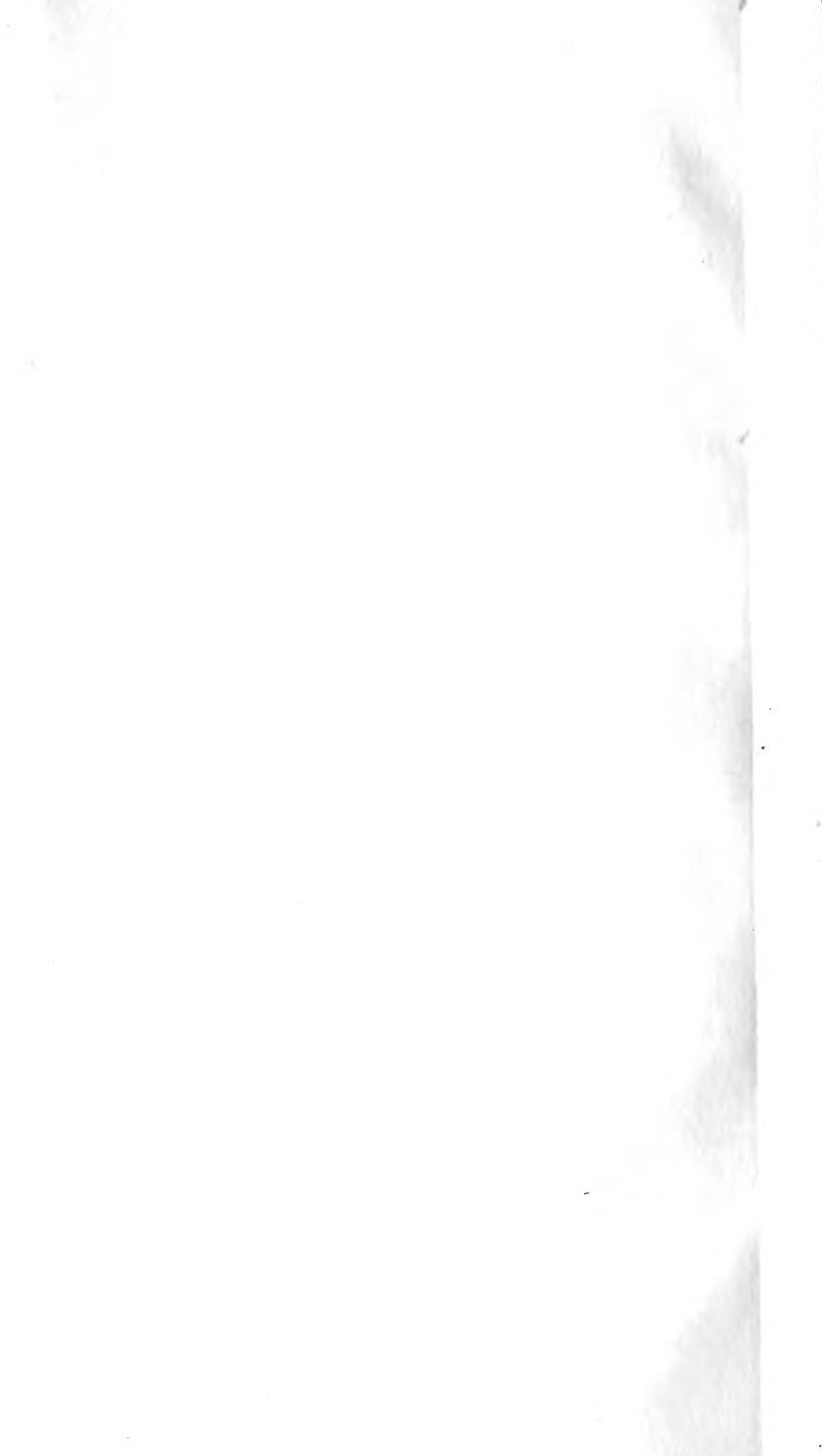




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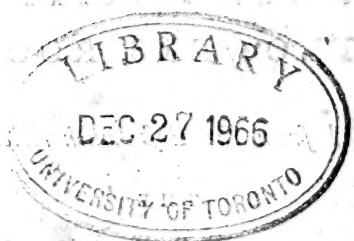
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HERB MAGAZINE

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MACE. One of the coverings of nutmeg. See NUTMEG.

MACCAW TREE. See PALM.

MAD APPLE. See APPLE.

MADDER, [*Rubia.*] This is the English name of a plant cultivated with great advantage in several parts of Europe, and lately in England, being a very capital ingredient in the dying business. There are several species of madder, all of which afford a dye. M. Guettard, of the Royal Academy of Sciences, has experienced that the ladies bed-straw, or cheese-rennet, [*gallium*] may be made to yield one; and of this kind is probably the Ray-dechaye, which is used on the coast of Coromandel for dying red. M. Dambourney has not, indeed, as M. Duhamel remarks, hitherto been able to extract a good colour from the gallium: but there yet remains room to hope that he may be more successful in the future experiments which he intends to make on this root.

Mr. Ray mentions and describes four different kinds of gallium or mollugo, bastard madder, which, after the laudable example of our enterprising neighbours, should likewise afford matter of experiment to those who wish well to this country, and particularly to our dyers.

The azala or izari of Smyrna, perhaps more properly written hazala or lizary (according to the eastern method of pronunciation) which is the sort used by the French dyers at Darnetal and Aubenas, to give cotton that fine carnation colour for which Adrianople is famed, is a true madder. Some species of it grow naturally under hedges and in woods; and the roots of these, when carefully dried, yield as fine a dye as the azala of Smyrna. M. Dambourney has cultivated a species of madder which was found growing wild on the rocks of Oiffel in Normandy, and the roots of this plant have yielded him as

beautiful a dye as the azala of the east. Mr. Ray describes particularly a wild madder which grows only on St. Vincent's rock near Bristol, but also on the rocks about Biddeford in Devonshire, and in great plenty among the hedges almost all over that county. As Mr. Ray calls this the *Rubia sylvestris Monspeffulana major*, and as M. Duhamel suspects M. Dambourney's Oiffel madder to be that very species, it surely is a matter of great importance to this nation, and well worth the attention of patriots, to follow M. Dambourney's example in making proper trials of it.

The species most commonly cultivated is the *Rubia tinctorum sativa*, commonly known among us by the general name of madder. It is of this species that the plantations of madder are made in Zealand, and in the neighbourhood of Lisle.

The root of madder is a capital drug used in dying wool, linen, and cotton; and is indispensibly requisite in printing linen and cotton, being the only red dye in general use for that purpose. It was, at the time when the Society for the encouragement of Arts, &c. first engaged in the encouragement of it, wholly imported from Holland: though it had formerly been a staple article of produce in our own country. We pay annually for this root to the Dutch an exceeding great sum; not less, according to calculation, than near three hundred thousand pounds; and, what is still worse, taking the advantage of the necessity we are under to purchase it of them, they have not only advanced the price to an exorbitant rate; but adulterate and sophisticate the madder in so bad a manner, as lays our manufactures, in which it is used, under the greatest difficulties. These manufactures moreover, in which it is absolutely necessary, are of the ut most importance,

importance to us; particularly the printing linen and cotton; which furnishes employment to some thousands of our women and youth, who would otherwise be waste hands, and many of them burthenfome to the public. Nothing, therefore, could be more worthy the regard of the society, than the introduction of the culture of madder here; which may tend to the national good so many different ways.

There was however, at first, an almost insurmountable impediment to the culture of madder in England. It consisted in this circumstance, that madder being a crop raised on land, it was subject to pay the tithe in kind: which was in fact so heavy a tax on the produce, as together with the great expence and risk, from the want of a more perfect knowledge of the manner of cultivation, almost entirely discouraged all attempts in a larger way. This obstacle was, nevertheless, removed through the endeavours of the Society, by the obtaining an act of parliament, to change the demand of tythe in kind to a modus, or composition, of five shillings per acre, for a term of years. The society thus, by their interposition in this matter, procured the first opening to that success, which is now likely to attend the attempts, to restore the production of this important article to our country.

The society, the mean time, exerted themselves to incite the public attention and spirit, to undertake the culture of madder by premiums. The first they offered was for the producing twenty pounds weight, the most perfect and best cured. This was obtained in the year 1755. They then, being by this means assured, that a method was known in England of raising and curing good madder, proposed premiums for the largest roots, twenty in number, of one, two, or three years growth: which were accordingly claimed and obtained for each kind, in the year 1758, and again in 1759. Further premiums were given in 1763, 1764, and the following years.

Madder is a plant of very little beauty, it in some degree resembles the common cleavers or goose grafs, in its manner of growth. The stalks are numerous, square, and commonly of a reddish colour: they are weak, so that

they lie upon the ground in their lower part; and in the upper, commonly intangle one with another. The leaves are long and narrow, they stand six at a joint; sometimes more, sometimes fewer, and are disposed like the rays of a star. Their natural colour is a dusky green, but they sometimes, especially toward the lower part of the stalk, grow reddish. The stalk is hairy, but the leaves are more so: their hairyness is not a woolly down like that of some plants, but is short, rough, and hard, so that they prick the hands when touched.

The flowers grow at the tops of the stalks, and small branches; they are small, but very numerous, and of a pale yellow. The seeds follow, which are contained in a kind of round little heads; the root, which is the useful part, is extremely long, and of a beautiful red colour, dusky on the surface, but very bright within.

The cup in which the flower of madder stands is very small, and stands upon the rudiment of that little roundish fruit in which the seed is to be lodged: it is composed of a single green leaf, hollowed and divided into four little segments at the edge.

The flower is in the same manner formed of a single leaf, a little hollow at the bottom, and divided lightly into four parts at the edge. In the centre of this rise four short filaments, each terminated by a single button or head, from the rudiment of the fruit, which, as it enlarges a little, shews itself to be composed of two parts; there rises a single filament called the style of the flower, this comes up in the midst of the four filaments just named, and is divided into two parts toward the top, each of which has a button to it: this, through certain imperceptible apertures, admits the dust from the heads of the other filaments for the ripening of the seed vessel, which then swells, and becomes a kind of double berry: in each part of which, or each berry, is contained a single seed.

There are two kinds of madder mentioned by those who treat of plants, these are the six-leaved kind we have described, and one which has only four leaves at a joint, but the latter is not worth the farmer's notice.

Madder being one of those plants that roots deep, and the value of which

is in the root; the soil for it should be deep and light. This is the principal caution, for it will get nourishment whether the ground be richer or poorer, provided it be not altogether barren. A black mould, such as is common in the fens of England, is very proper; and is the same soil whereon they plant it in Flanders, whence we have our greater supply. A loamy soil that is in some degree rich, and has but little clay in its composition, is also very proper; of a mixture of loam and mould, as is very common in many parts about the edges of the fen countries. A sandy soil will also do well if properly managed.

There is no part of England where this plant would thrive better than in these places, for they have all the advantage of the Flemish grounds, and this further benefit, that they are drier; the Flemish often bursting their roots by their over moisture, or occasioning an expensive manner of dressing to prevent that accident.

Whatever be the soil for madder it must be deep. We have observed it is the nature of the root to extend itself in length, and that no art can bring it to any great thickness; therefore a depth of soil is the most essential point, that it may have room to penetrate. There are usually produced a great many side roots, which spread along just under the surface of the ground. These are the provision of nature, for the nourishment of the stalk and leaves, the great root taking almost all the juices it receives to its own nourishment. Now as the stalks and leaves of this plant are of no use or value, it is idle to provide for the maintaining them in vigour at the expense of the main root. These horizontal shoots never come to any value themselves, and as they only take that nourishment which should supply the main root, the proper course is to destroy them.

This account of the nature of madder, and of the soil that suits it, naturally points out a new method of managing it to advantage; of all the plants that can be raised, none is so perfectly suited to the horse-hoeing husbandry. The soil it requires is such as perfectly suits those implements; the method of horse-hoeing, of all other practice, will the most effec-

tually and most essentially cut off the shallow and horizontal roots; and as the main roots are to be encouraged is their growth to the utmost, no method of planting can be so proper as that in rows at a considerable distance from one another. This directs in every article the horse-hoeing husbandry, as the method for raising madder to an excellence, and perhaps such a one as it never reached yet in England. The culture of this profitable and useful species has been recommended frequently and strongly, and has been tried at different times with different success, but always with some profit; we hope therefore that the farmer will be encouraged, from what has been found of the advantages of this crop, in methods less suited to its nature, to try it in the way we are about to propose; in the which it cannot fail of very well answering his care, expence, and trouble; and according to which there is a reasonable prospect of his enriching himself by it in a few years culture.

Madder is to be planted in spring; but the preparation of the ground for it must be undertaken long before. Let the farmer who intends to raise it look carefully out for a field that has a deep light soil, of the nature of either of those kinds we have mentioned. When he has fixed upon the field, in autumn, as soon as the crop is off the ground, let him plough it up deeply and thoroughly. Let him leave it in this condition three months, and then going over it with the plough once again, tear it up to a great depth, and thoroughly break and divide it: let him then leave it to himself till the end of March. Having secured his sets, let him in the last week in March, send in his plough again, set to its greatest depth. As the ground has been twice ploughed before, it will very well give way to this. The sets are now to be taken off from the sides and heads of the old roots, and the ground is to be harrowed even. Then a line is to be drawn along near the edge, as in the planting of liquorice, and the sets are to be let into the ground in the same manner, at a foot distance from one another.

When one row is thus planted, the line is to be removed a foot and half, and another row planted, the sets in
this

this not being placed opposite to those in the other, but just over against the middle of the space between.

The line is then to be removed to the distance of five foot, and drawn strait over the ground as before, and a row of the sets are to be planted there; thus there will be a third row at five feet distance from the second, and at six and a half from the first row: the line is then to be moved again one foot and half, and another, being a fourth row, is to be planted opposite the middle distances of the last. Thus the whole ground is to be planted out. The sets are to stand every where at the same distance in the row, as at first ordered; and the whole field will be laid out in double rows, with five feet intervals; the space or partition between one row and another, of each double row, being one foot and a half.

When the sets are all in and lightly covered up, let the planter go over the places, where they stand, with a garden rake, and lay all level.

The beginning of April is a season when showers are seldom wanting; but if it should so happen that there are none, there must be the labour of once watering the sets. The best time for doing it is on the third day after their planting, and when this is done they may be left to nature.

The plants will now quickly appear, and as this is a time when the increasing warmth of the season, and wet from the showers, sets every thing on growing, weeds will appear among them. As these must be principally seedlings, for we suppose no roots left in the tillage, they will not at once over-run the proper growth, because that is planted with good roots; so that they need not be attacked so soon as ever they appear; but when they have got a little height the hand-hoers must be sent in to clear the partitions of them between row and row, not meddling with those in the five foot intervals, except just on the outside of each row.

This is to be done with care and management, and a great deal depends upon it. The instructions to be given the hoers are these. First to take care of the plants of madder, which being set regularly, and now up at some height, and being very different in

their aspect from the weeds, cannot well be mistaken; all this however must be pointed out to them, and they must be strictly cautioned; for the destruction but of a few of the plants where they are set separate, and each intended for a large growth, will be a considerable loss to the owner. This being pointed out to them, they are to be sent in with directions to cut up all weeds in the small partitions, and break the surface of the ground as deep as they readily can with those instruments; then they are to clear away between plant and plant of the madder; and thence advancing to the outside they are to cut up the weeds, and break the ground for about a hoe's breadth all along the rows.

This done, the plants are to be left to themselves three weeks, in which time they will strike very strongly, and the ground just above them will be very clear of weeds, from the hoeing; but by this time the middle of the large intervals will be full of weeds of some growth.

The horse-hoe is now to be sent in, and is to cut along the middle of each interval, to as much depth as it can: this will thoroughly root up and destroy that growth of weeds, and break the ground. The weeds will, in great part, be buried, and will become a kind of manure, for weeds that cannot grow soon rot at this season, which is warm and wet; and the ends of some of the longest fibres of the madder roots will be broken off, and new ones will consequently grow in great quantities from them, as is seen in cutting of the fibres of roots in the gardener's way of planting; and there will be a fine quantity of fresh and free earth for these new roots, as also for what farther shoots the others may make; and it will be full of nourishment for them.

We have said that the main downright roots are all that are of value in his madder plants. Now the horizontal or spreading ones, that run under the surface, are to be considered in two distinct lights, as they are larger or as they are smaller, for at one of these times they impoverish, but at the other they feed them; so that at one time they are to be nourished, and at another destroyed.

It is while they are young that they are

are of advantage to the main root. This is their condition in the present instance, and it is therefore we are recommending every method to feed and to encrease them; and on the other hand, we shall soon after take as much pains to destroy them. The part of the madder above ground, now though of some bigness, is not so large as to demand any vast quantity of nourishment; the root, on the contrary, is pushing downward, and grows the faster the more it is supplied by its fibres, and the less it is drained by the plant above.

This is the case in many instances at the period of growth whereat the madder is at present, but in none more visibly. The first nourishment the new planted roots take in, goes to the pushing some fibres from themselves outward, and a shoot of stalk and leaves upward. This shoot takes up the greater part of the nourishment in the first days, but afterwards it grows slower, and requires a smaller proportion of what is drawn. After this there is a period when the main root is taken care of and supplied, that it may be able to send up nourishment in abundance to the herb, when ripening its flowers and seeds, that being the great purpose of nature in all plants: for this purpose also in madder a number of long horizontal roots grow out every way under the surface.

These horizontal fibres we have named, and for which we are now so carefully providing by the horse-hoe, are in time to become those long horizontal and side roots. At present they are very serviceable, for they draw in nourishment in vast abundance; which being not demanded in that quantity by the plant in its present state, goes according to the design of nature, to the feeding and enlarging the main or downright roots. The present horse-hoeing has vastly encouraged, filled, and encreased them; but the next is to destroy them.

Some time after this horse-hoeing there will be weeds again in the partitions, and between plant and plant, for this is a season that produces them very quickly: the hand-hoers must be sent in again to cut them all up, and the plants of the madder being kept clear, will have a healthy aspect,

which is very essential to the good growth of the root, and which they would not have if choaked up with weeds: some weeks after this, when the madder has grown to a considerable size, let the horse-hoe be sent in a second time, with orders to cut much nearer one side, or one row, alternately; by this means all the large horizontal roots on that side will be cut and broken off, and only small ones will grow from the ends of them, which will tend to the service of the main root again.

The hand-hoers at this last time need not hoe the outsides of all the rows, but only alternately of those near which the horse-hoe is not this time to come, for the next hoeing it is to take the others. This instrument could not be brought so near the rows while they were young, for fear of tearing up or burying the plants, but they are too well established now to be in any danger on that head, especially as it is done only on one side; for the horse-hoe is to be carried along the farthest side of the next interval all the way, in the course of this operation; so that it never comes near both sides of the same row.

The plants will immediately after this thrive surprisingly, and advance toward their flowering. There will need no more hand-hoeing, for they will be now of such a size and strength, as to destroy all the weeds about them; and the next horse-hoeing, which will be the last for the summer, will complete the work for the first season.

This is to be done as soon as the weeds have got some head again in the intervals, for they will rise there tho' they be over-powered in the partitions. The instrument is now to be carried on the other sides of the rows alternately, so that now there will have been a thorough and deep cutting up of the ground, near both sides of every row.

The large horizontal roots, which would impoverish the main roots, and be of no value in themselves, are now broke and cut off on this side also; and the main roots, which are now large and strong, have all the advantage of the nourishment

The flower and seed of madder are wholly useless: and as a plant's running to seed impoverishes the root, this dietates

dictates a new practice in the present case, which is the cutting down the plants just before they are breaking out into flower.

Let this be done with caution, and with moderation. The farmer is not to cut them down close to the ground; it is enough if he stop their running to seed, therefore all he has to do is to cut them off half a foot below the top. This will take off all the flower buds, and yet will leave enough of the plant to draw up a great quantity of sap, and keep nature in her proper course. By this means a vast quantity of rich juice, intended for the perfection of the plant in its ripeness, will go to the main root, for there will be no large side roots to take it up; and the increase in that useful part will be very surprising.

The stalks will shoot out side branches from the part where they were cut off, and from every joint below, and will grow stronger for that cutting, and very bushy. Some of these will make an attempt to flowering, and they may be left to themselves in it. The few flowers that grow upon these shoots are not like the full and universal flowering of the whole growth, they will do neither good nor harm, and are not worth regarding.

The first summer will thus pass, and the plants, not having drawn a vast deal of nourishment upwards, the roots will be greatly strengthened and increased. This will be the condition of the crop at the autumn of the first season; and all that is to be done is in the same manner to promote the growth of the root, during the rest of the time it is to remain in the ground, which is to the next autumn. A crop of madder, though it remain but eighteen months in the ground, is to be accounted by the farmer as a two years standard, because the preparation of the land takes up the other six. The whole course is this; at autumn the ground is to be taken for it; during the winter it is to be prepared: and in spring it is to be planted: the next autumn the plants have had one summer's growth, and they are to have another, for they must remain through the winter, and the following summer: and the roots must be gathered in autumn following, which is two years from the time of beginning the preparation of the ground.

In the usual way of management, when the roots are taken up at this time for sale, another piece of land is to be sought out for the next crop; but in the method we have proposed by the horsehoeing husbandry, the same piece of ground may raise madder for ever; and will be fitter for it than any other could.

All the winter the ground is to lie perfectly quiet: in spring a fortnight before the plants begin to shoot, the horsehoe should be sent in to cut a deep furrow in the center of every large interval, and the hand-hoers to cut up those weeds that rise in the partitions. After this there will be no more care needful about them, for the growth will be too strong to suffer any annoyance; but the intervals will have weeds, and should be horsehoed just as in the preceding summer, to prevent their farther growth, and to give new supplies of nourishment to the main roots, as well as to cut away and destroy the side or horizontal ones.

This is to be done exactly in the same manner as before mentioned for the first season, and therefore needs not be described more at large here. By this means the crop will proceed as it ought in every respect; and this season the whole care will be over.

In autumn, when the plants wither, is the time to take up the roots; this must be done with care and circumspection, for the more they are broke in the ground, the more of them is lost. The regular method of planting them comes in here to be of great use, for the people employed to take them up know where to look for them one by one, and where they may, and where they may not, work about them.

When they are all taken up they must be cleaned from dirt, and after a quantity of fine sets are separated for a new plantation, they are to be dried for sale. The dyer will be always a ready purchaser, nor need the husbandman fear to overstock the market.

Madder has little or no smell; a sweetish taste, mixed with a little bitterness. The virtues attributed to it are those of a detergent and aperient; whence it has been usually ranked among the opening roots, and recommended in obstructions of the viscera, particularly of the kidneys, in coagulations of the blood from falls or bruises

ses, in the jaundice, and beginning dropsies.

It is observable, that this root, taken internally, tinges the urine of a deep red colour; and in the philosophical transactions, we have an account of its producing a like effect upon the bones of animals who had it mixed with their food: all the bones, particularly the more solid ones, were changed both externally and internally, to a deep red; but neither the fleshy or cartilaginous parts suffered any alteration: some of these bones, macerated in water for many weeks together, and afterwards steeped and boiled in spirit of wine, lost none of their colour, nor communicated any tinge to the liquor.

Petty Madder, [*Asperula*.] A plant growing wild in many woods in England. See *WOODROOF*.

MADS. EARTHWORMS. See -

MADWORT. [*Alyssum*.] There are several species of this plant growing naturally in warmer climates, yet will in general bear the cold of ours. They are propagated by slips or seeds; the flowers appear in April or May; are various, white, yellow, &c. and last about three weeks in beauty, if the weather is moderate.

MADNESS, in a Dog. There are abundance of prescriptions for the bite of a mad dog; but whether any are good we cannot presume to say. The Ormskirk medicine is much esteemed; but if we might advise, it should be to cut out the part or cauterize it immediately.

MAHOGANY, [*Cedrus Mahogoni*.] This tree is a native in the warmest parts of America, growing plentifully in the islands of Cuba, Jamaica, and Hispaniola; there are also many of them on the Bahama islands. In Cuba and Jamaica there are trees of a very large size, so as to cut into planks of six feet breadth; but those on the Bahama islands are not so large, though they are frequently four feet diameter, and rise to a great height, notwithstanding they are generally found growing upon the solid rocks, where there is scarce any earth for their nourishment. The wood which has been brought from the Bahama islands has usually passed under the appellation of *Madeira wood*, but there is no doubt of its being the same wood as the mahogany.

VOL. II.

The leaves of this tree are winged like those of the ash, having commonly six or eight pair of pinnæ (or lobes) which are shorter and broader at their base than those of the ash, where they adhere to the midrib by very short footstalks; these lobes are very smooth, having but one vein running through each, which is always on one side, so as to divide them unequally. The entire fruit, before it opens, is of a brown colour; these fruit grow erect upon long footstalks, which closely adhere to the five cornered column, running through the middle of the fruit, and to which the seeds are fastened, lying imbricatum like slates on a house, over each other; so when the fruit is ripe, the outer cover divides at the bottom into five equal parts; and when these fall off, and the seeds are dispersed, the foot-stalk and column remain some months after on the tree.

It is propagated by seeds, which may be easily procured from the Bahama islands, from whence most of the good seeds which have come to England were brought; for most of those which have been sent from Jamaica, although brought in their pods, have not succeeded, whereas those from the Bahama islands have grown as well as if they were immediately taken from the trees; the seeds should be sown in small pots filled with light sandy earth, and plunged into a hot-bed of tanners bark, giving them a gentle watering once a week; if the seeds are good, the plants will appear in a month or five weeks; and when the plants are two inches high, a sufficient number of small pots should be filled with light earth, and plunged into the tan-bed a day or two, that the earth may be warmed before the plants are put into the pots; then the young plants should be shaken out of the pots, and carefully separated, so as not to tear their roots, and each planted in a single pot, being careful to shade them till they have taken fresh root; after which they must be treated in the same manner as other tender plants from the same climate, being careful not to give them much water, especially in winter. If the plants are properly managed, they will make considerable progress.

MAIDEN-HAIR, [*Adiantum*.] The species are 1. *The officinal or true Maiden-hair*, 2. *Cahada Maiden-hair*. The first

fort is the true Maiden-hair, which is directed to be used in medicine; but as it does not grow naturally in England, so the *Trichomanes* is usually substituted for it, which is found growing wild in great plenty in several parts of England. The other is a native of the South of France, Italy, and the Levant. It usually grows out of the joints of walls, and the fissures of rocks, so that whoever is inclinable to keep this plant in their gardens, should plant it in pots filled with gravel and lime rubbish, in which it will thrive much better than in good earth; but the pots must be sheltered under a frame in winter, otherwise the plants are often killed by the frost.

The second fort is often preserved in gardens for the sake of variety; this should be planted in pots, and treated in the same manner as the former; for although it will live through the winter in the open air in moderate seasons, yet in severe frost it is often destroyed. This fort grows naturally in Canada in such quantities, that the French send it from thence in package for other goods, and the apothecaries at Paris use it for the Maiden-hair, in all their compositions in which that is ordered.

Maiden-hair has been greatly celebrated in disorders of the breast, proceeding from a thinness and acrimony of the juices; and likewise for opening obstructions of the viscera, and promoting the expectoration of tough phlegm. But modern practice pays little regard to it; nor is it often to be met with in the shops.

English MAIDEN-HAIR, [*Trichomanes*.] There are three or four varieties of this plant, which grow naturally in Europe; but in America there is a great number of species, which are remarkably different from each other, as also from the European kinds.

These being of the tribe of ferns, or capillary plants, are seldom preserved in gardens. Their roots should be planted in moist shady places, especially the European sorts, which commonly grow from between the joints of old walls, and in other very moist shady situations; but those sorts which are brought from hot countries must be planted in pots filled with rubbish, and strong earth mixed, and in winter they must be screened from hard frost, to which, if they are exposed, it will destroy them,

The common fort in England is generally sold in the markets for true Maiden-hair, which is a very different plant, and not to be found in England, it being a native of the south of France, and other warm countries, so is rarely brought into England.

White MAIDEN-HAIR, [*Ruta Muraria*.] A plant growing out of old walls in many parts of England.

MAIZE, [*Zea*.] See GUINEA WHEAT.

MALACCA BEAN. See *Anacardium*.

MALABAR-NUT, [*Jussiaea*.] This plant is a native of Ceylon, but hardy enough to live in a green-house, in England, without any artificial heat. It rises here with a strong woody stalk to the height of twelve or fourteen feet, sending out many spreading branches, garnished with spear-shaped oval leaves six inches long and three inches broad, placed opposite. The flowers are produced on short spikes at the end of the branches, which are white with some dark spots, but are not succeeded by any seeds in England.

It may be propagated by cuttings, which, if planted in pots in June and July, and plunged into a very moderate hot-bed, will take root, but they must be screened from the sun; and if the external air is excluded from them, they will succeed better than when it is admitted to them. It may also be propagated by laying down the young branches, which will take root in one year, and then should be put each into a separate pot, and placed in the shade till they have taken new root; then they may be removed to a sheltered situation during the summer, and in the autumn they must be housed, and treated in the same way as the orange trees, with only this difference, that these require more water.

MALANDERS. This is an external disorder of a horse very painful and troublesome, and very difficult of cure; inasmuch that some say nothing more is to be attempted than to alleviate the pain; and that it is dangerous to stop the distemper.

This is a very unhappy error; for there is no degree of the Malanders but may be cured by proper management; and that with perfect safety.

This disease shews itself on the fore-legs, upon the inner part, just against the bending of the knee.

It is not a knob or ulcer like the farcy, but a hard, dry, flat scab, of which sometimes there is only one great one, sometimes several smaller; and these are cracked and chopped upon the surface, and have stiff hairs like bristles growing upon them.

This is the whole of the disorder: it sometimes is very violent and inveterate, sometimes more slight. When it is very bad it makes the horse halt; and when least it occasions him to go stiff till warmed with exercise.

The general cause of the malanders is bad management. It is the common disorder of horses kept in a slovenly manner, and much more rarely affects those which are managed more carefully.

Those horses are most subject to it which have most hair upon their legs, and they are the most difficult to cure.

One essential difference the farmer is to make in his conduct, for a horse under this disorder, which arises from this consideration, that sometimes the malander is only a forenefs in the part, while the horse is otherwise in health; sometimes the blood is corrupt and bad, and in this case the disorder is more violent in its degree, and more difficult to be cured.

When the malander is only the effect of carelessness, and it is upon a horse otherwise healthful, the method to be observed is this. Let him be kept to his usual work and usual food; and let the following wash be made for the part:

“Set on a saucepan with three quarts of water, put to it half a pound of sœnægreek-seed bruised, and a pound of fresh marshmallow root cut in slices. Boil all this till it is like a jelly, strain it off hot, and press it hard out, then add to the thick liquor half a pound of opodeldock ointment.”

Make some of this hot morning and night, and dipping flannels in it, wrap them round the leg where the complaint is, as hot as the hand can bear to touch it. Let this be several times repeated; and at the last of all, wet some of the ingredients, which must be saved when the liquor has been pressed out, with some of the liquor hot, and lay them upon one flannel, cover them with another, and wrap the

whole round each leg, tying it round so as to keep it on, but not tight.

Let this be done every day twice, as directed, till the hard substances begin to soften; after this once in four and twenty hours will do; and there will thus be a perfect cure.

Before the first dressing let the hair be clip'd round about the place, and the whole part about the Malanders wash'd clean with warm soap suds. Let this be repeated at times during the cure; and after it is perfected, let the legs be kept very clean in this part, for fear of its returning.

In this manner a horse will be cured very easily, and very certainly; that has no taint in his blood: but if there be that added to the outward malady, care must be taken accordingly, by giving inward medicines at the same time.

When this is the case, the owner will perceive it by his habit of body; and by the outward remedy not taking its desired and natural effect; he is then to proceed thus:

Let a pound of crude antimony in powder be mixed with four pounds of flour of brimstone; & let some of this be sprinkled among his food. This is better in such a case than giving it in balls or drenches, for he takes it with his nourishment a little at a time, and often; and accompanying the food in its passage through the Intestines, its virtue goes into the blood, together with the nutritive part of the food.

I have heard many who should know something better than the vulgar, say, that they would not cure a horse of the malanders if they could; for that all that is prudent is to keep him from growing lame with them. They have an old proverb that has misled them from father to son for many generations, which is, “that curing the malanders is shutting up the wolf in the sheep-cot.” But they may be sure of this, not only in the present case, but in all others whatever, that there will be no danger of damage in curing any outward disorder, when the blood is at the same time rectified within.

We have shewn the difference already, that when the complaint is only external, outward remedies alone may be trusted, but when the blood is affected, inward things must be given to assist. The danger even of a mistake

take in these cases, is not so great as these persons apprehend; for when the blood is in fault, and no care has been taken to amend it in the cure, the common consequence is only, that it breaks out again.

MALE BALSAM APPLE. See **APPL.**

MALLOW, [Malva.] This is a plant growing common enough in the fields, the leaves are ranked the first of the four emollient herbs: they were formerly of some esteem, in food, for loosening the belly; at present decoctions of them are sometimes employed in dysenteries, heat, and sharpness of urine, and in general for obtunding acrimonious humours: their principal use is in emollient glysters, cataplasms, and fomentations.

There are several species of this plant, exotics, cultivated in the gardens, propagated by seeds.

Bastard MALLOW. See **BASTARD.**

Jew's MALLOW, [Cochorus.] There are several species of this plant brought from the East and West Indies and South America, but are all too tender to thrive in England in the open air, therefore their seeds must be sown on a hot-bed in the spring, and when the plants are come up and fit to remove, they should be transplanted on a fresh hot-bed to bring the plants forward. After the plants are rooted in the new hot-bed, they must have free air admitted to them every day, for they must not be drawn up weak; and when they have obtained strength, they should be transplanted each into a separate pot, and plunged into a hot-bed, observing to shade them from the sun till they have taken root; in June they should be gradually inured to the open air: part of them may be shaken out of the pots, and planted in a warm border, where, if the season proves warm, they will flower and perfect their seeds; but as these will sometimes fail, so it will be proper to put one or two plants of each sort into pots, which should be placed in a glass-case, where they may be screened from bad weather; and from these good seeds may always be obtained.

Indian MALLOW, [Urena.] There are four species of this plant brought from China and the coast of Malabar. They are propagated by seeds in a hot-bed, and require the assistance of a stove to preserve them.

Marsh MALLOW, [Althæa.] This plant grows naturally in moist places in divers parts of England, and is frequently used in medicine. It has a perennial root and an annual stalk, which perishes every autumn. The stalks of this plant grow erect to the height of four or five feet; these are garnished with leaves which are hoary and soft to the touch, and placed alternately on the branches; the flowers come out from the wings of the leaves, which are shaped like those of the mallow, but are smaller and of a pale colour. It may be propagated very fast, either by seeds or parting of their roots. When it is propagated by seeds they should be sown in the spring, but if by parting of the roots, the best time is in autumn, when the stalks decay. It will thrive in any soil or situation, but in moist places will grow larger than in dry land.

This plant has the general virtues of an emollient medicine; and proves serviceable in a thin acrimonious state of the juices, and where the natural mucus of the intestines is abraded. It is chiefly recommended in sharp defluxions upon the lungs, hoarseness, dysenteries, and likewise in nephritic and calculous complaints; not, as some have supposed, that this medicine has any peculiar power of dissolving or expelling the calculus; but as by lubricating and relaxing the vessels, it procures a more free and easy passage. *Althæa* root is sometimes employed externally for softening and maturing hard tumours: chewed, it is said to give ease in difficult dentition of children. There are two other species of this plant brought from Portugal and Hungary, both propagated by seeds.

Rose MALLOW. See **HOLLYHOCK.**

Tree MALLOW, [Lavatera.] There are several tall herbaceous flowering annuals and shrubby perennials of this plant, bearing large red, white, and purplish flowers, continuing in bloom from June till August or September.

They are all proper ornaments for any part of the pleasure ground. The annuals particularly have singular beauty, their flowers being large, numerous, and conspicuous, and very proper furniture where large showey plants are required; and are easily and abundantly raised from seed in the open ground.

The

The shrubby kinds are also good furniture for shrubbery compartments, having large, strait, upright, durable stems, terminated by branchy bushy heads, and very large soft foliage, that form a fine variety in assemblage; though their flowers are often hid by their large leaves. These perennial kinds should have a dry soil, otherwise are apt to go off in two or three years; a fresh supply, however, may always be raised from seed in the common ground.

They are propagated abundantly by seed in the open ground in the spring; the annuals in the place where sowed, and the perennials also either where they are to remain, or for transplantation.

Syrian MALLOW, [*Hibiscus*.] This plant is commonly known among nursery-men by the name of *Althæa frutex*.

Viscous MALLOW, [*Malva viscosa*.] This hath a shrubby stalk, branching ten or twelve feet high, bearing scarlet flowers, succeeded by roundish scarlet viscous berries.

Venice MALLOW, [*Hibiscus Trionum*.] *Trionum*, *Bladder Ketmia*, *Flower of an hour*. This is an annual plant bearing flowers of very short duration, which in hot weather only just open, and then wither away in an hour or two. Its propagation is by seed sown either in autumn or spring in the place where they are to remain, leaving about three of the best plants on the spot.

Yellow MALLOW. See *INDIAN MALLOW*.

MALT. Barley prepared, to fit it for making beer or ale, by stopping it short in the beginning of vegetation.

It is said, that the soil on which barley grows makes a considerable difference in the grain, and that the barley fittest for malt is that which grows on a rich, light, or gravelly soil, and which has been raised from seed brought from a farm of a different soil and situation. The fullest and largest grains of such a crop should be chosen for making malt. It should be heavy and perfectly sound, and such as has not suffered any accident in the field. Its being a little heated in the mow is by some reckoned an advantage, because the grain will be the more equally dried, and will consequently the more equally imbibe water. If it has been so much mow-burnt as to look blackish when

broken at the root end, or as Mr. Combrune says, if it has suffered a heat of 120 degrees, it is unfit to make good malt. It is also found by experience, that barley taken immediately from the field does not malt so kindly as that which has been some time in the house, or mow. Special care ought to be taken that it be free from the seed of weeds; for these, in the malting, are apt to give the grain a bad taste, which cannot by any means be afterwards got rid of.

By germination, all the principles of barley are put in action. The heat which it undergoes in malting separates and divides its parts; and the viscosity which it before possessed is removed by the looser texture of its oils, and their intimate union with the salt, which gives malt the sweetish taste that distinguishes it from barley.

In order to its being malted, the barley is put into a cistern lined with lead or stone, and covered with water about six inches deep above the barley, to give room for its swelling. All the good grain will sink in the water; but after stirring it, the imperfect or dis-tempered grains will rise to the surface. These should be skimmed off, and given to Poultry or hogs, for they will never make good malt. By the water gaining admittance into the barley, a great quantity of the air is expelled, as appears from the number of bubbles which rise on the surface.

The barley is left in the water two or three days, more or less, in proportion to the heat of the weather and the dryness of the barley. A judgment is formed that grain is fully saturated with water, from its appearing turgid, and easily giving way to an iron rod dropped perpendicularly into it. Or, take a corn from the middle of the cistern, and hold it steadily by the two ends, between the fore-finger and thumb: press it gently, and if it continues firm when so pressed, and the skin does not break, it must soak longer: if it crushes together and feels mellow, and the skin crack, it is watered enough. Nicety in this is a material point, and can be learnt only by experience. If the grain should be suffered to remain too long in water, it would begin to lose part of its sweetness. When it has been steeped sufficiently, the water is drawn off.

The

Barley sometimes appear to have been heated in the Barn or Stack, called Hoaf-burnt - and looks so often when only affected by May-weed, but then it has the weed smell - (See May-weed)

The water used for this purpose should be that of a clear running stream, or rain water; or if such cannot be had, pond water, provided it be sweet and clean, will do very well; or pump water, which should be rendered soft if it be naturally hard. If the water made use of be any way tainted, it communicates to the malt a taste which it never loses. Mr. Combrune advises the adding of lime to the water in which the barley is steeped: but this seems to be improper, because it appears from Dr. Home's experiments that lime renders water hard.

From the cistern, the barley is laid in a regular heap or couch, where it must remain thirty hours, or till it has contracted a heat. It must then be worked in one or more heaps, and turned every four, six, or eight hours, according as the weather is cold or hot. When it begins to spire, it should be turned every three or four hours, according to the temperature of the air; and as it comes (or so its spiring is commonly termed) the heap must be spread thinner to cool it, lest it be heated too much, and the germination be carried on too fast, by which the oils would be too much consumed. The turning of it must be continued in proportion as it is more or less slow in growth, so that it may be brought tolerably dry to the kiln. When the roots begin to deaden, the couch must be thickened again, and often turned, that the growth of the roots may not revive. At this time, the spire should be near piercing through the outer skin of the barley: for if it grows quite out, the strength of the malt will be too much consumed. After the malt is made thus far, the common practice is to lay it at once on the kiln: but the best way is to gather it all up in one heap, to let it lie in that state twelve hours, and then to turn it every fourth hour, during the space of twenty-four hours.

No person should be suffered to tread on the malt with their shoes, while it is on the floor: because many grains are inevitably bruised thereby, and these, vegetating no longer, afford the roots of the other grains a substance into which they extend their fibres, and are by that means entangled in bunches: and besides this, the bruised corn acquires a degree of putrefaction which taints the liquor made of the

malt intermixed therewith. Equal care should also be taken, that the grain be not bruised by any other means.

Mr. Combrune thinks, that the time most proper for malting is when the temperature of the air is such that barley begins naturally to germinate, at which season the thermometer marks from between 32 to 40 degrees. How far that time may be extended, experience alone can determine. The warmer the weather is, the greater must be the disadvantage under which the master labours; because the motion of the fluids is then so strong, that the process goes on too quick, and the finer parts are apt to fly off; the consequence of which is, that instead of a sweet, the malt inclines to a bitter taste, the oils being turned rancid. This is so universally experienced, that brewers carefully avoid purchasing what is termed latter-made malt.

The grain thus prepared for drying is spread on the kiln, where, meeting with a greater heat than is suited to vegetation, its farther growth is stopped. It is spread on the kiln three or 4 inches thick, and turned every three or four hours. The laying of it thicker is often attended with inconveniences, among which is particularly its being unequally dried; and therefore that should be avoided. The strength and duration of the fire is different, according as the malt is intended to be dried, pale, amber, or brown. The pale malt requires more leisure and less fire than the amber or brown.

Pale and amber malt are dried with coke or culm, which not emitting any smoke, give the malt a brighter colour, and do not communicate that bad relish which malt has when dried with wood, straw, &c. the smoke of which taints it. Coke is best, because its fire gives a steady and constant heat, whereby the malt is dried uniformly. If wood, or any vegetable fuel be used, it should be extremely well dried, in order that being as free as possible from moisture, it may yield the less smoke.

The size of the malt kiln is generally proportioned to the quantity of malt for which it is intended. Some build their kiln square, and others make it round; but this last is undoubtedly the best form, because the heat of the fire is more equally diffused therein, and the grain is, of course, more equally dried.

Various

Various substances have been made use of for covering the kiln, such as tiles, plates of tin, and wire: of these, the wire is to be preferred, because it does not contract so great a degree of heat as to parch the grain in contact with it: but for this very reason, hair-cloth is preferable to any other covering; because, when any part of the malt is in immediate contact with a substance more solid than itself, and therefore capable of receiving a proportionably greater degree of heat, the malt in contact with that heated body is parched or burnt, by heat which is not equally diffused through the whole mass, which mafs cannot therefore be all equally heated. The hair-cloth is spread upon small wooden rafters, and these are supported by bars of iron laid across the kiln.

An ingenious and attentive malster marked the degree of heat in the malt whilst on the floor: and the result of his observations in this respect is as follows. During the first ten days that the malt was on the floor, the heat in it was between 50 and 60 degrees. During the next three or four days, the heat was increased from 60 to 65 and 67 degrees; and during the last days of its lying there, to 80, 84, and 87, which last was the degree of heat when the malt was put on the kiln. There cannot be any absolute rule as to the difference of heat during the different times in the process of malting, because it must be suited to the heat of the air: at least we have not yet sufficient data whereon to found such a calculation. The heat of the malt on the kiln when fit for pale malt was 120 degrees, and when it was fit for brown the heat was 147.

This intelligent artist's observation, that the malt was fit for what is called pale malt when its heat was at 120 degrees, suggests a caution which should be most carefully attended to, namely, that whatever colour it be intended to give to the malt, the heat at first should always be the same: thus, for example, malt which is dried to the degree of high brown, should first be rendered pale malt, then amber, and so on progressively; not by a sudden increase of the fire; but by a longer continuance thereof. In this manner, the whole body of the grain is equally and gradually dried; whereas a strong and

quicker fire would parch, or as it were singe the outside, while the internal parts remain moist: and as that moisture is afterwards evaporated, it must crack the surrounding hardened crust, whereby the grain is again damaged in another respect.

As soon as the malt is dry, it must be removed from the kiln, and spread thin, that it may cool to the temperature of the air. It cannot be supposed, that any of its parts are capable of retaining the fire in such manner as not to suffer it to escape; though some have conceived that they do. In proportion as malts are dried, their particles are more or less separated, and coming in contact with water, they strongly attract from it particles which fill up their interstices. In mashing, this action between the malt and the water generates a small degree of heat, but no way durable; though from hence arose the opinion, that brown malt is full of fire.

Barley may, at a medium, be said to lose by malting one fourth part of its weight, including what is separated from it by the roots being skreened off: but this proportion varies, as it is more or less dried.

The condition of the barley, as to its greenness or ripeness, at the time of its being gathered in, is clearly discernable when it is melted. If it were gathered green, it rather loses than gains in quantity, the malt becomes of a smaller body, appears shrivelled, and is often unkindly hard; whilst, on the contrary, that which was cut at full maturity increases in malting, appears plump, bright, and clear, if properly carried thro' the process, and on being cracked, readily yields that fine mealy substance so much desired by brewers.

Malt which has not had a sufficient time to shoot, so that its plume, or acrospire as the adepts in malting call it, may have reached to the inward skin of the barley, remains charged with too large a quantity of its unattenuated oils. All those parts which have not been put in motion by the act of generation, will, when laid on the kiln to dry, be so hardened, as not to be soluble in water, and consequently will be lost to the strength of the drink.

When malt is suffered to grow too much, or until the spire has shot through the skin of the barley; though

all that is left be malt, yet as too large a portion of its oils will have been expended in vegetation, the malt will be greatly diminished in proportion to what it ought to have been, & what remains cannot be fit to brew drink for long keeping, because of the loss of the oils.

Malt which has been duly worked on the floor, will, if it has not been sufficiently dried on the kiln, be apt to germinate or sprout afresh; perhaps to conceive so great a heat as to take fire; and should it continue long with a moderate degree of heat, the least evil that can be expected is, that it will grow mouldy and have an ill flavour.

Malt well worked, but over-dried, will be so hardened, or its saponaceous quality will be so destroyed, that it will not imbibe from the air that moisture which is necessary to mellow it, and render it fit for brewing; for when it has been previously softened by the moisture of the air, it mixes more easily & more intimately with the water, and by that means yields a more copious extract, than it would otherwise do.

Malt just, or but lately, taken from the kiln, remains warm a considerable time. Until it becomes as cool as the surrounding air, it does not mellow by the addition of a due quantity of moisture from the air: and the wort made of such malt requires a much longer boiling before it breaks, than that which is made of malt some months old.

The practice of those masters who sprinkle water on malt newly taken from the kiln, to give it the appearance of having been made a proper time, is highly blameable. It is in fact a downright fraud, practised chiefly because less grain then fills the bushel: but a farther evil is, that if it be not used speedily, it heats, soon grows mouldy, and suffers great damage.

Malt dried on a kiln not sufficiently heated must require a proportionably longer time for it to receive the due effect of the fire, for want of which it will be in the same state as malt not thoroughly dried. If the fire be too quick, or too fierce, instead of gently evaporating the water from the corn, it scorches the outward skin, and separates it from the body of the grain. The malt to which this happens is called blown malt; of which Mr. Combrune observes, that by the internal expansion of its parts, it occupies

a larger space than it ought to do. He adds, that if such a fire be continued, it changes some parts of the grain into so brittle a substance, that the malt is said to be glassy. The particles which are thus hardened will not dissolve, or but in small proportion: so that they frequently occasion an almost total want of extract, which, in the phrase of the art, is termed setting the grist.

The goodness of malt may be known by the following marks. Bite a grain of it asunder, and if it tastes mellow and sweet, breaks soft, and is full of flour from one end to the other, it is good. It has a round body, and if upon putting some grains of it in water they swim on the surface, it is good. Barley sinks in water, and malt that is not well made will do the same: but it is to be observed that this is not an invariable proof, because if the malt be broken, or in the least cracked, it will take in water, and sink. Malt that is rightly made will not be hard, but of so mellow a nature, that if drawn over an oak board, across the grain, it will leave a white line upon the board, like a mark of chalk. Its smell also may be consulted; for malt, though otherwise good, may have contracted an ill scent from the fuel, or from the water used in the steeping.

Before malt is ground, it should be freed from the tails and dust, which would otherwise heighten the colour of the wort, render the liquor muddy, and give it a bad taste, which could not afterwards be got rid of. The cylindrical sieve will be of excellent use for this purpose.

The malt must be broken, in order to its communicating its virtue to the water. If it be ground too small, its flour will mix too freely with the water, and cause the wort to run thick. Many are of opinion that the best way is only to crack it, so that none of the grains may come out whole: for the intent is, that the water should draw out an extract, but not be mixed with the mealy part, in the manner of paste or gruel. Some think that malt is better ground by a stone mill, than by a steel one, because the former bruises it, and the latter only cuts the grains.

After the malt is ground, it should lie some time to mellow, in a cool room; where no sun comes. The
time

time for this is different, according to its kind. Brown malt may be ground at from three to fourteen days before it is used, in order that the corn, which is rendered uncommonly hard by that degree of drying, may be gradually softened by the moisture in the air; by which means it will become the more soluble in water. The pale malts require only one or two days. After lying thus in the air less mashing suffices, the strength of the malt is more perfectly extracted, and the beer will be considerably stronger than it would be with the same quantity of malt taken directly from the kiln. Care must be taken that it get no damage in lying.

Mr. Combrune observes, that malt imbibes moisture more readily by being ground and exposed for some time to the air, than it does when whole; and that as the dampness thus absorbed by the grain is in reality so much cold water, malt which has been long ground requires to be mashed with hotter water than it would otherwise be necessary to use.

To know whether malt has been mixed with barley unmalted: Take a bowl of water and throw into it a couple of handfuls of the malt; give it a gentle stirring, and the barley which has not been malted will sink to the bottom; the half-malted grains will have one end sunk, being in a vertical position; and the good malt will swim.

MALT DUST. This is an excellent manure sown as a top-dressing on wheat in the spring, especially on harsh, clayey and stubborn soils.

MALT WORM. A cankerous sore in the hoof of a horse so called.

MAMMEE. This is a very large tree growing both in Asia and the West-Indies to the height of 60 or 70 feet.

Both these trees in their native soil produce abundance of fine fruit, as large as Catharine peaches, of a yellowish green colour, and said to be of a delicate flavour.

In this country they require to be continued constantly in the stove, so must be kept always in pots, and placed in that conservatory, where they will cause a fine variety all the year with their large splendid foliage.

Their propagation is by seed, which arrives from America, &c. in spring. Sow it in small pots of light rich earth, and plunge them in the bark-bed,

where they will soon come up; give gentle waterings, and about August transplant them into separate pots a size larger, plunging them in the bark-bed, and give shade and water till fresh rooted.

MANCHINEEL TREE, [*Hippomane.*] This is a very large tree in its native soil, almost equalling the oak in size; the wood is much esteemed for making of cabinets, book-cases, &c. being very durable and taking a fine polish; it is also said that the worms will not eat it. As these trees abound with a milky caustic juice, they make fires round their trunks before they are felled to burn out their juice, otherwise those who fell them would be in danger of losing their sight, by the juice flying in their eyes: for wherever this falls upon the skin, it will raise blisters, and if it comes upon linen it will immediately turn it black, and on being washed will come in holes. It is also dangerous working of the wood after it is sawed out; for if any of the sawdust happens to get into the workmen's eyes, it causes inflammations, and the loss of sight for some time; to prevent which, they generally cover their faces with fine lawn during the time they are working the wood.

This tree hath a smooth brownish bark, the trunk divides upwards into many branches, garnished with oblong leaves ending in acute points, slightly sawed on their edges, and are of a lucid green, standing on short footstalks. The flowers come out in short spikes at the end of the branches, being of both sexes in the same spike, but having no petals they make but little appearance; these are succeeded by fruit about the size and of the same shape as the golden pippin, turning of a yellow colour when ripe, which has often tempted strangers to eat of them to their cost, for they inflame the mouth and throat to a great degree, causing violent pains in the throat and stomach, which is dangerous unless remedies are timely applied.

The inhabitants of America believe it is dangerous to sit or lie under these trees, and affirm, that the rain or dew which falls from the leaves will raise blisters; but it is very certain that unless the leaves are broken, and the juice of them mix with the rain, it will do no injury.

These plants are preserved in some of the curious gardens in Europe, where they can never be expected to rise to any great height, for they are too tender to live in these northern countries but in stoves; they rise easily from seeds, provided they are good.

MANDRAKE, [*Mandragora*.] This plant grows naturally in Spain, Portugal, Italy, and the Levant, but is preserved here in the gardens of the curious. It hath a long taper root, shaped like a parsnip, which runs three or four feet deep in the ground; it is sometimes single, and at others divided into two or three branches, almost the colour of parsnip, but a little darker; from this arises a circle of leaves, which at first stand erect, but, when grown to their full size, spread open, and lie upon the ground; they are more than a foot in length, and four or five inches broad in the middle, of a dark green colour, and a foetid scent. These rise immediately from the crown of the root, without any foot-stalk; between them come out the flowers, each standing upon a separate foot-stalk about three inches long, which also arise immediately from the root; the flowers are five-cornered, of an herbaceous white colour, spreading open at the top like a primrose, having five hairy stamina, with a globular germen in the center, supporting an awl-shaped style. The germen afterward turns to a globular soft berry lying upon the leaves, which, when fully grown, is as large as a nutmeg, of a yellowish green colour when ripe, full of pulp, in which the kidney-shaped seeds are lodged. It flowers in March, and the seeds are ripe in July.

MANGE. A well-known filthy disease in a horse, which makes him rub against every thing he can lean on, and if other horses that are with him are not removed, they are subject to catch it from him. It is known by the hair staring, and in many places peeling away from the skin, on which a scurf will arise. This disorder is occasioned by over-heats and colds, hard riding, or labour, whereby the blood is corrupted, or by feeding upon unwholesome meat. To cure this disagreeable distemper, we would recommend the following method:

“Take of tobacco stalks half a pound, tobacco dust one pound, black soap half a pound, allum and

bay salt each a quarter of a pound, green broom a large handful, and stone lime about the size of a hen's egg; boil all these in two gallons of urine, till half be consumed; when almost cold, stir into it an ounce of flour of brimstone or stone brimstone in powder.”

Cut the hair off the mane and tail, and then curry them all over where the distemper is, till the blood is almost ready to start; then take a piece of flannel or woollen cloth, and daub the horse all over with the liquor a little warm, if the weather is not very hot.

This quantity will dress the horse all over twice; the second application may be two days after the first; or if the disorder is very bad, the next day following. This remedy will do for dogs, &c. See **LEPROSY**.

MANGER. A wooden trough in which horses corn is put. Mr. Williamson advises a rack and manger for cows in the following words:

“I would by all means advise every farmer to have a rack and manger for his cows, with a loft over for hay, from whence it may be put down as for horses; and he will find that they will eat with more satisfaction, and make infinitely less waste, than by the common method of laying it on the ground; the manger should be about seven or eight inches from the ground, and always be kept very clean by the cow-boy.”

MANGROVE TREE, [*Rhizophora*.] This is a West-India tree, of which there are several species, but they will not grow upon land.

MANGROVE GRAPE. See *Seaside GRAPE*.

MANGO TREE, [*Mangifera*.] This plant grows naturally in many parts of India, and has by the Portuguese been transplanted to the Brazils and other countries, where it grows to a large size; the wood is brittle, the bark rough when old; the leaves are seven or eight inches long, and more than two broad; the flowers are produced in loose panicles at the end of the branches; these are succeeded by large oblong kidney-shaped plumbs.

This fruit, when fully ripe, is greatly esteemed by the persons who reside in the countries where it grows, but in Europe we have only the unripe fruit brought over in pickle; however, the

account

account given of the ripe fruit by those who have tasted it, has excited the curiosity of many persons to procure young plants for their gardens in Europe, but hitherto without effect.

MANDOL, or MANIHET. See CASSADA.

MANNA. The juice of certain trees of the ash kind (growing in Italy and Sicily) either naturally concreted on the plants, or exsiccated and purified by art. There are several sorts of manna in the shops. The larger pieces, called flake manna, are usually preferred; though the smaller grains are equally as good, provided they are white, or of a pale yellow colour, very light, of a sweet not unpleasant taste, and free from any visible impurities. Some people injudiciously prefer the fat honey-like manna to the foregoing: this has either been exposed to a moist air, or damaged by sea or other water. This kind of manna is said to be sometimes counterfeited by a composition of sugar and honey, mixed with a little scammony: there is also a factitious manna, which is white and dry, said to be composed of sugar, manna, and some purgative ingredient, boiled to a proper consistence; this may be distinguished by its weight, solidity, untransparent whiteness, and by its taste, which is different from that of manna.

Manna is a mild, agreeable laxative, and may be given with safety to children and pregnant women: nevertheless, in some particular constitutions, it acts very unkindly, producing flatulencies and distension of the viscera: these inconveniences may be prevented by the addition of any grateful warm aromatic. Manna operates so weakly as not to produce the full effect of a cathartic, unless taken in large doses, and hence it is rarely exhibited in this intention by itself. It may be commodiously dissolved in the purging mineral waters, or joined to the cathartic salts, senna, rhubarb, or the like. Geoffroy recommends accuating it with a few grains of emetic tartar: the mixture is to be divided into several doses, each containing one grain of the emetic tartar: by this management, he says, bilious serum will be plentifully evacuated, without any nausea, gripes, or other inconvenience. It is remarkable, that the efficacy of this drug is greatly promoted, (if the account of

Vallisneri is to be relied on) by a substance which is itself very slow of operation, casta.

MANURE. This term comprises all sorts of dungs, composts, and other materials proper or used for the improvement of lands. See DUNG, COMPOST, &c. *Meadow-pasture*

Manure, therefore, is necessary to all soils, to repair them when exhausted by the growth of vegetables; and to cure the defects of soils naturally bad, such as to enrich and fertilize very poor land; to render very strong or stubborn land more light, loose, and pliable; and to render very light, loose, dry soils, more compact and moist: and wet land dryer, &c. Strong moist land is the most improved by light manures, to open and loosen it: very light land by the more heavy and moist sort of manure; and wet land by dry light composts. Some soils require manure annually, others but once in two or three years.

All sorts of horse-dung, neats-dung, hogs-dung, farm-yard mulch, or a mixture of all or any of these together, suits almost all sorts of land; or a compost of any or all of these, and chalk, lime, earth, mud of ponds and ditches, cleanings of streets, ashes, rotten tanner's bark, rotten wood, and saw dust, rotten vegetables, &c. or such of any of these materials as can be had, and formed into a compost-heap to rot together, make a good manure, both for corn and grass-land. *See M.*

Rotten tanner's-bark alone, or in compost, is good manure for strong, cold, corn-land; and will also suit grass, if applied the beginning of winter, for the rains to wash it into the ground.

Rotten wood, and rotten saw-dust, is very proper for strong land.

Rotten vegetables, such as all sorts of weeds, and the refuse of the kitchen garden, &c. laid in heaps, and if mixed with mud or any earthy substance, and the whole lie to rot, they will make a tolerable good manure for corn-land.

Green fern mowed down and laid in heaps to rot, is also used as manure.

Marle, chalk, lime, &c. properly prepared, either alone or in compost, are greatly used in many places as a dressing for corn-land.

Sea-sand and shells, &c. being full of salts, are sometimes used as manure for

for strong clayey and stubborn loamy soils.

Sea-weed is likewise employed as manure, and being full of salts, greatly improves corn-land.

See. Ashes of all sorts prove excellent manure, especially to all strong cold or moist land; but coal ashes are superior to those of wood, or any other kind of vegetables; the farmers in the counties round London have experienced this; and they fetch them from that city by cart and waggon-loads, twenty or thirty miles distant; for in London they in general using coal-fuel, prodigious quantities of ashes are daily made, and collected in carts and carried to the ash-hills in the environs of the city; where numbers of people are employed in sifting them, and sell the siftings by the sack or load to the farmers for manure; also to the brick-makers for tempering their loam or brick-earth.

Bones of animals are also used as manure for ploughed-land, where they are to be had in due quantities, as about London and other great cities.

Soot is also used as manure to sprinkle thinly over corn-land.

See Malt-dust, containing a natural heat and sweetness, proves an eligible manure to moist sorts of land, but more particularly to stubborn, clayey, and four harsh soils.

Cleansing of streets laid in compost-heaps with horse-dung, &c. makes excellent manure both for corn and grass-ground.

All manure for ploughed or digged land, should be applied at the time the ground is to be tilled, and not spread about any long time before it is ploughed in, especially in hot dry weather, which would exhaust the salts, and other enriching particles; observing however, where any hard substances, as marle, chalk, shells, &c. are used for manure, it is proper to spread them abroad some considerable time, exposed to the sun, rains, and frost, to pulverize, before they are ploughed into the ground.

The manuring grass-land should generally be performed in autumn, about Michaelmas, or a little before or after, and not in the heat of summer, as is often practised, whereby the sun's heat greatly exhausts its moisture and goodness; but when done in autumn,

the rain soon washes the enriching particles into the ground, to the great benefit of the grass, and increase of the future crop.

MAPLE TREE, [*Acer.*] The species are, 1. The greater maple or sycamore tree; this is a large growing tree, and adapted to increase the variety in our woods and fields. It is very proper, if kept down, for underwood, because it shoots very fast from the stool, and makes excellent fuel. There is no tree more proper than this to form large plantations near the sea; for the spray, which is prejudicial to most trees, seems to have no bad effect upon it. 2. The small or common maple; this does not grow to such a large size as the sycamore, though its timber is of greater value. The timber with us is deemed excellent, and is used for several curious purposes, such as musical instruments, inlayings, &c. For the making of turnery ware also, such as dishes, bowls, trays, &c. it is superior to most other wood. 3. The Virginia ash-leaved maple: This is a quick grower, arrives to a large timber-tree, and is admirably adapted to cause a beautiful variety in our woods, though is not proper to be planted in exposed places, the branches being subject to split when attacked by violent winds. The leaves are of a pale green colour, moderately large, and fall off pretty early in the autumn. The timber is extremely useful for turners; and like the Norway maple, serves all the purposes of the sycamore. It is propagated by sowing the keys, which this tree, though a native of Virginia, perfects in this country. It is also propagated by layers, or by planting the cuttings, in a moist situation, in autumn. 4. The Norway maple with plane-tree leaves: this maple will grow to a great timber-tree, and therefore should be raised to increase the variety in our plantations. The leaves are of a shining green colour, look beautiful all summer, and die to a golden yellow in the autumn. This tree perfects its seeds with us; so that it may be raised in the same manner as the sycamore, from the keys. It may also be propagated by layers and by cuttings; which if planted in a moist soil in the autumn, will grow. 5. The scarlet flowering maple of Virginia; of this there are two sorts, Virginian scarlet-flowering maple,

maple, and Sir Charles Wager's maple. Both of these are propagated for the flowers, which are of a scarlet colour, and come out early in the spring. 6. The American sugar maple; this has some resemblance to the Norway maple when the plants are young; but as they grow up the leaves are more deeply divided, and their surfaces less smooth, so that they are easily distinguished. From this tree the inhabitants of North-America make a very good sort of sugar, in large quantities, by tapping the trees early in the spring, and boiling the juice, which, by the usual process, is converted into sugar. 7. The mountain maple of America: the body of this tree is slender, and is covered with a whitish bark. It sends forth several red branches, and grows about fifteen feet high. 8. The Italian maple: this is very common in most parts of Italy, but particularly about Rome, where it is one of the largest trees of that country, and is esteemed for the size of the leaves, which are large, affording a great shade: so that these trees are frequently planted by the sides of roads and near habitations. 9. The Montpellier maple; the Montpellier maple grows to about twenty feet high, and is a very beautiful tree. 10. Cretan maple with three entire lobes to the leaves, which are somewhat hairy on their under-side: this grows to about the height of the former. The leaves are downy, composed of three lobes, and grow opposite to each other on long downy foot-stalks. The flowers come out in the spring, and are very seldom succeeded by good seeds in England.

Maple and sycamore are best raised from seed; but as the seeds of the foreign kinds do not ripen in this country, they should be procured from abroad. In a cool and shady part of the seminary let beds of fine mould be marked out about four feet in breadth, and with proper alleys. Upon these let the foreign seeds be regularly sown, sitting over them about half an inch of the finest mould. When the plants come up, they should be kept clean from weeds, and frequently watered; and this work must be duly attended to all summer. The spring following, the strongest may be drawn out, and planted in the nursery, in rows two feet asunder, and at the distance of a

foot from each other in the rows, leaving the others in the seminary to gain strength. The succeeding spring they must receive the same culture; and they may remain in the nursery, with no other trouble than keeping the ground clean from weeds in the summer, digging between the rows in the winter, and taking off all strong and irregular side-shoots, till they are planted out for good.

Notwithstanding these are the general laws of raising all the species of maple from foreign seeds, the culture varies with respect to the scarlet flowering kind, when the seeds are gathered at home. This species brings its seeds to maturity the beginning of June in our gardens. They should be then gathered, and after having lain a few days to harden, they should be sown in beds of the finest mould, and covered only a quarter of an inch deep. The beds should be hooped, and covered with mats in scorching weather; but when it is rainy and cloudy, they should always be uncovered. In about a month or six weeks many of the plants will appear; but the far greatest part of them will not come up till the following spring. When the summer-plants first shew themselves, they should hardly ever feel the full beams of the sun. The seeds must be constantly covered with the mats in the day-time, unless cloudy and rainy weather happens, when they should always be uncovered; during the night no mats must be put over the plants, that they may have all the benefit of the refreshing dews, air, and cooling showers. When these latter do not fall, watering must be duly attended to; and this is all the trouble they will require for the first summer in the seed-bed. The summer following they may be exposed to all weather, when they will only require being kept clean from weeds, and watered in dry seasons. The succeeding spring the strongest may be set out in the nursery-way, like the former seedlings.

By layers also all the species of this genus may be propagated; though that method is never practised for the common maple and the sycamore. The young shoots may be laid down in the autumn, winter, or early in the spring. By the autumn following they will have struck root, and become good plants;

when the strongest should be set out in the places where they are to remain; whilst the weakest may be planted in the nursery, like the seedlings, for a year or two, to gain strength.

Maples raised from seeds will grow faster, and arrive at a greater height, than those raised from layers; but they will not produce such quantities of flowers; which makes the latter method more eligible for those who want these plants for a low shrubbery.

By cuttings also these trees may be propagated: but this method is chiefly practised on the ash-leaved and Norway maples, which more readily take root this way. The cuttings should be the bottom parts of the last year's shoots; they should be taken off early in October, and planted in rows in a moist shady place. The spring and summer following they must be duly watered as often as dry weather makes it necessary, and be kept clean from weeds. By the autumn they will be fit to remove into the nursery; though, if the cuttings are not planted too close, they may remain in their situation for a year or two longer, and then be set out for good, without the trouble of previously planting them in the nursery.

Maples may likewise be propagated by budding, grafting, and inarching: but the other methods being more eligible, these are never practised, except for the variegated sorts, especially the large broad-leaved kind.

In order to propagate the varieties by budding, let some plants of the common sycamore, one year old, be taken out of the seminary, and set in the nursery in rows a yard asunder, and the plants about a foot and half distant from each other in the rows: let the ground be kept clean from weeds all summer, and be dug, or as the gardeners call it, turned in, in the winter; and the summer following the stocks will be of a proper size to receive the buds, which should be taken from the most beautifully striped branches. The best time for this work is August, because, if it is done earlier, the buds will shoot the same summer; and when this happens, a hard winter will infallibly kill them. Having, therefore, budded your stocks the middle or latter end of August, with the eyes or buds fronting the north, early in October take off the bass matting, which before

this time will have confined the bark and pinched the bud, but not so as to hurt it much. Then cut off the stock just above the bud, and dig the ground between the rows. The summer following keep the ground clean from weeds; cut off all natural side-buds from the stock as they come out; and by autumn, if the land be good, your buds will have shot forth, and formed themselves into trees five or six feet high. They may be then removed into the places where they are designed to remain; or a few of them only may be drawn out, leaving the others to be trained up for larger standards, to serve for planting out in open places, or such other purposes as shall be wanted.

MANOR. An ancient royalty or lordship, with demesnes, &c.

MARACOCK. Passion flower.

MARCHES. The bounds between England and Wales, or England and Scotland.

MARGUERITE. Daisy.

MARE. The female of the horse. *See* HORSE.

MARKING Sheep. This is done with a marking iron, either of the letters of the owner's name, or of some other device, dipped in hot pitch or tar, and clapped on some part of the sheep, to make them be known; some mark them with ruddle; but both these methods are liable to great objection: the pitch and tar spoiling a great deal of wool, and the ruddle washing out. *See* COOLING *See* COOLING

MARJORAM, [*Origanum.*] The species, 1. Pot or common marjoram. 2. Winter sweet marjoram. 3. Annual sweet marjoram. 4. Dittany of Crete. 5. Marjoram of Mount Sipylus. 6. Cretan marjoram. 7. Smyrna marjoram. 8. Egyptian marjoram.

The first three sorts have great merit as culinary aromatics for the kitchen-garden, and may also be introduced in the pleasure-ground, in patches in the open borders to increase the variety, and for nosegays, &c. the variegated perennial marjorams in particular have a pretty effect; they are all easily raised from seed in the open ground in spring, and the perennial sorts also by dividing the roots; all of which sorts, both perennials and annuals, when designed for the kitchen garden, should generally be disposed in four feet wide beds, the perennials in rows a foot asunder, where they will abide for years; and the

the annual sort being always raised from seed annually, it may either remain where sowed, or the young plants may be planted out in rows six or eight inches distant; and when designed to have any of the sorts in the pleasure garden, dispose them about the garden in patches.

The last five species, being exotics from warm countries, require shelter here in winter, so must be potted and placed in the green-house collection, or may be preserved all winter in a common garden-frame, furnished with lights to put on in nights and cold weather.

Their different methods of propagation are: The hardy perennial species by seed and by slipping the roots; the annual sort only by seed annually; and the five green-house kinds principally by slips and cuttings.

Sow the seed in spring, March or April, in any bed or border of light earth, and rake it in with a light hand; they will soon come up, and when the seedlings are a few inches high, plant them out in moist weather, in rows ten or twelve inches distant, finally to remain, giving occasional waterings till fresh rooted.

Autumn is the best season for parting the roots, though it may also be performed successfully in spring. Having some large plants, slip or divide the roots into slips, each furnished with fibres; which plant in rows, as directed for the seedlings, giving occasional waterings, and they will readily grow, and become good bushy plants by autumn following.

Their general culture is the keeping them clean from weeds; every autumn cut down the decayed stalks, loosen the earth between the plants, at the same time digging the alleys, spread a little of the earth over the surface of the beds.

When any are intended for the pleasure garden, remove them in autumn or spring, with little balls of earth about their roots, and plant them where wanted.

All the green-house kinds are propagated by slips or cuttings of the young shoots in spring and summer. If you plant them early, let it be in pots, and plunge them in any hot-bed, they will readily take root; but if in summer, they may be planted either in pots, of in a shady border. In either mode of

planting, give water directly, which repeat as occasion may require in moderate quantities; and if those that are planted in the open air, either in pots, or in the full ground, are covered down with hand-glasses, it will facilitate their rooting; but the glasses must be removed when the plants begin to shoot at top. The plants in either way will be rooted the same year, and towards autumn may be potted off separately into small pots, and afterwards managed as other hardy green-house exotics.

MARLE. Marle is a treasure to the farmer whereforever it is found, and there is no country in the world where there is more of it than in England, yet there are few places in which it is known to lie. The industry of those who deal in husbandry has not been in any thing so slack, as in the searching after this valuable commodity.

We shall endeavour to awaken them to a sense of their interest, by shewing its value: and to assist them in the search after it we shall endeavour to make it known to them by sight and feeling in its several appearances, for these differ greatly. After this, to prevent mistakes in the application, the several kinds of marle shall be distinguished, and the particular kind of land shewn, to which each properly belongs.

In order to the husbandman's finding marles upon his land, he must first have some knowledge of them. The very finest kinds have often been thrown up accidentally in digging on other occasions, and no one has known them. The fields have languished for want of what they contained in their own bowels through the ignorance of their owner.

Marle is of several kinds, and differs greatly in appearance; but to him who will carry a general knowledge of it in his head, it may be always known in whatever form it is found.

Marle, like other earths, may be pure or foul: for those beds of matter which lie in the earth are subject to mixtures as those on the surface, tho' not so frequently: and the deeper marle lies, the purer it usually is.

We shall first then divide the marles into two kinds, the pure and the mixt. The pure marles all agree in their texture; their difference being only in the degree of hardness, and in the colour.

Pure

*See
Mud.*

Pure marle is a substance not unlike fuller's-earth; it is soft and fatty to the touch, it is not tough like clay, nor dusty like ochre, nor sandy like loam, but is of a tender fine nature, unlike all other sorts of earths.

When a farmer finds a piece of earth of this kind, whether it be thrown up in digging a well, or by whatever other accident, let its colour be what it will, he may depend upon it it is a marle. In order to be more confirmed, let him throw a piece of it into a basin of water, and he will find it swell like fuller's-earth, and crumble in the same manner of itself to pieces. The harder and more compact kinds break slower, the soft and loose ones quicker, some almost immediately. But in whatever manner it happens, this joined to the others is a sure proof that the earth under examination is a marle, and let him who has fallen by chance upon a piece of it, dig in search of the treasure.

Of the pure marles there are four principal kinds, distinguished according to their colours. A white, a yellow, a red, a blue, there is also a black, but it is less common.

These are to be distinguished under the name of pure marles of those colours; for there are foul and coarser kinds of the same colours.

There are found in different places marles of these several colours, varying in their texture and hardness; but in general, the white or whitish are the softest and lightest, and the blue are the firmest and heaviest. For this reason the white is generally used for pasture grounds, and the blue for corn lands.

This custom however is not to be established into a law to the farmer; though in those counties where they have choice, they use the softest marles for pasture, because they dissolve most freely: and the harder for ploughed lands, where they are more assisted by tillage. The farmer who has either of these kinds, may use it indifferently on both occasions, in this manner.

If it be the blue firm kind, or any of the compact sorts, let him lay it upon his corn land early in the season, that the weather may mellow it before the last ploughing: if it be for pasture ground, let him in the same manner lay it on in time, spreading it thin. If it be the white, or any other of the loose and crumbly kinds, it need not be laid

on either till late, because it breaks and dissolves almost as soon as it is exposed to the weather.

The colour of marle is no certain proof of its compact, or crumbly nature; but in general, the blue is firmest, the white softest, and the red and yellow are of a middle degree between both.

Those already named are the richest and finest of the marles: and as all mixture debases their value, among the other kinds, which we shall distinguish by the name of impure or mixed marles, the most impure are constantly of the least value. These mixed marles differ not only in colour, but in their very nature, according to the substances which have got in among them. Their colour is no general mark of distinction, but they may be very well arranged under separate heads, according to the substances of which they partake. These being sand, clay, loam, or stone; they may be considered as sandy marles, clayey marles, loamy marles, and stony marles: and among these last are also to be comprehended some which have at first the hardness of a stone from their own nature and composition; though they have not a particle of real stone in them.

Many marles also, beside these natural earths and stony matter, contain great quantities of sea-shells which are preserved in them in a singular manner; for instead of being petrified, or rendered hard, they are made brittle, and seem as if they had been calcined. These shells are far from injuring the marle in its improving quality; they on the contrary, are found to encrease that virtue.

There are of these several kinds of all the before-mentioned colours, but greyish or yellowish are the most frequent. The sandy kinds are the richest of these impure ones; and they are fittest for ready use, for they break to pieces in the hands easier than any others, and crumble the soonest of any with the weather. In a proper application these may be accounted of equal value with any, for on clayey lands the very sand which is contained in them is useful.

The loamy marles are the next in value among these to the sandy, for they break easily with the weather; but in these as the former, a great deal

of the advantage arising from the use of them will depend upon a proper knowledge of their nature, and their use on a right soil.

The clayey and stoney are inferior to the others: but on some lands the former are preferable to those which are more pure: and amongst the stoney kinds there are some, and they even of the hardest, which, when properly mellow'd by the weather, are inferior to none in Richness. Some of these a large hammer would make no impression upon when first dug up, but with frost, rain and sun-shine, they have in six months time crumbled away to powder.

Some of these, when broken with great labour, and laid upon the lands, have for several months appear'd like so many stones scatter'd over the fields, and seem'd to damage rather than improve them: but after one winter there has not been a piece of any one of the lumps so big as a nutmeg to be found: and the land has been kept in heart eight or ten years by that single dressing.

As the considerate husbandman must see the vast value of Marle, it is natural that he should bethink himself of seeking for it on his own grounds; we shall therefore not only encourage, but assist him in the search.

In the first place he has this to tempt him to examine his land in hope of it, that it is frequent in many places where it is not regarded or even known: and that although so little observed, it is a commodity so naturally and generally the produce of England, that there are few pieces of land of any extent in which one kind or other of it may not be found.

If it be too deep indeed, it may not be worth taking up, but that is seldom the case: it is commonly near the surface.

The several kinds and varieties of marle have been so fully described, that the farmer has all the reason in the world to suppose he shall know it at sight: we shall add to these the soils under which it usually lies.

But prior to this, which beginning without any certain information, is a more random kind of search, we would have him examine well both by report and by the appearance of the ground, whether marle has ever before

been dug in his Land, or any where near its borders.

If he hear that it has, let him look narrowly after those broad and shallow delves in the ground which have been before mention'd, for they are certainly the places where the pits were. If he can learn no such thing by report, yet let him see if there be any such hollows in the ground, for tho' less certain, still they are an evidence that something has been dug. It may have been gravel, but marle is more likely.

When he has found any such hollows, let him mind the course wherein they run, for that way probably the vein of marle runs also.

If he find only one such, let him first observe how deep it is; for on this depends the nature of his search, since by this he may guess whether the marle lay low or near the surface.

His business is to try all about the place where the hollow is, for marle. If that hollow be very shallow, let him have holes dug the depth of three feet with a spade; if deeper, let him use an augur, such as they bore the ground with on various occasions. Let him bore in a great many places to the depth of six feet; for if the marle lie deeper than that, 'tis hardly worth his digging; but let him examine strictly every thing the augur brings up within this depth. Let him keep in his mind the various kinds of marle, and if any thing come up that has the least appearance or resemblance of any of those several kinds, let him try it by seeing if it moulders away in a bason of water, if it crackles on being put into the fire; and what effect the sun and air take upon it when it has lain two or three nights exposed.

By these means, if there ever have been marle dug there, and the vein of it continues, he will be sure to find where it runs; and he is then to follow the course of it by the augur, and consider where he can open a pit of it the most conveniently for the general use of his land.

But suppose there be not the least sign upon the ground, or the least account from report that marle ever was dug any where thereabouts; yet this should not discourage him from enquiring if there be any; for there is a time for the discovery of every thing.

In this case he must first have recourse to what he can see upon digging any where. If a well he sunk at any time upon or near his land, let him look carefully over all the kinds of earth that are thrown up. Nay, if a pond be dug, let him make the same observations.

Let him examine the sides of ditches newly dug or cleaned; and follow the plough with a careful eye, observing if it any where turn up matter different from the soil. For marle often is within the reach of the plough.

If he discover nothing of the nature of marle in all these researches, let him have recourse to the augur, boring in different places, but chiefly in the clayey soils, for under these the marle ofteneit lies.

The mellow earth is the next soil that is likely to conceal marle: and after this the loamy earth. It sometimes lies under gravel, but seldom in any great plenty: it very rarely is found under a sandy soil, and then commonly in a thin vein, and at a great depth.

The clayey soil not only ofteneit has marle under it, but that which lies under this soil is usually of the finest kind. The Kentish marles generally are covered with a foot or two of tough clay. In general it is the finest, pureit, and richest marles the farmer is to expect under a clayey soil.

It has been observed, the fine black mellow earth of the low lands commonly has under it a bed of tough clay. Sometimes it has a thin bed of some fine marle, particularly of the reddish kind, in the place of the clay; and very often a vein of marle comes between the clay and the mould.

The former is the best for the farmer; but if the latter presents itself, let him follow with his augur the course of the vein, and he will find it gradually thicken till at last it usually takes the place of the clay. It is here he is to open his marle pit; and he will often fall upon a bed of marle five, six, or seven feet thick, rising within a foot and half of the surface of the ground.

Sometimes the stony marles are found under clay or black mould, but it is more commonly the pure, fatty, and tender sort: as to those found under sandy soils, they are usually one or other of the clayey marles, and, with

double expence in digging, are not of half the value.

There are some parts of Suffex where a bed of marle comes up within eight inches of the surface, and when open'd is found to be ten or twelve feet thick, all of some one of the pure and fine kinds: and in Cheshire, and also in Lancashire, where the best marles often lie under the fine black mould, a bed of blue marle has been within a yard of the turf, down to four yards deep, and they were not then got through the vein.

When the farmer has by the methods already described found out a vein of marle, and fix'd upon a convenient part of his land for opening of a pit; let him begin by marking out a tolerable large place for the work; and for a proper way for the carts that are to fetch out the marle. A great deal depends upon all this being well ordered, and now is his time for contrivance.

He is then to employ his labourers to clear away, with pick-axe, spade, and wheel-barrow, all the soil that covers the vein of marle, and when this is done, they are to begin digging it.

The different condition of the marle will now be found, and the necessary accidents of treating it. Where it is of the finest and tenderest kinds, they often work with a kind of hoe, and three hoers will tear up as much as four can fill into the carts.

In the clayey kinds they use spades for digging, and then the diggers must be more than the fillers. Sometimes these are so dry and tough, that the workmen must have water brought to them to wet their spades; and in other places they are so wet, that there must be a pump set up to keep them dry.

When the marle is got into the cart, it is to be shot on the fields; but this in a different manner according to its nature. If it be of the fine soft tender kinds, the best way is to spread it as it is taken out of the cart: but if it be of the stoney or other compact kinds, every load had better be shot separately, and left in a heap for the whole winter, that the frost and air may mellow and break it.

There are very few lands that may not be improved by marle, but some require

quire it more than others; there are also many kinds of marles, as well as many different sorts of soils; and the marles of one kind are fit for certain lands, and those of other kinds for others. A strict regard must be had to this, otherwise, as already observed, the land may be spoiled.

In some places they have a way of laying on such a quantity of the marle, that they may be said to add a soil rather than to improve what was there before. This is the practice in some parts of Cheshire, where they will lay fifteen, sixteen, or eighteen hundred load of marle upon one of their acres; they will thus in digging and carriage bestow twelve or fifteen pounds upon marling an acre; and then they will work it with good management twenty or thirty years together.

For the first years they plough very shallow; they don't cut up more than an inch of the soil for fear of burying the marle; so going deeper in the following years. This is a particular practice.

In the first place, the soil which requires marle most of all, and which is the most improved by it, is the sandy. The advantage arising from this practice upon such lands, is beyond the belief of any who have not seen the fact.

The marle which is fit for this land is the clayey kind, and more than all others that brownish or yellowish marle, which looks like real clay in the pit, but is found of so different a nature when examined. This marle, or any one of the clayey kind, laid thick upon a sandy soil, gives it at once a body and a richness. The clay that is in it binding the light soil tolerably together, at the same time that the fatty and enriching earth blends itself with the whole.

This is the application of marle, in which its virtue is most fully seen: for by this means land, that before would yield scarce anything, has been known to produce surprizing crops; nay, it has been try'd by way of Experiment, to marle one half of a piece of new broke-up ground of this sandy kind, and leave the other in its natural condition; then both being sown with the same seed, the marled part has yielded a plentiful crop, when the other has not ripen'd one ear,

Another great advantage of this practice is, that in years wherein other crops fail, those succeed which are on these grounds even to admiration. Thus when there comes a dropping summer, while a piece of marled sandy soil is in its full vigour, the increase is prodigious. These seasons generally hurt the crop on other lands; but they load these with as much as can stand upon the ground.

But all this time care must be taken that the marle be well suited to the soil; and this is to be done by this rule; the more sandy the ground is, the more clayey the marle must be.

If a rash young husbandman, hearing of the great profit that arises from laying marle on sandy soils, should without any farther thought lay on one of the pure fat and tender marles before described upon a very barren sandy piece of ground, tho' he put on a Cheshire loading, yet the wet would wash it in, and the sand would swallow it up in such a manner, that the whole effect would be lost after all the labour and expence.

Next after the sandy, the soil which receives most advantage from marle is the loamy; and this admits the greatest improvement of all when the sand in its composition bears an over proportion to the clay. Some lands, the soil of which was fitter to make bricks than to yield corn, have been so improved by marle, that the corn has stood like a sward of grass at its first appearance; and has thriven so afterwards, that every stalk has come to a due maturity.

The marle for this kind of land must be the purest and finest that can be had. If the farmer should lay on a clayey, or a sandy marle, he would only increase the proportion of one or other ingredient of the natural land, which already made it barren.

All that renders a loamy earth at all fruitful in its natural state is the quantity of mould that is mix'd in it; now a fine marle is of the nature of that mould, only much richer: it blends among the loam, and the firmness of the loamy soil holds it till it has yielded all its virtue.

Of all the kinds of marle, that which agrees best with a loamy soil, is the blue, pure, and tender marle. After this the best is the yellow: but any

marle that is light and free from mixture will answer the purpose.

The stony marles have been try'd in some counties upon their loamy soils with tolerable good success; particularly that sort they call shale marle, laid on a tough loamy soil, abounding naturally too much with clay.

This has succeeded but poorly at first. The first year scarce at all, the second somewhat better, and the third and fourth best of all. The pure marle is very much preferable for this soil to the stony. The farmer may do well to use any of the stony kinds when he cannot get the other sort in the neighbourhood, and he will reap considerable advantage from it; but when he can have his choice, the pure marle is preferable for this land by many degrees.

Some of these stony marles, not of the hardest kind, have been used on sandy soils, but without any great success.

The practice of marling lands is founded upon reason; and that, as well as experience, will shew in what manner it should be done. The pure marles are all fatty; the mix'd kinds are either clayey, sandy, loamy, or stony; now upon considering this, the application is easy.

After sandy and loamy soils, that which receives most advantage from marle is mellow earth: this wants improvement less than any other kind, but the proper use of marle adds to its fertility; and there is this farther advantage, that there is scarce any kind of marle whatsoever but may be used to it: but still there are some from which it has more benefit than others.

Ploughed land, meadow, & pasture, when they have this mellow earth for their soil, equally receive good from marle. As to grass lands, only the pure marles should be used to them, because they wash in readily, and don't lie about in clots or lumps upon the ground. For plough'd lands of this soil, any of all the kinds of marle may be used with benefit. If they be of the clayey sort, they break in with ploughing after a little time; if loamy, they blend so much the sooner; if they be of the stoney kind, it takes time for the weather to divide them, but they do very well at last; and finally, if they be of the pure, or of the sandy

kind, they break with the first dressing, and wash in with the rains immediately.

As to chalkey soils, marle is not the manure most suited to them of all others, because marle is itself in some degree of a chalkey nature: nevertheless, it is to be used with prudence to good purpose.

Gravelly soils have the same advantage from marle as the sandy, and one reason of this is, that they always have sand among the gravel. These let all other manures be wash'd through them by the first rains, but the marles of a proper kind remain in them. They not only enrich those lands by their own mellowness, but they give them a firmness that will make them hold other dressings. Dung laid on a loose gravelly soil is lost and swallow'd up without any benefit, but dung upon such a land that has first been dressed with marle, takes the same effect as upon other soils.

In this, as in all the other instances, care must be taken to suit the marle to the soil; if a pure marle were used, it would be washed through quicker than dung; and if a sandy marle were chosen, the marley part of that mixture would be wash'd down through the soil, and only the sand that was among it would remain. This could be no improvement to a soil already too sandy.

The proper marle for a gravelly soil is the clayey sort. This is the only kind that is proper; and this never fails of giving the greatest advantage.

Last of all, we come to speak of the clayey soils, which are in general supposed to be improper for marling to a proverb. Every common farmer can repeat what is retailed from one to another through all the common writers on husbandry, and can tell his son,

He that marles Clay,
Throws all away.

And this he thinks he has two substantial reasons for believing to be true, because it is verse; and because it is in print. But let not the reasonable husbandman be frighted out of his profits by rhymes.

It may be possible enough to throw away cost and labour by laying an improper sort of marle upon a clayey ground;

ground; and the same may be as truly said of any other. But the business of the present enquiry is the suiting the marle to the land; and when that is observed, the same benefit will follow from the use of it on these, as on all other soils.

Excepting the clayey marles, there is no kind of them but is good on clay grounds. In the first place, all the pure marles being well worked in by the plough, blend with the soil, and loosen and enrich it. The stoney kinds are kept on or near the surface till they mellow and break, and the firmness of the ground takes in all their benefit: the loamy marles, if there be too much clay in them, are to be rejected as approaching to the nature of the clayey kind, but if otherwise, they are excellent, as they approach to the nature of the sandy ones. These last-mentioned are for clayey soils the best of all, for they consist only of a fine fatty marle and sand, and they act doubly upon the clay, at once loosening and enriching it. As soon as they are laid on, they break and crumble to pieces; for the sandy marles are the brittlest of all the kinds; and thus separated, the sand gets into the clay, and makes way for the marle, which the rains wash thoroughly in, and which is then detain'd among it to exert the full effect of its fertility.

He therefore that has a clayey soil to manure, and can get at a sandy marle, has it in his power to raise his land to many times its original value.

Having taught the practical farmer to know marle when he sees it, how to seek for it on his own grounds, and in what manner to suit the kind to the nature of the land; it remains to instruct him in the manner of using it.

For this is no little article, and in this the experience of others only can be his guide, comparing their success one with another: for not only the practice of a particular county may many times mislead him; but what has been written under the appearance of advice is too often false.

As to the quantity that he shall lay upon his land, so many errors appear on both sides, that the truth seems hard to hit. Some of the Staffordshire farmers lay on so little, that it scarce answers any purpose. Some of these are contented to use twenty loads to

an acre, and then they have complained that what was written of the profit by marle was not true. In Cheshire, on the contrary, they bury their land under such loads, that they seem to sow their marle and not their ground.

The medium between these practices is the right method; and he who would reap all those advantages that have been declared of marle, must follow that course. The right use of marle is not to put it in the place of the soil, but to make a mixture of it with the soil, so as to raise a poor land into the condition of one naturally rich: to do this, a due quantity of the marle must be employ'd; and to give a general rule, that should be about a hundred loads to an acre.

The best way of sowing marled land is in general under furrow.

The farmer is not to look for the full effect of this the first year, but it will last as before observed: and the continuance will be according to the nature of the soil, and the kind of the marle, seven, ten, twenty, or even thirty years.

When the farmer sees his land that has been marled after fair weather look all over white, as if covered with a hoar frost, he may conclude it will answer his best expectations. It is a proof that the marle was good in itself; that it has been used in due quantity; and that it is well mix'd with the land.

Some have delivered this white appearance as a mark that there is marle in any part of the land where it is seen; but marle cannot discover itself in that manner in its natural beds, unless they lie almost close to the surface. It is therefore of little use in that respect; but on the lands where it has been laid, when there is this appearance, 'tis certain that it is mix'd and mellow'd in the ground.

If the hard and stoney kinds are used, they must be laid on early in the season; if the clayey a little later; the loamy may be a little later yet than the clayey: the pure marles of all kinds, and the sandy marles, are to be laid on very late. In this the farmer's discretion will direct him after these general rules. The proper timing of the laying on this dressing regards its effect for the ensuing year; but the harder kinds with the best management will not do much so soon.

The last method of laying on the marle is, to shoot the several loads, as they are brought out of the pit, at about equal distances one from another; and then to spread them all. This will occasion the ground to be all cover'd with the same thickness. When it is thus spread, it must be will mix'd with the soil, and all laid smooth and level together: and the quicker this is done from the time that the marle be taken out of the bed, provided it be a pure or a sandy marle, the better; for as these crumble to pieces almost directly, the business is to get them mix'd in the ground at once, that they may begin to break among it, and so perfectly make one body of the whole: for this is the nature of an improvement by marle.

If the field to be marled lie level, the marle is to be spread evenly over it, not thicker in one place than another: but if it lie upon a descent, the best way is to spread the marle half as thick again on the higher part of the field as on the lower, for the rains will wash enough of its best part down to make all equal.

It is impossible to give one and the same direction for all lands, as to the times of marling, and what may be reasonably expected from them, for the nature both of the marle and of the soil make an endless variety; but the farmer will see by his crops when the land needs to be refreshed.

MARCH. The third month of the year;—in which the

Products of the Kitchen-Garden are,

Winter spinage, cabbages sprouts, brocoli, favoys, coleworts, red beets, carrots, parsnips and turnips.

Upon the Hot-beds; cucumbers, asparagus, peas, kidney-beans, purslain, &c. And, on the warm borders, radishes, and young fallot-herbs; as also mint, tansy, tarragon, &c. if planted upon a moderate hot-bed the beginning of February.

Fruits still lasting: Apples, Loan's pearmain, nonpareil, golden russet, winter pearmain, Pile's russet, john apple, pomme d'api, golden pippin, Kentish pippin, Holland pippin, French pippin, Stone pippin, Wheeler's russet, with some others of less note.

Pears: burgamot bugi, winter boncretien, double-flowering Royel d'huyver, bezi de chaumontelle, l' amozelle,

union or Doctor Uvedale's St. Germain, Parkinson's warden, cadillac, with some others.

Plants now in Flower.

Some anemonies, crocuses of several colours; double snow-drop, persian iris, dens canis, crown imperials, spring cyclamen; early, white, blue and stary hyacinths, hepatica's, double pilewort, narcissus's of several sorts; early tulips, violets, primroses, polyanthuses, green-flower'd black hellebore, fennel-leav'd black hellebore, wall-flowers, double daisies, some auricula's, dwarf Portugal navel-wort, with many others of less note.

Hardy Trees and Shrubs now in Flower.

Almond-tree, double flower'd peach, virginian cherry-plumb, mezereons, spurge laurel, laurus-tinus, Spanish travellers joy, cornelian cherry, benjamin tree, and some others.

Plants now in Flower in the Green-house and Stove.

Several sorts of ficoides's; some sorts of aloe, sedum arborescens, chrysanthemums, anemonespermos two or three kinds; germaniums, Aleppo cyclamens, polygala frutescens; the ananas or pine-apple, hermannia two sorts; ilex-leav'd jasmine, Spanish jasmine, with some others.

MARSHY LAND. Marshy land can be made little use of without first draining, therefore that business should be immediately set about by a good husbandman where it is practicable to be done, or where the expences of workmanship would not be more than equal to the profit;—for a farmer above all men should be careful never to buy crops too dear, and on the other hand never let a too great covetousness prevent his applying all necessary expences to the cultivation and improvement of his land.—A farmer from observation will easily comprehend the advantage from draining of marshy land, even from the ditches round his farm, which dray off the water from his land; but are of themselves inadequate to marshes or even springs—we must here have recourse to underground draining—the best materials required for this work, where they can be had at a reasonable price, are stones or brick, laid in such a manner as to give a free passage for the current

See also Marshes - last March.

of water; and to prevent the earth filling up the interstices, heath should be put over the stones.—If this be found unhandy, bavins or faggots may be used, covered over with heath or even straw; the best kind of wood, perhaps, is holly, but where this cannot be had, oak, alder, &c. may be used. If there be a tolerable descent for the water to run off, the work will be easy enough, but if that should not be the case, ditches must be made sufficient to answer the current of water drawn off. The upper part of the channel should be about 18 inches, and gradually decrease to four at bottom, where the stones are thrown in: if bricks or square stones are placed, they may be rather wider.

Land which was in the marshy or boggy state may, by draining, be made good land.

If it is in such a situation as to be incapable of being drained, it will in general afford a good deal of feed for cows in the summer, but will be improper for sheep.

After the land is drained, it would be an exceeding good method to shave off the upper surface of the land, and dry it like turf, which should be burned on the spot; this operation, which is called *burn-baking*, would be an excellent manure for the land, and destroy numberless plants which would be mischievous in a state of cultivation;—when this was done, we would recommend a crop of oats, and no fear of having a good one, if not sown too thick; after them a summer fallow for turnips, and then the crops in course as the land may be adapted best for.

This land well managed afterwards will generally turn to very good account, and bear very considerable crops for some years without manure.

If it cannot be burn-baked; a crop of oats will answer very well without, but they will be apt to be very rank in straw and thin in ear.

Beans planted at one ploughing have been known to produce five quarters to an acre; but whatever the first crop may be, we would recommend a fallow the next year; not that the land wants rest, but that it will be necessary to destroy a number of unprofitable plants and weeds which may have taken fast hold of the ground. Chalk and lime

will be acceptable to this fresh turned up land, which must of course possess great degree of fertility from its situation; they will correct that fertility, and so do good.

The marsh-lands in Lincolnshire, and many other parts of England, produce a sort of grass, which feeds sheep in a better manner than that of almost any other land, in regard to their size, and the quantity of wool. The sheep about Grimsby, and some other places in this county, produce such luscious wool, or, as they call it, wool of so large a staple, that three or four fleeces usually make a tod of twenty-eight pounds weight. Several hundred loads of this wool are yearly carried from these places to Norfolk, Suffolk, and other parts of the kingdom, for the cloth manufacturers. They send this in large packs, which they call pockets, each containing about five and twenty hundred weight.

When marsh-lands lie flat, it is necessary for the owner to keep all the water he can from them. The sea-water in particular is to be kept from them as much as possible; and this is usually done at a very great expence, by high banks and walls.

Two things greatly wanting in these lands, in general, are good shelter for the cattle, and fresh water. The careful farmer may, however, in a great measure obviate these, by digging, in proper places, large ponds to receive the rain water, and by planting trees and hedges in certain places towards the sea, where they may not only afford shelter for the cattle, but keep off the sea breezes, which often will cut off the tops of all the grass in these places, and make it look as if mowed.

These lands fatten cattle the soonest of any, and they preserve sheep from the rot. It would be of great advantage to them, if there were raised, in the middle of every large marsh, banks of earth in a cross, or in the form of two ferni-circles, and these planted with trees; these would serve as a shelter for cattle, let the wind blow from what quarter it would, and would soon repay the expences of making.

There are, in different parts of England, very large quantities of land upon the sea-coasts that would be worth taking

king in, though no one has yet thought of doing it. The coasts about Boston, Spalding, and many other parts of Lincolnshire, give frequent instances of this, where the sea falls from the land, so that on the outside of the sea walls, on the owfe, where every tide the salt water comes, there grows a great deal of good grafs, and the owfe is firm to ride upon when the water is upon it.

This owfe, when taken in, hardly sinks any thing at all, and they dig the walls from the outside of it, all the earth they are made of being taken from thence, and the sea, in a few tides, filling it up again: and though the sea, at high water, comes only to the foot of the bank, yet once in a year or two, some extraordinary tides go over the banks, though they are ten feet high. These banks are fifty feet broad at the bottom, and three feet at the top; and the common price of making them is three shillings a pole, the earth being all carried in wheelbarrows, and the face towards the sea, where the greatest slope is, being turfed.

MARSH ELDER. See GELDER ROSE.

MARSH MALLOW. See MALLOW.

MARSH TREFOIL. See BUCK-BEAN.

MARTAGON. See LILY.

MARVEL of PERU, [*Mirabilis*.]

There are three species, the common, the long-flowered, and the forked. They all flower in July, continuing in succession until October, very conspicuous and elegant. Having the singularity of being shut all day, and expand towards the evening when the sun declines; hence the inhabitants of the Indies, where they grow naturally, called them Four-o'clock-flowers: their time of opening here, however, depends on the weather, for if cloudy, or that the sun is not very vehement, they often open great part of the day.

The flowers are universally hermaphrodite, and of one funnel-shaped tubular petal, having the lower part a long narrow tube, and the upper spreading.

These plants are naturally perennial in root, which, however, if not preserved here in winter, prove but of one year's duration, but if sheltered from frost and wet during the winter season, they will remain alive, and shoot out strongly again in spring: in this country,

however, the plants are commonly considered as annuals; because they rise from seed in the spring, and the same year produce flowers and perfect seed: and if left to nature in the open air, totally perish in winter, at the first attack of frost or excessive wet; but, as aforesaid, if in autumn, when the stalks begin to assume a state of decay, the roots are taken up, and preserved in sand in a dry room all winter, and planted again in spring, they shoot out afresh stronger than at first, and sometimes attain four or five feet stature, with very spreading heads; or if plants growing in pots, having the stems cut down in autumn, and the pots placed in a green-house, or garden-frames under glasses, the roots may also be preserved sound, and will shoot out again in spring as above.

The roots generally become large, tuberous, and fleshy, covered with a dark rind.

All the species are of a tender nature, scarcely able to endure the open air here fully day & night, until May or June; that is, they being raised from seed in spring, chiefly in hot-beds under glasses, continued & forwarded there until the beginning of June, then fully exposed in the borders or pots, they become large branchy plants in July and August; and continue flowering until October or November, till prevented by the cold.

They are all elegant furniture for the principal compartments of the pleasure ground, they being both very ornamental in the large branchy growth, closely garnished with leaves, and by flowering so numerously seem as if entirely covered with flowers, in constant plentiful succession from July till the beginning of winter, as aforesaid.

The roots of all these plants are a strong purgative, and, given in a double quantity, operate equal to the true jalap.

The propagation of all the species is by seed in the spring, either in a warm border, or in a hot-bed; but the latter will forward the plants to considerably the earliest and greatest degree of perfection.

MARYGOLD, [*Calendula*.] The species are, 1. the common marygold with great varieties, being all hardy annuals. 2. Cape leafy-stalked violet and white marygold.

Marshing. See *Thon L. admiranda*.
 Marsh in or Marshon. See *Beards-*

marygold. 3. Naked stalked violet and white Ethiopian marygold. 4. Grass leaved low perennial cape marygold. 5. Shrubby cape marygold. The first sort in its common single flowered state is regarded only as a pot-herb, and its flowers are the only parts used; but some of the full double varieties and prolific kinds demand attention also as ornamental plants for the beauty of their flowers, which will effect an agreeable diversity in the common compartments of the pleasure ground, in assemblage with other hardy annuals.

Likewise the second and third sorts, being hardy annuals, will flower abundantly, and form a good variety in the open borders in the months of June, July, and August.

The fourth and fifth sorts, grass-leaved and shrubby *Calendula*, producing many flowers in long succession, are also worthy of a place in our gardens: but being impatient of frost, must be kept in pots, to have shelter of a green-house or frame in winter.

All the annual sorts are propagated by sowing the seeds in beds or borders in March or April, either in the places where they are to remain, or for transplanting.

When intended to cultivate the first sort for culinary uses, many either sow the seeds where the plants are to remain, by broad-cast on the surface, and rake them in, or sow them in small shallow drills a foot asunder, covering them half an inch deep, and when the plants in either method have leaves an inch broad, hoe them out to twelve inches distance; or they may be sown thick for transplantation, and when the plants have four or five leaves, plant them out in rows the above distance.

Their flowers being the useful parts, they will be fit for use in constant succession from time to time in dry weather, and, after drying them in the shade, should be put up in paper bags for use.

To propagate the annual kinds in general as flowering plants, sow them either in patches in the borders, &c. where they are to remain, sowing four or five seeds in each patch half an inch deep, but leave only one of the best of the plants in a place; or the plants may be raised in a bed or border, and when they have four or five leaves,

transplant them in the order just directed.

They will flower and ripen seeds abundantly from June to the end of October.

The fourth sort is propagated by slipping the heads anytime from March till September, planting them in pots, which, if plunged in a hot-bed, or in the common earth, and close covered with a hand-glass, and occasionally shaded and watered, they will readily grow, hardening them gradually to the air.

The shrubby sort is propagated by cuttings of its branches, in pots of light earth, in April, May, or June, plunging them in a moderate hot-bed, or, in default thereof, plunging them to the rims in the common ground, giving shade and water.

African MARYGOLD. See *AFRICAN MARYGOLD.*

Corn MARYGOLD. See *CORN MARYGOLD.*

Fig MARYGOLD. See *FICOIDES.*

French MARYGOLD. See *AFRICAN MARYGOLD.*

Marsh MARYGOLD, [*Caltha.*] This plant grows upon moist boggy land in many parts of England: of this there is a variety with very double flowers, which for its beauty is preserved in gardens, and is propagated by parting of the roots in autumn. It should be planted in a moist soil and a shady situation; and as there are often such places in gardens, where few other plants will thrive, so these may be allowed to have room, and during their season of flowering will afford an agreeable variety.

SYRIAN MARUM, [*Marum Syriacum.*] This is a small shrubby plant, growing spontaneously in Syria, Candy, and other warm climates, and cultivated with us in gardens. The leaves have an aromatic bitterish taste; and, when rubbed betwixt the fingers, a quick pungent smell, which soon affects the head, and occasions sneezing: distilled with water, they yield a very acrid, penetrating essential oil, resembling one obtained by the same means from scurvygrass. These qualities sufficiently point out the uses to which this plant might be applied; at present, it is little otherwise employed than in cephalic snuffs. It is propagated by slips or cuttings.

Common MARUM, or MASTIC. This is a pungent aromatic plant, formerly in esteem as a medicinal, plant but now not much in use.

MASH. For horses, &c. an infusion of bran, malt, &c. steeped, and given as food when they are indisposed.

MAST. See BEECH MAST.

MASLIN CORN. Rye and wheat mixed together. *See Rye.*

MASTICK TREE, [*Pistacia.*] This is a pretty evergreen, requiring shelter all the winter, is propagated by layers in the spring, and they will be well rooted by the following autumn.

MASTICK TREE of Jamaica. A species of the Cornelian cherry.

Indian MASTICK TREE, [*Schinus.*] The species are, the Peruvian, and the Brazilian. Both these species are shrubby, durable in root, and top, and retain their leaves the year round; and being natives of hot countries, require shelter here of a good green-house in winter; or, if sheltered in a stove, two or three winters whilst young, it will be an advantage to the plants; however, they both succeed tolerably with the culture of common green-house exotics. They being pretty ever-greens, with finely pinnated leaves, merit a place in the collection of our tender exotics, in which they will effect a good variety; let them, therefore, be cultivated in pots of rich earth, and placed among the plants of the above department.

They are propagated by seed obtained from abroad, also by layers and cuttings.

Sow the seeds in the spring, in pots of rich earth, and plunge them in a hot-bed, managing them as other tender seedling exotics.

Layers of the young branches in the spring will be well rooted in one year; and cuttings of the young shoots, planted in spring, in pots, and plunged in a hot-bed, will readily emit roots in six or eight weeks.

Bull-head. MATFELON. Blue bottle.

MAUDLIN, [*Achillea.*] Yarrow, milfoil.

MAY. The fifth month in the year:—in which the

Products of the Kitchen Garden are,

Radishes, spinage, sallating of all sorts, cabbage, brown dutch, Silesia and Imperial lettuces, asparagus in plenty; early peas and beans, cauli-

flowers from under bell-glasses, young carrots, artichokes, kidney-beans and cucumbers upon hot-beds; purslain upon warm borders, or on hot-beds, with most sorts of spring herbs.

Fruits in Prime, or yet lasting.

Pears: L'Amozelle, or Lord Cheney's green, Parkinson's warden, burgamot de Pacque, Rezy du Chaumontelle, cadillac, with some others.

Apples; golden ruffet, stone pippin, John apple, oaken pin, pomme d'api, winter ruffet, and sometimes the non-pareil; May and May-duke cherries; and in a warm situation, some scarlet strawberries; in the forcing frame, masculine apricots, nutmeg peaches, and some early plumbs.

Plants now in Flower.

Late flowering tulips, anemonies, ranunculus's, pinks of several sorts; lilly of the valley, double white narcissus, sea narcissus, tuberoso iris's of several sorts; white and yellow asphodel, pulsatilla's, double rockets, piones of several sorts, corn-flags, yellow and and pompony martagons, English hyacinths, stary hyacinth, hyacinth of Peru, blue grape hyacinth, feathered hyacinths, bulbous iris, blue aconite or monk's-hood, Tradescant's spiderwort, favoy spiderwort, bulbous fiery lily, red day lily, double purple and large blue periwinkle, peach-leaved and nettle-leaved bell-flower, fraxinella white and red, hedyfarum clypeatum, lychnidea Virginiana, double German catchfly, Greek valerian white and blue, double white and red batchelors button, double white mountain ranunculus, double ragged robin, helianthemums several kinds, jacea's several sorts, double feverfew, sea ragwort, veronica's of several sorts, digitalis or fox-glove, two or three sorts, bupthalmums two or three sorts, with several others of less note.

Hardy Trees and Shrubs now in Flower.

White, blue, purple and Persian lilacs, elder rose, yellow jessamine; syringa, early white, Italian and common honey-suckles, cinquefoil-tree, laburnums, two or three sorts; bird-cherry, Cornish-cherry, flowering ash, horse-chestnut, scarlet horse-chestnut, perfumed cherry, cockspur hawthorn, double flowering hawthorn, male cistus, mallow-tree, Arbor Judæ, cytisus lunatus, scorpion fena, bladder fena, cytisus secundus, clusii, lotus or nettle-tree

tree, sea buck-thorn, spirea falicis folio, spirea opuli folio, spirea hyperici folio, menthly, cinnamon, damask and burnet-leaved roses, with some others.

Plants now in Flower in the Green-house and Stove.

Several sorts of ficoides's, some geraniums, aloes, oranges, aloe-leaved asphodel, onion-leaved asphodel, African scabious anemonospermos's, salvia Africana flore aureo magno, phlomis's several sorts, polygala Africana, the humble plant, ricinoides folio multifido, lotus argentea Cretica, with some others.

MAYBUSH. Hawthorn.

May LILLY. See LILLY of the Valley.

May WEED. See STINKING CAMOMILE.

MEADOW. The Farmer in his conversation, and writers in their books, divide the natural grafs grounds into two kinds, not as differing in the species, but in the place of growth, and the intended use. These they distinguish by the names of meadow and pasture, and generally understand, by that distinction, the grafs intended to be cut for hay, and that to be eaten on the ground, but this is an uncertain manner of speaking. By meadow some express the grafs of low grounds only, that lie about rivers; and by pasture only such as grows on higher lands; but both these are by the judicious farmer mowed at times, and fed at times, so that all that is properly to be understood by the two words is, that being used together, they express that part of the farmer's land which is not in tillage, and they should be used together, because this variation comprehends all grafs ground whatsoever, in distinction from all that which is kept in tilth.

It is a matter of great importance to the farmer, to proportion these two kinds of ground, the tillage and pasturage, one to another. There are many who call themselves farmers near London, and about other great towns, who deal altogether in pasturage; and this they may do without any necessity of tillage; but there is no such thing as a man's keeping his farm all in tillage, without pasture. His cattle must have food, and his fields for corn in the common way of husbandry, require a great deal of dung for manure.

This brings on the necessity of keeping up a proportion between one kind and the other, for which there is no laying down any general rule; because, according to the nature of his land, and the particular course of husbandry he follows, more or less dung may be wanting.

His experience alone must shew him this, but he will find it easy to make alterations where it is necessary: the laying down a piece of corn land for grafs, and the taking up a piece of grafs ground for tilth, being, as we have shewn, very easy.

There are particular estates also that answer best in various manners. There are some that are so rich and proper for corn, and that lie so conveniently for dung, that a much greater proportion than the common method may be kept conveniently and profitably in tillage; and there are others naturally favourable to grafs, and that lie where there is a great demand for it; and in these the greater part should be kept for pasture.

As we have shewn that the distinction into meadow and pasture is very little settled in its meaning, we shall, to be the better understood by all, speak in general of both under the name of grafs ground. The hay from grafs grounds that lie low, and are what is most properly called meadows, is generally in larger quantity than that from such as are higher; but this latter, though there is less of it, is sweeter.

The abundance of water that often gets into, or upon these low grounds, makes the grafs rank; and where they lie in the way of constant wet, they naturally produce very coarse kinds of it. We see rushes grow in barren and wet places, and there are a great many kinds of grafs, tho' not enough regarded, that more or less approach to the rushy kind, which greatly diminish the value of the hay, that comes from the wetter sort of these grounds.

The grafs grounds that lie high require assistances from manure, but those which are lower, and in the way of flooding, do not; the overflowing of every river so far imitates that of the Nile, that it always leaves a mud behind it, which serves in the place of manure, and makes the grafs spring fresh, as if art had been used to recruit the strength of the ground.

We have named two kinds of grafs grounds, but there is a third yet to be mentioned, which is fuch as are in the reach of falt water, whether by the fides of rivers, near the fea, or of the fea itfelf. Thefe are a great quantity in one part or other of the kingdom, and are capable of being turned to very good account, their management therefore is a material confideration in a work intended for general ufe.

Having premifed thus much concerning the nature and diftinctions of grafs ground in England, we fhall firft confider the three forts feparately, and afterwards the general and particular methods of procuring the richeft produce from each.

Thefe are what the farmer generally expreffes by the term up-land grafs grounds; fome, by way of diftinction from the lower, call them paftures, the other having the name of meadow. Thefe up-land grafs grounds differ in fituation as they lie upon higher or lower rifings, or upon their tops or fides: they alfo vary greatly in their foil, which, tho' it be in general different from that of meadows, yet is alfo very various in kind between one up-land ground and another.

With refpect to their particular fituation, we muft firft obferve, that as a certain degree of expofure is proper for grafs, fo there may be too much; and therefore that thofe rifings which are of a moderate height, are better for grafs than fuch as come under the denomination of high hills.

The next difference is, that of their lying on the top, or on the fide of a hill; and this is fo great, that it often trebles the value in one above the other: nothing is more frequent than for ground to be wet and boggy on the top of a hill, while it is perfectly fine on the fides all the way down.

Springs naturally rife on hills, and when they are pent in, they break and foak through the very fubftance of the ground, and convert the whole upper part of the furface into a bog.

On the contrary, the fide of a rifing ground that has a gradual defcent, is, of all fituations that can be named, the beft for grafs. In fuch ground there generally is moifture at the bottom, which is very effential to grafs, and there is a way for it to run off, which is equally neceffary.

Grafs will not thrive without water, nor can it be good where there is too much; this is the great article. Where the tops of hills that are any thing high have no fpring, the bleaknefs of the expofure, and the poornefs of the foil, as that is commonly the cafe, render the grafs very weak: it is fweet, but very little of it; and where there are fprings, it is general boggy. The way of getting off the water we have already treated of under the article draining; we here fpeak of the natural condition.

Now the fide of a hill, having foil and moifture, feeds a rich and good grafs, without having fo much wet as to make it rank, or favour the growth of ruftes, or thofe other bad kinds of mixture, which generally depreciate that which grows on the tops of hills, or near rivers.

As to that in meadows, lying low, it is generally a black rich mould, and nothing more favours the growth of fine grafs; but then what thefe grounds gain in foil, they lofe by the abundant moifture.

The up-land paftures, of which we treat here, have all that variety of foils we fee in tilled ground; they are fometimes gravelly, fometimes loamy, in others they are ftony, chalky, or clayey. Of all thefe, the loamy foil, where there is a good proportion of rich earth amongft it, yields the beft grafs; upon clay, it is apt to be coarfe, becaufe of the wet it detains; upon chalk, it is low; upon gravel, it is fweet, but thin; the loam, when of the right condition, yields it juft in the middle way between all thefe, it is plentiful yet fweet, and affords the fineft hay, and the fweeteft and richeft food for cattle.

This will direct the farmer, when he is about to make changes in the proportion of his tillage and pafture, what to keep for grafs, and what to break up.

A foil that is too clayey, is liable to great inconveniencies with refpect to grafs: in winter it detains the wet a long time, and in the fummer it cracks and chaps, and no earth is more perfectly burnt up.

The black mould, fuch as is in the low grounds, yields abundance of fine grafs when it lies dry on the fide of a hill, but then it is commonly infefted in a terrible manner with worms; the loamy foils are lefs fubject to them, and

are therefore preferable; so that on all accounts, that preference is due to the rich loams, which we have given them in respect to the growth of grass: they are not subject to poach in winter, nor to crack or be burnt up in summer.

All low ground is subject to overflowing, either in a larger way by rivers, or in a smaller by the water coming from the higher grounds in the winter rains; and both these wettings are of great benefit, if proper care be taken to carry off the redundant water; and to prevent the overflowing by rivers at improper times.

The finest part of the mould is washed off by rains from ploughed lands that lie high, and a part of the manure with it, and carried down with the water to the low grass grounds at their bottom; this it is that renders them so fruitful; and in same manner land floods drowning meadows by river sides, have the same effect. The waters of these are thick and yellow, with the richest part of the soil from the adjoining high grounds, and they leave this upon those meadows when they lie upon them to settle, and are then taken off. This renders the grass on these grounds very plentiful, but as there generally remains too much of the moisture behind, it is coarse; there grow weeds, and ill kinds of grass in them, which are not in the sweet pasturage of the up-lands. There is a great deal of difference in the value of those meadows which are liable to be overflowed by accident, and those which are capable of being overflowed at pleasure, but are out of that danger. In the first, the water may come at a wrong time, and often does so to the utter loss of the crop: but, in the other, it never can come but when it is brought, and yet 'tis at all those times, when proper, ready at the husbandman's command.

Such meadows as lie flat on the banks of great rivers, are of the first kind: these are subject to accidental floodings, which may come at very wrong times, and are therefore very precarious and uncertain as to the produce.

Those which lie near lesser streams, and a little higher than the level of their waters, are of the latter kind; they may be overflowed when it will do them good by turning the stream of the water upon them; and these are worth much more than other low grass grounds

for this reason; as the others, from their hazardous situation, are worth less.

To those two we may add a third kind of grass grounds, which are of a kind of middle nature between these, and the up-land pastures. These last are such as lie above the level of the water considerably, yet not so much but it may be brought over them by means of wheels or engines: these are expensive, but the benefit very great. We have not the spirit of the Italians in this respect, nor indeed the necessity: they raise water to a surprising height for the overflowing their pastures; and they owe all their verdure to that artificial management.

The meadows that lie on the sides of large rivers, having all the same general soil, which is a rich dark mould, they yield abundance of grass; and they owe their fertility to the overflowing of those rivers.

When grass grounds lie near the borders of great rivers, but so high as not to be flooded accidentally, it will always be worth the farmer's while to have an engine for overflowing them at such times as he shall think proper.

We have shewn what is to be expected from each kind of grass ground with respect to its soil, its situation and its degree of moisture: we now come to consider those accidents to which all grass grounds are liable, and which reduce their value. These are of three principal kinds, the first being from weeds, the second from rubbish of any sort, left on the ground, and the third from ant-hills and mole-hills: these last are the most difficult to be removed, but when mowing is considered, they are of all other annoyances the most obnoxious.

Weeds are of various kinds, and hurtful in different degrees. All plants, not of the grass kind, may be called by this name when among grass, but some are beneficial: the white trefoil, which is a sort of clover; and the red trefoil, which is a wild clover, are both serviceable, and so are several other little plants that rise spontaneously among the grass.

The large weeds are most troublesome, such as thistles, docks, and mallows. These are grubbed up, or drawn with an instrument made for that purpose, called the thistle hook. This

pierces into the ground, and laying hold of them at some depth, easily pulls the whole root up.

As to accidental rubbish, this must always be picked off. Some will be thrown on by carelessness, and some comes on among the manure; which, though not so easily seen at first, is very plainly to be perceived when the rains have washed the rich part of the dung into the ground.

Women or boys may be sent in to gather up this sort of stuff, which consists of bones, bits of brick, and broken glass; a little trouble takes it off, and saves a great deal of difficulty to the mowers. See ANTHILLS.

Dung is an universal manure for grass ground, and the more mellow and rotten it is, the better: most people content themselves with it, and seek no farther; but grass ground of different soils as well as corn land, admits with advantage the same diversity of manures.

For grass ground of the common kind, where the soil is a fat loam, or a loam with a very large quantity of mellow earth among it, the best of all manure is old dung and pond mud mixed together. This may be considered as the general manure for these grounds; and the time of laying it on is according to the particular circumstances or use the farmer makes of his land, from September to February.

The most favourable time of all is in the middle of winter, that there may be frost to dissolve and break to pieces the harder parts of the manure, and the rains may wash the whole into the ground in their leisure, while there is no great power of sun to evaporate the virtue of it as it lies spread on the ground.

The way of laying on manure upon grass ground, is to drop it in small heaps at due distance; and first employing labourers to break and spread it well by hand, the owner is afterwards to have it worked over with a bush harrow.

When a piece of grass ground produces moss, and other bad things, but not in such a degree as to require the method of cutting up and burning, the best method is to strew over it twice a year, namely, in October & the beginning of February, a mixture of two parts coal-ashes and one part wood-

ashes, wetted with the emptying the pots of the family.

On a piece of grass ground, that is cold, but not very wet, let the husbandman spread a good dressing of pigeon's dung; or of the dung of fowls mixed with earth and coal-ashes. This is to be done at the latter end of February, and being the richest of all manures, it must be spread with the greatest care and attention; it will thus come to the roots of the grass, just as they are about to make their shoot, and will cause twenty blades in many places to grow for one.

There are good grass grounds on the sort of soil quite opposite to what we have been naming, that is, on such a loam as having a great proportion of sand, and little of the binding ingredients in it, is hot, loose, and crumbly. In this case the manure must be varied as the soil varies; and of all that can be recommended, nothing comes near the virtue of any one of those clayey marles we have described under the head of manures; a dressing like this laid on early in winter, becomes quite broken and mouldered by the spring, and will all wash into the earth; the consequence is, that it gives the two qualities wanting firmness and fatness. The quantity of hay may very well be doubled by such a dressing, and the feeding in proportion; and although this be an expensive manure for grass lands in the first laying on, yet it very well answers in the end; for the effect, instead of three or four, which is the common duration of manures, will last ten or twelve years.

In some of the up-land pastures in Derbyshire and Staffordshire, there is a kind of brown earth full of fragments of stone. The proper manure for this is lime.

There is nothing so wrong in the husbandman's whole practice, as the deferring the laying his ground for hay too long: it may be convenient to him to feed upon it; but let him consider what will be the effect of a hot dry summer, and what will be the loss if he be disappointed of his crop. Spring is the season for the grass to make its shoot; and if it be eaten over and over again at that time, and hot dry weather follow, it is deprived of the benefit of rains, and never makes that first shoot tolerably, nor comes to any reasonable

sonable growth afterwards. For these reasons let the farmer suit his several occasions, so as to be sure of laying down his ground for the hay in time; and if he lose something in the advantage of feeding, he may be perfectly assured of making himself ten-fold returns for it.

As soon as the cattle are off let him send in women or children to finish the clearing of the ground, by picking up the broken boughs of trees that the winter winds may have thrown in upon the grass, and every other kind of annoyance: this done, let him send in a labourer or more, according to the compass of ground, and let these have orders to break and spread all about the dung that may have fallen from the cattle upon it; and also to break and scatter any fresh mole-hills.

This being done, the expence of which is very little, and the convenience and benefit very great, let him order the ground to be rolled carefully and thoroughly.

The rolling grass grounds intended for mowing is of great consequence, as it prepares the surface for the scythe, and destroys the last accidents that can happen to it during the preparation for hay.

In the winter months the surface of the ground will be rendered here and there unequal, by the treading of cattle, in such places as the wet has most affected, and where it has lodged most: these make the growth of the grass irregular, and therefore are an injury.

During the first approach of spring the worms will be at work, and will every damp and mild night throw up abundance of their casts; these also are, like the other, nuisances, though not great ones, and they hinder the right and regular growth of the grass; if there be moles, or if there be any ants left, they will also be at work at the same time; and this is a season at which all should be set right; and the condition of the ground is such that it will easily be so. The roller will answer the purpose, for it will take more effect at this time than at any other.

The ground being thus carefully laid for hay, the farmer has no farther care but knowing when to cut it. This he must carefully observe, for there is a proper time of ripeness; and all after, as well as all before that, is so much loss.

There is a time of the year when every plant flowers; and grass, like others, has its season. If we examine in other plants the course of nature, we shall see that, though their leaves stand pretty well during the flowering, they wither when they come to ripen the seed. The leaves of grass go to the quantity of hay as well as the stalks; and are indeed the best part: they are not therefore to be neglected for the sake of the other. The hay will not have its due quantity till the stalks are full grown; but after that time, the leaves will fall so fast into a state of decay, that there will be more lost by twenty times at the bottom, than there is gained at the top. The price of hay is very considerable, but that depends upon its goodness; and this upon two articles, the time of cutting, and the manner of making; and upon the former little less than on the latter.

The fine green colour of hay is very much valued. This is owing, in a great measure, to the making; but then it must be in the grass itself, otherwise all the care that can be taken in drying it, is all in vain; a proper method of turning will preserve a colour, but it cannot give it: that must be from nature.

This fine colour depends, like the rest of the good qualities, on the time of mowing, or the degree of ripeness of the grass. When it is just in flower, the leaves are fresh and green; but when it is got to seed, they grow brown; this is the first step toward their decay, and this is the change of colour which no art can recover.

While the grass is but coming to perfection, it is too green; when it has stood too long, it becomes brown; and that fine pale green colour so esteemed in hay, can never be obtained by any art afterwards.

The smell of hay is another article of its value, and this, like the rest, must be preserved by care in the making, but it must be entirely owing to the time of cutting.

Hay that has stood too long, has the appearance of so much stubble, and has no more smell; whereas at the time of the grass flowering, which is its just state of perfection, there is one of the pleasantest flavours we know, from the cutting through of the stalk,
and

and the evaporating of its juice in drying. The colour of the stalks fades as well as that of the leaves, after the due season is over.

Let the farmer go into his grass fields from time to time toward the beginning of June, if not prevented sooner by the full ripeness. Let him examine the stalks which will be now grown up in height, and see how their tops approach toward ripeness; he will perceive from time to time the little heads swell, and at length there will appear a few white threads. These, in some kinds of grass, only shew themselves on the surface of the buttons; and, in others, hang from them a fifth part of an inch. This is the flower of the grass, and when it appears, the hay-time is near.

He must not judge from one or two plants in a hundred, but see when the whole field thus gets into bloom; and then he must be critical in his examination. The fuller and freer it is at the top, while the bottom remains perfectly sound and good, the better; therefore that is to be examined for the final marking of the time. Let the farmer open the grass with his hands in several places down to the ground, and observe carefully how the lower part looks: as these flowery parts, or the top, ripen, the bottom will grow brown. After this the top will get nothing, and the bottom will lose a great deal, so this is the time for the mowing.

The mowers are to be sent in, and the ground having been thus prepared and levelled for them, they have no excuse if they do not cut it close. These are a sort of people, as every one knows who has had any concern with them, who are very apt to slight over their work, and ready to seize upon any pretence for doing so; they have no consideration that their carelessness is the loss to the farmer, perhaps of the tenth part of his crop; but let him take care of himself. As he has according to these directions prepared the ground for them, let him follow them and frequently put them in mind of it, they will thus be brought to do much better than they ever will when left to themselves; and the addition to the quantity of the hay will very well pay the farmer for his care and attendance.

The business of hay-making is generally done much better than that of

mowing; and if any omission be made in it, it is easily seen, & there is time to rectify it; but in the mowing, the mischief is scarce to be seen, unless the scythe be followed; and when it is once done, there is no mending of it. The grass being down, it is to be carefully dried; and in this there is so much difference between the practice of the farmers in those parts of the kingdom where husbandry is most improved, and the others, that it should be set in the strongest light, to render those improvements universal.

The grass being down, it is to be turned and dried, and then it is hay. This is the whole process in a few words, but there must go more to the well understanding of it.

The great care in this point, is to preserve the colour. The grass being cut in the condition we have named, will be of a fine green, and this is to be preserved; for the farmer may be assured, that a loss of colour is always attended with a loss of taste, and loss of smell; and with a certain loss in the article of price.

To preserve the colour of the grass, and give it the full sweetness when it is mowed, it should be let to lie in the sward two days and a half. At the end of this time it is to be spread out; this is properly what is called *tedding* the hay; and thus it is to lie exposed to the sun during the remainder of the day. Then it is to be made up in little cocks, which are called *grass cocks*, at evening, and so left for the night. The next morning, as soon as the dew is off the ground, these grass cocks are to be spread, and thus the side of the grass that had lain undermost, will get dried. In this condition it lies all that day. Toward evening, it is to be cocked up into the same little grass cocks as before.

This is a reasonable, and an excellent practice, for it at the same time gives the hay all the advantage of the air and sun during the day, and defends it from the dews of the night, which can do little harm when it is gathered up in these heaps; though while it lay spread upon the ground, they would have greatly interfered with the drying. Sometimes when this caution of cocking up at evening has been omitted, the whole quantity which was very toward in drying the day before, has
been

been rendered damp and soft, and brought into a worse condition than at first; for the water of the dew is more hurtful to its colour than the natural juices of the grass. In this condition the smell and colour have been greatly impaired, and there has been afterwards no way of recovering them. This is not so bad as the practice of the remote farmers, whose hay is always brown, and mow-burnt; but it is very much inferior to the true and careful method, and never fails to reduce the price.

In the proper method of hay-making after the tedding, and grass cocking, so far as we have named, the hay is to be spread again, and drawn up into a kind of lengths, which they call wind-rows. This is a very good condition for drying, and what is a great advantage also, these wind-rows are easily thrown up into cocks, for they lie conveniently for that purpose: thus when the weather is fine, the hay has the full advantage of it, as it lies spread out in these rows; and if rain come on, the hay-makers can toss it into cocks in a few minutes, in which condition it will get very little damage, and is ready to be spread again to take the advantage of the next fair blast.

From these wind-rows the hay is to be thrown into large cocks, and in these to stand through the night, and for some time afterwards; but then it is not, though pretty well made, to be carried home directly from the field in this condition. The outside of one of these large cocks will be very dry, while there is moisture in the middle, and the farmer's business is to have his hay all alike; not only some of the juices of the grass will remain in that which has been in the innermost part of the cock, but it will sweat a little with lying together: therefore these cocks must be thrown to pieces, and the whole quantity of the hay once more spread upon the ground. If good weather follow, it will thus dry in a very compleat and perfect manner: three hours wind and sun going farther under these circumstances than a day at another time.

If the weather continue favourable, the business of hay-making is thus happily finished; but if rain come, the farmer is not to turn the hay that has caught the wet as it lay spread,

but to let it dry as it lies, which, these showers being seldom lasting, it will quickly do. On the contrary, if the over-care of the hay-makers should turn the grass thus nearly dried, and then wetted by accident, to the ground, the damp of the earth would greatly injure it. On the other hand, as the wet is slight, and the sun and air have great power; the top will presently dry again lying as it is.

After this spreading from the cocks, the hay may be thrown together for convenience of loading, and is in perfect good condition to carry in. *See Pasture.*

MEADOW Rue, [*Thalictrum*.] There are several species of this plant, all hardy perennials, easily propagated by parting the roots in autumn, and sowing the seed in the spring.

MEADOW Saffron, [*Colchicum*.] There are three species, the common autumnal, the mountain Spanish, and the variegated eastern Meadow Saffron. The first grows wild with a purple flower in many rich meadows. They are all hardy, and are propagated by off-sets of the bulbs, taking them up in June when their flowers decay, and putting them into the ground again in August.

MEADOW Sweet, [*Uimaria*.] This herb is frequent in moist meadows, and about the sides of rivers: it flowers in the beginning of June, and continues in beauty a considerable time. The flowers have a very pleasant flavour, which water extracts from them by infusion, and elevates in distillation.

MEADOW Trefoil. See CLOVER.

MEALLY TREE. Wayfaring tree.

MEAK. A hook to cut up pease, &c.

MEASLES. This is a common disorder among hogs, and shews itself in a redness of the eyes, and foulness of the skin, and in their neglecting their food.

The best remedy is this. Keep the hog fasting the whole afternoon and night. Then fet before him a good mess of victuals; not large in quantity, but hot and well prepared, and put into it forty grains of salt of hartshorn and two ounces of bole armoniac. It will all go down very well after this fast; and will make a good beginning of a cure. The same method is to be followed every day till he is perfectly recovered, and for a few days after, for fear of returns.

MEOHOACAN, [*Mechoacanna.*] The root of an American convolvulus not very unlike jalap, but inferior to it in virtue, and the quantity of resin it yields.

MEDIC. Lucern.

MEDEOLA. See *African ASPARAGUS.*

MEDLAR, [*Mespilus.*] A species of fruit-trees, which may be raised by grafting or budding them upon the common white-thorn. This is the usual way of propagating the American forts, which are of the hawthorn kind; but the best way to raise the other forts is from their seeds. All medlars will take when they are grafted or budded upon each other. They will also take upon stocks of pears, or of quinces, and both of these will take upon the medlar; so that there is a great affinity between them. All the American forts will grow twenty feet high, if they are not stunted by grafting.

Medlars may also be raised from their seeds, which, if put into the ground in autumn, soon after they are ripe, will come up the following spring: but if they are not set till the next year, they will not shoot till the year after.

MELANCHOLY THISTLE, [*Cirsium.*] This plant is preserved in the gardens for variety, and is propagated by sowing the seeds in the spring.

MELILOT, [*Melilotus.*] This grows wild in hedges among corn; and has likewise, for medicinal uses, being cultivated in gardens. The green herb has no remarkable smell; when dry, a pretty strong one: the taste is roughish, bitter, and if long chewed, nauseous. A decoction of this herb has been recommended in inflammations of the abdomen; and a decoction of the flowers in the fluxus albus. But modern practice rarely employs it any otherwise than in emollient and carminative clysters, and in fomentations, cataplasms, and the like; and in these not often. It formerly gave name to one of the officinal plasters, which received from the melilot a green colour, but no particular virtue.

MELON, [*Cucumis.*] Of the melon, there is but one real species of the plant, but of the fruit there are innumerable varieties, with respect to figure, size, colour of the rind, and flesh or pulp.

This fruit, in different varieties, is

of various sizes, from about four to ten or twelve inches in length and diameter, in most sorts ripening externally to a yellowish colour, and some ripen green, and others white, but have mostly a reddish flesh or pulp, except one variety, which is green both in rind and pulp, as hereafter described.

The varieties of most estimation at present in the English gardens are,

Common Musk-Melon. A large, oblong-oval, longitudinally-ribbed, and netted-wrought Melon; having a reddish tolerably rich flavoured flesh; and the plants being of the hardier kind, generally set a plentiful crop of fruit. This is also one of the best sorts of melon for mangoes, for which purpose the London gardeners cultivate principally this variety for the supply of markets.

Romana-Melon. A roundish, moderate-sized, ribbed, and netted melon, somewhat compressed at both ends, and with a reddish firm flesh of a fine rich flavour, the plants good bearers, each often setting from about five or six to eight or ten fruit, and is one of the best sorts, both for an early and general crop.

Cantaleupe, or Armenian Warty Melon. A large, roundish, deeply-ribbed melon, a little compressed at both ends, and the surface full of warty protuberances, and with a reddish firm flesh of a most delicious rich flavour, of which there are some varieties. Large black carbuncled or black rock cantaleupe melon, being of a blackish green colour, having the surface covered with high, rugged, saxatile protuberances. Large white carbuncled cantaleupe melon. Orange cantaleupe melon. These varieties are the finest of the melon kind, with respect to the richness of flavour of the fruit, and which by the melon-eaters are preferred to all the other sorts: but the plants being rather more tender, do not set fruit so freely, nor in such plenty, they often not having more than from one to two or three fruit on a plant, and in a three-light frame sometimes not more than five or six fruit.

This variety derives the term Cantaleupe melon, from Cantaleupe near Roma, the place where it was first cultivated in Europe, brought thence from Armenia.

Small Portugal Melon. A smallest round

round melon, having a reddish flesh of a fine musky flavour, and the plants are plentiful bearers, each often setting from eight or ten to twenty fruit, which, however, is more by half than should be left to come to perfection.

Green fleshed Melon. An oval, moderate-sized melon, having an even, smooth, green rind, and the flesh or pulp ripening to a greenish colour, which is highly flavoured.

Large Green-rinded Melon. A large roundish-oval, green, smooth-rinded melon, having a reddish flesh.

Black Galloway Melon. A roundish oval, middle-sized, slightly-ribbed, dark-green, smooth melon, having a reddish, rich flavoured flesh, and the plants excellent bearers, but the sort not at present very plentiful in England. It was brought from Portugal many years since by a Lord Galloway.

Nettled or Wrought Melon. An oval, middle-sized, scarcely ribbed melon, having the surface closely wrought with raised net-work, and hath a reddish flesh.

White Spanish Melon. An oval, smallish, white, smooth-rinded melon, having a reddish pulp.

Zatta Melon. A very small, roundish, warty-rinded Melon.

Observe, that although all the above kinds be only varieties of the same species, yet, by care in cultivating them separate, they may be continued all tolerably permanent.

There are many other intermediate varieties of less note, but a few of known good qualities is better than many different sorts, some of which probably not much better than gourds; and of the varieties here specified, the *Romana* and *Cantaleupe* kinds are considerably the most worthy of attention, as these two sorts ripen to a much higher degree of perfection.

It is an exotic from the hot parts of the world, supposed principally of Persia, from which country, however, it was first introduced into the different parts of Europe; and consequently its culture in every part of Britain can be effected only by artificial heat, and constant shelter of glass, &c. till July as at an early season they require a temperature of heat almost equal to that of our pine-apple stoves.

The principal season of ripe melons in England, is June, July, and August;

they, however, by different sowings and plantings, may be obtained from May till October; but they are always in the greatest perfection in the times before mentioned.

The flowers of the melon are consequently *monoecious*, like the cucumber, as being of the same genus and class, male and female apart on the same plant, the males standing immediately on the summit of its foot-stalk, without any appearance of germen or fruit under it, and the females discover the round germen or embryo fruit under its base, when not bigger than a pea; observing, that the male blossoms are by nature designed for fertilizing the female flower, as observed of the cucumber, so must not be pulled off until a full crop of fruit is set.

With regard to the propagation of the melon, the plants being annual, are raised every year from seed, sowed at different times in spring, in hot-beds of dung or tanner's bark, under frames and glasses, &c. they requiring continual aid of artificial heat and shelter, from the time of sowing until June or July, for they will at no time succeed in the natural ground, at least rarely perfect fruit; and each crops require two different hot-beds, that is, to be sowed in one, and the plants nursed therein till a month or six weeks old, that they begins to shoot runners, then transplanted into a second and final hot-bed, to remain to fruit.

The season for sowing is any time from the beginning of January, until the middle of April, according to the conveniencies there may be for their culture, and time the fruit is required in perfection; for the early crops, to be raised in January, February, and beginning of March, require very substantial hot-beds, under constant shelter of garden frames and lights, until July; but the later crops, sown in the middle of March, and in April, succeed with more moderate hot-beds, and may be ridged out in April and May under hand or bell-glasses, or oiled paper frames, and the plants will set and ripen their fruit under these shelters; observing, that the early sowings in January sometimes produce ripe fruit in May, but come into full bearing in June; and those raised in February, and early in March, ripen fruit in June, July, and August; and sow-

ings performed any time from about the middle of March till that of April, furnish ripe fruit principally in August and September, and sometimes in October.

Observe, therefore, that, like the cucumbers, crops of melons may be raised in three different ways; under frames and lights, under hand or bell-glasses, and under oiled paper; each of which will be exhibited under a separate head.

The materials principally necessary in their culture are,

Frames and glass-lights for early, and hand-glasses, &c. and oiled paper lights, for late crops; and for each crop good mats for covering on nights; all as observed for the cucumbers.

Horse stable-dung, a plentiful supply both for making the hot-beds, and for occasional linings, must be in quality, quantity, and preparation, as hinted for cucumbers, and in the article hot-beds.

But sometimes in the melon culture bark hot-beds are employed, or of bark and dung together, which, where tanner's-bark can be easily procured, on account of its regular and durable heat, is a very proper material for hot-beds in the culture of melons, either used alone, or mixed with hot dung.

As to mould, the melon, like the cucumber, will prosper in any rich pliable kitchen-garden earth, prepared some months in a heap; but the favourite and most prosperous soil for the melon is a fine mellow loam, taken from the surface of a pasture field or common, enriching it with about one-third of rotten neat's dung, or thorough rotten dung of old hot-beds, preparing the whole in a heap, and managed as directed under the article Composts; observing, that when it is to be used, not to sift or screen any, only break it well to pieces with the spade.

The situation, or place for making the hot-beds, should be dry, warm, full to the sun, and sheltered, as for cucumbers; likewise observe, not to dig any trench for the early hot-beds, but make them entirely on the surface of the ground, for the reasons there assigned.

It is generally advised to cultivate melons as far as possible distant from cucumbers, lest, by an intercommuni-

cation of their *farina*, it should cause a degeneracy; there is apparently some reason in this: however, when we consider that the two plants are real different species, I believe there is no great danger to be apprehended, as in the case of varieties.

The seed, and its kind, being material articles, you should be particularly careful to procure such only as have been saved from the very finest fruit of the respective approved varieties; this, if possible, should be two or three years old, for the reasons observed of the cucumber seed; but when you are obliged to use new seed, it is proper either to hang them in a paper, or phial, in a dry room near the fire, all winter, or in a phial, exposed in a dry window to the sun; or may carry them in your pockets three or four weeks, either of which expedients will dry up much of the watery parts, whereby the plants will be less luxuriant and more fruitful. We receive melon seeds annually from France, Spain, Italy, and other hot countries; but we would caution against depending on these for a principal crop, for not being enured to this climate, the plants from such would be more tender and delicate in their culture, less fruitful, and the fruit often of much less value, than those of seeds saved at home; therefore, only a plant or two of the foreign seeds should be raised at first, just to prove the quality of the fruit.

From the time of sowing the seed to the maturity of the fruit, it is commonly near four months, and sometimes longer; for the plants seldom shew fruit till they have shot several runners, which, from the first appearance of the plants, will be at least six or eight weeks in effecting; from the appearance of the fruit till it is fairly set, a week or fortnight; and from its setting till fully ripe will be about forty days.

The proper quantity of hot-bed in the culture of melons for private use is, that for the smallest family there cannot be less than one three-light frame for the early, and three hand or bell glasses, or three holes under oiled paper, for the late or succession crops, allowing two plants to each light of the frame, the same to each hand-glass, or hole under the paper lights; and supposing each plant, one with another,

to produce about three fruit, so that in a three-light frame, and in three holes under hand-glasses, or oiled paper shelters, there will be but about from thirty to forty melons; though of the smaller sorts of melon there will sometimes be from six to ten, or twelve, or more, on a plant; but six or eight is as many as the plants are able to bring to perfection: however, for the supply of a middling family, two three-light frames, and, at least, six hand or bell-glasses, &c. will be necessary to furnish a tolerable supply during the season; and for a large family, four three-light frames, at least, or twelve lights, will be requisite, and double that number of hand-glasses, or holes of plants under paper frames.

We now proceed to the different methods of culture; and first, of their early culture in frames, observe as follows.

The time of year to begin the culture of melons in frames, is January, February, and beginning of March; but when designed to have melons as early as possible, we commonly begin in January, though the beginning of February is a more successful time of sowing to have a good crop; if, however, you begin early in January, it is proper to sow also twice in February and March for succession crops; likewise to be ready in case of accidents to the early plants, or that they should not thrive, as is often the case at a very early season.

The seed may be sowed, and the plants raised, either in a hot-bed of early cucumbers now at work, in the same manner in every respect as for them directed; or, where none is, make a hot-bed for a one-light frame on purpose, observing exactly the same rules with respect to dimensions, making, framing, and earthing the bed, sowing the seed, and other management, as directed for the early cucumbers; likewise, when the plants have been come up three days, that their cotyledons are a little expanded, transplant or prick them into small pots for the convenience of removal, as there directed; but of these, i. e. melons, put only two plants in each pot, plunging them in the bed, and manage them as above till fit to ridge out; for the cucumbers and melons, being nearly of equal temperature, the

same degree of heat, air, &c. suits both in this part of their culture; it would therefore be superfluous to trouble the reader with a repetition, since the particulars are fully exhibited under cucumbers.

In this nursery-bed they are to be continued a month or six weeks, till their first runners begin to advance; observing, as their shanks rise in height, to earth them up by degrees with fine mould, till the pots are full; for this will greatly encourage them, and they will come fast into the rough leaf, and begin to form joints and shoot runners.

Observe, when their two or three first rough leaves are fully expanded, and another forming in the centre, appearing like a bud, which part being also the end of an advancing shoot, it should just at this period of its growth be stopped, i. e. cut or pinched off close to the second or third leaf, as advised for the cucumbers, to procure lateral shoots, called runners; for it is from these, or others issuing from them, that we are to expect the fruit; and when these first runners appear, the plants are ready for ridging out into the fruiting hot-bed.

The plants from the time of sowing, till arrived at the above size for ridging-out, take about five or six weeks growth.

The ridging-out, or fruiting hot-bed, should be prepared in due time to receive the plants when arrived to the proper age and size above-mentioned; observing, to prepare fresh hot dung a week or two in a heap, as for the cucumbers, sufficient for one or more three-light frames; let the bed be made entirely on the surface, for the opportunity of lining, carrying it up three feet and half, or four feet high, raising the back or north side three or four inches higher; directly put on the frame and lights, to defend the bed from chilling rains, and to draw up the heat, tilting the glasses behind for the steam to pass away; and in a week, or ten or fifteen days, according to the substance of the bed, its first great heat will abate; then prepare to mould it, and put in the plants, observing the necessary precautions, as for the cucumber beds.

The bed being ready, as above, then wheel in your prepared mould, and lay just under the middle of each light about

about a bushel of it in a heap, for the immediate reception of the plants, forming each heap into a sort of conical hillock about fifteen inches high; and the thus having the hills of earth this height, is proper both that the plants may be near the glasses, which is of importance to early work, and to allow them a good depth of earth; for they should generally have a greater depth of mould than cucumbers, the plants being more impatient of moisture by watering, which is also prejudicial to the prosperity and flavour of the fruit; that, therefore, by allowing a good depth of earth, they will shift much longer without the aid of water: when the hillocks are thus formed, directly earth the other parts of the bed within the frame three inches thick, just to keep down the steam rising immediately from the dung; then shut down the lights, and when the earth is warm put in the plants.

In a day or two the heat of the dung will have sufficiently warmed the hills of earth; then bring the plants in their pots; being two in each, plant one pot of plants, with the balls of earth about their roots, in the middle of each hill, as directed for the cucumbers; and if the mould should appear dry, give a little water towards the outside, being careful not to wet the plants much at this time; and as soon as planted shut down the lights, to draw up the heat about the roots of the plants, but tilt them again in due time, to pass off the steam.

The plants being now ridged out into the fruiting hot-bed, observe, that as the glasses are to be continued constantly on the frames till July, your daily care is to admit fresh air at all opportunities in calm weather, by tilting the lights behind from about half an inch to two, three, or four high, according to the temperature of the heat and steam of the bed, and that of the outward air, which must be also observed occasionally on nights at first ridging-out, if there is a great steam, for this must not be pent up, nor stagnated for want of air; cover the glasses also every night with mats, one or two thick, as shall seem necessary, but never let them hang down all over the sides of the frame and bed, as often done, which would draw up a violent steam, and exclude the air too

much from the plants, and draw them up weak and of a yellow colour; give water also occasionally when the earth appears dry: observing, that in the performance of all of the above works in this bed, to follow strictly the same rules as exhibited in the ridging-out bed of early cucumbers; but to keep in mind, that melons, being rather impatient of moisture, must have it more seldom, and less in proportion, than for cucumbers, especially near the main stem and principal roots; for by much moisture these parts are apt to canker and rot, so should be watered mostly at some distance from these principal parts, and never to wet the vine much at an early season; but when there is not less than twelve or fifteen inches depth of earth on the beds, they will not need water oftner than once a fortnight; and sometimes, when the earth is of a loamy nature and depth as above, and pressed down close, that it may the better retain its natural moistness, the plants, after two or three waterings, till they have firmly established their roots, will often succeed without, or, at least, with very little more water; and in which case they generally set their fruit freely; and it ripens to a rich and high flavour; for redundancy of moisture retards the setting of the fruit; and although, after it is fairly set, occasional waterings will encrease its magnitude, yet much of it greatly debases its flavour and taste; but on the other hand observe, that where the earth of the beds is a light texture, or of but a moderate depth, the plants will all along require occasional waterings, especially in warm sunny weather; let it however be remembered, that when the plants exhibit their first shew of young fruit, no water, or as little as possible, should be given, until the fruit is set as big as walnuts, when, agreeable to the nature and proportion of the earth, and other rules as above mentioned, and as hereafter hinted, use your discretion accordingly in watering.

Examine with care for the first week after ridging out, that the earth of the hills and roots of the plants do not receive too much heat from the violence of the bed; and if there is danger, remove some of the earth around the lower part of each hill; and if any is burned at bottom, add directly some fresh

fresh in its stead, and in a few days or a week the burning quality will subside; then place the removed mould again about the hillocks.

After danger of burning is past, cherish the heat as much as possible, by laying long dry litter around the sides of the bed, to defend it from chilling wet and cold piercing winds.

When the heat begins to decline considerably, be sure to revive it as soon as possible, by adding a substantial lining of hot dung, to the sides of the bed at different times, using the same precaution of earthing the top, &c. to prevent the steam of the linings entering under the bottom, or at any part of the frame; for the rancid steam coming directly from the dung would destroy the plants.

When the fibres of the plants begin to advance through the hills of earth, let some fresh mould be layed in the frame at different times to warm, and by degrees add each parcel around the hills, till the whole bed is gradually molded nearly as high as the top of them; but rather let the top of each hill be about an inch higher, that the main stem and principal roots may be preserved moderately dry, otherwise, being watered, would soak to these principal parts, and cause them to rot, as being very impatient of copious moisture from watering, &c. therefore, according as the mould is occasionally added, observe the afore-mentioned precaution: also to press it down close, that by lying compact it may retain a due moisture in itself the longer, so as the plants will require to be but seldom watered.

As the runners of the plants advance, dispose them with regularity, and when they are three joints long, if no young fruit appears, it is proper to perform a second stopping, by taking off the end of the extreme joint, to promote a more speedy supply of other lateral runners, which, together with others naturally arising from them, will sufficiently spread the bed with vine; and it is from these lateral shoots we may generally expect soon to see plenty of young fruit.

At the first training the vines, as above, if some dry and clean reeds are thinly spread upon the surface of the bed for the vines to run upon, it will preserve all the runners and young

fruit from the damp of the earth, as well as prevent the earth and upper fibres of the roots from being dried too fast by the sun; some, for the above purposes, cover the bed all over closely with plane tiles; but this I should think rather excludes the necessary benefit of the sun and air, too much from the earth and roots of the plants.

When the young fruit begins to appear, it is of much importance to support a due temperature of heat in the beds, by occasional linings, &c. do not omit this, because the whole success of having the plants set, a regular and a plentiful crop of fruit depends on a good bottom heat, both to warm the earth sufficiently about the fibres, as well as the internal air of the frame; for these fruit being so extremely tender whilst young, that without a proper heat they set very sparing and stragglingly, generally assuming a slow, stunted, and irregular habit of growth; maintain, therefore, the necessary degree of heat, and the fruit will set freely, and swell fast in magnitude.

At this period also of the first appearance of the fruit, I should advise to forbear watering, if possible, till the fruit is set as large as good walnuts, as we above observed; observing, that if the plants are growing in a tolerable depth of soil of a loamy nature, they will shift very well without any during that period, or longer, unless the earth should be very dry indeed, and then let them have it but sparingly; for if any considerable portion of water is given when the fruit is setting, the vine will acquire a glut of sap, and continue shooting with great luxuriance, which is contrary to the nature of these young fruit, as, being of such a delicate temperature in their infant state, and even during their minor growth, that the exuberant quantity of sap in the branches causes them to turn yellow, and drop off soon after they have blossomed, and sometimes after they have set as large as an egg, and more especially if there is not a due degree of warmth in the beds.

According as the young fruit appears, you will observe it accompanied by abundance of male blossoms; these must not be picked off, as too often practised, their *puleis antherarum*, or powder of their antheræ, being absolutely necessary for fecundating the female flowers,

flowers, and fertilizing the young fruit; it is therefore of importance not only to retain these flowers; but also, to assist nature, it is proper, in the early crops, to perform the operation of setting, i. e. of applying their antheræ to the stigmata of the female blossoms, using for this purpose such male flowers whose antheræ are duly ripened, and well furnished with *farina*, which you may readily know by previously applying the antheræ gently to the thumb nail, to which some of the *pollen*, if ripened, will adhere; so using one or two males to each female blossom, and it will be found to assist greatly in setting the early fruit.

Air, at this time of blossoming, will also be particularly beneficial in promoting the free setting of the fruit; do not omit therefore to admit it every mild day, in manner before mentioned.

After setting the fruit, observe, that as they are most commonly produced on the lateral runners, issuing from the sides of the main vine, and that exuberancy of sap retards their setting, we would advise, if the plants are rather luxuriant, that, to restrain the sap from flowing too abundantly into the setting fruit, instead of stopping the end of the runner, as often done, rather turn it carefully curve-ways, so that the end may incline towards the main stem, whereby the sap will be directed from the bearing runners, and its course continued principally into the more luxuriant branches; and the sooner this is done the better, which, after the fruit is set, and a little advanced in growth, must be turned again into their former position. Many persons prune off the ends of the bearing runners a joint or two beyond the fruit, in order that the whole nourishment of that branch should be directed to it, to make it more certainly stand; but this has often the contrary effect, since stopping or shortening a branch promotes its drawing a greater quantity of sap, which, as we have above observed, is contrary to setting these fruit; therefore, those branches on which the setting fruit are immediately situated, should not be stopped until the fruit is fairly set, and full as big as a large walnut.

Neither is it proper to stop many of the runners, which would occasion their throwing out numerous shoots, and cause a great confusion of vine.

As the fruit sets, and has attained nearly the size just mentioned, the branches on which they grow, if they were turned towards the main stem, as above advised, should be now reconducted into their former directions, that the sap may now find a freer passage to nourish the fruit.

Likewise, as the fruit sets, lay a piece of clean dry tile under each, to preserve it the better from the moisture of the earth.

The quantity of fruit to be expected to set and arrive to perfection, is from about two or three, to eight or ten upon each plant; but this is according to the sorts; for the Canteloupe Melon sometimes does not set above two or three on a plant; on the other hand, the Romana will sometimes set and ripen eight or ten, and sometimes many more fruit will set than the plants are capable of nourishing; but, when this is the case, they should be thinned; and even of the smaller kinds leave only about six or eight of the most promising fruit upon each plant, and not more than five or six of the larger kinds, and never leave more than one fruit upon the same runner, and that which is nearest the main vine is generally the most eligible to leave, though it is best to fix upon that of the forwardest and handsomest growth.

After a tolerable crop of fruit is set, and they advanced in magnitude, if the earth of the bed is dry, take the first opportunity of a mild day to give a good watering, especially if the bed is kept to a proper heat, which, according to the nature of the earth, and its depth on the beds, may be afterwards either wholly discontinued, or less or more repeated, as you shall see occasion by the temperature of moistness, or dryness of the earth; observing, in giving water, let it be rather moist towards the sides of the bed, so as still to preserve the main stem and principal root always moderately dry.

Continue also to admit air at all opportunities every day when the weather is fine, which is also very beneficial to the free-growth of the young swelling fruit.

Still, likewise, continue to support a due temperature of heat in the bed by occasional linings with the usual care, even till May; for, by maintaining a bottom heat, the fruit will swell freely,

freely, continue a regular growth, and be in a little time surprisngly forwarded in magnitude. In applying the last lining in April, or beginning or middle of May, it is proper to earth it at top equal in depth to that of the bed, and by raising the frame the fibres of the plants will strike into the mould, and receive very great benefit, as will appear from the healthful appearance of the plants, and free growth of the fruit; but observe, this part should be defended from great rains with mats, that the extreme fibres may not receive and convey too much moisture to the vines and fruit, otherwise it would be more advisable to confine the fibres wholly within the frame.

Shading the plants occasionally from the sun may be necessary in very hot days, when the sun is so powerful as to endanger scorching their leaves, &c. observing the same rules as for the early cucumbers.

As the leaves of the plants grow large, and press against the glasses, continue to raise the frame at bottom three inches; and as, in doing this, the earth next the frame will be disturbed, directly therefore make good all inequalities; and, if the leaves are considerably crowded, it is proper to thin them a little in proportion, so as that the young fruit may receive the necessary benefit of the sun and air.

If, after a due quantity of fruit is fairly set, and advancing in growth, the vine is greatly crowded, it is proper to regulate them, by cutting off close all the small runners, proceeding from the principal fruit-branches, and others, and any luxuriant shoots that support neither bearing runners nor fruit, and such other vine as may appear to be superfluous or unnecessary, cutting them off quite close, which will greatly encourage the free growth, and promote the size of the melons.

In May and June, as the vines of the plants will be advanced to the sides of the frame, if you have a full crop of fruit fairly set, they may be pruned so as to confine them within due compass; or, if you would have as many fruit as possible to succeed each other, they may be suffered to run out from under the frame upon the top of the lining, to produce some late fruit to succeed those already set within the frame, raising the frame high enough at bot-

tom for that purpose towards the middle of June; observing, when the vines are thus trained out, to cover them every night, and all very wet weather, with mats; for the glasses must also still be continued on the frames till the weather is become quite settled and warm towards the end of this, or in next month. (July) and then only taken off a few hours in the warmest time of the day, and always put on at night and in all wet weather.

When the fruit is nearly full grown, no water, or at least very little, should be given; for moisture will considerably retard its ripening, as well as rob it of the richness of its flavour. At this period of growth let each fruit be placed upon a brick, or some flat tiles, placed one upon another, to raise it a little above the leaves, to receive the greater benefit of the sun and air, whereby its flavour and relish will be considerably improved, being careful to turn it every three days, that every part may equally enjoy the benefit of the sun's influence; observing also, at this time, to admit a large portion of fresh air every mild day, by tilting the lights several inches behind, or in front, in very hot weather, which will also contribute very much to the rich flavour of the ripening fruit.

From the setting of the fruit to its maturity, it takes commonly about six or seven weeks, and sometimes more.

The maturity of the fruit is known sometimes by its cracking at the base, as if it would start or recede from the stalk; sometimes by its inclining to a yellow colour; frequently by imparting a fragrant odour; and when the top of the fruit is soft, it is always a sure indication of ripeness; therefore, observing these appearances of maturity, let the fruit be cut at the proper time; for if suffered to remain on the vine a day or two longer, it will lose much of its flavour. Let it be cut in a morning before the sun shines hot to evaporate its rich juices, cutting each fruit with all its stalk, and lay it in a dry but cool airy place till it is wanted for table.

In the latter end of June, and in July, if the weather is dry and warm, the plants may be gradually inured to full air, by shoving the glasses off a few hours in fine dry days; but let them not have much rain, lest it rot the

main stem of the plants, and it would also debase the flavour of the fruit; therefore retain the glasses ready at the back of the frames, to draw on every night, and in all very wet and boisterous weather.

The culture of melons under hand or bell-glasses is effected by sowing the seed in March or April, in a nursery hot-bed, under frames and lights, and when the plants are about a month old transplant them into ridges or hot-beds, under the above glasses, to remain for fruiting; but, in default of frames, the plants might even be raised entirely under hand or bell-glasses, placed on a hot-bed, sowing them in April, and transplant them into a fresh hot-bed in May, under the same sorts of glasses, or oiled paper lights; they will sometimes come in for a tolerable crop in August and September; however, the most eligible practice is, where possible, to sow and forward the plants in a hot-bed, under frames, pricking the young plants in pots, so continuing them in the frame hot-bed till large enough to ridge out, then transplant them with balls into the fruiting hot-bed.

The most proper period of time for sowing the above crops is, the third and fourth week in March; but, if possible, for the main crops, never be later than the first week in April.

And the time for ridging out the plants under these glasses, is from about the eighteenth or twentieth of April until about the middle of May.

For, it must be remembered, that these hand-glass crops must never be raised nor ridged out before the above-mentioned times, otherwise they will advance too much in growth, and fill the glasses before the nature of the season admitted of their being trained out, unless sheltered by paper frames, as they must not be confined within the small compass of these glasses, longer than the beginning or middle of June, when the weather becomes settled and warm; nor ought the principal crops to be sowed nor ridged out later than the times above specified, because they would not be forward enough to ripen their fruit in perfection before the approach of cold weather in autumn.

The seed may be sown, and the plants raised large enough for ridging out, either in the hot-beds of forward

melons or cucumbers now at work under frames, or in a small hot-bed made on purpose for a one-light box, &c. earthed a few inches deep, sowing the seed either in pots half an inch deep, or in the earth of the bed, drilling it in that depth, so managing the same as for the seedling melons and cucumbers for the frames; prick the plants also in pots, when a few days old, two in each pot, as in the frame crops, giving them nearly the same culture; and having expanded their two first rough leaves, stop them at the first joint, as there directed; and when a month or five weeks old they will begin to shoot runners, and should then be ridged out into the fruiting hot-bed.

Therefore you must forecast to prepare the dung, and make the ridges or hot-beds in proper time, to be ready to receive the plants at the above period of growth.

The dimensions of the fruiting hot-bed should be four feet and half wide, and, if made in April, two feet and half, or a yard high; and even if made early in May, two feet and half depth of dung will be requisite; nor should it be less than two feet high, made in any time of that month; and the length in proportion to the number of glasses you intend working, allowing them at a yard and half distance from centre to centre, in one row along the top of the bed; observing, that if the plants are ready for ridging out in April, or beginning of May, the bed should be made entirely above ground, for the opportunity of lining the sides when the heat declines; or, at this season, if the ground be tolerably dry, so as there will not be much danger of standing, the bed may be made in a trench, for the advantage of having it retain its heat the longer, making the trench four feet and half wide, and eighteen or twenty inches deep; but observing, that in three weeks after the bed is made, the trench must be widened a foot and half on each side, and to the full depth, to admit of a lining of dung that width and depth to each side of the bed; for hot-beds made for these plants at either of the above-mentioned times, either on level ground or in a trench, will receive considerable benefit by having a lining of hot dung added to each side in three or four weeks after making, which will not only

only throw in a fresh heat, but, by being earthed at top, give an additional width for the roots and vines of the plants to extend; observe likewise, that if more than one range of hot-beds are intended, make them one before another in a parallel direction, allowing a space of four or five feet between, which, if afterwards entirely filled up as high as the ridge with hot dung and earth, will be of great advantage to the plants.

The ridge or ridges being made, then, according to the rules and precautions exhibited in the hand-glass crop of cucumbers, prepare to earth it with the proper compost for the reception of the plants, first marking out with sticks the places for the glasses, in a row along the top of the bed, at a yard and half distance; and then, on each place where the glasses are to stand, lay about a wheel-barrow full of mould in a hill fifteen inches high at least, and wide enough for a hand-glass, for this depth of earth is as necessary here as in the frame crops, covering the other parts of the bed between the hills only three inches deep at present, that the burning steam and heat may have due vent, yet to prevent it from evaporating too suddenly; it is afterwards to be gradually earthed almost as high as the top of each hillock: as soon as the bed is thus earthed set on the glasses, one upon each hill of earth, covering the whole with mats at night, to draw up the heat sooner, and in a day or two the earth will be warm enough to receive the plants.

When the earth, therefore, under the glasses is properly warmed by the dung, then, having previously watered the pots of plants the day before, that the earth may adhere in a ball about their roots, proceed to plant one pot of two plants under each glass, removing the plants out of the pots with a ball, in the manner directed in the early cucumber hot-beds; and, levelling the top of the hillocks broad enough for each glass to stand, make a wide hole in the middle, and plant the ball of plants, giving directly a moderate watering, and put on the glasses, which must remain constantly over the plants, and be covered every night for a month or two, & in all bad weather, with mats.

They being now ridged out, observe, if their removal causes them to flag

their leaves at the approach of the sun, it is necessary to indulge them with a moderate shade the first three or four days, when sunny, or till they stand the sun fully without flagging.

Fresh air must also be occasionally admitted in the warmest time of every fine day, by tilting the warm side of the glasses an inch, or a little more or less, according to the heat of the bed & temperature of the weather, having particular attention to shut them down close in due time in the afternoon, or as soon as the weather changes cold, keeping them close on nights; also in all unfavourable weather in the day time, unless there is a very great steam, when, during its continuance, the glasses must not be kept too close; and, if the weather is then cold or windy, the place where they are tilted may be defended with a mat; observing, as the warm weather advances, and the plants make progress in growth, a larger portion of fresh air must be admitted, to harden the runners gradually, in order to be trained out from under the glasses in June.

Cover the glasses and the whole surface of the bed every night with large mats, which must constantly be practised until the beginning or middle of June, or longer, if cold weather renders it necessary:

Likewise, in all heavy or cold rains, at any time, night or day, from the time of ridging out to the maturity of the fruit, particular care should be taken to defend the whole ridge, by a good covering of mats, for much wet would ruin the crop.

Waterings in warm weather once a week or fortnight, in moderate quantities, may be necessary, according to the rules mentioned in the frame crops.

In a week or fortnight after ridging out, when the heat of the bed is become moderate, begin to earth the whole gradually almost as high as the top of the hills on which the plants stand, pressing it down from time to time, that it may retain its moisture the longer, so as the plants may not require much water, raising the whole nearly equal with the summits of the hillocks, preserving the middle of each rather highest, to prevent moisture from soaking to the main stem, &c. as formerly cautioned.

Lining the ridges will be necessary

in about three weeks after they are made; this ought not to be omitted, especially to those made in April, or early in May; and having for this purpose a quantity of well prepared hot dung, add to each side of the bed a foot and half width at least, and full as high as the dung of the bed, and directly earth it at top to the thickness of that on the ridge; and thus, by the addition of the linings, that besides the advantage of renewing the heat, it widens the bed to about seven feet, and forms a fine scope for the fibres and vines of the plants; observing, if there are two or more ridges ranging parallel, that if the whole space between was afterwards gradually filled up with hot dung and mould, it would prove still more beneficial to the plants.

Having directed stopping the plants at the first joint to procure lateral runners, if these laterals are also stoppt at the third joint they will more speedily furnish a farther supply for bearing, as observed of those in the frames.

About the end of May, or beginning of June, the first ridged-out plants will have nearly filled the glasses with their runners, at which time do not omit indulging them with a large portion of free air at all opportunities, by tilting the glasses every mild day two or three inches high, or in proportion to the temperament of the weather, so as to strengthen the runners, and harden them by degrees to the full air, which, in June, when so much advanced in growth that they can be no longer contained within the glasses, must be trained out; the glasses must then be raised three inches on every side, on props, as for the cucumbers, and the runners trained out with regularity; but if some dry reeds are previously spread upon the surface of the bed, for the vine to run upon, it will preserve them and the young fruit from the damp of the earth; observing, the glasses are to remain constantly over each hole of plants, to protect the main stem and principal roots the better from wet and other inclement weather, but are now to remain day and night supported on props, as above: continue also the nightly covering of mats for the first fortnight, at least, after the plants are trained from under the glasses, to protect the tender vines till inured to the full air.

Observe, likewise, that as melons are rather impatient of copious moisture, it is advisable, after being thus trained out, to protect them with great care from excessive rains and cold, at all times, day or night, by proper covering; the most effectual means for this purpose is, to place oiled paper frames over the ridges, as soon as the vines are trained out; however, in default of these conveniencies, we would advise to arch the bed over with hoops or rods, &c. just to the height of the hand-glasses; so having good thick mats or canvas cloths always ready to draw over the arches, in time of heavy or cold rains, and blustering winds, will be found of very considerable advantage, since a few hours violent rain often injure the plants so greatly, that they never after recover, so as to produce handsome fruit, nor bring any tolerable crop to perfection.

But when the beds are covered with paper frames, these remaining constantly on the beds, effectually defend them at all times, and admit a due portion of light, &c. to the plants.

If, however, you use only mats or canvas, to cover occasionally in cold nights and bad weather, let these be always taken wholly off betimes every fine morning, or as soon in the day as the weather is favourable.

In June and July the plants will spread their runners all over the bed, and will shew fruit abundantly, at which period of shewing fruit very little water should be given, especially if there is a proper depth of earth on the beds, but in very hot & dry weather, after the first tolerable shew of fruit is fairly set, and begin to advance in magnitude, a moderate watering once a week, or ten or twelve days, whilst the fruit are taking their growth, will encourage them, promote their size, and increase the substance of their flesh, being careful to apply the water mostly towards the sides of the bed to the extreme fibres, so as to preserve the main stem and principal roots from receiving too much wet; and be sure never once to over-water the beds, which might prove of very bad consequence; but for the greater convenience of watering at this period, a deep drill may be drawn around the outsides of the bed, and the necessary supply of water poured into these drills, whereby the fibres will

will receive its benefit without wetting the leaves, branches, or fruit; but when the fruit is nearly full grown, give as little water as possible.

With respect to useless and superfluous or unnecessary branches or runners, if there be any, it is eligible culture to clear them off occasionally, to prevent confusion of vine, and for the prosperity of the fruit, executing it according to the rules laid down for those of the frame plants.

Observe also the same of superfluous fruit, leaving only such a due quantity of the most promising and best-situated in each hole, as the plants can be expected to bring to perfection.

During the growth of the fruit, observe, that if the ridges are not covered with oiled paper, but only with the hand-glasses, &c. and the weather should prove rather unfavourable or wetish, and that many of the fruit are situated on the advanced vine without side of the glasses, it is advisable either to move the fruit gently under their own respective glasses; or rather, where there are any spare glasses, bring these and place over the fruit, contriving each glass to cover as many as may be convenient; for it is necessary thus to protect these fruit from injury of weather, supporting each glass two or three inches high on props; and this shelter of the glasses will greatly improve the size and flavour of the fruit: but in unfavourable seasons oiled paper frames are the most effectual, because, being placed all over the ridge, they defend plants also, as well as the fruit, both from cold and wet; or, in cold wet seasons, if there are any spare garden-frames and lights, these might be placed over the ridges, as soon as they are at liberty in June, July, or August, so to defend the plants and fruit the remainder of the summer, by shoving on the lights in all unfavourable weather, day or night.

When the fruit is increased somewhat considerably in growth, it is proper to turn them every three or four days, that they may swell equally, and each side have an equal benefit of the sun.

Their ripening is determinable by the appearance of maturity, mentioned in the early crop, observing also the same rules as there advised in cutting them for table.

Melons are also fruited in great perfection under oiled paper frames, by placing them over those ridges of plants which are ridged out in April and May, for they will not succeed in earlier crops, but for the crops just mentioned, they are considerably the most eligible shelters to place over the ridges in the middle or latter end of May, or beginning of June, after the plants have filled the hand-glasses, these being then previously removed entirely away, and the paper frames placed upon the bed; for these frames being made of due width and proper length to cover the whole ridge, and the paper being well oiled with linseed-oil, to render it proof against wet, and more pellucid or transparent to admit the rays of light and heat in a proper degree, that they are continued constantly upon the ridges, whereby the plants are at all times protected from all inclement weather, either wet, wind, cold, or heat, as, although the paper admits the rays of light, &c. yet it, at the same time, affords the most agreeable shade from the scorching sun.

These frames are formed either like the roof of a house, or archways, like the tilt of a waggon, four or five feet wide, ten long, and a yard high, framed of thin slips of wood and lath, or broad hoops, &c. but those made ridge-fashion with two sloping sides, in the manner of the ridge of a house, are rather the most eligible form, because on one side may be made two pannels, to open with hinges towards each end, and each pannel about two feet wide, being convenient for giving air, and other necessary work: in either of the above forms the frames are constructed in an open manner, having the ribs or spars, a foot or fifteen inches asunder, or at such distances as to admit of passing the sheets of paper commodiously; but previous to pasting on the paper, draw lines of pack-thread, &c. across corner-ways from rail to rail of the frame, drawing other lines intersecting or crossing the first, these being necessary for supporting the paper the more effectually against the power of wet and wind: then having some strong printing paper, let it be a little damped, that it may not sink in hollows after it is fixed on the frame; therefore, as soon as it is damped, paste

It on the frame; two large sheets will generally range from bottom to top, passing it securely to the rafters and rails, and so as the middle of each sheet rests upon the interfections of the pack-thread lines; and when the paper and passing is thoroughly dry, brush the outside all over lightly with boiled-linseed-oil, then suffer the frame to stand in a dry shed till the whole is perfectly well dried before it is used.

But for want of regular made frames, a quantity of hoops or rods might be placed across the ridges of plants archways, sticking both ends into the earth, about one foot asunder, & two high, so drawing lines of pack-thread along from hoop to hoop, both to steady the arches, and help to support the paper; then paste a quantity of strong paper in large pieces about three or four sheets in width, and in length proportionable to that of the ridges they are to cover; then oil them with linseed-oil, and, when thoroughly dry, spread them over the hoop-arches, and secure them by lines drawn from end to end; and that for the admission of air, and doing other necessary work, one side of the paper is readily turned up at bottom as far as convenient.

In respect to the mode of using either of these paper shelters, the plants are previously to be raised in hot-beds, under frames and lights, exactly at the time and manner as directed for the hand-glass crops, and to be ridged out also at the same time and manner there mentioned; observing, that, in default of hand-glasses, these paper frames may be used as soon as the plants are ridged out; but in this case the ridging out should not be performed till May: but the most successful way is, when there are hand-glasses sufficient, to place these glasses over the plants at first ridging out, as directed in the hand-glass culture, managing them in the same way in every respect, till the plants have filled the glasses with their runners; then remove the glasses away, and place over the paper frames.

When these shelters are placed over the plants, free air must be admitted in proportion to the temperature of the season, either by opening the panels less or more, according to the warmth of each day, or by tilting one side of the frames at bottom, &c. for the article of fresh air must not be o-

mitted at all opportunities, particularly when the plants shew fruit, the air being not only necessary to strengthen the plants, but also to assist in the impregnation of the fruit, for the reasons explained in the early cucumber work; and towards the end of June, when the season is warm, the frames may be raised at bottom about four inches.

It is also necessary to defend the plants over the above shelters with mats every night till towards the middle of June; likewise, occasionally, in all hard rains, day or night.

These paper shelters never last but one season, that is, the paper; but as to the frames, they, with care, will continue useful several years, so must be fresh papered every spring, in proper time to be ready to place over the beds.

Melon plants are generally between three and four months from their first appearance till they produce ripe fruit, and they all the time require the constant aid of artificial heat, which, though they are fruited in great perfection in that of dung, i. e. dung hot-beds, yet those of tanner's bark being considerably of more durable and regular heat, the plants by that aid may still be fruited to greater advantage, and with less trouble, because, if made entirely of new tan, no lining, or but very little, will be necessary, nor is there such danger to be apprehended from steaming or violent heat, as in dung hot-beds; but it must be remembered, that the purchase of the tan renders these kind of hot-beds more expensive than dung, though, if both these materials are obliged to be purchased, and the tan can be obtained within a moderate distance, there is but an inconsiderable difference in the expense.

But, in case of scarcity of new tan for the above purpose, the waste or cast-off bark of the stoves, mixed with a quantity of new, might be used; provided, however, the old tan is not become quite earthy; so mixing one half old to one of new, which will form a moderately strong and durable heat, and will answer for beds made not earlier than the middle of February, or beginning of March.

Or, for the latter crops, beds might be formed entirely of cast-off bark, provided, as above observed, it is not become

become very earthy, and its fermenting property not quite exhausted; which, if not, when fresh worked up, and formed again into a bed, will renew its heat, though in a moderate degree, therefore should not be used for beds earlier than March or April, and which, if made in a pit formed of post and planking; so as to admit of a substantial lining of hot dung to each side in six weeks or two months after making, would be an additional advantage to the plants.

Observe, that either the above-mentioned bark-beds for the culture of melons, must be made in some kind of pit, or frame, to confine the bark, which otherwise could not be formed into a bed, or, in default of such a pit, one might be formed of post and planking, of width and length for one or more large three-light frames, and three feet and a half deep, to contain that substance of bark, and may either be sunk half way in the ground, or not so much, according as the soil is dry or wet; but it would be most convenient to have it not sunk more than a foot, for the advantage of adding a lining of hot dung to the sides, if there should be occasion; I would therefore observe, that a planked pit, for the culture of melons, may be rather preferable to brick or stone, because if you shall find it necessary to line the beds, by applying hot dung against the outside of the planking, its heat will readily penetrate sufficiently to recruit the declining heat of the bed; for as the melons are to be planted in the full bed, and not in pots, as practised to pine-apple plants, there is no stirring up the bark to revive the heat, as in stoves, and a lining may probably be necessary to those beds, where cast-off bark is used, or perhaps sometimes one lining to those beds made of new tan, may be of advantage, just when the fruit is setting and taking their first growth; on these considerations, contrive the pit so as to admit of lining the sides almost or quite to the bottom.

The time of year to begin the culture of melons in these sort of hot-beds, is the same as mentioned in dung hot-beds, and the plants should be raised in a nursery-bed as there directed; and when of the proper age and size, as there observed, transplant them into the bark-beds to remain to fruit.

These fruiting-beds should be made a fortnight or three weeks before-hand, to acquire a proper heat in due time for the reception of the plants from the nursery hot-bed, at their proper period of growth. Let the beds be made the full width and length of the pit allotted for them, and three feet at least deep; but if cast-off bark is used, three and a half depth in bark will be requisite. As soon as made, cover the bed with the proper frames and glasses, to defend it from rains; and in about a fortnight it will be arrived to a proper temperature of heat; then earth it at top, as directed for the dung-beds, and the earth being warm, set two plants with their ball of earth entire, just under the middle of each light, give a little water, and manage them according to the former directions.

But if the bed is to be made mostly of cast-off bark, as it will be somewhat of a mouldering texture, and of but moderate heat, instead of earthing it as above observed, you may try the success of planting intirely in the bark, without any earth at all. Let the bed be of the above-mentioned dimensions, and covered with the frames and lights, and in about three weeks it will be warm enough either to receive seed, or plants, first making holes in the middle of the bed, one immediately under the middle of each light, six or eight inches deep, and twelve or fifteen broad, fill them with rotten or finely pounded bark, forming each a little hollow, basin-like, in which either sow seed, and when the plants are a week or two old, thin them to two of the best in each hole, and there let them remain to fruit: or, to make the most of the bed, put in plants raised to a proper age, as in the dung hot-bed culture.

The plants being transplanted into either of the above bark hot-beds, observe the lights are to be kept constantly on, being careful to give the plants a proper share of warm air at all opportunities, as the weather permits, according to the former rules.

It must be remarked, that the plants will not require much water in these hot-beds, as bark continues to support a fine moist heat, of a very agreeable nature to the growth of most sorts of plants, so that the melons will be found to succeed with a very moderate supply

of water, and the less the better, both for the continuance of the heat of the beds, as well as for the advantage of plants and fruit.

Should you find the heat of the beds considerably declined when the fruit is setting, or taking its first growth, a good lining of hot dung against the out-sides of the pit will be very beneficial.

As to saving melon seed, we need only farther observe here, that it should be saved only from the very finest fruit of the respective varieties, & such as have a firm and highly flavoured flesh; this should be particularly observed when the fruit is served at table, and the right seed properly reserved in its own pulp, and sent to the gardener; which, after laying in the pulp a few days, may be washed out, and all the heavy or good seed which sink in the water are to be preserved, dried, and put up for saving.

It will retain its germinative property ten or twelve years, but when from about three to five years old, is in its best perfection for use.

Water MELON. See CITRUL.

MELON Thistle, [Cactus.] This plant is of a very singular structure, being shaped like a melon, having neither visible stem, branches, nor leaves, but appears like a large, roundish, fleshy mass, or lump, sitting close to the earth, and throwing down roots to a considerable depth. There are two sorts, a larger and a smaller; they are both propagated by seed, but require the assistance of a stove.

MELLETT. A dry scab on a horses foot.

MERCURY, [Mercurialis.] Male and female French mercury; the leaves. These stand among the five emollient herbs; and in this intention are sometimes made use of in glysters. A syrup made from the leaves, given in the dose of two ounces, is said to prove a mild and useful laxative.

There is another sort of mercury growing in woods and hedges, which by some botanic writers, as having the same virtues with the foregoing, and as more palatable, has been lately found possessed of noxious qualities. This may be distinguished from by its being a perennial plant, larger, having its leaves rough, and the stalk not at all branched. The officinal sort is named

by Linnæus *mercurialis caule brachiato, foliis glabris*; the poisonous *mercurialis caule simplicissimo, foliis scabris*; it is commonly called dogs mercury.

English MERCURY, [Banus Henricus.]

This is met with by road sides, and in uncultivated places. It is ranked among the five emollient herbs, but rarely made use of in practice. The leaves are employed by the common people for healing flesh wounds, cleansing old ulcers, and other like purposes.

Dogs MERCURY. See MERCURY.

MÉT. A strike or bushel.

METHEGLIN. A liquor made with honey and water, or honey and beer fermented together.

MEZERON. See *Spurge LAUREL.*

MEU. See *SIGNAL.*

METER YARD. A measuring staff.

MICE. Field mice are as numerous as those of the house, and the farmer often finds them as troublesome, and sometimes much more so. There are several species of them; but they are all equally his enemies: all feeding upon his seed-corn and pulse in the same manner: and are all to be destroyed by the same means.

Drier lands are more subject to this kind of vermin than those which lie wet; and of all the kinds of sowing, that under furrow most exposes the seed to them, *called sowing below wide*

In this case, as the furrows will fall somewhat hollow, they afford a shelter to the mice at the time of their committing all their havoc. *land*

The farmer seems to contrive for their feasting and safety together in this method; for the corn or other seed lies perfectly exposed to them, and they are not exposed to his eye while they are feeding upon it.

In these lands we have with great concern often traced the path of those devourers, and seen all eaten up, or carried away to some little distance: for under the covert of this manner of tillage they will make their nests and granaries as it were in different places; and the seed shall be found stored up in one of these, that should have covered a great space of ground with its shoot.

The husbandman will by this see a great disadvantage attending that kind of tillage; and he will know in what fields he is most to fear these enemies.

Though

Thought his manner of sowing gives the mice an advantage, the other way does not sufficiently secure the corn from them. When it is sown in the common way and harrowed in, it is better covered; and there is a great deal more trouble for them to get at it: but they are very industrious, and in this case will dig after it, and tear up and destroy a great deal.

When it is sown under furrow, they begin with it as soon as it is in the ground; but when it is harrowed in, they wait for its first sprout. This gives the farmer an advantage, because he knows exactly when he is to expect them; and it is a great article of safety to know when to guard against the danger.

The careful husbandman is not in this case to wait till he sees the shoot of his seed; for the mice have very quick eyes, and they will perceive it a day or two before he does: he is therefore to look to his ground a day or two before the time of its being seen covered with the young shoot; and then, as he knows the devourers will be about, he is to prepare for their destruction.

Traps are a very improper method of getting rid of these creatures. There is no way well worth his consideration but poison; and happily for him there are drugs which will answer this purpose of poison to these creatures, which are not literally and strictly poison to ourselves. These he is to use, and they will sufficiently answer his purpose. It would be a disagreeable thing to be meddling with ratbane; but there is no harm in handling the ingredients he has to use.

In the first place let him consider what fields from their soil are most likely to harbour mice, and in what places he has known them most mischievous. Let him never sow these under furrow, for that takes from him all opportunity of attacking his enemies: they work under ground as it were, and will never come into the way of his poison.

When these fields have been sown otherwise, and harrowed over, the mice must come upon the surface and dig down for the corn, and they will then certainly meet with anything he lays on the ground for them.

Let him mix up a peck of barley-meal, a pound of powder of white

hellebore root, and four ounces of powder of staves-acre; and when these are all mixed together by sifting through a coarse hair sieve, add half a pound of honey, and as much milk as will work the whole into a paste.

Let this be broke into pieces, and scatter'd over the field at the time when the mice are known to be coming. They will eat it greedily, and it is certain death to them. There is nothing in any of the ingredients disagreeable to the taste when thus mixed; and every morsel of it will be devoured. The mice will be kept from digging after the corn; and at the same time killed by the ingredients.

This is the method to be used just at the time of danger; but the farmer who has a field-pestered with these vermin, will do well to be thinking at other times also of destroying them.

They live at a small depth under ground, and there breed in abundance. The passage into their nest is by a little round hole, and these are easily seen in dry weather.

On these occasions the farmer should go his rounds with a quantity of the paste before directed: and wherever he sees a hole throw in a piece. A little trouble of this kind taken from time to time in the heat of summer, when the holes are most conspicuous, would utterly root them out.

MIDDING. A dunghill.

MILFOIL, [*Milfolium.*] Milfoil or yarrow. This grows plentifully about the sides of fields, and on dry commons, flowering greatest part of the summer. The leaves have a rough bitterish taste, and a faint aromatic smell. Their virtues are those of a very mild astringent, and as such they stand recommended in hæmorrhages both internal and external, diarrhœas, debility and laxity of the fibres; and likewise in spasmodic hysterical affections. In these cases, some of the Germans have a very high opinion of this herb, particularly Stahl, who esteems it a very effectual astringent, and in his language, one of the most certain tonics and sedatives. Its virtues are extracted in greatest perfection by proof spirit: water takes up its astringency and bitterness, but little of its aromatic flavour; tinctures made in rectified spirit contain the latter, with little of the former.

The flowers of milfoil are considerably stronger in aromatic flavour than the leaves; in distillation, they yield a small quantity of essential oil, of an elegant blue colour.

MIL-DEW. Blights and mill dews have been generally taken to be the same thing, which hath begotten much error, and the ways and means used for the prevention and cure have miscarried through the ignorance of the disease. Mill-dew is quite another thing from blasting. Mill-dews being caused, as some say, from the condensation of a fat and moist exhalation in a hot and dry summer from the blossom and vegetables of the earth, and also from the earth itself, which by the coolness and serenity of the air is condensed into a fat glutinous matter, and falls on the earth again, part whereof rests on the leaves of the oak and other trees, whose leaves are smooth, and do not easily admit the moisture into them, as the elm or other rougher leaves do, which mill-dews become the principal food of the bees, being of itself sweet, and easily convertible into honey.

Other parts thereof rest on the ears and stalks of wheat, bespotting the stalks with a different colour from the natural, being of a glutinous substance by the heat of the sun, and so binds up the young tender close ears of the wheat, that it prevents the growth and compleating the imperfect grain therein, which occasioneth it to be very light in harvest, and to yield a poor lean grain, for which reason many reckon the bearded wheat not so subject to it, as the other, the beards defending the ear from it.

Some think mill-dews to proceed from vapours arising from the dung, and so falls upon the corn; because lands new dunged are the most subject to it.

But if, after the mildew falls, a shower succeeds, or the wind blows stiffly, it washeth or shaketh it off, are the only natural remedies against this distemper.

Some advise in the morning, after the mill-dew is fallen, and before the rising of the sun, that two men go at some convenient distance in the furrows, holding a cord stretched streight betwixt them, carrying it so that it may shake off the dew from the tops of the corn, before the heat of the sun has thickened it.

It is also advised to sow wheat in open grounds, where the wind may the better shake off the dew, this being looked upon to be the only inconvenience inclosures are subject unto, but it is evident that the field lands are not exempted from mill-dews, nor smut, where it is more than in inclosed lands.

Some say, that lands that have been subject to mill-dews many years, have been cured by sowing of foot with, or just after, the corn. See BLIGHT.

Mr. Miller takes the true cause of the mill-dew's appearing most upon plants which are exposed to the east, to proceed from a dry temperature in the air when the wind blows from that point, in which case it stops the pores of plants, and prevents their perspiration, whereby their juices are concreted upon the surface of their leaves; and that concretion being of a sweetish nature, insects are incited thereto. Those insects, finding their proper nutriment, deposit their eggs, and multiply so fast as to cover the whole surfaces of plants, and, by corroding their vessels, prevent the motion of the sap. He thinks it very probable, that the excrements of these insects may enter the vessels of plants; and, by mixing with their juices, may spread the infection all over them; for it is observable, that whenever a tree has been greatly infected by this mill-dew, it seldom recovers in two or three years, and many times never is entirely clear from it after. But he by no means allows these insects to be the first cause of this distemper, as some have mistakenly imagined. It is observable, that mill-dews and blights frequently attack only one sort of corn, or fruit, and leave the other species unhurt.

Count Ginanni distinguishes two principal kinds of mill-dew, one of which spots the blades and stems of corn, and dries upon them, without ever producing any powder; but penetrates through their outward covering, and entirely dries them up. This is generally of a pale colour, either reddish, yellowish, purpleish, or blackish, and sometimes a variegated mixture of many colours. The other speedily covers the plant with a moist and thickish substance, which afterwards becomes dry, and turns into a powder, of one or other of the above-mentioned colours, but most commonly reddish.

crab
in the
soil
rips. See.

dish or yellowish. This, says he, always fades, corrodes, and separates the outer skin from the plant. The former extends to every species of corn; but the latter is almost peculiar to wheat in the blade; though it is sometimes seen upon oats and barley. Some may perhaps reckon, as a third species of mildew, a yellowish substance, or powder, sometimes seen under the membrane of the blades of corn, where it raises blisters, makes many little holes and cracks, and corrodes the fibres; and perhaps they may not be wrong in accounting it such.

He is confident that this distemper is the *rubigo* of the Latins. See HONEY-DEW.

MILK. Milk is a fluid separated from the nutritious juice of bodies, called their chyle; deposited by nature in the breasts or udders of female animals, during their pregnancy, and for the nourishment of their young.

After the young is born, it becomes in greater abundance: and it will be prepared and furnished by nature in that plentiful manner, so long as it is sucked by the young, or any other way drawn at times; but when no use is made of it, the supply ceases; and the milk, as the expression is, dries up of itself.

Milk is very much of the nature of what is called chyle, that is, the nutritious juice separated from our food, and intended for the support and nourishment of our bodies. All our foods tend to the formation of chyle, and the great purpose of nature in their digestion is the furnishing of a sufficient supply of it; for on this restoration and preservation of the fabric depend.

Chyle is a thin white juice, consisting of the finest and most nourishing part of our food; and milk is, properly speaking, nothing more than a thicker and richer chyle: when the two are compared together, there is found but little difference between them; therefore we may very reasonably conclude, that milk not only is made of chyle, but that it is made by a very natural and easy procedure; for there seems nothing more to have been done than this, that a quantity of chyle has been brought into the glands of the breasts, and there some of its watery parts have been separated from it; and the remainder becoming richer by that

means, has been left there ready to be drawn by the mouth of the young, or otherwise, in the form of what we call milk.

When milk is viewed with powerful glasses, it does not look an uniform white liquor, as it appears to the naked eye, but is discovered to consist of two different matters; the one white and rich, which is kept separate in round drops, and the other thin and watry: this last is the more large quantity, and the other drops swim in it.

In the same manner when we make butter and cheese, we force a separation of those parts, which we could not see to be distinct and different in the milk, though this common operation shews they were so: the rich part makes the butter and cheese, and the other runs off poor and watery in the butter milk and the whey.

These three parts are, 1. the oily; 2. the curdy; and 3. the watery. The oily are, as we have seen, the buttery parts; the curdy are the cheesy; and the watery are the wheyey.

Nothing but the force of nature in the body of the animal, could work and blend these perfectly into one rich and nourishing fluid, fit for the tender stomach of the young. We find they are so mixed there; and that they continue mixed in that manner for some time, after the milk is out of the body; but when they have once separated, either naturally or by art, we shall never be able to mix them so again. Butter, cheese, and whey, were all contained in the milk, and nature united them in that manner; but all our chymistry will never be able to mix butter, cheese, and whey, into milk again.

Milk differs extremely in various creatures, according to their diet, their construction of body, and the particular structure of those parts in which it is formed.

The first and great end of nature in the production of milk, we have shewn, was for the nourishment of the young; she knows, or to use more proper words, God, whose immediate and regular care in the guidance of the world is what we call nature, knows best the structure of those young and tender bodies he forms; and he has accordingly provided, in the breasts and udders of their dams, a nourishment suited to them,

Thus in all creatures, milk is, as we have shewn, the chyle or nutritive juice of the parent's body, formed into that condition by the separation of its watery parts; but in some creatures; more of those watery parts are separated, and in others fewer, according to the structure of those vessels; and it must be according to what we see of their food, that in some the chyle comes more watry to those glands that separate it, than it does in others: why otherwise should it be, that the milk of the cow should be so rich, and that of the ass so poor, when both eat the grass of the same pasture.

Let not any be surpris'd at the calling asses milk poor in comparison of cows, from an opinion that it must be richer, because of the use physicians make of it to restore decayed constitutions: it is because it is poorer they prefer it, for the stomach in those persons is not able to bear the richer milk of the cow.

According therefore to what we see in nature, it is plain that the different construction of body, and different fabrics of the vessels formed for separating and preparing milk, occasion that liquor to be richer in some and poorer in others. This is all the real difference between the milk of one creature and that of another: having premis'd this, we shall proceed to consider, separately, those several kinds that any way come under the farmer's consideration.

These are principally four; the cows, the asses, the goats, and the sheep: a fifth might be added, for the milk of the mare is used in some places; but the first named kind is the great and principal concern of the farmer, and the support of the dairy.

Nothing can be more rational than the giving such milk as asses, and any other kind that can be borne upon the stomach, as a restorative: for we have shewn already, that milk is only chyle under a particular form; therefore, when the stomach will bear it, it is nourishment ready formed, and fit for immediately mixing with the blood, to answer all the purposes of life.

This is properly a method of restoring nature: it is coming in to her assistance when she is not able to furnish nourishment, by bringing her that of some other animal ready formed, to supply the place.

As to the preference of asses milk above that of the cow, in the relief of human kind, the reason is shewn in nature. Let the milk of our own species be compared with that of a cow, and that of an ass; and the asses milk will be found to resemble it much more than the other.

Cows milk is in general by much the richest of all the kinds we know, and the most profitable: its several products in butter and cheese, being, like its natural condition as milk, preferable to those of all others, not only in quality, but in quantity: two articles which, when they concur, as they do perfectly in this instance, constitute the highest use and value to the owner.

The milk of the cow is supposed to vary according to the colour of the skin; but this is an idle observation. There is an old saying among the farmers, that red cows give the best milk; and another, that black cows bring the best calves: but we can, from fair trial, and repeated experience, assure our readers that there is not in the least truth in either of these maxims: he is to look upon them as old wives tales, and no otherwise. We have seen as much and as good milk from black cows, as ever produced from red; and we may call every butcher to witness, that the value of the calf is not in the least dependent upon the colour of the cow. See Cow.

Milk appears to be a vegetable juice, with little of an animal nature.

New milk mixes uniformly with common water, the mineral chalybeate waters, wines, and malt liquors that are not acid, weak vinous spirits, solutions of sugar, soaps, and neutral salts; but not with oils expressed or distilled. Acids, both mineral and vegetable, coagulate it; as also do fixt and volatile alcalies, and highly rectified spirit of wine: the curd made by acids is resolved again by alkaline liquors, as that made by alcalies likewise is by acids. Neutral salts, nitre in particular, preserve it from coagulating spontaneously; and likewise render it less easily coagulable by acids.

The human milk is the sweetest of these liquors, and that of asses next to it: this last is the most dilute of them all: on suffering it to coagulate spontaneously, the curd scarce amounted to two drams from twelve ounces, whilst that

that of cows milk was five times as much: the coagulum of asses milk, even when made by acids, forms only into fine light flakes which swim in the serum; that of goats milk concretes into more compact masses which sink.

Upon evaporating twelve ounces of	There remained of dry matter drams	From which water extracted a sweet saline substance, amounting, when exsiccated, to drams
Cows milk	13	1 $\frac{1}{2}$
Goats milk	12 $\frac{1}{2}$	1 $\frac{1}{2}$
Human milk	8	6
Asses milk	8	6

The saline substance obtained from asses milk was white, and sweet as sugar; those of the others brown or yellow; and considerably less sweet; that of cows milk, the least sweet of all. It appears therefore, that asses milk contains more serum, and much more of a saccharine saline matter, than those of cows and goats; and that the two latter abound most with unctuous gross matter: hence these are found to be most nutritious, whilst the first proves most effectual as an aperient and detergent.

The inspissated residuum of milk, digested with about as much water as was wasted in the evaporation, yields an elegant kind of whey, more agreeable in taste, and which keeps better, than that made in the common manner. This liquor promotes the natural secretions in general, and if its use is duly continued, does good service in scorbutic, and other disorders, proceeding from thick phlegm and obstructions of the viscera.

There are considerable differences in the milk of the same animal, according to its different aliment. Dioscorides relates, that the milk of goats, who fed on the scammony plant and sparges, proved cathartic: and examples are given in the *Acta Hassniensia* of bitter milk from the animal having eat wormwood. It is a common observation, that cathartics and spirituous liquors given to a nurse affect the child: and that the milk of animals feeding on green herbs, is much more dilute than when they are fed with dry ones. Hoffman carries this point so far as to direct the ass (the animal, whose milk he in all cases prefers) to be dieted according to the disease which its milk is to be drank for.

MILKING. The best and most commended hours for *Milking* are, indeed, but two in the day; that in the

spring and summer, which is the best season for the dairy, is between five and six in the morning, and six and seven in the evening; and though nice and curious housewives have a third hour between them, as between twelve and one o'clock in the afternoon; yet the better experienced allow not thereof, saying, that two good meals of milk are ever better than three bad ones. In performing the work itself, the woman must sit on the near side of the cow, gently at first handle and stretch her dugs, and moisten them with milk, that they may yield out the milk the better, and with less pains; neither must she settle herself to milk, nor fix her pail firm to the ground, till she see the cow stand firm and sure; but be ready, upon any motion of the cow, to save her pail from over-turning: but when she sees all things answerable to her desires, she shall then milk the cow boldly; and desist not to stretch and strain her teats, till not a drop more of milk will come from her, it being the worst point of housewifery imaginable to leave a cow half milked; for besides the loss of the milk, it is the only way to make a cow dry, and utterly unprofitable for the dairy: neither should the milk-maid, while at her work, do any thing rashly or suddenly to affright the cow, or maze her; but as she comes gently, so with all gentleness to depart.

MILK VETCH. Liquorice vetch, wild liquorice.

Basilar MILK VETCH. See *BASTARD*.

MILKWORT. [*Polygala*.] This is a perennial plant, growing wild in many parts of England. There are several species of this plant kept in gardens, which are natives of France, Austria, and America.

MILLET, [*Milium*.] This grain was originally brought from the eastern countries,

See
Panic.

countries, where it is still greatly cultivated, from whence we are furnished annually with this grain, which is by many persons greatly esteemed for puddings, &c.

It must be sown the beginning of April upon a warm dry soil, but not too thick, because these plants divide into several branches, and should have much room; and when they come up, they should be cleared from weeds; after which they will, in a short time, get the better of them, and prevent their future growth. In August these seeds will ripen, when it must be cut down and beaten out, as is practised for other grain; but when it begins to ripen, if it be not protected from birds they will soon devour it.

MILL MOUNTAIN. See *Purging FLAX.*

MILT-PAIN. Is a disease in hogs, proceeding from greediness of eating masts, and is known by their reeling and going on one side; to cure which, give him the juice of wormwood in a little honied water.

MILTING. Is an evil in beasts, arising from a blow, &c. The signs whereof are, that they will lay themselves down, rise again presently, and cannot rest, but sit in pain: The cure is, to take stone pitch, pound it small, and blend the same with ale, saffron, pepper, and give it him, and walk him a little after it.

MILT-VAST. See *SPLEENWORT.*

MINT, [Mentha.] The leaves of mint have a warm, roughish, somewhat bitterish taste; and a strong, not unpleasant, aromatic smell. Their virtues are those of a warm stomachic and carminative: in loss of appetite, nausea, continual retchings to vomit, and (as Boerhaave expresses it) almost paralytic weaknesses of the stomach, there are few simples perhaps of equal efficacy. In colicky pains, the gripes to which children are subject, dysenteries, and other kinds of immoderate fluxes, this plant frequently does good service. It likewise proves beneficial to sundry hysterical cases, and affords an useful cordial in languors and other weaknesses consequent upon delivery. The best preparations for these purposes are, a strong infusion made from the dry leaves in water (which is much superior to one from the green herb) or rather a tincture or

extract prepared with rectified spirit. These possess the whole virtues of the mint: the essential oil and distilled water contain only the aromatic part; the expressed juice only the astringency and bitterness, together with the mucilaginous substance common to all vegetables.

It is propagated by parting the roots in the spring, or cuttings, during any of the summer months.

There are some people who are very fond of mint salad in winter and spring, in order to obtain which, they take up the roots before Christmas, and plant them upon a moderate hot-bed close together, covering them with fine earth an inch thick, and cover the bed either with mats or frames of glass. In these beds the mint will come up in a month's time, and be soon fit to cut for that purpose.

When the herb is cut for medicinal use, it should be done in a very dry season, just when it is in flower; for if it stand longer, it will be not near so handsome, nor so well tasted; and if it be cut when it is wet, it will change black, and be little worth; this should be hung up to dry in a shady place, where it may remain until it be used.

Water MINT. [*Mentha Aquatica.*] Horsemint.

Horse MINT. See *HORSE MINT.*

Pepper-MINT. See *PEPPERMINT.*

Cats MINT. See *CATMINT.*

MISLETOE, [Viscus.] This is a bushy plant, growing on the trunk and branches of different trees: that met with on the oak is generally preferred, perhaps on account of its being the most rare. It may, however, be propagated by art on any trees by rubbing the berries against the bark.

MIST. A meteor, consisting of gross vapours floating near the surface of the earth.

The bluish mist, which we sometimes see on our fields and pastures in a morning, though often innocent, yet has been in some places found to be the actual cause of murrain, and other fatal diseases among the horned cattle.

MITHRIDATE MUSTARD. See *MUSTARD.*

MOAR-LOVRE. A term used to express a peculiar distemperature of corn, generally comprehended under the common term of a blight. In this case the earth sinks away from the roots

of the corn, and leaves the plant standing in great part above ground with naked roots; these being too weak to support the stalks, the plants fall, and the ears become light. This is a dif-temperature peculiar to corn growing on light and loose lands.

The remedy is this: turn a shallow furrow against the rows, when they are strong enough to bear it, and the mould is fine and dry; the motion of the stalks with the wind will draw in this loose powder, and it will spread itself equally among all the rows, settle about the roots, and cover them.

MOCK ORANGE. A species of the Syringa.

MOCK PRIVET, [*Phillyrea*.] There are several species of this plant which are evergreen shrubs, flowering in March. The propagation is by seed, sown in autumn, or by layers in autumn or spring.

MOLE. These are mischievous subterraneous animals. We see their hills in pastures, where they work under ground at a strange rate, and are very hurtful; but the damage they do to corn is much greater; and frequently comes upon the farmer quite unexpectedly. He knows that the ants and mice will eat the grain when newly sowed, and that the slugs will destroy it when just shot up; but when these times are over, he is at rest on those heads. On the contrary, there is no time at which the mole may not destroy his crop.

This creature, formed for living under ground, preys upon the roots of plants, and is fond, in a particular manner, of those of corn; but beside the quantity they destroy by eating, they damage a vast deal more by undermining the ground. It is hardly to be conceived what havoc one way or other a single mole will make in a field of corn, or in how little time; one of these creatures will burrow through a third part of an acre in a day; and this perhaps at a time when the corn is half grown.

The driest lands are the most subject to these animals, but they will get into any; and there is no creature of all the number to whose injuries the farmer is exposed, against which it is so difficult to guard. There is no foreseeing when they will come; but it is very import-

ant to know of their being in the ground as soon as possible, in order to stop the destruction.

The only caution in the farmer's power is to observe whether there are any there at the time of plowing; and if there be, he is to use every possible method of destroying them: if not, he is to examine whether the lands nearest his own every way be infested by them, or clear from them.

The freer they are the more likely he is to be clear of them; but there is no certainty from this; for there are times when they will come without any possible manner of guessing from whence; and they will sometimes have done irreparable mischief, before it is discovered they are in the place.

The next caution to this, of knowing when to expect them, is the destroying them when found. They are a very defenceless creature, and not very cunning. Their only security is the being hid under the surface; and they betray themselves in that retreat by the manner of their working.

The husbandman, whose crop is suffering by them, is to look for the tracks where they have gone; and these he will easily see by the different colour of the new turned up earth.

He is to follow the course of one of these passages; when he has got sight of it, he is to dig cross holes in it, and to watch the going out or coming back of the mole. And wherever it is casting, to strike it through with an iron instrument made for that purpose. The traps for catching them are also common, cheap, and of a plain structure. Indeed the destruction of this creature is so easy, and so many are ready to undertake it at a trifling price, that the caution we first gave is the most important; which is, the finding as soon as possible where they are growing mischievous.

In some places the farmers content themselves with driving them out of their fields; and this is to be done by smoaking them, as other creatures of a lesser kind are destroyed.

To this purpose they open their passages in several places, and burn heaps of straw and some brimstone. This will drive the moles out of a corn field speedily enough; but this is not a safe or eligible method. It is only sending

sending them out of one's own ground into one's neighbours, who may in the same manner drive them back again. This is only a temporary relief; and there is none wise or effectual but their destruction.

MOLTEN-GREASE. A fat or oily discharge with the dung, which arises from a colliquation, or melting down of the fat of the horse's body, by violent exercise in very hot weather.

It is always attended with a fever, heat, restlessness, starting and tremblings, great inward sickness, shortness of breath, and sometimes with the symptoms of a pleurisy. His dung will be extremely greasy, and he will fall into a scouring; his blood will have a thick skin of fat over it when cold, of a white or yellow hue, but chiefly the latter; the congealed part, or sediment, is commonly a mixture of size and grease, which makes it so extremely slippery, that it will not adhere to the fingers, and the small portion of serum feels also slippery and clammy. The horse soon loses his flesh and fat, which probably is dissolved and absorbed into the blood; and those that survive this shock commonly grow hide-bound for a time, their legs swelling both before and behind, and continue in this state till the blood and juices are rectified; and if this is done not effectually, the farcy, or some obstinate surfeit, generally follows very difficult to remove.

It the first place bleed plentifully, and repeat it two or three days successively in smaller quantities; two or three rowels should also be immediately put in, and cooling emollient clysters daily thrown up, to abate the fever, and drain off the greasy matter from the intestines. By the mouth give plenty of warm water, or gruel, with cream of tartar, or nitre, to dilute and attenuate the blood; which in this case is greatly disposed to run into grumes, and endanger a total stagnation.

When the fever is quite gone off, and the horse has recovered his appetite, gentle aloetic purges should be given once a week, for a month or six weeks, in order to bring down the swelled legs; but if the purgative ingredient does not exceed half an ounce, or six drams of fine aloes, it only opens the belly gently; and, with other medi-

cines joined with it, passes into the blood, acts as an alterative, and operates both by urine and perspiration; as will appear by the horse's staling plentifully; and the kindly feel of his skin. To this end give the following, which, repeated for some time, will intirely remove this disorder.

Take of succotrine aloes six drams, of gum-guaiacum powdered half an ounce, of diaphoretic antimony, and powder of myrrh, each two drams: make into a ball with syrup buckthorn.

Or it may be prepared with an ounce of aloes, six drams of diapente, and a spoonful of oil of amber.

These will seldom take a horse from his business above two or three days in a week; neither will he lose his flesh or appetite with them, which cannot be obtained by any other method of purging, and gives this greatly the preference in many cases.

Two ounces of nitre mixed up into a ball with honey, and a dram of camphire, will also be found an excellent medicine for this purpose, as it will powerfully attenuate the blood, and promote the due secretions; to which end it should be given every day for a fortnight or three weeks.

MONOPETALOUS. Formed of one leaf.

MONEY WORT. See HERB TWOPENCE.

MONKEY BREAD. See SOUR GOURD.

MONKSWOOD. See WOLF'S BANE.

Moak's RHUBARB, [Rumex Alpinus.] A species of the dock. See DOCK.

MOONSEED, [Menispermum.] This is a native of North America, which is propagated by layers and parting the roots.

MOON BLIND. See BLIND.

MOON WORT. See HONESTY.

MOSESSES, [Musci.] The plants of this order.

Moss on Trees, is a distemper of very bad consequence to their increase, and much damages the fruit of the trees of our orchards.

The present remedy is the scraping it off from the body and large branches, by means of a kind of wooden-knife, that will not hurt the bark; or with a piece of rough hair-cloth, which does
very

very well after a soaking rain. But the most effectual cure is, the taking away the cause. This is to be done by draining off all the superfluous moisture from about the roots of the trees, and may be greatly guarded against in the first planting of the trees, by not setting them too deep.

If trees stand too thick in a cold ground, they will always be covered with moss; and the best way to remedy the fault, is to thin them. When the young branches of trees are covered with a long and shaggy moss, it will utterly ruin them; and there is no way to prevent it, but to cut off the branches near the trunk, and even to take off the head of the tree, if necessary, for it will sprout again; and if the cause be in the mean time removed by thinning the plantation, or draining the land, the young shoots will continue clear after this.

If the trees are covered with moss, in consequence of the ground's being too dry, as this will happen from either extreme in the soil, then the proper remedy is, the laying mud from the bottom of a pond or river, pretty thick about the root, opening the ground to some distance and depth to let it in; this will not only cool it, and prevent its giving growth to any great quantity of moss, but it will also prevent the other great mischief which fruit-trees are liable to in dry grounds, which is, the falling off of the fruit too early.

Moss. A name given to moory or boggy grounds, in many parts of England. These sorts of land consist of a tuffy surface, below which is a black, moist, spongy earth, which being dug up with spades, almost in the form of bricks, and dried, is what they call peat, and is used as fuel in several parts.

The shortest method of all for the improvement of moss, if the ground be designed only for grass, and its situation be such as admits of it, is this: first drain the moss, and if there be heath upon it, burn that off, and make the surface even. Then make a dam at the lowest part, and a sluice, and work the water upon it through the winter. The mud which comes with the land flood will bring a fine sward upon it in two or three years, and be

afterwards a yearly manure; so that it will bear annual cutting, and, besides, be good pasture for cattle, after the sward is become strong enough to bear them.

Mr. Græme found that the improvement of moss may be endangered by draining it too much; for his crops were best where the surface of the water in the surrounding ditches was not above three feet lower than the level of the moss. It will, undoubtedly, be a vast advantage to an improved moss, if the farmer is able to flood it at proper times, by means of a sluice in the lowest part of the surrounding ditch, as mentioned before. This will greatly promote the growth of plants; but should be used with the caution of not letting the water remain too long at a time upon the ground, because, though there will be no danger of its re-converting the soil into a bog so long as there are channels to carry it off, it will be apt to chill, and thereby hurt the plants.

MOOR. See Bog and *Marshy Land*,

MOTHER of THYME. See *Thyme*.

MOTHERWORT, [*Cardiaca*.] This is common in waste places, and found in flower the greatest part of the summer. The leaves have a bitterish taste, and a strong disagreeable smell: they are supposed to be useful in hysteric disorders, and likewise to promote urine.

MOULD. Earth, soil, loam. The goodness of a mould for the purposes of agriculture and gardening, &c. may be known, according to Mr. Miller, by the sight, smell, and touch. 1. Those moulds that are of a bright chestnut or hazel colour, are counted the best: of this colour are the best loams, and also the best natural earth; and this will be the better yet, if it cut like butter, and does not stick obstinately, but is short, tolerably light, breaking into small cleds, is sweet, will be tempered without crusting or chopping in dry weather, or turning to mortar in wet. Next to that the dark grey and russet moulds are accounted the best: but the light and dark ash-coloured the worst, such as is usually found on common heathy ground: the clear tanney is by no means to be approved; but that of a yellowish red colour is the worst of all: this is commonly found in wild and waste

waste parts of the country, and for the most part produces nothing but goss, furze, and fern, according as their bottoms are more or less of a light and sandy, or of a spewey gravel, or clayey nature. 2. All lands that are good and wholesome, will, after rain, or breaking up by the spade, emit a good smell. 3. By the touch we may discover whether it consists of substances entirely arenaceous, or clammy; or, as it is expressed by Mr. Evelyn, whether it be tender, fatty, detestive, or slippery; or more harsh, gritty, porous, or friable.

MOULDINESS. A term applied to bodies which corrupt in the air, from some hidden principle of humidity therein; and whose corruption shews itself by a certain white down, or lanugo, on their surface, which, viewed through a microscope, appears like a kind of meadow, out of which arises herbs and flowers, some only in the bud, others full blown, and others decayed, each having its root, stalk, and others parts.

MOUSE-EAR. [*Auricula Muris.*] This is a low creeping plant, covered with a kind of blackish hairs. It grows wild in dry pasture grounds, and flowers in June and July. The leaves have a rough subacid taste: They are recommended as astringents, but practice pays no regard to them.

MOUSEL-SCAB. Is a distemper that sometimes attends sheep and young feggs; and that comes (as shepherds say) where there is great plenty of furs and goss, that by eating of the tops and flowers thereof, they prick their lips and mousel, whereby these sorts of scabs are produced; which are healed, by anointing them with fresh-butter; but some take the juice of plantain and fresh grease boiled together, wherewith they anoint them.

MOUND. A bank or fence of earth.

MOW. The pile or collection of corn in the straw, placed in a bay of a barn.

MOW-BURNT. Over-heated in the mow for want of being dry.

MOWING. Cutting down with a scythe, which instrument goes nearer the ground than the reaping hook, and is applied to grass in general, and to barley and oats chiefly.

MUCK. Dirt, rubbish,

MUD, properly so called, is the finest earth, wash'd and worn to a surprizing fineness by the action of water. This is the condition of fine and pure mud: this is such as is drag'd out of the bottoms of rivers, where it has been many years collecting, and where sand and all other foulnesses whatsoever are thoroughly wash'd from it.

Mud, in some of its properties, resembles marle. It is the softest, fattest, and mellowest of all earthy substances after that; and like marle it breaks with the least rains, and crumbles away: so far they are alike, as also in giving great fertility; but marle is a particular substance, and has a lasting quality of enriching land, whereas mud is only mould in a particular form, and its effect is of no great continuance.

The next to the mud of rivers is that of ponds: but this is less pure and fine; it is often clayey, and generally has some mixture of sand.

The last kind to be named is, that mud which is thrown up in the cleansing of ditches. This is the poorest and worst of all: but even the worst sorts are not to be rejected or despised; for they have their particular uses, which the very finest would not answer so well.

The mud of ditches, especially those by road sides, is full of grit and sand blown in with the dust: it is short enough, but wants mellowness.

The first thing the farmer is to do in these matters, is like what he is to do in respect of his marle. He must learn to distinguish these three kinds of mud by the names of river mud, pond mud, and ditch mud; and then consider, from their nature and from experience, what soils each of them will severally suit.

As marle is most used on plough'd lands, mud is most frequently laid on pasture and meadow grounds. But this need not be established as an universal rule. We have seen how marle may be used with advantage on pasture grounds; and mud will also help many corn lands.

Marle is commonly used alone, and mud with other Ingredients; but in some instances marle may be mix'd also; and in several cases mud may be best used alone.

From

From the different nature of the mud it is qualified to answer different purposes. River mud is proper to give fertility, and nothing else: for its richness is all its character. Pond mud will enrich, and at the same time give a body to the soil from the clay it usually contains; and ditch mud, though it will less enrich, will serve better than any to break a tough land.

When mud is to be laid on a plow'd land, this is usually the kind.

From the consideration of their nature, the farmer will be led to a general notion of their use, and the lands to which they are suited. Thus the river mud is proper for meadows and pastures of a mellow soil, that want nothing but a recruit of that fine mould, which the several growths have wasted and drawn forth; pond mud is best where the soil is too light and crumbly; and ditch mud is preferable to both on a clayey ground.

Mud, especially that out of rivers, has this particular quality, that it mixes in a favourable manner with the finer part of dung. This we have observed several times in meadows. After having given them a sprinkling of mud and dung mix'd together, and a few showers, falling on the ground, the straw part has been washed clean, and nothing but that remaining the mud and the rich part of the dung being wholly gone down into the land: and the next crop has sufficiently found their effects.

People who study the growth of plants, talk greatly of the value of virgin earth, that is, earth on which nothing ever grew. River mud is the nearest this virgin earth in its nature of any thing whatever.

We advise the farmer who has dry pastures, whether they be of a stony, gravelly, or sandy nature, to use this manure preferably to all others; but let him observe the following directions:

If the land be entirely of a loose nature, let him use the pond mud, mix'd with rich well-rotted dung; and lay it on in a good round quantity.

If the soil be mellow, and only require to be recruited and put in heart, after several growths that have exhausted it, let him mix pure river mud with the dung of poultry or sheep, and

scatter this lightly over the ground. A very little of this answers the purpose; and it is best to use a little at a time, and repeat it often.

If the soil be clayey, let him take the mud of ditches, and make a mixture of it with chalk and rotten dung, this, being spread tolerably thick, will break and mellow the ground, as well as give it warmth and richness.

MUGWORT, [*Artimisia.*] This plant grows plentifully in fields, hedges, and waste places, throughout England; and flowers in June. In appearance it somewhat resembles the common wormwood: the difference most obvious to the eye is in the flowers, those of wormwood hanging downwards, whilst the flowers of mugwort stand erect. The leaves of this plant have a light aromatic smell, and an herbaceous bitterish taste. They are principally celebrated as uterine & antihysteric: infusion of them is sometimes drank, either alone or in conjunction with other substances, in suppressions of the menstrual evacuations. This medicine is certainly a very mild one, and considerably less hot than most others to which these virtues are attributed: in some parts of this kingdom, mugwort is in common use as a pot-herb.

MULBERRY, [*Morus.*] The species are, 1st. The common mulberry, which is cultivated for the delicacy of its fruit. It grows naturally in Persia, from whence it was first brought to the southern parts of Europe, but is now become common in every part of Europe where the winters are not severe; for in the northern parts of Sweden these trees will not live in the open air; and in several parts of Germany they are planted against walls, and treated in the same way as the Peach, and other tender fruits, in this country. 2d. Virginia mulberry, branching like the nettle-tree, having very large leaves. This tree grows to the height of thirty or forty feet. It sends forth many large branches; and the bark of the young shoots is of a blackish colour. The leaves are larger than the common mulberry, and rougher, though in other respects they somewhat resemble them. It produces plenty of katkins, in shape like those of the birch-tree; and the female flowers are succeeded

by a dark reddish fruit. This is a very scarce plant at present, notwithstanding it bears the severity of our climate extremely well. 3d. Mulberry with a white fruit. This tree will grow to a large size, and is very proper for walks and avenues, or for clumps or standards, either in fields or parks. The leaves are of a clear light green, and the fruit is of a paler colour than any of the other sorts, which makes it take the name of the white mulberry. This tree possesses the peculiar property of breeding no vermin, either when growing or cut down; neither does it harbour any caterpillar, the silk-worm excepted. This species is cultivated for its leaves in France and Italy to feed silk-worms; and, when raised for that use, the tree should not be suffered to grow tall. The leaves should be shorn off together with the tender twigs, which injures the plant much less than pulling them by the hand. This kind should be raised from seeds procured from the south of France or Italy. 4th. Mulberry with a green fruit, whose wood dyes a sulphur colour. Fustick wood. This tree is better known by the title of Fustick, which is given to the wood, than by its fruit, which is of no estimation. It grows naturally in most of the islands in the West-Indies, but more plentifully at Campeachy, where it abounds greatly. This wood is one of the commodities exported from Jamaica, where it grows in greater plenty than in any other of the British islands.——This tree, in the countries where it grows naturally, rises to the height of sixty feet and upward. The bark is of a light brown colour, with some shallow furrows. The wood is firm, solid, and a bright yellow. It sends out many branches on every side, covered with a white bark, and garnished with leaves about four inches long, which are broad at their base, and indented at the foot-stalk, where they are rounded; but one side is broader than the other, so that they are oblique to the foot-stalk; these diminish gradually, and end in acute points; they are rough like those of the common Mulberry, of a dark green, and stand upon short foot-stalks. Toward the end of the young branches come out short catkins of a pale herbaceous colour; and in other parts of the same branches the fruit is pro-

duced, growing upon short foot-stalks. The fruit is as large as a nutmeg, of a roundish form, full of protuberances like the common Mulberry, green within and on the outside, and of a luscious sweet taste when ripe.——This species is too tender to thrive in this country, unless preserved in a warm stove. There are several of the plants now growing in the Chelsea garden, which were raised from seeds sent from Jamaica by William Williams, Esq; with many other curious sorts, which are natives of that island. The seeds of this plant come up freely on a hot-bed; and when the plants are fit to remove, they should be each planted in a separate small pot filled with fresh light earth, and plunged into a hot-bed of tanners' bark, and shaded from the sun till they have taken new root. Let them be treated in the same way as other plants from those hot countries, always keeping them in the tan-bed in the stove, where they will make good progress. These plants retain their leaves great part of the year in the stove. 5th. Mulberry with hand-shaped leaves and prickly fruit. This sort grows naturally in China and Japan, where the inhabitants make paper of the bark. They cultivate the trees for that purpose on the hills and mountains, much after the same manner as Osiers are cultivated here, cutting down the young shoots in autumn for their bark. A few years ago there were several of these trees raised in the garden of his Grace the Duke of Northumberland from seed; and, when removed into the open air, bore the weather without shelter. This plant makes very strong vigorous shoots but seems not to be of tall growth, for it sends out many lateral branches from the root upward. The leaves are large, some of them are entire, others, are deeply cut into three, and some into five lobes, especially while the trees are young, dividing in form of a hand. They are of a dark green, and rough to the touch, but of a pale green, and somewhat hairy on their under side, falling off on the first approach of frost in autumn, as do those of the common Mulberry. The description which Kæmpfer gives of the fruit is, that they are a little larger than pease, surrounded with long purple

ple hairs, are composed of acini or protuberances, and, when ripe, change to a black purple colour, and are full of sweet juice. 6th. India Mulberry. This kind grows naturally in India, where it becomes a large tree. It hath a soft, thick, yellowish bark, with a milky juice like the Fig, which is astringent. The branches come out on every side, and are garnished with oblong, oval, leaves, standing upon short foot-stalks. Both sides of these leaves are equal, but their edges are unequally sawed. They are rough, of a dark green on their upper side, but pale on their under, standing alternately on the branches. The flowers come out in round heads at the foot-stalks of the leaves on each side the branches; they are of an herbaceous white colour; the male flowers have four stamina; the female flowers are succeeded by roundish fruit, which are first green, afterwards white, and when ripe turn to a dark red colour.—The plants are too tender to live out of a stove in this country. The Mulberry is of the class and order Monoecia Tetrandria, which contains those plants that have male and female flowers at separate distances upon the same plant, the male flowers having four stamina. It is generally observed, that the old Mulberry-trees are not only more fruitful than the young, but their fruit is much larger and better flavoured: so that where there are any of these old trees, it is the best way to propagate from them, and to make choice of those branches which are most fruitful. The usual method of propagating these trees, is by laying down their branches, which will take root in one year, and are then separated from the old trees; but as the most fruitful branches are often so far from the ground as not to be layed, unless by raising of boxes or baskets of earth upon supports for this purpose, so the better way is to propagate them by cuttings, which, if rightly chosen and and skilfully managed, will generally succeed: And in this method there will be no difficulty in having them from trees at a distance, and from the most fruitful branches. These cuttings should be the shoots of the former year, with one joint of the two years wood to their bottom; the cuttings

should not be shortened, but planted their full length, leaving two or three buds above ground. The best season for planting them is in March, after the danger of frosts is over. They should be planted in a light rich earth, pressing the ground pretty close about them; and if they are covered with glasses, it will forward their putting out roots; but where there is not such conveniency, the ground about them should be covered with moss to prevent its drying; and where this is carefully done, the cuttings will require but little water. If the cuttings succeed well, and make good shoots, they may be transplanted the following spring into the nursery, where they should be regularly trained to stems by fixing down stakes, to which the principal shoots should be fastened; and most of the lateral branches should be closely pruned off, leaving only two or three of the weakest to detain the sap; for the augmentation of the stem; for when they are quite divested of their side-shoots, the sap is mounted to the top, so that the heads of the trees grow too fast for the stems, and become too weighty for their support. After four years growing in the nursery they will be fit to transplant where they are to remain; for these trees are transplanted with greater safety while young, than when they are of a large size.

If the cuttings are planted in a bed fully exposed to the sun, it will be proper to arch the bed over with hoops, that they may be shaded with mats in the heat of the day during the spring, till they have put out roots; after which, the more they are exposed to the sun, the better they will succeed, provided the ground is covered with moss or mulch to prevent its drying; for the sun will harden the shoots, whereby the plants will be in less danger of suffering by the early frosts in autumn; for when these are in a shady situation, they are apt to grow vigorously in summer; and, being replete with moisture, the early frosts in October frequently kill their tops. If the following winter proves severe, they are often killed to their roots, and sometimes are entirely destroyed. Mr. Miller recommends the cuttings to be planted on a hot-bed; and he informs

Informs us, that he was led to this improvement by observing some sticks of Mulberry-trees which were cut for forks, and thrust into the hot-bed to fasten down the vines of cucumbers; which, although they had been cut from the tree a considerable time, yet many of them put out roots and shot out branches; so that when any person is in haste to propagate these trees, if the cuttings are planted on a moderate hot-bed, they will take root much sooner than in the common ground;

This tree delights to grow in a light earth, such as is in most of the old kitchen gardens about London; for in some of those gardens there are trees of a very great age, which are very healthy and fruitful, and their fruit is larger and better flavoured than that of younger trees. Dr. Hunter says, he has never yet seen any of these trees which were planted in a very stiff soil, or on shallow ground, either upon clay, chalk, or gravel, which have been healthy or fruitful; their stems and branches are generally covered with moss, so that the little fruit which they produce, is small, ill tasted, and late before it ripens.

If these trees are planted in a situation where they are defended from the strong south & north-west winds, it will preserve their fruit from being blown off; but this shelter, whether it be trees or buildings, should be at such a distance as not to keep off the sun; for where the fruit has not the benefit of his rays to dissipate the morning dews, it will turn mouldy and rot upon the trees.

MULCH. A sort of strawey dung, somewhat moist, and not rooted, and is useful in gardening, to protect the roots of new-planted choice trees or shrubs from severe frost in winter and from being dried by the fierce sun or drying winds in spring & summer, before they are well rooted; for both of which purposes, it is spread evenly on the surface of the ground round the stem of the tree, as far as the roots extend, about three or four inches thick, but which may be augmented in winter if the severity of the frost render it necessary.

MULE. The mule has the good qualities of the ass without its bad ones. It is as patient of fatigue, and

as capable of enduring hunger as the ass; but then it is as tractable as the horse; and is sufficiently swift of foot for any common service. When properly bred it is also a very handsome creature: and it is indeed so well fitted for so many different services, that nothing can be more worth while than raising them in all places where they will thrive.

The mule is often of the size of an ordinary horse, some sixteen or seventeen hands high. They are very strong, and very sure-footed. This is the quality for which they are valued in many parts of Europe, where the roads are mountainous and stony; they will go with the greatest safety over these, where a horse would break his neck.

They perform excellently also in draught; and will travel many weeks together with six or seven hundred weight on their backs, without any sign of uncommon fatigue.

The mule is bred from the copulation of an ass and a mare. Those for travel and show are bred from very large he-asses and Spanish mares: these are tall and itately, their colour usually inclining to black, and they are very handsome. But a larger and stouter kind are bred from the same asses, and large Flanders' mares. These are frequently seventeen hands high; and as large set as our common coach horses. They are much stronger than horses of the same size, and will bear greater hardships, and be fed at much less expence. At the same time they are much less subject to distempers. These are great recommendations of this creature; and may shew how much it would be to the advantage of the farmer always to have them in his yard.

They are extremely fit for the saddle, as well as for these laborious employments: they are very manageable, and walk and trot very easy. If it should ever become a custom to breed them in England, they may be suited to the services for which they are design'd, by the choice of proper mares, for they take after them. Those for the road should be bred from light made mares; and those for cart, plough, and the like, from the larger bodied and stouter kinds.

There is a very substantial reason why we should breed them in England, which

which is, that such as are bred in colder countries are always better and longer lived than those in hot. As to the objection some have raised of their being vicious, it is a complaint only made where there are but few of them, and those ill taken care of; for where they are common, and are treated in the manner as horses, they are as inoffensive.

Beside the mule already mention'd, which is bred between the ass and the mare, and is a light, beautiful, and lively creature; there is another kind propagated in some places, raised between the horse and the she-ass; but this is an inferior kind.

It has been observ'd, that foals take more after the nature of the female than the male parent; and the same thing is seen very plainly in the breed of mules: those between the ass and the mare, partaking of the nature of the mare, being beautiful, lively and swift; and only inheriting the good qualities of the ass, his patience, strength, and perseverance under fatigue: while on the contrary, those bred from a horse and a she-ass, are of the ass kind, dull, heavy, sluggish, ill-made, and small. There is very little temptation to breed these any where, because the others may be had with as little trouble. Let the husbandman therefore who shall think of breeding mules among his stock, take care that he does not fall into the mistake of supposing that 'tis the same thing, so one parent be of the ass kind, which of the two it is: he here sees the difference.

As the mare is to be suited to the service for which the mule is intended, great care is to be taken to have a proper ass. He should have all the marks of a good one, and above all things he must be large. The fine mules we see, in other parts of Europe, are bred from the tallest asses that can be procured; which they purchase at a vast price, and out of their finest mares. The mare is put into a hollow place rail'd in and the ass has the advantage of higher ground in covering.

We see in this circumstance of the mule, the abhorrence of nature to monsters, or animals produced of mix'd breeds. It was believ'd among the ancients, that new sorts of savage

creatures were every year produced in Africa, from the copulation of different kinds, and the increase of those monsters so produced; but this is an error; and we see in the instance of the mule, that two creatures of a different, tho' like kind, are very difficultly brought to copulate; and that when they are, altho' they produce a creature different from either, as the mule is both from the horse and ass, yet that creature is not able to propagate its kind again.

The pretence that there is any where a sort of mules that produce their own kind one among another, is as false as the new species of monsters in Africa. The horse and ass are difficultly got together, in order to the production of this animal; but when that is done, there is no carrying the power any farther.

The mare is always averse to receive the ass, and in the same manner the she-ass is unwilling to admit the horse to copulation; inasmuch that where they breed mules frequently, it is a practice to make the ass colt suck a mare: and the mare foal suck an ass, in order, as is imagin'd, to make them in some degree partake of the nature of either. This has no real effect, but it is named to shew how sensible the breeders of mules are, that those creatures do not go freely and willingly together: and it is certain, that there is not in nature any power of the mules generating its own kind again.

MULLEIN. [*Verbascum.*] This is met with by road sides, in ditches, and amongst rubbish; and flowers in July. It is said to soften tumours, cool inflammations, and ease pains, and is recommended in distempers of the breast, coughs, and spitting of blood. There are many species cultivated in the gardens of the curious.

MURE. The cake of the apples after pressing.

MURRAIN. The murrain is principally caused from a hot dry season of the year, or rather from some general putrefaction of the air, or from the infection of other cattle, from cattle smelling to carrion, and licking of the bones; from foul food, as overflown hay, grass rotted by the long standing of water on it in wet summers; which
sort

fort of food is much better to rot on the ground than to be made use of. All these things beget an inflammation in the blood, and cause a swelling in the throat, which in little time suffocates the cattle.

The signs of this disease are, a hanging down of the head, gum at the eyes as big as your finger, going weakly, staggering, the head swelling very big, the breath short, the heart beating, with rattling in the throat; and if you put your hand into his mouth, and find his breath very hot, his tongue shining, he hath the distemper very strong. If he be taken backward, he will be very stiff, and his guts rumble very much.

If any of your cattle are infested, speedily let both sick and well blood, and drench them. The following receipt we have not had the opportunity to try, but it hath been much recommended:

Take diapente a quarter of an ounce, dialphera, London treacle, mithridate, and rhubarb, of each the quantity of a nut; of saffron a small quantity, wormwood, red sage, of each an handful, and two cloves of garlick: boil all together in two pints of beer till it comes to a pint and a half; give it lukewarm, when he is fasting; keep him very warm, and give him a mash of ground malt, and let him drink warm water a week, & sometimes boiled oats. If you can make him sweat he will do well: if one drink will not do, give him another three days after. Half the proportion will do for a cow.

MUSHROOMS, are, by many persons, supposed to be produced from the putrefaction of the dung, earth, &c. in which they are found, but notwithstanding this notion is pretty generally received amongst the unthinking part of mankind, yet by the curious naturalists they are esteemed perfect plants, tho' their flowers & seeds have not as yet been perfectly discovered.

The true Champignon, or Mushroom, appears at first of a roundish form like a button; the upper part of which, as also the stalk, is very white, but being opened, the under part is of a livid flesh colour; but the fleshy part, when broken, is very white: when these are suffered to remain undisturbed, they will grow to a

large size, and explicate themselves almost to a flatness, and the red part underneath will change to a dark colour.

In order to cultivate them, if you have no beds in your own, or in neighbouring gardens, which produce them, you should look abroad in rich pastures during the months of August and September, until you find them (that being the season when they are naturally produced;) when you should open the ground about the roots of the Mushrooms, where you will find the earth, very often, full of small white knobs, which are the offsets, or young Mushrooms; these should be carefully gathered, preserving them in lumps with the earth about them; but as this spawn cannot be found in the pasture, except at the season when Mushrooms are naturally produced, you may probably find some in old dunghills, especially where there has been much litter amongst it, and the wet hath not penetrated it to rot it; as likewise by searching old hot-beds it may be often found; for this spawn has the appearance of a white mould, shooting out in long strings, by which it may be easily known, wherever it is met with: or this may be procured by mixing some long dung from the stable, which has not been thrown on a heap to ferment; which being mixed with strong earth, and put under cover to prevent wet getting to it, the more the air is excluded from it, the sooner the spawn will appear; but this must not be laid so close together as to heat, for that will destroy the spawn: in about two months after the spawn will appear, especially if the heap is closely covered with old thatch, or such litter as hath lain long abroad, so as not to ferment, then the beds may be prepared to receive the spawn: these beds should be made of dung, in which there is good store of litter, but this should not be thrown on a heap to ferment, that dung, which hath lain spread abroad for a month or longer, is best; these beds should be made on dry ground, and the dung laid upon the surface; the width of these beds at bottom should be about two feet and a half, or three feet, the length in proportion to the quantity of Mushrooms desired; then lay the dung about a foot thick, covering

covering it about four inches with strong earth. Upon this lay more dung, about ten inches thick; then another layer of earth, still drawing in the sides of the bed, so as to form it like the ridge of a house, which may be done by three layers of dung and as many of earth. When the bed is finished, it should be covered with litter or old thatch, to keep out wet, as also to prevent its drying; in this situation it may remain eight or ten days, by which time the bed will be in a proper temperature of warmth to receive the spawn; for there should be only a moderate warmth in it, great heat destroying the spawn, as will also wet; therefore when the spawn is found, it should always be kept dry until it is used, for the drier it is, the better it will take the bed. Mr. Miller says, he had a parcel of this spawn, which had laid near the oven of a stove upward of four months, and was become so dry, that he despaired of its success; but never had seen any which produced so soon, nor in so great quantity as this.

The bed being a proper temperature for the spawn, the covering of litter should be taken off, and the sides of the bed smoothed; then a covering of light rich earth, about an inch thick, should be laid all over the bed, but this should not be wet; upon this the spawn should be thrust, laying the lumps two or three inches asunder; then gently cover this with the same light earth, about half an inch thick, and put the covering of litter over the bed, laying it so thick as to keep out wet, and prevent the bed from drying: when these beds are made in the spring or autumn, as the weather is in those seasons temperate, so the spawn will then take much sooner, and the Mushrooms will appear perhaps in a month after making: but those beds which are made in summer, when the season is hot, or in winter, when the weather is cold, are much longer before they produce.

The great skill in managing of these beds is, that of keeping them in a proper temperature of moisture, never suffering them to receive too much wet: during the summer season, the beds may be uncovered to receive gentle showers of rain at proper times; and in long dry seasons the beds should be

now and then gently watered, but by no means suffer much wet to come to them; during the winter season they must be kept as dry as possible, and so closely covered as to keep out cold. In frosty or very cold weather, if some warm litter shaken out of a dung heap is laid on, it will promote the growth of the Mushrooms; but this must not be laid next the bed, but a covering of dry litter between the bed and this warm litter; and as often as the litter is found to decay, it should be renewed with fresh; and as the cold increases, the covering should be laid so much thicker. If these things are observed, there may be plenty of Mushrooms produced all the year; and those produced in beds are much better for table than any of those which are gathered in the fields.

A bed thus managed, if the spawn takes kindly, will continue good for several months, and produce great quantities of Mushrooms; from these beds, when they are destroyed, you should take the spawn for a fresh supply, which may be laid up in a dry place until the proper season of using it; which should not be sooner than five or six weeks, that the spawn may have time to dry before it is put into the bed, otherwise it will not succeed well.

Sometimes it happens, that beds thus made do not produce any Mushrooms till they have lain five or six months, so that these beds should not be destroyed, though they should not at first answer expectation; for we have frequently known these to have produced great quantities of Mushrooms afterward, and have continued a long time in perfection.

MUSK, [*Abelmoschus*.] This plant is a native of the West-Indies propagated by seeds sown on a hot-bed, and may be treated as the Amaranth.

Musk Hyacinth. See **HYACINTH**.

Musk Melon. See **MELON**.

MUST. New wine or wort before it is fermented.

MUSTARD, [*Sinapis*.] The species are, 1. white mustard; 2. black mustard; 3. Field or Disham mustard. The two first flower in June, and the seeds ripen in July and August; the other flowers in May, and the seeds ripen in June. To save the seed for garden use, sow it on an open spot of ground

ground in March or April, either thinly in drills a foot asunder, or broad-cast all over the surface, and let the plants run up to stalk, and they will furnish ripe seeds in August.

To raise the plants for the seed for Mustard, they should be sowed in the spring, any time in March, in some open situation either in a kitchen-garden, or in the open fields, where large quantities are required for sale; in either case, having digged or ploughed the ground, then sow the seed broad-cast all over the surface, and rake or harrow them in lightly, or sow it in shallow drills a foot asunder. They will soon come up, observing, that when the plants have four or more leaves an inch or two broad, those sown in the broad-cast way should be hoed and thinned, leaving them ten or twelve inches asunder, and cut up all weeds, repeating it once or more if necessary; after this the plants will soon spread and cover the ground, and shoot fast up to stalks for flowers and seed, which will ripen in July or August, and the third probably in June, when the stalks should be cut or pulled up, and threshed out for use.

Hedge MUSTARD. See HEDGE MUSTARD.

Mithridate MUSTARD, [*Thlaspi*.] A biennial plant that grows among corn, or the sides of dry banks in many parts of England, which dies soon after it has perfected his seeds. There are several species, annuals and biennials, cultivated in botanic gardens. They are propagated from seeds.

Bastard MUSTARD. See BASTARD.

Bastard Mithridate MUSTARD. See BASTARD.

Treacle MUSTARD. Mithridate mustard. The seeds have an acrid biting taste like the common mustard.

MYROBALANS, [*Myrobalani*.] Dried fruits brought from the East-Indies; their outward part, freed from the stone.

Five kinds of myrobalans were formerly directed as officinals; 1. The yellow; 2. The chebule; 3. The Indian or black; 4. The belliric; 5. The emblic.

All the myrobalans have a low degree of purgative virtue. They have also an astringent quality, discoverable by the taste, from their use among the

Indians for tanning leather, and from their striking a black colour with chalybeate solutions; in consequence of this, they are supposed to strengthen the bowels after their operation as a cathartic is over. Nevertheless their purgative virtue is so inconsiderable, that practitioners have for a long time laid them entirely aside in that intention; and the college of Edinburgh, as well as that of London, have now rejected them from the catalogue of officinal simples.

MYRRH, [*Myrrha*.] Is a concrete gummy-resinous juice brought from the East-Indies, in glebes or drops, of various colours and magnitudes. The best sort is of a brown or reddish yellow colour, somewhat transparent; of a lightly pungent, bitter taste, with an aromatic flavour, though not sufficient to prevent its proving nauseous to the palate; and a strong not disagreeable smell. The medical effects of this aromatic bitter are, to warm and strengthen the viscera, and dissolve thick tenacious juices: it frequently occasions a mild diaphoresis, and promotes the fluid secretions in general.

Hence it proves serviceable, in languid cases, diseases arising from a simple inactivity, those female disorders which proceed from a cold, mucous, sluggish indisposition of the humours, suppressions of the uterine discharges, cachectic disorders, and where the lungs and thorax are oppressed by viscid phlegm. Myrrh is likewise supposed in a peculiar manner to resist putrefaction in all parts of the body; and in this light stands recommended in malignant, putrid, and pestilential fevers, and in the small-pox, in which last it is said to accelerate the eruption.

Rectified spirit extracts the fine aromatic flavour and bitterness of this drug, and does not elevate any thing of either in evaporation: the gummy substance left by this menstruum has a disagreeable taste, with scarce any thing of the peculiar flavour of the myrrh: this part dissolves in water, except some impurities which remain. In distillation with water, a considerable quantity of a ponderous essential oil arises, resembling in flavour the original drug. Myrrh is the basis of an officinal tincture, and gives name to a compound tincture, elixir, powder,

der, and troches. It is an ingredient in the aloetic wine or elixir proprietatis, the gum pills, Rufus's pills, stomachic pills, mithridate, theriaca, and theriaca Edinensis.

MYRTLE, [*Myrtus*.] The species are, 1. The common myrtle, the varieties of which are, the broad-leaved Roman, the broad-leaved Dutch, the orange-leaved Spanish, the common upright Italian, Portugal acute-leaved, box-leaved, rosemary-leaved, thyme-leaved, nutmeg, broad-leaved nutmeg, cristated, or cock's-comb, frequently called bird's-nest Myrtle.

They are all beautiful ever-green shrubs of exceeding fragrance; exotics originally of the southern parts of Europe, and of Asia and Africa, and consequently in this country require shelter of a green-house in winter: all of which, though rather of the small-leaved kind, have their foliage closely placed, remain all the year, and are very floriferous in summer; and when there is a collection of the different sorts, they afford an agreeable source of variety with each other; they therefore claim universal esteem as principal green-house plants, especially as they are all so easily raised from cuttings, and of such easy culture, as to be attainable in every garden, where there is any sort of green-house, or garden-frames furnished with glasses for protecting them in winter from frost; but some of the broad-leaved sorts are so hardy as to succeed in the full ground, against a south-wall and other warm exposures all the year, by only allowing them shelter of mats occasionally in severe frosty weather: so that a few of these sorts may be also exhibited in a warm situation in the shrubbery: observing, however, all the sorts are principally to be considered as green-house plants, and a due portion of them must always remain in pots to move to that department in winter.

There are several species of the stove temperature, as natives of the Indies; but there are not more than the four following sorts commonly met with in the English gardens, all of which are beautiful ever-greens, with larger leaves than the Common Myrtles and are mostly strong aromatics.

1. Ceylon white-berried Myrtle,
2. Pimento, or Jamaica all-spice tree.

This species is wholly an admirable

fine aromatic, its leaves are remarkably fine scented; and its fruit is that valuable spice, Jamaica pepper, or all-spice, so called, because it is supposed to partake of the odour and taste of most other spices. The tree grows in great abundance in the island of Jamaica, where its fruit is made a considerable branch of trade; is generally gathered a little before it acquires full growth, and dried in the sun ten or twelve days; it is then packed up ready for exportation to Europe.

3. Dicoecious American Myrtle.

4. Brazilian Inodorous Myrtle.

All these five species of Myrtle are exotics of the shrub and tree kind, though in this country, as being confined in pots, the largest of them assume only the growth of moderate shrubs. The first species, Common Myrtle, is considerably the most noted species of the genus in this country; where in most of our green-house collections one or other of the varieties is found in tolerable plenty; but all the varieties of it highly merit notice. The other four species are rare in England, they however are retained in many curious gardens, in the stove collection, more particularly the Pimento, which is a very beautiful odoriferous ever-green, and exhibits a fine variety in the stove at all seasons: in short, all the species, both green-house and stove kinds, have a pretty effect as ever-greens, and some of the sorts flower very ornamentally, particularly of the Common Myrtle.

The propagation of the Common Myrtle and varieties is effected abundantly by slips or cuttings, also by layers; but as the former strike freely, it is the most eligible method for raising any considerable quantity, as also the hardiest plants, which may be struck either in natural earth, or by aid of hot-beds, to bring them more forward.

The young shoots, either of the same or former year's growth, of from about two or three to five or six inches long, either slipped or cut off, are the proper parts for planting; and, as above said, may be struck either in natural earth without artificial heat, or by aid of hot-beds; but by the latter you may greatly facilitate the rooting and first effort of growth. By either method the work may be performed any time from March or April until August,

though June or July is the most common season practised, especially when intended to use the shoots of the same year, which are generally in prime order in July, and often strike freely that year without aid of hot-beds; the young shoots of the former year will also often strike tolerably, especially if planted in spring or early in summer, or by aid of hot-beds may be made to strike root readily at any time in the spring or summer season. By aid of a hot bed, however, all the sorts, both of one or two years shoots may be greatly facilitated in rooting: a dung hot-bed under common frames and lights will do, though a bark hot-bed of a stove, &c. is considerably the most eligible and effectual, and may be readily used any time in spring and summer for this purpose; and by which assistance vast numbers of cuttings may be struck with the utmost facility in a short time, with but little trouble; and plants thus struck in spring or early in summer, may be so much forwarded as to form pretty little plants the same year, and be fit to pot off separately early in autumn. We will, however, exhibit separate directions for both methods, i. e. striking them in natural earth, and by hot-beds.

First, by striking them in natural earth: we noticed above, that the planting might be performed any time from March till August; observe in respect to this, that if you would begin in spring, or early in summer, you must chuse principally the shoots of the former year; and if you do not begin planting till June or July, but particularly the latter month, the young shoots of the year will be arrived at a proper growth, and will root freely. Observe in chusing the shoots, either of the former or same year, to chuse the straight clean growth, of from about two or three to four or five inches length, and as robust as possible; which divest of the lower leaves, two parts in three of their length, they are then ready for planting; then having some large wide garden-pots, or rather flat wide earthen pans, six inches deep, with holes at bottom to discharge the wet, such as are used by the setting-gardeners about London, who raise prodigious quantities of Myrtle annually for the supply of the markets; fill the pots or pans with light rich

mould, in which plant the slips or cuttings, many in each pot or pan, if required, putting them in within an inch of their tops, and about an inch or two asunder; give directly some water to settle the earth closely about each plant; then either plunge the pots, &c. in a shallow garden-frame, and put on the glasses, or under oiled paper-frames, or cover each pot or pan close with a low hand-glass, which is rather the most eligible for facilitating their rooting; in either method, however, observe to plunge the pots in the earth, and keep them close covered with the glasses, &c. where practicable, to exclude the air, for this will promote the quick emission of roots the same season; remembering to afford them occasional shade from the mid-day sun, but if under oiled paper none is wanted; and give plenty of water three or four times a week at least, or oftener in very hot weather; thus they will be rooted in a month or six weeks, which will appear by their exhibiting signs of growth at top; at which period inure them gradually to the full air, still supplying them duly with water during the hot weather, whereby they will shoot in height; and those planted early will often branch out laterally a little the same year, so as to commence pretty little plants by autumn: let them remain in the full air until October, then remove them in their pots or pans into the green-house, or under a good garden-frame for the winter, and in spring the forwardest in growth may be potted off separately in small pots; but if rather small and weak, or but indifferently rooted, let them have another summer's growth, and pot them out separately in September or spring following, as it shall seem proper; managing them as other green-house shrubs of similar temperature, and shift them into larger pots annually, or according as they shall require.

For want of frames and glasses of any sort to strike the cuttings under, oiled paper-frames may be used, which may be obtained at an easy expence, and are excellent for striking many sorts of cuttings; they admit the rays of light and heat sufficiently, & at the same time afford such agreeable shade, that no other is required, and which is of such a nature as greatly to promote the rooting of cuttings.

But

But Myrtle cuttings will sometimes strike in the open ground without any coverings; and if planted betimes in summer, either in pots or pans, as above mentioned, and plunged in a shady border, or the slips planted in the earth of such a border of rich earth; and in either method plentifully supplied with moisture, they will often root tolerably the same year, and shoot a little at top; though rarely make so good plants by autumn as those forwarded in the above manner, nor near so strong as those struck in the following method by artificial heat.

By Aid of Hot-beds, either that of dung, under frames and glasses, oiled paper-frames, or in the bark-bed in the stove, &c. but rather the latter; but by either method the rooting and first growth of the slips may be greatly forwarded; a bark-bed in particular in the stove, &c. is the most eligible, and effectual for this purpose, and in which vast numbers of slips or cuttings may be readily struck, at any time from March until August, both in shoots of the former year, and of the same year's growth, from three or four to five or six inches long: and that those struck in spring and early in summer, will form fine young plants for potting off early in the succeeding autumn. However, in default of bark hot-beds, one of dung under glasses may suffice; but if furnished with both, give preference considerably to a bark-bed.

Therefore being furnished with pots, or rather wide pans, as before directed, filled with fine rich earth, take off a quantity of slips or cuttings, the most robust shoots; which if in spring or early in summer, those of the former year must be chosen; and at a more advanced season, those of the same year will be arrived to a proper growth for this purpose: observing for either sort to strip off the under leaves, as before advised; then plant them in the pots or pans, as already exhibited, give a general watering, and directly plunge them in the hot-bed, affording occasional slight shade from the fierce sun, and water them frequently; they will thus root in a fortnight or three weeks, and advance in growth; observing to inure them gradually to the open air, if the temperature of the weather permits, in a sheltered situa-

tion; or in a frame, if cold weather; and from thence by degrees expose them fully for the remainder of the summer, in a sheltered place, and supply them duly with water in dry weather. They will be fine plants by September; and, as before observed, those raised early will be then fit to pot off singly into small pots; and the latter plantings will be fit for potting in spring, or autumn following; removing them all to shelter towards the middle or latter end of October.

In striking the cuttings by the above method, if, as soon as they are planted and plunged in the hot-bed, each pot or pan is covered close with a low hand-glass, it will still contribute to facilitate their rooting the more effectually; for being close covered, it will force out roots sooner, and prevent the cuttings from running up weak; observing, however, when they begin to advance at top, to remove the glasses.

By the above methods of artificial heat, in striking Myrtle cuttings, you may make two or three plantings each season, where large quantities are required; the first planting in March or April, of the best last year's shoots; the second early in June, of the succeeding best shoots; or about Midsummer, or soon after, may plant shoots of the year; and in a month or six weeks after, the next best shoots also of the same year will be come forward, and of which may be made another plantation; plunging each planting in the bark-bed, &c. as above; thus may you have three young crops advancing in different stages of growth each year in store-pans; some ready for potting off singly every autumn and spring, whereby a large stock may be always kept up, as is necessary for those who raise them for sale, especially about London, for Covent-garden market, where amazing quantities are brought for sale at all times of the year, which sell from six-pence to half-a-crown per pot, according to the size and goodness of the plants.

Those who propagate large quantities of these plants annually, should always keep some strong bushy plants for furnishing slips or cuttings for this purpose.

Propagation by Layers.——Such plants as are furnished with young bottom branches or shoots situated
low

low enough for laying, may be layed in spring, in the usual way; every shoot will readily emit roots, and be fit to transplant into separate pots in autumn.

By Seed.—These may be sowed in spring, in pots of light mould, plunged in a moderate hot-bed; they will soon come up, and, when two or three inches high, pot them off separately in small pots; manage them as the others, and probably as they advance in growth may discover some new varieties.

With respect to the general culture of all these sorts of common Myrtle, they succeed in the open air from May until the end of October, when remove them in their pots to the green-house, or into a deep garden-frame under glasses, allowing air freely in all mild weather, by opening the glasses wide; giving water once or twice a week or ten days in winter, and every other day at least in summer; and according as they advance in growth, shift them into larger pots, as may be necessary every year to one or other of them.

In training these shrubs, observe, as they naturally branch out all around, so to be feathered quite to the bottom, in a beautiful manner, that if you design any shall form standards, with bushy heads for variety, trim off the lower shoots gradually so as to form a straight clean stem, two or three feet high or more, then suffer them to branch out every way at top to form a head: but those which are intended to be low and branchy quite to the bottom, should have the lateral shoots encouraged nearly in their own way, whereby they will be feathered all the way from bottom to top, and assume a more picturesque appearance.

Let them afterwards for the most part assume their own natural growth, except when their heads become thin, straggling, and irregular; then shorten with a knife such shoots as shall appear proper, either in order to force out laterals to make good deficiencies, or to form regularity.

Never practise clipping these shrubs with garden-shears into globes, pyramids, &c. as sometimes done; but let all necessary trimming be performed be the knife, and that only in cases of irregularity as above, for they always appear the most agreeable when they grow nearly according to nature.

If their heads at any time become very irregular, or thin and stubby, by heading down all the branches pretty short in spring, and shifting them into larger pots of fresh mould, with the ball of earth about their roots, affording plenty of water all summer, they will all branch out again numerously, and form handsome full heads by the succeeding autumn.

Sometimes when Myrtles are become very weak straggling shooters, with naked unsightly heads, if headed down, as above, in April or May, turned out of the pots, and plunged in a warm border of rich soil, giving plenty of water, they, by sending their fibres into the fresh earth, often break out with fresh vigour, and become fine full-headed plants by the end of summer, when they may be taken up with balls and potted in fresh earth.

As the sorts in general encrease in size, shift them into larger pots.

The four kinds of Myrtle for the stove, are commonly propagated by feeds; though, when any are pretty branchy, it may also be tried by layers and cuttings.

By Seed.—This is procured from abroad by the dealers, preserved in sand, &c. and arrives in spring, which sow as soon after it arrives as possible, in pots of fresh rich mould, and plunge them in a bark-bed, they will come up the same season; and, when of two or three inches height, plant out in separate small pots, plunge them also in the bark-bed, supply them with water, and manage them as other woody plants of similar temperament.

By Layers.—The first sort in particular often branch out low: lay some of the young shoots in spring, by slit-laying or wiring, &c. plunging the pots in which they are layed in the tan; they will probably be rooted in one year, though it is frequently two before they strike good root, when pot them off separately.

By Cuttings.—In May or June, cut off some short young shoots from such of the plants as afford them, plant them in pots of fresh compost, plunge them in the bark-bed, and cover them close with a low hand-glass, giving due refreshments of water; they will soon take good root, the same year, and be fit to plant in separate small pots.

In

In the general management of these forts, keep them always in the stove, except about a month in the heat of summer, when they may be trusted abroad. Let them shoot nearly in their own way, keeping them, however, to upright stems, and suffer their hands to branch out according to nature, except just reducing very irregular shoots: give frequent waterings in common with other woody plants of the stove department, and shift them occasionally into larger pots.

Dutch MYRTLE, [*Myrica*.] *Candleberry Myrtle*. This plant grows in the bogs in many parts of England. See *CANDLEBERRY TREE*.

MUM. A kind of liquor much used in Germany; thus made. Take sixty-three gallons of water that hath been boiled to the consumption of a third part, brew it according to art with seven bushels of wheat malt, one bushel of oat meal, and one bushel of ground beans; when it is tunned, let not the hoghead be too full at first; and when it begins to work, put into it, of the inner rind of fir three pounds, tops of fir and birch one pound, cardu-

us benedictus three handfuls, flowers of rosa solis a handful or two, burnet, betony, marjoram, avens, penny-royal, wild-thyme, of each a handful and a half, of elder-flowers two handfuls or more, seeds of cardamom bruised three ounces; barberries bruised one ounce: put the herbs and seeds into the vessel when the liquor hath wrought a while; and after they are added, let the liquor work over the vessel as little as may be; fill it up at last, and when it is stopped, put into the hoghead ten new-laid eggs, unbroken or crack'd, stop it up close, and drink it at two years end.

But our English brewers use cardamom, ginger, and saffras, which serves instead of the inner rind of fir, also walnut rinds, madder, red sanders, and enula campana; and some make it of strong-beer, and spruce-beer: and where it is designed mostly for its physical virtues, some add watercresses, brooklime, and wild-parsly, with six handfuls of horse-radish rasped to every hoghead, according to what their inclinations and fancy most lead them,



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N A I

NAIL. A kind of horny excrescence, upon the ends of the fingers or toes; also a well-known spike of metal with a sharp point, and a flat head, used to fasten things together.

NAIL. In measure, the sixteenth part of a yard.

NARD, [*Nardus.*] There are two sorts of this plant, the Celtic and the Indian: the Celtic is a root consisting of a number of fibres, with the lower part of the stalks adhering; these last are covered with thin yellowish scales, the remains of the withered leaves. The Indian nard or spikenard, is brought from the East-Indies.

This is a congeries of small fibres issuing from one head, and matted close together, so as to form a bunch about the size of the finger, with some small strings at the opposite end of the head. The matted fibres (which are the part chosen for medicinal purposes) are supposed by some to be the head or spike of the plant, by others the root: they seem rather to be the remains of the withered stalks, or the ribs of the leaves; sometimes entire leaves and pieces of stalks are found among them; we likewise now and then meet with a number of these bunches issuing from one root.

Both the nards have a warm, pungent, bitterish taste; and a strong, not every agreeable smell. They are stomachic and carminative; and said to be alexipharmac, diuretic, and emmenagogue: their only use at present is as ingredients in the mithridate and theriac.

NASTURTIUM, [*Lepidium.*] Dittander.

NASTURTII Aquatici. Watercresses. This plant grows wild in rivulets, and the clearer standing waters; its leaves remain green all

N A V

the year, but are in greatest perfection in the spring. They have a quick pungent smell (when rubbed betwixt the fingers) and an acrid taste. As to their virtues, they are among the milder aperient antiscorbutics. Hoffman has a mighty opinion of this plant, and recommends it as of singular efficacy for accelerating the circulation, strengthening the viscera, opening obstructions of the glands, promoting the fluid secretions, and purifying the blood and humours; for these purposes, the expressed juice, which contains the peculiar taste and pungency of the herb, may be taken in doses of an ounce or two, and continued for a considerable time. The juice is an ingredient in the *succi scorbutici* of the shops.

NASTURTII Hortensis. Garden-cresses. The leaves of garden cresses make an useful salad in scorbutic habits: in taste and medical virtues, they are similar to the foregoing, but much weaker. The seeds also are considerably more pungent than the leaves.

NAVE, of a Wheel, is that short thick piece in the center of the wheel, which receives the end of the axletree, and in which the ends of the spokes are fixed: it is bound at each end with hoops of iron, called the nave-bands. It has likewise, in each end of the hole, through which the end of the axletree goes, a ring of iron, called the wisher, which saves the hole of the nave from wearing too big.

NAVEL-GALL. The Navel-gall is seated on the top of the spine, opposite to the navel, from whence it has its name, and is generally caused by a bad saddle pinching a horse behind, which, being neglected, turns to a foul fungous excrescence; and sometimes, after long continuance, to a sinuous

sinuous and fistulous ulcer, sometimes it looks like a harden'd brown jelly, and sometimes black and mortified. While there is moisture and sensibility in the part, an ointment may be applied of quicksilver and turpentine, *viz.* an ounce of quicksilver to every two ounces of the turpentine, rubbed in a mortar till they be well incorporated, and then spread upon hurds or flax: on each side of the spine, over the swelling, may be laid smooth dry pledgits of hurds, or bolsters of flaxen cloth, which may be girt round with a surringle. But if the sore be dead and lifeless, a good sharp razor or knife may be made use of to cut it to the quick, and then let it be dress'd according to the directions laid down in the cure of wounds, &c.

NAVELWORT, [*Cotyledon.*] This plant grows upon old walls, buildings, and rocky places, in many parts of England; it is a biennial plant. There are several other species brought from different parts of the world, and cultivated in the gardens, some of which require the assistance of a stove.

Sbrubby African **NAVELWORT**, [*Craffula.*] There are several species of this plant, which may be managed like the *Sicoides*.

Venus's **NAVELWORT**, [*Cynoglossum.*] This is an annual plant, with long narrow greyish leaves, and white flowers, which grow in loose panicles. It is propagated by seeds sown in autumn.

Water **NAVELWORT**, [*Hydrocotyle.*] This plant grows plentifully in moist places in most parts of England.

NAVEW, [*Rapa.*] This is a sort of turnep, sown in some of our gardens for culinary use: the roots are warmer than the common turnep. The seeds have a bitterish taste, accompanied with a faint aromatic flavour: abundance of virtues have been ascribed to them, as attenuating, detergent, alexipharmac, and others; at present, they are of no farther use in medicine, than as an ingredient in the theriaca.

NEAT. Cattle of the cow kind.

NEAT-HERD. A cattle-keeper.

NECTARINE. Properly so called of nectar the poetical drink of the Gods. This fruit differs from peaches in nothing more than having a smooth rind, and the flesh being firmer; it should

have come under the article peaches, but that the writers in gardening have distinguished this fruit by the name of nectarine, and we shall follow their example, lest by endeavouring to rectify their mistakes, we should not be understood to the reader. Mr. Miller mentions the following varieties of this fruit:

1. Fairchild's early nectarine. This is one of the earliest ripe Nectarines we have; it is a small round fruit, about the size of the Nutmeg Peach, of a beautiful red colour, and well flavoured; it ripens the end of July, or the beginning of August.

2. Elruge Nectarine. The tree has sawed leaves; the flowers are small; it is a middle-sized fruit, of a dark red or purple colour next the sun, but of a pale yellow or greenish colour towards the wall; it parts from the stone, and has a soft melting juice; this ripens in the middle of August.

3. Newington Nectarine. The tree has sawed leaves; the flowers are large and open; it is a fair large fruit (when planted on a good soil,) of a beautiful red colour next the sun, but of a bright yellow towards the wall; it has an excellent rich juice; the pulp adheres closely to the stone, where it is of a deep red colour: this ripens the latter end of August, and is the best flavoured of all the sorts.

4. Scarlet Nectarine is somewhat less than the last, of a fine red or scarlet colour next the sun, but loses itself in paler red towards the wall: this ripens in the end of August.

5. Brugnion or Italian Nectarine has smooth leaves; the flowers are small; it is a fair large fruit, of a deep red colour next the sun, but of a soft yellow towards the wall; the pulp is firm, of a rich flavour, and closely adheres to the stone, where it is very red: this ripens in the end of August.

6. Roman Red Nectarine has smooth leaves and large flowers; it is a large fair fruit, of a deep red or purple colour towards the sun, but has a yellowish cast next the wall; the flesh is firm, of an excellent flavour, closely adhering to the stone, where it is very red: this ripens in the end of August.

7. Murry Nectarine is a middle-sized fruit, of a dirty red colour on the side next the sun, but of a yellowish green towards

towards the wall: the pulp is tolerably well flavoured; this ripens the beginning of September.

8. Golden Nectarine is a fair handsome fruit, of a soft red colour next the sun, but of a bright yellow next the wall; the pulp is very yellow, of a rich flavour, and closely adheres to the stone, where it is of a faint red colour: this ripens the middle of September.

9. Temple's Nectarine is a middle-sized fruit, of a soft red colour next the sun, but of a yellowish green towards the wall; the pulp is melting, of a white colour towards the stone, from which it parts, and has a fine poignant flavour; this ripens the end of September.

10. Peterborough, or late green Nectarine, is a middle-sized fruit, of a pale green colour on the outside next the sun, but of a whitish green towards the wall; the flesh is firm, and, in good seasons, well flavoured: this ripens the middle of October.

There are some persons who pretend to have more sorts than are here set down, but we doubt whether they are different from those here mentioned, there being so near a resemblance between the fruits of this kind, that it requires a very close attention to distinguish them well, especially if the trees grow in different soils and aspects, which many times alters the same fruit so much, as hardly to be distinguished by persons who are very conversant with them; therefore, in order to be thoroughly acquainted with their differences, it is necessary to consider the shape and size of their leaves, the size of their flowers, their manner of shooting, &c. which is many times very helpful in knowing of these fruits.

The culture of this fruit differing in nothing from that of the Peach, we refer the reader to that article, for an ample account of their planting, pruning, &c.

NECTARIUM. From nectar, the fabled drink of the gods; defined by Linnæus to be a part of the *corolla*, or appendage to the petals, appropriated for containing the honey, a species of vegetable salt under a fluid form, that oozes from the plant, and is the principal food of bees and other insects.

Notwithstanding this definition, which seems to consider the nectarium

as necessary a part of the *corolla* as the petals, it is certain that all flowers are not provided with this appendage; neither indeed is it essential to fructification.

There is, besides, a manifest impropriety in terming the *nectarium* a part of the *corolla*. Linnæus might, with equal propriety, have termed it a part or appendage of the *stamina*, *calix*, or *pointal*, as the appearance in question is confined to no particular part of the flower, but is as various in point of situation, as of form. The truth is, the term *nectarium* is exceedingly vague; and, if any determinate meaning can be affixed to it, is expressive of all the singularities which are observed in the different parts of flowers.

The tube or lower part of flowers with one petal, Linnæus considers as a true *nectarium*, because it is generally found to contain the sweet liquor formerly mentioned. This liquor Pontedera compares to that called *amnios* in pregnant animals, which enters the fertile or impregnated seeds; but that this is not at least its sole use, is evident from this circumstance, that the honey or liquor in question is to be found in flowers where there either are no seeds, or those, from the want of male organs, cannot be impregnated. Thus the male flowers of nettle and willow; the female flowers of sea side laurel, and black bryony; the male and female flowers of *clusia*, *higgelaria*, and butcher's broom, all abound with the honey or nectar alluded to.

Dr. Vaillant was of opinion that the *nectarium* was an essential part of the *corolla*; for which reason he distinguished the singular appearances in fennel-flower and columbine, by the name of petals: the coloured leaves, which are now termed the petals, he denominates the flower cup.

That the *nectarium*, however, is frequently distinct from the petals, is evident, both from the well-known examples just mentioned, as likewise from the flowers of monks-hood, hellebore, *isopyrum*, fennel-flower of Crete, barrenwort, grass of Parnassus, chocolate-nut, *cherleria*, and *sauvagifia*.

These general observations being premised, we proceed to take a nearer and more particular view of the prin-

cipal diversities, both in form and situation, of this striking appendage to the flower.

1. In many flowers, the *nectarium* is shaped like a spur or horn; and that either in flowers of one petal, as valerian, water-milfoil, (*utricularia*) butter-wort, and calves-snout; or in such as have more than one, as larkspur, violet, fumatory, balsam, and orchis.

2. In the following plants, the *nectarium* is properly a part of the *corolla*, as lying within the substance of the petals: ranunculus, lilly, iris, crown-imperial, water-leaf, mousetail, ananas or pine-apple, dog's-tooth violet, piperidge bush, *wallisneria*, *bermannia*, *woularia*, and *swertia*.

3. The *nectarium* is frequently placed in a series or row within the petals, though entirely unconnected with their substance. In this situation it often resembles a cup, as in narcissus. A *nectarium* of this kind is said by Linnæus to crown the *corolla*. The following are examples: daffodil, sea daffodil, campion, viscous campion, swallow-wort, *stapelia*, *cynanchum*, *nepenthes*, *cherleria*, balsam-tree, African spiræa, witch hazel, *olax*, and passion-flower.

4. In Indian crests, buckler mustard, Barbadoes cherry, and *monotropa*, the *nectarium* is situated upon, or makes part of the calix.

5. The *nectarium* in bastard flowerence is seated upon the *antheræ* or tops of the stamina; whence the name *adenanthera*, or glandular anthera, which has been given to this genus of plants. In the following list it is placed upon the filaments: bean caper, bay, fraxinella, marvel of Peru, bell-flower, lead-wort, *roella*, and *commelina*.

6. In hyacinth, flowering rush, stock July-flower, and rocket, the *nectarium* is placed upon the seed-bud.

7. In honey-flower, orpine, buck-wheat, *collinsonia*, *lathræa*, navel-wort, mercury, *clusia*, *kiggelaria*, sea-side laurel, and African spiræa, it is attached to the common receptacle.

Lastly, in ginger, nettle dyer's weed, heart-seed, turmeric, *grewia*, bastard orpine, vanellœ, skrew-tree, and willow, the *nectarium* is of a very singular construction, and cannot properly fall under any of the foregoing heads.

In discriminating the genera, *nectarium* often furnishes an essential character.

Plants which have the *nectarium* distinct from the petals, that is, not lodged within their substance, are affirmed by Linnæus to be generally poisonous. The following are adduced as examples: monk's hood, helleboré, columbine, fennel-flowers, grass of Parnassus, barren-wort, oleander, marvel of Peru, bean caper, succulent swallow-wort, fraxinella, and honey-flower.

The term *nectarium*, by which this part of the flower has been distinguished, is the invention of Linnæus, who pretends even to have first recognized the part in question. It is certain, however, that Tournefort, in 1694, observed it in the passion-flower, swallow-wort, and some other plants; and that Vaillant, in 1718, regarded it as a part depending upon the petals, which did not merit any particular appellation. *Nec. 13. See 1821.*

NEEZEWORT. Sneezewort.

NENUPHAR. Water lily.

NEP. Catmint. This plant is commonly cultivated in our gardens, and is sometimes also found growing wild in hedges and on dry banks. It is a moderately aromatic plant, of a strong smell, not ill resembling a mixture of mint and pennyroyal; of the virtues of which it likewise participates.

NEPHRITIC WOOD, [*Lignum nephriticum*.] An American wood, brought to us in large compact, ponderous pieces, without knots, of a whitish or pale yellow colour on the outside, and dark-coloured or reddish within: the bark is usually rejected. This wood imparts to water or rectified spirit a deep tincture, appearing, when placed betwixt the eye and the light, of a golden colour, in other situations blue: pieces of another wood are sometimes mixed with it, which give only a yellow colour to water. The nephritic wood has scarce any smell, and very little taste. It stands recommended in difficulty of urine, nephritic complaints, and all disorders of the kidneys and urinary passages; and is said to have this peculiar advantage, that it does not, like the warmer diuretics, heat or offend the parts. Practitioners however have not found

these virtues warranted by experience. **NETTLE**, [*Urtica*.] This is a very common plant well known. There are several species brought from different countries cultivated in the gardens; they are easily propagated by seeds or parting the roots.

Dead NETTLE. See **ARCHANGEL**.

Hedge NETTLE. See **HEDGE NETTLE**.

NETTLE Tree, [*Celtis*.] The lote tree.

NEWING. Yeast or barm.

NICKING. The operation of nicking a horse, in the manner it is commonly performed by our grooms and farriers, is one of the most cruel and absurd (not to say in many cases dangerous) that ever was invented or practised; though, in itself, it is neither severe or dangerous, and, if properly done, the horse in three or four days will be fit again for his accustomed labour. A safe, easy, and rational method of nicking cannot then fail of proving universally useful and acceptable, to all who are lovers of this so noble and serviceable an animal.

In order to understand the rationale of nicking, it may be necessary to premise, that there are, in very limb, both in the *human* and *brute* species, two different sets of muscles, called, the flexors & extensors, whose actions are diametrically opposite to each other, as the flexors, in their actions, will always serve to bend the limb, and the extensors to straiten or extend it.—Of these, the flexors are by much the strongest, and will always keep the limb in a half-bent state, unless, by any effort of the will, the weaker extensors should be brought into action, and overcome the natural contraction of the bending muscles.—The arm of a man, when asleep, or in a state of rest, is always half bent, and the fingers half closed, but he can at any time, at pleasure, extend it, and bring it strait; but this state of extension may be called, a state of violence; as it cannot, for any length of time, be continued without fatigue and pain, owing to the superior strength, and actions, of the flexor muscles.

Let the same method of reasoning be applied to the effect of the operation of nicking on the tail of the horse; and it will readily appear, why it should raise or cock the tail; and, at

the same time, will point out to us what are the best, the easiest, and the safest methods of performing the operation.

The tail of a horse is naturally drawn downwards by the actions of the flexor muscles, and the horse has it in his power to raise or elevate his tail when he voids his excrements or the like; yet this may be considered as a state of violence, and is but of short duration.—But weaken or destroy the action of the muscles, which draw it downwards, and the extending, or elevating muscles, having nothing to counteract or resist them, will exert their own particular action, and draw and pull up the tail.

In the methods at present used in nicking, we may see an instance of the barbarity, and savage cruelty of the farriers and grooms; for, as they never trouble themselves to enquire into the rationale of the operation, they in general act as if they believed that the deeper they cut, and the more they punished the horse by pulling and the like, the more likely will he be to carry a good tail; hence they often cut into the very joint itself, and put the horse to such torture, that fevers, and mortifications, will come on; which often end in death: whereas, when the operation is properly performed, it is not attended with any hazard, and but very little pain; and any gentleman may perform it upon his own horse, without risk or danger; as all that is required is to destroy the action of the muscles which draw down the tail; whence necessarily the extensors, having no power to counteract them, will elevate and lift it up.

When the tail is raised, the two flexor muscles may be seen and felt, near or upon the edges of the under part of the tail, from the base to its extremity: an incision is to be made with a lancet or pen-knife, thro' the skin, at the distance of about an inch or two from the base of the tail; and, the muscle will appear like a red cord, about the thickness of the little finger, which is likewise to be cut through.—Make a second incision, in the same manner, at the distance of about two inches from the first, and when the muscle is cut through, the lower extremity of the divided muscle, will drop, so as to hang near half an inch

inch out of the first incision.—Make a third, and, if necessary, a fourth incision, in the same manner, on each side the tail: but it is not necessary that the skin, in the middle of the tail be divided, or, that the wounds should communicate from side to side with each other: then with a pair of small pincers, lay hold of the ends of the muscle, as they hang out of the wound, and draw them as far out as may be, then with a knife, or pair of scissors, cut off as much of them, as you can come at.—If an artery should be divided, and the wound bleed much, which will seldom or never happen, if the incisions do not extend too far towards the middle of the tail, a little lint or tow, dipped in flour and bound lightly on, will be sufficient to stop it; but, if there should not be a loss of blood, there will be no occasion for any dressing, or application of any kind, as the wounds will, in a very few days, heal of themselves.—It is the general, and indeed universally received practice, to extend the horse's tail with weights and pulleys, for many days after the operation, but what service this can be of, is hard to guess; 'tis true indeed, it is a severe punishment to the poor animal, and may carry an appearance of stretching, and keeping open the wounds, but that it is of no real advantage, is manifest from experience, as instances can be produced of horses, which have never been pulleyed, that carry as good a tail, as any of those who have gone through the whole severity of their racks and pulleys: besides, as all that can with any degree of reason be attributed to the pulleys is, only to keep the divided extremities of the muscle from coming together to heal and unite again, it will appear obvious to any one that will give himself the liberty to think, that this can never be the case, even when no pulley is used, for when the muscle of the tail is divided, the lower part of it shrinks and contracts it to a full half inch from the incision, at the same time near half an inch being cut off from the upper part, there will be a distance of near or quite an inch, between the extremities of the divided muscle; a space far greater than is necessary to prevent a union again.

In the method above related of performing the operation, it is recom-

mended to make the first incision, at the distance of an inch or two from the base of the tail; but this depends entirely upon the manner in which any one may chuse to have the horse carry his tail; if a very high cock-up tail should be required, the nearer the incision is made to the base of it, the likelier will this effect be to happen, and *vice versa*; or if the tail should be required to turn round, up towards the back, four or five incisions may be made, otherwise three will in general be fully sufficient:—or, if the horse's tail should be required with the point dripping downwards, two incisions will be sufficient, and the first may be made at the distance of near three inches from the setting on of the tail.

NIGHTSHADE, [*Solanum*.] Mr. Miller reckons no less than thirty-one different species of this plant, and under this head the botanists range potatoes, love-apples, egg-plant, and winter-cherry. They may be propagated by seeds or cuttings.

Deadly NIGHTSHADE, [*Solanum Lethale*.] This plant grows wild in shady waste grounds. This and the common night-shade have both been supposed cooling and discutient in external applications, and poisonous when taken internally. Late experience has shewn, that an infusion of half a grain or a grain of the dried leaves of either may be taken with safety, and that in many cases the dose may be increased by degrees to five or six grains: that they generally occasion some considerable evacuation, and sometimes, especially in the larger of the above doses, alarming nervous symptoms, which however cease with the operation of the medicine. It has been expected, that a cautious use of these very active plants would afford relief in some obstinate disorders: but though in some instances they promised great benefit, the general event of these trials has not been very favourable. The Edinburgh college, who retained these plants at the preceding revival of their Pharmacopœia in the year 1744, have, at the late one in 1756, rejected them both.

Enchanter's NIGHTSHADE. See ENCHANTERS.

American NIGHTSHADE, [*Solanoides*.] This plant grows naturally in the West-Indies; and may be propagated by

by seeds, but will not bear the cold of England.

NIPPLEWORT, [*Lapsana.*] This is a common weed growing by the sides of foot paths and hedges.

NITRE, [*Nitrum.*] A salt, extracted in Persia and the East-Indies, from certain earths that lie on the sides of hills; and artificially, produced in some parts of Europe, from animal and vegetable matters rotted together (with the addition of lime and ashes) and exposed for a length of time to the air, without the access of which, nitre is never generated: the salt extracted from the earths, &c. by means of water, is purified by colature and crystallization.

Pure nitre dissolves in about six times its weight of water, and concretes again in colourless transparent crystals; their figure is that of an hexagonal prism, terminated by a pyramid of an equal number of sides. It readily melts in the fire; and in contact with fuel deflagrates, with a bright flame and considerable noise; after the detonation is over, a large quantity of alkaline salt is found remaining. The taste of nitre is sharp, penetrating, and bitterish, accompanied with a certain sensation of coldness.

Nitre is a medicine of celebrated use in many disorders. Besides the aperient quality of neutral salts in general, it has a manifestly cooling one, by which it quenches thirst, and abates febrile heats and commotions of the blood: it has one great advantage above the refrigerating medicines of the acid kind, that it does not coagulate the animal juices; blood, which is coagulated by all the mineral acids, and milk, &c. by acids of every kind, are by nitre rendered more dilute, and preserved from coagulation: it nevertheless somewhat thickens the thin, serous, acrimonious humours, and occasions an uniform mixture of them with such as are more thick and viscid; by this means preventing the ill consequences which would otherwise ensue from the former, though it has not, as Juncker supposes, any property of really obdusting acrimony. This medicine for the most part promotes urine; sometimes gently loosens the belly; but in cold phlegmatic habits, very rarely has this effect, though given in large doses:

alvine fluxes, proceeding from too great acrimony of the bile or inflammation of the intestines, are suppressed by it: in choleric and febrile disorders, it generally excites sweat; but in malignant cases, where the pulse is low, and the strength lost, it retards this salutary evacuation and the eruption of the exanthemata.

Dr. Stahl has written an express treatise upon the medical virtues of nitre; in which he informs us, from his own experience, that this salt added to gargarisms employed in inflammations of the fauces in acute fevers, thickens the salival moisture upon the palate and fauces into the consistence of a mucus, which keeps them moist for a considerable time, whereas, if nitre be not added, a sudden dryness of the mouth immediately ensues: that in nephritic complaints, the prudent use of nitre is of more service than any of the numerous medicines usually recommended in that disease: that nitre gives great relief in suppression and heat of urine, whether simple or occasioned by a venereal taint; that it is of great service in acute and inflammatory pains of the head, eyes, ears, teeth, &c. in all erysipelatous affections, whether particular or universal, and likewise in chronic deliriums; that in diarrhoea happening in petechial fevers, nitre mixed with absorbents and diaphoretics, had the best effects, always putting a stop to the flux, or rendering the evacuation salutary; that in diarrhoea happening in the small-pox, it had been employed with the like success, two doses or three at most (consisting of two, three, or four grains each, according to the age, &c. of the patient) given at the interval of two or three hours, putting a stop to the flux, after the bezoardic powders, both with and without opium, had been given without success. The same author recommends this salt likewise as a medicine of singular service in cholera attended with great anxieties and heat of the blood; in the flatulent spasmodic heart-burns familiar to hypochondriacal people; and the loss of appetite, nausea, vomiting, &c. which gouty persons are sometimes seized with upon the pains of the feet, &c. suddenly remitting. In cases of this last kind, the use of nitre surely requires great

great caution, although the author assures us, that no bad consequences are to be feared from it. Nevertheless he observes, that in a phthisis and ulcerous affections, it has been found to be of no service; and that therefore its use may be superseded in these complaints. Indeed in disorders of the lungs in general it is commonly reckoned to be rather hurtful than beneficial.

The usual dose of this medicine among us is from two or three grains to a scruple; though it may be given with great safety, and generally to better advantage, in larger quantities; the only inconvenience is its being apt to sit uneasy on the stomach. Some have affirmed, that this salt loses half its weight of aqueous moisture by fusion, and consequently that one part of melted nitre is equivalent to two of the crystals; but it did not appear, upon several careful trials, to lose so much as one-twentieth of its weight. The official preparations of nitre are a decoction or solution in water and troches. A corrosive acid spirit is also extracted from it. It is employed likewise in operations on metallic bodies, for promoting their calcination, or burning out their inflammable matter.

NONE-SO-PRETTY. London pride.

NONESUCH, or FLOWER OF BRISTOL. Campion. *See Clover.*

NORTHERN ASPECT. Is the least favourable of any in England, as having very little benefit from the sun, even in the height of summer, therefore can be of little use, whatever may have been advanced to the contrary: for although many sorts of fruit-trees will thrive and produce fruit in such positions, yet such fruit can be of little worth, since they are deprived of the kindly warmth of the sun to correct their crude juices, and render them well tasted and wholesome; therefore it is to little purpose to plant fruit-trees against such walls, except it be for such which are intended for baking, &c. where the fire will ripen, and render those juices wholesome, which, for want of sun, could not be performed while growing.

You may also plant Morello Cherries, for preserving; and white and red Currants to come late, after those which are exposed to the sun are gone: and if the soil be warm and dry, some

sorts of summer Pears will do tolerably well on such an exposure, and will continue longer in eating, than if they were more exposed to the sun. But you should by no means plant winter Pears in such an aspect, as hath been practised by many ignorant persons, since we find that the best south walls, in some bad years, are barely warm enough to ripen those fruits.

Duke Cherries planted against walls exposed to the north, will ripen much later in the season; and if the soil is warm, they will be well flavoured, so that hereby this fruit may be continued a month later than is usual.

NOSEBLEED. Milfoil.

NOVEMBER. The ninth month of the year.

Work to be done this month in the Kitchen Garden.

Continue to sow Beans and Peas on a warm border, to support those sown last month.

About the middle of this month begin to cut off the leaves of Artichokes close down to the ground, and throw the earth up in ridges about the plants, which will keep out the frost better than laying long dung over them. In very severe weather, however, they will require a covering of straw or litter.

Take up Carrots and Parsnips, and other kitchen roots, this month in a dry day, for winter stores. Cut the tops off close, clean them from dirt, and deposit them in a bed of dry sand, with the crowns of the roots outwards, over which lay a covering of dry straw.

Potatoes should be laid in a dry room, and in frosty weather covered with straw a foot thick. Examine them frequently, and take out the rotten ones, otherwise they will corrupt the whole stock.

It is a good method to gather only the outside leaves of Spinage at this season, for the inner ones will grow the larger against another gathering.

Prepare hot-beds to raise Asparagus, in the manner above directed for making hot-beds.

Nursery, Fruit, and Flower Gardens.

Prepare your land for new plantations in February or March.

Stake and tie new planted trees; lay mulch on their roots, and cover the beds of seedling exotic plants, in sharp

in sharp frosts, with hoops and mats, or totally with peas-straw, &c.

Plants in pots should be plunged into the earth to the rim in a warm situation, when they may be easily covered.

Open the Greenhouse windows in the middle of the day, and water the plants as there shall be need.

Take care to shelter the choicest of your Tulips, Hyacinths, Ranunculus's and Anemonies, from heavy rains, sharp frosts, and snow, which will destroy or greatly injure them; and continue to plant those and other bulbous roots as in October.

Continue to transplant Roses, Syringas, Honeyuckles; and other hardy flowering shrubs; and prune off their irregular branches at the same time; you may also take up their suckers, and place them in the nursery for increase.

Prepare the ground for receiving the more tender plants in the spring. Clear the gravel walks of weeds, moss, and rubbish, and roll them once a week in a dry day; which will keep them in better order than the modish custom of digging them up for the winter.

Trees and Shrubs in flowers

Honeyuckles, laurustinus, meze-reon, passion-flower, pyracantha in fruit, roses, strawberry-tree in fruit and flower.

Flowers.

Anemonies; asters, Chinese asters, colchicums, cyclamens, daisies, golden-rods, pansies, polyanthus, prim-roses, starworts, stocks, striped lilies in leaf, sunflowers, wallflowers.

NOURISHMENT *of Plants.* See Food.

NURSERY. A most useful district of gardening, appropriated for the raising and nursing all sorts of trees, shrubs, and herbaceous plants, to a proper growth, for supplying and recruiting the different gardens, orchards, plantations, &c.

In the Nursery-garden are raised all the different sorts of fruit-trees, and fructiferous shrubs, by the methods directed for each sort under their proper genera, nursing and training them up to a proper size & growth for planting in the garden or orchard, where they are finally to remain to produce their fruit.

Likewise in the Nursery is raised the

vast train of forest-trees, hardy ornamental trees, and shrubs in general, both deciduous and ever-greens of all those kinds, and training them up to a proper size for the purposes for which they are designed in the plantations and pleasure ground.

And in the Nursery may also be raised all the sorts of hardy herbaceous plants, both fibrous rooted, bulbous, and tuberous-rooted kinds, for adorning the pleasure-garden, medical use, &c.

All sorts of the above kinds may be readily raised together in the same Nursery in separate compartments.

A Nursery thus furnished with the different sorts of all kinds of trees, shrubs, and herbaceous plants, will prove an inexhaustible source of accommodation both for private and public use.

The raising or propagation of the numerous kinds is performed by various methods, as by seed, suckers, layers, cuttings, slips, off-sets, parting the roots, grafting, budding; each of which methods as directed under their proper heads; and after being raised by either of the above methods, & stationed in Nursery-rows, they are to remain until they have acquired a proper growth for their respective uses, then to be transplanted into the garden, orchard, plantation, &c. where they are designed finally to remain, to effect the several purposes for which they are calculated, either for use, ornament, or variety; observing, that as a recruit of some or other of the various sorts will be required to be drawn off every year, to supply the different gardens and plantations, a fresh supply of young plants should also be raised accordingly every year in the Nursery, of most of the various kinds, so as to have this district always fully stocked with all kinds in several different degrees of growth; some in seed-beds, others transplanted in Nursery-rows; some one year, others two, three, or several years: all of which should be well attended to, both in private and public Nurseries, that there may be a sufficiency of plants of all sorts for furnishing every different department of gardening as they shall be occasionally wanted.

In

In the public Nursery-gardens they have also convenient green-houses, glass-cases, and stoves, with their proper appendages, for raising the tender exotics from the warmer parts of the world; these departments are always stationed in the warmest and most sunny situation, having their front directly facing the south, to have all possible benefit from the sun's influence; and each principal department having its different appendages as aforesaid, which are smaller departments of framework, sashed and glazed, either adjoining to the main ones, or detached: serving as seminaries or nurseries for raising and nursing the various tender plants to a proper growth for furnishing the other larger conservatories.

Thus a Nursery ground, furnishing plants of different temperatures, will prove very valuable, and its various growths will afford the most agreeable source of variety at all seasons, which to many will appear as ornamental and desirable as the most elegant pleasure-ground or flower-garden.

With respect to the proper extent or dimensions of a Nursery, whether for private use, or for public supply, it must be according to the quantity of plants required, or the demand for sale; if for private use, from a quarter or half an acre to five or six may be proper, which must be regulated according to the extent of garden-ground and plantations it is required to supply with the various sorts of plants; and if for a public Nursery, not less than three or four acres of land will be worth occupying as such, and from that to fifteen or twenty acres, or more, may be requisite, according to the demand, though some occupy forty or fifty acres in Nursery-ground.

In the neighbourhood of London, for eight or ten miles round, there are a great number of extensive public Nurseries, most beautifully furnished with a prodigious variety of all sorts of trees, shrubs, and herbaceous plants, of different degrees of growth; for supplying noblemen and gentlemen's gardens and plantations, for some hundreds of miles distant at home and abroad; as also all sorts of seeds. Most of which Nurseries are also furnished with all proper green-houses, glass-cases, stoves, &c. for the raising all kinds of curious tender exotics for public supply.

With regard to soil for a Nursery, the nature and quality of this, without all dispute, requires our particular attention. The Nursery-men generally prefer a loamy soil of a moderately-light temperament, if possible, such as in most of the Nursery-grounds around London: however, a Nursery may be of any fat moderately light land, that is fifteen or eighteen inches depth of good working staple, but if two or three spades deep it will be the greater advantage; and where there is scope of ground to chuse from, always prefer that where there is a good depth, and naturally rich or fat soil; for the soil of a Nursery cannot be too good; notwithstanding what some advance to the contrary; for if soil prove poor and lean, the plants raised thereon will be languid, weak, and stunted; and no remedy, how artful soever, will be able to rectify their constitution, especially all the tree-kinds: whereas those raised in a good fat soil always assume a free growth, and advance with strength and vigour. It is not absolutely requisite, however, that the soil should be exceedingly rich, nor over carefully manured, a medium between the two extremes is best. A good fresh fat soil, such as any good pasture, which having the sward trenched to the bottom, is excellent for the growth of trees; any good fat soil of corn-fields is also extremely proper; or any other good soil of the nature of common garden-earth is also very well adapted for a Nursery.

As to situation; if this be rather somewhat low it will be the better, because it is naturally warmer, and more out of the power of cutting and boisterous winds than a higher situation; though if it happens where some parts of the ground is high and some low, it may be an advantage, the better to suit the nature of the different plants. It is also of singular advantage to have a Nursery-ground suit exposed to the sun and free air; and, if possible, where there is the convenience of having water for the occasional watering of seedlings; and some newly transplanted plants.

And as to a Nursery for private use, with regard to its place of situation, respecting the other garden districts; that, where there is room, it may either

be entirely detached, or may be somewhat contiguous to the outer boundaries of the shrubby plantations of the pleasure-ground, and so contrived as to lead insensibly into it by winding walks, so as to appear part of the garden.

A fence round the whole ground is necessary: this may either be a hedge and ditch, or a paling; the former is the cheapest, and in the end the most durable; though in some places where hares and rabbits abound, paling fences at first are eligible, for preserving the Nurseries from the depredations of those animals, which often do great mischief to the young plants, by barking and cropping them: a good hedge-and-ditch-fence, however, may be made very effectual against the inroads of both men and brutes; and the most eligible plant for this purpose is the haw-thorn.

The ground must then be all regularly trenched one or two spades deep, according as the natural depth of soil will admit, for by no means dig deeper than the natural good soil, let it be either one, one and a half, or two spades deep.

Then, having trenched the ground, proceed to divide it by walks into quarters, and other compartments; a principal walk should lead directly through the middle of the ground, which may be from five to eight or ten feet wide, according as it shall seem proper for use or ornament, having a broad border on each side: another walk should be carried all round next the outward boundary, four or five feet wide, leaving an eight or ten-foot border next the fence all the way; then may divide the internal part by cross walks, so as to form the whole into four, six, or eight principal divisions, which are commonly called quarters.

One or more of the divisions must be allotted for a seminary, i. e. for the reception of all sorts of seeds, for raising seedling plants to furnish the other parts; therefore divide this seminary-ground into four-foot-wide beds, with foot-wide alleys at least between bed and bed: in these beds should be sowed seeds, &c. of all such trees, shrubs, and herbaceous plants, as are raised from seed; and which seeds

consist of the various sorts of kernels and stones of fruit, to raise stocks for grafting and budding; seeds of forest-trees, ornamental trees, shrubs, &c. and seeds of numerous herbaceous perennials, both of the fibrous-rooted and bulbous-rooted tribe. The sowing season is both spring and autumn, according to the nature of the different sorts, which is fully illustrated under their proper genera; and when the young tree and shrub seedling-plants so raised, are one or two years old, they are to be planted out in Nursery-rows into the other principal division; but many kinds of herbaceous plants require to be pricked out from the seed-beds, when but from two to three or four months old. On the other hand, most kinds of bulbous seedlings will not be fit for planting out in less than one or two years.

Another part of the Nursery-ground should be allotted for stools of various trees and shrubs, for the propagation by layers, by which vast numbers of plants of different kinds are propagated. These stools are strong plants of trees and shrubs, planted in rows three or four feet distant every way, and such of them as naturally rise with tall stems are, after being planted one year, to be headed down near the ground, to force out many lower shoots conveniently situated for laying.

The other principal divisions, therefore, of the Nursery-ground, is for the reception of the various sorts of seedling-plants from the above seminary-quarters; also for all others that are raised from suckers, layers, cuttings, &c. there to be planted in rows from one to two or three feet asunder, according to their natures: observing to allow the tree and shrub-kinds treble the distance of herbaceous perennials.

Of the tree and shrub-kinds some are to be planted for stocks to graft and bud the select sorts of fruit-trees upon, and other choice plants, which are usually propagated by those methods; others are trained up entirely on their own roots without budding and grafting, as in most forest and other hardy tree-kinds; as also almost all the sorts of shrubs.

Here

Here they are to remain to have two, three, or several years growth, according as they shall require for the several purposes for which they are designed in their future situations in the garden, &c. which is directed in their respective cultures.

With regard to the manner of performing the various methods of propagation for raising the numerous Nursery-plants, it is fully exhibited under the following heads, in the course of this work: *sowing seeds—layers—cuttings—suckers—slips—off-sets—parting roots—grafting—inoculation.* And the sorts that are usually propagated by either of those methods are pointed out under their several respective heads, with particular directions of the several ways each method is performed on the different kinds.

The season for performing the works of sowing, planting, &c. is different in different kinds, but autumn and spring are the principal seasons.

Some sorts require to be sowed in autumn, others not till spring, which is particularly explained for the various sorts under the articles themselves.

And as to planting or transplanting, the principal season is from October until March, or even until April for tender kinds, especially many of the ever-green tribe; but all hardy trees and shrubs may be transplanted any time in winter, in open mild weather from October until March, as just observed; and for the tender kinds of ever-greens, &c. early in autumn, or not till settled weather in spring, is the proper time to remove these sorts.

But as to hardy herbaceous fibrous-rooted plants, they may be transplanted almost any time in autumn or spring; even many sorts in summer, when planting them out from the seminary: observing, however, autumn and spring are the proper planting-seasons for older or larger plants; and which are also the only proper seasons for dividing or slipping the roots of all these kinds of plants for increase.

As for bulbous-rooted kinds, & all such tuberous roots whose leaves decay in summer, the proper season for planting or transplanting them is from May or June until the beginning of August,

when their flower-stalks decay, which in some sorts happens early and some late in the summer; but as soon as it happens in the different sorts, is the only proper time to remove all those kinds of plants when necessary, as also to separate their off-sets for increase; and which may either be planted again directly, or kept out of ground one, two, or several months, though it is proper to plant the principal part again in autumn, unless where any is to be retained for sale.

Succulent perennials may be transplanted almost any time from March or April until August or September, which is the best season for removing these kinds; and most kinds of succulent cuttings succeed best when planted in summer.

In the distribution of all the various sorts of plants in the Nursery, let each sort be separate: the fruit-trees should generally occupy spaces by themselves; the forest-trees, &c. should also be stationed together; all the shrub-kind should also be ranged in separate compartments; allot also a place for herbaceous perennials; a warm place should likewise be allotted for the tender kinds, and inclosed with yew hedges, or a reed hedge, &c. in which compartments you may station all such plants that are a little tender whilst young, and require occasional shelter from frost, yet are not so tender as to require to be housed like green-house plants, &c. so that in such compartments there may also be frames of various sizes, either to be covered occasionally with glass-lights, or with mats, to contain such of the choicer of the above tender kinds in pots, to be nursed up a year or two, or longer, with occasional shelter, till hardened gradually to bear the open air fully.

The arrangement of all the sorts in the open grounds, must always be in lines or Nursery-Rows, to stand till it arrives at a proper growth for drawing off for the garden and plantations; placing the fruit-tree stocks, &c. for grafting and budding upon, in rows two feet asunder, if for dwarfs; but standards two feet and a half, and a foot and half in the lines; though after being grafted and budded, they then commencing

commencing fruit-trees, &c. that if they are to stand to grow to any large size, they should be allowed the width of a yard between the rows. Forest-trees should also be placed in rows from two or three feet asunder, and half that distance in the rows; varying the distance both ways according to the time they are to stand; the shrub kind should likewise be arranged in rows about two feet asunder, and fifteen or eighteen inches distant in each line; and as to herbaceous plants, they should generally be disposed in four-foot-wide beds, in rows from six to twelve or eighteen inches asunder, according to their nature of growth, and time they are to stand.

By the above arrangement of the various sorts of hardy trees, shrubs, and herbaceous plants, in rows at those small distances in the Nursery, a prodigious number of plants are contained within a narrow compass, which is sufficient room, as they are only to remain a short time; and that by being thus stationed in a little compass, they are more readily kept under a proper regulation for the time they are to remain in this department.

But in the public Nurseries they often plant many kinds of seedling-trees and shrubs in much closer rows at first planting out, than the distances above prescribed, not only in order to husband the ground to the best advantage, but by standing closer, it encourages the stem to shoot more directly upward, and prevents their expanding themselves much any where but at top, as for instance, many sorts of ever-greens that are but of slow growth the first year or two, such as the pine-trees, firs, and several others; which the Nursery-gardeners often prick out from the seminary, first into four-foot-wide beds, in rows, length-ways, six inches asunder; and after having one or two years growth here, transplant them in rows a foot asunder; and in a year or two after give them another and final transplantation in the Nursery, in rows two or three feet asunder, as observed above; and by these different transplantings, it will encourage the roots to branch out into many horizontal fibres, and prepare them better for final transplantation, which

is the more particularly necessary in several of the pine and fir kinds, and several other ever-greens, as is more fully exhibited under their proper genera.

With respect to the different methods of planting the various sorts of Nursery-plants, after being raised either by seed, layers, cuttings, &c. it is performed in several ways to different sorts; some are pricked out by dibble, others are put in by the spade, either by trenches, sitting-in, trenching, or holing; and some are drilled in by a spade or hoe.

As to most of the tree and shrub-kind, sometimes the young seedling-trees and shrubs are pricked out from the seminary by dibble; sometimes they are put in by the spade in the following methods: first, having set a line to plant by, strike the spade into the ground with its back close to the line, and give another stroke at right angles with it; then set a plant into the crevice made at the second stroke, bring it close up into the first made crevice even with the line, and press the mould close to it with the foot; then proceed to plant another in the same way, and so proceed till all is planted. A second method is for plants with rather larger roots: strike the spade down with its back close to the line, as aforesaid, and then with a spade cut out a narrow trench, close along the line, as practised in planting box-edgings, making the side next the line perfectly upright; then placing the plants upright against the back of the trench close to the line, at the proper distances, before mentioned; and as you go on, trim in the earth upon their roots: and when one row is thus planted, tread the earth gently all along close to the plants; and then proceed to plant another row. A second method of planting-out small tree and shrub plants is, having set the line as above, then turning the spade edgeways to the line, cast out the earth of that spit, then a person being ready with plants, set one in the cavity close to the line, and directly taking another such spit, turn the earth in upon the roots of the plant, and then placing another plant into the second cut, cover its roots with the earth of a third spit,

spit, and so on to the end; but sometimes, when the roots are any thing larger, holes are made along by the line wide enough to receive the roots freely every way; so covering them in, as above, as you go on: observing always to press the earth gently with the foot close to the roots, and close about the stems, to settle the plants firmly in their proper position.

Herbaceous fibrous-rooted plants are, for the most part, planted with a dibble, except when the roots are larger and spreading, or such as are removed with balls of earth; then they are more commonly planted by holeing them in with a garden trowel, or small spade.

Bulbous and tuberous-rooted plants, such as lilies, tulips, anemonies, ranunculas, &c. are very commonly planted with a dibble, but many sorts may also be drilled in with a hoe. These sorts are also sometimes planted as follows: rake or trim the earth from off the top of the beds from about three to four or five inches deep, into the alleys, then place the roots in rows upon the surface, and immediately cover them with the earth which was drawn off into the alleys for that purpose, spreading it evenly over every part, so as to bury all the roots an equal depth.

But as to the tender kinds of exotic-plants they require occasional shelter whilst young, many of them should be potted, in order for moving to a warm situation in winter, or some into frames, &c. to have occasional shelter from frost, by glasses or mats, as they shall require; hardening them, however, by degrees, to bear the open air fully in the Nursery they ear round.

And the most tender kinds, that require the aid of a green-house and stove, must all be potted, and placed among the respective plants of those conservatories.

With respect to the management of the various hardy Nursery-plants;

Those designed as stocks for fruit-trees should have their stems generally cleared from lateral shoots, so as to form a clean straight stem, but never to shorten the leading shoot, unless it be decayed, or become very crooked, in which case it may be pro-

per to cut it down low in spring, and it will shoot out again; training the main shoot for a stem, with its top entire for the present, till grafted or budded; and as to the grafting and budding them, that work is full directed under these articles, and their general method of training, whether for dwarfs or standards, is also particularly exhibited under those two heads, and in the respective genera of the various sorts.

Forest-trees should also be encouraged to form straight clean stems, by occasional trimming off the largest lateral branches, which will also promote the leading top-shoot in aspiring farther in height; always suffering that part of each tree to shoot at full length, that is not to top it, unless, however, where the stem divides into forks, to trim off the weakest, and leave the straightest and strongest shoot or branch, to shoot out at its proper length to form the top, as above.

The different sorts of shrubs may either be suffered to branch out in their own natural way, except just regulating very irregular growths; or some may be trained with single clean stems, from about a foot to two or three high, according as you shall think proper with respect to the sorts or purposes for which you design them in the shrubbery; but many shrubs appear the most agreeable when permitted to shoot out laterally all the way, so as be branchy or feathered to the bottom.

All the fruit-trees, as soon as grafted or budded, should have all their different varieties numbered by placing large flat-sided sticks at the ends of the rows, for which purpose many of the London Nursery-men use the spokes of old coach-wheels, or any thing about that size of any durable wood, painting or marking the numbers thereon, 1, 2, 3, &c. to different sticks, entering the numbers in the Nursery-book, with the name of the varieties to which the number-sticks are placed; whereby you can always readily have recourse to the sorts wanted.

The same method may be practised to any other trees, shrubs, or herbaceous plants, especially the varieties of particular sorts, when they are numerous, such as in many of the showery-tribe,

as auriculas, carnations, tulips, anemones, ranunculas, and the like.

With respect to watering the Nursery-plants; this may be very requisite in dry hot weather in spring and summer, to seed-beds and tender seedling-plants, while young, and when first planted out till they have taken good root; also occasionally to new-laid layers, and newly-planted cuttings, in dry warm weather; but as to hardy trees and shrubs of all sorts, if planted out at the proper time, that is, not too late in spring, no great regard need be paid to watering, for they will generally succeed very well without any: indeed where there is but a few, you may if you please water them a little, if it proves a very dry spring in April and May; but where there are great plantations, it would be an almost insupportable fatigue, and great expence; as in many public Nurseries, where they each winter or spring plant out fifty or sixty thousand trees and shrubs, and in some double those numbers.

Every winter or spring, the ground between the rows of all sorts of transplanted plants in the open Nursery-quarters must be digged; this is particularly necessary to all the tree and shrub-kind that stand wide enough in rows to admit the spade between; which work is by the Nursery-men called turning-in; the most general season for which is any time from October or November until March, but the sooner it is done the more advantageous it will prove to the plants. The ground is to be digged but one spade deep, proceeding row by row, turning the top of each spit clean to the bottom, that all weeds on the top may be buried a proper depth to rot: this work of turning-in is a most necessary annual operation, both to destroy weeds, and to increase the growth of the young Nursery-plants.

In summer be remarkably attentive to keep all sorts clean from weeds; the seedlings growing close in the seminary-beds must be hand-weeded, except the plants of all sorts that grow in rows wide enough to introduce an hoe: this will prove not only the most expeditious method of destroying weeds, but by loosening the top of the soil, it will prove good culture in promoting the growth of all kinds of plants: al-

ways perform this work of hoeing in dry weather, in due time before the weeds grow large, and you may soon go over a large space of ground, either with a large drawing-hoe, or with a scuffling hoe, as you shall find the most convenient.

According as any quarter or compartment of the Nursery-ground is cleared from plants, others must be substituted in their room from the seminary; but the ground should previously be trenched and lie some time fallow, to recruit or recover its former vigour; giving it also the addition of manure, if it shall seem proper; and after being trenched in ridges, and having the repose only of one winter, or summer, or a year at most, it will sufficiently recover its vegetative force, and may be planted afresh.

It will be of advantage to plant the ground with plants of a different kind from those which occupied it before.

The tender or exotic plants of all kinds that require shelter only from frost, whilst young, as we formerly mentioned, and by degrees become hardy enough to live in the open air, should, such of them as are seedlings in the open grounds, have the beds arched over with hoops, or rods, at the approach of winter, in order to be sheltered with mats in severe weather; and those which are in pots, either seedlings or transplanted plants, should be removed in October in their pots to a warm sunny situation, sheltered with hedges, &c. placing some close under the fences facing the sun, where they may have occasional covering of mats in frosty weather; others that are more tender may be placed in frames, to have occasional covering either of glass-lights or mats, &c. from frost; observing of all those sorts here alluded to, that they are gradually to be hardened to the open ground, and need only be covered in frosty weather; at all other times let them remain fully exposed, and by degrees, as they acquire age and strength, inure them to bear the open air fully; so as when they arrive at from two or three to four or five years old, they may be turned out into the open ground. The sorts requiring this treatment are pointed out under their proper heads.

NUT.

NUT. See **FILBERT.**

Bladder NUT. See **BLADDER.**

Earth NUT. See **EARTH.**

Physic NUT. This plant grows naturally in the West-India islands, where the seeds are used as physic; it rises with a stalk to the height of 12 or 14 feet,

Pistachio NUT. See **Pistachio.**

Malabar NUT. See **MALABAR.**

Wall NUT. See **WALNUT.**

NUTMEG, [*Nux Moschata.*]. The kernel of a roundish nut which grows in the East-Indies. The outside covering of this fruit is soft and fleshy, like that of a walnut, and spontaneously opens when the nut grows ripe; immediately under this lies the mace, which forms a kind of reticular covering; through the fissures whereof appears a hard woody shell that includes the nutmeg. These kernels have long been made use of both for medicinal and culinary purposes, and deservedly looked upon as a warm agreeable aromatic. They are supposed likewise to have an astringent virtue; and are employed in that intention in diarrhœas and dysenteries. Their astringency is said to be increased by torrefaction, but this does not appear to the taste: this treatment certainly deprives the spice of some of its finer oil, and therefore renders it less efficacious to any good purpose; and if we may reason from analogy, probably abates of its astringency. Nutmegs distilled with water, afford a large quantity of essential oil, resembling in flavour the spice itself; after the distillation, an insipid sebaceous matter is found swimming on the water; the decoction, inspissated, gives an extract of an unctuous, very lightly bitterish taste and with little or no astringency. Rectified spirit extracts the whole virtue of nutmegs by in-

fusion, and elevates very little of it in distillation: hence the spirituous extract possesses the flavour of the spice in an eminent degree.

Nutmegs yield to the press (heated) a considerable quantity of limpid yellow oil, which in cooling concretes into a sebaceous consistence. In the shops we meet with three sorts of unctuous substances, called oil of mace, though really expressed from the nutmeg. The best is brought from the East-Indies, in stone jars; this is of a thick consistence, of the colour of mace, and an agreeable fragrant smell: the second sort, which is paler coloured and much inferior in quality, comes from Holland in solid masses, generally flat and of a square figure: the third, which is the worst of all, and usually called common oil of mace, is an artificial composition of serum, palm oil, and the like, flavoured with a little genuine oil of the nutmeg. These oils yield all that part in which their aromatic flavour resides, in distillation, to water, and to pure spirit by infusion: the distilled liquor and spirituous tincture nearly resemble in quality those prepared immediately from the nutmeg. The officinal preparations of nutmegs are, a spirituous water, essential oil, and the nutmegs in substance roasted. The nutmeg itself is used in the compound horseradish water, compound spirit of lavender, cordial confection, cardialgic troches, and syrup of buckthorn; its essential oil, in the volatile aromatic spirit, and the expressed oil in mithridate and theriaca, stomachic and cephalic plasters and cephalic balsam.

NUX VOMICA. This is the poisonous seed of a plant growing in Malabar. *Used to Ripe Rats*

O.

O A K

OAK, [*Quercus*.] Botanists and nurserymen reckon a great number of species; but as we write chiefly for the use of the farmer, we shall confine ourselves to the cultivation of the sovereign of the woods.

The oak is a large tree with a rough bark, spreading branches, and large leaves, deeply waved at the edges: the flowers are inconsiderable; they are a kind of brown threads: the fruit is the acorn, standing in a cup, and growing in some trees on a longer, and in others on a shorter foot-stalk; from which difference some have distinguished two kinds of oak. Others have, in the same manner, divided the oak into two kinds, one of which rises more in height, and the other, which they call the wild oak, spreads more into branches. But these are accidental varieties, not distinct kinds.

The oak will grow in almost any soil: this we see in fact, as we find oaks on all kinds of land. We see it on clayey, sandy, and stony ground: but those who have made strict observations declare, that in the clayey soils it obtains most firmness, but in these the growth is slow. The best earth for oak, where there is choice, is a rich loam. This is a sound and commonly a deep soil. Too much wet is an enemy to the oak, so that it should be guarded against; and 'tis principally for this reason that it grows best on somewhat rising grounds, for they are naturally more dry than the absolute flats on which the wet lodges and remains.

When the ground is too moist, the oak puts out moist branches, and the trunk is defrauded of its due nourishment; in very dry and exposed places it grows low and stubbed.

The timber in too moist ground is

softer, and in these hilly and barren places it is harder than its usual quality, but 'tis there of an uneven grain, and less useful.

The finest oak timber is that which has grown on a firm good soil, rather inclining to clay than any other particular quality, and where there is not too much moisture.

The oak is propagated three ways; first, from seed, or the acorn; second, by raising in a nursery, and then transplanting; and, thirdly, by taking up young sets out of the woods, where they have risen from the fallen acorns, and are usually plentiful enough.

Of these methods we altogether prefer that of raising the oak from the acorn, in the place where it is to grow. The oaks from the nursery are commonly twice transplanted to come to their standing place, and this gives them two checks greater or less; and disposes them twice to an unevenness in the growth: as to the sets taken out of woods, they are the worst way of all. Idleness or frugality may tempt those who will not raise, or purchase the young sets out of a nursery, to do this, but these wild ones, having been raised under too much shade, are usually very ill shaped; and as they are planted out into more exposed places, they commonly get an ill growth.

Of raising Oaks by Transplantation.

If any one in spite of these disadvantages will plant the wild sets, the method he is to take is to cut them off close to the ground, with a sharp knife, and by a slanting stroke, as soon as they are planted. This gives the root time to recover some strength, and as it affords a new shoot, that is often better than the original plant. But in this case the disadvantage is plain, for it is evident that it would be better

this

this shoot rose from the root than from a stump.

Those who raise oaks in a nursery for transplantation must observe a different method from what is to be followed by such as sow them where they are to stand. They are to proceed thus. Let the acorns be shooed, as soon as fully ripe, from a stout branch of a well-growing oak, and immediately sown in the nursery, for the air withers them.

They are to be set in lines, at two inches asunder, and about two inches and a half deep in the ground. They will shoot the succeeding spring, and they should be suffer'd to stand till that time twelvemonth: then they are to be transplanted into another part of the nursery, and set at eighteen inches distance, in rows three feet asunder. They are to be watered a little when first transplanted, but this must be carefully done, for too much water is apt to hurt the oak, especially when young.

The oak is a particular tree, and requires, as will as deserves, a particular care in its management. In many little respects the conduct is to be different from that observed in the raising the generality of trees; and it is to a want of regard to these, that so many young oaks are lost more than of other trees.

The young trees thus transplanted are to be watered sometimes in dry seasons, and kept clear from weeds. It is also good to dig between the rows: for this, by breaking the soil, affords them a greater supply of nourishment, and at the same time it cuts off the straggling or far-spreading roots, which will make the young trees bear their next transplantation the better.

During the time they stand in these beds they are to be regulated in their growth, but in this only a little is to be done. They who cut off the head destroy the tree, for if there be not a leading shoot to conduct the top, the whole will perish. Neither are many of the side branches to be taken off, but only such as tend to too much spreading. The planter is to remember that the trunk of the oak is to be his best benefit; he must therefore cut off such very spreading branches, as would draw the sap away from it and starve

it: but it is prudent to leave a competent number of the others, to draw up the sap. When an oak in this young state is too close pruned, the head is always seen to grow over proportioned, and weighs down the tree, and spoils its future progress.

When the trees have stood about four years; that is, when they are between five and six years old from the sowing, they may be conveniently transplanted. They are at this time of a pretty size and having been thus pruned shew well. It is dangerous to move them in the common way, when they are older, for the oak bears removing, when grown to a size, worse than any other tree.

The time for transplanting them is just before they begin to shoot; and it is prudent to chuse a showery season: if no rain fall, they must be gently watered, as before directed, and staked up to keep them strait.

This is the method for raising oaks by transplantation; and when they are wanted for beauty and ornament, as for clumps in parks, and for wildernesses in large gardens, this is a very good way, because they may be had of a proper growth from the common nurseries: or from the owner's own stock, raised there for other purposes. But when oaks are intended for timber; and use and value are more studied than ornament; 'tis by much the best method to raise them from the acorn, in the places where they are always to continue.

Of raising Oaks from the Acorn.

When the oak is to be raised immediately from the acorn, a different method, and different season, are to be observed for sowing.

Let the acorns be gathered when full ripe, from a thriving tree, and immediately spread upon the floor of a dry shady room; when they have lain a week, frequently turning them, let them be put up in large garden pots, with a quantity of dry sand, and laid by for the winter.

Early in spring let the ground be marked out where the plantation is to be made, and at the distance of forty feet every way, let the holes be opened for receiving the seed. These are to be dug two spit deep, and the earth well broken

broken, four or five acorns ready to put into each, and covered two inches deep, and when they have shot, and acquired a little growth, all the plants, except the one best in each hole, are to be taken up, and that single plant in each hole is to be nursed up for some years with due care.

The head of these young trees is to be suffered to grow, and none of the branches are to be cut away, except such as spread out too wide, as in the nursery; and if it happen that in spite of the care in the choice of those shoots which have been suffered to stand, any one be uneven; the best method is to cut it off at the ground, and wait for a new and better shoot.

A plantation of oak thus made, if the soil be tolerable, is a fortune for the successor in the estate; but it is not limited to that; men enter too late upon these studies, otherwise they might reap the benefit of their plantations themselves. If a man would begin to plant at eight and twenty, and should live to see sixty-three, there is a space of five and thirty years, which is a time for raising even an oak plantation, slow as that is in growth, to very considerable value, though not to its full price, or nearly to that.

It is not easy to give what can be called a middle calculation for the growth of the oak, it differs so prodigiously in respect of the soil, situation, and other circumstances. We have seen oaks of thirty four years fourteen inches in diameter.

An oak of this bigness is but advancing toward the proper time of felling, and towards its value; but if the necessities of the owner induce him to fell these, the price of the worst tree among them would pay for the labour and charge of the plantation.

If the young plants, when they rise in these spots, appear almost above the ground, or stand too high with their roots, the best method is to lay up a parcel of fine earth against the bottom of that which is the most thriving shoot. This happens sometimes from the acorns being not set deep enough, and sometimes from the weather: for after a frost the mould will rise, and bear up the young shoot with it.

Acorns are not to be buried too

deep, especially in a moist soil, for they often rot: and, on the other hand, they must not be set too shallow: for it not only makes the shoot stand too high; but frequently the field mice find them out, and devour the hopes of the plantation.

The quantity of ground taken up by this plantation, at forty feet distance, is not to be supposed wasted: for though the oaks will, in their larger growth, require that distance, they do not at first. For many years ashes may be raised upon the ground between the oaks, for poles, and cut to a great advantage. Underwood of all the shrubby or coppice wood kinds may also be planted for a time, if the ground be fit for it: or it may be grazed, and will lose little of its value for many years. Nay, the planting the trees at this distance is the only way to preserve a value in the ground for these purposes; and when the soil is good, it will continue to yield fine pasture.

Of the Uses of the Oak.

No plantation whatsoever exceeds that of oak, when made in this manner: and to those who will suffer it to stand a proper time, none equals it in value. By this management the trees will all rise with a single straight and upright stem, and their branches spreading every way with a beautiful regularity, make, when clothed with their large and fair leaves, a beautiful appearance. Their shade is preferable to that of any tree whatsoever: their very imperfections and excrescences, the oak apples, oak cones, and oak grapes, are beautiful; and the air is perfumed and rendered healthy by blowing over them.

Among the excrescences of the oak, we have not followed the common custom of ranking the herb, called mistletoe; because it is not an excrescence, but a regular plant, rising from its own seeds, but whose place of growth is not the ground, but the bark of some tree; and no trees afford it so seldom as the oak.

Its fruit, which a good and well-grown oak bears annually in vast abundance, is an excellent food for Hogs. No fruit feeds them so well, it gives their flesh also an excellent taste. The flavour of the Westphalia hams

is owing to this food. They are made from wild swine that live in the forests; and it would, doubtless, be an improvement of our hogs flesh intended for that service, if the creature were fed with acorns; which can only be done to advantage by letting them run about.

That they give a flavour to the flesh of such hogs as eat them in abundance, is not to be questioned; for our country people, who are not accustomed to that taste in bacon, always feed their hogs some time with pease after the acorns, to take off the flavour.

The effect of food on creatures in giving a taste to their flesh, is not to be doubted. The Heath-Cock of Germany is not eatable in autumn, except by the peasants, because its flesh tastes so strongly of the Juniper berries he eats at that season; and as to the effect of particular food on hogs, an instance is given in the Philosophical Transactions of the very bones of a pig being tinged red, by its eating madder root at a dyer's.

The hog is the creature that eats acorns most freely and naturally, and is best fed with them; but what nature has meant as food to one animal, may, by proper management, or in necessity, be made food to others; all poultry will eat acorns if broke small, and given them among other food, and nothing fattens them more. They have also been given to oxen, and other cattle, among their dry food; and we read that before the cultivation of land was so well known, they were, in part, the food of mankind.

Their effect in fattening the hog is supported by sufficient experience. A peck of acorns a day, with a little bran, will, it is affirmed, upon good authority, make a healthy hog encrease a pound each day in his weight, for fifty or sixty days together.

The bark of the Oak serves the tanner, and fetches a large price; the dyers also use it: and it has been discovered some years since, that the young branches of the oak cut and ground to pieces in a mill, answer all the purposes of the bark, and that in as great perfection on these occasions.

We have mentioned saw-dust among

the articles useful as manures; and experience shews that none is so excellent for that purpose as the dust of the oak: this is natural enough, because the oak is the most firm and solid of all our timber. Those who have tried the experiment say also, that of the kinds of wood ashes used in dressing of land, the oak claims greatly preference.

All these however are but, as it were, accidental articles of value in the oak, its great worth is in the timber, which in solidity, strength, and soundness, exceeds all our other kinds, and is therefore the most fit for great and lasting uses. Of all kinds of wood yet known in this part of the globe, the oak is in its service the most universal.

Beside its prodigious use in our shipping, it is called for, on a thousand occasions, in buildings, and for instruments. It resists the injuries of weather more than any other wood, which is not a wonder; for even the fire takes effect upon it much slower than on any other timber whatsoever: and some of it is so hard that the best tools will scarce work upon it.

In water-works, where the timber is exposed both to the air and the water, no wood stands like the oak: and no wood is equal to it in the support of burthens. The ebony and some other foreign woods, when they are very hard and firm, cut as difficultly as oak, but if they are tried in the supporting of burthens, they start and fly under half the weight that a piece of oak of the same size will support with perfect safety.

Even the defects, as they naturally appear of oak, serve to give it strength for certain particular purposes. Thus it is not unusual for an oak trunk to grow a little twisted: this may be discovered through the bark as it is standing, but is very visible when the tree is felled and stripp'd: the trunk of such an oak is useful beyond any other, for the supporting vast weights. Where posts and columns are required for such a purpose, nothing equals it.

In buildings, the straightest, finest, and evenest growing pieces of oak are usually wanted, and they bring their price accordingly; but for engines, where a vast strength is required, the

body of one of those stubbed, and rough grained oaks, which are not fit for other purposes, and which are so hard that a tool will scarce pierce them, is superior to any thing.

There is no oak, while sound, that is not fitted for some purpose. Those parts which will not do for greater uses make pales, posts, coopers ware, and laths; all which bring their price to the owner: even the least pieces are worked into the pins and pegs used in tiling, and that way are of value.

Oaks that grow crooked, and firm withal, make what they call knee timber for shipping. The knottiest and roughest peices are fit for piles in water-works; and mill wheels, and spokes for other wheels, are made from the proper pieces.

Beside all the uses of the oak in its various conditions, considered as a timber tree, we are yet to consider it as a part of the coppice wood plantation; and no kind is there more valuable. The oak maintains its character in every condition, and is every where of value.

When the oak is sown among the coppice wood, to be felled with it at twelve or fourteen years growth, it yields excellent poles for hoops. 'Tis usual to make these of ash, and some take hazel; but the preference is due to the oak hoop beyond all degree of comparison: the ash does not exceed the hazel for hoops half so much as oak exceeds the ash. An oak hoop will last out seven of any other timber.

The smaller kinds of poles serve as staves, and the least make our walking sticks. The root of the oak, where it is knotty and firm, has also great beauty when used by the turner or inlayer.

Thus we see that this serviceable and universally useful tree supplies us with materials of all kinds, as timber, from the ribs of a man of war to a walking staff, and from the main beam of a house to the pegs in the tiling; not the least particle of it but is useful. Even such as is fit for nothing else in the coppice oak is good for firing; whether split into billets from the larger pieces, or cut into faggots, it excels other wood. The charcoal that

is made of the oak is better than any other.

Of the Growth of Oak Trees.

The growth of the oak is not only vary different on various soils; but it has been found by nice observation, to very exceedingly at different periods on the same place. For instance, an oak has been observed to grow very freely and very well for twenty successive years: at the end of this time it has come to a stop, and has for ten or a dozen years made little progress. From this time it has begun to grow again, and has continued in its usual way increasing visibly in height and thickness.

This, though seeming to arise from some hidden cause in the tree itself, is really owing to the soil. 'The tree being planted in a good earth, spreads out its roots, and flourishes extremely well, so long as they remain within the compass of that coat or layer of the ground; but when they have pierced through that, and got into some other starving and poor earth, they receive little nourishment, and the tree comes to a stand. It would continue so all along, were it not that the same roots pushing deeper and farther, find good soil again. Thus in the present instance, the good soil holds the roots twenty years, and affording sufficient nourishment, the tree all that while grows freely. At the end of that time they penetrate into some unfavourable layer; there they are kept twelve years, all which time the tree barely lives, and hardly grows at all; till at the end of this period the roots piercing into another bed of good matter, supply the tree as at first, and it then grows and increases again as it did from the beginning.

It has been observed already, that the oak will grow in any soil, though it thrives differently according to the nature of that earth: but the difference that is made by soils in the speedyness or slowness of the oak is not all: for the very grain of the wood is affected by it.

On barren heaths, where the bottom is stony, the oak is ill-grained and coarse: the grain of that oak which has been raised in sandy soils, is smoother

smoother and evener than any: but that which has been fed by a good firm loam, inclining to clayey, is the right substantial and true grained timber.

Though the oak will grow any where, it will be stopped in its growth by the interposition of a bed of unfavourable matter in its way: it will therefore be worth the planter's while to bore the earth with an auger where an oak plantation is designed to be raised: and that the planter may know to what a vast size and value oaks will grow when the soil favours them, not only in condition, but depth, we shall give him an account of what bigness some have arisen to in England, as supported by unquestionable authority.

In Workop Park the Duke of Norfolk had an oak which spread almost three thousand square yards. Near a thousand horse might stand under the shade of it: Plot, in his Oxfordshire, tells us of an oak at Clifton, that spread eighty-one feet from bough end to bough end, and shaded 560 square yards of ground. 'Twas computed five and twenty hundred men might stand sheltered under it: The famous Robur Britanicum in Lord Norrey's park at Ricot, was computed to be able to shelter between four and five thousand men.

The mainmast of the old Royal Sovereign was ninety-nine feet long, and near a yard thick, all of one piece of oak; and some of the beams of that ship were made from another oak near five feet thick, and were forty feet in length.

What must be the value of these trees is very evident; and there is no reason why any man who will take the pains in raising his oaks from the acorn upon the spot with due care, and see that the soil be perfectly fit for the growth, may not leave an inheritance of such to his posterity.

The oak requires less lopping than any other tree, whether it be intended for beauty, or for use. Nature rarely over-proportions the branches to the trunk; and they spread with great beauty, and grow in value with it.

Of the Felling of the Oak.

If it be true that an oak continues growing a hundred years, certainly 'tis best not to fell that tree till after

the full period of the growth, when it can conveniently be suffered to stand so long; but with a view of advantage, it is idle to think of its standing any longer: for certainly it can never be better than when at a full maturity.

This then is, in general, the best time of felling, but no particular period can be limited for each tree; for of those raised from acorns of the same soil, some will thrive better than others.

More things enter into the consideration in the article of felling the oak than any other timber; as the separating of the bark for the tanners, and the like. The best season is in April, which favours the separation of the bark; it then rises freely and easily.

At this season the trees being marked out that are to be felled, the first thing to be done is to cut off such arms as may damage the trunk in the fall. The manner of doing this is, by beginning below close to the trunk: when they have thus cut the arm about a sixth part through, they begin at the top near the trunk also, and when they come near meeting the other cutting, the arm falls off without splitting.

When the branches that may be hurtful in the fall are thus removed, they are to go to work upon the trunk, cutting it down as near as possible to the ground, because the length of the timber is a very great article in its value beside the adding to its quantity.

When the oak is down, its trunk is to be stripped of the bark, which will come off freely at this season, because the sap is full and flowing; as the bark is taken off, set it up in such a manner as it may dry best. After this take off the bark from the branches that were left on, and set up in like manner: when this is done, let the branches be cut off, and then cut it into lengths for sale.

Of the seasoning Oak, and judging of the Timber.

The wood being thus felled and cut, the next consideration is the seasoning of it, which is done several ways; but all of them require time. Green oak is fit for very few purposes; and a great deal of its value in many cases depends upon the seasoning.

The plainest and most familiar method is to trust to time only, taking care

care to prevent accidents in the mean while. Thus let the timber, cut as before directed, be laid up till dry in a careful manner. Let it be taken off the ground at a dry time, and laid up in an airy place, but out of the reach of the sun, and defended from the winds, both which crack it in drying. Let blocks be put between the several pieces, to give passage to the air. If this be omitted, they grow moist and mouldy, or breed toadstools. In this manner time will take a proper effect, the timber will shrink gradually and regularly, and being thus seasoned, it will stand when it is employed in building, or on other occasions.

Another way of seasoning oak timber is by burying it for some time under ground: but this must be done in a dry soil, otherwise it will require more seasoning when it comes out than it did when it was put in.

The best method of all for many purposes, and particularly those which require the best seasoned timber, is that we learned of the Venetians, which is called the water seasoning. This is done by sinking the timber under water; and no way is so good to prevent its splitting. The Venetians keep the timber for their sea service two or three years under water before they use it, and then it stands firmly.

The water seasoning is commonly done in England in this manner. When the oak is cut into boards, or pieces, they sink it under river water for fourteen or fifteen days. Then they take it out, and lay it up carefully to dry in a cool airy place, as directed in piling up the fresh timber; preserving it from winds and sun, but leaving the air free passage amongst it.

Oak that is cleft is not so apt to split and crack as such as is entire: and round pieces are always more ready to crack than such as are squared. These are standing rules, and the workman it to conduct himself in his choice accordingly: pieces that are bored through seldom split. In general, the more the oak is in its natural condition, the more liable it is to split; and the more it has been cut and wrought, the less.

Burning the ends of posts of oak that are to be let into the ground, has been accounted an excellent method

to preserve them a long time; and some have carried this practice so far, as to burn the ends so deep as to impair their strength. It is at present much disputed by those who pretend experience on their side, whether this practice be of any use at all. If not, 'tis a great deal of trouble thrown away.

This burning naturally preserves that part of the post from the worms by which it is subject to be gnawed under ground; and the Dutch, to prevent the same accident under water, cover over their piles and ship bottoms with pitch and tar; on which they sprinkle sea sand with powder of sea shells among it, and flakes of iron, such as fly off in the hammering.

In the choice of oak timber, the purchaser should examine the weight and the grain; the heaviest timber in this kind is always the best for purposes that require great strength and soundness, and the smoother and evener the grain, the better for most occasions. Oak is not to be trusted in any nice works, till it has been well seasoned: and that from full-grown trees is preferable to such as has been cut from smaller. But when the tree has stood beyond its time, the wood becomes somewhat brittle; this is the first tendency in oak to decay.

To judge of oak as it stands is an article of great consequence very frequently, and nothing is so difficult: it is a common thing to purchase trees standing; and in oak 'tis of great importance to be able to guess at their value. Were all good, nothing would be so easy; for the question might be answered by measuring, instead of guessing; but nothing is so capable of deceiving as a tree while it stands. There may be many infirmities which 'tis impossible to discover till it is down; and which then greatly lessen the value. Such as may be discovered we shall point out; as also the signs of decay.

In the first place, if the head of the tree be in any part dead, 'tis a shrewd sign that there are more faults in the body: in this case it is a very good method to bore into the trunk with a small piercer made auger fashion, and observe the condition of what it draws out,

If in any tree there be a swelling vein perceived rising above the level of the rest of the tree, and covered by the bark, it is a sign all is not well within. When this vein twists about in the manner of a stalk of ivy, it is worst of all; and seldom is seen but where the heart of the trunk is rotten.

Finally, another very good method of judging is, to open the earth about the roots; and examine in what condition they appear. If they are fresh, sound, and full of juice, it is a sign all is well above; but on the contrary, when many of them are found decayed without any visible cause in the ground; when some of them are rotten, brittle, and mouldy, all is wrong in the body of the tree. This is a part not so much attended to, but a decay here is a more fatal sign than the deadness of a part of the head.

Upon the whole, a great deal is to be judged by the general aspect, and that much more by those who are accustomed to these things than by strangers. There is a look of health in a tree that is perfectly well and sound, which no other perfectly has. And tho' people who should be judges are often deceived, yet it is their want of observation, or their want of knowledge, that often leads them to it. There will be faults which no person whatsoever can discover till they are seen in cutting through the tree; but the greater part of those which debase the value, are not of this kind: they may be guessed at least, if not certainly known, from some one or another of these marks on a careful inspection.

Ever-green OAK, [*Ilex*.] Holly.
See HOLLY.

OAK of Jerusalem, [*Castanea*.] This plant is a native of America, where the seeds are given for worms in children. It is propagated by sowing the seeds in the spring.

OAK Bark. See BARK.

O A T S, [*Avena*.] The oat is distinguished from other corn, by the grain growing in loose panicles.

There are three principal sorts of it.

1. The common, or manured white.
2. The black oats: which are omitted in Gerard and Parkinson, though in some parts of England they are more sowed than the former.

3. The naked oat: much sowed in Cornwall.

To these we may added two others, very considerable.

4. The red or brown oats; and some, I suppose, reckon these the red and the gray, and all of them comprise the large Poland oat under the name of white; the seed of it being brought from Poland, gave it that name. And as it degenerates here in a few years, it is often brought new from thence. It is apt to shed after rain.

The white oat has undoubtedly the larger kernel, and turns out more meal in the grinding than the black oat; the meal of a bushel of the white being near three pecks from the mill, and that of the black but two pecks; but then the white oat requires richer land, and will not bear cold so well; and as to every other article, but what they call the yield, the black is equal to the white, if not superior in some particulars.

Oats, being a very temperate mild grain, are fit for almost all manner of uses and purposes any sorts of corn can be; and being an hardy grain, it will grow in almost any soil, and that with the least culture of any grain whatsoever, and being very prolific, will all things considered, be found the most profitable of any grain whatsoever (except wheat.)

It is commonly known and observed, what great fatigues and labours the Scotch have frequently gone through, when supported only by a small quantity of oatmeal, which is a manifest proof of the goodness and spirit of that grain that could enable man to go through such toils and labours; and it is very well known, that most of the northern peasants have little else to support them in their hard labours, particularly in that of getting of stone; in which work they have been known to sweat day after day, with no other nourishment but oat cake (bread) and water; and the better of them, with only an addition of a little butter and cheese, and a little whey or butter-milk to drink, seldom tasting flesh meat or any malt liquor whatsoever.

Oats, when malted, make a very pleasant ale; and are frequently used for

for that purpose: and they are used in the kitchen in a thousand particulars, in which the flour is preferred to the flour of all other grains; and there is no pretence to set up any other as equal to it, except wheat, which to be sure is to be preferred before it.

It is also exceeding proper for the feeding of all sorts of fowls, and swine, making the sweetest bacon of all feeds; though it is thought very adviseable to give the swine a few pease, toward the end of their feeding, in order to harden their fat.

The excellency of oats, as the best and most wholesome food for horses, is allowed by all; and that, when they have been kept till they are thoroughly dry, there is no danger of those distempers which commonly attend, and are frequently fatal to those fed on beans.

They are equally useful for the feeding the cow or the ewe, to help them to milk, and to nourish their young; and at the same time will support the ox in his labour, or feed him fat for the slaughter. And the straw is valuable for food for beasts, beyond that of all grain, and when some of the lightest oats are left in it, and only the best threshed out (which is called *bating*) it is thought very good food for beasts; and packs of hounds, and all other dogs, are commonly fed with oats, when ground down.

As to the soils, it has been mentioned that they will grow on all, and do very well on most, where a crop of corn can be reasonably expected; yet oats certainly do best on the best ground, for which we may appeal to common experience, when they are sown at the first breaking up good ground, or when the ground is well manured for them, which is common in the north; and in the instances before, and which will be mentioned hereafter, also fully confirm the truth of this.

The seed usually allowed for an acre is four Bushels; but in several places, they sow six or more, where the ground is poor, or where such an ill custom has prevailed. In this article of feed, the farmer ought to be careful in getting what is good, and changing it from different sorts of soils as in any kind of grain whatsoever,

since he will find it equally beneficial.

Formerly they used not to sow oats till March, but of late years they commonly plow for them at the beginning of February, and sow and harrow them in from the middle of February, and so on; and now apply to them in this particular, the saying, the sooner in the ground the sooner out; and find by experience, that their crops are generally ripe sooner than they formerly were when sowed later.

If the sowing be deferred long, as it sometimes is till April, then it should be well harrowed in; and in some places the wetness of the land almost obliges the farmer to the sowing so late.

Miller mentions oats as a very profitable grain, and that the usual produce is five and twenty bushels; though he has sometimes known more than thirty on an acre. This is a very poor account of the produce of this grain, since four quarters are common on very indifferent ground; and six or seven is no extraordinary crop; and ten quarters are frequently had with only one plowing without any further trouble.

There are three very considerable advantages the oat claims, which no other of the white corns do; nor, indeed; any other sort of grain common amongst us, has any pretence to vie with it in, with the least appearance of reason.

The first is, that it will grow and pay frequently very well on those lands, which will not answer to the sowing any other sort of grain: and this advantage is generally allowed the oat by all who write on this subject; which they have rather carried to an excess in its behalf, when they say, it will grow in all countries, and on all lands; that there is no ground too rich or too poor for it; which cannot be said of any other grain whatsoever. So that in this respect oats have undoubtedly the advantage above all other grain whatsoever.

The next advantage of the oat is, that it is pretty certain to bring a very good crop, on the breaking up any good meadow or pasture ground.

The third particular advantage of the

the oat is, the benefit arising from the goodness of the straw for food for cattle; and, tolerable good crops may on a medium be valued at twenty shillings per acre, in which no other straw can be compared to it as to the sweetness of it for food; nor indeed is there any other straw but wheat of any value to speak of. And though wheat straw excel it for thatch, yet oat straw will last several years for that use; and, on the whole, may justly have its straw reckoned amongst the excellencies belonging to the oat.

There is another advantage it certainly has over the two most esteemed sorts of grain, wheat and barley, which is, that it is got with less plowing, requires not so fine a tilth, and not near so much manuring in general, as they do to procure an equal respective proportionable good crop; all which will be saved in the farmers out-goings.

Lastly, It is superior to all other grain but barley in its capacity of receiving the foreign grasses to be sowed with it, from which a great part of the advantage of all the new husbandry particularly depends.

A late writer gives the oat the preference to barley, in this point, in the following words: "An oat crop is the properest corn of all others, to sow any of the grasses amongst, if the ground is in heart, because the stalks of oats are apt to stand stiffer than barley, and thereby the crop of grass is in less danger of being spoiled."

This author justly observes, "If the ground is in heart," since the land set apart for oats is very seldom so well manured for oats, when the grass seeds are to be sown in it, as it is for barley; and, consequently, a less valuable crop of the grasses is to be expected when the land is in a poorer condition: but the right way of judging is, when they are in the same equal condition of goodness; and then to see, which would answer the best. But even in this case I would not insist on its superiority to barley in this particular, but only say it is equal to it: for the oat has other sufficient advantages above the barley in its particular departments or on lands in which barley cannot so well be cultivated.

Of keeping of Oats.

The oat has one farther advantage, that it may be kept the securest and in the easiest manner of most sorts of grain, if not of all kinds whatsoever.

It is little subject to receive damage when housed in the barn, or placed in a stack, on account of the nature of the straw, which is both sweet and dry, and the least subject to be musty of any sort.

Oats will also keep very well when threshed, and laid by in the chaff, without farther trouble or care, provided they be not laid by wet, or wet be permitted to come to them, in such a degree as would spoil any other corn whatsoever.

But the principal method of securing the product of this grain, where it is used as bread, is by first grinding it, and making it into meal, and then putting it close down in an ark of wood, where it will keep good many years. This method is so well known in the countries where the meal is generally used for bread, that there is scarce a family but has one of these arks kept under lock and key, either in the dwelling-house, or in some building adjoining to it, or in their barns. In which those who are able, keep a sufficient stock for their families, from time to time; and those who can keep it for a rising market, often sell at the same proportionable profit as those do who can save wheat till it rises. It is very common to put four hundred pecks of meal into one of these arks.

Wild OATS. A species of oats difficult to be extirpated where they have once taken possession; for ripening before harvest, and scattering their seed round them, they will remain in the ground till it is ploughed up again, though it be for a whole year, some say four or five years, and will then come up with the corn. The surest way to destroy them is to lay the ground down to clover, and to mow the oats and clover together before the oats are ripe. *By some called Drack.*

OCTOBER. The tenth month of the year.

Work to be done this month in the Kitchen Garden.

As October is the only time to crop a garden before winter, omit not any thing ordered now till next month.

Aromatic herbs and shrubs, in beds, weed; and spread some earth over them.

Asparagus-stalks cut down, hoe the weeds, and spread earth from the paths on them.

Hotbeds prepare for forcing, and plant (three-year-old plants) for the first crop.

Beans, the early Mazagan, must be planted on a south border, for the first crop.

Borecole, plant out the third crop, and hoe the ground about the others.

Broccoli, plant out the rest of the fourth crop.

Cabbages, sown in August, plant half out in a warm situation.

Cabbage Turneps, plant early in the month, and earth up others.

Carrots sown in July, finish hoeing.

Cauliflowers, plant six to each glass, and the rest in a frame, or under a south wall.

Celery, plant out the fifth and last crop, and earth up the second to blanch.

Coleworts, finish planting.

Cress and Mustard, sow on a hotbed.

Endive, tie up to blanch, and plant more.

Eschalots, Garlick, and Rocamboles, plant.

Ground, which is vacant, throw in ridges.

Hoe Borecole, Broccoli, Cabbages, and Cabbage-Turneps, and draw up earth to their stems.

Hoe Carrots and Spinach.

Hotbeds prepare for forcing asparagus.

Lettuces, plant out Cabbage and Brown Dutch on Asparagus beds, some under glasses and on hotbeds for forcing.

Mint, plant in pots on a hotbed.

Mushroom-beds cover well with straw and mats, to defend them from rain.

Onions must be well weeded.

Peas, the early hotspurs, sow on a south border, near the wall, for a first crop. As also

Plant Asparagus on a hotbed, the first crop.

Beans, Borecole, Broccoli, Cabbages, Cabbage Turneps, Cauliflowers, Celery, Coleworts, Endive, Eschalots, Garlick, Lettuces, Mint, Rocamboles.

Plant out, to stand for seed,

Beets, Parsley, Cabbages, Parsneps,

Carrots, Turneps.

Pot herbs and sweet-herbs on beds, weed, stir up the earth, and spread more over them.

Seeds of all sorts should be threshed out, dried, and put into bags.

Sow cress and mustard on hotbeds.

Peas on a south border.

Spinach, hoe for the last time before winter.

Weeds in every part of the garden must be destroyed.

Flower Garden and Shrubbery.

Any thing ordered last month, it omitted, finish early in this.

Auriculas and Carnations remove into shelter, and in wet weather cover with mats.

Bulbous roots for forcing, in pots or boxes, plant, and finish planting all others.

Evergreens still plant, but early in the month.

Grass walks, finish laying.

Gravel walks, weed, and roll when dry.

Layering of shrubs, finish, if not done.

Layers and suckers take off, if rooted.

Leaves, sweep up frequently.

Mignonette should be removed under glasses, or else into a green-house, or warm closet.

Perennials, finish planting.

Plant bulbous roots, of all sorts, in the beginning of the month, if not done.

Box and Thrift early in the month.

Perennials early in the month.

Shrubs and trees of all sorts.

Strawberries and Thrift for edging.

Tulips, and all other bulbous roots.

Seedlings in pots, place under a south wall, and weed and earth seedlings in beds.

Seeds, gather in the middle of the day.

Shrubberies, finish pruning and hoeing.

Shrubs and trees, finish planting.

Tulips, finish planting early in the month, and all sorts of bulbous roots.

Turf, finish laying early in the month.

Weeds should be destroyed by hoeing and raking off, or they will take root again.

Trees and Shrubs in Flower.

Althæas, bramble, broom, climber, honeysuckles, jessamin, laurustinus, passion-

passion-flower, roses, strawberry trees, in fruit and flower.

Flowers.

African marygolds, anemonies, asters, auriculas, balsams, campanulas, carnations, china-asters, china-pinks, chrysanthemums, colchiums, cyclamens, daisies, French-marygolds, golden-rods, Guernsey lilies, lupines, marvel of Peru, mignonette, nasturtiums, pansies, pinks, polyanthus, primroses, saffron, scarlet beans, scabiouses, starworts, stocks, sunflowers, sweet-peas, sweet fultan, tuberoses, wall-flowers, and some others.

Fruit-Garden and Orchard.

Apples and pears gather in the middle of fine dry days, and plant the trees the end of the month.

Currants, gooseberries, and raspberries plant.

Nectarines and peaches plant.

Orchard or fruit-trees intended to be planted should have the ground prepared and the holes digged beforehand.

Plant fruit-trees of all sorts.

Prune all sorts of wall-trees and stone-fruits.

Strawberry-beds finish dressing.

Vines prune and plant.

Wall-trees may be pruned and planted.

The Greenhouse.

Give air very freely in the day-time.

Earth the tops of the pots.

Geraniums take in, early in the month.

Leaves clean well before the plants are set in order, and dead ones pick off.

Myrtles may be taken in, towards the end of the month.

Oranges should not remain out this month.

Succulent plants water sparingly.

Water myrtles, oranges, winter cherries, and all woody plants frequently.

Windows open every fine day.

OFFSETS. Young roots that spring and grow from roots that are round, tuberous, or bulbous; also the loose, outward brown skins, either in tulips, onions, &c.

OILS. The beards or prickles of barley, &c.

OILY SEED, [*Sesamum.*] See *Oily GRAIN.*

OLEANDER, [*Nerium.*] Rose bay. There are several varieties of this plant, all fine evergreens, and producing large

clusters of fine ornamental flowers; they are exotics, brought from the island of Crete, and both the Indies, but are hardy enough to bear the open air in summer, and green-house in winter. They are propagated by layers, cuttings, and suckers.

OLIVE, [*Olea.*] The species are the European, common olive tree, and the cape box leaved olive. The European rises with upright solid stems, branching numerously on every side, twenty or thirty feet high; spear-shaped, stiff, opposite leaves, two or three inches long, and half an inch or more broad; and at the axillas small clusters of white flowers, succeeded by oval fruit.

This species is the principal sort cultivated for its fruit; the varieties of which are numerous, varying in size, colour, and quality.

It is a native of the southern warm parts of Europe, and is cultivated in great quantities in the south of France, Italy, and Portugal, for the fruit to make olive-oil, which is in so great repute, and is transported to all parts, to the great advantage of those countries where the trees grow in the open ground: the green fruit is also in much esteem for pickling, of which we may see plenty in the shops.

The Cape Box-leaved Olive rises with shrubby stems, branching numerously from the bottom, six or seven feet high; small, oval, thick, stiff shining leaves; and at the axillas small clusters of whitish flowers; succeeded by small fruit of inferior value.

These plants in this country must be kept principally in pots for moving to shelter of a green-house in winter; for they are too tender to prosper well in the open ground here; though sometimes they are planted against a warm south wall, and sheltered occasionally from frost in winter, by mulching the roots, and matting their tops; whereby they may be preserved, and will sometimes produce fruit for pickling; a very severe winter, however, often kills or greatly injures their young branches; therefore let the principal part be potted in rich earth, and placed among the green-house shrubs.

Their propagation here is commonly by layers.

The laying is performed on the young

young branches in spring; give plenty of water all summer, and they will sometimes be rooted fit for potting-off by autumn; but sometimes they require two summers to be rooted effectually: when, however, they are properly rooted; take them off early in autumn, and pot them separately; give water, and place them in the shade till they have taken fresh root; and in October remove them into the green-house, &c.

Those you intend to plant in the open-ground, as before suggested, should be kept in pots, in order to have occasional shelter of a garden-frame two or three years, till they have acquired some size, and are hardened to the full air; then transplant them into a warm border against a wall: mulch their roots in winter, and mat their tops in frosty weather.

Wild OLIVE, [*Oleaster*, *Elæagnus*.] There are two species, the narrow-leaved, and the thorny; both these trees merit culture, the first for the shrubbery, the second for the stove; their silvery-leaves render them very conspicuous, and effects a delightful variety.

Their propagation is easily effected by layers of their young shoots, also by cuttings, which will be rooted in one year, and may then be transplanted, placing the hardy kinds in the nursery, to have two or three years growth, when they will be fit for the shrubbery.

Wild OLIVE of Barbadoes, [*Bontia*.] This plant is greatly cultivated in the gardens at Barbadoes for making of hedges, than which there is not a more proper plant to thrive in those hot countries, it being an evergreen, and of quick growth. We have been informed that from cuttings (planted in the rainy season, when they have immediately taken root) there has been a complete hedge, four or five feet high, in eighteen months. In England it is preferred in stoves. It may be raised from seeds, which should be sown on a hot-bed early in the spring, that the plants may acquire strength before winter. When the plants are come up, they must be transplanted out each into a separate small pot, and plunged into a moderate hot-bed of tanners bark, observing to shade them until they have taken root; after which they

must have a large share of air in warm weather, and be often refreshed with water. In winter they must be placed in the stove, where they should have a moderate degree of warmth, and but little water during that season. In summer they may be exposed abroad, in very hot weather, in a sheltered situation. With this management these plants will produce flowers and fruit in three years from seed. They may also be propagated by cuttings, which should be planted in the spring before the plants have begun to shoot. These must be put into pots, and plunged into a moderate hot-bed, observing to shade them until they have taken root, after which they must be treated as hath been directed for the seedling plants. These plants being evergreen, and growing in a pyramidal form, make a pretty variety in the stove amongst other exotic plants.

Spurge OLIVE. See *Spurge LAUREL*.

OLLIVORY. A kitchen garden.

OLLET. Fuel of any kind.

OMY. Mellow, applied to land.

ONE BERRY, [*Paris*.] *Truelove*. This plant grows wild in moist shady woods in divers parts of England, but especially in the northern counties, and it is with great difficulty preserved in gardens. The only method to procure it, is to take up the plants from the places where they grow wild, preserving good balls of earth to their roots, and plant them in a shady moist border, where they may remain undisturbed, in which situation they will live some years; but as it is a plant of little beauty, it is rarely preserved in gardens.

ONE BLADE, [*Smilax*.] There are twelve or thirteen species, mostly of a shrubby, climbing growth, some hardy, and some of tender nature, but it is principally some of the hardy kinds that are esteemed for culture in our gardens, having long trailing stalks, some armed with prickles, others are unarmed, and mostly climb by means of cirrhi, or clasps, upon the adjacent trees and bushes, many feet high, which renders them proper furniture for thickets and wilderness quarters, &c. are all exotics from different foreign countries, both in Europe, Asia, and America; consisting of several shrubby, and one herbaceous kind for hardy plantations, and some shrubby sorts for the green-house, &c.

The hardy kinds are propagated by slipping the roots, by layers, and by seed.

The tender species may be propagated by layers, and by dividing the roots. Perform the laying in spring on the young shoots, which by autumn or spring following will be fit for potting off separately: and by roots, these being slipped in March or April, and the off-sets potted separately, they will soon take root; managing the whole as other woody exotics of the greenhouse.

ONION, [*Cepa*.] The varieties are, Strasburgh or common oval onion, Spanish silver-skinned large flat onion, Spanish red-skinned large flat onion, Portugal great oval onion.

Of these four the Strasburgh is the best for general culture; it is a handsome bulb, generally assuming an oval shape, is of firm growth, and keeps well for winter service.

The Spanish onions are large and flat, the white sort is of mildest flavour. Both the varieties generally turn out very profitable crops, and none excels them for culinary purposes, but they rarely keep so well after Christmas as the Strasburgh or oval onion.

The Portugal onion is a very large handsome bulb, of somewhat oval shape, although they rarely attain the size here as in Portugal, &c. as is obvious by those imported annually, from that kingdom by the orange merchants. If, however, seeds saved in Portugal are sown here, the bulbs will arrive at a much larger size than from seeds saved in England, especially if saved two or three years successively, which will often be so far degenerated, that the bulbs become flat, and not larger than the common onions.

This sort being very mild, is greatly esteemed for sauces, and other uses in cookery.

All these sorts are propagated by seed sown annually; which, for the general crops, the proper season is from about the twentieth of February until the latter end of March, observing however, in cold, wet, stubborn land, it is proper to defer sowing entirely until towards the middle of the last named month. It is likewise to be remarked, that in cases of omission in sowing at the times above-mentioned, it may be

performed in moist rich soils, with tolerable success, any time before the 15th of April; but remembering that the crops of the February or March sowing always build more freely, and acquire a much larger growth than those sown later.

The proper situation and soil for these crops should be an open exposure, and the land moderately light and rich; choosing however a spot of the best mellow ground in the garden, with the addition, if possible, of a good coat of rotten dung, which should be dug in, one spade deep, observing to preserve a level surface; and while it is fresh stirred, let the seed be sown, which is of particular importance. Do not however sow it when the surface is so wet or moist as to clog to the feet, or rake.

The proper quantity of seed is about an ounce to every rod or pole of ground, but if it is not required to have them thick for culture, two ounces for three rods is sufficient.

Be particularly careful to procure fresh seed; for of that which is more than one year old, not one in fifty will grow.

The seed may either be sown all over the piece or plat of ground, and raked in; or the ground may first be divided into beds of four or five feet, allowing foot-wide alleys between; then sow the seed with a regular spreading cast, and immediately tread the surface over evenly; then pare the alleys an inch or two deep, and cast the earth over the beds, and directly proceed to rake them length-ways, keeping an even hand, and trim off all stones.

The sowing them in beds is certainly the most eligible practice, when it is designed to draw or cull the young onions from time to time, for market or family service, because in such cases a person can stand in the alleys without treading at every turn upon the beds, which renders the surface hard, to the detriment of the crop, as well as unavoidably trampling upon the plants themselves; and it is likewise very convenient to stand in the alleys to weed, thin, or hoe the crop.

It is a common practice in the general culture of onions to sow them thick, to allow for culling or drawing out the superabundant plants by degrees as they are wanted. We, how-
ever,

ever, advise to sow a piece particularly for general culling, exclusive of the main crop, for by a daily thinning out the superfluous plants, there is no avoiding treading upon, disturbing, and loosening the remaining ones, and the plants thereby become of stunted growth.

In fifteen or twenty days after the seed is sown, the plants will appear; and in a month or six weeks after that, they will be three or four inches high, and weeds will be numerous, when they should be cleaned from weeds, and thinned to three or four inches distance. The weeding and thinning should be began in due time, before the weeds branch and spread, which may either be performed by hand or small hoeing; the latter is the most expeditious method, as one man may do as much as three, and is also the most beneficial to the plants, for by stirring the ground about them with the hoe, it will greatly facilitate their growth, as will be obvious in a few days after the operation; a small hoe two inches broad is the proper size; chuse dry weather, cut up all weeds, and where the plants stand close, cut them out to two or three inches distance each way, having regard to leave the strongest and most promising plants.

In a month after run over them again with the hoe, and cut up weeds, and any superfluous plants that escaped you the first time; after this they will require no farther culture than pulling out straggling weeds.

In July the plants will begin to swell greatly at bottom, and in August the bulbs will be fully grown.

Towards the middle of August, therefore, examine the crop in general; when the necks shrink and fall, and the leaves wither, it may be presumed the bulbs are arrived at maturity, and are done growing, and should be pulled up, cleaned, dried, and housed for use: this should be done in dry weather; at the same time hoe and rake a piece of the ground clean, and as you pull the onions, spread them thereon to dry and harden. Here let them lie about a fortnight, turning them every day or two, when, if the weather proves dry, they will be duly prepared for keeping, then take the first opportunity to house them before wet weather prevails. Let

the bulbs be first divested of all adhering earth, loose skins, and the grossest parts of the leaves and neck, rejecting all insectious and bruised ones; and carry them into any dry upper room out of the damp, spreading them on the floor not more than a foot thick, but if room to lay them thinner, it will be an advantage.

Being now housed, the closer the room is kept the better, observing to turn them over once in three weeks, and clear out such as have any tendency to infection, which they would soon communicate to others in their neighbourhood, and it would become general.

In the culture of onions it often happens that, through badness of seed, many are disappointed of a crop, by waiting long in expectation of the plants rising, till it has been too late to sow again. In this recourse may be had to transplantation from other gardens, either from a neighbouring one, where there are superfluous crops, or may purchase a bed, or such part of one as is necessary from a market gardener; this should be done in May, or early in June, and if possible in moist weather: having a spot of well-dunged ground prepared, take up the plants with good roots, and plant them in rows six inches distance, and four inches asunder in each row, giving directly a hearty watering.

Repeat the waterings occasionally for a week or fortnight, and the plants will grow freely, and you will not be disappointed; they will form handsome bulbs.

Onions for pickling are in great request. These proper for that purpose should not be bigger than common round buttons; to procure which in due quantity, some seed should be sown late in a spot of light poor land; about the middle of April is the proper time: sow it moderately thick, and the plants need not to be thinned, except they rise in very thick clusters. They will bulb in June and July, and be fit to take up in August.

Right pickling onions sell well in the markets; those that are cleaned and trimmed ready for the pickling tub fetch from eight to twelve shillings per bushel.

In the spring many of the keeping
onions

onions will unavoidably grow as they lie in the house, these may be planted out in rows six inches distance, and will serve to draw up by way of escallions.

Of the Autumn or Michaelmas crop.

This crop is generally sown in August, and the plants arise before Michaelmas, stand the winter, and are intended principally for spring service, to draw up for young fallads, &c. and likewise, if the Strasburgh or any other variety of the common onion are sown, they, if permitted to stand, will bulb to a tolerable size in June, and supply the kitchen or market as headed onions till those of the spring crop are bulbed.

But as the common onion is liable to be cut off in severe winters, it is necessary always at the same time to sow some beds of Welch onions, which bid defiance to the most rigorous frost.

We observed above, that August is the season for sowing these crops; it is to be remarked, that in warm rich land, from the fifteenth to the twenty-fifth is the proper period; but in cold or poor ground, always sow in the first or second week of that month, observing to sow them in beds four feet wide, with twelve-inch alleys between; do not spare seed, and tread and rake it in as directed in the spring crop.

The plants will appear in a fortnight, and with them numerous weeds, to which early attention must be had to clear them out by hand before they begin to spread, but the plants of this crop are not now to be thinned.

In November and December however, if they stand very thick, some of the largest may be thinned out occasionally for use.

Of sowing seed of this species

February is the proper time to plant onions for seed, though this is often done in October by those that save great quantities for sale.

For this purpose make choice of a due quantity of the largest and hand-somest bulbs, rejecting all blemished ones, and such as have already made any effort to grow, and having made choice of a spot of ground well exposed to the sun, which being dug, proceed to plant the onions; strain a line, and with a hoe or spade open three drills, twelve inches asunder, and six deep, place the bulbs therein nine inches distance, and rake the

earth over them; measure off two feet for an alley, and in that manner proceed to the end; the wide spaces of two feet is by way of alleys to go between to hoe and clear off weeds, as well as to stake and support the stalks of the plants when necessary.

In June the flower stalks will be shot their full height, and the flower heads will be formed at top, to secure which in erect position, drive some stout stakes in the ground along each row, at two yards distance, and from stake to stake fasten double lines of pack-thread, and if these are tied together in the intervals between the stems of each plant, it will effectually secure them.

About the latter end of August the seed will be ripe, which is very discoverable by the capsules opening, and black colour of the seed; cut the heads in a dry day, and spread them upon cloths in the sun, but remove them under cover at night; and in a week or fortnight beat or rub out the seed; clean it out from the rubbish, and put it up in bags for use.

Good onion seed is a very material article to be attended to: it is to be remarked that this seed never germinates freely after the first year, but notwithstanding this, seeds-men are very apt to mix more than half old seed with their new, to the great loss and disappointment of many; to try its goodness, some, before they venture their general crop, sow a little in a pot, and place it in a moderate hot-bed, or near a fire: but the most expeditious method is this; tie about a thimble-full of the seed loosely in a piece of linen rag, and put it into a vessel of boiling water, suspended by a thread; in ten or fifteen minutes pull it out, and if the seeds are good, they will in that short space of time be germinated or chipped, perhaps a quarter of an inch in length.

Leek, & other seed of similar nature, may be tried by the same experiment.

Welsh Onions. A sort of onions propagated by gardeners for the use of the table in spring; they never make any bulb, and are therefore only to be eaten green with fallads.

They are propagated by sowing their seeds towards the end of July, in beds of a dry but rich soil; and in three weeks

weeks after sowing they will appear above ground; when they must be kept very free from weeds. About October all their leaves die away, which has occasioned some to think all the plantation lost, and to dig up the ground for some other use; but if they are suffered to stand, they will shoot up again very strong in January, and from that time will grow very vigorously, resist all weathers, and be fit to draw in March, when they will be extremely green and fine. They are much stronger than any other sort of onions, and have much of the taste of garlic.

Sea ONION. See SQUILL.

OPIUM. In the materia medica, is an insipid juice, partly of the resinous, and partly of the gummy kind, brought to us in cakes from eight ounces to a pound weight. It is very heavy, of a dense texture, and not perfectly dry; but in general, easily receives an impression from the finger: its colour is a brownish yellow, so very dark and dusky that at first sight it appears black: it has a dead and faint smell, and its taste is very bitter and acrid. It is to be chosen moderately firm, and not too soft; its smell and taste should be very strong, and care is to be taken that there is no dirty or stony matter in it.

Opium is the juice of the papaver album, or white poppy, with which the fields of Asia Minor are in many places sown, as ours are with corn. When the heads are near ripening, they wound them with an instrument that has five edges, which on being stuck into the head makes at once five long cuts in it; and from these wounds the opium flows, and is next day taken off by a person who goes round the field, and put up in a vessel, which he carries fastened to his girdle: at the same time that this opium is collected, the opposite side of the poppy head is wounded, and the opium collected from it the next day. They distinguish however the produce of the first wounds from that of the succeeding ones, for the first juice afforded by the plant is greatly superior to what is obtained afterwards. After they have collected the opium, they moisten it with a small quantity of water or honey, and work it a long time upon a flat, hard,

and smooth board, with a thick and strong instrument of the same wood, till it becomes of the consistence of pitch; and then work it up with their hands, and form it into cakes or rolls for sale.

Opium at present is in great esteem, and is of one of the most valuable of all the simple medicines: applied externally it is emollient, relaxing and discutient, and greatly promotes suppuration; if long kept upon the skin, it takes off the hair, and always occasions an itching in it; sometimes it exulcerates it, and raises little blisters if applied to a tender part. Sometimes, on external application, it allays pain, and even occasions sleep: but it must by no means be applied to the head, especially to the sutures of the skull, for it has been known to have the most terrible effects in this application, and even to bring on death itself.

Opium taken internally, removes melancholy, eases pain and disposes to sleep; in many cases removes hæmorrhages, provokes sweating, and is a provocation to venery; and in general has a greater effect on women and children than on men. A moderate dose is commonly under a grain, though according to the circumstances two grains, or even three may be within the limits of this denomination; but custom will make people bear a dram or more; tho' in this case nature is vitiated, and nothing is to be hence judged in regard to others. If given dissolved, it operates in half an hour; if in a solid form, as in pills, or the like, it is sometimes an hour and a half. Its first effect, in this case, is the making the patient cheerful, as if he had drank moderately of wine, and at the same time bold and above the fear of danger; for which reason the Turks always take it when they are going to battle. A very immoderate dose brings on a sort of drunkenness, much like that occasioned by an immoderate quantity of strong liquors; cheerfulness and loud laughter at first, then a relaxation of limbs, a loss of memory, and lightheadedness; then vertiges, dimness of the eyes, with a laxity of the cornea and a dilatation of the pupils, a slowness of the pulse, redness of the face, relaxation of the under jaws; swelling of the lips; difficulty

faculty of breathing, painful erection of the penis, convulsions, cold sweats, and, finally, death. Those who escape are usually relieved by a great number of stools, or profuse sweats; People who have gradually accustomed themselves to an immoderate use of opium, are subject to relaxations and weaknesses of all the parts of the body: they are apt to be faint, idle, and thoughtless; and are generally in a stupid and uncomfortable state, except just after they have taken a fresh dose; in short, they lose their appetite, and grow old before their time.

Prepared opium, commonly called extract of opium, is made by dissolving opium in a sufficient quantity of water with a gentle heat; then straining the solution from the faeces, and evaporating it to the consistence of honey. Tincture of opium, or liquid laudanum, otherwise called the thebaic tincture, is made as follows: take of prepared opium two ounces; of cinnamon and cloves, each one drachm; of white-wine, one pint: infuse them a week without heat, and then filtre it through paper. Quincy observes of this preparation, that the addition of the spices are of no use.

OPODELDOC. A liniment in much esteem for sprains, &c. it is thus made:

Take spirit of rosemary one pint,
Soft soap three ounces,
Camphor one ounce.

The College of London direct hard soap, but soft soap is most generally used.

ORACH, [*Atriplex*.] Arrach. The species are, 1. Pale green, or white garden orach. 2. Broad-leaved, or shrubby orach. 3. Shrubby sea orach. There are several other species, some of which grow naturally in England, but as they are plants of no beauty, they are rarely admitted into gardens.

The first of these plants was formerly cultivated in the kitchen-garden as a culinary herb, being used as spinach, and is now by some persons preferred to it, though in general it is not esteemed amongst the English; but the French at present cultivate this plant for use, as the people in the northern parts of England also do.

The second sort was formerly cultivated in gardens as a shrub, and by some persons were formed into hedges,

and constantly sheared to keep thick; but this plant is by no means fit for such purposes on many accounts, for it grows too vigorous; the shoots in one month at the growing season of the year will be two feet long, provided they have a good soil, so that a hedge of this plant cannot be kept in tolerable order, nor will it ever form a thick hedge. But a worse inconvenience attends this plant, for in very hard winters it is often destroyed.

It may be propagated by cuttings, which may be planted in any of the summer months on a shady border; they will soon take root, and be fit to transplant the Michaelmas following, when they should be planted where they are to remain.

The third sort grows wild in divers parts of England, on the sea-side, from whence the plants may be procured; or it may be propagated by cuttings in the same manner as the former sort. This is a low under shrub, seldom rising above two feet and a half, or at most three feet high, but becomes very bushy. This may have a place amongst other low shrubs, and if planted on a poor gravelly soil, will abide several years, and make pretty diversity.

ORANGE TREE, [*Aurantium*.] The species are, the Seville Orange, the China Orange, the Shaddock, or Pumplemoes, the Horned Orange, the Hermaphrodite Orange, the Willow Leaved, and the Dwarf or Nutmeg Orange.

There are many more less material varieties than are here noticed, in the countries where they grow in the open ground; and the varieties, like our apples and pears, may be multiplied by seed without end: but, like other fruit so raised, it is probable there may not be one in a hundred worth notice, so that the approved sorts can only be continued with certainty by budding.

The flowers of all the species and varieties are formed each of five spreading petals, appearing here principally in May or June, and the fruit continue setting in June and July, and ripen the year following.

All the sorts are elegant evergreens of the tree kind, obtaining in England from about five to eight or ten feet stature, forming full and handsome heads, closely garnished with beautiful large leaves the year round, and a pro-

fusion of sweet flowers, in spring and early in summer, which, even in this country, are often succeeded by abundance of fruit, sometimes arriving to tolerable perfection; but the chief merit of these trees in England is for ornament, which consists not only in their beautiful foliage, but also in the flowers and fruit, and have this peculiar merit, as to exhibit blossoms, green fruit in different stages of growth, and full-grown ripe yellow fruit, all at the same time; which, together with their large shining green leaves, effect one of the most beautiful contrasts of our gardens, which renders all the sorts very desirable furniture for the green-house collection. Oranges and lemons are generally more fruitful in England than the citron, and the Seville orange most of all, which is the only sort of orange to be depended on for any considerable quantity of flowers and fruit; this tree being hardiest, retains its fruit in winter better than most of the other varieties.

These trees are all natives originally of India, but have been long retained in our gardens as green-house plants; and in the southern parts of Europe, as Portugal, Spain, and Italy, they grow in the open ground like our apple and pear trees, and from which countries vast quantities of the fruit are imported hither annually; but in England the trees must always be continued in pots or tubs, to be housed in winter.

They all succeed in the open air from the beginning of June unto the middle or latter end of October, and the rest of the year must have the shelter of a green-house, and they will prosper in any good garden mould.

They are propagated by seed, budding, and inarching. By seed, i. e. the kernels of the fruit: this method of raising these trees is rarely practised in England, except for stocks, on which to bud the different kinds; for although raising the trees entirely from seed, without budding, is the way to gain new varieties, yet out of numbers so raised, it is probable not a tree of them may produce fruit that possesses any good property, but will be small, crablike, and intolerably sour and harsh: but when any new valuable variety is by this means accidentally

obtained, it is continued, and multiplied by budding it upon stocks raised from the kernels of any of the sorts; by which practice all the above described varieties are annually increased in our gardens. The method of raising them entirely from seeds, except for stocks, is both tedious and uncertain; therefore in this country it is scarce worth practising, unless a few merely for curiosity.

The raising them, however, from the kernel, either to form trees for new varieties, or for stocks to bud upon, is in this country performed effectually and expeditiously by the aid of a hot-bed, and by this means stocks may be obtained of due size for budding, in two years. The following is the method of raising them:—

Early in spring procure some kernels which may be had plentifully from rotten fruits, or others that are perfectly ripened, observing, that for stocks, the citron, lemon, and Seville orange, as being the freest shooters, are to be preferred, though the citron is the strongest shooter of the three: sow the kernels in March, in pots of rich light earth half an inch deep, and plunge them in a hot-bed of dung or tan, under frame and glasses, giving them air, and frequent sprinklings of water. In two or three weeks the plants will come up, and in six weeks or two months more, they will be advanced four or five inches in height; observing, in the middle or latter end of June, to harden them to the full air, in which let them remain till October, then move them into the green-house to stand till spring. In March or April, proceed to plant them singly in small pots, being careful to shake them out of the seed-pot with their roots entire, and having half filled the other pots with light, rich, loamy compost, place one plant in each pot, filling it up over the roots with the same sort of earth, and let them be directly watered, repeating it occasionally till they are fresh rooted; afterwards treat them as other woody exotics of the green-house, and in a year or two, the largest of those designed for stocks will be fit to bud.

But, to have stocks as forward and fine as possible for budding, as soon as they are potted out as above, plunge them directly in a hot-bed, under a frame

frame and glasses, about three or four months, which will draw them up in height with handsome stems.

A bark-bed would be the most eligible, made either in a glass pit, or to be covered with a deep frame and lights; so plunging the pots to their rims in the bed, giving occasional shade in the middle of hot sunny days, and fresh air daily by tilting one end of the lights more or less, as you shall judge expedient: likewise refresh them frequently with water, and by the middle or end of July the plants will be advanced fifteen or eighteen inches, or near two feet high, observing then to harden them by degrees to the full air for the remainder of the summer; and by being thus forwarded, those designed for stocks will be in excellent order for budding the year following.

But these seedlings may still be more forwarded, and a year or two's growth may be gained by forcing them, as above, the first season. This is effected by pricking out the seedlings the first year they come up, when two or three inches high, in small pots, as above, to be plunged either in a bark-bed, or even in a dung hot-bed, covered with old tan eight or ten inches deep for the reception of the pots. The plants are then to be potted singly, and plunged in the hot-bed, and by the middle or end of July, they will have advanced to twelve or fifteen inches, or perhaps to a foot and a half, or near two feet in height; they must then be gradually hardened to the full air, by raising the lights more and more every day, leaving them also up on nights, and at last take them quite off in a cloudy calm day. Let the plants remain fully exposed till October, then move them into the green-house for the winter, and many of them will be in due order to receive the buds the next August; and the following is the method:

The operation of budding is performed in August upon stocks of their own kinds, for all the species and varieties of this genus take freely upon one another, and the budding or inoculation is performed in the common way.

As to the buds for budding them, observe to procure cuttings only from bearing free-shooting trees, of the sorts you would encrease; young shoots, that are round and plump, must be

chosen, and from these take the buds in the usual manner, being careful to insert them in a smooth part of the stock, at about six to ten or fifteen inches from the bottom, one bud in each stock, tying them with a ligature of bafs.

As soon as the budding is finished, it is proper to place the plants in their pots in the green-house, or in a glass-case, &c. to defend the buds from wet and drying winds, turning the budded part from the sun: or where there is the convenience of a spare bark-pit, where the heat of the bark is almost exhausted, the pots may be plunged therein two or three weeks, and it will more effectually promote the union of the buds; observing, in either department, to admit air freely, by opening the front glasses, and allowing a slight shade of mats in the middle of scorching sunny days: the pots should also be supplied with water every day or two during the hot weather. In three or four weeks the buds will be united with the stocks; when it is proper to loosen the bandage of each bud, that they may have room to swell; observing, however, that the buds will all remain dormant till spring.

After this there is nothing more required this year but due waterings, only observing, that in case of great rains, it will be proper to retain the plants in the green-house for the remainder of the summer, and until next spring.

In March following, the heads of all the stocks must be cut off slanting close behind the insertion of the bud; after this operation the buds will soon begin to spring, and produce each one shoot, which probably will obtain from about five or six, to eight or ten inches in length the same year. It is proper to observe, that if the stocks could have the aid of a bark-bed, there will be a chance of having the buds shoot a foot and half, or more, by the end of summer; therefore where there is the convenience of a bark pit, or glass-case, or any deep frame, that can be placed on a bark-bed, &c. we should advise by all means to make use of such conveniences for forwarding the first shoot of the buds; so that as soon as the stocks are headed, as above directed, plunge the pots in the hot-bed, and let them enjoy the benefit of air and wa-

ter, in proportion to the temperature of the bed and weather; likewise occasional shade when the sun is very powerful. Here they may be continued, with the above care, till the end of July, when some of the strongest shooters will be advanced near two feet high; and it is then proper to begin to inure them by degrees to the full air, to harden them against winter, that they may be able to live during that season in the green-house, to which they must be removed in October.

When it is however designed to propagate by inarching, stocks must be raised from seed, as before directed, which, when of due size, are to be placed in their pots, upon a sort of stage, or some erection convenient to the head of the trees you intend to inarch from, observing to fix upon some convenient young shoots, nearly the size of the stocks, for the purpose of inarching; these are to be inarched in the stocks, as they grow on the trees, in April or May, one in each stock, and by the end of August following they will be united to the stock, and may be separated from the parent tree.

But this method of propagating these trees, is rather practised by way of curiosity, to raise a few trees to a bearing state in haste, because, by inarching a young bearing branch, furnished with fruit, into any of their own stocks, in April or May, it will frequently be united by the following August, and the branch so inarched may be separated from its parent plant, and, being firmly attached to the stock, it then commences a new tree, bearing fruit, raised in the short space of four or five months.

By the same rule you may inarch an orange into the branch of a citron or lemon, or all three upon the same tree, for the sake of variety.

But trees raised by this method never grow so large nor handsome as those raised by budding.

The flowers are highly odoriferous, and have been for some time past of great esteem as a perfume: their taste is somewhat warm, accompanied with a degree of bitterness. They yield their flavour by infusion, to rectified spirit, and in distillation both to spirit and water: the bitter matter is dissolved by water, and, on evaporating the decoction, remains entire in the extract. The distilled water was for-

merly kept in the shops, but on account of the scarcity of the flowers is now laid aside: it is called by foreign writers *aqua nephae*. An oil distilled from these flowers is brought from Italy under the name of *oleum* or *essentia neroli*.

The outer yellow rind of the fruit is a grateful aromatic bitter, and, in cold phlegmatic constitutions, proves an excellent stomachic and carminative, promoting appetite, warming the habit, and strengthening the tone of the viscera. Orange peel appears to be very considerably warmer than that of lemons, and to abound more with essential oil: to this circumstance therefore due regard ought to be had in the use of these medicines. The flavour of the fruit is likewise supposed to be less perishable than that of the other, hence the College employ orange peel in the spirituous bitter tincture, which is designed for keeping, whilst in the bitter watery infusion, lemon peel is preferred. A syrup and two distilled waters are for the same reason prepared from the rind of oranges in preference to that of lemons.

The juice of oranges is a grateful acid liquor, of considerable use in febrile or inflammatory distempers, for allaying heat, abating exorbitant commotions of the blood, quenching thirst, and promoting the salutary excretions; it is likewise of great use in scurvy, especially when given in conjunction with the *cochlearia*, *nasturtium*, or other acrid antiscorbutics, as in the *succi scorbutici* of the shops.

ORANGE MINT, [*Mentha Rubra*.] A species of mint smelling like an orange.

Mock ORANGE. See Mock ORANGE.

ORCHARD. A garden department, consigned entirely to the growth of standard fruit trees, for furnishing a large supply of the most useful kinds of fruit.

In the orchard you may have as standards all sorts of apple trees, most sorts of pears and plumbs, and all sorts of cherries; which four species are the capital orchard fruits: each of which comprise numerous valuable varieties; but to have a compleat orchard, you may also have quinces, medlars, mulberries, service-trees, filberts, Spanish nuts, barberries; likewise walnuts and chestnuts, which two latter are particularly applicable for the boundaries of orchards,

orchards, to screen the other trees from the insults of impetuous winds and cold blasts. All these trees should be arranged in rows from twenty to thirty feet distance.

But sometimes orchards consist entirely of apple-trees, particularly in the cyder-making countries, where they are cultivated in very great quantities in large fields, and in hedge-rows, for the fruit to make cyder for public supply.

And sometimes whole orchards of very considerable extent are entirely of cherry-trees; but in this case, it is when the fruit is designed for sale in some great city, as London, &c. for the supply of which city, great numbers of cherry-orchards are in some of the adjacent counties, but more particularly in Kent, which is famous for very extensive cherry-orchards; many of which are entirely of that sort called Kentish cherry, as being generally a great bearer; others are stored with all the principal sorts of cultivated cherries, from the earliest to the latest kinds.

A general orchard, however, composed of all the before-mentioned fruit-trees, should consist of a double portion of apple-trees or more, because they are considerably the most useful fruit, and may be continued for use the year round.

The utility of a general orchard, both for private use and for profit, stored with various sorts of fruit-trees, must be very great, as well as afford infinite pleasure from the delightful appearance it makes from early spring till late in autumn: in spring the various trees in blossom are highly ornamental; in summer, the pleasure is heightened by observing the various fruits advancing to perfection; and as the season advances, the mature growth of the various sorts arriving to perfection in regular succession from May or June until the end of October, must afford exceeding delight, as well as great profit.

As to the proper extent of ground for an orchard, this must be proportioned, in some measure, to the extent of land you have to work on, and the quantity of fruit required either for private use, or for public supply: so that an orchard may be from half an acre to twenty or more in extent.

With respect to the situation and aspect for an orchard, we may observe

very thriving orchards both in low and high situations, and on declivities and plains, in various aspects or exposures, provided the natural soil is good. We should, however, avoid very low damp situations as much as the nature of the place will admit; for in very wet soils no fruit-trees will prosper, nor the fruit be fine: but a moderately low situation, free from copious wet, may be more eligible than an elevated ground, as being less exposed to tempestuous winds; though a situation having a small declivity is very desirable, especially if its aspect incline towards the east, south-east, or southerly, which are rather more eligible than a westerly aspect; but a north aspect is the worst of all for an orchard, unless particularly compensated by the peculiar temperament or good quality of the soil. We would remark, for the advantage of those that are not accommodated with choice of situation and aspect, that they need not be under any great anxiety, if the soil is but suitable; only observing, if possible, to abandon very low damp situations, for the reason before given them.

As for soil, any common field or pasture that produces good crops of corn, grass, or kitchen garden vegetables, is suitable for an orchard; if it should prove of a loamy nature, it will be a particular advantage: any soil, however, of a good quality, not too light and dry, or too heavy, stubborn, or wet, but of a medium nature, of a soft pliant temperature, not less than one spade deep of good staple, will be proper for this purpose.

Where, however, the soil is naturally defective, the defects must be rectified as well as possible, by the application of proper manures and composts, and applied either to the whole ground, if but of moderate extent, or to the places where each tree is to stand, for a space of eight or ten feet circumference, working it up with the natural soil of the place.

This application, in extensive orchards, would be a very chargeable operation; therefore those who are at liberty to chuse, should have particular regard to the fixing upon a proper spot, where but little or no foreign aid is requisite.

The preparation of the ground for the reception of the trees, is by trenching,

ing, or if for very considerable orchards, by deep ploughing; but trench-digging, one or two spades, as the soil will admit, is the most eligible, either wholly, or only for the present, in the places where the lines of trees are to stand, a space of six or eight feet wide, all the way in each row, especially if it be grass-ground, and intended to be kept in sward; or if any under-crops are designed to be raised, the ground may be wholly trenched at first; but as to this you may suit your convenience, observing in either case to trench the ground in the usual way to the depth of the natural soil; and if in grass, turn the sward clean to the bottom of each trench, which when rotted, will prove an excellent manure.

In planting orchards, however, on grass-ground, some only dig pits for each tree, capacious enough for the reception of the roots, loosening the bottom well, without the labour of digging any other part of the ground: where the ground, however, is trenched either wholly, or some considerable width along the place of each row of trees, it will consequently prove of greater advantage in promoting their free growth.

The ground must be fenced securely against cattle, &c. either with a good ditch and hedge, or with a paling fence, as may be most convenient.

The best season for planting all the sorts of fruit trees is autumn, soon after the fall of the leaf, from about the latter end of October until December; or it may be performed any time in open weather from October until March.

All the sorts of fruit trees proper for this department, if not furnished with them in your own nursery, may be had very reasonable at all the public nursery-grounds; observing to chuse them principally full standards, with strait clean stems, six feet high, especially the apples, pears, plumbs, cherries, and other tree kinds, each with a branchy well-formed head, of from two or three to four or five years growth; and let several varieties of each particular species be chosen, that ripen their fruit at different times, from the earliest to the latest, according to the nature of the different sorts, that there may be a sufficient supply of every sort regularly during their proper season; and of ap-

ples and pears in particular, chuse a much greater quantity of the autumnal and late ripening kinds, than the early sorts; but the most of all of apples: for the summer-ripening fruit is but of short duration, being only proper for temporary service. The later ripening kinds keep sound some considerable time for autumnal use; and the latest sorts that ripen in October continue in perfection for various uses all winter, and several sorts until the season of apples come again.

Having made choice of the proper sorts, and marked them, let them be taken up with the utmost care, so as to preserve all their roots as entire as possible; and when taken up, prune off any broken or blemished parts of the roots, and just tip the ends of the principal roots in general with the knife, on the under side, with a kind of slope outward.

If the trees have been already headed, or so trained as to have branched out into regular shoots to form each a proper head, they must be planted with the said heads entire, only retrenching or shortening any irregular or ill-placed shoots that take an aukward direction, or run longer than the rest.

The arrangement of the trees in the orchard must be in rows, each kind separate, at distances according to the nature of growth of the different sorts; but for the larger growing kinds, such as apples, pears, plumbs, cherries, &c. they should stand from twenty-five to thirty or forty feet every way asunder, though twenty-five or thirty feet at most is a reasonable distance for all these kinds.

Each species and its varieties should generally be in rows by themselves, the better to suit their respective modes of growth: though for variety you may have some rows of apples and pears ranged alternately; likewise plumbs and cherries; and towards the boundaries may have ranges of lesser growth, as quinces, medlars, filberts, &c. and the outer row of all may be walnut-trees, and some chefnuts, set pretty close, to defend the other trees from violent winds.

Proceed to stake out the ground according to the above distances, for marking the holes for the reception of the trees; which if made to range every way, will have a very agreeable effect, and

and admit the currency of air, and the influence of the sun, more effectually.

In planting very extensive orchards, some divide the ground into large squares or quarters of different dimensions, with intervals of fifty feet wide between, serving both as walks, and for admitting the air. In different quarters plant different sorts of fruit, as apples in one, pears in another, and plumbs and cherries in others, &c. and thus it may be repeated to as many quarters, for each species and its varieties, as may be convenient.

A wide hole must be dug for each tree, capacious enough to receive all the roots freely every way without touching the sides. When the holes are ready, proceed to planting, one tree to each hole, a person holding the stem erect, whilst another trims in the earth, previously breaking it small, and cast it in equally about all the roots, frequently shaking the tree to cause the mould to settle in close about all the smaller roots and fibres, and so as to raise the tree gradually up, that the crown of the roots may be but two or three inches below the general surface; and when the hole is filled up, tread it gently, first round the outside, then near the stem of the tree, forming the surface a little hollow: and then if on the top of all is laid some inverted turf to the width of the holes, forming it with a sort of circular bank, three or four inches high, it will support the tree, and guard the roots from drying winds and the summer's drought: observing that each tree stands perfectly upright, and that they range exactly in their proper rows.

If the orchard is much exposed to the winds, it may be proper to stake the new-planted trees to support them in their proper position, and secure them from being rocked to and fro by the wind, which would greatly retard their rooting afresh; placing one or two strong tall stakes to each tree; but the most effectual method is to have three stakes to each, placed in a triangle, meeting at top near the head of the tree, wrapping a hay-band round that part of the stem, to prevent its being barked by the stakes or tying; then tie the stakes at top close to the tree, with some proper bandage, bringing it close about the stem and stakes together, over the hay-wrapping, in a

proper manner to secure the tree firmly in an erect posture.

The ground of the orchard, between the rows of trees, is very commonly laid down in grass, as being the most convenient for admitting of coming readily at the trees at all times to gather the fruit: but if thought proper, it may be employed for some years either wholly, or in part, for the produce of kitchen vegetables, or for the growth of corn, turnips, potatoes, &c. being careful in digging or ploughing the ground for the reception of these crops, not to go too near to disturb the roots of the trees; likewise not have any strong-growing plants within three feet of each side of the rows of trees: however, after the trees are advanced in growth, and begin to bear any thing considerably, it may be more eligible to lay the ground down intirely in grass, as it will be then more in character of an orchard, and be more convenient for gathering the fruit, and doing any necessary work to the trees; but in any of these ways, every one may suit their inclination or convenience.

If, however, it is laid down in grass, no cattle should be turned in to graze at large, unless the stems of each tree be previously well secured with posts and railing, and wattled with thorn-bushes, especially in young orchards, otherwise they will bark the trees, to their very great injury; nor should large cattle be turned into orchards, where the branches of the trees are low and within their reach.

With regard to the general culture of orchard fruit-trees, observe, that as being standards, their heads should generally be permitted to branch out nearly in their own natural manner, with the branches at full length, without shortening, only on particular occasions, and they will gradually form themselves into large branchy heads, and all the branches soon assume a bearing state; very little pruning of any sort being required to standard fruit-trees, except in particular cases, as above hinted, of superfluous or very irregular growths: as for example, all suckers arising from the root, must constantly be taken off close; likewise divest the stems of all side-branches coming out below the head; and all luxuriant shoots arising in the heart or middle of the tree, or in any part where they

they appear too much crowded, should be pruned off close. If any particular branch of the head should become of long straggling growth, extending beyond all the rest, it may be shortened as you shall see proper, down to some young shoot, or lower branch it supports, that is of a regular growth, or intirely retrenched as it may seem proper to keep up some uniformity in the head; and if the head in general become at any time over-crowded with branches, thin out the worst and most irregular growers of the superfluity. All dead wood and cankered parts should also be cut off to the live wood.

But remarking, that except in the above cases, the branches in general of standard fruit trees, in every stage of growth, should be suffered to shoot forth, both in length and branch, laterally in their own way; for as most of the sorts first form their fruit-buds, or spurs, near the extremity of the branches or shoots, if pruning their ends were practised, it would not only be cutting off the parts where the fruit would have been produced, but would force out a number of lateral uselefs shoots, and crowd the tree with superfluous or unnecessary wood, and greatly retard the branches from forming the above fruit-spurs or buds for bearing; and unless these are formed in plenty; none of the principal tree kinds can ever produce any tolerable crops of fruit; but the trees being suffered to take their natural growth, according to the above rules, all the branches and shoots will gradually form fruit-spurs towards their extreme parts, at almost every eye or bud.

By the above hints it is obvious that standard fruit-trees require but very little culture in respect to pruning; and the less they are pruned, except in the before-mentioned cases, the better they will bear.

Besides, to attempt at any regular pruning of orchard or other standard fruit-trees, would prove a very tedious as well as unnecessary work.

When necessary, however, to prune any of these trees occasionally in the above cases, observe that the proper season for that work is any time from the fall of the leaf until March. Likewise observe in performing that operation, that such branches as require retrenching should be cut off quite

close either to their origin, if necessary, or close to any more convenient branch it may support, not leaving any stump, and make the cut as even and smooth as possible.

Orchard-trees are sometimes greatly infested with moss growing all over their branches, but more particularly those trees which are situated in very damp soils; also often in old orchards where the trees stand so close as to crowd one another so considerably as to exclude the free air: in which case of mossiness, the trees commonly assume a stunted unkindly growth, producing but indifferent crops, and the fruit often small and ill-flavoured. The only remedy for this disaster, is, to thin out some of the branches where thickest, to admit the sun and air more freely, and scrape the moss off from the remainder, with an instrument directed below; but where the trees thus infested stand very close to one another, some of them should be cut down to admit a larger portion of air, and the sun's heat and light; and for the same reason thin the branches of the remaining trees; then clear the branches in general from the grossest of the moss; for which purpose you should be provided with some iron scrapers hollowed on the edge, and of three different sizes to suit the different branches, having the edges a little blunted; and with these tools scrape off the moss from all the principal branches at least, and of as many of the smaller ones as your time will permit, for it is tedious work where there are many trees: after this, if the ground of the orchard, either wholly or but ten or twelve feet width along each row of trees, be dug or deeply ploughed, it will give new vigour to the roots, and which together with the thinning of the trees to admit the sun and air freely, and the principal branches being divested of the moss, you will find them shoot at top with fresh vigour, and the quantity, size, and quality of the fruit be greatly augmented in a year or two.

ORCHARD-GRASS. The name of a small, coarse, but very sweet grass. It is of very quick growth, and may possibly hereafter be cultivated to advantage.

ORE-WEED. A general name for weeds growing at the bottom of the sea,

sea, and also on the muddy and rocky parts of the shore.

Sea-weeds are so beneficial a manure, that farmers ought not to grudge the expence of carrying them a few miles. In Devonshire, Cornwall, and other maritime parts of England, these weeds are laid in heaps till they are rotten, and then spread upon the land, about a load to three rods; but this lasts only one year, unless sand, or a stiff earth, according to the quality of the soil intended to be improved, be laid on or mixed with them; and then they become a lasting manure. In some places, these weeds are gathered in heaps, and burnt as soon as they are dry; after which about a bushel of their ashes is laid on upon three rods of ground. But these, like all other ashes, should be mixed with sand, or stiff earth, if you will have the land last good: otherwise they are only an improvement for a year. These ashes are particularly good for grass grounds over-run with moss. Loose sandy soils are likewise peculiarly benefitted by this weed: but, being a sub-marine plant, the wind and sun soon exhale its moisture; so that the more speedily it is taken from the shore, where storms often throw it up in great quantities, the better it is. When spread on the ground, and afterwards covered over, it soon dissolves into a salt oily slime, proper to fertilize and bind light soils. This is the most approved way of applying it: though some lay it naked, and fresh from the sea, upon their barley lands, towards the end of March and beginning of April, and have a good crop of corn: but such quantities of rank weeds are apt to shoot up afterwards, that no wholesome plant is to be expected that year.

ORCHIS, See DOGSTONES.

ORIGANY, [*Origanum.*] Wild Thyme, or Wild Majoram. This is met with upon dry chalky hills, and in gravelly soils, in several parts of England. It has an agreeable smell, and a pungent taste, warmer than that of the garden majoram, and much resembling thyme, which it seems to agree with in virtue. An essential oil distilled from it, is kept in the shops.

ORPINE, [*Telephium.*] This is a very thick-leaved juicy plant, not unlike the houseleeks. It has a mucilaginous roughness taste, and hence is re-

commended as emollient and astringent, but has never been much regarded in practice.

Bastard ORPINE. See BASTARD ORPINE.

ORRIS, [*Iris.*] The roots of this plant, when recent, have a bitter, but acrid, nauseous taste, and taken into the body proves strongly cathartic; and hence the juice is recommended in dropshies, in the dose of three or four scruples. By drying they lose this quality, yet still retain a somewhat pungent, bitterish taste: their smell in this state is of the aromatic kind; those produced in the warmer climates have a very grateful flavour, approaching to that of March violets: hence the use of the Florentine iris in perfumes, and for flavouring liquors: the shops employ it in the white pectoral troches, &c.

OSIER, [*Salix.*] A small kind of willow; which from the particular uses for which it is raised, requires a different sort of management, and another manner of planting.

The osier very much resembles the willow in its appearance, but that is a smaller tree, its shoots are longer and slenderer, and its leaves also much longer; these are very narrow, and in the best kind are green on the upper side, but whitish, as it were, woolly underneath.

The osier loves a wet and low ground near waters, and nearly upon a level with the water. It thrives no where so well as in marshy places, near the edges of large rivers; or in those little islands that are formed by the breaking of their current; and every way surrounded by the water. The ground for an osier bed should be a rich black mould; and this is very common in these low and wet situations.

The design in planting the osier is, that it may shoot out a great quantity of fine slender twigs, which are to be cut at a small growth. Therefore there is no occasion for a trunk either of the pollard or timber tree form. This would only exhaust a great deal of the nourishment taken in by the root, and deprive the shoots of it; neither are they so apt to rise straight and fine, unless they begin near the ground.

On this depends the peculiar way of planting the osier. It is raised in the same manner as the other willows, by truncheons or stakes driven into the ground;

ground; and it is proper always to let a certain quantity of the shoots stand for a due growth for this purpose, when the rest are cut. But as these are not to rise in a trunk, they must not be above four foot in length, and three foot of this must be thrust into the ground.

They will, by this means, have a fine supply of roots; and beginning to shoot so near the earth, all the nourishment will be carried up into the twigs.

These stakes are to be planted at three foot distance, and they will quickly yield a large profit: the twigs rise numerous from their tops; and being cut down pretty close, in the manner of throwing pollard trees, they send up a new set of twigs again almost immediately, which quickly grow to their proper size.

The time of cutting osiers is in September; and the advantage that may be made of planting them is very great. Many waste pieces of wet ground might be made to yield a great profit by them.

If stakes or truncheons of a proper bigness cannot be had, more time will be required to raise the ozier bed; but it may be done from smaller sets. These are to be cut four or five foot long, and stuck at the same distances into the ground. They will grow very freely; and when they have stood three years, they are to be cut down within a foot of the ground; and from thence will rise the twigs in great abundance; and they will continue affording a supply of them many years.

The finest and best kind of osier is that here described with long leaves, white underneath; but there are several others that answer the purpose very well. The twigs are of constant and ready sale. The basket-maker's work depends upon them; and there is a great consumption of them among the fishermen. The wheels, as they are called, for catching eels and other fish, are made of them: and baskets, hampers, and the like, of which the consumption is, in a manner, endless and unlimited.

The quick growth of the twigs is a great article in the profit of an osier belt, for they are cut every year; and the heads that bear them grow for a long time more and more bushy at every cutting. So that here is a vast profit

to be made with scarce any expence; annually returned and increased every year; and this upon ground fit for nothing else; for the osier will grow and flourish on ground that is so loose and so wet, that it would not afford hold for the root of any other kind of plantation whatsoever.

As the stems of the osiers will decay in time, let the husbandman always take care to have a supply. Nothing is so easy: for 'tis only sticking into the ground some twigs between the stems, which will take their time to root themselves, and grow to a due bigness; and when properly cut, and managed according to the directions already given, of raising an osier ground from sets, will be ready to yield their produce as the old ones begin to decay; and may thus be made to supply their place gradually as they are wanted.

OSIETS. Osiers are little hard substances that arise among the small bones of the knee of the horse, on the inside; they grow out of the gummy substance which fastens those bones together, and derive their origin from a matter like that which produces splents, and like them proceed from the same cause, viz. the straining of a horse while he is young, and before his joints be well knit; and from hence also we may understand the nature of all those hard tumours already treated of, which grow near the joints, whether they be *Spavins*, *Fardons*, *Curbs*, or of any other kind, their chief difference consisting in their situation, being all of them formed of a matter, which, in time, grows hard, yea, even as the bone itself; and this is the reason why they cannot be moved but by things that are of the greatest efficacy. Notwithstanding, if they be discovered before they acquire such a degree of hardness, they may be made to yield to less powerful remedies than what we are sometimes constrained to make use of.

OST. See **OUST.**

OVERFLOWING LAND. This is commonly effected by diverting the streams of rivers, brooks, land-floods, or some part of them, out of their natural channel: but were the streams lie so low as to be incapable of overflowing the lands, they are made use of to turn such engines as may raise a quantity of water to do it.

When you have got your water up

to the highest part of the land that you can bring it to, make a small trench to carry some of the water in, to give you the level the land, keeping of it always as much as you can upon a level, or upon the highest part of the land, so that from the upper part you may be able to water the lower when you will, and by carrying of the level of this small trench you will be directed how to cut on your main trench, which ought to be made big enough to receive the whole stream that you raise, and to be rather broad than deep. At convenient distances according unto the bigness of the stream, and the quantity of the land you are to water, make several small trenches, making your main trench the narrower, proportionable to the number of drains you lead from it; only you must note, that the greatest advantage of over-flowing is, where you can do it frequently, and draw it off quickly; because where water stands long on ground, especially in winter, 'tis apt to breed rushes and weeds; and therefore where any such inconveniency is, draw it off by small trenches.

Some graze their land till Christmas, and some longer; but as soon as 'tis sèd bare from Allhallowtide to spring, that the grass is not too high, is the best time for over-flowing, except it prove a dry time in April or May: If it do, it will be of mighty advantage; for in hot weather the grass grows three times as much if moistened, as at another time. Land-floods are best to over-flow with in winter, and warm fattening springs in summer, only you must observe to let the water dry in before you water it again; and not to let cattle poach it, and that you water it at night so as that the water may be gone before the heat of the day comes, which is apt to occasion the scorching of it; and to rot the roots of the grass by lying too long on the land. The washing of high-ways, towns, or streets, especially of commons, where sheep feed, is a very great improvement of land or trees.

But in some places issue springs whose waters are injurious to land, as such usually are that flow from coal mines, or any sulphurous mineral, because they are of such a brackish, harsh quality, that they kill vegetables, instead of nourishing of them; as too much salt, urine, or dung will do, if

not applied in due quantities; yet we cannot but think that even these waters would make a great improvement, if sparingly used, and in wet times, that a great quantity of other water might mix with them. These waters are commonly of a reddish colour, and leave a reddish sentiment where they run, and are much better when they have run some distance, than at their first breaking out.

Also some sorts of lands will not be improved by watering, except only with land floods, and in summer, when 'tis a very dry time; as your cold clay, and strong land that lies very flat; partly because of its flatness, and that water will not easily penetrate stiff clay; and therefore light dry warm grounds are the most improved by watering.

OVER-REACH. A wound in the fore-heel of a horse, made by the point of the hind-shoe.

When this wound is only slight or superficial, it is, in general, very easily cured, by washing it clean, and applying the wound ointment: but it should be observed, from the nature and manner of the injury, where the blow has been smart, that it differs widely from a common cut; the part here being both torn and bruised, and consequently it requires to be properly digested, in order to lay a good foundation for healing.

For this purpose, after washing out any dirt or gravel with soap-suds, &c. let the wound be digested, by dressing it with dossils of lint dipped in an ounce of Venice turpentine, divided with the yolk of an egg, to which half an ounce of mixture of myrrh may be added; over this dressing it would be advisable to apply the turnip poultice, or that with strong beer grounds and oatmeal, three or four times, or oftner, till the digestion is procured, and then both these dressings may be changed for the precipitate medicines, or the lime-water mixture; observing always to apply the dossils carefully to the bottom, to fill up the sore with the same even to the surface, and to bind all on with a compress and roller: and if any cavities appear that cannot conveniently be dressed to the bottom, they should always be laid open, or no proper foundation for healing can be obtained. The hoof also should be kept supple, or pared away, when the growth

of it interrupts this end, as is sometimes the case.

OUST. A kiln, generally applied to that used in drying hops.

It is built with fire-places in the nature of malt-kilns; and at a proper distance over the fire is an hair-cloth strained upon laths; and thereon the hops are laid, and raked even to the depth of about six or seven inches, for the better conveniency of drying them equally; and when they are properly cured on the under side, they are carefully turned; and by that means the upper side becoming the under, the whole shares the fire alike. The person that performs this part is called the dryer, whose business it is to manage the fires.

The fuel commonly made use of is charcoal, for its freedom from smoke, and affording a steady heat. Great nicety is required in this part; a small fire being to be made, at first, that they may heat gradually, and so raised as they dry; that it may be done without scorching; and the fire is to be lowered by degrees, against they are ready to be taken off: the time required is about eight hours.

But as charcoal is very dear, being three or four pounds per load, many people have adopted the method of drying with sea-coal, upon what they call cockle-ousts, which are square iron-boxes, placed upon brick-work, and a flue and chimney in the back part of the building for the smoke to go off. The computation is, that a chaldron of sea-coal, at about twenty-four shillings, will dry a load of hops, and that a load of charcoal will do no more. It is indeed expensive to erect such ousts, as there must be no timber near them; and an iron-beam and iron-laths are to be used, and they covered with plates of tin or iron, properly fastened together.

A gentleman has lately claimed the merit of having invented a new method of drying hops with sea-coal, or any kind of fuel whatever, by means of a moveable iron furnace: it is in form of an horizontal cylinder, stopped at both ends: it lies on an iron carriage, which rolls on four iron-wheels: in the fore-end of the cylinder is the furnace door, and a hollow iron flue runs in a horizontal direction along the upper surface of the cylinder from the

back, till it reaches the fore-end of it, when it takes a vertical direction, and is carried as high as is necessary to convey the smoke out of the oust. We cannot pretend to say what are the particular advantages resulting from the use of this rolling furnace, never having seen it at work.

OUT-HOUSES. Are such as be-long and are adjoining to dwelling-houses.

OUTLAND. Among the Saxons, was that land that lay beyond the demesnes, and was granted out to tenants, though at the will of the Lord, in like manner as copyhold estates.

OXEN. Oxen should be tall, full bodied, short jointed, and well put together in every part, so that one sees their strength. Their hair should be fine, and lie smooth, for that betokens health, and a good kind.

The strength of the ox is very great, and he has patience to endure fatigue, but he is slow, and must not be put beyond his natural pace. He will not work easily or freely, if this be attempted, and what is worse, fretting & hurrying throws him into distempers.

'Tis but in some particular parts of England they now breed their oxen to labour, but it is very profitable. In these places the husbandman cannot be too much warned against his hurrying them in their employments; for he should consider that they are to be fed as well as worked; and while he makes them thus liable to distempers, he takes them off from one, and makes them incapable of the other.

When oxen are to be trained to labour, they must be first put to work at three years old, but they must be brought to it gently, and, by degrees, in the manner of a young horse; for if they be pushed or worked too hard at this time, they are spoiled for ever.

Great care must be taken to match such well as are to draw together, for otherwise they draw unequally, and spoil both the work and one another.

In this case of matching them, regard must be had to three things; their height, their strength, and their spirit: for some are tall that have not much strength; and others have a great deal of power that are sluggish.

In general they are very tractable and gentle, but regard must be had to their several natures, for they will not

be forced out of them by any usage; and they may be greatly injured in the endeavour.

Of all the kinds the pyed Lincolnshire ox is the fittest for labour. He is naturally long-bodied, and till put up to feed, is less fleshy than any of the other good breeds; though he takes to fattening very readily with rest, and a good pasture.

When the young oxen are first put to work, a great deal of care must be taken not to overheat or fatigue them. They must be suffered to rest in the middle of the day in hot weather, and the servant should give them some hay, which will support them in the new fatigue of their labour, much better than grass. They must be well fed during the whole time of their labouring, for they will not do much if they be not kept in spirits by good nourishment; but in this let the husbandman understand moderation; for there is difference between feeding them for strength, and for fattening.

An ox for labour must neither be bare, nor must he be too fat; in the first case he will be weak, and in the other he will be lazy. They should be treated gently, for they do not understand blows and hard usage, and may easier be beaten into sicknesses and disorders, than into labour.

In this way an ox may very well be kept to work seven or eight years, that is, till between ten and eleven years old; and in that time he will do the owner an incredible deal of business, provided he thus understand how to manage him, for it all depends upon that; otherwise he will be as stubborn as an ass, and will not be fit half his time for service,

Sometimes a young ox will prove very stubborn, vicious, and unruly; but this, when enquired into, will be found owing to some bad usage at setting out, for the ox has nothing of that bad disposition in his nature. When this happens, he must be kept hungry; and when he has fasted long enough, he must be made to eat out of the hand: when he is brought to his labour, he must be tied with a rope; and at any time when he grows faulty, he must be cherished, and fed with a mouthful of hay by hand; thus bringing him by soft means to quietness, and a readiness in performing his

business; for nothing else will do with this creature.

For the breaking a young ox to the field, no way is so well as to single out one of the tamest of the old ones, that is of its own size; and yoke them together. Let them be put to some slight work, and suffered to do it easily and slowly: they will thus draw equally, and the young beast will become perfectly familiar to it. They will be apt to get into too slow a gait at first, but by degrees they must be spirited to be a little brisker in their pace; and after half a dozen times going out with this quiet beast, the young one must be coupled with an ox of more spirit, that will learn him to go quicker. Thus he is to have his companion changed from time to time, till in the first month or six weeks of his labour, he gets to draw with the briskest of the stock.

This is the only way to get the ox to his speed; for at best it is not great, nor will he be brought to it by force.

The advantages of labouring with oxen are so great, that it is wonderful the practice does not extend farther. The ox of eleven years old, when he is unfit for labour any longer, may be fattened as well as at any time; and in the same manner if he fall lame, or by any other accident be spoiled for labour, at whatever age that happen, he may then be fed up for sale.

In this the ox has a great advantage over the horse, which, when aged, or spoiled by accidents, is good for nothing, and becomes an entire loss, and often a very great one to the farmer.

The food of the horse is also a very expensive article to the husbandman, but that of oxen is cheap. They require no oats. They are very little liable to diseases, whereas one is never secure of a horse at all. But though the ox does not require so expensive food as the horse, yet such as he eats must be good in its kind, and he must not be stinted. He must always have good grass to go to, and good hay in winter, else he will be of little service; for though he must not be fattened in his time of working, yet if he be not kept well fed, and in good spirits, he is worth nothing.

The greatest use of the ox in the way of labour, is that of plowing; and 'tis that for which they are suited

by nature. They will work at this in the toughest and heaviest grounds as well as horses, and do as much in a day. They do not serve so well for drawing of carts and waggons; and are not fit to be used much in places where the roads are good.

In most counties the farmer would do well to train up some of his oxen for draught, though it is better not to depend upon them entirely for that service in any. We have shewn for what they are most, and for what they are least fitted. Every farmer has occasion both for carting and plowing; and the horses are in general fittest for the former, and the oxen most profitable for the latter: therefore when there are more teams than one kept, some should be of horses, and others of oxen, proportioning the number of either to the nature of the service, and of the roads and the ground. The Farmer who keeps two teams only, will almost always find it his interest to have one of them of oxen, and the other of horses.

In clayey lands, the oxen are most useful; and in chalky countries the least; the chalk soon spoiling their feet.

It is a custom in some places where oxen are used for draught, to yoke them by the horns, but this is awkward and troublesome. It is left off in many places where it was once used; and ought to be in all. The common way of yoking them together by the neck and breast is vastly preferable, but harness best of all.

Whenever the farmer comes to a resolution of keeping oxen for labour, let him at the same time provide for a proper supply of them; and see that it be rather too much than too little, for it will always be more to his profit to sell what he does not want, than to buy for his necessary uses. To this end he should rear at least two oxen and two cow calves every year to keep up his stock; and put up his old, or injured beasts to fatten, and supply their places from this breed as occasion requires: for an ox, as before said, whether put off the team forage or injuries, will fatten as well as at any other time, and will bring a good price at market; and afford as good beef as any other that had not been worked.

When the husbandman buys in cattle to fatten, it should be either in spring, or toward the beginning of October. These oxen which are bought in early in spring, will, with proper care, be fat in July, August, or September, according to the goodness of the soil, and the manner of feeding them, and according to the condition wherein they were bought. An ox that is very forward when bought in, and is turned into a very rich pasture, will be fit for market in ten weeks; but there is no need that every ox that is bought for this purpose, should be in this forward way; or that every one should be hastened to a market condition in that hurry. The care of the husbandman in this should be, to suit his endeavours to the nature of his grounds, and to the best demand for the cattle: he may keep on fattening the whole summer months, and answer his purpose better both for the market, and for having the best service out of his land, than if he hastened up all that he bought, or bought only very forward ones.

Those oxen that are bought in about the beginning of October, will in general be fit for sale early in the following spring. This requires some management in this article of the husbandman's business, for without it he may lose by his industry, but with due care he will find a sufficient profit in this way. These cattle being for sale early in spring, will always fetch a good price; but the winter feeding of them may easily run away with what should be his profit.

The method is to forward these in flesh, before the winter sets in hard; and then to take care only to keep them up in flesh during the hard time, with hay or turneps.

They may be thus kept in a condition for market whenever it is worth while to sell them; and be sure of fattening up with great ease very early in spring, to a certain advantage.

Another way of buying cattle in the beginning of October, to great advantage, is to purchase young lean oxen; which will pay for their winter keeping by their growth, and be ready to fatten up early in spring, to the fairest and fullest profit.

Another very good time of buying oxen for feeding is in August, or the
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beginning of September. These should be got forward as soon as may be, by putting them into very rich pastures, and they will be ready for the winter sale.

This is the best method the husbandman can take, who has rich and fine pasture ground; for no other will support the large and valuable breed of these oxen. But he who happens not to have this advantage, is not altogether to decline thus much of the grazing business, which to the other proves very advantageous.

Therefore he who has but moderately good pasturage, and is inclined to deal this way, should set about in a different manner. Let him buy in a number of young Welch heifers, instead of oxen, in August or September, and put them into the best of his ordinary pasturages. He is to take his chance whether these prove with calf or not, but either way they will answer his purpose.

If they prove with calf his business is to keep them till spring, and then he will sell them to a good advantage, with a calf by their side, for the dairy. If they do not prove with calf they will presently begin to fatten upon his ground, which, though poor, is yet very fine in comparison of what they have been used to, and he will be able to sell them out at a very good account at Christmas or in spring; at both which times meat is dear, and consequently cattle fetch a price.

These heifers will, to the husbandman thus situated, answer, in some measure, the purposes of oxen; and he is not to complain they do not bring altogether such a price; because neither the cattle themselves, nor their keeping, have cost him so much as in the other instance. Such land being cheaper than the rich and fine pasture ground, on which the large oxen may be fattened.

But there is this to be considered, that the advantage will be the greater, in proportion as the farmer has the convenience of hay, or turneps, which are the two foods for winter fattening of cattle; and in proportion to his nearness to some large city, where the demand and the price will answer to the expensive feeding of hay. About great towns they must afford to let a beast eat a couple load of hay in a

winter, because the demand is certain and the price good: but this will not do in remote places.

Let the husbandman who buys cattle for fattening, take great care in the choice, for on that will depend a large share of his success. Let him examine their bulk and shape, and the forwardness they are in at the time, and after that proportion the goodness of the pasture to their kind.

Those that are intended to be kept up for a winter, or early spring market, must be turned out in September into the rowens, till the weather become severe by much snow or a very hard frost; and till this time they will not need any fodder.

Upon the coming in of the hard weather they must have some hay regularly every morning and evening, which must be proportioned to what the ground still affords. The more they find there the less they want of the supply; and the less there is, the more hay must be each time given them.

The frosts have an effect upon grass, especially upon the worst sorts, to sweeten it. The four grass which the cattle had left untouched for a great while, becomes palatable to them after two or three nights good frost, with a large white ryme. They will eat this greedily; and it will make hay the less necessary, till the snow covers it, and they cannot get at it. 'Tis at these times the foddering is to be largest and best; for without a due care they will, in a little time, lose all the advantage they had made in many weeks.

For those oxen that were bought in lean, and are not got into any great degree of flesh by the beginning of the hard season, straw will do instead of hay; and the husbandman must begin with barley straw, and then come to oat straw, both which are very good food to cattle in this condition; and will keep them as they are, and in a readiness for any farther improvement, when it comes upon easy terms.

Toward the end of winter the whole product of the ground that hath been thus fed, will be eaten up, and then the oxen are to be taken into the yard. If the husbandman has oxen in two conditions, (the one that he feeds with hay, the other with straw,) they must be put up separate; and their food must be put up in sacks for them.

The farmer often complains that his cattle will not eat their fodder, when they are taken up into the yard, though they did freely when it was given them in the field. But this is generally owing to the folly of giving them too much at a time. An ox will often eat heartily, and freely out of the crib for a time, till when he had often breathed upon it, what was left became quite disagreeable to him.

This is a delicacy in the nature of the animal, and nothing can break him of it; but all the inconvenience of it is easily prevented, by giving these cattle a little at a time, and often. This being, for all reasons, the best way of foddering all cattle in the yard.

Let the husbandman take care that his yard be well sheltered, and kept dry. Let there be straw enough scattered about it, that his cattle may lie sweet and warm; this will greatly assist in keeping them in good case; and he need not grudge the expence, for what the straw is worth will be many times over made up to him in dung. Their trampling this litter, with their dung and urine, converts the whole into a very rich manure; and the quantity becomes so considerable, that it is an article of great consequence.

When oxen are put to be fattened on land, they may be turned in either alone or with horses; or they may be put into the pastures first, and the horses afterwards. Which ever way is used, let the husbandman take care of the time of turning in his oxen. Many think they ought to let the grafs be very well grown before they put them to feed upon it; but they are greatly mistaken. There is not a greater disadvantage the farmer can lie under, in this way, than the having his pastures too high grown before he puts the beasts into them. *Especially Meadow*

The ox is a nice creature, and does not love a rank grafs. In this case they only nip the tops, and the remainder rots upon the ground. When grafs is grown too high, in autumn especially, it becomes sour, and the cattle will not eat it freely before the frost has sweetened it to their taste.

If it happen the farmer have at this season of the year, a pasture ground of eall grafs, the best method he can follow is this. Let him first turn in his oxen in a proper number, and they will

eat off the tops; but as they will meddle with no more of it, when this is done they should be removed out of it. Horses are then to be turned in, who, not being so nice as the ox will eat it down lower; and after these he may feed it with sheep, which will still find a great deal for their purpose, that the ox and the horse had both left.

If the pastures in the farmer's grounds be all of nearly the same kind, and all of a proper grafs for feeding of his oxen, still let him frequently change their place, removing from one of the closes to another. This answers a double purpose; it gives the cattle a variety of food, and it gives every piece of the ground rest at times to shoot afresh after their eating. Their taste is so nice as to distinguish the growth where it appears to our eye all the same; and therefore they will be pleased with removing from one ground to another: and each close will shoot up with spirit and freshness from their cropping of it, when it is quiet for a little time from the treading of their feet.

Let the husbandman always purchase as large a breed as his ground will maintain; and by this management he will find it support a better sort than perhaps he might imagine it could, or than it in reality would do, in the hands of a less skilful person. The size of the ox is a vast article, for it makes great addition both in the flesh and tallow.

Let the ox have a smooth forehead and a deep belly, if he be intended for fattening. The strength of his joint is more the matter when he is first designed for labour.

In buying oxen for fattening preference is to be given to the young; but if they be somewhat older, let the farmer see that they are healthful. Let him feed his own breed for slaughter, if he uses their labour till the best time of their working is over, as before directed; but let him not bring them in for fattening at that age, without he bargain accordingly.

It is always a good sign of health that an ox frequently licks himself. It is a proof that he is in good humour with himself, and in spirit; for when they grow sickly, dull, and drowsy, they utterly neglect themselves, and their coat becomes rough, and stares for want of this little care of their own, which keeps it in order.

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Nevertheless, every thing is to be understood within the bounds of moderation. This licking of himself, which is in general a sign of health in the ox, may be a disease. They will sometimes lick till they cannot eat, for they swallow a great many of the hairs they lick off, and they will sometimes get together into a kind of ball in the stomach, which will impair the creature's health. In this case the owner must, at times, wash the ox with a strong decoction of worm-wood, which is a taste it abhors; and fining this bitterness on the skin, it will be cured of licking; as children are weaned by rubbing the nipple with aloes.

Some, for this purpose, cover the creature with his own dung, but this is a filthy way. As the licking is always done for cleanliness, the ox will often tire himself, from day to day, with endeavouring to get this off; or else he will utterly neglect himself, which will prove of as bad consequence.

In examining how the ox proceeds in fattening, the surest way is to feel the hindermost rib. If all be soft and loose about that, 'tis a proof that the creature is getting into good flesh. The part behind the shoulders in an ox, and the navel of a cow, are the parts to be examined, to know how they encrease in tallow. *Also at the Rump.*

Finally, there is one thing we shall recommend to the husbandman very strongly, from experience, as excellent toward the fattening of cattle, and this is the bleeding of them at proper times. This should be done once at least, and commonly it may be done twice, with great benefit during their feeding.

The method to be observed is this: in the cattle bought in spring, always to

bleed them as soon as they are put to pasture, which makes them take to fattening directly. In those bought in autumn, follow the same method of bleeding, at the time of turning into good pasture; which will not only help their fattening, but prevent disorders. This is all there is to do with those intended for the winter market; but for such as were bought lean to be kept for growing in winter, and fattened up in spring, have them bled twice, once when they are bought in, and a second time early in spring, when they are going into the pasture for fattening.

OX-BOOSE. An ox-stall, or cow-stall, where these creatures stand in the winter.

OX-HARROWS. Very large harrows, called, in some counties, drags.

OX-GANG, or *Ox gate.* A quantity of land measuring fifteen acres, being as much ground as a single ox is supposed to be capable of ploughing in a year.

OX-EYE, [*Buphtalmum.*] There are several species of herbaceous and shrubby plants, which ornament the pleasure garden and green-house, and are all propagated by seeds and cuttings.

OXEYE-DAISY, [*Bellis-Major.*] This plant is frequent in fields, and among corn, flowering in May or June. The leaves have a mucilaginous, subsaline, roughish taste. They are said to be detergent, resolvent, aperient, and also moderately astringent. Geoffroy relates, that the herb, gathered before the flowers have come forth, and boiled in water, imparts an acrid taste, penetrating and subtle like pepper; and that this decoction is an excellent vulnerary and diuretic.

OX-SLIP. A species of cowslip.

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PACK-HORSE. A horse used for carrying loads on a saddle made for that purpose.

PACK-SADDLE. A saddle contrived for the carrying of burthens on a horse's back.

PACK, of Wool, is seventeen stone and two pounds, or two hundred and forty pounds weight.

PAD. An easy pacing horse.

PAD. A low saddle.

PAD. A road, a path.

PADDLE. An instrument to open gutters in a water course, to clean the ploughshare from dirt, weeds, &c.

PADDOCK. A small field or inclosure.

PAIGLE. A cowslip.

PAIL. A wooden vessel to carry water or milk in.

PAINS, or watery sores on the legs and pasterns. These are caused by a ferous matter oozing through the pores, which is indued with such a sharpness, that it makes the hair fall off from several parts of the legs and pasterns; sometimes it loosens the Coronet from the hoof; and sometimes the flesh appears as if it was disjoined from the bones and sinews; wherever the matter runs, it so hardens the skin, that it is apt to break out into cracks and rests, which discharge abundance of stinking matter, as in the abovementioned case. The cure consists chiefly in internals, and in those things that are proper to rectify the blood, as decoctions of box-wood, guajacum and saffras, &c. or the said woods may be rasped and mixt with his oats, and sometimes among dry bran. All the medicines prescribed in the farcin may be made use of in this case: but if the horse be inclinable to a dropy, which may be known by the yielding of the swelling, and likewise as the fore legs will also be affected, and by the other signs peculiar to that distemper, he must then be treated accordingly; mean while the following applications may be made outwardly.

' Take honey, turpentine, and hog's-grease, of each a like quantity: melt them over a gentle fire in a glazed pipkin, and add a sufficient quantity of wheat flour to make it into a poultice.' Or this:

' Take sœnugreek meal, bean flour, linseed meal, and mustard seed pounded, of each a like quantity. Boil them over a gentle fire, with a sufficient quantity of ointment of marsh-mallows; into the consistence of a poultice.'

These must be applyed warm to the legs and pasterns, to draw out the matter, and bring down the swelling. If there be foulness, you may take a pound of black soap, half a pound of honey, four ounces of burnt allum, two ounces of verdigrease in powder, a pint of brandy or spirit of wine, with a sufficient quantity of wheat flour. Let this be spread on cloths, and applyed as the former.

As soon as the swelling is abated, and the moisture dryed up, it must be very convenient to keep the legs and pasterns rolled up with firm bandage, whereby the parts will not only be kept close, but the influx of fresh matter prevented; for the continuance or frequent returns of those watery eruptions brings such a looseness into the legs, that it causes a rottenness in the flesh, breeds spints; and, sometimes by rotting the tendons, becomes the cause of quitter-bones, foundering, and other distempers in the feet.

PAINPISS, or *Strangury*. This disease happens most frequently when there is an obstruction of the dung hardened and indurated in the straight gut, yet sometimes it proceeds from another cause, and is most likely occasioned by an inflammation of the bladder, or an ulcer in the kidneys; for when there happens to be an ulcer in those parts, the sharpness of the matter proceeding from thence may no doubt cause pain, when

when it passes into the *Urethra* or piss-pipe, by abrading and carrying off the *mucus* that should defend that sensible part, so that a horse in this case must piss in pain; and as this will also cause an inflammation there, instead of pissing freely, he will often dribble.

An inflammation in those parts, arising from any other cause, as hard riding, too long a detention of his urine, has generally the same effect; but an inflammation of this kind happens the more readily if there be a lentor of the dung.

To remove all such disorders, it will be necessary to give emollient softning clysters, made of a decoction of mallows, marsh-mallows, mercury, camomile and the like, with a mixture of oils and other slippery things, or clysters made of fat broths; and to make them a little purgative, common treacle or manna may be dissolved in them, to the quantity of six ounces or half a pound.

Half an ounce of *Sul Prunella* or purified nitre may be dissolved in his water for two or three days together, or two ounces of crude tartar may be boiled in it; and among his provender may be mixt the leaves of strawberries, radishes and turnip-tops.

But if after hard riding you have reason to suspect an inflammation in the kidneys, the bladder, or urinary passage, which must at the same time be accompanied with feverish symptoms, it will then be very proper to take blood from the neck-vein, and the use of the clysters may be repeated as often as you shall see occasion; but if you have reason to fear an ulcer in the kidneys, in that case all cleansing balsamic medicines are to be complied with, for which purpose we chiefly recommended the following balls.

Take gum benjamin half a pound.

Balsam of capivi, Flour of brimstone, each six ounces. Bees wax three ounces. Crude opium one ounce. Honey four ounces. Beat them well together with syrup of marsh-mallows, enough to make into balls of two ounces each, one to be given every morning, an hour before his water.

PALATE, *Falling off*. A troublesome disorder in oxen, from over driving, &c. rub the palate with pepper and salt mixt together.

PALE. A piece of wood split or sawed, for the purpose of fencing, where hedges cannot be made, or are not sufficiently secure.

PALING. Fencing with pales.

PALISADE. A row of handsome pales set up by way of ornament or defence. The gardeners use this word to denote a row of trees, which bear branches and leaves from the bottom, cut and spread in the manner of a garden wall, along the side of an alley or the like, so as to appear like a wall covered with leaves.

PALM-TREE. There are several species of this tree, as the *DATE-tree*, *MACAW-tree*, *CABBAGE-tree*, &c.

PALMETTO. A species of palm, the leaves of which are used as thatch in the West-Indies.

PALMS. The flowers of the willow,

PALSY. This disorder has been usually reckoned the same with the staggers, but certainly, without any reason whatsoever; the former implies the absence of fever or stimulus, the latter, an increased degree; in the one, warm cordials will be necessary; in the other, emollients and anodynes. Warm stimulating embrocations will be very proper. Such as the following:

Take spirits of wine and camphor 6 ounces, spirits of sal ammoniac 2 ounces, mix and bathe the part affected night and morning.

Such medicines should be given as will promote the circulation of the blood. Such are the following balls:

Take assafoetida six ounces, grains of paradise in powder two ounces, aloes two ounces, honey to make 6 balls, give one night and morning,

PANIC, [*Panicum*.] A plant resembling millet in its stalks, leaves, and roots; but differing in its spikes, or ears, which are about the thickness of a man's finger at their base, and growing taper toward their points. They are about eight or nine inches long, and closely set with a small roundish grain, sometimes white, sometimes red or purple, and sometimes yellow. It is raised and reaped in the same manner as millet, but does not require so much rain. This plant grows naturally in both the Indies, and is cultivated in many parts of Europe for the food of men. Cakes and bread are made of it in Germany, Italy, and the southern parts of France; but it is not reckoned so good nourishment

See it.

ment as millet: nor is the German sort so much esteemed as the Italian; though the former ripens best in cold countries, where it is frequently sowed in land which will not produce better grain. It thrives most in a dry stiffish soil, such as the sides of hills, and even in stony ground; grows to the height of about four feet, and branches very much; for which reason the horse-hoeing husbandry is by far the fittest for it. The plants, if managed rightly, should stand eighteen inches asunder, in rows three feet apart, that there may be room to hoe the ground between them, and to keep them clear from weeds. When grown pretty tall, they should be supported by stakes, lest the wind break them down; and particular care must be taken to guard against birds when their seeds begin to ripen.

PANNAGE. The food which swine feed upon in woods, as acorns, and the masts of beech. It also signifies the money taken by the King's agistors, for the privilege of feeding hogs in the King's forests.

PANNEL. A low saddle.

PANSIES. Hearts-ease.

PANTING-EVIL. A disorder in cattle, caused by extraordinary labour, over heat, &c. the symptoms are, great faintness and unwillingness to move, sighing, moaning, &c.

Let the beast be kept very quiet and be supported with some ale spiced, and bread sopped in it; or, boil some rosemary, and some wormwood, in some ale, and give the beast to drink.

Give an ounce of Bracken's cordial, every four, six, or, eight hours. Let the food be a little bran and oats, with some very sweet hay.

PANTILES. A peculiar kind of tiles made of clay, moulded and burnt.

PAPAW. A plant of the gourd, or squash kind, growing in the Caribbee Islands, and the warmer parts of America. May be propagated as melons.

PARADISE-APPLE. A kind of apple tree, formerly much esteemed for stocks to graft on.

Grains of PARADISE. This fruit is about the size of a fig, divided internally into three cells, in each of which are contained two rows of small seeds like cardamoms. These seeds are somewhat more grateful, and considerably more pungent, than the common cardamoms, approaching in this respect to

pepper, with which they agree also in their pharmaceutical properties: their pungency residing, not in the distilled oil, as that of cardamom seeds does, but in the resin extracted by spirit of wine.

PAREIRA BRAVA. This is the root of an American convolvulus, brought to us from Brazil, in pieces of different sizes, some no bigger than one's finger, others as large as a child's arm: it is crooked, and variously wrinkled on the surface; outwardly of a dark colour, internally of a dull yellowish, and interwoven with woody fibres, so that upon a transverse section, a number of concentric circles appear, crossed with fibres, which run from the center to the circumference: it has no smell; the taste is a little bitterish, blended with a sweetness, like that of liquorice. This root is highly extolled by the Brazilians and Portuguese, in a great variety of diseases, particularly against suppressions of urine, nephritic pains, and the calculus. In the two first, Geoffroy says he has given it with good success, and that the patient was almost instantly relieved by it, a copious discharge of urine succeeding. He likewise observed large quantities of gravel, and even small stones, voided after its use: this effect he attributes not to any lithontriptic power, but to its dissolving the viscid mucus, by which the fabulous matter had been detained. He likewise relates, that he has had frequent experience of the good effects of this root in deterging and healing ulcers of the kidneys and bladder, where the urine came away purulent and mucous, and could not be voided at all without extreme pain; by the use of the *pareira*, the urine soon became clear, and of a due consistence, and was evacuated freely; and by joining to this medicine balsam of Copaiba, the ulcer perfectly healed. The attenuating quality, which he had discovered in this root induced him to make trial of it in other diseases, proceeding from tenacious juices, and in these likewise it fully answered his expectations: in humoral asthmas, where the lungs were stuffed up, and the patient almost suffocated by thick phlegm, an infusion of *pareira*, after many other medicines had proved ineffectual, occasioned a plentiful expectoration, and soon completed a cure: in the jaundice, proceed-

ing from thick bile, it did excellent service; but in another ictical case, where the liver was swelled and hard, this medicine did no good. His dose of the root in substance is from twelve grains to half a dram, in decoction two or three drams.

PARK-LEAVES. St. John's wort.

PARSLEY. The name of a well-known herb, which is cultivated in gardens for culinary purposes, it being more used in the kitchen than any other herb whatsoever; it will tolerably endure cold, but is apt to be destroyed in very severe winters, especially where the land is moist; it is commonly sown in the spring, and sends forth a stalk the year after, which flowers in June or July, and the seeds ripen in August.

The common parsley is, by some skilful people, cultivated in fields for the use of sheep, it being a sovereign remedy to preserve them from the rot, provided they are fed twice a week, for two or three hours each time, with this herb: but hares and rabbits are so fond of it, that they will come from a great distance to feed on it.

Bastard PARSLEY. See **BASTARD**.

Mountain PARSLEY. Candy carrot.

Macedonian PARSLEY. The seeds of the Macedonian parsley are a strong carminative, it is cultivated by seed, like the common parsley.

Bastard-stone PARSLEY. See **BASTARD STONE PARSLEY**.

PARSNEP, [*Pastinaca*.] The name of a well known root, cultivated in the same manner as carrots. If you intend to save the seeds of this plant, you should make choice of some of the longest, straightest, and largest roots, which should be planted about two feet asunder, in some place where they may be defended from the strong south and west winds; for the stems of these plants commonly grow to a great height, and are subject to be broken by strong winds, if exposed thereto; they should be constantly kept clear from weeds, and if the season should prove very dry, you should give them some water twice a week, which will cause them to produce a great quantity of seeds, which will be much stronger than if they were wholly neglected. Toward the latter end of August, or the beginning of September, the seeds will be ripe; at which time you should

carefully cut off the heads, and spread them upon a coarse cloth for two or three days to dry; after which, the seeds should be beaten off, and put up for use; but you should never trust to these seeds after they are a year old, for they will seldom grow beyond that age.

PASSION-FLOWER, [*Passiflora*.] The name of a very beautiful plant, having long slender stalks, which run a great length, and require support; they are covered with a purplish bark, and are furnished at each joint with a digitated leaf, composed of five smooth entire lobes, connected with the stalk by pedicles, about two inches long, having two small leaves embracing the stalks at their base; and from the same point comes out a long tendril, which twists round the neighbouring support; the flowers come out at the same joints as the leaves, supported on footstalks almost three inches long; these flowers have a faint smell, and continue but one day; they come out in July, and there is a diurnal succession till the frost in autumn puts a stop to them.

This plant may be propagated either from seeds, layers, or cuttings; they require a good aspect wall; where they may have height for their shoots to extend, which should be properly trained against it; and in the spring, the plants must be pruned, when all the small weak shoots should be cut off, and the strong ones shortened to about four or five feet long, which will cause them to put out strong shoots for flowering the following summer.

PASTURE-LAND, Is properly such land as being laid down to grass, is kept for the purpose of feeding cattle, not for mowing; but this distinction is not strictly observed, and it most usually means, all lands which have been laid down to grass, whether for mowing, or feeding of cattle. See **MEADOW**. *& Laquis down land*

The following method of improving wet pastures, seems to be the result of experience.

"As I have, says an ingenious husbandman, within a few years, not only had some experience in my own farm, but observed the methods employed by many neighbouring gentlemen and farmers in mending their pastures, I shall communicate a few of my remarks to you on the improvement of wet

wet pastures; which may prove, perhaps, of some little utility, as I shall speak of nothing but what I have either performed myself, or seen hereabouts.

“The particular lands of which I speak are loose, woodcock, brick-earth soils, for about eighteen or twenty inches, and under that, clay to a great depth.

“Some that I have drained myself were exactly level, so as to be quite poisoned with the wet, which could not drain off.

“From the best observations I could make on many experiments, the following is the method which answers best to improve them, I shall also give you the expence with us.

“The first thing to be done is, to make large, deep ditches round every field, and, if the fields are large, to divide them into smaller, of five, six, or seven acres each, by new ditches; nothing is attended with a more sudden improvement of all the ground near the borders of the fields, than good ditches.

“I generally make mine six feet perpendicular deep, seven wide at top, and three at bottom. I never pay for them by the rod (which is customary) but give two-pence halfpenny per load, of thirty bushels, for all the clay, &c. that is thrown out of them, and two shillings and sixpence a score loads for filling and spreading it.

“Those ditches should be made in such a manner that no water can remain in them, but a descent from one to another, to carry it quickly off.

“It may easily be imagined how much these must drain the land, besides the quantity of manure (clay) which arises out of them. Add to this the great convenience of having such fences about a farm, that the farmer is sure to find his cattle wherever he turns them, instead of their breaking perpetually into his corn or hay fields, which, in multitudes of farms, is so often the case: it is sometimes the work of a boy, only to be hunting after hogs and sheep that go astray for want of good fences.

“In the banks of new ditches we always lay white-thorn, fifty roots to a rod (the workmen are allowed sixpence per hundred for gathering them;) but I always avoid intermixing any thing with it, especially hazel, for in

the nut season, fences are pulled to pieces for the fruit, by all the boys and girls in the neighbourhood; and oak, ash, &c. only gives an opportunity to get over the hedge with greater ease. Sallow, willow, elder, &c. are to be avoided in the hedge, or by way of hedge-stake for the dead hedge, as they grow so fast as quite to overshadow the quick, and even destroy it. After frequent cuttings, to render the plants thick and strong, I keep the quick regularly clipped, which, in a few years, renders the fence impenetrable to man or beast, considering the largeness of the ditch.

“If an old fence is grown bad and thin, or composed of improper plants, I never yet observed it improved by planting quick in the gaps: the best way is, to reverse the bank, and plant fresh quick.

“One advantage arising from good fences is not apparent at first sight. To the disgrace be it spoken of most of the gentlemen of large fortunes round Bury, the game is wretchedly destroyed by poachers, who take it with night-nets. These vermin, who are generally labourers, swarm in every village round me. Their method is this: they take the farmer's horses out of his fields, and, after their doing a hard day's work, ride them all night, as fast as they can make them go, over the stubbles, to catch the partridges, blundering over every hedge (except such as I have described) in their way, oftentimes staking the horses making gaps in the fences, riding over standing corn, clover for seed, or any thing that is a cover for birds, and, after damaging the farmer in a most shameful manner, carry the produce of their infamous labour to many, who, to their great dishonour, encourage these rascals for their convenience. The money they get is spent at the next alehouse, and instead of doing the farmer a good day's work, they are drunk, asleep, or idle, the whole day.

“Now there are very few farmers horses that will leap a-gate; but most will plunge through such hedges as are common hereabouts: none could pass such ditches as I always make and commend. A farmer in this parish has so effectually fenced in his fields with prodigious ditches, that I have heard him declare, that not a single night-

night-netter has been on his grounds on horse-back; and were they to attempt it, they would lose more time in passing one ditch than was necessary to drag some whole farms.

"The pernicious effects, to farmers, of this abominable practice, are notorious, and cry aloud for redress: if they would ease themselves, I know of no way but such ditches as I have described.

"But to return:

"When the ditching is done, the next work is to land-drain the whole fields in such a manner that every part of them may be laid dry. In a pasture of six acres, I did two hundred rods. If there is the least fall in any part, or any place more wet than others, the drains should be cut through them. If the surface is exactly level, the depth of the drains should vary, so that the water may every where have a descent.

"These drains are made here, in general, thirty-two inches deep, twenty inches wide at the top, and four wide at the bottom. They are filled eight inches deep, with either stones or wood; but I shall ever recommend the former, as the most effectual and lasting, to those who are not desirous of saving the difference of the expence. However, I know many fields in this parish and neighbourhood that are drained with wood, and which answer extremely well; and I have been assured that they will last twenty or thirty years. Nay, in some parts of Essex I hear they do it with straw alone; but this must be of service for only a few years: if stone be used, there can be no doubt of its lasting. The labour of the whole is three-pence per rod; sometimes it is done for two-pence halfpenny.

"If with stone of the farmers, a load of thirty bushels will do three rods, which costs one shilling and a halfpenny stubbing and picking; so the expence of a rod is seven-pence, besides carriage of the stone, which is not much: but if he buys his stone, as is much the most probable in this country, we may suppose he must go two miles to fetch it, and give a shilling for eighteen bushels ready picked: the carriage is worth a shilling more, and reckoning the eighteen bushels to do a rod and half (which is near the matter) the stone of it will cost per rod, one shilling and four-pence.

"If bushes are used, a load of forty faggots will cost if he buys them, or be worth if he has them, five shillings, and cost cutting one shilling. They will do ten rods; so that the whole expence of doing a rod with them will be ten-pence, and of stone one shilling and seven-pence.

"The very first year the prodigious advantage of these drains appears, especially if the season proves wet. The grafs (or corn if in ploughed fields, for it answers in all) will be fresh, vigorous, and sweet, wherever the pastures are drained.

"I have a field of six acres (mentioned above) which by land-draining, ditching, and manuring, is an exceeding good pasture, and has produced two tons and ten hundred weight of hay per acre, in a very good year, and generally thirty-five hundred weight per acre; whereas the pastures adjoining are scarce worth the farming, and let but at seven shillings an acre, producing scarce any thing, but a little feed for lean cattle. The soil is the same in both; the six acres, about twelve years ago, being full as bad as the rest.

"To improve such wet land, nothing can be more advantageous than the clay which is thrown out of the ditches. Eighty loads per acre is the quantity I have laid on, and have been told by several sensible farmers (who clay a good deal) that it is a proper covering; but if nothing is mixed with it, ninety-five or one hundred. I know a piece of grafs-land greatly improved, on which were spread one hundred and fifty loads.

"My method is to make a large hill of manure, by first laying a quantity of clay regularly on a heap; then placing a thin layer of muck, such as I have, upon it, either my stable or rack-yard dung, or bringing it of any kind in my waggon from Bury; on this layer, another thick one of clay; then the second of dung, and so on; letting the proportion be about twenty loads of dung to fifty of clay. These heaps, after remaining six months without stirring, I mix well together by turning them over, which a workman will do at the rate of eight shillings for one hundred loads. Let it lie six months longer in this state, and then carry it on to the land, paying two

*See Coll
-port.*

two shillings and six-pence per score loads for filling and spreading. This I take, from experience, to be by much the best way of manuring with clay, as it works and impregnates the soil much sooner than alone.

“ Whenever I clay arable land, I do it on clover pastures, after the crop of corn is off, managing it in the same manner as for pastures. If it is ploughed in directly, it is several years before it works; but having a winter and summer to dissolve and powder it, it washes into the soil more equally, and in a proper state for improvement.

“ These are the principal points to be observed in improving such wet, cold, loose, pastures as I have described: some that I have quite changed by these means were half over-run with moss and rushes; but draining them thoroughly, and claying them, kills all rubbish of this sort, and presents the farmer with so admirable a view of good pasture for dairy or grazing, where so lately nothing could live, as is to be equalled in scarce any thing of the kind.

“ But as all improvement ceases to be such when more money is spent in it than the advantages will repay, I shall in a few words display how far this is from being the case here. I will suppose two or three fields are improved, amounting in the whole to twenty acres,

l. s. d.

- “ Sixty loads of clay per acre thrown out of the ditches, twelve hundred loads, at two-pence half-penny per load — 12 0 0
- “ I will suppose sixty rod of new ditching done, which, before clay is thrown out by the load, will cost one shilling per rod — 3 0 0
- “ Three thousand quicksets at six-pence per hundred 0 15 0
- “ Land-draining seven hundred rods with bushes (this is the quantity I have now marked out in a field of twenty acres) at ten-pence per rod 29 3 4
- “ N. B. I had a great part of my last crop of barley killed in this field with the wet: I had therefore a fine opportunity of marking

exactly where the drains should be made, which ought, on such occasions, never to be omitted, were it only for the common water-furrows which are made for every crop. In some fields, unless such a guide offers, it is very difficult to tell exactly where to make the land-drains.

“ Turning and mixing one thousand six hundred loads of manure — — — 6 8 0

“ Filling and spreading one thousand six hundred loads, at two shillings and six-pence per score — — 10 0 0

“ I will suppose that the work may be done the sooner if the farmer brings one hundred loads of dung from the nearest town; and as I have not reckoned the horses and driver for the clay cart, I shall not in the bringing the dung: therefore the expences per waggon load will be, the cost three shillings, boy six-pence, and turnpike six-pence. A waggon load is two tumbrel loads (in this country) so fifty loads, at four shillings, are — 10 0 0

Total 71 6 4

“ This is three pounds eleven shillings and three-pence per acre: and supposing the profit to last but twenty years, although the draining and ditching part will last twice that time, and the clay five and twenty as good as at first; and the farmers hereabouts seldom change their farms, if tolerable ones, living in them their lives, and their sons after them, with leases of 17, 21, and 25 years; supposing twenty years profit, I say, the expences will then be, per acre, per annum, three shillings and six-pence halfpenny.

“ So small is the expence divided. But now let us consider the profit.

“ Such land as I have described never lets here for more than ten shillings per acre, by far oftener for eight shillings, or eight and six-pence; and it is from my own experience, as well

as various observations, that I assert the same land, after the improvements, will let to any tenant for seventeen, eighteen, and twenty shillings per acre.

"I will suppose it only sixteen shillings, though I am certain that is considerably under the mark: he then gains, in point of rent, six shillings per acre; and the whole calculation is absurd, if we do not add his whole proportionable profit on the acre: supposing his profit on it before improvement was a rent, ten shillings; afterwards, it will undoubtedly be the same at least; which adds six shillings more to the profit; so that the whole will be twelve shillings per acre per annum, or eight shillings and six-pence clear, after the improvement is paid.

	£.
"Twelve shillings per acre is per annum, for twenty years —	240
"Expences of improvement —	71
"Clear profit —	169

"Or eight pounds nine shillings per annum. And if we reckon five per cent. interest for the seventy one pounds, that is, three pounds eleven shillings per annum, which, deducted from eight pounds nine shillings, leaves four pounds eighteen shillings per annum absolute profit.

"Thus, I think, I have stated the case of this improvement clearly; and I must repeat it, that I speak from experience. The sum to be expended on twenty acres will appear large to most farmers, whose property is not considerable; but the proportion holds for a single acre; and those who cannot afford to improve twenty, may three, four, or five; and I make no doubt but such as attempt it will find their account in it greater than I have stated it.

"As I have mentioned a tumbrel-load to be thirty bushels, and a wagon load to be but two tumbrels, I should observe that we carry away of muck fifty bushels at a time in our tumbrels, and so agree with our men in proportion to the thirty bushel loads.

"I have observed, that in making new ditches, or enlarging old ones, I never pay by the rod, but by the load: however, to those who chuse the former way, I would recommend that they have them worked by a frame of

small slit deal, nailed into the exact size of the intended ditch, and agree with the workmen to do their work by it: This will prevent disputes which frequently arise."

PATIENCE. A species of the dock. Monk's Rhubarb.

PEA, [Pisum.] The species are 1. The greater garden pea; 2. the dwarf pea; 3. the rose or crown pea; 4. the sea pea; 5. Cape-horn pea; 6. the winged pea.

There is a great variety of garden pease now cultivated in England, which are distinguished by the gardeners and seedsmen, and have their different titles; but as great part of these have been seminal variations, so if they are not very carefully managed, by taking away all those plants which have a tendency to alter before the seeds are formed, they will degenerate into their original state; therefore all those persons who are curious in the choice of their seeds, look carefully over those which they design for seeds at the time when they begin to flower, and draw out all the plants which they dislike from the other. This is what they call roguing their peas, meaning hereby, the taking out all the bad plants from the good, that the farina of the former may not impregnate the latter; to prevent which, they always do it before the flowers open; by thus diligently drawing out the bad, reserving those which come earliest to flower, they have greatly improved their pease of late years, and are constantly endeavouring to get forwarder varieties; so that it would be to little purpose in this place, to attempt giving a particular account of all the varieties now cultivated; therefore we shall only mention their titles, by which they are commonly known, placing them according to their time of coming to the table, or gathering for use.

The Golden Hotspur.

The Charlton. —

The Reading Hotspur.

Masters's Hotspur.

Essex Hotspur.

The Dwarf Pea.

The Sugar Pea.

Spanish Morotto.

Nonpareil.

Sugar Dwarf.

Sickle Pea.

Marrowfat.

T

Rose,

Rose, or Crown Pea.

Rouncival Pea.

Grey Pea.

Pig Pea, with some others.

The Sea pea is found wild upon the shore in Suffex, and several other counties in England, and is undoubtedly a different species from the common pea.

The fifth sort hath a biennial root, which continues two years. This was brought from Cape Horn by Lord Anson's cook, when he passed that Cape, where the pease was a great relief to the sailors. It is kept here as a curiosity, but the pease are not so good for eating as the worst sort now cultivated in England; it is a low trailing plant; the leaves have two lobes on each foot-stalk; those below are spear-shaped, and sharply indented on their edges, but the upper leaves are small and arrow pointed. The flowers are blue, each foot-stalk sustaining four or five flowers; the pods are taper, near three inches long, and the seeds are round, about the size of tares.

The sixth sort is annual. This grows naturally among the corn in Sicily, and some parts of Italy, but is here preserved in botanic gardens for the sake of variety. It hath an angular stalk rising near three feet high; the leaves stand upon winged foot-stalks, each sustaining two oblong lobes. The flowers are of a pale yellow colour, shaped like those of the other sorts of pea, but are small, each foot-stalk sustaining one flower; these are succeeded by pods about two inches long, containing five or six roundish seeds, which are a little compressed on their sides. These are by some persons eaten green, but unless they are gathered very young they are coarse, and at best not so good as the common pea. It may be sown and managed in the same way as the garden pea.

We shall now proceed to set down the method of cultivating the several sorts of garden pease, so as to continue them throughout the season.

It is a common practice with the gardeners near London, to raise pease upon hot-beds, to have them very early in the spring; in order to which they sow their pease upon warm borders, under walls or hedges, about the middle of October; and when the plants come up, they draw the earth up gently

to their stems with a hoe, the better to protect them from frost. In these places they let them remain until the latter end of January, or the beginning of February, observing to earth them up from time to time as the plants advance in height (for the reason before given;) as also to cover them in very hard frost with pease-haulm, straw, or some other light covering, to preserve them from being destroyed; then, at the time before-mentioned, they make a hot-bed (in proportion to the quantity of pease intended) which must be made of good hot dung, well prepared and properly mixed together, that the heat may not be too great. The dung should be laid from two to three feet thick, according as the beds are made earlier or later in the season; when the dung is equally levelled, then the earth (which should be light and fresh, but not over rich) must be laid thereon about six or eight inches thick, laying it equally all over the bed. This being done, the frames (which should be two feet high on the back side, and about fourteen inches in front) must be put on, and covered with glasses; after which it should remain three or four days, to let the steam of the bed pass off, before you put the plants therein, observing every day to raise the glasses, to give vent for the rising steam to pass off; then, when you find the bed of a moderate temperature for heat, you should, with a trowel or some other instrument, take up the plants as carefully as possible, to preserve the earth to their roots, and plant them into the hot-beds in rows, about two feet asunder, and the plants about an inch distant from each other in the rows, observing to water and shade them until they have taken root; after which you must be careful to give them air at all times when the season is favourable, otherwise they will draw up very weak, and be subject to grow mouldy and decay. You should also draw the earth up to the flanks of the plants as they advance in height, and keep them always clear from weeds. The water they should have must be given them sparingly, for if they are too much watered, it will cause them to grow too rank, and sometimes rot off the plants at their flanks, just above ground. When the weather is very hot, you should cover the

glasses

glasses with mats in the heat of the day, to screen them from the violence of the sun, which is then too great for them: but when the plants begin to fruit, they should be watered oftner, and in greater plenty than before; for by that time the plants will have nearly done growing, and the often refreshing them will occasion their producing a greater plenty of fruit.

The sort of pea which is generally used for this purpose, is the dwarf, for all the other sorts ramble too much to be kept in frames. The reason for sowing them in the common ground, and afterwards transplanting them on a hot-bed, is to check their growth, and cause them to bear in less compass; for if the seeds were sown upon a hot-bed, and the plants continued thereon, they would produce such luxuriant plants as are not to be contained in the frames, and would bear but little fruit.

The next sort of pea, which is sown to succeed those on the hot-bed, is the hotspur, of which there are reckoned several varieties; as the Golden hotspur, the Charlton hotspur, the Masters's hotspur, the Reading hotspur, and some others; which are very little differing from each other, except in their early bearing, for which the Golden and Charlton hotspurs are chiefly preferred; though if either of these sorts are cultivated in the same place for three or four years, they are apt to degenerate, and be later in fruiting; for which reason, most curious persons procure their seeds annually from some distant place; and in the choice of these seeds, if they could be obtained from a colder situation and a poorer soil, than that in which they are to be sown, it will be much better than on the contrary, and they will come earlier in the spring.

These must also be sown on warm borders, toward the latter end of October; and when the plants are come up, you should draw the earth up to their shanks in the manner before directed, which should be repeated as the plants advance in height (always observing to do it when the ground is dry) which will greatly protect the stems of the plants against frost; and if the winter should prove very severe, it will be of great service to the plants to cover them with pease-haulm, or some other

light covering, which should be constantly taken off in mild weather, and only suffered to remain on during the continuance of the frost; for if they are kept too close, they will draw up very weak and tender, and thereby be liable to be destroyed with the least inclemency of the season.

In the spring, you must carefully clear them from weeds, and draw some fresh earth up to their stems, but do not raise it too high to the plants, lest by burying their leaves you should rot their stems, as is sometimes the case, especially in wet seasons. You should also observe to keep them clean from vermin, which, if permitted to remain amongst the plants, will increase so plentifully, as to devour the greatest part of them. The chief of the vermin which infest pease, are the slugs, which lie all the day in the small hollows of the earth, near the stems of the plants, and in the night-time come out, and make terrible destruction of the pease; and these chiefly abound in wet soils, or where a garden is neglected, and over-run with weeds; therefore you should make the ground clear every way round the pease to destroy their harbours; and afterwards, in a fine mild morning very early, when these vermin are got abroad from their holes, you should slack a quantity of lime, which should be strewn hot over the ground pretty thick, which will destroy the vermin wherever it happens to fall upon them, but will do very little injury to the pease, provided it be not scattered too thick upon them. This is the best method I could ever find to destroy these troublesome vermin.

If this crop of pease succeeds, it will immediately follow those on the hot-bed; but for fear this should miscarry, it will be proper to sow two more crops at about a fortnight or three weeks distance from each other, so that there may be the more chances to succeed. This will be sufficient until the spring of the year, when you may sow several more crops of these pease at a fortnight distance from each other. The late sowings will be sufficient to continue the early sort of pease through the season, but it will be proper to have some of the large sort of pease to succeed them for the use of the family in order to which, you should sow

some of the Spanish Morotto, which is a great bearer, and a hardy sort of pea, about the middle of February, upon a clear open spot of ground. These must be sown in rows about four feet asunder, and the pease should be dropped in the drills about an inch distance, covering them about two inches deep with earth, being very careful that none of them lie uncovered, which will draw the mice, pigeons, or rooks, to attack the whole spot; and it often happens, by this neglect, that a whole plantation is devoured by these creatures; whereas, when there are none of the pease left in sight, they do not so easily find them out.

About a fortnight after this you should sow another spot, either of this sort, or any other large sort of Pea, to succeed those, and then continue to repeat sowing once a fortnight, till the middle or latter end of May, only observing to allow the Marrowfats, and other very large sorts of pease, at least four feet and a half between row and row; and the rose pea should be allowed at least eight or ten inches distance, plant from plant in the rows; for these grow very large, and if they have not room allowed them, they will spoil each other by drawing them up very tall, and will produce no fruit.

When these plants come up, the earth should be drawn up to their shanks (as was before directed,) and the ground kept entirely clear from weeds; and when the plants are grown eight or ten inches high, you should stick some brush-wood into the ground close to the pease for them to ramp upon, which will support them from trailing upon the ground, which is very apt to rot the large growing sorts of pease, especially in wet seasons; besides, by thus supporting them, the air can freely pass between them, which will preserve the blossoms from falling off before their time, and occasion them to bear much better, than if permitted to lie upon the ground, and there will be room to pass between the rows to gather the pease when they are ripe.

The Dwarf sorts of pease may be sown much closer than those before-mentioned, for these seldom rise above a foot high, and rarely spread above half a foot in width, so that these need not have more room than two feet row from row, and not above an inch

asunder in the rows. These will produce a good quantity of pease, provided the season be not over-dry; but they seldom continue long in bearing, so that they are not so proper to sow for the main crop, when a quantity of pease is expected for the table, their chief excellency being for hot-beds, where they will produce a greater quantity of pease (provided they are well managed) than if exposed to the open air, where the heat of the sun soon dries them up.

The Sickle pea is much more common in Holland than in England, it being the sort mostly cultivated in that country; but in England they are only propagated by curious gentlemen for their own table, and are rarely brought into the markets. This sort the birds are very fond of, and if they are not prevented, many times destroy the whole crop. This should be planted in rows about two feet and a half asunder, and be managed as hath been directed for the other sorts.

Although we have directed the sowing of the large sorts of pease for the great crop, yet these are not so sweet as the early hotspur pease; therefore it will also be proper to continue a succession of those sorts through the season, in small quantities, to supply the best table, which may be done by sowing every fortnight; but all those which are sown late in the season should have a strong moist soil, for in hot light land they will burn up, and come to nothing.

The large growing sorts may be cultivated for the common use of the family, because they will produce in greater quantities than the other, and will endure the drought better, but the early kinds are by far the sweeter tasted pease.

The best of all the large kinds is the Marrowfats, which, if gathered young, is a well-tasted pea; and this will continue good through the month of August, if planted on a strong soil.

The Grey and other large Winter pease are seldom cultivated in gardens, because they require a great deal of room, but are usually sown in fields in most parts of England. The best time for sowing of these is about the beginning of March, when the weather is pretty dry, for if they are put into the ground in a very wet season, they are
apt

apt to rot, especially if the ground be cold; these should be allowed at least three feet distance row from row, and must be sown very thin in the rows; for if they are sown too thick, the haulm will spread so as to fill the ground, and ramble over each other, which will cause the plants to rot, and prevent their bearing.

The common white pea will do best on light sandy land, or on a rich loose soil. The usual method of sowing these pease is with a broad-cast, and so harrow them in: but it is a much better way to sow them in drills about three feet asunder, for half the quantity of seed will do for an acre, and being set regularly, the ground may be stirred with a hoe to destroy the weeds, and earth up the pease, which will greatly improve them, & the pease may be much earlier cut in autumn when they are ripe. The usual time for sowing of these pease is about the middle or latter end of March, on warm land, but on cold ground, they should be sown a fortnight or three weeks later. In the common way of sowing, they allow three bushels or more to an acre, but if they are drilled, one bushel will be full enough.

The green and maple Rouncivals require a stronger soil than the white, and should be sown early in the spring; also the drills should be made at a greater distance from each other, for as these are apt to grow rank, especially in a wet season, they should be set in rows three feet and a half, or four feet asunder; and the ground between the rows should be stirred two or three times with a hoe, which will not only destroy the weeds, but, by earthing up the pease, greatly improve them, and also render the ground better to receive whatever crop is put on it the following season.

The grey pease thrive best on a strong clayey land; these are commonly sown under furrow, but by this method they are all always too thick, and do not come up regular; therefore all these rank-growing plants should be sown in drills, where the seeds will be more equally scattered, and lodged at the same depth in the ground; whereas in the common way, some of the seeds lie twice as deep as others, and are not scattered at equal distances. These may be sown toward the end of

February, as they are much hardier than either of the former sorts, but the culture of these should be the same.

The best method to sow these pease is to draw a drill with a hoe by a line about two inches deep, and then scatter the seeds therein; after which, with a rake, you may draw the earth over them, whereby they will be equally covered: this is a very quick method for gardens, but where they are sown in fields, they commonly make a shallow furrow with the plough, and scatter the seeds therein, and then with a harrow they cover them over again. After this, the great trouble is to keep them clear from weeds, and draw the earth up to the plants; this, in such countries where labour is dear, is a great expence to do it by the hand with a hoe; but this may be easily effected with a small plough, which may be drawn through between the rows, which will entirely eradicate the weeds, and by stirring the soil, render it mellow, and greatly promote the growth of the plants.

When any of these sorts are intended for seed, there should be as many rows of them left ungathered, as may be thought necessary to furnish a sufficient quantity of seed; and when the pease are in flower, they should be carefully looked over to draw out all those plants which are not of the right sort, for there will always be some roguish plants (as the gardeners turn term them) in every sort, which, if left to mix, will degenerate the kind. These must remain until their pods are changed brown, and begin to split, when you should immediately gather them up, together with the haulm; and if you have not room to stack them till winter, you may thresh them out as soon as they are dry, and put them up in sacks for use; but you must be very careful not to let them remain too long abroad after they are ripe, for if wet should happen, it would rot them, and heat, after a shower of rain, would cause their pods to burst, and cast forth their seeds, so that the greatest part of them would be lost; but it is not advisable to continue sowing the same seed longer than two years, but rather to exchange their seeds every year, or every two years at least, whereby you may always expect to have them prove right.

PEACH-TREE,

PEACH-TREE, [*Malus Persica*.]

The varieties of peaches are very great, and by continuing to raise them from the seed or kernel, they may be multiplied indefinitely. It is to be observed, however, that notwithstanding the number of varieties that may be obtained that way, it is probable not one in twenty is possessed of the proper qualities, as is obvious by the cultivated sorts now known in England; for most of the eminent nursery-men retain no more than from twenty to thirty sorts in their catalogues, which they sell as real good peaches. Some indeed extend them to 40 or 50; but among these there are many of very indifferent qualities, and not worth the space they occupy; and since it is not more expence to cultivate the best than the more indifferent ones, the first only deserve our regard; and as all the sorts require to be trained against walls, the expence of building them is very considerable, and a good affected wall is too valuable to be filled with any but the capital sorts.

These fruit are divided into two classes, viz. peaches and paves; the former are distinguishable by the flesh or pulp readily quitting the stone, that of the latter firmly adheres thereto.

Botanists allow only one distinct species of peach-trees; all the different sorts of fruit being varieties of one another, so that the trees of all the varieties bear the particular marks of the original species. Varieties are,

1. The early white nutmeg peach; a very small oblong whitish fruit, ripe in July. 2. Early red nutmeg; a small, roundish, bright red fruit, ripe the end of July. 3. Anne peach; a small, round, & yellowish, white fruit, early in Aug. 3. Small mignon peach; a small, and round fruit, red towards the sun, ripe the middle of August. 5. Great mignon peach; large, round, swelling on one side, and beautifully spotted with red to the sun; middle of August. 6. Early purple peach; large and round; middle of August. 7. Late purple; ripe the middle of September. 8. White magdalen peach; round, middle-sized, whitish, and deeply furrowed on one side; early in August. 9. Red magdalen; a beautiful large, round, red fruit; end of August. 10. Early Newington peach; roundish, middle-sized, and red to the sun; in August. 11. Old late

Newington peach; middle of September. 12. Montauban peach; middle-sized, roundish, purple, and cleft on one side; end of August. 13. Belle chevreuse peach; middle-sized, oblong red; end of August. 14. Noblesse; large, roundish, marbled with a purplish red; September. 15. Yellow Alberge peach; middle-sized, longish, yellow-fleshed fruit; middle of August. 16. Belle-garde peach; roundish, and almost wholly of a deep purple colour; beginning of September. 17. Chancellor peach; a large, somewhat oblong, bright red fruit; September. 18. La Teton de Venus, or breast of Venus peach; a pretty large, somewhat longish fruit, deeply divided on one side, both divisions swelling and rounded like a woman's breast, and of a pale red colour on the sunny side; the end of September. 19. Rossana peach; a middle-sized, somewhat oval fruit, purple next the sun; early in September. 20. Persique peach; a fine large, roundish, and somewhat oblong fruit, terminated at top by a small nipple, having the sunny side red, the other pale green; early in October. 21. Admirable peach; a very large, round fruit, beautifully adorned with red next the sun; middle of September. 22. Rambouillet peach; a large, longish, deeply-furrowed fruit, the sunny side beautifully reddened, the other yellow; towards the end of September. 23. La Royale, or royal peach; a large, round, almost wholly red fruit, but deeply reddened next the sun; end of September. 24. Bourdine peach; a large, round, very fine fruit, bright red on the sunny side; ripe beginning or middle of September. 25. Bloody peach; a middle sized, deep red fruit next the sun, and its whole pulp of a blood red colour; late in October. 26. Nivette peach; a very fine, large, longish, deep purple fruit next the sun; middle of September. 27. Portugal peach; a large, round, even peach, generally spotted, and the sunny side elegantly red; end of September. 28. Royal George peach; a middle-sized, round peach, furrowed on one side, of a deep red next the sun, the other part white, spotted with red; early in September. 29. Violet peach; a middle-sized, roundish, oval, violet-coloured peach; the middle of September. 30. Catharine peach; a beautiful, very large,

large, round peach, the sunny side wholly of a fine bright red, the other side white; ripens in October. 31. Monstrous pavié of Pomponne; an amazingly large and beautiful peach, the shape round, and often measures twelve or fourteen inches in circumference; the side next the sun deeply red, and the other a pale flesh colour; the end of October. 32. Cambrai peach; middle-sized, longish, pale-coloured; in October. 33. Sion peach; a large, handsome, round peach, reddish on the sunny side, the other side whitish; ripe end of September. 34. Narbonne peach; a very large peach, of a greenish colour; ripe in October.

The above thirty-four varieties of peaches are the principal sorts of that universally admired fruit, known in Great-Britain; and the name here annexed to each variety is that by which they are generally known to all the nursery-men, who cultivate the trees for sale, to supply noblemen and gentlemen's gardens.

Many of the above varieties approach so near to one another in size, shape, and colour, that it is sometimes difficult to determine their difference without the strictest attention.

We do not pretend to recommend all these varieties as real good peaches, but for the sake of those who have large extent of walling, have collected all the principal sorts to view, with short descriptions of their sizes, shapes, colours, and times of ripening, which it is presumed will convey some idea of the respective varieties to the unexperienced, and help to direct him in the choice of the sorts.

The sorts that have the greatest claim to esteem, as the best and most beautiful, both in regard to size, shape, colour, flavour, and the best bearers, are the following:

The Anne peach, small mignon, great mignon, red Magdalen, belle garde, belle chevruese, mountauban, admirable, early Newington, late Newington, bourdine, nivette, la royale, purple, teton de Venus, Catharine, and great pavié of Pomponne; the latter chiefly for its prodigious size and beauty, and, as a pickle, it surpasses all the other sorts.

The two nutmeg peaches, though of small size and indifferent flavour, especially the white for t, on account

of their early perfection, should also be allowed a place in the collection.

The bloody peach merits a place more for singularity, than for the quality of the fruit.

The two Newington peaches, Portugal, Catharine, and monstrous pavié, may be deemed of the pavié tribe, their flesh adhering closely to the stone. The old Newington and Catharine are esteemed two of the most valuable peaches that are cultivated in England.

Peach trees in general will grow 15 or 20 feet high, if they have full scope; and if trained for standards, and permitted to take their natural growth, they form regular heads, but they do not ripen their fruit well on standards in this country, they being natives of a much warmer climate; so that, to effect the ripening of their fruit perfectly, they require the shelter of a warm wall, to which their branches should be regularly trained.

The trees in general flower early in spring; the flowers come out before the leaves, appearing chiefly on the shoots last year, arising some singly, others in pairs, all along the sides of the shoot, to which they sit close; they are formed each of five small petals, and many stamina in the middle, with a small round germen, which becomes the peach.

The general propagation of peach-trees is effected by budding them upon plum-stocks.

But all the fine varieties of these fruit were originally obtained from the seed or kernel, and more new varieties may be gained by that means; but the process is somewhat tedious, and often terminates in but trifling success, in respect to the quality of the fruit so obtained; for if you plant the stones of the finest sorts, it is a thousand to one, if, out of a great number, you obtain one like the originals, and but few that have any real merit, so greatly do these, and indeed all other fruits, vary from the seed. However, for the sake of experiment, there are many who have curiosity and patience enough to undertake the acquisition of new varieties by the above methods, and think themselves amply rewarded if they gain one or two new sorts that possess good qualities in respect to size, form, colour, and flavour.

The method of planting the stones
for

for that purpose, is, they should be planted in autumn, in drills about two or three inches deep, and in spring following they will come up, and after having one summer's growth, they should, in autumn or spring following, be transplanted in rows in the nursery, and in a year or two after may be planted against any spare wall, pales, or reed fence, and trained as other peach-trees; and when they have shown fruit, those of merit should be planted where they are to remain, which you may propagate or encrease by budding, as hereafter directed.

The only method of propagation, however, to continue, with certainty, the approved or any acquired sorts of peaches, is by budding, i. e. inoculation; since, by inoculating the bud of a tree of any of the kinds, in the stem or stock of any sort of peach, almond, or plumb, the bud unites with the said stock, the head of which being cut off, the bud shoots forth, branches out, and becomes a peach-tree, which will produce fruit in size, shape, colour, and flavour, exactly the same as that of the parent tree from whence the bud was taken, and by which means you may multiply any of the sorts of peaches, and other fruit trees at pleasure, and with certainty; and besides, trees thus raised, much sooner attain a bearing state than those from the kernels.

Peaches, as above hinted, may be budded upon three or four different stocks, viz. upon those raised from their own kernels, upon the almond, apricot, and plumb.

There is however but one sort of stock proper for general use whereon to bud peaches, which is that of the plumb; the peach, the almond, and apricot stocks, are often attacked by the gum, and communicate it to the trees just as they arrive at a state of full bearing, and quickly go off; whereas, the plumb stock being in every respect hardier, and better suited to different soils, peaches budded upon them are generally healthful, and of long duration; observing, however, that experience has proved them to be the most prosperous and durable on one particular sort, which is that of the true muscle plumb.

The propagation or raising stocks from the varieties of plumbs indiffe-

rently, as also of peaches, almonds, and apricots, may with great ease be effected by sowing the stones of the fruit in autumn, in drills two inches deep, and they will rise freely the spring following; and in October they may be transplanted in rows two feet and half distant, and in the two following summers, those that are intended to form dwarfs, may be inoculated with peach buds.

But in respect to the real muscle-plumb stock, this cannot be obtained in its true state from the stones, for they vary so greatly when raised from seed, that not one in a hundred will prove of that sort; therefore, the only method to obtain the true muscle kind is either by layers in autumn, or by suckers that are sent up from the roots of peach or plumb trees, that are known to be worked upon that sort of plumb. These should be collected in October or November; chuse those that are about the size of a large goose-quill; cut off any knots of old wood that adhere to their roots, and trim off all side-branches, and plant them in lines two feet and half distant, and in the following summer some will be fit to bud for dwarfs.

The proper sized stocks to bud upon to form dwarfs, should be about half an inch thick.

But if intended to form half or full standards, the stocks, before they are budded, must be permitted to form stems an inch thick at bottom, and four, five, or six feet in height. The season for budding them is August, tho' some perform that work in June and July; but when budded too early, the buds are apt to shoot the same year, which shoots, being weakly, are either killed in winter, or, if they escape the frost, they never make great progress; therefore, from about the 25th of July to the 25th of Aug. is the proper period for that operation, and the buds will remain dormant till spring, when they will shoot forth with vigour.

The method of performing the operation of budding, and every thing relating thereto for those and other trees, is fully explained under that article, See *Inoculating*.

We shall therefore only observe, that as Peach-trees require to be trained against walls, &c. they should be budded principally to form dwarfs; that their

their branches may at first come out low, so as they may by degrees be trained to occupy every part of the wall, from bottom to top; the stocks should therefore be budded within five or six inches of the bottom, but where there are high walls to furnish, it is necessary also to raise half-standards and standards, to occupy the upper part, while the dwarfs are gradually advancing to cover the whole; the stocks, to constitute such standards, should for half-standards be budded at the height of three or four feet, and for full standards at that of five or six, or they may be budded near the ground, and the first shoot from the bud trained to the above heights to form a stem.

Observe to insert only one bud in each stock, the heads of which are to remain on entire until spring.

In March following, the heads of all the stocks are to be cut off sloping, just above where the bud is inserted.

Soon after this the buds will shoot forth, each will produce one strong erect shoot, which, by autumn, will probably attain three or four feet in height, and the trees have then acquired their first state of formation, which, in October or November, should be transplanted in the places where they are finally to remain; and in the spring after that, they must be headed down to a few eyes, to procure laterals near the place of inoculation, to give the tree its suitable form for the wall, and in two or three years they will bear fruit.

With respect to situation and exposure, the peach-tree being originally a native of warm climates, is, in some respects, tender, and will not prosper, at least not bear well, in an open situation; so that for the general part, require to be trained against walls.

The trees themselves, though hardy enough in respect to cold, yet the blossom and young fruit are extremely impatient of frost & cutting winds, which generally reign in this country at early spring, when the trees bloom and set their fruit: the trees, therefore, should be indulged with the shelter of a warm wall, or other substantial close fence, to which they should be planted close, and their branches regularly trained, which is necessary, not only to defend the blossom and young fruit the better from the inclemency of the weather,

but also that they may have all the advantages of the sun's influence, to accelerate its ripening, as well as to give it colour and flavour, which many sorts, even with all the aid in our power to give, hardly effect in unfavourable seasons in this country.

The proper aspected walls, or exposure for the fine sorts, is that of a due south; some may also be planted upon an east aspected wall, and in favourable seasons the trees will also sometimes set and ripen fruit tolerably on a western aspect. However, where there is walling enough, let the capital sorts be always planted against such walls as enjoy the greatest degree of the south sun, as even that aspect, in some seasons, is barely sufficient to ripen some of the late sorts of these fruit, in any part of this island.

Such of the forward kinds that you desire as early as possible, should have the warmest situation on the best south wall, which, though some are inferior in size and flavour, yet when obtained at the earliest season, they are highly acceptable as a rarity in the desert.

With respect to soil, the peach-tree will prosper in any common soil of a garden, where it is not less than fifteen or eighteen inches depth of proper staple, that is such as is proper for the culture of common kitchen herbage, and where moisture is not very copious; but if the depth of good soil in the fruit-tree borders is two or three feet, it will be the greater advantage.

The breadth of the borders against the walls where it is intended to plant these trees, should never be less than three, but those of six or eight feet are the most proper width.

If the natural soil of the borders is of a moderately light, pliable nature, and of proper depth, it is a happy circumstance; and if it is of a loamy temperature, it will also be a particular advantage, provided however there is such depth of proper staple as above noticed, before you come at gravel, clay, or any other bad soil at bottom, when nothing more than common digging is necessary; but where there is less than that depth, the borders must be raised with a due portion of good fresh earth and rotten dung, working the whole well together.

Where good rich or pliable loam could be easily obtained from the sur-

face of some contiguous pasture, common, or other field, and with store of rotten dung, working or blending the whole with the natural soil of the border to the proper depth, it would form a fine compost, and the trees will prosper, and be of long continuance.

But if the soil is naturally stiff and clayey, or of any other stubborn or very moist nature, it may be mellowed by adding dry substances, such as coal ashes, drift sand, road soil, and other similar materials, and plenty of rotten dung, working the whole with the natural soil to the above depth.

Where any one is so happy to possess a soil whose natural goodness renders all foreign assistance unnecessary, no more need be done than digging the borders one or two spades deep, and it is fit for the reception of the trees.

The season for planting is October and November, or even any time in open weather till March, in dry warm soils; but in moist or wet soils, we prefer the spring for that work.

Peach-trees, and, in short, all others that are designed for walls, should be planted in their places of final destination when they are one year old, that is when their heads are of one summer's growth from the bud, and with their said heads entire for the present, that we may have the opportunity of training them from their origin, as it were, and in their proper position in the places where they are finally to remain; for the great art in forming a wall-tree depends entirely upon the due pruning and training the two first years, after making the first shoot or head from the budding.

But if any one is in haste to have his walls covered at once, as it were, with bearing trees, he may be supplied with such at most of the nurseries, which are what the nursery-men call trained trees, which they sell from five to ten shillings per tree, according to the sorts, size, and property of growth. Every one may do as they please, but we always preferred those of one year from the bud; for these reasons, first, that trees of that age sooner and more firmly establish their roots, which is an essential point to keep in view; and secondly, because we would have the tree under our own management from the beginning, which we always found to be of importance,

The distance these trees should be planted from one another is fifteen feet, and if the walls are high, half or full standards may be planted between the dwarfs, to occupy the upper part, while the dwarfs grow up to fill that space; for no part of good walls should be left unoccupied.

The rule is this, if the walls are not above six or eight feet high, plant none but dwarfs, and these at fifteen feet distance; if the walls are nine feet high, half standards, of about three or four feet stem, may be planted between the dwarfs; and if the walls are ten or twelve feet, or more in height, full standards, of six feet stem, should be planted to occupy the upper part; and as the dwarfs are to be the principal residents, way must be made, as their branches gradually advance, by cutting away the lowermost ones of the standards by degrees annually, and at last, in seven, eight, ten, or more years, as you shall see necessary, the standards may be entirely taken away, that the dwarfs may advance, and fill the whole space of walling.

The mode of planting being fixed on, mark out on the walls the distances as above for the trees.

Then, having recourse to the nursery, let the trees be taken up with all their roots as entire as possible, for this is of much importance; the extreme ends of all of which should be tipped, i. e. a little shortened, and those of broken or bruised ones smoothed, preserving the heads entire for the present. Holes or pits are then to be opened, capacious enough to receive the roots freely every way. Place the tree therein, about three inches from the wall, with the bud outward, and then break and trim in the earth regularly between all the roots and small fibres, and tread the whole gently, to fix the whole plant in its proper position; then directly tack the head to the wall, or tye it to a stake, to secure it from the power of boisterous winds till March, when it is to be headed down.

If the ensuing spring or beginning of summer should prove very dry, indulge the trees with moderate waterings once or twice a week, according to the drought and heat of the season, which will encourage them to push out more freely and strong after heading down.

The trees being planted with their
first

first head from the bud entire, as we advised; the next necessary culture is to perform the operation of heading them down, which is to be done just as they begin to shoot, and the proper time is March.

This work consists in shortening the head, or first main shoot down within five or six eyes of the bud, or place of its origin, sloping it off on the side next the wall, just above an eye, which is a necessary operation, both to dwarfs, half, and full standards, that are planted against walls; that by stopping its upright direction, it may throw out several lateral shoots from the remaining lower part to the right and left, and constitute the proper foundation for forming a wall-tree, whose first branches should always proceed on both sides, from within six inches of the place of inoculation, whether dwarfs for the lower part, or standards for the middle and top of the wall; and that if the heading down was omitted, the consequence would be, the tree would advance with a naked stem, and leave almost one half of the allotted space of walling unoccupied.

Therefore, pay no regard to the first head from the bud, howsoever large and fine it may appear, but cut it down as above; for the general formation of the tree depends entirely upon the form acquired by this practice, and the two succeeding years pruning.

The trees being thus headed down, they will soon after produce one strong shoot from each remaining eye, observing that such as proceed immediately from the front and back, are to be constantly rubbed off close, but all those that advance from the two sides are to be preserved entire, which, in June, when of due length to admit of laying in, should be nailed close to the wall, continuing them thereto at full length during the summer.

At the fall of the leaf following, proceed to give them their first winter pruning.

This may be done any time from November till March. You are now to examine the number of shoots each tree produced the preceding summer from the effect of heading down, and to prune them accordingly; for example, if there are two shoots, one on each side, they are both to be retained; and to encourage their furnishing a

farther supply of branches; shorten them to eight or ten, or if of very strong growth, to twelve or fifteen inches, and nail them horizontally to the wall.

If there are three shoots, the middle one of them is to be cut out close, and shorten the other two as above, and nail one to each side in a horizontal direction; but if the middle shoot of the three be considerably weaker than the other two, it may be retained, and nailed in at full length, which probably will furnish a fruit or two, while the other two are providing a farther necessary supply of wood; but if it is a strong shoot, cut it clean away.

If the tree is furnished with four shoots, two on each side, retain them all, and shorten them from ten to fifteen inches, according to their strength, as above, and nail them equally to the right and left.

And if there are five shoots, and that those on the sides are strong, and the middle one weak, shorten the former as above, and lay them horizontally, and nail in the middle one entire; but if the latter is nearly of equal strength, or stronger than the others, cut it clean out, which, if left, would draw the principal part of the nourishment, and impoverish those of the two sides, which should now be wholly attended to, for the middle will always furnish itself in due time.

One fundamental rule to be observed, is, that your tree, at this period of growth, should, if possible, proceed with shoots of an equal strength and number on each side, and depends principally upon two or four good branches, shortened & trained equally to the right and left, in a nearly horizontal direction, which will not fail in their turn to furnish you with more to occupy the wall upward.

The trees having had their first year's pruning, observe the following rules in their second year's culture.

During summer, all shoots that arise from the upper and under side of the former year's horizontals, are now to be retained and trained entire, and all buds or shoots that proceed immediately from the front and back part of the said horizontals, should be constantly rubbed off, because they cannot be trained consistent with the necessary form and regularity of the tree, having particular regard, however, to

reserve all the regular shoots, and train them in at full length; for, except in some particular instances, the shoots must not be shortened in summer, therefore continue them to the wall entire till the winter pruning.

In November, when the leaves are fallen, or any time betwixt that and the beginning of March, you may proceed to the second winter pruning; in performing this, we, for example, will suppose the tree in the first pruning to have been trained with four horizontals, that is, two on each side, and that each of these produced two or three well-placed shoots the preceding summer, or as many as to make the tree now possessed of eight, ten, or twelve branches; now, if these stand four, five, or six on one side, and as many on the other, it is a happy uniformity, and all of them are to be retained; and that to procure still a farther supply of horizontals, each of the above are now to be shortened according to its strength; if they are weakly, cut them to six or eight inches, and if of middling growth to ten or twelve, and if very strong ones to about fifteen or eighteen inches, and train them to the wall horizontally, at six inches distance, observing that the opposite branches of each side range exactly in an equal position.

But where it happens that there are an unequal number of shoots, as for instance, four, five, or six on one side, and seven, eight, or more on the other, and that they are all of tolerable strength; then, to render both sides nearly equal, some of the weakest and worst placed on the fullest side should be cut out.

Observe to proceed as near as possible with an equal number and strength of horizontals on both sides, extending the lowest branches the longest, and if you have now five, six, or eight on a side, trained at five or six inches distance, your tree will begin to assume a handsome form, and next summer you may expect some fruit.

Previous to the general pruning, observe, that peach and nectarine-trees always produce their fruit upon the one-year old shoots; that is, the shoots produced each summer bear the succeeding year, and the same individual shoots rarely bear but once, nor do they furnish good bearing wood af-

ter the first year, so that the grand article in pruning, is to procure an annual succession of these young shoots in every part, from the very bottom to the extremity every way of the tree, which are to be obtained principally by shortening, in winter pruning, those of every year, whereby they furnish, at the same time, both a proper crop of fruit, and supply of bearing wood.

The great art in pruning and training a peach and nectarine tree against walls, is to preserve uniformity in every part from the beginning, having strict regard that both sides to the right and left advance with equal strength, and number of horizontals, whose numbers on each side should be equally increased every year, and those trained constantly in a nearly horizontal position, at five or six inches distance one above another, till by degrees, they cover the whole space of walling allotted for them, both in breadth and height; for this is very essentially to be observed.

After the tree is thus formed and conducted to a bearing state, its duration, beauty, and fruitfulness depend wholly upon proper pruning every summer and winter.

The general summer pruning consists in reforming the irregularity of the numerous shoots then produced, and training to the wall at full length, in every part, all regularly placed ones, as succession-wood for next year's bearing, for the great art is to procure a due supply of these every summer in all parts of the tree.

And the general winter pruning comprehends a general reform among all the branches and shoots of all ages, sizes, and situation, such as the retrenching all worn-out and naked branches, as they from time to time occur to make room for those that furnish the best bearing-wood, shoots of the preceding summer; at the same time selecting and retaining in every part the best of the said shoots for next summer's bearing, cutting out unnecessary and irregular ones, and all useless shoots in general, as well as part of the former year's horizontals, to make due room to train the proper useful shoots; all of which should be shortened, to promote their emitting laterals in summer for bearing the year after, and the whole then nailed close to the wall in regular order.

The time to begin the summer pruning is in May or June. Every one knows that in spring a peach-tree abounds with a great number of shoots, arising from every side of the last year's horizontals or present bearers, probably three times more than are useful, or than are wanted, or can possibly be trained in without confusion; you must therefore thin them, and ease the tree of all that are irregular, and such as are evidently useless and superfluous, at the same time retaining a sufficiency of the regular shoots; that is, two, three, or four of the side ones upon each horizontal, to be trained for next year's bearing.

The rule is this: Each of the last year's horizontals will probably produce from three to six, or more shoots, and of these, some proceed from the upper and under sides, and some from the back and fore parts; those of the former situation, viz. from the upper and under sides, are to be regarded as the only proper regular shoots, and are to be principally attended to, retained, and trained in at full length, to prune upon in winter for bearing the succeeding year; but those that proceed directly foreright from the front, and those from the back of the horizontals, or from any of the other parts of the tree in that irregular direction, must be rubbed off close, because, by their situation on the branches, they cannot be trained with due regularity; therefore, that though good of themselves, they are to be deemed irregular, or useless shoots, and should be every where displaced, except in cases where horizontals furnish no other, when the best placed of them may be retained.

In respect to the regular shoots above described, examine, as you go on, their situation and number upon each horizontal; if two or more shoots rise from the same eye, retain only one of them; and if the tree is but a moderate shooter, it is necessary to disburthen it of all that are evidently superfluous, which are such shoots as, though good and well placed, yet if there are four, five, or more on a horizontal, where only one or two is apparently necessary for next year's bearing, some of the weakest and worst placed, or any remarkably luxuriant ones, should be cleared away, retaining however,

where practicable, always two of the best situated and fairest shoots upon the weak, and three or four on each of the middling and strong horizontals, which, though double, or even treble of what will be apparently wanted, it is eligible culture to reserve enough to chuse from in winter pruning, training the whole at full length during summer.

But where a tree shoots very vigorously in general, it is advisable to reserve as many of the side-shoots of each horizontal as there is tolerable room to train at full length, which, by dividing the sap among many, checks luxuriance, which would probably take place in a smaller number; for the natural inclination of these sort of trees should, in some degree, be followed.

Another circumstance to be attended to in thinning & regulating the shoots, is to leave one good shoot at, or as near the end of each bearing horizontal as possible, that it may draw the sap through the whole branch to the nourishment of the fruit.

All weak shoots rising from the old wood must be displaced, unless any regular placed ones appear useful to fill a vacancy.

If any remarkably vigorous or luxuriant shoot arise either from the bearing horizontals, or any of the older branches, examine its situation and strength, and consider whether it is wanted; if it is likely to impoverish the neighbouring shoots of moderate growth, or that it is not immediately wanted to fill a vacancy, cut it out; but if useful, either to fill a vacancy, or to prevent an apparent one, or to exhaust too abundant sap, retain it, and pinch it in May or early in June to four or five eyes, and you will procure one middling shoot from each eye the same year, to train in, to chuse from in the winter pruning.

All those very rank or luxuriant shoots, distinguished singularly from the generality of the others of the same tree, by their extraordinary size, green colour, and often redness at the tips, should be cut out from every part, unless you have no other resource to fill a vacancy, when such that are duly placed for that purpose may be reserved and pinched as above observed.

Attention should always be had to
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the bottom or lower part of the trees, especially those that are aged; if any strong shoot arise in those parts, you must preserve it carefully to succeed worn-out or naked branches, which are cut away by degrees; and if there is a present vacancy, pinch it early in June to four or five eyes, to furnish lateral shoots the same year, to be ready against the winter pruning.

Where a vacancy or want of wood is discovered, at this time, in any part, and that there is only one shoot where two, three, or more are necessary, shorten or pinch the said shoot to three, four, or five eyes, in May or early in June, and it will afford as many laterals the same year to fill the vacant space.

In the whole operation of summer pruning, observe, that all the regular shoots you judge necessary to retain to prune upon in winter, must be left entire, shortening none now, except in cases of vacancy as above, and all irregular and other useless shoots that are now to be taken out, must be rubbed or cut off as close as possible, leaving no stumps, which would shoot out from every eye, and fill the tree with innumerable useless shoots, and choak up and darken the fruit, and deprive it of the necessary benefit of sun, air, showers, &c. and which would require much time to cut out in the winter pruning.

It is necessary to observe, that if the above operations are begun early in summer, the shoots that are to be displaced may readily be rubbed off with the thumb; but observe, if you delay the work till the wood begins to harden, they will not break off easily without damaging the mother-branch, therefore use the knife, and cut them as close as possible.

After the above regulations, let all the remaining shoots, when of due length, be trained close to the wall unshortened, and as their ends advance, continue to train them still along at full length, and let them remain entire until the winter pruning; for in the common course the shoots must never be shortened in summer.

These are nearly all the directions we have to advance relative to the summer pruning; the utility of which, if the operation is performed in due time, is very great both to the tree and fruit.

Therefore, if the operations are begun in May, only just rub off all the ill-placed buds, that is, foresight ones, and those behind the bearing horizontals, and such others that are evidently useless, as before observed; and in June, when the useful or regular shoots are of proper length, they are easily and expeditiously trained in, for every one points to its proper place; besides, when the work is begun early, it can be performed with considerably more expedition and truth, as the useless buds or shoots may then, with the utmost facility, be rubbed off close with the thumb, without the use of any instrument, and the early operation will contribute very considerably to the size and goodness of the fruit, as well as beauty and duration of the trees.

The work however should never be delayed longer than the beginning of June, or till the shoots have attained due length for training in, and not, as is often the case, wait till they are two or three feet in length, and form such a thicket and confusion, that the most expert pruner would be at a loss to know where to begin to break through such obscurity, to determine what is necessary to be done, which, besides, is highly prejudicial to the prosperity of the fruit, the main object, as well as to the beauty and duration of the tree; and the confusion occasioned by such a thicket of wood and leaves prevents you from cutting close, and the trees become full of disagreeable stumps, producing useless shoots from every eye, which take up much time to remove in the winter pruning; and upon the whole the fruit being hidden, choaked up, and as it were buried behind such a thicket, becomes tender, as is evident from the colour, which is rather white than green, and when thus suddenly laid open to the air, joined to a scorching sun, great part of it withers and drops off, which never happens when the fruit has from the beginning been inured to the weather, by early rubbing off the useless, and training close the useful shoots, so as to give the sun and air free admission; but on the contrary the fruit always excels in size, colour, and flavour.

At this time of laying in, or dressing, that is, June, we recommend the following observation, which could not

not be so discoverable at the earlier dressing, viz.

Where short shoots, of an inch or two in length, appear upon this or the former year's horizontals, or sides of the old wood, and that they apparently will not exceed that length, it is of utility to reserve them, at least till the winter pruning, because they may prove natural fruit-spurs, which, at that season, are distinguishable by having a cluster of blossom buds.

If a vacancy is any where discovered early in summer, you may pinch some of the strongest neighbouring shoots to three or four eyes, and they will furnish you shoots the same year, to chuse from in the winter pruning.

Do not pull off any of the leaves at this time, as often practised, with a view to admit the sun, for these are necessary to the growth, both of the young shoots and fruit, so should never be taken away, unless there is indeed in any part so great a thicket as to darken the fruit considerably, when a little thinning may be necessary; in other cases that work must be dispensed with till the fruit are full grown.

After the trees have been summer-dressed, according to the preceding directions, you must not forget to review them once a fortnight, to rub off any unnecessary or straggling shoots that may arise, which is soon done, and to fasten up any shoot that may start from its place, or project from the wall, as well as to continue the trained shoots in general thereto, as they advance in length.

One thing more, which is necessary to observe in the summer dressing, is the blight which attacks these trees: this disorder is the effect of noxious winds, that occasion the curling up of the leaves, which become thick, clammy, yellowish, red, and scabby; and attacks the ends of the shoots, and proves very injurious both to the young shoots and fruit, and often their destruction; for the blighted leaves exhaust the sap, at the expence of all the other parts of the tree. When your trees are first attacked, there is no other remedy for this accident than to pick off all the curled leaves as soon as discoverable, and also cut off, below the disorder, all the infected part of the shoots, which generally form a rough disagreeable bush or thicket; this

enables the sap to push out new shoots lower down, for next year's bearing. So destructive is this infection, that it frequently destroys in a short time the whole leaves of a wall of trees; and when these are gone, the principal part of the fruit soon after follow, which generally withers and drops; as likewise the young wood, for next year's bearing, either dies or becomes stunted. Various other methods have been tried to prevent the spreading of this pestilence, but nothing effectual.

Insects also often prove very injurious to these trees; a fumigating engine lately invented is recommended, in which is burned tobacco, the smoke of which issuing with a perpetual stream, is applied to the trees attacked by the vermin, which infallibly destroys them, without injury to the trees or fruit.

The winter pruning may be executed any time from the fall of the leaf in November, until the beginning of March; for no weather has any particular effect with regard to proving injurious to the new-cut shoots.

This work however should never be delayed till late in spring, because the blossom buds will be so very turgid or swelled, that numbers of them will be unavoidably rubbed off in performing the operation of pruning and nailing; though some wait till this period, that they may better judge of the good or bad buds, and of the wood-buds from those that produce blossom and fruit. This is of some importance, but the sap is generally risen sufficiently in January, or sooner, to swell the buds, to enable you to distinguish them.

As these trees always bear their fruit upon the one-year old wood; that is, the shoots produced each summer bear the fruit the summer following, so that the fruit-buds are principally to be looked for upon these shoots.

Wood-buds are distinguishable by their being long and firm; blossom buds are round, swelling, thick, and soft.

It must be observed that good blossom buds are always double, two at an eye, having a leaf-bud or shoot between them; those that are single, though they sometimes have a leaf-bud, and blow pretty well, never set fruit so freely as the twin blossoms.

Great attention must always be had to keep every part of the tree well furnished with an annual supply of young wood, of the former summer, for bearing next year, advancing, as it were, gradually one behind another, from the bottom to the extremity every way; which is easily acquired by properly selecting, thinning, and shortening those of every year, and by cutting out annually some of the old horizontals to make room for them. Likewise observe, that as the bottom of the trees are apt to become naked, be also watchful of that part, to retain in proper places an annual supply of strong young wood, either to fill an immediate vacancy, or to be trained up gradually to supply the place of any naked or worn-out branch, that may happen either there, in the middle or upper part; which are such that support little or no young wood, or produce weak and a scanty portion of shoots, and should, wherever they appear, be cut down to the great branch from which they proceed, or to any lower strong young shoot they support, or any convenient branch supporting such shoots: and part of the old horizontals must be cut out annually, to make room to train in the bearing wood.

Previous to the performing the operation of winter pruning, it is eligible to unnailed the greater part of the branches, and all the young shoots in general; you then have full liberty to examine the state and situation of the whole, as well as to have due command in using your knife, and nailing the tree again in regular order, according to the situation and strength of the general supply of young shoots necessary to be trained for next summer's bearing, &c.

The trees being unnailed as above, you should first proceed to examine all the principal branches, and see if any are become naked, or worn out. Naked branches are such that, as formerly hinted, have advanced a considerable length, and support very little or no good bearing shoots, or lateral branches furnished with such wood, and should be cut out to their origin, provided there are proper young wood, or horizontals, well furnished with such shoots, properly situated to be trained up to supply their places; for way must always be made for those

branches that furnish the best young wood, both for bearing the following summer, and providing a further supply of shoots for future service. And the worn-out branches are easily distinguished by their uncommonly weak shooting, so should be cut out as above, to make room to extend those of better growth.

From these you pass to regulate the shoots of the year; of which you will find often, on the same tree, weak ones, middle-sized ones, and some of very luxuriant growth; those of the middle-size are to be principally attended to; observing, as noticed in the summer pruning, that the proper shoots for our present purpose to train for next summer's bearing, are principally those that grow upon the one-year old horizontals, and of which we are now to select and retain the most regular placed ones, namely, such as are the most properly situated for training close and neatly to the wall, which are chiefly those that proceed from the two sides of the said horizontals; so that keeping those in view for training, clear away all the irregular and other useless shoots, as hereunder mentioned.

Suppose your tree to be chiefly of moderate growth, and here and there in it shoots of superior luxuriance and rankness; these, where-ever situated, must be cut out close: but if the tree is in general vigorous or luxuriant, the shoots must only be thinned in a moderate way, as hereafter directed.

All shoots of extreme weakness should be cut away, unless you shall see it necessary to keep one here and there to fill a vacancy, or as a reserve in case of one the future year; in which latter case I would cut them down to an eye or two.

I do not comprehend by weak shoots those short ones an inch or two long, which I call natural fruit-spurs, and often furnish excellent fruit: These must be retained.

All foreright shoots, and such that proceed directly from the back of the branches, and in other irregular directions, that cannot be trained consistent with the uniformity of the tree, and those arising from the old wood, are also to be cut off close; except in cases of vacancy, and that there is no other resource.

Cut away all stumps of last summer,
and

and leave none now, cutting every thing close.

During the whole operation of the above reforms, great attention must be observed in selecting and retaining all the well-placed regular side-shoots above described, which must next be regulated according to the following rules.

Having in this manner cleared your tree from worn-out branches, and from luxuriant, irregular, and other bad shoots, there is nothing left but useful branches supporting horizontals, furnished with proper young wood, nearly of equal strength, and you see your work clear; you have nothing now to do but select and retain upon each horizontal a due portion of the best placed of these proper shoots, and retrench the superfluous ones.

Examine therefore the number of proper shoots upon each horizontal, and their strength, keeping in mind, that the middling strong ones are to be principally attended to. We advised in the summer pruning to leave upon each horizontal two, three, or four shoots, according to the strength of the tree in general: now, if your tree is fully trained, no more than one or two, as you shall see necessary, need be left upon each horizontal, except in cases where a tree is very luxuriant, or where there is a very wide space to fill, or a vacancy in its neighbourhood; but if the tree is still in training, you may retain two or more shoots upon each bearer, as you shall judge expedient, to forward the tree to its intended form. But suppose you are upon a still trained tree, or such that are nearly so, and that you judge one of the young shoots on each horizontal sufficient, keeping in view they should be trained about five, six, or seven inches distance; on this consideration you are to select the best of the lowermost of these shoots, unless you shall judge necessary to advance the length of the branch; then chuse the best of the uppermost, observing that whatsoever shoot you fix upon, to cut off the upper part of the horizontal on which it stands, close to the said shoot, or if you leave two or more shoots upon each horizontal, let one be near the upper, and the other near the lower part thereof, on the opposite sides, and cut down the horizontal to the uppermost of the two

shoots, so that by cutting away part of each of the former year's horizontal, the remaining part is terminated by a young shoot, which now commences the bearer or horizontal of the ensuing year.

Observe, where two or more shoots arise from the same eye, never leave but one.

Where any shoots rise from the sides of the old wood or main branches, and which you shall judge necessary to retain, either to fill a present vacancy, or to be ready for an apparent one, it may be reserved without shortening down the said branch to it, as is necessary in the one year's horizontals, unless that part of the said branch immediately from the shoot upward is naked, or unfurnished with young wood, in which case take it down to the shoot in question.

Those short shoots or natural spurs, an inch or two long, above observed, may be retained wherever they appear, for they are generally well furnished with blossom buds.

Observe, that many of the principal bearing shoots which you now retain, will have probably put out several small twigs or side shoots; these, being produced late, are generally spongy, besides, being superfluous or unnecessary, must be cut close, leaving only the main shoot.

In cutting out the irregular and superfluous wood in general, cut all close, leaving no stump, which would send out shoots from every eye the ensuing summer, and crowd your tree with useless wood; and any of those short natural spurs of the former year, now devoid of blossom buds, or that exceed two or three inches in length, should now also be cut away close, but especially those that advance directly forthright.

After making these reforms of regulating and thinning, we proceed to consider of shortening the remaining select shoots, the utility of which is obvious; for as these trees always produce their fruit upon the one-year old shoots, the same wood, by proper shortening in winter pruning, furnishes, as well as fruit, lateral shoots the following summer, to bear the fruit the year after that; therefore, to procure an annual supply of young wood in the proper parts, we must not omit

Stopping or shortening that of each year in the winter pruning, by which each shoot will emit two, three, or more lateral ones the succeeding summer; whereas, if they were left at full length, the sap which would have thrown outshoots below, would mount to the extremities, and leave the bottom bare, and in a short time all the lower part of the tree would become naked, and furnished with bearing wood only towards the extreme parts. The rule of shortening is this; if the tree is in health, and of a middling free growth, shorten or cut off about one-third of the length of each shoot; for instance, shoots of ten or twelve inches should be shortened to six or eight; those of about fifteen or eighteen inches shorten to eight, ten, or twelve; and so in proportion to the length and substance of the respective shoots, observing, where a tree is weak, or on the decline, and makes weakly shoots, to leave the shoots thin, and cut them shorter in proportion: on the contrary, where a tree is in general a vigorous shooter, leave the shoots close, and shorten them moderately, which by retaining a good deal of wood to divide and exhaust [the great redundancy of sap, is the only means to reduce a luxuriant tree to a state of moderate growth, and to bear plentifully.

In shortening these shoots, it is of importance to cut them just above a wood, or branch-bud, that it may produce a shoot for a leader, to draw the sap through the whole horizontal, the more effectually to nourish its respective fruit. A wood bud is with facility distinguished from a blossom-bud; the former is long, narrow, and firm, the blossom-buds are roundish, thick, swelling, and soft; so that by cutting to a wood bud you are sure of a leading shoot, and the fruit will be well nourished; but where two blossom-buds appear on the same eye, a wood-bud also generally issues from between, so that if you cannot conveniently cut to a wood-bud, make the cut to a twin blossom-bud as above.

Thus much for the general directions to be observed in the principal winter pruning, although there are other circumstances that cannot be conveyed by words, nor judged of but upon the spot, which depend chiefly upon practice.

We will however subjoin a few other particulars very necessary to be observed.

In the course of practice, you will meet with trees of very different habits of growth; some, for instance, are weakly, and produce small or weak shoots; others, of a middling state, shoot freely in every part, but not too vigorous, which is the most desirable state of growth of any; and some shoot very vigorous in almost every part. With respect to the former, if the tree makes very weak shoots, examine whether the disease is at the root; if it is, pull it up; if not, preserve it, and dig in rotten dung, which often recovers these sort of trees, observing to keep it thin of wood, and prune the shoots short, and even the best to five or six inches, till it recovers. In the second case, the middling shooting tree is to be managed as in the general directions. And in the third instance, if the tree be remarkably vigorous, and bear little, it should in some degree be humoured in its own way; for if you cut out many, and shorten considerably the remainder of these very vigorous shoots, where they are general, as is frequently done without mercy, supposing by that practice to check luxuriance, and so continue to prune, and depend entirely upon the smallest ones, the consequence is, that by much thinning, and close cutting vigorous trees, they continue to shoot still with greater vigour and irregularity for several years, without being able to gain either form or fruit, till at last, by severe pruning, they pass into the opposite extreme, become, as it were, tired with acting ineffectually, grow weak & sickly, and shoot no more. On the contrary, by following, in some degree, the inclination of the tree, leaving the shoots as close as there is any tolerable room to lay them in, and shortening them very little, some of the strongest not at all; and by thus leaving a good deal of wood, and that at a considerable length, the sap is divided, and the luxuriance is checked; and in a year or two your tree will become a moderate shooter, and furnish fine young wood, and bear plentifully.

The trees being pruned, they should be directly nailed to the wall; as you go on, that is, as soon as one tree is pruned, let that be nailed before you prune another.

Peach-trees come into blossom early in spring, when cutting frosts prevail, which, in some seasons, is so severe as to cut off the whole. Not only the blossom is liable to this disaster, but also the young fruit, till they are as large as ordinary cherries, which obliges us to have recourse to all possible means to defend them.

The dangerous time lasts a month or six weeks; various ways have been tried to shield the trees during that period; some cover with large garden mats, which are often found of great use; but where there is much walling, it takes up much time to cover and uncover, as the danger threatens, for they must only be used when there is apparent danger: free air and light must be admitted, so that if the mats are nailed up in an evening when there is an appearance of a cutting frost, they should be removed again in the morning, if the weather is quite mild; but if not, they may be permitted to remain till it is: do not omit however to take them down when the weather changes; and so continue their use only occasionally, till your fruit are as big as large peas at least.

This is the principal expedient in practice to defend these trees, which, after all, sometimes does not secure a quarter of a crop; it however should not be omitted in hazardous times, especially to some of the early and choice sorts.

There is another method which we have sometimes experienced to save a few fruit, when all that were fully exposed were cut off: this is to procure a quantity of cuttings from the branches of evergreen trees, such as those of laurel, yew, spruce-fir, &c. and stick them moderately thick between the branches of the peach-tree, so that the leaves of the cuttings cover the blossom; these should be placed when the blossoms begin to open, not too thick to darken it, and may be permitted to remain until the beginning of May, when the fruit will be set, and past danger. In default of the above cuttings, branches of dried fern may be used.

Neither of these methods of covering, nor indeed any other, can we recommend as generally effectual; but a poor expedient is better than none; they often insure a few fruit, when

those that are fully exposed are all destroyed by the frost.

In favourable seasons peach and nectarine-trees sometimes set their fruit very thick in every part, often double or treble the quantity that have room to grow, or the trees capable of nourishing, and frequently the fruit are set only here and there in clusters; in either case they must be thinned, otherwise the fruit will not attain half its common size, and during their growth would thrust one another off; besides, if the trees are overloaded, they would produce but very weakly shoots for next year's bearing, and would be two years before they recovered themselves.

This work should be performed when the fruit have attained nearly the size of small cherries, which will be some time in May, for if you thin them sooner, frosts may destroy the remainder, and you have no resource left.

The rule of thinning is, if the tree is weak the fruit must be left thin, not more than one or two on the larger shoots, and none upon the small ones, which is the only way to insure wood for another year: upon trees of a middling strong growth you should retain but one fruit upon the smaller shoots, and two upon the middling sized ones, and three upon the strong shoots: but the smallest kinds of fruit may be left a little thicker in proportion, and the large sorts should be thinner, i. e. about six inches distant upon each shoot, and the largest of all eight or ten. In performing this work, observe to select and retain the best placed, largest, and fairest fruit, in every part, according to the above rule; and in removing the superabundant ones, be careful not to disturb these. Leave no where two or more upon the same eye, especially if one exceeds the other in size, taking off the smallest, which the other would starve; but if they are of equal size, you may, if it shall seem necessary, leave both of them.

We formerly observed, that it was of utility to preserve a slight coverture of the leaves of the tree, by way of shade to the fruit during their growth, and until they begin to change colour: when they have attained that state of perfection, it is necessary to pinch off a few of the leaves that immediately cover the fruit, to admit the sun to give it colour and flavour.

Do this however regularly, and thin the leaves by degrees, which should be pinched, and not torn off, which would mangle the eyes, and prevent the fruit buds from forming themselves for next year.

Peach-trees, from the time of heading down to the sixth or seventh year, may be said to be in a state of training, though they frequently begin to bear the second or third year after the operation of heading down; and in five, six, or seven years will bear pretty plentifully, according to their size, for they will not have attained their full growth till they are ten, twelve, or fifteen years old, according to the extent of walling they have to cover, at which age they will be arrived at the beginning of their ultimate state of vigour and perfection of bearing, which they generally acquire between the seventh and fifteenth year, and in which they will continue for twenty or thirty years to come; for these trees, with due management, will endure fifty or sixty years, provided no accident happen, such as violent blights, or tainted with gum, or attacked by vermin; so that the opinion of some, that peach-trees are seldom of more than twelve or fifteen years duration, is erroneous, and must be given up, for it is owing only to bad management that they do not last as long as other fruit-trees.

The trees may be said to be in their third state when they begin to decline through age; but if our general directions in pruning are observed, this seldom happens until they are upwards of thirty or forty years old, when they should be cherished by leaving only the best young shoots, and that moderately thin, and which should be pruned shorter than the general rules. Make the most of strong young wood that rises from or near the bottom, to supply the place of worn-out branches.

When it is observed any trees approach near their end, and the bottom of the walls become naked, young trees should be planted in due time in the spaces between the old ones to succeed them, and as they shoot up lop off the lower branches of the old trees, which in four or five years may be taken entirely away; thus you may keep your walls always occupied, without intermission.

It sometimes happens that the trees

do not bear fruit of the approved or desired sort, which is often the mortifying circumstance when purchased in some nurseries, and a very cruel one, after all the trouble of training, &c. To remedy this you, in August, may bud some of the young shoots of the same year, in different parts of the tree, and as these advance, cut the other parts away, and in two or three years they will spread considerably, and bear fruit.

If the gum has attacked any shoot of a tree, young or old, cut it off an inch below, to stop the communication, and prevent killing the whole shoot.

The utility of tillage to these trees is very obvious, and should be performed every autumn and spring.

Dung, in moderation, is also of the utmost utility in preserving due vigour and health in these trees, and to promote the size of the fruit; let it be perfectly rotten, and added every two or three years, spreading it all over the border, and dig it in in the usual way.

As to cultivating kitchen herbage on the borders, the moderate growing sorts, such as radishes, lettuce, small salad herbs, kidney-beans, a few small early mazagan beans, peas, &c. do very little or no injury to the trees.

Peach and nectarine-trees are often planted in forcing-frames and hot-walls, to produce early fruit; the sorts proper for this are the earliest kinds.

There are two varieties of peach-trees that are esteemed chiefly by way of curiosity and ornament, which we judge it most proper to speak of under a separate head. These are, the

Double blossomed peach-tree; and Dwarf peach-tree.

The former of these has great beauty in its double flowers; it attains the height of common peach-trees, and differs in nothing from them but in the doubleness of its flowers, which, like those of the others, are succeeded by fruit: the tree make a fine appearance in ornamental plantations.

The dwarf peach rises but two or three feet high; the stem is small, and hath very slender branches, which produce small insipid fruit, the size of a nutmeg. It is sometimes planted in pots, and brought to table with the fruit upon for curiosity, and makes a singular appearance.

For purposes of ornament, any of the sorts of peach-trees may, with propriety, be admitted as standards in the shrubbery, and will make a fine appearance when in bloom; and if they stand in a sheltered situation, there will be a chance of having now and then some fruit from them: they may either be planted as standard-dwarfs, or as half or common standards.

The propagation of the double blossomed and dwarf kind is effected by budding, the same as common peach-trees.

The nectarine and peach-trees have been generally considered as distinct species, principally by the difference of their fruit; but late discoveries has determined otherwise, and that they are found to be varieties of one another, but which is the original is not yet agreed on; but certain it is, that there have been instances of nectarines growing naturally on peach-trees, accompanied by peaches on the same branch; which very singular phenomenon determines them to be varieties of one species.

Neither the trees, by their manner of growth, the wood, leaves, nor flowers of nectarines and peaches, can with any precision be distinguished from one another; but the fruit is distinguishable at sight in all its stages of growth: that of the nectarine hath a smooth firm skin or rind, and the peach is covered with a soft downy matter; the flesh too or pulp of the nectarine is considerably firmer than that of peaches. See NECTARINE.

WOLF-PEACH, [*Lycopersicon.*]
Love-Apple, see LOVE-APPLE.

PEACOCK, [*Pavo.*] In ornithology, a genus of birds, of the order of the gallinæ, the characters of which are these: there are four toes on each foot, and the head is ornamented with an erect crest of feathers.

PEARL, [*Margarita.*] in natural history, a hard, white, shining body, usually roundish, found in a testaceous fish resembling an oyster.

Pearls, though esteemed of the number of gems by our jewellers, and highly valued, not only at this time, but in all ages, proceed only from a distemper in the creature that produces them, analogous to the bezoars, and other stony concretions in several animals of other kinds; and what the

antients imagined to be a drop of dew concentered into a pearl in the body of the pearl-fish, which they supposed rose from the bottom to the surface of the water to receive it, is nothing more than the matter destined to form and enlarge the shell, bursting from the vessels destined to carry it to the parts of the shell it would have formed, and by that means producing these little concretions.

The fish in which these are usually produced is the East-India pearl-oyster, as it is commonly called; it has a very large and broad shell of the bivalve-kind, sometimes measuring twelve or fourteen inches over, but those of eight inches are more frequent: it is not very deep; on the outside it is of a dusky brown, and within of a very beautiful white, with tinges of several other colours, as exposed in different directions to the light. Besides this shell, there are many others that are found to produce pearls; as the common oyster, the muscle, the pinna marina, and several others, the pearls of which are often very good, but those of the true Indian burberi, or pearl-oyster, are in general superior to all. The small or seed pearls, also called ounce pearls, from their being sold by the ounce, and not by tale, are vastly the most numerous and common; but as in diamonds, among the multitudes of small ones, there are smaller numbers of larger found, so in pearls there are larger and larger kinds; but as they increase in size, they are proportionably less frequent, and this is one reason of their great price.

Artificial PEARLS. Are made by reducing seed pearls to a paste, by means of a chemical preparation called mercurial water, making the beads in silver moulds, boiling them with a hog's bristle, and drying them in a closed glass in the sun.

Beads, in imitation of pearls, are also made of wax, and covered with the scales of several kinds of fishes.

PEAR-TREE, [*Pyrus.*] There is only one species of this tree, but it comprehends almost endless varieties, which furnish fruit for use from the beginning of July until May or June the next year. We shall confine ourselves to a list of the most valuable, arranged in three classes; summer-pears, autumn-pears, and winter-pears.

Summer.

Pearls - see Crustaceans

Summer-Pears are such as ripen from the beginning or middle of July until the middle or latter end of September, and continue but a short time in perfection: some of the earliest sorts keep good only a few days before they become mealy and rotten; and very few of the sorts will last much above a fortnight; but by having different varieties the succession may be continued two months or ten weeks, till succeeded by the autumnal sorts, which will continue in eating from the end of September till Christmas.

Little Musk-Pear. A small roundish yellow pear of a musky flavour, valuable for its early perfection: ripe beginning or middle of July.

Green Chiffel-Pear. A small, nearly oblong, light-green pear, melting, very juicy, and agreeably flavoured; ripe the middle or end of July.

Red Muscadelle, or Faircut Supreme. A middle-sized, beautiful, red-striped and yellow pear, somewhat firm, breaking juicy and rich flavoured; ripe the end of July and the beginning of August.

Jargonelle Pear, commonly so called, but is properly *Cuisse Madam*, or *Lady's thigh*. A largish, long, pyramidal, ruffetty-green pear: ripe beginning or middle of August.

Cuisse Madam Pear, commonly so called, but is properly the *Jargonelle*. A fine large oblong, smooth, yellowish-green pear, sometimes reddened next the sun, having a firm pulp, tolerably juicy, and agreeably relished, though not high flavoured, and is apt to become mealy when full ripe; but being a large handsome fruit, and the tree a remarkably good bearer; it highly merits culture, particularly for the supply of markets; and for which purpose it is greatly cultivated about London: ripe towards the middle of August.

Windfor Pear. A large oblongish pear, swelling considerably towards the crown, of a greenish-yellow colour, having a softish pulp, but soon becomes mealy: ripe middle or end of August.

This sort and the former bear a great resemblance to each other, but this is rather shorter and more swelling towards the crown.

Great Blanquette Pear. A large roundish, yellowish-green, smooth

pear, having a soft juicy flesh of a rich flavour: ripe beginning or middle of August.

Little Blanquette Pear. A small, roundish, smooth, yellowish-green pear: ripe middle or end of August.

Early Russelet Pear. A middle sized, oblong, reddish pear, melting, and replete with sugary juice: ripe about the middle of August.

Musk Robine, or Queen's Pear. A small roundish, top-shaped, yellowish-coloured pear, tender, sweet, and musky: ripe middle or end of August.

Red Orange Pear. A middle-sized, globular pear, reddened on the sunny side, the other green, melting and richly flavoured: ripe end of August.

Perfumed Pear. A middling, roundish, deep-red pear, spotted with brown, having a melting perfumed flesh: ripe end of August.

Orange Musc Pear. A large, round, yellow pear, very good if eaten from the tree, as soon as a little ripe: it ripens in the end of August.

August Muscat, or Poyal Pear. A largish, globular, whitish-yellow pear, breaking sugary and perfumed, and one of the finest pears of the season: ripe end of August.

Onion Pear. A middle-sized, globular, brown-skinned pear: ripe end of August.

Salviati Pear. A largish, globular, flatted pear, reddish and yellow to the sun, and whitish on the other side, tender and agreeably flavoured: ripe beginning of September.

Red Admirable Pear. A large globular pear, crimson-coloured on the sunny-side: ripe in September.

Summer Bon Chretien, or Good Christian. A fine, large, oblong pear, beautifully reddened next the sun, and whitish on the other side, breaking and highly flavoured: ripe beginning of September.

Rose Water Pear. A middle-sized, globular, brownish red, rough pear, breaking and finely flavoured: ripe middle of September.

Summer Bergamot Pear. A largish, round-flatted, greenish-yellow pear, melting and sugary: ripe middle of September.

Varieties. There are two or three varieties of this sort that differ in size, but are all of the Bergamot shape.

Orange Bergamot Pear. A largish round-

round-flatted, greenish-yellow pear, reddish next the sun, breaking and replete with perfumed juice: ripe towards the end of September.

Other Summer Pears of less note are known by the following names; Catharine Pear,—St. James's Pear—Crawford Pear,—Citron Pear,—Pear Piper,—Brute Pear,—Muskdrone Pear,—Lemon Pear,—Green Musk Pear,—Long stalked Blanquette Pear.

All the kinds of Summer pears ripen on the trees fit for eating, but should be gathered before they are too ripe.

Autumnal Pears.

Autumn pears are such as attain their full growth on the trees from about the middle or end of September till the end of October; and which after being gathered gradually mellow and improve in flavour, and will keep some a month, others six weeks, and some two months or longer; being in eating principally in October, November, and December.

Autumn Bergamot Pear. A middle-sized, roundish, flatted, yellowish-green pear, faintly reddening next the sun, melting, and of a richly perfumed flavour: ripe end of September or beginning of October, continuing good until the end of November.

Swiss Bergamot Pear. A middle-sized, roundish, greenish Pear, finely striped with red, melting and tolerably well flavoured: ripe the end of September, continuing in eating till November.

Great Ruffelet Pear. A large oblong brown and reddish pear, sometimes spotted, having a tender rich pulp: ripe middle or end of September.

Brown Beurre, or Beurre de Roy Pear. A fine, large, oblong, ruffetty, brown and greenish pear, very melting, juicy, and sugary, and is one of the finest pears of the autumn: ripe beginning of October, and keeps good till December.

White Beurre Pear. A large, roundish, top-shaped, whitish-yellow pear, melting, very juicy and good: ripe beginning of October, and keeps till November.

Red Beurre Pear. A large, oblong, reddish pear, melting and very fine: ripe beginning of October.

Green Sugar Pear. A middle-sized, top-shaped, smooth, green pear, full of a rich sugary juice; ripe end of October, and keeps good all November.

Monsieur John Pear. A largish, nearly round, swelling, brown pear with a rough skin, having a breaking, delicious pulp: ripe end of October, continuing in perfection all November and part of December.

Cresane Pear. A large, somewhat globular, flatted, greenish-yellow, ruffety pear, hollowed at the top, is remarkably tender and sweet, and may be ranked as the finest pear of the season: ripe end of October, keeping good till December.

Swann's-egg pear. A moderately large, egg-shaped, dusky-green pear, brownish next the sun, is very juicy and agreeably flavoured: ripe end of October, continuing in tolerable perfection till near Christmas.

Verte Longue, Long-Green Pear, or Autumn Mouth-water. A large, long, very green pear, is melting and juicy: ripe in October, and continues till December.

Marquis's Pear. A fine large, swelling, flat-topped, greenish-yellow pear, faintly spotted with red, having a tender good pulp; is in eating in November and December.

Grey Good-wife Pear. A middle-sized, roundish, brownish-red pear, moderately tender and well-flavoured: is in eating from the end of October till December.

Rouffeline Pear, or Long-stalked, late Autumnal Muscat. A large, oblong, long-stalked pear, reddish on the sunny side, is tender, and of a musky flavour: in eating in the end of October and part of November.

Muscat Fleury Pear. A smallish globular, brownish-red, long-stalked Pear, tender and high-flavoured: in eating from October till December.

Twice flowering Pear-tree. It often produces blossom twice a year, the first in the spring, and the second in autumn, so is preserved in many gardens as a curiosity.

Other less material autumnal pears are—Resideri Pear.—Dean's Pear.—Vicar's Pear.—Vine Pear.—Autumn Rose Pear.—French Bergamot.—Beurre Bergamot.—Knave's Pear.—Burnt Cat Pear.—Pound Pear, very large.

All the autumn pears should have their full growth on the tree, but not hang till quite ripe, which is the end of September and in October, being their season of full growth.

Winter Pears.

Winter pears arrive to full growth about the end of October and in November, but do not attain maturity for eating until they have lain some considerable time in the house, some a month or six weeks, others two or three months or more, before they ripen, as observed below in their descriptions, so that they succeed one another in perfection generally from about December until May.

By the winter pears being so long acquiring perfection after gathered from the tree, many persons have thought them fit only for culinary uses; but most of the following are very fine eating pears, after having lain the proper time to mellow.

St. Germain Pear. A large long yellowish-green, extraordinary fine pear, of the melting sugary kind: in eating from December until February.

Chaumontelle Pear. A large oblong pear, having one side purplish, the other of a whitish-green colour, is melting, of a very rich delicious flavour: in eating from December until March or April.

Martin Sec, or Dry Martin Pear. A large, oblong, ruffety-reddish pear, is breaking, somewhat dry, but of a fine perfumed flavour: in eating end of November, December, and January.

Colmar Pear. A large swelling, flat-topped, greenish-yellow pear, spotted with yellow; is tender and exceedingly fine flavoured: in eating from December till January or February.

Spanish Bon Chretien. A large pyramidal purple and yellow pear, having many dark spots on the purple side; is a fine winter pear, ready for eating the end of December, continues good near two months.

Virgoleuse Pear. A large, oblong, greenish-yellow pear, sometimes brownish next the sun, is an excellent fruit: in eating from the beginning or middle of December until the end of January.

Dauphine Pear. A middle-sized, roundish, top-shaped, smooth, yellowish-green pear, having a melting, sugary, musky pulp: in eating the end of November, continuing in perfection all December and most part of January.

Winter Verte Longue Pear. A longish, green-coloured, smooth, spotted exceeding good pear: in eating the end of December and January, &c.

Winter Beurre Pear: A smallish, oblong, yellowish, red-spotted, very fine pear; ready for eating in December and January.

Winter Thorn Pear. A large, long, pyramidal whitish-green pear; is melting, and in fine eating from December till February.

Martin Sire, or Lord Martin Pear. A large, roundish, irregularly-swelling, smooth pear, red on one side, the other yellow; is breaking, and of a perfumed flavour: in eating in December and January.

Winter Bergamot Pear. A middle-sized, roundish, greenish-yellow pear: in eating from the end of November until the spring.

Holland's Bergamot. A large, round, greenish pear, having a tender rich pulp: in eating from January till April.

Winter Bon Chretien. A very large, long pyramidal, yellowish-green pear, having often an uneven surface; is breaking, very juicy, remarkably sweet and rich flavoured, and often proves the best winter pear in the collection: in eating from February till April or May.

German Muscat Pear. A middle-sized, oblong, ruffety-red pear, having a melting rich pulp: in eating from February till May or longer.

Easter Bergamot Pear. A large, roundish, flat-topped, greenish pear, having many rough spots, is of the breaking kind; and is in eating from February till April or May.

Winter Russet Pear. A middle-sized, longish pear, red on one side, the other of a greenish-yellow, is melting and agreeably relished: in eating in January, March, &c.

St. Martial Pear. A longish, oblong, smooth pear, one side purple, the other yellow; having a buttery rich flesh: in eating from February till May or June.

Cadillac Pear. A very large, roundish, red and yellow pear, having a hard, sour, pulp, but is excellent for baking and other culinary purposes: in use from November or December till May.

Union Pear, or Uvedale's St. Germain. A large, long, deep-green pear, reddish on one side, having a hard, sour, pulp, but is excellent for baking, &c. in perfection from November or December till May or longer.

Black Pear of Worcester, or Parkinſon's Warden. A remarkably large, oblong, dusky brown, rough pear, having a hard-austere pulp, but is very fine for culinary uses, from November till March or April.

Double Flowered Pear. The tree produces double flowers succeeded by a large, short, yellowish and red pear, rather hard and austere; but is remarkably fine for baking, &c.

Other less material varieties of winter pears are known by the following names.—Good Lewis, a large, longish pear.—Ambrette, a large roundish pear.—Thick-stalked Pear, a very large roundish fruit.—Amador, a middle-sized oblong pear.—St. Austin, a middling oblong pear.—Ruffet of Anjou, large roundish pear.—Chaffery, a large oblong pear.—Iron-coloured Pear, a middle-sized oblong fruit.—Golden Winter Pear, a large globular fruit.—Villain of Anjou, a large roundish pear.—Winter Ruffet, a middle-sized longish pear.—Carmelite, a middling roundish pear for kitchen uses.—Winter Citron-shaped Pear, for baking.—Blood Pear, for baking, &c.—English Warden, a large pear for baking and other culinary uses.

There are many other varieties of pears of less account, both of summer, autumn, and winter kinds, that are unnecessary to insert here; and indeed it would be almost impossible to discriminate the various sorts of hard pears, and others of little note, found in the orchards and gardens in country villages and about farm-houses, in different parts of England, &c.

But as the varieties described in the above three lists are of known merit, and are cultivated in most of the nurseries for sale, by the names here prefixed to each kind, consisting of near sixty different sorts, they are more than sufficient to furnish the most extensive garden with a copious variety of pears, almost the year round.

All the varieties of this tree are hardy and will succeed in any common soil of a garden or orchard, both as dwarfs for walls and espaliers, &c. and in standards of all sorts; and in all of which modes of training they will bear plentifully: it is however of importance to allot a good wall and espalier for some of the choicer kinds, both summer, autumnal, and winter pears,

Vol. II.

in order both to forward the growth of the fruit and to improve its size, beauty, and flavour: a south, east, and westerly wall are the proper exposures, and it is eligible to plant some in each of those aspects, to vary the times of ripening, though most of the summer pears will succeed very well in almost any aspect, and if some are planted also against a north-wall, they will ripen later, and continue the succession of any approved sorts longer in eating; but it is particularly necessary to allow all the fine sorts of winter pears an east or west wall, or a well-exposed espalier, otherwise they will not perfect their fruit kindly in unfavourable seasons; in espaliers however that are well trained, all the sorts of pears attain great perfection, and the espaliers may be arranged round the quarters of the kitchen-garden, or in any other free situation where the soil is of similar quality.

Remarking, that these trees, both against walls and espaliers, should generally be allowed a great deal of room to spread, for by having full scope they will extend their branches more than twenty feet on each side of the stem, and the whole will sometimes form a spread of forty or fifty feet, with height in proportion.

Standards of some sorts of pears are also naturally of a very spreading growth, others grow more upright.

However, in all the methods of training these trees, it is highly requisite to allow them sufficient room to spread to their full extent, and their branches should be suffered to extend themselves always at full length; for pear-trees should never be shortened, except in the first or second year, &c. to obtain a supply of lateral branches to form a more regular spreading head, because as they always bear their blossom and fruit upon short spurs arising from the sides of the branches; first, however, towards the extreme parts, then by degrees all along the sides almost from every eye, that shortening would cut away the first fruitful parts, and thus by stopping their progress of shooting in length it would force out strong shoots from all the eyes, and prevent their forming spurs or fruit-buds; but being trained at full length they shoot moderately, and in two or three years naturally form

short

short spurs of from about half an inch to an inch or two long, the same branch and spurs continuing fruitful a great number of years.

But it must be observed, that pear-trees are generally several years before they attain any tolerable bearing state, for the branches seldom begin to form fruit-spurs till they are from about two or three, to four or five years old; at that age, however, they sometimes begin to bear, but never any general crop till they are eight or ten years old.

Pear-trees are propagated by grafting and budding upon any kinds of pear-stocks; also occasionally upon quince-stocks, and sometimes upon white-thorn stocks, but pear-stocks are greatly preferable to all others for general use. See APPLE-TREES, ESPALIERS, GRAFTING, PRUNING, &c.

In the gathering of pears, great regard should be had to the bud which is formed at the bottom of the foot-stalk, for the next year's blossoms, which, by forcing of the pear before it be mature, is many times spoiled; for while the fruit is growing, there is always a bud formed by the side of the foot-stalk upon the same spur, for the next year's fruit; so that when the pears are ripe, if they are gently turned upward, the foot-stalk will readily part from the spur, without injuring of the bud.

The season for gathering all summer pears is just as they ripen, for none of these will remain good above a day or two after they are taken from the tree; nor will many of the autumn pears keep good above ten days or a fortnight, after they are gathered. But the winter fruits should hang as long upon the trees as the season will permit, for they must not receive the frost, which will cause them to rot, and render their juices flat and ill-tasted; but if the weather continue mild until the end of October, it will then be a good season for gathering them in, which must always be done in dry weather, and when the trees are perfectly dry.

In the doing of this you ought carefully to avoid bruising them, therefore you should have a broad flat basket to lay them in as they are gathered; and when they are carried into the store-room, they should be taken out singly, and each sort laid up in a close heap,

on a dry place, in order to sweat, where they may remain for ten days or a fortnight, during which time the windows should be open to admit the air, in order to carry off all the moisture which is perspired from the fruit; after this, the pears should be taken singly, and wiped dry with a woollen cloth, and then packed up in close baskets, observing to put some wheat-straw in the bottoms and round the sides of the baskets, to prevent their bruising against the baskets. And if some thick soft paper is laid double or treble all round the basket, between the straw and the pears, this will prevent the pears from imbibing the musty taste which is communicated to them by the straw, when they are contiguous; which taste often penetrates through the skin so strongly, that when the fruit is pared the taste will remain. You should also observe to put but one sort of fruit into a basket, lest by their different fermentations they should rot each other; but if you have enough of one sort to fill a basket which holds two or three bushels, it will be still better. After you have filled the baskets, you must cover them over with wheat-straw very close, first laying a covering of paper two or three times double over the fruit, and fasten them down; then place these baskets in a close room, where they may be kept dry and from frost; but the less air is let into the room, the better the fruit will keep. It will be very necessary to fix a label to each basket, denoting the sort of fruit therein contained, which will save the trouble of opening them, whenever you want to know the sorts of fruit; besides, they ought not to be opened before their season to be eaten, for the oftner they are opened and exposed to the air, the worse they will keep. We doubt not but this will be objected to by many, who imagine fruit cannot be laid too thin; for which reason they make shelves to dispose them singly upon, and are very fond of admitting fresh air, whenever the weather is mild, supposing it very necessary to preserve the fruit; but the contrary of this is found true, by those persons who have large stocks of fruit laid up in their storehouses in London, which remain closely shut up for several months, in the manner before related; and when these are opened, the fruit

fruit is always found plumper and sounder than any of those fruits which were preserved singly upon shelves, whose skins are always shrivelled and dry. For (as Mr. Royle observes) the air is the cause of putrefaction; and, in order to prove this, that honourable gentleman put fruits of several kinds into glasses where the air was exhausted, in which places they remained sound for several months, but, upon being exposed to the air, rotted in a very short time, which plainly shews the absurdity of the common method now used to preserve fruit.

Earth - Nut PEA. See *Everlasting* PEA.

Heart PEA, [*Cardiospermum*.] A plant of which there are two species growing naturally in both the Indies, where they climb up the shrubs that grow near them; they are tender annuals, and if cultivated in England, must be raised in a hot-bed.

PIGEON-PEA [*Cytisus*, *Cayan*.] A species of *Cytisus* growing in the American Islands, and cannot be preserved in England but in a stove.

PEARL-ASHES. A salt made from the ashes of wood.

PEARL-BARLEY, [*Hordeum Perlatum*.] Barley prepared by grinding the shelled barley into little round grains.

PEAT-ASHES, are a most excellent manure for young clover and grass, vetches, and wheat sown dry in the spring of the year. They should be kept dry and entirely free from wet. The following are the observations of a judicious farmer:—

“Peat is found in most low grounds that lie betwixt hills, especially if timber has formerly stood on the spot. It lies at various depths, being often near the surface, and sometimes six, eight, or ten feet deep, having a stratum of black moory earth over it, such as is the soil of many of our low meadows near the banks of rivers: it sometimes even lies under a bed of gravel.

“Peat may be burnt, for the sake of procuring its ashes for manure all the summer season: as soon as it is dug, some of it is mixed in a heap regularly disposed with faggot wood, or other ready burning fuel: after a layer or two of it mixed in this manner, peat alone is piled up to complete the heap. A heap will consist of from one hundred to a thousand loads,

“After setting fire to it at a proper place, before prepared for the purpose, it is watched in the burning, and the great art is to keep in as much of the smoke as possible, provided that as much vent is left as will nourish and feed the fire.

“Whenever a crack appears, out of which the smoke escapes, the labourer in that place lays on more peat; and if the fire slackens too much within, which may easily be known by the heat on the outside, the workman must run a strong pole into the heap in as many places as is necessary to supply it with a quantity of fresh air. When managed in this manner, the work goes on as it should do. It is to be noticed, that when once the fire is well kindled, the heaviest rain does it no harm whilst it is burning.

“Having procured a sufficient quantity of ashes, the farmer's next care should be to apply them properly to use; and to do this, he must be made well acquainted with the nature of the manure he is to lay on his land.

“All ashes are of a hot, fiery, caustic nature; they must therefore be used with caution. With respect to peat-ashes, almost the only danger proceeds from laying them on in too great quantities at improper seasons.

“Nothing can be better than peat-ashes for dressing low damp meadows, laying to the quantity of from fifteen to twenty Winchester bushels on an acre: it is best to sow them by hand, as they will then be more regularly spread.

“This work should be done in January or February at latest, that the ashes may be washed in towards the roots of the grass by the first rains that fall in the spring.

“If they were spread more forward in the year, and a speedy rain should not succeed, being hot in their nature, they would be apt to burn up the grass, instead of doing it any service.

“It is to be remembered, that the damper and stiffer the soil, the more peat-ashes should be laid on it; but in grass lands the quantity should never exceed thirty Winchester bushels, and on light warm lands less than half that quantity is fully sufficient.

“On wheat crops these ashes are of the greatest service, but they must be used with the utmost discretion. Were

every other consideration, the sole view of lessening his expences will, it is imagined, sufficiently induce him to be attentive to this particular.

“ When peat is burnt for the sake of its ashes in summer time, it is necessary that some care should be taken to defend them from the too powerful influence of the sun, air, dews, rains, &c. or great part of their virtue would be exhaled and exhausted. If the quantity of ashes procured is not very great, they may be easily put under cover in a barn, cart-lodge, or hovel; but large quantities must necessarily, to avoid expence, be kept abroad; and when this is case, they should be ordered as follows.

“ A dry spot of ground must be chosen; and on this the ashes are to be laid in a large heap, as near as possible in the form of a cone standing on its base, the top as sharp pointed as possible: when this is done, let the whole be covered thinly over with a coat of soil, to defend the heap from the weather: the circumjacent earth, provided it is not too light and crumbly, will always serve for this purpose.

“ When thus guarded, the heap may very safely be left till January or February, when it is in general the season for spreading it: but, before it is used, it is always best to sift the ashes, that the cinders, stones, and half burnt turf, may be separated from them.

“ This may, perchance, by many be esteemed an unnecessary trouble; but experience, which is the best guide, has convinced me, that by this means I can better ascertain the quantity that ought to be sown on the several sorts of land; for the small powdered ashes, being equal in quality, are of course equal in effect; whereas, when there has been any other mixture with them, the effect has often been greater or less than I could have wished. Thus, when I mention the number of bushels I strew on an acre, it is always to be understood of sifted ashes: should any farmer be inclined to try them rough as they are first produced after burning, the quantity to be allowed for an acre must be more in proportion to the mixture of other matter that is in them.

“ These peat-ashes are almost, as I have already observed, a general manure suited to every soil. On cold clay they warm the too compact particles,

dispose it to ferment, and of course fertilize, and, in fine, not only assist it in disclosing and dispensing its great vegetative powers, but also bring to its aid a considerable proportion of ready prepared aliment for plants.

“ On light lands these ashes have a different effect: here the pores are too large to be affected, or farther separated by the salts or sulphur contained in them; but, being closely attached to the surfaces of the large particles, of which this earth is generally composed, this manure disposes them, by means of its salts, to attract the moisture contained in the air; by this operation, the plants, which grow on these porous soils, are prevented from being scorched up and burnt; and if they want, which they generally do, more nourishment than the land is of itself capable of affording, this is readily and abundantly supplied by this useful manure.

“ In large farms it is very usual to see all the home-fields rich and well-mended by the yard-dung, &c. whereas the more distant lands are generally poor, impoverished, and out of heart, for want of proper manure being applied in time.

“ Whilst the farmers depend almost entirely on the yard-dung, this cannot fail being the case; for dung is of very heavy carriage: they are willing, therefore, to drop it as near home as possible, being in this way able to do a great deal more work in the same space of time: but would they once try the virtue of peat-ashes, all their lands might be alike improved, though at a very considerable distance from the home-stall; for so few of them are required, and they are so light of carriage, that a single tumbril will hold as many as ought, in most cases, to be laid on two acres of land; by which means, when these ashes are used as a dressing for the distant fields, it costs the farmer less in carriage than does that of the stable-dung for his home-fields.”

PECK. A measure containing two gallons, or 8 quarts.

PELLITORY, *of the Wall*, [*Parietaria*.] This is a small plant, growing upon old walls; of an herbaceous, subsaline taste, without any smell. It is one of the five emollient herbs, and in this intention is occasionally made

use

use of. It is an ingredient in the nephritic decoction of the Edinburgh pharmacopœia. The expressed juice has been given in the dose of three ounces as a diuretic.

PELLITORY of Spain, [Pyrethrum.] This plant, though a native of the warm climates, bears the ordinary winters of this; and often flowers successively, from Christmas to May; the roots also grow larger with us than those which the shops are usually supplied with from abroad.

Pellitory root has no sensible smell; its taste is very hot and acrid; but less so than that of arum or dracunculus: the juice expressed from it has scarce any acrimony, nor is the root itself so pungent when fresh as after it has been dried. Water, assisted by heat, extracts some share of its taste, rectified spirit the whole; neither of them elevate any thing in distillation. The principal use of pyrethrum in the present practice is as a masticatory, for promoting the salival flux, and evacuating viscid humours from the head and neighbouring parts; by this means it often relieves the tooth-ach, some kinds of pains of the head, and lethargic complaints.

PELT. By this name is called the dead body of any fowl an hawk hath killed.

PELT-WOOL. Is the wool pulled off the skin or pelt of any dead sheep.

PENNY-EARTH. A term used by the farmers for a hard, loamy, or sandy earth, with a very large quantity of sea shells intermixed in it; some of which being round and flat, and in some measure resembling pieces of money, have occasioned the earth's being called by this name. It is an earth not easily dug, but is usually undermined with pickaxes, and then falls in large lumps; which, with the frosts, break to pieces, and leave the shells loose. It is prepared by breaking and mixing well with water, and then makes very desirable floors. The Jersey combers comb-pots are also made of it, and the sides and roofs of ovens are plastered with it; and, being rightly managed, it combines into a plaster almost as strong as plaster of Paris.

PENGUIN, [Karatas.] Wild ananas. This plant is very common in the West-Indies, where the juice of its

fruit is often put into punch, being of a sharp acid flavour. There is also a wine made of the juice of this fruit, which is very strong, but it will not keep good long, so is only for present use. This wine is very intoxicating, and heats the blood, therefore should be drank very sparingly.

In England this plant is preserved as a curiosity, for the fruit seldom arrives to any degree of perfection for use in this country, though it often produces fruit in England, which has ripened pretty well; but if it were to ripen as thoroughly here as in its native country, it will be little valued on account of its great austerity, which will often take the skin off from the mouths and throats of those people who eat it incautiously.

This plant is propagated by seeds, for though there are often suckers sent forth from the old plants, yet they come out from between the leaves, and are so long, slender, and ill-shapen, that if they are planted they seldom make regular plants. These seeds should be sown early in the spring in small pots, and plunged into a hot-bed of tanners bark, where the plants will come up in six weeks. When the plants are strong enough to transplant, they should be carefully taken up, each planted into a separate pot, and plunged into the hot-bed again; when the plants have taken new root, they should have air and water in proportion to the warmth of the season. In this bed the plants may remain till Michaelmas, then they should be removed into the stove and plunged into the bark-bed, where they should be treated in the same manner as the Ananas.

The leaves of this plant are strongly armed with crooked spines, which render it very troublesome to shift or handle them; for the spines catch hold of whatever approaches them by their crooked form, being some bent one way, and others the reverse, so that they catch both ways, and tear the skin or clothes of the persons who handle them, where there is not the greatest care taken to avoid them.

PENNY-ROYAL, [Pulegium.] This plant grows spontaneously in several parts of England upon moist commons, and in watery places; trailing upon the ground, and striking
roots

roots at the joints. Our markets have been for some time supplied with a garden fort, which is larger than the other, and grows upright: this is called by Mr. Dale *pulegium erectum*.

Pennyroyal is a warm, pungent herb, of the aromatic kind, similar to mint, but more acrid and less agreeable; it has long been held in great esteem, and not undeservedly, as an aperient, and deobstruent, particularly in hysteric complaints, and suppressions of the uterine purgations. For these purposes the distilled water is generally made use of, or what is of equal efficacy, an infusion of the leaves. It is observable, that both water and rectified spirit extract the virtues of this herb by infusion, and likewise elevate greatest part of them in distillation.

In the shops are kept a simple and spirituous water and essential oil of the plant; this herb is used also in the compound valerian water and troches of myrrh, and its simple water for making the lac ammoniac and the camphorated emulsion.

Harts PENNYROYAL, [*Pulegium erectum*.] This species is met with, though not very often, in our gardens. It is somewhat stronger, yet rather more agreeable, than the foregoing, both in taste and smell.

Marsh PENNYROYAL, Water Navel-wort.

PEONY, [*Paeonia*.] The species are 1. The male. 2. The female. 3. The foreign Peony. 4. The Portugal Peony. 5. Tartarian Peony. They are all annual in stalk, and perennial in root; their propagation is easy by dividing the roots in August or September.

PEPPER, [*Piper*.] The pepper plant is a shrub whose root is small, fibrous, and flexible; it rises into a stem, which requires a tree or a prop to support it. Its wood has the same sort of knots as the vine; and when it is dry, it exactly resembles the vine-branch. The leaves, which have a strong smell and pungent taste, are of an oval shape; but they diminish towards the extremity, and terminate in a point. From the flower-buds, which are white, and are sometimes placed in the middle, and sometimes at the extremity of the branches, are produced small berries resembling those of the currant-tree. Each of these contains between twenty & thirty

corns of pepper; they are commonly gathered in October, and exposed to the sun seven or eight days. The fruit, which was green at first, and afterwards red, when stripped of its covering, assumes the appearance it has when we see it. The largest, heaviest, and least shrivelled, is the best.

The pepper-plant flourishes in the islands of Java, Sumatra, and Ceylon, and more particularly on the Malabar coast. It is not sown, but planted; and great nicety is required in the choice of the shoots. It produces no fruit till the end of three years; but bears so plentifully the three succeeding years, that some plants yield between six and seven pounds of pepper. The bark then begins to shrink, and the shrub declines so fast, that in twelve years time it ceases bearing.

The culture of pepper is not difficult; it is sufficient to plant it in a rich soil, and carefully to pull up the weeds that grow in great abundance round its roots, especially the three first years. As the sun is highly necessary to the growth of the pepper-plant, when it is ready to bear, the trees that support it must be lopped, to prevent their shade from injuring the fruit. When the season is over, it is proper to crop the head of the plant. Without this precaution, there would be too much wood, and little fruit.

Long PEPPER, [*Piper Longum*.] This is the fruit of a plant growing also in the East-Indies. It is of a cylindrical figure, about an inch and a half in length; the external surface appears composed of numerous minute grains disposed round the fruit in a kind of spiral direction.

Jamaica PEPPER. This is the produce of our own plantations; it is the fruit of a large tree, growing spontaneously in the mountainous parts of Jamaica, called by Sir Hans Sloan, *myrtus arborca, aromatica, foliis laurinis*. The smell of this spice resembles a mixture of cinnamon, cloves and nutmegs: its taste approaches to that of cloves, or a mixture of the three foregoing; whence it has received the name of *all-spice*. The shops have been for some time accustomed to employ this aromatic as a succedaneum to the more costly spices, and from them it has been introduced into our hospitals: the London college have given it a place

place in their late dispensatory, and direct a simple water to be distilled from it, which possesses the flavour of the pimento in great perfection. It yields a large quantity of pleasant essential oil, which sinks in water; this oil is recommended in the Edinburgh pharmacopœia. Rectified spirit extracts its pungency and flavour, and elevates nothing in distillation.

Guinea PEPPER. *Capficum.*

Wall PEPPER, [*Sedum acre.*] This plant grows very common upon old walls, in all parts of England.

Water PEPPER. See *Biting Arsmart.*

Posman's PEPPER, } See *Dittander.*

PEPPERWORT, }

PEPPERMINT, [*Mentha piperis.*]

This species has been lately introduced into practice, and received for the first time in our present pharmacopœia: very few of the botanical or medical writers make mention of it; it grows wild in some parts of England, in moist watery places, but is much less common than the other sorts. The leaves have a more penetrating smell than any of the other mints, and a much warmer, pungent, glowing taste like pepper, sinking as it were into the tongue. The principal use of this herb is in flatulent cholics, languors, and other like disorders: it seems to act as soon as taken, and extends its effects through the whole system, instantly communicating a glowing warmth. Water extracts the whole of the pungency of this herb by infusion, and elevates it in distillation.

PERENNIAL, [*Perennis.*] Perennial, or everlasting plants; plants that are perpetuated by the roots, that is, whether their leaves and stalks decay annually in winter, or always remain, provided the roots of several years duration, they are still perennial plants.

All plants, therefore, with abiding roots, both of the herbaceous tribe in general, and of the shrub and tree kinds, are perennials; though in the general acceptance of the word perennial, it is most commonly applied to herbaceous vegetables with durable roots, more especially those of the flowery kind, which among the gardeners are commonly called simple perennials, particularly the fibrous-rooted tribe; but it is equally applicable to fibrous, tuberous, and bulbous-rooted plants, whose roots are of several years dura-

tion: likewise all shrubs and trees of every denomination, as having abiding roots, are also perennial plants.

Perennial plants consist both of deciduous and ever-green kinds; those that cast their leaves &c. in winter are termed deciduous perennials, and those which retain their leaves ever-greens.

Of the herbaceous perennials, however, both of the fibrous-rooted tribe, tuberous and bulbous-rooted kinds, far the greater part have annual stalks, rising in spring and decay in winter; and a great many lose their leaves entirely also in that season, such as the perennial sun-flower, asters, [and numerous other sorts; and many sorts retain their leaves all the year, but not their stalks, exemplified in the auricula, polyanthus, some *campanulas*, pinks, carnations, and many others.

Great number of the herbaceous perennials multiply exceedingly by offsets of the root, by which they are propagated in great abundance.

All the tree and shrub perennials are durable both in root, stem, and branch; but all renew their leaves annually, even the ever-green kinds, although they are in leaf the year round, yet they put forth new leaves every year, to which the old ones gradually give place.

PERIWINKLE, [*Vinca.*] There are three species, the narrow, the broad-leaved, and the oval; they are easily propagated by their trailing stalks, which put out roots freely.

PERRY. A vinous liquor made of pears, as cyder is made of apples. See **CYDER.** The best pears for perry, or at least the sorts which have been hitherto deemed the fittest for making this liquor, are so excessively tart and harsh, that no mortal can think of eating them as fruit; for even hungry swine will not eat them, nay, hardly so much as smell to them. Of these the Bosbury pear, the Bareland pear, and the horse pear, are the most esteemed for perry in Worcestershire, and the squash pear, as it is called, in Gloucestershire; in both which counties, as well as in some of the adjacent parts, they are planted in the hedge-rows and most common fields.

There is this advantage attending pear trees, that they will thrive on land where apples will not so much as live,

and that some of them grow to such a size, that a single pear tree, particularly of the Bosbury and the squash kind, has frequently been known to yield, in one season, from one to four hogheads of perry. The Bosbury pear is thought to yield the most lasting and most vinous liquor. The John pear, the Harpy pear, the Drake pear, the Mary pear, the Lullum pear, and several others of the hardest kinds, are esteemed the best for perry, but the redder or more tawney they are, the more they are preferred. Pears, as well as apples, should be full before they are ground.

PERUVIAN BARK. See BARK.

ST. PETER'S-WORK, [*Ajcyum*.]

This plant has a perennial root with an annual stalk; it is of little use or beauty.

PETTYWHIN. Furze, *Cammoek*.

PHEASANT'S EYE, [*Adonis*.] See ADONIS.

PHYSIC for a Horse. There are a great variety of occasions on which this creature may want purging, and many sorts of physic may answer the purpose; but before we come to the method of preparing any of these, it will be necessary to give the farmer proper directions concerning the use of such medicines. A horse must be prepared for a purge the day before it is given him, or it will take very little effect; and then it will operate more or less, according to the management of him during the time.

The day before a horse is to be purged, give him a good quantity of water with scalded bran in it, and let him have it warm. Keep him quiet, and the next morning, before he has any thing to eat, give him the purge. Any one of the following will answer the common purposes, with little charge.

1. *A Purge with Aloes.*

Take an ounce and a quarter of horse-aloes beaten to powder, and a quarter of an ounce of cream of tartar, and half an ounce of powder of anniseeds, work this up into a consistence, and roll it round into two balls. Rub these over with butter, and give them to the horse; they will, by means of being greased, slip down very freely; and after them give him a horn of small beer made warm.

The dose is to be made larger or smaller, as the horse is larger and coarser fed, or finer limb'd, and managed more delicately. There is as much difference between the constitution of a cart-horse and a racer, as between a drayman and a person of quality; and they must in all respects be treated accordingly, not only in the strength of the dose, but in the management afterwards: for what suits one will be quite improper for the other.

2. *A Purge with Jalap.*

Take powder of aloes an ounce, powder of jalap a quarter of an ounce, and powdered ginger a dram: mix all these up with two ounces of fresh butter, and make the whole into a couple of balls, or more; grease them on the outside, and give them to the horse with some warm ale afterwards.

These are two common receipts, but they are often ill proportioned in the quantities; something of this kind stands under the name of a purge for horses in most books that treat of these things; but the quantity of the anniseeds is too great, in the common directions for the first; and this will make a horse sick afterwards; and to the other there are commonly added useless ingredients. These are approved proportions, and they will answer almost every occasion there can be for a horse's being physicked in this way.

Let the balls and the beer be given him early in the morning, and let him then be rid out gently for a quarter of an hour. Then bring him cool in, and let him be set up two hours without food.

After this time give him a small quantity of good hay, and a quarter of an hour after that some warm water.

An hour after this give him some scalded bran. He will purge kindly after this manner of management; and after this he should be rid out a little again; then when he is brought in, he should have some bran and water warm, with but a small quantity of the water. Then let him be rid out again; in this manner a horse is to be treated with his purge, and, in general, it will be easy to make him work more or less at pleasure, by giving him more or less exercise, and more or less of the bran and water.

If the purge has been too violent, and will not stop, the following astringent drink will always stop it.

An Astringent Drink.

Boil three pints of stale beer, and some pieces of crust of brown bread: to this put an ounce of whiting, and a quarter of an ounce of diascordium, made without honey; if this does not stop it in four or five hours, give the same quantity of whiting and double the quantity of diascordium in only one pint of the beer and bread. This will make him altogether quiet and easy, and he will be in his body as usual.

For a Cold.

This is a disorder so well understood, that it cannot be mistaken, nor does it need any explanation.

Boil in a quart of ale three ounces of fresh liquorice-root, beat very fine into threads. Strain the liquor off, pressing it hard, and add to it three drams of elecampane powder, one dram of powder of anniseeds, a quarter of a pint of oil, and a quarter of a pound of honey; mix all well, and give it warm. If it does not take effect the first time, let it be repeated three or four times, and it seldom fails.

Balls for a Cough of long standing.

Put into a large-bowl six pounds of wheat meal, mix with it two ounces of powder of anniseeds, cummin-seed one ounce, linseed three ounces, fenugreek-seed one ounce and a half; stir these well about, then mix half a pound of liquorice powder, and a quarter of a pound of flour of brimstone: add these to the rest. Lastly, add bay-berries and Juniper-berries, powdered, three ounces of each, and the same quantity of powder of elecampane.

When all are well stirred and mixed together, break six eggs, throw away the whites, beat up the yolks with two quarts of mountain wine. Add to this a pound and a half of honey and a pint of salad oil. Mix all these perfectly well together; then bring in the powder, and work the whole to a paste. If this should be too stiff, a little more wine must be added;

and, if too soft, some flour must be put in, till the whole be of such a consistence that it will conveniently roll into balls.

These are to be made of the bigness of a hen's egg, but round. This rolling them up is only for the convenience of keeping; when they are to be used, they are to be dissolved. Two is the proper quantity for a dose, and they are to be melted in the creature's water, morning and evening, for fifteen days.

PHYSIC NUT. See Physic Nut.

PIGEON. It is a great recommendation of any creature to the farmer, that it will be kept at small expence, and this is the case with the pigeon, which he should keep; for there are some kinds that require a great deal of food and charge: the proper pigeon for the dovecoat, which is the only kind he is to regard, is able the greatest part of the year to provide for itself; and when it requires his assistance, the food is not of any dear kind.

There are at this time many kinds of pigeons kept in England, by people fond of curiosity, and it has become a study to procure and raise new kinds among those who are called pigeon-fanciers, as much as to get from abroad, or raise from seed, new kinds of carnations or auriculas among the florists. But with this the industrious husbandman has nothing to do. He is to keep pigeons for their value, not their beauty; and he is to consider which may be kept with most ease, which is in his way one of the greatest of recommendations to any thing.

Not to enter into the nice distinctions of the kinds which are of late years become endless and innumerable, we may say in general that there are two sorts; the tame, and dovecoat pigeon. The tame pigeon is valued not only for beauty, but for the largeness of its body; the common pigeon, which is the kind usually kept in dovecoats, and thence called the dovecoat pigeon, is smaller, and less beautiful.

The tame kind generally have but two young ones at a brood; but they make some amends for the smallness of the number by the frequency of their hatching; for, if well fed and tended, they will have young ones every month.

For the choice of these the beauty is generally most regarded; but there

should be care taken to pair them well, and this is the more worth while because they are not apt to separate afterwards.

They must be kept clean, for they hate dirt, though they make a great deal of it. But their food is so dear, that few but those who know very well how to manage them care to meddle with them. Their best food is tares or white pease, and they should have beside this some gravel scattered about, and clean water at all times: and a great deal of care must be taken to preserve them from vermin, and their eggs from the starlings and other birds, which always haunt the places where they are kept, in order to suck them.

In order to the perfect thriving of these pigeons, it will be proper, beside their food, gravel, and water, always to let there be some salt, clay, or some other thing with sea salt in it, for them to peck at their pleasure.

We have said thus much with respect to the management of the tame pigeon, for the information of such as may chuse to breed them, and have not had opportunities of seeing it done; and it will be proper to add here, that although the expence and trouble they occasion, be more than is worth the husbandman's while in general to give himself; yet there is this advantage, that their dung is richer than that of the common pigeon as a manure.

After this short account of the tame, we come to the consideration and management of the common or dovecoat pigeon, which is a subject that demands, and deserves the husbandman's utmost regard.

The keeping of pigeons is a great advantage to every farmer that may do it; and they bring in a great profit for a very small expence in all places; but they thrive best in open countries, because there is usually most corn there, and they feed with less danger, the hedges in enclosed places sheltering people while they shoot them.

There are some counties where the husbandmen sow great quantities of horse beans and grey pease, and in these particularly the pigeons feed to a great advantage. These sorts of pulse are sowed earlier than other kinds of grain; and their early feeding upon them makes them healthful and stout at those times, and is an occasion of

their breeding earlier than they do elsewhere, which is a consideration of great importance.

The common blue pigeon is properly the dovecoat breed; and it has the advantage of many other kinds, in that it is hardier, and will live in the worst winters.

If it be too small for the farmer's purpose, he may mend the breed by putting in a few tame pigeons of the most common kind, and the least conspicuous in their colours, that the rest may the better take to them by finding them more like themselves; this, however, is to be done with caution, and never without a due consideration; for though the bigness of a pigeon's body is a plain advantage, yet it is very well known in the kinds in general, that the smallest bodyed are the best breeders.

The ringdove has been by some introduced into the dovecoat, by setting the eggs under a common pigeon; they will in this case live, and take the chance among the pigeons; and they have two advantages over them, the one in their largeness, and the other in their hardyness; for they will endure any weather, and live upon any food.

The husbandman should have a very careful eye upon the proportion of the sexes among his pigeons; for there is nothing so hurtful as the having too many cocks, especially if they keep the larger or tame kind. It is his business to keep his dovecoat well stock'd; and most people who keep them make their consciences easy about deluding away those belonging to their neighbours; but this abundance of cocks thins the dovecoat, for they grow quarrelsome, and will beat others away; till by degrees a very thriving dovecoat shall be by this single mistake reduced to a poor condition.

A very cheap and easy way of making a dovecoat is to build the walls with clay mixed with straw, they may be made four feet or more in thickness, and while they are wet it is easy to cut holes in them with a chissel or other instrument.

This kind of dovecoat, beside its cheapness, has the advantage of great warmth, and no building agrees better with the pigeons. A dovecoat of this kind, of four yards square in the clear, may be built for about five pounds.

The holes should be made about fourteen

fourteen inches deep, and a little dipping backward. The Rev. Mr. Lawrence who used this method of building his dovecoat says, that the pigeons prospered in it better than in any brick or stone building he had seen.

Of whatever materials the coat be erected, it should be white-washed frequently on the outside. The pigeon, as has been said already, is a cleanly bird: it loves the appearance of neatness; and beside the white colour, renders the building more conspicuous.

As to the food of pigeons, beside the pease, and tares already mentioned, barley is very proper, heartening them very much, and making them lay; and for the same purpose buck-wheat is also an excellent as well as cheap food.

For the greatest part of the year, however, the common pigeons in a dovecoat take care of themselves, and need no food from their keeper. There are only two seasons at which it is necessary or proper to feed them. One of these times is the depth of winter, when the ground is covered with snow, or hardened so by frost, that nothing is to be got; and the other is, the middle or latter end of June.

The reason of feeding them in the first of these seasons is obvious; the latter, the farmers, when they speak of this fowl, call benting time. There is a grass called bent grass, the seed of which is ripe about this season, and is the only food of that kind the pigeons can easily get, the pease being not yet ripe. This is a very poor food, and the pigeons at this season usually have many young broods; so that they will be starved if they are left to this poor diet: and the farmer will always find his account in giving them food at this season, as well as at the other. This lasts however but a small time; and the other is only necessary at the severest days of winter; so that the pigeon is at the utmost but a small expence, and that for a very short time.

Beside the food, the breeder of tame pigeons has been advised to give them a lump of salted clay, and the same indulgence must be shewn to these. But as they are more numerous, there is to be a larger allowance. A large heap of clay should be laid near the dovecoat, and the brine of the family continually beaten in among it. Ano-

ther way is to make a kind of mortar with lime, sand, clay, and salt, which they will peck with great satisfaction. The pigeons themselves have pointed out this method, for they are continually pecking at the joints of walls to get out the mortar. When it is thus made on purpose for them, it is best to make it thin, and keep it so by often beating it up with brine.

In some places they lay what is called a salt cat, near the dovecoat. This is a large lump of salt made for the purpose at the salt pans; and is the method commonly taken where there are works in the neighbourhood, but the way of using salt in a mixture with clay is better.

What is found by experience to answer best of all is this. A heap of loam is to be laid near the dovecoat, and beat up to a kind of pap with brine or water; into this is to be thrown a large quantity of bay salt, and a little saltpetre, and with it a shovel full or two of large coarse sand. When brine is used to beat up the loam, less salt is to be used; and when water, there must be the more of it in proportion. And in the same manner, if the loam contain a great deal of sand, the less is to be added to it; and if it contain less, the more is to be given. Where loam is not to be had, clay will do, but then a much larger quantity of sand must be put in; and the best sand for this purpose is large coarse sea sand, which is already impregnated with salt water; or that which is got in screening of gravel.

It is a very singular thing, that the pigeon loves salt in this manner; and its fondness for saltpetre, which is very great, is not so well known; though this might have been discovered by observing the liking this bird has to the mortar in old walls, which contains a salt very nearly allied to the common saltpetre.

Salt is not only useful in this manner to please the pigeons, when they are in health, but nothing recovers them so readily from sickness. A mixture of bay salt and cummin seed being with them an universal remedy.

A great many contrivances have been published; and many more are handed about among the country people as great secrets, for the making the pigeons love their habitation, and tempting

tempting such stragglers from their neighbours as chance to come to the coat to settle in it. Some have advised the use of assafoetida, and others of cummin seed before mentioned for this purpose; but the best method of all others is to keep up constantly such a heap of salted loam as before described; this they love, and they will therefore stay where they can have it in plenty. This contrivance, with the addition of keeping the dovecoat neat and clean, and not suffering them to be disturbed in it, will be sure to keep the stock in good number, and too likely to increase it at the expence of the neighbours.

The profit of pigeons is very considerable, and very certain; for they breed very fast, and there is a constant demand for them. Near great towns it may be worth while to keep some of the large tame kind; because although they cannot be fed but at a large expence, yet their young come so early, and are so fat and fine, that they command a price, which very well returns it; but in the country, the common pigeon is the proper kind; for though the price that the birds fetch is not nearly so great, their number, and small expence of keeping, very well make amends,

PILEWORT, (*Chelidonium minus*.) This is a very small plant, found in moist meadows and by hedge sides: the roots consist of slender fibres, with some little tubercles among them, which are supposed to resemble the hæmorrhoids; from whence it has been concluded, that this root must needs be of wonderful efficacy for the cure of that distemper: to the taste, it is little other than mucilaginous.

PIMENTO, Jamaica pepper.

PIMPERNEL, (*Annagallis*.) Common male and female pimpernel. This is a low plant; in appearance resembling chickweed; but easily distinguishable by its leaves being spotted underneath, and joined immediately to the stalk. The male and female pimpernels differ no otherwise than in the colour of their flowers: they are both found wild in the fields, but the male or red flowered sort is most common.

Both the Pimpernels have an herbaceous, roughish taste, with little or no smell. Many extraordinary virtues have been attributed to them. Geof-

froy esteems them cephalic, sudorific, vulnerary, antimaniacal, antepileptic, and alexaterial. Tragus, Caspar, Hoffman, Michaeli, and others, are also very liberal in their praises: one of these gentlemen declares, that he has known numerous instances of the singular efficacy of a decoction and tincture of pimpernel, in maniacal and melancholic deliria. But later practitioners have not been so happy as to meet with the like success. Pimpernel is not unfrequently taken as food; it makes no unpleasant salad; and in some parts of this kingdom, is a common potherb. A spirituous tincture of it contains nothing valuable: the only preparation that promises any utility, is an extract made with water; or the expressed juice depurated and inspissated.

Water PIMPERNEL, [*Samolus*.] This plant grows wild in swampy places, where the water usually stands in winter, and is seldom preferred in gardens. It is an annual plant, which flowers in June, and the seeds are ripe in August; at which time, whoever hath a mind to cultivate this plant, should sow the seeds on a moist soil, where the plants will come up, and require no farther care but to keep them clear from weeds.

PINE, [*Pinus*.] The species are, 1st, the wild or Scotch pine, or Scotch fir.

This is called by us the Scotch fir, because it grows naturally on the Highlands of Scotland, where the seeds, falling from their cones, come up and propagate themselves without any care. But it is not in Scotland only that these trees thrive naturally; for they grow spontaneously in Denmark, Norway, and Sweden. And though, from the above instances, it would seem that they delighted principally in these northern parts; yet when the plants are properly raised and planted out, no climate comes amiss to them, for they will thrive and grow to be good timber trees in almost any part of the world.—The timber of this tree is what we call deal; is sometimes red, sometimes yellow, but chiefly white.

2. *The Weymouth Pine*. This grows naturally in most parts of North America, where it is called the white pine. It is one of the tallest trees of all the species, often growing a hundred feet high in those countries. The bark of this tree is very smooth and delicate, especially

especially when young; the leaves are long and slender, five growing out of each sheath; the branches are pretty closely garnished with them, so make a fine appearance; the cones are long, slender, and very loose, opening with the first warmth of the spring, so that if they are not gathered in winter, the scales open and let out the seeds. The wood of this sort is esteemed for making masts for ships; it is in England titled Lord Weymouth's, or New-England Pine. As the wood of this tree was generally thought of great service to the navy, there was a law made in the ninth of Queen Anne for the preservation of the trees, and to encourage their growth in America; and it is within these forty years that these trees began to be propagated in England in any plenty, though there were some large trees of this sort growing in two or three places long before, particularly at Lord Weymouth's, and Sir Wyndham Knatchbull's in Kent; and it has been chiefly from the seeds of the latter that the much greater number of these trees now in England have been raised; for although there has annually been some of the seeds brought from America, yet these have been few in comparison to the produce of the trees in Kent; and many of the trees which have been raised from the seeds of those now produce plenty of good seeds, particularly the trees in the gardens of his Grace the Duke of Argyle at Whitton, which annually produce large quantities of cones.—This sort and the Scotch Pine are the best worth cultivating of all the kinds for the sake of their wood; the others may be planted for variety in parks, &c. where they make a good appearance in winter, when other trees are destitute of leaves.

3. *The Cultivated Pine-tree*, commonly called the *Stone Pine*. The Stone Pine is a tree of which there should be a few in all plantations of ever-greens. It will grow to a considerable height, and arises with a straight and fair stem, though with a rough bark. The leaves will contribute to the diversifying the scene, as they differ in colour from the other sorts, and are arranged in a different manner. The cones which it bears are monstrously large and turbinated; they strike the eye by their bold appearance when hanging on the trees, and afford pleasure upon being more closely exa-

mined, from the beautiful arrangement of their scales. They produce a large kernel as sweet to the taste as an almond, which formerly were kept in the shops and sold for restoratives, but are at present neglected. In Italy, the kernels are served up in deserts at the table, and are thought to be salutary in colds, coughs, and consumptions. Its timber is not quite so valuable as the other sorts. The colour is not the same in all trees; some exhibiting their timber of a very white colour, others are yellow, and smell stronger of turpentine.

4. *The Swamp Pine-tree*. This is a very large growing tree, and is highly proper, as its name imports, to be planted in moist places.—The leaves are long, of a delightful green colour; three issue out of each sheath, and adorn the younger branches in great plenty.—Its propagation is the same as the Weymouth Pine; and the planting out, and after management of the trees, should be exactly similar.—It will grow well on all upland and dry grounds; but it chiefly delights in moist places.

5. *The Cembra Pine*. The Cembra Pine is a fine tree; the leaves are very beautiful, being of a lighter green than most of the sorts, and are produced five in a sheath. The leaves are long and narrow; and as they closely ornament the branches all round, they look beautiful, and render the tree on that account very valuable. The cones of this tree also have a good effect; for they are larger than those of the Pineaster, and the squamæ are beautifully arranged. This tree is a native of the Alps, and is well described by Mr. Harte, in his elegant essays on husbandry, under the title of *Aphernoussi Pine*. He considers it as a tree likely to thrive with great advantage on our bleak, barren, rocky, and mountainous lands; even near the sea, and in north or north-easterly aspects, where something of this hardy kind is much wanted. The timber is large, and has many uses, especially within doors, or under cover. The bark of the trunk or bole of the tree is not reddish like the bark of the Pine, but of a whitish cast, like that of the Fir. The shell which incloses the kernel is easily cracked, and the kernels are covered with a brown skin which peels off. They are about the size of a common pea, triangular like buck-wheat, and white and soft as a blanched almond,

mond, of an oily agreeable taste, but leaving in the mouth *that* small degree of asperity which is peculiar to wild fruits, and not unpleasing. These kernels sometimes make a part in a Swiss desert. Wainscotting, flooring, and other joiners work, made with the planks of Aphenoussi, are of a finer grain, and more beautifully variegated than deal, and the smell of the wood is more agreeable. From this tree is extracted a white odoriferous resin. On this occasion the curious planter may consult a very scarce piece, *De Arboribus Coniferis*, written about 200 years ago, by Pietro Belloni.—In the plantations belonging to Jeremiah Dixon esq; at Gloddow near Leeds, may be seen several of these Pines. They are there called the Gloddow Pine.

6. *The Silver Fir-tree.* This is a noble upright tree. The leaves grow singly on the branches, and their ends are slightly indented. Their upper surface is of a fine strong green colour, and their under has an ornament of two white lines, running lengthways on each side the midrib, on account of which silvery look this sort is called the Silver Fir. The cones are large, and grow erect; and when the warm weather comes on, they soon shed their seeds; which should be a caution to gather the cones before that happens.—This tree is common in the mountainous parts of Scotland, and in Norway, and affords the yellow deals. From its yielding pitch, it has obtained the title of *Picea*, or Pitch-tree.

7. *The common Spruce Fir-tree.* The Spruce Fir is a beautiful tree, as well as a valuable one for its timber, producing the white deal. It is a native of Norway and Denmark, where it grows spontaneously, and is one of the principal productions of their woods. It also grows plentifully in the Highlands of Scotland, where it adorns those cloud-capped mountains with a constant verdure. The longconed Cornish Fir is a variety of this tree, and differs scarcely in any respect, except that the leaves and the cones are larger. As gardeners generally receive it as a distinct Fir, it may not be amiss to mention it here; though we own the difference is so inconsiderable as to make it hardly worth seeking after; and though the cones are rather longer than the other sort, yet of that also the cones are very large, oftentimes

near a foot; so that they may easily pass the one for the other, as they both hang down alike.

8. The Canada Pine, *Hunter's Evelyn.*

For the cultivation of Pine, see FIR.

PINEASTER, (*Pinus Sylvestris.*) A species of Pine growing wild on the mountains of Italy.

PINE-APPLE, [*Ananus.*] Of this plant there are several varieties differing in the shapes, size, and colour of their fruits. The most esteemed are, 1. Oval shaped with white flesh, or the green pine. 2. Pyramidal, or sugar-loaf pine-apple, with yellow flesh. 3. Green Sugar-loaf. 4. Black Antigua or Ripley pine-apple. 5. Shining Green-leaved pine, with scarce any spines; or the King pine. 6. Granada Pine with marbled leaves. 7. Bogwarp pine, with broad green leaves. 8. Smooth long narrow leaved pine. 9. Gold-striped leaved pine. 10. Silver-striped leaved pine.

Of the above sorts the two former are chiefly esteemed, and the latter preferred most of all.

The plants are propagated by planting the crowns which grow on the fruit, or the suckers which are produced either from the sides of the plants, or under the fruit, both which have been found equally good; although by some persons the crown is thought preferable to the suckers, as supposing it will produce fruit sooner than the suckers, which is certainly a mistake.

The suckers and crowns must be laid to dry in a warm place for four or five days, or more (according to the moisture of the part which adhered to the old plant or fruit); for if they are immediately planted, they will rot. The certain rule of judging when they are fit to plant, is by observing if the bottom is healed over and become hard; for if the suckers are drawn off carefully from the old plants, they will have a hard skin over the lower part, so need not lie so long as the crowns, or those whose bottoms are moist. But whenever a crown is taken from the fruit, or the suckers from old plants, they should be immediately divested of their bottom leaves, so high as to allow depth for their planting; so that they may be thoroughly dry and healed in every part, lest when they receive heat and moisture they should perish, which often happens when this method is not observed. If these suckers or crowns

are

are taken off late in the autumn, or during the winter, or early in the spring, they should be laid in a dry place in the stove, for a fortnight or three weeks before they are planted, but in the summer season they will be fit for planting in a week at farthest.

As to the earth in which these should be planted, if you have a rich good kitchen garden mould, not too heavy, so as to detain the moisture too long, nor over light and sandy, it will be very proper for them without any mixture: but where this is wanting, you should procure some fresh earth from a good pasture, which should be mixed with about a third part of rotten neats dung, or the dung of an old melon or cucumber bed. These should be mixed six or eight months at least before they are used, but if it be a year it will be the better; and should be often turned, that their parts may be better united, as also the clods well broken. This earth should not be screened very fine, for if you can only clear it of the great stones, it will be better for the plants than when it is made too fine. You should always avoid mixing any sand with the earth, unless it be extremely stiff, and then it will be necessary to have it mixed at least six months or a year before it is used; and it must be frequently turned, that the sand may be incorporated in the earth so as to divide its parts: but you should not put more than a sixth part of sand, for too much sand is very injurious to these plants.

In the summer season, when the weather is warm, these plants must be frequently watered, but you should not give them large quantities at a time: you must also be very careful that the moisture is not detained in the pots by the holes being stopped, for that will soon destroy the plants. If the season is warm, they should be watered twice a week, but in a cool season once a week is often enough; and during the summer season you should once a week water them gently all over their leaves, which will wash the filth from off them, and thereby greatly promote the growth of the plants.

There are some persons who frequently shift these plants from pot to pot, but this is by no means to be practised by those who propose to have large well-flavoured fruit; for un-

less the pots be filled with the roots, by the time the plants begin to shew their fruit, they commonly produce small fruit, which have generally large crowns on them, therefore the plants will not require to be new potted oftener than twice in a season: the first time should be about the end of April, when the suckers and crowns of the former year's fruit (which remained all the winter in those pots in which they were first planted) should be shifted into larger pots, that is, those which were in halfpenny, or three-farthing pots, should be put into penny, or at most three-halfpenny pots, according to the size of the plants; for you must be very careful not to over pot them, nothing being more prejudicial to these plants. The second time for shifting of them is in the beginning of August, when you should shift those which are of a proper size for fruiting the following spring, into two-penny pots, which are full large enough for any of these plants. At each of these times of shifting the plants, the bark-bed should be stirred up, and some new bark added, to raise the bed up to the height it was at first made; and when the pots are plunged again into the bark-bed, the plants should be watered gently all over their leaves, to wash off the filth, and to settle the earth to the roots of the plants. If the bark-bed be well stirred, and a quantity of good fresh bark added to the bed, at this latter shifting, it will be of great service to the plants, for they may remain in the same tan until the beginning of November, or sometimes later, according to the mildness of the season, and will require but little fire before that time. During the winter season, these plants will not require to be watered more than once a week, according as you find the earth in the pots too dry; nor should you give them too much at each time, for it is much better to give them a little water often, than to over-water them.

You must observe never to shift those plants which shew their fruit into other pots, for if they are removed after the fruit appears, it will stop the growth, and thereby cause the fruit to be smaller, and retard its ripening; so that many times it will be October or November before the fruit is ripe; therefore you should be very careful to

keep the plants in a vigorous growing state, from the first appearance of the fruit; for if they receive a check after this, the fruit is generally small and ill tasted.

When you have cut off the fruit from the plant whose kind you are desirous to propagate, you should trim the leaves and plunge the pots again into a moderate hot-bed, observing to refresh them frequently with water, which will cause them to put out their suckers in plenty; so that a person may be soon supplied with plants enough, because upon this depends its size and goodness; if he keeps the plants in health.

There is not any thing which can happen to these plants of a more dangerous nature, than to have them attacked by small white insects, which appear at first like a white mildew, but soon after have the appearance of lice: these attack both root and leaves at the same time, and if not destroyed will spread over a whole stove in a short time, and in a few weeks stop the growth of the plants, by sucking out the nutritious juice, so that the leaves will appear yellow and sickly, and have a great number of yellow transparent spots all over them. These insects, after they are fully grown, appear like bugs, and adhere so closely to the leaves, as not to be easily washed off, and seem to have no local motion. They were originally brought from America upon the plants which were imported from thence, and probably they are the same insects which have destroyed the sugar canes in some of the Leeward Islands.

The stoves which are erected for preserving of these plants are built in different ways, according to the fancy of the contriver. Some persons build them with upright glasses in front, about four feet high, and sloping glasses over these, which rise about six feet high, so that there is just height enough for a person to walk upright on the back side of the bark-bed. Others make but one slope of glasses, from the top of the stove down to the plate, which lies about six or eight inches above the bark-pit, in the front of the stove, so that in this stove there is no walk made in the front between the bark-pit and the glasses; but the inconvenience of watering the plants, as also of coming near those plants

which are placed in the front of the stove to clean them, has, in some measure, brought them into disesteem, so that few persons now build them, though the expence is much less than the other kind of stoves. One of these stoves, about twenty-five feet long in the clear, with the pit for the tan reaching from end to end, and six feet and a half wide, will contain about an hundred plants; so that whoever is desirous to have this fruit, may easily proportion their stove to the quantity of fruit they are willing to have.

But it will also be necessary to have a bark-pit under a deep frame, in order to raise the young plants in summer; for in this bed you should plunge the suckers, when they are taken from the old plants, as also the crowns which come from the fruit, so that this frame will be as a nursery to raise the young plants to supply the stove; but these plants should not remain in these frames longer than till the beginning of November, unless the frame is built with brick-work with flues in it to warm the air, which are very useful, as nurseries, to keep the young plants till they are of a proper size to produce fruit; and the air in this frame may be kept either warmer or cooler than the stove, according as the plants may require, so that the stove may be every autumn filled only with bearing plants, whereby a much greater quantity of fruit may be annually produced, than can be where young and old plants must be crowded into the same stove: but where there are no inconveniencies of this kind, the young plants, about the middle or latter end of October, must be removed into the stove, and being small, may be crowded in among the larger plants; for as they will not grow much during the winter season, so they may be placed very close together. The end of March, where there is no nursery for the young plants, they must be removed out into the hot-bed again, which should be prepared a fortnight before, that the tan may have acquired a proper heat; but you should be careful that the tan be not too hot, for that might scald the fibres of the plants if they are suddenly plunged therein. Therefore if you find the bark too hot, you should not plunge the pots above two or three inches into the tan, letting them remain so until the heat of the
tan

tan is a little abated, when you should plunge the pots down to their rim in the bed. If the nights should continue cold after these plants are removed into the bed, you must carefully cover the glasses with mats, otherwise by coming out of a warm stove they may receive a sudden check, which will greatly retard their growth, which must be carefully avoided; because the sooner the plants are set growing in the spring, the more time they will have to gain strength, in order to produce large fruit the following season.

You should not plunge the pots too close together in this frame, but allow them a proper distance, that the lower part of the plants may increase in bulk, for it is on this that the magnitude of the fruit depends; because when the plants are placed too close, they draw up very tall, but do not obtain strength; so that when they are taken out of the bed, the leaves are not able to support themselves, but all the outward long leaves will fall down, leaving the smaller middle leaves naked, and this sometimes will cause them to rot in the center. You must also observe, when the sun is very warm, to raise the glasses of the hot-bed in the heat of the day with props, in order to let out the steam of the bed, and to admit fresh air; for one neglect of this kind, in a very hot day, may destroy all the plants, or at least so scald them, that they will not get over it in many months. It will be also very proper, in extreme hot weather, to shade the glasses with mats, for the glasses lying so near to the leaves of the plants will occasion a prodigious heat at such times.

There are some persons who regulate the heat of their stoves by thermometers in summer, but at that season this is unnecessary; for the outward air in hot weather is frequently greater than the ananas heat marked on the thermometers, so that the heat of the stoves at that season will be much greater. The use of the thermometer is only in winter, during the time the fires are continued, by which it is easy to judge when to increase or diminish the fires; for at that season the stoves should not be kept to a greater warmth than five or six divisions above ananas, nor suffered to be more than as many divisions below it. When the plants

are placed into the tan for the winter season (which should be done about the middle of October) the tan-bed should be renewed, adding two thirds of new tan to one third of the old. If this be well mixed, and the new tan is good, the bed will maintain a proper degree of warmth till February, at which time it will be proper to stir up the bed, and add a load or two of new tan, so as to raise the bed as much as it sunk since the autumn; this will give a fresh heat to the bed, and keep the plants growing, and, as the fruit will now begin to appear, it will be absolutely necessary to keep the plants in a growing state, otherwise the fruit will not be large; for if they receive any check at this time, it will greatly injure them.

In April it will be proper to stir up the tan again, and if the bed has sunk since the last stirring, it will be proper to add some fresh tan to it; this will renew the warmth of the bed and forward the fruit. And if the tan-bed is constantly kept in a good temper, and a sufficient quantity of air admitted every day to the plants, they will succeed much better than in a cool bed kept too close.

Those plants which shew their fruit early in February will ripen about June; some sorts are at least a month or five weeks longer in ripening than others, from the time of the appearance of the fruit: but the season in which the fruit is in greatest perfection, is from the beginning of June to the end of September; though in March, April, and October, this fruit may frequently be seen in pretty good perfection, but then the plants have been in perfect health, otherwise they are seldom well flavoured.

The method of judging when the fruit is ripe, is by the smell, and from observation; for as the several sorts differ from each other in the colour of their fruit, that will not be any direction when to cut them; for should they remain so long as to become soft to the touch before they are cut, they become flat and dead, as they do also when they are cut long before they are eaten: therefore the surest way to have this fruit in perfection, is to cut it the same day it is eaten: but it must be cut early in the morning, before the

fun has heated the fruit, otherwise it will be hot, observing to cut the stalk as long to the fruit as possible, and lay it in a cool, but dry place, preserving the stalk and crown unto it until it is eaten.

Mr. Speechly, gardener to the Duke of Portland, has lately introduced oak leaves into the stove instead of Bark.

“ I presume, says he, that the leaves of the oak abound with the same quality as the bark of the tree, therefore the sooner they are raked up, after they fall from the trees, the better; as that quality will naturally decrease during the time they are exposed to the weather.

“ After being raked into heaps, they should immediately be carried to some place near the hot-house, where they must lie to couch. I generally fence them round with some charcoal-hurdles, or any thing else, to keep them from being blown about the garden in windy weather. In this place we tread them well, and water them, in case they happen to have been brought in dry. We make the heap six or seven feet in thickness, covering it over with old matts, or any thing else, to prevent the upper leaves from being blown away. In a few days, the heap will come to a strong heat. For the first year or two that I used these leaves, I did not continue them in the heap longer than ten days or a fortnight; but in this I discovered a considerable inconvenience, as they settled so much, when got into the hot-house, as soon to require a supply. Taught by experience, I now let them remain in the heap for five or six weeks, by which time they are properly prepared for the hot-house. In getting them into the pine-pits, if they appear dry, we water them again, treading them in layers exceedingly well, till the pits are quite full. We then cover the whole with tan to the thickness of two inches, and tread it well till the surface becomes smooth and even. On this we place the pine-pots in the manner they are to stand, beginning with the middle-row first, and filling up the spaces between the pots with tan. In like manner, we proceed to the next row, till the whole be finished. And this operation is performed in the same manner as when tan only is used,

“ After this, the leaves require no farther trouble the whole season through: as they will retain a constant and regular heat for twelve months without either stirring or turning; and if I may form a judgment from their appearance when taken out, (being always entire and perfect) it is probable they would continue their heat through a second year: but as an annual supply of leaves here is easily obtained, such a trial, with us, is hardly worth the trouble of making. However, as a saving in leaves may be an agreeable object in places where they are less plentiful, I was induced to make the following experiments: In 1777, one of the pine-pits was filled with one part of old and two parts of new leaves, well mixed together. And last year, (1778) one pit was filled with old and new leaves in equal quantities. In both these experiments, I had the satisfaction to find the pits, so filled, to retain a heat through each season, equal to the other pits that were filled entirely with new leaves.

“ Last year (1778) I also used a considerable quantity of the leaves after they were taken out of the hot-house in the early-made hot-beds, and found them to answer quite as well as fresh leaves.

“ I must beg leave to observe, that when the leaves are intended to be used a second time, it will be proper at the taking them out of the pits, to remove some few at the top, as also on each side, because the leaves at the top and outside of the pit, approach most to a state of decay.

“ After this, the pines will have no occasion to be removed but at the stated times of their management, viz. at the shifting them in their pots, &c. when, at each time, a little fresh tan should be added to make up the deficiency arising from the setting of the beds; but this will be inconsiderable, as the leaves do not settle much after their long couching. During the two first years of my practice, I did not use any tan, but plunged the pine-pots in the leaves, and just covered the surface of the beds, when finished, with a little saw-dust, to give it a neatness. This method was attended with one inconvenience: for by the caking of the leaves, they shrunk from the sides of the

the

the pots, whereby they became exposed to the air, and at the same time the heat of the beds was permitted to escape.

“ Many powerful reasons may be given why oak-leaves (for having an opportunity of collecting an immense quantity of them here, I have not tried any other kinds) are preferable to tanner’s bark.

“ First, They always heat regularly; for during the whole time that I have used them, which is near ten years, I never once knew of their heating with violence; and this is so frequently the case with tan, that I affirm, and indeed it is well known to every person conversant in the management of the hot-house, that pines suffer more from this one circumstance than from all other accidents put together, insects excepted. When this accident happens near the time of their fruiting, the effect is soon seen in the fruit, which always comes ill-shaped and exceedingly small. Sometimes there will be little or no fruit at all; therefore gardeners, who make use of tan only for their pines, should be most particularly careful to avoid an over-heat at that critical season—the time of showing fruit.

“ Secondly, the heat of oak-leaves is constant; whereas tanner’s bark generally turns cold in a very short time after its furious heat is gone off. This obliges the gardener to give the tan frequent turnings in order to promote its heating. These frequent turnings, not to mention the expences, are attended with the worst consequences; for by the continual moving of the pots backwards and forwards, the pines are exposed to the extremes of heat and cold, whereby their growth is considerably retarded; whereas, when leaves are used, the pines will have no occasion to be moved but at the times of potting, &c.—The pines have one particular advantage in this undisturbed situation; their roots grow thro’ the bottoms of the pots and matt amongst the leaves in a surprising manner.—From the vigour of the plants, when in this situation, it is highly probable that the leaves, even in this state, afford them an uncommon and agreeable nourishment.

“ Thirdly, there is a saving in point

of expence, which is no inconsiderable object in places where tan cannot be had but from a great distance, as is the case here, the article of carriage amounting to ten shillings for each waggon-load. Indeed, this was the principal reason that first induced me to make trial of leaves.

“ My last ground of preference is the consideration that decayed leaves make good manure; whereas rotten tan is experimentally found to be of no value. I have often tried it both on sand and clay, also on wet and dry lands, and never could discover, in any of my experiments, that it deserved the name of a manure; whereas decayed leaves are the richest, and, of all others, the most suitable for a garden. But this must only be understood of leaves after they have undergone their fermentation, which reduces them to a true vegetable mould, in which we experimentally know that the food of plants is contained—but whether that food be oil, mucilage, or salt, or a combination of all three, I leave to philosophers to determine. This black mould is, of all others, the most proper to mix with compost earth, and I use it in general for pines, and almost for all plants that grow in pots: For flowers, it is most excellent. The remainder of this vegetable mould may be employed in manuring the quarters of the kitchen-garden, for which purpose it is highly useful.

“ Leaves mixt with dung make excellent hot-beds—and I find that beds, compounded in this manner, preserve their heat much longer than when made entirely with dung.”

He describes the different species of insects with accuracy; and the directions he gives for their destruction are plain to every understanding. It consists in washing the pine-plants well with the following liquor:

“ Take one pound of quicksilver; put it into a glazed vessel, and pour upon it one gallon of boiling water, which let stand till it becomes cold; then pour off the water for use. Repeat this on the same quicksilver, (for it will retain its powers) till a sufficient number of gallons are provided to fill a vessel intended for the purpose. One in the form of a trough, that will hold eight or ten gallons, is the most convenient,

venient, especially for the large-sized plants.

“Then to every gallon of this mercurial water add six ounces of soft green soap, dissolved in a portion of the prepared water. Let the mixture stand till it becomes about milk-warm, which is the degree of warmth it must be kept to during the time of dipping, which operation is performed in the following manner :

“The pine plants being now ready, let them be put into the mixture, in which they should remain, with every part covered, for the space of three minutes; then take them out, first letting the tops decline for the mixture to drain out of their centres. The vessel should be immediately filled with fresh plants, and those taken out set in the open air to dry, with their roots downwards; for by placing them in that position, the mixture will descend and penetrate to the very bottom of the leaves in the centre of the plant, whereby the insects which are concealed there will be totally destroyed.

“It will be proper to do this work in a fine day, and as soon in the forenoon as convenient, that the plants might have time to dry, which they will do in a few hours, and then they must undergo the same operation a second time.

“In the next dipping, one table spoonful of sweet oil should be added to every gallon of the mixture. If the oil and some green soap should be put together, and a little prepared boiling water poured thereon, the oil will most readily incorporate.

“The process of the second operation being exactly the same as the first, a repetition thereof is unnecessary.

“After the second dipping, a sponge should be used, to remove any unsightly matter left on the leaves of the plants. They should then be set to dry with their tops downwards, that the mixture may drain from every part; for it is necessary that every part of the plant should be quite dry before it is planted.

“For a twelvemonth after the destruction of the insects, I constantly keep a pound of quicksilver in a glazed vessel, at the bottom of the cistern which contained the water for the use of the hot-house. Whether the quick-

silver impregnated the water in such a manner as to be of any real use, I do not pretend to say: however, this I can with truth affirm, that I never saw pine plants grow with greater vigour than those did at that time.”

Dwarf PINE. Tree Pender.

Wild PINE APPLE. See PENGUIN. PINK. See CARNATION.

PINT. A vessel or measure containing in quantity sixteen ounces; half a quart; the eighth part of a gallon.

PIP. This is a disorder peculiar to young fowls, and generally arises from the want of water. The natural moisture of the mouth in this case hardens upon the end of the tongue into a kind of scale, and this prevents their feeding.

The greatest care is required to observe in time which of them have the disease, for the remedy is easy.

Let some bay salt be melted in a little vinegar, and set ready in a saucer.—Then let the young creatures be taken up and the scale loosened, and then pulled off from the tongue with the fingers. Then wet the end of the tongue two or three times over with the vinegar and salt, and turn the chick loose where he cannot drink for an hour. This will prevent a return.

PIPE. A large vessel for wine, equal to two barrels; half a tun.

PIPE TREE, (*Syringa*) See LILAC.

Pudding PIPE TREE. See CASSIA.

PIPERIDGE Bush. See BARBERRY.

PISSING of Blood, in Horses. Great care should be taken to observe the quantity of urine made; if there be too much in proportion to the liquor drank, retringents should be made use of, such as the following balls:

Japan Earth, two ounces,

Mithridate,

Diafcoridium, each one ounce and a half, mix altogether in a pint and a half of forge water, and give it in a morning, repeating every third morning.

If on the other hand, urine is made in quantity, and seems made with difficulty,

Take Marshmallow Roots,

Liquorice Roots, each two ounces, boil in three pints of water to a quart. Dissolve in it two ounces of Nitre, and give for a dose night and morning.

Let a clyster be given, made of a strong

strong decoction of marshmallows and sweet oil.

“ This disorder in cows (says a writer in the Farmer’s Magazine) is often produced by a blow or a strain, and in either case is dangerous; perhaps more so than if it proceeded from an inward disorder, as a mortification is much to be feared; whereas an exalted state of the urinous salts will sometimes produce the disorder, but a blow or strain to produce it must not only do an external violence to the muscles of the loins, (probably to the nerves themselves) but also to the vessels of the kidneys, and those which go from the kidneys to the bladder; and I have seen the whole in a state of mortification, and this from a strain which has not been thought of sufficient consequence to require medicines;—but remember, that as your beast cannot tell how great the injury is, you are to apply immediate remedies.

Take away some blood. If the beast be cosine, give the following emollient clyster, immediately: Milk gruel, three pints; sweet oil, half a pint. And afterwards the following anodyne clyster, twice or thrice a day: Sheep’s-head broth, three pints; liquid laudanum, one ounce.

“ Of all remedies in diseases of the bladder or kidneys, clysters are the most to be depended on; of which I was informed by an ingenious physical friend, who told me that in the most violent fits of the gravel, retention of urine, &c. he chiefly depended on anodyne clysters, which acted as a fomentation to the parts immediately concerned, and gave a more immediate relief than medicines taken by the mouth.

“ If the disorder proceed from a strain or blow, the loins should be bathed with Goulard’s vegeto-mineral water, and then covered with cloths. The beast should be kept up at house, and well supplied with warm gruel, or rather the following liquor:

Take two dozen of white poppy heads, seeds and all; liquorice, marshmallow, and couch grass roots, each half a pound; nitre, and gum arabic, each three ounces, camphor, one ounce and a half; boil in six gallons of water-gruel to four, and then add a pound of

treacle. Give to the quantity of two gallons daily, a little warm.

“ Different as the above prescription may be to the common method pursued by Cowleeches, I can recommend it not only as rational, but successful. Restraining are unadvisable.”

PISHAMIN, or PERSIMON, (*Diospyrus*) See DATE PLUM TREE.

PITCH TREE. The Fir Tree, See *Art. 1*

PLANE TREE, (*Platanus*) Of this tree there are only two species, 1. The true Eastern Plane-tree. This kind grows naturally in Asia, where it becomes very large; the stem is tall, erect, and covered with a smooth bark, which annually falls off; it sends out many side-branches, which are generally a little crooked at their joints; the bark of the young branches is of a dark brown, inclining to a purple colour; they are garnished with leaves placed alternate; their foot-stalks are an inch and a half long; the leaves are seven inches long & eight broad, deeply cut into five segments, and the two outer are slightly cut again into two more; these segments have many acute indentures on their borders, and have each a strong mid-rib, with many lateral veins running to the sides; the upper side of the leaves is of a deep green, and the under side pale. The flowers come out upon long foot-stalks or ropes hanging downward, each sustaining five or six round balls of flowers; the upper, which are the largest, are more than four inches in circumference; these sit very close to the foot-stalks. The flowers are so small as scarce to be distinguished without glasses; they come out a little before the leaves, which is in the beginning of June; and in warm summers the seeds will ripen late in autumn, and if left upon the trees will remain till spring, when the balls fall to pieces, and the brittly down, which surrounds the seeds, helps to transport them to a great distance with the wind.

2. Occidental or Virginian Plane-tree.

This sort is naturally produced in most parts of North America; it grows to a large size, with a straight stem of equal girt most part of the length; the bark is smooth, and annually falls off like that of the other; the branches extend wide on every side; the young ones have a brownish bark, but on the old

old ones it is grey; the foot-stalks of the leaves are three inches long; the leaves are seven inches long, and ten broad; they are cut into three lobes or angles, and have several acute indentures on their borders, with three longitudinal midribs, and many strong lateral veins. The leaves are of a light green on their upper side, and paler on their under. The flowers grow in round balls like the former, but are smaller. The leaves and flowers come out at the same time with the former, and the seeds ripen in autumn.

The flowers come out late in the spring, and are so small as scarcely to be visible to the naked eye. The buds of the leaves of the oriental sort begin to swell about the fourteenth of April, and the leaves are generally out by the latter end of the same month.

Besides the two species already described there are two varieties: 1. The Spanish Plane-tree; 2. The Maple-leaved Plane-tree.

The Spanish Plane-tree has larger leaves than either of the other sorts; they are more divided than those of the Occidental, but not so much as the Eastern. Some of the leaves are cut into five and others into three lobes; these are sharply indented on the edges, and are of a light green; the foot-stalks are short, and covered with a short down. This is by some called the Middle Plane-tree, from its leaves being shaped between those of the two other sorts. It grows rather faster than either of the other kinds.

The Maple-leaved Plane-tree differs from the two genuine species, in having its leaves not so deeply cut as the Eastern, nor lobed as the Western kind. The foot-stalks of the leaves are much longer than those of the above sorts, and the upper surface of the leaves is rougher.

The Oriental and Spanish Plane-trees are propagated from seeds, when they can be procured; but whoever enjoys not this convenience, must have recourse to layers. The ground proper for the seminary should be moist and shady, well dug, and raked till the mould is fine; then, in the autumn, soon after the seeds are ripe, let them be scattered over this ground, and the seeds raked in, in the same manner as turnip-seeds. In the spring many of

the young plants will come up, though you must not expect the general crop till the second year; the spring after which they may be taken out of the seminary, and planted in the nursery in rows one yard asunder, and at one foot and a half distance in the rows. Here they may remain, with the usual care of digging between the rows and keeping them clean, till they are of sufficient size to plant out for good.

Where the seeds of these trees cannot be procured, layering must be the method of propagation. For this purpose a sufficient number must be planted out for stools on a spot of earth double dug. After they have stood one year, they should be cut down, in order to make them throw out young wood for layering. The autumn following these should be laid in the ground, with a little nick in the joint; and by that time twelvemonths they will be trees of a yard high, with a good root, ready to be planted in the nursery, where they may be managed as the seedlings; and as the stools will have shot up fresh young wood for a second operation, this treatment may be continued *ad libitum*.

The Occidental Plane-tree is propagated by cuttings; which if they are taken from strong young wood, and planted early in the autumn, in a moist good mould, will hardly fail of succeeding. They are generally planted thick, and then removed into the nursery-ground, as the layers of the other sort: But if a large piece of moist ground was ready, the cuttings might be placed at such a distance as not to approach too close before they were of a sufficient size to plant out for good; and this would save the expence and trouble of a removal. The Oriental Plane-tree will grow from cuttings, but not so certainly as this; and whoever has not the convenience of proper ground for the cuttings of either, must have recourse to layers with this tree also; which, indeed, is always the surest and most effectual method.

Plane-trees delight in a moist situation, especially the Occidental sort; where the land is inclined to be dry, and Plane-trees are desired, the other kinds are to be preferred. But in moist places, by the sides of rivulets, ponds, &c. the Occidental makes such surprising

prising progress as induces me to think that it might be ranked amongst the Aquatics, without any impropriety.

See the Note on this thing.
PLANTAIN, (*Plantago*.) There are two kinds of this plant, the narrow and broad-leaved, both common in fields and by road-sides. The leaves are lightly astringent, and the seeds said to be so; and hence they stand recommended in hæmorrhages, and other cases where medicines of this kind are proper. The leaves bruised a little, are the usual application of the common people to slight flesh wounds.—The Edinburgh college directs an extract to be made from the leaves.

PLANTAIN TREE. See BANANA.

PLANTAIN SHOT. Indian Cane. See CANE.

PLANTATIONS. Plantations of trees, &c. greatly embellish and improve estates, as well as ornament the adjacent country; and those formed into woods for timber-trees, prove not only very beneficial to the owners, but may be said to be a public convenience to the country around, to have the opportunity of purchasing wood in the neighbourhood, for the various purposes of buildings, fences, making all sorts of husbandry implements, as carts, waggons, ploughs, &c. and for innumerable other uses; also for furnishing fuel, a very essential article.

In former ages, this island abounded in natural plantations or forests, which spread themselves over the surface of the country, to a very considerable extent, and were composed of various sorts of lofty trees of prodigious magnitude, all blended promiscuously together, and all of spontaneous growth. Those vast forests were never planted by any human hand, such only have been employed for ages in cutting them down; for in many places there were such a profusion of useless wood, that large tracts were obliged to be cleared by degrees, in order to cultivate the ground for other purposes; which, together with the necessary demands for the timber from time to time for buildings, &c. and that owners of estates, reaping considerable advantage from the sale of their timber, continued by degrees, one generation after another, grubbing up their timber, without measure; and few ever planted any in lieu of what they cut down; so that in

many parts there is almost a general demolition of woodland, and many considerable estates have scarcely any timber of value left standing, whence comes the present scarcity in many parts of the kingdom.

Every possessor of estates, either of large or moderate extent, will reap great pleasure and advantage in dedicating some share of his land to plantations; for in estates of whatsoever extent, they give grandeur and ornament to the premises, as well as an air of fertility and riches; and those large plantations designed for woods, will, after the first eight or ten years, bring in great profit by a gradual thinning of the underwood, besides leaving a sufficiency of standards to attain full growth: in the mean time the plantations in general will contribute exceedingly to the beauty of the estate; for how delightfully it is for travellers to behold the noble plantations in groves, thickets, clumps, &c. variously disposed in parks, and on the boundaries of spacious lawns, and the like places, formed of a great variety of beautiful trees and shrubs, and to see grand avenues of lofty growth, leading to or from a stately mansion, or some main road, or some adjacent town; and in the out-grounds to observe the Plantations of woodlands, &c. ranging along the sides of hills, plains, and other grounds occasionally; but in estates, how fertile soever the soil, yet it appears naked and barren without a proper share of plantations; on the other hand, when estates are beautifully diversified with plantations, the whole may be said to form a sort of pleasure-garden; especially as in the homeward plantations we may have commodious walks of gravel and sand, both private, shady, and sheltered walks, occasionally disposed in many winding turns in the serpentine way, bordered with hardy shrubs and flowers, which will afford most agreeable walking at almost any season of the year, as in summer they afford a screen from the vehement heat of the sun, and at other times shelter from boisterous winds, and cold piercing blasts; there may be also here and there recesses or places of retirement, leading by private turnings from the principal walks, with gladdings or openings of grass-ground in the midst of

the most extended parts of the plantations.

No land-holder, therefore, let the extent be almost ever so moderate or considerable, but ought to appropriate a proportionable share to commodious plantations as soon as possible, either for ornament or emolument, or both, where the extent will admit, as there is hardly any estate that does not afford soil and situation proper for the cultivation of all our hardy trees, &c. and in many places often furnish soils improper for grass and corn, yet adapted to the growth of many sorts of trees, which would form good plantations, and secure to the planter and his posterity a future pleasure and revenue of considerable importance.

In short, there is hardly any soil so barren and untractable but what will rear a growth of trees and shrubs of some species or other, both for ornament and advantage; and there is scarcely any kind of tree so bad but may be raised to one or other of those purposes: any very poor ground, or such that lies waste, or at a great distance, cannot be better improved than in plantations; even although a tract of land should be so poor as to rear nothing but a crop of aspen trees, alder, and willows, yet the profits even of these productions will greatly exceed what many may think.

So that there is a great number of examples to encourage, and warrant success in plantations, to reward not only with the pleasure of ornamenting our lands, and that of beholding their growth, but also with profit sufficient to compensate amply for the tract of land occupied, and labour in planting.

But to many persons, the necessary expence attending the making a plantation, and knowing that they must wait several years before the trees have made any considerable progress, or can reap any advantage therefrom, often proves an obstacle in attempting the prosecution of that business; but as to the expence of planting, if you raise the plants in your own grounds, it will not prove near so great as many might imagine, especially as a small spot of seminary or nursery-ground will raise plants enough in three or four years to plant a great many acres of land, both

ornamental and woodland; and by the latter, the expence of raising and planting them, together with the loss of time in waiting a few years till the plants attain some growth, will be compensated by the first fall or thinning of the underwood, in eight or ten years after planting; and the stools or roots remaining shoot up again, and afford a lopping every eight or ten years, exclusive of the due portion of standards left at proper distances, to attain full growth for timber, as aforesaid.

One particular precaution in making plantations, is the judicious choice of such trees as are the best adapted to the nature of particular soils, which may vary exceedingly in estates of great extent; however, such trees as we find daily growing by road-sides, hedges, and in any adjacent grounds, are rough sketches of what the land will produce.

As to the sorts of trees and shrubs proper for plantations in general, there is a vast variety, both of the deciduous and ever-green tribes, that will prosper in the open ground in any common soil.

It is of importance, in making any considerable plantation, to chuse principally young plants, of from about two or three to five or ten feet stature, which always prove more successful than older trees; for although some persons, being in haste to have plantations as forward as possible in a few years, transplant tall trees, perhaps twelve or fifteen feet high or more, particularly for ornamental plantations, yet younger growth always take root sooner, and more firmly establish themselves, so as to form considerably the finest plantations at last, and be of longest duration; for although large trees of from ten to twenty feet height, especially of the deciduous kind, may with care be transplanted, so as to grow and probably thrive tolerably for some years, yet trees more than twelve or fifteen feet high often fail, by not rooting firmly like young plants, and after some years standing, have hardly made any shoots, and at last gradually dwindle and perish; therefore large trees should never be employed for plantations only on particular occasions, where a few may be necessary to form

form an immediate shade or blind, &c. in some particular place; but for general work, be persuaded to employ chiefly young plants, either of your own raising, or purchased from the nurseries. And for timber plantations in particular, such plants should be chosen as are only from about two or three, to five or six feet in height.

All the different sorts of trees and shrubs, proper both for ornamental and timber plantations, may be had at all the public nurseries moderately reasonable; though persons, accommodated with scope of ground, may easily raise all the sorts for their own private use: A small nursery will raise trees and shrubs enough to plant many acres of land.

Observe, that where plantations are intended principally for ornament, as great a variety as possible of the different sorts of hardy trees and shrubs should be employed, to afford the greater source of entertainment; and should consist both of lofty and middling trees, down to the humblest shrub; disposing the deciduous and evergreen plants principally in separate compartments; sometimes arranging the tree-kinds by themselves; some in running irregular plantations, towards the boundaries of spacious lawns, parks, paddocks, &c. others in avenues, groves, thickets, and clumps, as aforesaid, variously disposed in different parts; and sometimes arranging the trees and shrubs together, in forming shrubberies, wildernesses, shady walks, and wood-works; placing the taller growth backward, and the lower in front; bordering the whole with the most beautiful flowering shrubs, and showy ever-greens, especially next the principal walks and lawns; observing to vary the form of all the several compartments, sometimes by bold sweeps and curves outward and inward, of different dimensions, other parts in long easy bends, irregular projections and breaks, so as to diversify the scene in imitation of a natural plantation. Allow all the sorts proper distances, which may be from five or ten to fifteen or twenty feet; for example, the tall trees designed for continued plantations may be from ten to fifteen or twenty feet, varying the distance in different parts, according as light and shade, &c. may

be proper; and those in groves may, if open groves, be at fifteen or twenty feet distance, and close groves ten or twelve; for thickets, five or six feet, or closer in particular places, where a very dark shade, or thick coverture of wood is required; and in clumps of trees, may allow from five or ten to twenty feet between the trees in each clump, varying the distance occasionally, as also the sorts and numbers of trees in each, from two or three to ten or more: likewise the form of the clumps; some may be triangular, others quadrangular, pentangular, &c. and some in curves, others in straight lines, to cause the greater variety. And as to the shrubby clumps, and wilderness compartments, where the trees and shrubs are employed promiscuously together, they may be planted from five to ten feet distant; the taller growth being placed backward eight or ten feet asunder, placing the lower plants gradually forward according to their gradation of stature, to the lowest in front, as above observed, at four or five feet distance: and if the trees and shrubs of the plantations in general are disposed somewhat in the quincunx way, they will appear to the greater advantage.

But when designed to form large plantations into woods, &c. composed principally of forest and timber-trees for profit, particular sorts must be chosen, consisting both of deciduous and ever-green trees. Of the deciduous kinds chusing the oak, elm, ash, beech, chestnut, hornbeam, birch, alder, maple, sycamore, plane-tree, poplar, lime-tree, walnut-tree, wild cherry-tree, mountain-ash, larch-tree, willow-tree, hazel-tree, &c. and of the ever-greens, the pine-trees, firs, cedar of Lebanon, holly-tree, bay-tree, laurel-tree, yew-tree, ever-green oak, box tree, and some others. The particular description and culture of all which sorts, deciduous and ever-greens, are exhibited in their proper genera. They are all hardy, and will grow in almost any common soil, rich or poor, and mostly also in dry or moist ground, high or low; allotting, however, particular sorts to very low marshy soils, such as the willow, fallow, and osier, poplar, alder, and other aquatics, which will prosper in places that are in a manner

covered with water, and are the most proper sorts for the embellishing and improvement of such grounds: all the other sorts will succeed in any other more upland places out of water; observing, with respect to disposition, the deciduous and ever-greens should generally be separate, as observed for the ornamental plantations. But the trees of the same tribe may sometimes be intermixed, and sometimes different sorts in separate divisions or quarters, as oaks in one, elms in another, &c. remarking likewise in timber plantations, that all the trees should be planted pretty close together, i. e. not more than three or four feet distance, in order that they may mutually draw each other up tall, more expeditiously, and to allow for a gradual thinning, as hereafter directed.

In forming woods, however, or plantations of timber-trees, the following hints in respect to planting them are proper to be observed.

Let it therefore be remarked, that there are two methods practised in forming plantations of woodlands; one is by raising the trees from seed at once on the ground where the plantation is intended to be, especially of the deciduous kind, and is effected by sowing the seed in drills, a yard asunder, and the plants always to remain where raised, thinning them gradually: the other method is by previously raising the plants in a nursery, till two or three feet high, then transplanting them into places allotted them, in rows of the above distance, to allow also for gradually thinning.

Either of these two methods may be practised, as shall seem most convenient to the owner; but the former, namely, raising the plants where they are to remain, although it may be more expeditious, and at once get rid of the trouble of transplantation, yet they will require greater attendance for a few years, till the plants have shot up out of the way of weeds; but on the other hand, the trees always remaining where raised, not disturbed by removal, probably may make the greater progress. The latter method, however, of raising the trees first in a nursery, is rather the most commonly practised, as being thought the least troublesome and expensive, with re-

gard to the attendance at first of the young growth. However, every one is at liberty to make the experiment as it suits his convenience.

The preparation of the ground for the final reception of the seed or plants of these plantations, is by deep ploughing and harrowing, upon such ground where the plough can be employed; where this, however, or any other tillage, is not practicable, we must use only young plants from the nursery, making holes, &c. at proper distances, for the reception of each plant: where, however, the ground can be tilled, it will prove very advantageous, performing it previously a year at least before; sowing it with a crop of turneps, or the like: when these come off, well plough and harrow the ground again, for the reception either of the seed or plants the ensuing season.

The most proper season to perform this planting, either by seed or plants, is any time in dry mild weather, from October or November till February, though November and February are rather the most eligible for most kinds of hardy tree seeds: however, where large tracts are to be planted, both methods must be pursued all winter, at every favourable opportunity.

If seed is intended, you must be well provided with seeds of the several deciduous trees in particular, which may be obtained at all the nurseries and eminent seed-shops; then, for its reception, draw furrows or drills about two or three inches deep, and three or four feet asunder, scatter the seed along the middle of the drills, and cover the earth evenly over them, the depth of the drills or furrows, and place scarecrows and traps to guard against the insults of birds and vermin.

But if designed to form the plantation with young plants, previously raised in beds in the nursery by the common method, let the following practice be observed: Choose always young plants, only from two to three or five or six feet high; and if very large plantations are intended, you may, to save time and trouble, take the plants immediately from the seed-bed, when one or two feet high, without giving them any previous transplantation in the nursery; though where the plantations are but moderate, it is most eligible

eligible to plant them out previously in nursery-rows, to have two or three years growth: but for remarkable large plantations, this would be a very great trouble and expence. Being, however, furnished with young plants, they are to be planted in rows, three or four feet asunder, as directed for the seed, and one or two feet apart in the lines: they may be planted either by opening small apertures or holes with the spade for each plant; or, if very small plants, it is sometimes performed by making only a slit or crevice with the spade for each plant; and some open small trenches the whole length, then one inserts the plants whilst another trims in the earth about their roots: some again, in very large tracts, where the situation admits of good ploughing and harrowing to divide and break the earth into small particles, open furrows with a plough, two persons being employed in depositing the trees in the furrows, whilst the plough following immediately with another furrow, covers the roots of the plants with the earth thereof.

The ground where the above plantations are made should be previously fenced all round with a deep ditch, &c. to guard against the encroachments of cattle.

Whilst these plantations are young, they must have some attendance to destroy weeds, which may be expeditiously executed by hoeing between the rows in dry weather, particularly by horse-hoeing; and this care will be needful for two or three years, especially the seedling plantations, till the trees are advanced out of the reach of weeds; after which no farther trouble will be required until the trees are ready for the first fall or thinning, for poles, faggots, &c.

In eight or ten years growth, they will be of a proper size to begin the first fall by a moderate thinning, which will serve for poles and faggot-wood, to pay towards the expence of planting, &c. but begin lopping only part of the plantation the first year; thinning out the weakest and most unpromising growth first; leaving a sufficiency of the most vigorous plants pretty close, to grow up for larger purposes; the year following begin thinning another part, and so continue an

annual thinning—fall till got through the whole plantation; cutting each fall down near the ground, leaving the stools to shoot out again, especially of the deciduous kinds, and by that time you have made the last fall, the first will have shot up, and ready to be cut again; so the returns of fallings may be contrived to be every six, seven, eight, or ten years, or more, according to the uses the poles or wood are wanted for; and if larger poles, &c. are wanted, the fall may be only once in fourteen, eighteen, or twenty years, still, at every fall, being careful always to leave enough of the most thriving plants for final standards; leaving them pretty close at first, that they may mutually draw each other up in height; but may be thinned every succeeding fall as they encrease in bulk, and meet, so as to leave a sufficient quantity of the principal trees at proper distances to grow up to timber, which, in their turn, as they become fit for the purposes intended, may also be telled according as there may be a demand for them to the most advantage; leaving young ones from the stools coming up in proper succession as substitutes, so as the ground may be always occupied.

PLANTING. Planting is the art of inserting plants, seeds, and roots, in the earth, for the purpose of vegetation.

There are various methods of planting in practice for different sorts of plants, seeds, and roots; such as hole planting, trench planting, trenching-in planting, slit or crevice planting, holeing-in planting, drill planting, bedding-in planting, furrow planting, dibble planting, planting with balls of earth about the root, planting in pots, &c. all of which methods of planting are occasionally used by different practitioners in the several branches of gardening, according as the several methods shall seem most eligible for different of particular sorts of plants.

1. *Hole-Planting.*—This is the principal method practised in the final planting of all sorts of trees and shrubs in the full ground, by opening with a spade round holes in the ground, at certain distances, one for the reception of each plant. Each hole should be digged capacious enough to admit all the roots of the tree or shrub freely
every

every way to their full spread, without touching the sides of the hole, and about one spade deep, or a little more or less, or according to the size of the roots, so as, when planted, the uppermost ones may be only about three inches below the common surface, or about as low as they were before in the ground, which is discoverable by examining the bottom of the stem of the tree; though in very moist soils, where the water is apt to stand, the holes should rather be shallow, so as the uppermost roots may stand full as high as the general level, or higher if it shall seem necessary, raising the ground about them, especially in winter planting: let the holes, however, be of a proper width and depth, according to the above rules, loosening the bottom well; and if too deep, it is easily remedied in the time of planting, by shaking up the tree as you shall see occasion; observing in digging out each hole, to lay the earth in a heap close to the edge, in order to be ready to fill in again: the holes being ready, then, having trimmed the roots, &c. of the trees, place one tree in the middle of the hole, making all its roots spread equally around, a person holding the plant erect by the stem, whilst another with his spade casts in the earth about the roots, taking particular care to break all large clods, and trim in some of the finest mould first all round about the roots in general, shaking the tree occasionally, to cause the fine soil to fall in close among all the small roots and fibres; at the same time, if the tree stands too deep, shake it up gently to the proper height, and having filled in the earth to the top of the hole, tread it gently all round, first round the outside to settle the earth close to the extreme roots, continuing the treading gradually towards the stem, to which tread the mould moderately firm, but no where too hard, only just to settle the earth, and steady the plant in an upright position: then pare in all the remaining earth evenly round the tree, to the width of the hole, raising it somewhat above the general level of the ground, to allow for settling, giving it also a gentle tread, and finish it off a little hollow at top, basin-like, the better to receive and retain the moisture from

rains, and occasional waterings in spring and summer, particularly to the choicer kinds of trees and shrubs.

After performing this planting, if in winter, or late in spring, it may be of advantage to the choicer kinds of trees and shrubs to mulch them, i. e. to lay some long mulch at top of all the earth, both to keep out the winter's frost, and prevent the drying winds and drought of spring and summer from penetrating to the roots before the trees are well rooted in their new quarters. But some, instead of mulch, use grass turfs, turned topsy-turvy, especially when planting upon any grass ground, or any out-plantations where turfs of grass can be obtained; or in orchards, where the ground is grass; in which case it may be proper to bank some turfs round the sides and top of each hole, particularly for large trees, which will steady them more effectually, as well as preserve the moisture, if much dry weather should happen the succeeding summer.

The above work, however, of mulching or turving new-planted trees, is not absolutely necessary to our common hardy kinds of fruit-trees, forest-trees, and shrubs; though it may prove beneficial to all sorts, but more particularly to the more tender kinds of wall fruit-trees, and more delicate sorts of flowering-shrubs, choice ever-greens, and some kinds of herbaceous perennials.

2. *Trench Planting.*—This method is sometimes practised in the nursery-way, in putting out seedling and other small trees and shrubs in rows; is also used for planting box edgings; sometimes likewise for planting small hedge-sets, &c. and always in planting *Asparagus*, and is performed by opening a long narrow trench with a spade, making one side upright, so place the plants against the upright side, and turn the earth in upon their roots.

3. *Trenching-in Planting.*]—This is also sometimes practised in light pliable-working ground, for planting young trees in the nursery-way, and sometimes in planting hedge-sets, &c. and is performed by digging along by a line, about one spade wide, and planting as you go on. The method is this: a line is set, then having the plants ready, and with your spade beginning

ginning at one end, and standing sideways to the line, throw out a spit of earth, which forming a small aperture, another person being ready with the plants, he directly deposits one in the opening, whilst the digger proceeds with the digging one spade wide, covers the roots of the plants with the earth of the next spit; and another aperture being thereby also formed, place therein another plant, the digger still proceeding, covers its roots, as before, with the next spit of earth, and so on to the end of the row; placing them at about a foot, or fifteen or eighteen inches asunder, according to the size of the plants; observing, when planting larger trees with more spreading roots, by this method, that instead of digging the trench only one spade wide, two may probably be requisite for the proper reception of the roots; likewise in forming the opening for each plant, make it capacious enough to receive the roots freely, digging the earth over them as above. After having planted one row, either small or large plants, tread the earth evenly along to settle it to the roots, and steady the plants all equally upright.

4. *Slit Planting.*—This method is performed by making slits or crevices with a spade in the ground, at particular distances, for the reception of small trees and shrub plants. A slit being made for each plant, which are inserted as you go on; and is practised sometimes in the nursery-way, &c. in putting out rows of small plants, suckers, &c. at from about a foot to eighteen inches or two feet high, and that have but small roots; it is also sometimes practised for final planting in out-grounds, where very large tracts of forest-trees are intended, and that they are to be planted out at the above sizes, and by the most expeditious and cheapest method of planting; the following is the method.

A line is set, or a mark made accordingly; then having a quantity of plants ready, for they must be planted as you proceed in making the slits, a man therefore having a good clean spade, he strikes it into the ground with its back close to the line or mark, forms a crevice, taking it out again directly, so as to leave the slit open, gives another stroke at right angles with the first,

then the person with the plants inserts one immediately into the second-made crevice, bringing it up close to the first, and directly presses the earth close to the plant with the foot; proceeding in the same manner to insert another plant; and so on till all is finished, which is a very expeditious way of putting out small plants, for any considerable plantation.—A man and a boy by this method will plant ten or fifteen hundred, or more in a day.

5. *Hole-in Planting.*—This is sometimes used in the nursery-way in light loose ground, also sometimes in planting potatoes, &c. in pliable soils.

The ground being previously digged or trenched, and a line placed, they proceed thus: a person with his spade takes out a small spit of earth, to form a little aperture, in which another person directly deposits a plant, &c. the digger at the same time taking another spit at a little distance, turns the earth thereof into the first hole over the roots, placing directly another plant in this second opening, the digger covers it with the earth of a third, and so on to the end of the row.

6. *Drill Planting.*—This is by drawing drills with an hoe from two to four or five inches deep, for the reception of seeds and roots, and is a commodious method of planting many sorts of large seeds, such as walnuts, chestnuts, and the like; sometimes also broad beans, but always for kidney-beans, and peas: likewise for planting many sorts of bulbous roots, when to be deposited in beds by themselves.

The drills for all which purposes should be drawn with a hoe, two or three inches deep; though for large kinds of bulbous roots, four or five inches depth will be requisite, covering in the seeds and roots with the earth, always the depth of the drills.

7. *Bedding in Planting.*—This is frequently practised for planting the choicer kinds of flowering bulbs, such as *Hyacinths*, &c. also for larger seeds of trees, as acorns, large nuts, and other larger kinds of seeds, stones, and kernels, and is performed by drawing the earth from off the tops of the beds some inches depth, then planting the seeds or roots, and covering them over with the earth, drawn off for that purpose; after the following method:

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The ground must be previously digged or trenched, raked, and formed into beds three or four feet wide, with alleys between bed and bed; then with a rake or spade trim the earth evenly from off the top of the bed into the alleys, from three to four or five inches deep for bulbous roots, and for seeds, one or two, according to what they are, and their size; then, if for bulbous roots, draw lines along the surface of the bed, nine inches distance, place the roots bottom downward, along the lines, six or eight inches apart, but, if seeds, they may be scattered promiscuously; and having thus planted one bed, then with the spade, let the earth that was drawn off into the alley, be spread evenly upon the bed again over the roots or seed, &c. being careful to cover all equally the above depth, and to rake the surface smooth.

This method is much in practice among florists for the choicer sorts of bulbous flowers.

The nurserymen also practise this method in planting many of their larger seeds, nuts, &c.

8. *Furrow Planting.*]—This is by drawing furrows with a plough, and depositing sets or plants in the furrow, covering them in also with the plough, and is sometimes practised for planting potatoe-sets in fields, and has been practised in planting young trees for large tracts of forest-tree plantations, where the cheapest and most expeditious method is required; but this method can be practised only in light pliable ground, and is performed thus: A furrow being drawn, one or two persons are employed in placing the sets or plants in the furrow, whilst the plough following immediately with another furrow, turns the earth thereof in upon the roots of the plants.

9. *Dibble Planting.*]—This is the most commodious method for planting most sorts of fibrous-rooted seedling plants, particularly all the herbaceous tribe; also for planting slips, off-sets, and cuttings, both of herbaceous and shrubby kinds; likewise for some kinds of seeds and roots, such as broad-beans, potatoe-sets, Jerusalem artichokes, and horse-radish-sets, with numerous sorts of bulbous roots, &c. and is expeditiously performed with a dibble or setting-stick, therewith making a nar-

row hole in the earth for each plant, inserting them in each hole, always as you go on; observing the following hints:

Having a dibble, or setting-stick, it is used by thrusting it into the earth in a perpendicular descent, in depth as the particular plants, &c. may require; directly inserting the plant, seed, or set, according as each hole is made, closing the hole immediately by a stroke of the dibble. So proceed dibbling the holes, and planting as you go on, at particular distances and depths, according to the nature of the plants, &c. observing, in setting any kind of plants, slips, cuttings, and the like, having long shanks or stems, it is proper to make holes a proper depth, to admit them some considerable way in the ground; for example, cabbage-plants, savoy, &c. should be planted down to their leaves; slips and cuttings should be inserted two parts of three, at least, in the ground; being particularly careful, in dibbling in all sorts of plants, to close the holes well in every part about the roots, by striking the dibble slantways into the ground, so as to strike the mould first firmly up to the root and fibres, at the same time bringing it close to the stem; for in dibble planting, many only strike the earth about the neck of the plant, and the lower part of the hole is often left hollow about the roots; but by striking the dibble first at the root part, you fix the plant effectually, then a stroke of the dibble at the top of the ground finishes, by closing up every part of the aperture. In this manner continue planting and finishing each hole as you go on, perfectly close, that neither the sun, air, nor penetrating winds, can enter, this being of much importance, but often disregarded, as we may often see the holes that are necessarily made in fixing the plants left open, though each hole at the insertion of its plant, at one stroke of the dibble, may be closed with the utmost facility.

10. *Planting with Balls of Earth about the Roots.*]—This is the removing a plant with a large ball of earth about its roots, so as the plant by having its roots firmly attached to the surrounding ball of earth, it still, during the operation, continues its growing state without receiving any or but very little check

check from its removal; and is often practised more particularly to the more delicate and choicer kinds of exotics, both trees, shrubs, and herbaceous plants: likewise when intended to remove any sort of tree or plant out of the proper planting season, as very late in the spring, or in summer, it is eligible to transplant it with a good ball of earth, to preserve it more certainly in a state of growth. Observing, some trees and shrubs are more difficult to remove with a ball than most kinds of herbaceous fibrous-rooted plants, tho' many of the tree and shrub kinds, having very fibrey roots, they will also readily rise with good balls.

But when trees or shrubs, with balls to their roots, are intended to be sent to any considerable distance, they should be placed in osier baskets, in order to preserve the cohesion of the ball, having a basket for each tree.— In planting them, if they cannot be readily moved out of the baskets without disturbing the ball of earth, plant basket and all; cut it here and there in the sides, and throw some fine mould close all round so as to join with that of the ball, and give a watering to settle it more effectually close; the roots and fibres will readily make their way through the sides of the basket; besides, the baskets will soon rot, without proving any obstruction to the growth of the plants.

The advantage in planting with balls, either in the full ground, or in pots, is, the root of the plant being enclosed in the ball of earth continues all the while drawing nourishment, and the growth of the plant is not retarded in waiting till it has taken fresh root in its new place, which may be of advantage in many places, particularly all tender plants, some of our choicest ever-greens, and many kinds of herbaceous flower plants.

But planting with balls is not recommended for general practice; for all the hardy tree and shrub kind, it would be needless as well as very expensive and troublesome.

11. *Planting in pots.*—This is practised to all tender exotics, in order for moving them to shelter occasionally, such as all kinds of green-house and hot-house plants; and it is likewise practised for many sorts of hardy flower-

ing-plants, for the convenience of moving some curious sorts when in flower to occasional shelter from the sun's rays, and excessive rains, in order to preserve their beauty, and prolong the time of their bloom; such as the fine auriculas, carnations, &c.

In planting in pots, it is highly requisite carefully to adapt the sizes to the size and nature of the different plants intended to be potted; if small plants, begin first with small pots, one plant only to each pot, especially if to remain; but according as the different plants advance in growth, shift them into pots one or two sizes larger, which may be requisite to many sorts once a year, to others once in two or three years, according to the nature and increased growth of the respective plants; though to some sorts of annuals it may be necessary once or twice in the course of a season; all of which is generally particularized in the culture of the various sorts. And by thus beginning first with small pots adapted to the size of the plants, it is not only cheaper and more commodious for moving and stowing them in different parts occasionally, till they gradually advance in growth, but by thus shifting them into pots a size larger, it admits of adding fresh earth, which proves highly beneficial to their growth.

Garden pots, for the reception of plants, are of several regular sizes, from two to sixty in a cast, so are distinguished at the pot-houses accordingly, as twos, sixes, twelves, sixteens, twenty-fours, thirty-twos, forty-eights, sixties, or sixty-fours, &c. in each cast; each pot having one or more apertures at bottom to discharge the superfluous moisture. They are sold by the potters at so much per cast, large and small, all of a price; those of only two in a cast the same as those of sixty; and from two shillings to half a crown per cast is the general price.

But, with respect to the particular method of planting in pots in general, the following particulars are necessary to be observed.

Having the pots and mould ready for the reception of the intended plants, observe, previous to planting them, to place some pieces of tile, potsherds, or oyster-shell over each hole at the bottom of the pots, both to prevent the holes

being clogged and stopped with the earth, and the earth from being washed out with occasional watering; also to prevent the roots of the plants getting out; then having secured the holes, put some earth in the bottom of each pot, from two or three to five or six inches or more in depth, according to the size of the pot, and that of the roots of the plant; this done, insert the plant in the middle of the pot upon the earth, in an upright position, making its roots, if without a ball of earth, spread equally every way, directly adding a quantity of fine mould about all the roots and fibres, shaking the pot to cause the earth to settle close thereto; at the same time, if the root stand too low, shake it gently up as you shall see occasion; and, having filled the pot with earth, press it gently all round with the hand, to settle it moderately firm in every part, and to steady the upright posture of the plant, raising the earth however within about half an inch, or less, of the top of the pot, it will settle lower; for some void space at top is necessary to receive waterings occasionally: as soon as the plant is thus potted, give directly a moderate watering, to settle the earth more effectually close about all the roots, and promote their rooting more expeditiously in the new earth; repeating the waterings both before and after they have taken root, as occasion requires.—Mawe.

Observations on planting Trees in general.

The first thing in the planting of trees is to prepare the ground (according to the different sorts of trees you intend to plant) before the trees are taken out of the earth; for you should suffer them to remain as little time out the ground as possible.

In taking up the trees, you should carefully dig away the earth round their roots, so as to come at their several parts to cut them off; for if they are torn out of the ground without care, the roots will be broken and bruised very much, to the great injury of the trees. When you have taken them up, the next thing is to prepare them for planting; in doing of which, there are two things to be principally regarded; the one is to prepare the roots, and the other to prune their heads in such a manner, as may be

most serviceable in promoting the future growth of the trees.

And first, as to the roots; all the small fibres are to be cut off as near to the place from whence they are produced as may be (excepting ever-greens, and such trees as are to be replanted immediately after they are taken up;) otherwise the air will turn all the small roots and fibres black, which, if permitted to remain on when the tree is planted, will grow mouldy and decay; and thereby greatly injure the new fibres which are produced, so that many times the trees miscarry for want of duly observing this. After the fibres are cut off, you should prune off all the bruised or broken roots smooth, otherwise they are apt to rot, and distemper the trees; you should also cut out all irregular roots which cross each other, and all downright roots (especially in fruit-trees) must be cut off; so that when the roots are regularly pruned, they may in some measure resemble the fingers of a hand when spread open; then you should shorten the larger roots in proportion to the age and strength of the tree, and also the particular sorts of trees are to be considered; for the walnut, mulberry, and some other tender-rooted kinds, should not be pruned so close, as the more hardy sorts of fruit or forest-trees, which in young fruit-trees, such as pears, apples, plumbs, peaches, &c. that are one year old from budding or grafting, may be left about eight or nine inches long, but in older trees they must be left of a much greater length; but this is to be understood of the larger roots only, for the small ones must be cut quite out, or pruned very short. Their extreme parts, which are generally very weak, commonly decay after moving, so that it is the better way entirely to displace them.

The next thing is the pruning of their heads, which must be differently performed in different trees, and the design of the trees must also be considered; for if they are fruit-trees, and intended for walls or espaliers, it is the better way to plant them with the greatest part of their heads, which should remain on until the spring, just before the trees begin to shoot; when they must be cut down to five or six eyes, being very careful, in doing of this,

this not to disturb the new roots. But if the trees are designed for standards, you should prune off all the small branches close to the places where they are produced, as also irregular branches which cross each other; and by their motion, when agitated by the wind, rub and bruise their bark, so as to occasion many times great wounds in those places; besides, it makes a disagreeable appearance to the sight, and adds to the closeness of its head, which should be always avoided in fruit-trees, whose branches should be preserved as far distant from each other, as they are usually produced when in a regular way of growth (which is in all sorts of trees proportionable to the size of their leaves and magnitude of their fruit.) But to return: After having displaced these branches, you should also cut off all such parts of branches as have by any accident been broken or wounded; for those will remain a disagreeable sight, and often occasion a disease in the tree. But you should by no means cut off the main leading shoots, as is by too many practised, for those are necessary to attract the sap from the root, and thereby promote the growth of the tree.

Having thus prepared the trees for planting, we must now proceed to the placing them into the ground; but before this, we would advise, if the trees have been long out of the ground, so that the roots are dried, to place them in water eight or ten hours before they are planted, observing to put them in such manner, as that their heads may remain erect, and their roots only immersed therein, which will swell the dried vessels of the roots, and prepare them to imbibe nourishment from the earth. In fixing of them, great regard should be had to the nature of the soil, which, if cold and moist, the trees should be planted very shallow; as also, if it be a hard rock or gravel, it will be much the better way to raise a hill of earth where each tree is to be planted, than to dig into the rock or gravel, and fill it up with earth (as is too often practised,) whereby the trees are planted as it were in a tub, there being but little room for their roots to extend; so that after two or three years growth, when their roots have extended to the sides of the hole, they are stopped by the rock or gravel, so can get no farther, and the trees will decline, and

in a few years die. But when they are raised above the surface of the ground, their roots will extend, and find nourishment, though the earth upon the rock or gravel be not three inches thick, as may be frequently observed, where trees are growing upon such soils.

Having thus planted the trees, you should provide a parcel of stakes, which should be driven down by the sides of the trees, and fastened thereto to support them from being blown down, or displaced by the wind, and then lay some mulch upon the surface of the ground about their roots, to prevent the earth from drying.

This is to be understood of standard trees, which cast their leaves; for such as are planted against walls, should have their branches fastened to the wall to prevent the trees from being displaced by the wind, and place their roots about five inches from the wall, inclining their heads thereto; and the spring following, just before they shoot, their heads should be cut down to five or six buds.

As to the watering of all new-planted trees, we should advise it to be done with great moderation, nothing being more injurious to them than over-watering. Examples enough of this kind may have been seen in many parts of England; and by an experiment made by the late Rev. Dr. Hales, in placing the roots of a dwarf Pear-tree in water, the quantity of moisture imbibed decreased very much daily, because the sap-vessels of the roots, like those of the cut-off boughs in the same experiment, were so saturated and clogged with moisture, by standing in water, that more of it could not be drawn up. And this experiment was tried upon a tree, which was full of leaves, and thereby more capable to discharge a large quantity of moisture than such trees as are entirely destitute of leaves; so that it is impossible such trees can thrive, where the moisture is too great about their roots.

The distance which trees should be planted at, must be proportioned to their several kinds, and the several purposes for which they are intended; but fruit-trees, planted either against walls, or for espaliers, should be allowed the following distances: for most sorts of vigorous-shooting pear-trees, thirty-

six or forty feet; for apricots, sixteen or eighteen feet; apples, twenty-five or thirty feet; peaches and nectarines, twelve feet; cherries and plumbs, twenty-five feet, according to the goodness of the soil, or the height of the wall.

It is common to hear persons remarking, that from the present spirit of planting, great advantages will accrue to the public by the increase of timber; but whoever is the least skilled in the growth of timber, must know, that little is to be expected from most of the plantations which have lately been made; for there are few persons who have had this in their view when they commenced planters, and of those few scarce any of them have set out right; for there never was any valuable timber produced from trees which were transplanted of any considerable size, nor is any of the timber of the trees which are transplanted young, equal in goodness to that which has grown from the seeds unremoved. Beside, if we consider the sorts of trees which are usually planted, it will be found, that they are not designed for timber; so that upon the whole, it is much to be doubted, whether the late method of planting has not rather been prejudicial to the growth and increase of timber than otherwise.

Most people are so much in a hurry about planting, as not to take time to prepare their ground for the reception of trees, but frequently make holes and stick in the trees, amongst all sorts of rubbish which is growing upon the land: nor has any care been afterward taken to dig the ground, or root out the noxious plants; but the trees have been left to struggle with these bad neighbours, which have had long possession of the ground, and have established themselves so strongly, as not to be easily overcome; therefore what can be expected from such plantations?—This is to be understood of deciduous trees; for the pines and firs, if once well rooted in the ground, will soon get the better of the plants and destroy them.

Every person who proposes to plant, should prepare the ground well beforehand, by trenching or deep ploughing it, and clearing it from the roots of all

bad weeds, for by so doing there will be a foundation laid for the future success of the plantation. Also we advise no person to undertake more of this work than he can afterward keep clean, for all plantations of deciduous trees will require this care, at least for seven years after they are made, if they hope to see the trees thrive well. Therefore all small plantations should have the ground annually dug between the trees, and as to those which are large, it should be ploughed between them. This will encourage the roots of the trees to extend themselves, whereby they will find a much greater share of nourishment, and by loosening of the ground, the moisture and air will more easily penetrate to the roots, to the no small advantage of the trees. But besides this operation, it will be absolutely necessary to hoe the ground three or four times in summer, either by hand or the hoe-plough. This will be objected to by many, on account of the expence; but if the first hoeing is performed early in the spring, before the weeds have gotten strength, a great quantity of ground may be gone over in a short time; and if the season is dry when it is performed, the weeds will presently die after they are cut; and if this is repeated before the weeds come up again to any size, it will be found the cheapest and very best husbandry; for if the weeds are suffered to grow till they are large, it will be a much greater expence to root them out and make the ground clean; beside, the weeds will rob the trees of great part of their nourishment. We have sometimes been told, that it is necessary to let the weeds grow among trees in summer, in order to shade their roots, and keep the ground moist; but this has come from persons of no skill. For if weeds are permitted to grow, they will draw away all moisture from the roots of the trees for their own nourishment, so that the trees will be thereby deprived of the kindly dews and gentle showers of rain, which are of great service to young plantations; and these will be entirely drawn away by the weeds, which will prevent their penetrating of the ground, so that it is only the great rains which can descend to the roots of the trees. And whoever has the least doubt of this matter,

if they will but try the experiment, by keeping one part of the plantation clean, and suffer the weeds to grow on another, they will soon be convinced of the truth by the growth of the trees. And though this cleaning is attended with an expence, yet the success will overpay this, beside the additional pleasure of seeing the ground always clean.

PLIANT MEALLY TREE. See WAY-FARING TREE.

PLOUGHING. Ploughs seem to have been invented in the rudest times, and, till very lately, to have had little improvement. What has been done on this head, however, by some ingenious persons within these few years, shews what is practicable; and we hope will lead others to the same useful pursuit.

The first kind of tillage was probably with the spade, and were that as convenient for large quantities of ground, as it is useful where it can be properly employed, no instrument in the world could be compared to it.— But when whole fields came to be turned up and tilled, it was natural to devise some method of saving the labour of men; and consequently, the plough which may be called a kind of spade drawn by horses, was invented.

As this was more and more frequently used, its form became probably a little altered, but improvements have been in nothing so slow: and this instrument, of such universal use, and vast advantage and importance to mankind, is still capable of many more; and it still wants them.

All tillage, it is evident, has its advantage from dividing and breaking the earth into a great many parts. The spade, as it is wrought by the hand of the workman, does this most perfectly, and it is for this reason that gardens are more fertile than fields; but it may not be impossible, if proper persons will set themselves about it, now that they know in what the greatest perfection of tillage consists, to make the plough, by more improvements, equal its effect.

The advantage of the spade over the plough is, that it goes deeper, and divides the land into more particles, and smaller: but the plough, when its structure shall be fully perfected, is

certainly capable of this. The four-coultered plough is an excellent contrivance, and shews, that there is nothing impracticable in the thought of forming a plough that shall go deeper, and divide the earth as much or more than the spade.

The ancient plough, according to the best accounts we have of it, had no coulter, nor earth-board, for the share, always going obliquely, served as an earth-board; and the two ears which were the corners of a piece of wood lying under the share, did the office of ground wrests.

This sort of plough is used in Italy, and even in some parts of France at this time. It serves for the turning up of light land, but it would do nothing with our stiff and tough soil in many counties.

This, so far as we know, was the first and original plough, and it is a very plain and simple contrivance. It did the office for which it was intended, in the place where it was invented; but it was not fit for other lands, and other countries, and therefore it was altered.

In those parts of Italy, where the soil is perfectly soft and mellow, this instrument does very well to keep it in tillage; but even in these favourable lands it is very unfit for the bringing them into this condition; for when they have lain in grass, and have any turf upon them, it is very difficult to manage them with it. They are obliged to go two or three times over the land before the turf is all broken.

These ploughs, for want of a coulter to cut the turf, tear it to pieces with great awkwardness and difficulty, but when it is once cut through, the soil being soft and tender, they easily get deeper.

As our soil is very different from that of those countries, our ploughs are necessarily made different, for otherwise they could not cut it. The necessity of a coulter to ours is very plain, because of the thickness to be cut, and that necessity was doubtless the mother of the invention. Our ploughs, when well made, cut off the furrow at the bottom flatwise, and therefore it is as thick on the land side as on the furrow side: but the plough cannot break it off from the whole land at such a thickness,

Ploughing is in the improved fashion, see under the title Plough.

thickness, so that there must be a coulter to cut it off. By this means the furrow is turned perfectly whole, and no part of the turf of it is broken.— Hence if it lie long without new turning, the grafs from the edges will spread, and form a new turf or sward on the other side, which was the bottom of the furrow before turning, but is now become the surface of the earth.

If the land be left thus, it will soon be greener with grafs than it was before ploughing, and the grafs, spreading its roots, will bind it firmly and toughly together; so that there will require a great deal of time and labour to bring it into a condition for the service it is intended to answer.

This has shewn the insufficiency of the common plough, and from a sense of this, has arisen the invention of the four-coulted kind, to be described hereafter. Several others have been devised to answer the same purpose, but none succeed so well.

Of the several kinds of Ploughs in common use in England.

The common plough differs very much in shape and form in various places; partly according to the fancy of the people, and partly to the nature of the ground. Some have longer and some shorter beams; and there are great varieties in the length and form of the share, the coulter, and the handles.

In general, without regarding the customs of particular places, there is great reason to have respect to the nature of the soil on which it is to be used. Thus, in general, the plough that is for stiff clay should be long, large, and broad, with a deep head, and square earth-board, so that it may turn up a large furrow. The coulter should be long, and very little bending, with a very large wing; and the foot long and broad, so as to make a deep furrow. The plough for moderate soils should be somewhat smaller than the former, but broad at the breech; the coulter should be long and more bending, and the share narrow, with a wing coming up to arm and defend the earth-board from wearing. The plough for light soils, such as sandy and the like, should be lighter and smaller than any of these. The

coulter should be more circular and thinner, and the wing not so large.

This is a direction contained in a small compass, yet it will give the farmer the general rule for his conduct in this respect: let him consider his soils under these three heads of heavy, moderate, and light, and in this general manner suit the bulk and fabric of his plough to them, and he will never make any great errors.

Ploughs are sometimes made with wheels, and sometimes without, but in general the wheels are a very great advantage; there are circumstances in which they are troublesome, and therefore it is fit they should be in some ploughs omitted.

The plough, which, from its great advantage above the others, might be esteemed the first great improvement in England, is the wheel-plough; that from the place where it was first used has been long called the Hertfordshire plough. This consists of a beam and handle, a neck, an earth-board, a sheath, a share, a coulter, a pin, pillow, and wheels.

This Hertfordshire plough, or common wheel-plough, as it is usually made, is very strong, and is serviceable for most uses: it is very easily managed, it follows the horse lightly, and it suits almost every kind of land. The greatest exception to its use is in miry clay in winter; because the wheels cut into them, and clog and stick when they are work'd at that time of the year. This is fit for that sort of ground when summer fallows are to be ploughed, and when a grafs ground is to be turned up for arable, for it turns the turf very well, and is very fit for uneven ground, and for the driest summer weather. Some make this plough in the original manner, with the handle sloping of one side, but this renders it troublesome to hold, or to follow; the remedy was very easy, and people, not bigotted to foolish customs, have improved it greatly by making it straight.

This is in a manner the general plough used at this time, and it is varied more or less, but never much, according to the pleasure of the owner, or fashion of the place.

The Essex plough, (for the best way to distinguish these instruments is according to the places where they are used)

used) has its earth-board, if the expression may be allowed, made of iron; by this means they make it rounding, and this has a great advantage in the turning of the turf; they generally make it light and fine, and the wheels proportioned. It is in this way very fit for light soils, and rids a great deal of business. We do not mean by calling this the Essex plough, that they use no other in that country; but that is the place where this kind is most used, and seems to have been invented.

The Lincolnshire plough owes its invention and form also to the general nature of the soil of that county. The fen land of that place is light, soft, and mellow, free from stones, and naturally over-grown with weeds and sedge on the surface; for this land they use a plough with a circular turning coulter, and a large sharp share; this is often a foot broad, and quite sharp at the edge. This plough has no wheels. There is a foot at the fore part of the beam, which they set higher or lower with a wedge, and by that means they keep the fore part of the plough from going deeper than they chuse. And they have also wedges for setting the hinder part where the handle joins the beam. The coulter stands in its usual place before the share, and is a round iron wheel, with a sharp edge, that turns upon an axle as the plough moves, and cuts through the roots of the sedge and grass as it goes round, while the broad share cuts the bottom. This would not do on other land, but where the soil is of this free and fine kind, and is thus covered with a tough and tangled matting of roots, it answers the purpose excellently.

The dray or drag plough was at one time, in a manner, universal, and there is no particular place where it can be said to be most in use at this time; for it is retained in some, and rejected in others, according to the sense and spirit of the farmers in adopting improvements. It is a very plain and simple kind; but notwithstanding the advantage the others have over it, on many occasions, this still excels them all, for wet clays in the winter ploughings; for having the least workmanship of any, it is the least apt to clog, and having the fewest parts it is fittest for such ground, where nothing

is required but going on, and turning up. It is limited to this use; for on other soils, and at other seasons, it is very much inferior to the other kinds. This plough has no wheels, and it consists of a beam, handle, earth-board, and share, and is set higher or lower, as they find occasion, by wedges at the sheath.

In some counties they have a plough with one wheel; it is a very ill-contrived, and very inconvenient instrument. 'Tis broad in the breech, and therefore it draws very heavily. It is a clumsy and ill-contrived kind, that is growing out of use; and of all the ploughs that have been invented, is the least worth introducing any where.

The largest kind of plough used in England, or perhaps in any part of the world, is that which, in some parts of the county of Cambridge, they use for cutting of drains. This is of the shape of the common plough, and has no wheels: it is very bulky in all its parts, and has two coulters; one of these is fixed in the beam as usual, and the other in a piece of wood, fastened to the beam for that purpose; these both turn inwards, and cut each side of the trench. The share is very broad and flat, and cuts the bottom of the trench. The earth-board is three times as long as in other ploughs, and casts the earth a great way off the trench. This instrument cuts a trench a foot and a half wide at the top, a foot at the bottom, and a foot deep. It is excellent for this purpose on wet lands, saving a great deal of the expence of work in the common way of digging trenches by hand, but it requires a great number of horses to draw it. There is something in the contrivance of this plough, that may be useful farther than in the making of trenches, and it is for that reason proposed here to the farmer's consideration.

Of the uses of the common Plough, and their proper make.

Where there is a hard and firm soil; or where the land is full of flints, sharp stones, and gravel, no plough whatsoever does so well as the two-wheel'd kind, which may be suited to the occasion according to the directions already given, with respect to strength; and where strong clays are to be wrought in summer fallows, no other plough

plough is equal to it. The point of the common plough will fly out every step on these occasions, but this will answer very well when the earth is so baked and hardened by the sun, that no other will penetrate. The wheels of this plough should be about twenty inches in diameter, and it will always run best if the furrow wheel be made a little larger than the other.

A great advantage of this plough also is, that it will work upon uneven ground without levelling, so that none is equal to it for the ploughing up of pastures, where there are mole-hills, and other irregularities. These disturb the other plough extremely, even the least of them, but this goes through all.

Although the single wheel plough be so clumsy and ill-contrived an implement, there is no reason why the use of a plough with one wheel should be rejected. A very light and slender-made plough may be furnished with one wheel instead of two, and it will answer excellently on light sandy soils. It will not be fit for harder work, but, running easily, it will serve this purpose better than any other.

The common two-wheel'd plough is to be drawn with horses or oxen, two a-breast. The heavy plough without wheels, which is useful for wet clays, and other very heavy and disagreeable work, is to be drawn by three, four, or five horses in length. The great use of this is where the ground lies level, and where there are no obstructions of roots, or the like, for these greatly disturb its operation. The two-wheel plough is preferable in such cases, notwithstanding all its inconveniences.

Whichever of these ploughs the husbandman chuses, let him take care, in the make of it, that it be suited to the soil upon which he is to use it. Let him see that it be made larger if it be for deep or strong soils, and lighter and smaller if for the light and shallow ones. When the land is stiff and deep, let the coulter be long and strong; in the deepest soils the coulter must go the deepest, because the weeds root deepest there.

Of whatever form, or whatever degree of strength, let him see that the iron work be made true as well as sound; for on the exactness of this

part of the instrument, depends the going of it true to the pitch at which it is set, and its keeping to the line wherein it is placed, without running out on one side or the other.

As so much depends upon the iron work, it is a very prudent method to have that made first, and wrought to a perfect truth, and then to have the wood work made to it: for in the common way of making the iron to the wood work, the Smith is often forced to work wrong in order to suit it: in this case no art will make the plough go well. Let him take care that the iron work is wrought smooth, and rightly tempered; and that it be kept bright and clean in the using.

The shorter and less the plough, the easier it is worked; but though this be a recommendation in light soils, there is no using of such as have not a due weight and strength in tough and heavy work.

Of the improvements of the common Plough.

The regard that has been shewn to husbandry of late years has occasioned several improvements of the plough, for particular and also for general purposes, and several new forms and kinds have been invented, some rather fanciful than advantageous, but others extremely useful. There is no part of husbandry in which more improvement may be made, nor in any in which it will be so immediately or certainly useful.

A double plough has been invented some years ago, and is at this time in use in some places, by which a double quantity of land is ploughed at a time, one furrow by the side of another.—As this requires twice the number of horses, the expence is nearly equal to the advantage: but this is a hint capable of improvement, for although in tough and deep soils it loses its benefit, from the necessity of a double expence, yet certainly in some of those light and shallow lands we have in Buckinghamshire, and other places, a double plough might be so contrived, as to be drawn by two horses, and managed by one man; and then certainly the advantage would be double, and the expence the same.

There has also been a contrivance of a plough that turned up two furrows at once one under another. But it is

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so unwieldy, and difficult of draught, that in its present form it will never get into reputation, nor does it deserve it; but we have seen already, what would be the advantage of ploughing deeper than ordinary, and that is enough to spirit up some who understand a little more of the mechanic arts to contrive one upon the same plan with more judgment. Doubtless it is possible to obtain this advantage of deep ploughing with much less trouble than attends it in the plough that has hitherto been contrived for that use.

We have observed, that the digging with the spade is a much finer and more excellent tillage than that with the plough; and that the reason why our gardens are more fertile than fields of the same soil and with the same manure is, that the spade digs deeper, and breaks the particles of earth finer.— Now a plough constructed upon this plan, with better judgment in the fabric of it, would have both those advantages: it would dig full as deep as the spade, and might be made to break the earth as much. It is surely worth the while of those who have a knowledge in the proper arts, to devote some of their studies to this improvement of the plough, which is doubtless the most useful engine in the world; and at present very deficient, even in its most improved state. The adding breadth to the fin of the dray or foot plough, will at all times make it more and more serviceable in damp and stiff clayey lands; and in ploughing these, the horses should always go at length, that they may tread less of the ground: on the other hand, in light soils, the cattle, whether horses or oxen, should always go a-breast, for the double treading is serviceable to such land, in the same manner with the treading of sheep when they are folded upon it. In stony ground that has grass of some standing upon it, the plough should have a round pointed share, with a fin to cut the roots of the grass, for the broad fin is apt to jump out of the ground.

In ground that has been wood, and has roots remaining; or in other places where there are a great many large roots in the way, it is a very good method they use in some parts of Staffordshire, of having an instrument of iron, with a sharp edge, set through the beam

of the plough, behind the coulter, and through the plough-head. This, at the same time that it arms the plough for cutting these roots asunder, if rightly fixed, strengthens the whole frame of it, and makes it able to bear the rough work there often is in these places, and which else would tear it to pieces: in other places thereabout, they use a couple of sharp wings of iron made fast to the plough-share, which answers the same purpose, but does not so strengthen the plough.

But these are all of them improvements, which rather shew what may be done, than execute it well in themselves; they may be considered as hints to what is proper, rather than as complete things: there remains one to be spoken of in which the improvement is very great, and is carried to a due degree of perfection; so that the farmer has no more to do than to order it to be made according to the description.

This is the four-coultered plough, so highly and so justly extolled by the author of the *Horsehoeing Husbandry*.

Of the Wheel Plough.

The foundation of this instrument is the common two-wheel'd plough, in its most improved condition, from which it differs in the having three additional coulters; so that instead of one there are four. We shall here consider this wheel plough in its most improved state; and hereafter describe the four-coultered plough form'd upon it.

This plough consists of two parts, distinguished by the names of the plough-head, and plough-tail. The head has two wheels of about eighteen inches diameter, the spindle or axis of these is of iron, and passes through a box which stands crosswise of the beam. This spindle turns round both in the box and in the wheels. From this box rise two perpendicular staves, called crow staves; these are fastened into the box, and have each two rows of holes, by means of which the beam of the plough is raised or sunk at pleasure, in order to increase or diminish the depth of the furrow. This is done by pinning higher or lower a cross piece, which is called the pillow, because the plough beam rests upon it. At the top of the two crow staves is another cross piece, called the gallows. The

crow staves pass through this by mortises, and are pinned into it. From the box of the plough within the staves, there is carried a small frame composed of two legs, and a cross top, to which the links of iron are fixed; by which the plough is drawn; this frame is called the wils of the plough. In the middle of the box there also is a hole into which is let one end of an iron chain, the other end whereof is fasten'd to the middle of the beam, this is called the tow chain, and fastens the head and tail of the plough together: at the end where it reaches the beam, this has a collar that goes round it, and is fastened by a stake within side the box. This stake is held up to the left crow-staff by a wyth, which passes round it above, and under the end of the galls below: a piece of cord is sometimes used instead of a wyth: any thing that may be tied will do. From the top of this stake goes an iron chain, called the bridle chain; this is fasten'd at one end to the top of the stake, and at the other to the middle of the beam of the plough, by a pin in the same place where the collar of the tow chain passes round it.

This is the structure of the head of the plough, and these are its several parts:

The tail consists of the beam, which is a stout and long pole, through which, a little below the pin that holds the bridle chain, and the collar of the tow chain, there passes the coulter, a long and slender iron instrument, which running downward and a little forward, ends near the point of the share. This coulter is fixed in its hole of the beam by a wedge, so that it can be raised or sunk at pleasure; behind are two handles, the one longer and the other shorter; the shorter of which meets the head of the fore sheat, where it enters the beam, and is fixed by a pin, and fastened to the top of the hinder sheat by another pin. These sheats are two boards, the hinder one near the extremity of the beam; the other forwarder and more slanting, and are both fastened to the share, which runs flat below. On the other side of the plough tail descends another flat board, called the drock; to this the ground-wrist is fastened, which is a board running nearly parallel with a

share. The longer of the two handles is also fastened to the drock, and the earth-board rises at its bottom. The fore-sheat is supported by a double retch, which passes through the beam, and is fastened by screws and nuts.

This is the four-wheel plough as used at present in the places where agriculture is most understood, and best practised: we see it consists of more parts than the two-wheeled plough of Hertfordshire, according to the first invention, but there is not one of these added parts but is an advantage in either strength or convenience.

Of the four-coulter'd Plough.

The beam of the common two-wheel plough, is usually eight foot long; the proper length of the beam of the four-coulter'd plough, is ten feet four inches. The beam of the common kind is straight all the way, but that of the four-coulter'd plough rises with a bend when it comes toward the wheels; to where it rests upon the pillow. The beam, supposing the plough to stand upon a level surface, would be at the end of the plough-tail only eleven inches and a half from the ground: at the place where the bend begins, which is a little before the first coulter, it will be one foot eight inches and a half; and where the beam bears upon the pillow, two feet ten inches. This is the proper make of the beam of the four-coulter'd plough.

The four coulters are thus disposed, measuring from the tail or extrem end of the beam behind. From this extremity to the back of the first coulter, is three feet two inches; this coulter has its point near the share: from the back of the first, to the back of the next coulter, is thirteen inches; from thence to the third thirteen inches, and from thence to the fourth the same. So that from the end of the beam behind, to the place where it begins to bend upwards, which is a little before the fourth coulter, counting from the tail, is seven feet. The length of the additional coulters, particularly of the fourth, or that next the head of the plough, would be a great inconvenience in this machine, but that is prevented by the bending of the beam toward the head. If the beam were straight as in other ploughs, these coulters must be very long to reach the ground, and they would

would require to be very strong, not to bend, and this would make them expensive and cumbersome; and at the same time their length, if ever so well formed, would make them apt to loosen the wedges wherewith they are fixed in the holes. This would make the coulter rise up out of its work, but by this contrivance of a crooked beam, a moderate length in the coulters serve; they do not require any great thickness or quantity of iron, and they always work with regularity.

As to the materials, the beam may be made of ash or oak, according to the nature of the ground whereon it is to be employed; for ash has the advantage of being light, but the oak is vastly stronger; so that when the work will be very hard, the oak, in spite of its weight, is preferable. As to its breadth and thickness, they may also vary according to the soil that is to be tilled; but for moderate ground, the beam at the first coulter hole should be five inches deep and four broad.

Giving this as a middling proportion, the size of the other parts may be as follows. The fore sheat, commonly called simply the sheat, should be seven inches broad; the retch upon it must be of iron, and its left leg must stand foremost, that the edge of its forepart, which is flat, may fit close to the wood of the sheat. The use of this retch is to hold the sheat up to the beam, which it does by means of nuts and screws. Through the top part of the sheat there is also to be a hole, which is to be a small part within the beam, so that a pin being driven into the hole, draws up the sheat very close to the beam. The elevation of this sheat is a very great article in the management of every wheel plough. If this make an angle of more than five and forty degrees with the plain surface whereon the plough stands, that instrument will never go well. In the four-coulter plough it ought to make an angle of forty-two or forty-three degrees only.

This sort of expression will be very well understood by those who are used to mechanics; but for the sake of the common farmer, we shall say all that is meant by it is, that the sheat is to be a little less raised in this than it is in a well-going common wheel plough.

The length of the share from the

point to the tail, should be three feet nine inches. The fin of the share rising slanting from the point upwards. The point of the share should be three inches and a half long, flat underneath, and round at the top, and this should be of hard steel underneath. The edges of the fin also should be well steeled, and its length proportioned to the nature of the ground.

Behind the fin is placed the socket, into which the bottom of the sheat, before described, enters; and from the tail of the share is to rise a small plate of iron, this is to be well rivetted to the share: by this the tail of the share is fastened to the hinder sheat. This fastening is done by an iron pin, with a screw at the end, to which a nut is to be screwed on the inner side of the sheat.

The socket is to be a mortise of about a foot long, at the upper part two inches deep, and the fore end must not be perpendicular, but made slanting, conformable to the fore part of the sheat that enters into it. The upper edge of the fore part of the mortise must bear against the sheat; and if it be not quite so slanting as the sheat, a little of the wood is to be pared off at the edge to make it fit.

The upper side of the share should be perfectly strait, but its neck on the under side should stand a little hollow from the ground. This hollowness should be about half an inch in a common plough, but in the four-coultered plough it should not be above a quarter of an inch. So that the share, when it is first made standing upon its bottom, bears upon the level surface only in three places; these are the point, the tail, and the corner of the fin. The hollowness of the fin must be greater in a stony soil than in others.

The placing of the share rightly upon the sheat is the most important, and the most difficult part of the Plough-right's trade: on this depends the well going of the plough, and for this reason; as it is more important in the four-coultered plough than in any other, we advise the farmer when he has made himself a master by these descriptions of the form and structure of this plough, to take care that he employ a skilful and an honest workman; and if he do not find the plough go well when

made, to look there for the occasion of the fault, for in that part is generally the seat of it.

The groundwrist is to be of iron, its length must be two feet five inches, its breadth at the longest end four inches, and is to go somewhat smaller all the way. Its thickness in general is to be three-eighths of an inch; but at the smaller end it is to be much thinner, that it may be capable of bending so, that it can be brought close to the share.

At the smaller end of the groundwrist are to be four holes, through one of which there goes a nail that fastens the groundwrist to the sheat. This passes through a long hole which is made in the side of the socket of the share. The space between the outside of the groundwrist, to the outside of the share, is eleven inches and a half, and this is the width of the lower part of the plough-tail at the ground: at the upper side of the broad end of the groundwrist there are also several holes by which it is nailed to the lower part of the drock; this is long, narrow, and has three holes for the reception of its fastenings.

The earth board has a rising near its end, which takes hold of the end of the sheat to fasten it the more firmly; and near that are two holes by which it is fixed to the sheat; at the other end also there is a hole, by which it is fastened to the drock.

The pin which fastens the earth board to the drock, is to be thicker in the middle than at the end, and this prevents the earth board from coming near the drock. By means of this pin the earth board is also set at a greater or smaller distance from the drock, as there is occasion sometimes to throw off the furrow farther from the plough than at others. It always stands a good deal farther out on the right hand than the groundwrist, and this is one reason why the drock is made crooked, bending outwards in that part.

The long handle of the plough is to be five feet four inches in length, and four inches broad in the widest part. It is to have holes in its lower part for pinning it to the sheat, and another near its upper end, by which it is fastened to the drock.

The length of the short handle is three

feet nine inches, and it is to have two holes, both toward its lower end: by the upper hole it is pinned to the hinder sheat, and by the lower to the top of the fore sheat above the beam of the plough.

We come now to describe the placing of the four coulter in the beam of this plough, contrived for their reception; this is the most important article of all: and the greatest point to be obtained is, that the four imaginary planes, described by the edges of the four coulters, as the plough moves forward, be all parallel, or nearly so, for if this be not regarded, they will not enter the ground together.

To make sure of this important point, the holes for the coulters must be made in the beam of the plough in the following manner. The first couler is to be placed as already directed, the second couler hole is to be made two inches and a half more on the right hand than the first: the third two inches and a half more on the right hand than the second; and the fourth two inches and a half more on the right hand than the third. This will place the four coulters conformable to the four cuts they are to make in a ten-inch furrow.

Now no beam of a plough is broad enough to hold these holes in this direction, and for that reason a piece of wood is added to the beam of the four coulters plough to give space for it. This piece is to be very well fastened to the beam, and the second hole is to be made, as will be seen, according to the distance, partly in the piece, and partly in the beam; and the others will be all made entirely in the piece. The piece is best fastened by three good screws with their nuts, and its place is on the right side of the beam. The distance of each hole to the right of the last, must be measured from the middle of one hole to the middle of the other.

The fore part of every hole must incline a little to the left, so that the backs of the coulters may not bear against the left side of the incisions made by the edges. Each hole is to be a mortise of an inch and quarter wide, with its two opposite sides parallel from top to bottom. The length at the top is three inches and a half, and

and at the bottom three inches; and the back of each is not perpendicular, but slanting, and makes the coulter stand slanting. It is fixed in this mortise by a pole wedge in the same manner as the coulter is in other ploughs.

The coulter is a kind of iron knife, consisting of two parts; a handle, and blade; the latter having an edge.—The length of the coulter is to be two feet eight inches, but it will shorten in wearing; the blade is to be sixteen inches long, with its edge running all the way along it; the handle is to be of the same length. This is so long that it will at first very well stand up above the beam, but it must be driven down lower and lower, as the point shortens by wearing. The handle is to be an inch and seven-eighths broad, and seven-eighths of an inch thick throughout.

The first coulter in all ploughs should be so placed, that its back should bear against the back of the hole; its right side above to bear against the upper edge of the hole, and its left side to bear against the lower edge: and for this reason there always are required at least three wedges to hold a coulter in its place. The pole wedge stands before it, the other two, one on the left side above, and the other on the right side underneath: and the hole must be so made, that the coulter standing thus across it, its point may incline two inches and a half or more toward the left than the point of the share, if it were driven down as low as it: but it should never be so low in any plough whatsoever. As to its bearing forwards, the point of the coulter should never be before the middle of the point of the share. It must be set obliquely with respect to the share, and it must never be set much more slanting; for if it should, it would have greater force to raise up the pole wedge, and would be continually getting loose.

In the four coulters plough, the three other coulters are to stand in the same posture with this in respect of the inclination of their points to the left: this is a great advantage to them; for by that means when the fin is raised up by turning the handles toward the left, their points do not rise out of the ground on the right hand as they otherwise would. With respect to their

pointing forwards, experience shews, that every one of the three should be set a little more perpendicular than the next behind it; so that the fourth coulter will stand nearest to perpendicular of any of them.

None of these coulters ought to descend so low as the bottom of the share, unless when the ploughing is very shallow. It is always sufficient that they cut through the turf, however deep the plough go into the ground.

When the ploughing is to be very shallow, the fin of the share should be broad enough to cut off the fourth piece of the furrow.

The nut which serves for fastening the piece to the beam of the plough, should have two opposite corners turn'd up, by which it may be driven round with a hammer. This has so great a force, that three of these will hold the beam and the piece as firmly together, as if they were one bit of wood. In dry weather the wood will shrink, and then the nuts are to be driven farther on. The same caution must be observed in other parts of the plough.—Between the nut and the wood there should be a thin piece of iron by way of bolster: this prevents the nut from wearing into the wood; it must be something larger than the nut, and of the thickness of a shilling. Some use a piece of leather, but when the nut is to be often screwed, iron is much better.

There must also be iron plates upon all the coulter holes, both above and below. These must be nailed on with nails made for that purpose.

Instead of a collar moving round the beam, 'tis much better to have a square one with an open end, which shall fasten to it by a couple of crooks.—These must turn upwards, that they may not lay hold of any thing that shall be turned up under the plough: the front or close end of this collar is to be a strong iron bar, with several notches. Two pins are to be driven into the beam of the plough, just behind the second coulter hole, one on each side: and there is to be another crook, called a (C) from its shape, which is to go over the close end of the collar. Each end of this is a hook, and one of these lays hold of the cross bar of the collar, going into one of its notches; and

and to the other is fixed a link, which holds the tow chain to the collar.

The use of these notches, and this fix'd position of the collar is this; that as the share wears at the point, it always inclines a little to the right; and this is remedied by removing the crook into another notch of the cross bar of the collar, so that the point of the share is thus always kept in a proper direction. The length of each side bar of the collar should be a foot.

We have shewn that the tow chain of the plough is fastened within the box by a staff passed through its first link, as the hook of the collar holds its left. This stake is commonly nailed, to prevent its flying out of its place. And when the plough is to be drawn a little nearer the crow staves, the method is to take in another link of this chain, passing through the stake, and fastening it as before: or it may be done better by taking hold of the crook of the collar, with a second or third link of the chain. This shortening of the chain always draws the point of the share a little to the left.

For drawing of the plough there is fastened to the box an iron machine, called the wilds; this is very like the square collar, only its legs are longer. The cross bar at the top is notched as that of the square collar, but only one leg of the wilds is fixed to this square bar in the making; the other leg is loose, and has a loop through which the other end of the cross bar is put, so that it is fixed on at pleasure. Both these legs of the wilds pass through the box of the plough, and are fastened in behind it by a couple of hooked pins made for that purpose. The holes cut through the box for letting these legs pass, are to be made slanting upwards, so that the fore part of the wilds may be higher than the hinder; otherwise the upper end of the crow staves will lean quite back when the plough is drawn. The use of the notches in the bar of the wilds, is to give the plough a broader or a narrower furrow. A double crook with a link is fixed to this bar, and by this the horses draw. If the cattle are tall, the traces must be long, else they will be apt to raise the wheels off the ground, and overturn the plough.

The legs of the wilds should be eight

inches and a half asunder, and their length nineteen inches: the links are to be six inches and a half long. They are to be put into two notches distant from one another, or else one wheel of the plough will advance before the other. When they are moved to the notches on the right hand, it brings the wheels toward the left hand, which gives the greater furrow; and, on the contrary, when they are moved on the notches on the left hand, it gives the plough a less furrow, by bringing the wheels towards the right.

The height of the wheels we have mentioned already, as also the proper method of making one of them higher than the other: their distance should be two feet five inches and a half, as set from one another on the ground.— The crow staves should be one foot eleven inches high from the box of the plough to the gallowes that goes across them: these are to stand upright upon the box, and they should be ten inches and a half asunder.

The pillow which crosses the staves below the gallowes, is to be pinned up at its end by two small iron pins, and it is convenient to keep these chained to it, that if they chance to drop, they may not be lost.

The height from the ground to the hole in the box where the tow chain passes through, is to be thirteen inches. This brings it to two inches below the holes of the wilds, on the hinder side of the box.

The height of the plough at the place where the other end of the tow chain is fastened to the beam, should be twenty inches from the level ground; and about the middle of the tow chain there should be a swivel, that one end of the chain may turn without the other.

This is the construction of the four coultered plough; and as it is founded upon the two wheeled plough improved to the greatest perfection, the parts of that plough can never be so well understood as in the description here given for their perfect and exact construction. It is very necessary that he who would undertake to make, or to give orders for the making of a four coultered plough, should first thoroughly understand the construction, parts, and composition of a perfect one with a single coulter; and we have by this means

mean's avoided the repetition of a long and dry detail of the parts.

We have before shewn what was the first construction of the wheel plough, which was a vast improvement upon the instruments in husbandry of that time; and we have here explained its farther advances toward that perfection, which it may be justly said to have attained in the four coulters kind.

When the four coulters is made, let it be tried with the single coulter before the others are put on. There may be a fault in the work that cannot be discovered, even by a judicious eye, till it is tried; and this may prevent its going as it ought. That plough which will not go well with one coulter, certainly would not with four; but it would be very unjust to charge upon the number of the coulters, what is really the fault of some part of the structure of the instrument itself, independent of that addition.

If the plough goes well with one coulter, then put in the other three; there is not much fear but it will also go well with them. If it do not, then let the position of the three additional coulters be examined; and let it be seen in what that differs from the rule, laid down here for that purpose. That it differs in something need not be doubted; for of a certainty, if they be rightly disposed according to these directions, the plough will go well.

To know whether a plough goes well, examine the furrow: if that be of an equal depth on the right hand and on the left; and if the plough turns it off fairly, it is right. If in the going of the plough, the tail of the share, and the bottom of the drock bear against the bottom of the furrow; and if it goes easy in the hand of the holder, without pressing one arm more than the other, the farmer may be assured it is a good one. Such a plough will go with four coulters as well as one.

Of the management of a Plough in working.

When the farmer has got his plough well made, let him see that he keep it in order; and that he employ a man in the working, who is able to manage it as he ought, and who has honesty enough to take the necessary care and pains. The farmer depends more upon the integrity and knowledge of his

ploughman, than on the qualities of any other servant whatsoever.

The handles of the plough being made of that length we have ordered, are very useful for the proper guiding of that instrument; but often the ploughman will cut them shorter to favour his idleness. When they are shortened, he can bear his whole weight upon them; and in a manner ride instead of walking. If he should play this idle trick with long handles, his weight would tilt up the fore end of the beam, and raise the share out of the ground. The keeping the arms long therefore prevents this negligent trick, and at the same time gives him an opportunity of managing the plough to the greatest advantage.

An awkward ploughman will be continually oversetting the two wheel'd plough; but a careful person, who is used to the management of it, hardly ever meets with such an accident.— The great danger of over-turning is, at the going out, at the land's end, from one furrow to another. But the skilful ploughman lifts his plough a little round, and then holds up the crow-slaves with the end of the beam, by pressing his hand hard against the handle, while the plough lies down on one side, till the horses, the wheels, and the body of the plough come nearly to a line in the beginning of the furrow; and then he lifts up the plough and goes on.

These little contrivances are exceedingly useful. They are more easily seen in the practice, than taught by words; but what is here said may serve to let the farmer know when his ploughman manages his business right, and when he does not; and may assist him in the giving one that is willing directions.

In the four coulters plough there is another inconvenience very likely to happen, but very easily remedied: this is, that sometimes the first or left furrow is apt to come through betwixt the first coulter and the share, and in this case it falls upon the left hand side of the plough.

This, though not of the consequence of many other faults, yet it is worth preventing, and the more as the remedy is easy. To this purpose let the second coulter stand a little higher than
the

the third; and then the second furrow holding the first at its bottom, will carry it over together with itself, and throw it on the right side of the earth-board.

Let us give the farmer one caution farther in this matter; which is, that in this placing the coulter, he never sets it so high that it does not cut the turf through. As to the first coulter, though it should cut but an inch or two within the ground, the share will break off the first furrow in raising it up.

If in the ploughing with this four coulters kind, the coulters become clogged and loaded with pieces of the turf, a boy should go by the side with a forked stick to clean them off from time to time, which is done very easily,

The coulters being disposed exactly as we have described, will have more space between them above than below, so that this clogging will not happen often, and when it does, the cleansing is easily performed. The farmer may always know when he shall have occasion for a boy to follow for this purpose, because it rises not from the fault of the plough, but the nature of the ground. This plough in clear ground goes as free and clean as any; but when there is a great quantity of couch grass on the land, its roots hold the turf together in such a manner, that it rises in pieces, and hangs between. This is the only occasion on which there is a need of such assistance; but if it be not taken care of, the load of clogging matter will fill the spaces between the coulters, and raise up the plough out of its work.

In the common two wheel plough there is a very great inconvenience too frequent, and of very bad consequence, this is, the leaving a great part of the land unturned from the share's point going too much to the left. The consequence of this is, that the work is done irregularly, and often a great part of the ground which is covered by the broken earth, is whole and untouched, and the weeds are found afterwards growing upon it. This is a great fault: it defrauds the farmer of so much of the business he engaged should be done; and there is nothing he ought to look into so carefully.

Sometimes he will find it happen from the imperfection of the plough itself, and then he is to apply to the maker. The well going of a plough principally depends in the placing of the share rightly upon the sheat; and in this case the remedy must be by an amendment in that article. This is the nicest and most difficult part of the ploughwright's business, and is what the farmer is most concerned of all other to see done well: it matters not that the maker can tell him, or shew him it is right as it stands upon the ground, let him try it in some work, and never be satisfied with it till it answers his expectation.

This fault last named, though it sometimes be owing to the make of the plough, yet may also arise only from the folly of the ploughman's setting it wrong: therefore this should be tried first. His fault is the setting it so that the point of the share turns too much to the left: in this case it will always cut crossly, and leave a part of the ground untouched, though covered by that which has been cut, and is thrown over it.

There is no part of his business which the farmer is more under a necessity of following with his own eye than this. His interest is engaged in the well executing of it, though the servants' are not. It is easy to plough too shallow, or too deep. Where there is a full soil, the deeper the plough cuts the better; but where the soil is shallow, and the bottom bad, let there be great care taken that the clay, or whatever other bad matter it may be, shall not be turned up with the soil. He should himself oversee this that his ploughing may give him all the advantage, and avoid all the disadvantage there is in the condition and nature of the ground.

Some choice is to be made in regard to the situation, in the manner, and course of the work. When a land lies upon the descent of a hill, let it never be ploughed frait up and down, but crosswise. This has a double advantage: for the horses are not tired, as they would be with going frait up and down, and the land also will fare a great deal the better.

Of laying Land in ridges. See Ridges
A great article in the rendering of land

fertile, is the breaking and dividing it into small particles, whether this be done mechanically by the plough, or by fermentation given to it by manures; that this breaking of the soil into small particles is essential to the free growth of plants is very plain, because it is from the smallest particles of this matter that they are nourished, and the breaking of the land in this manner is the only method of giving the roots a free passage between them, in their search of this nourishment.

On this depends the famous system of Horse-hoeing Husbandry. But beside these two articles, of liberty of spreading the roots, and a proper quantity of nourishment, there are two other, without which plants cannot thrive, these are, a due degree of heat and moisture.

Corn, and the other common produce of our ploughed land, demand a moderate degree of each of these, and the farmer is to guide his practice throughout in such manner, as to give them a supply without giving them abundance. It will be asked, can the farmer cause sunshine, or can he call down rain? Neither: nor do we expect impossibilities of him; nothing is more easy than what we require him to do, and the effect shews that it will succeed.

But as he is to communicate to his crop all good, so far as he is able, so he is to defend it from all ill: and as we have shewn how he may give the advantage, it remains that we shew how he may prevent the hurt.

Now one of the greatest misfortunes that can attend a crop is too much wet. This sometimes happens from the particularity of a season; but oftner from the nature of the land. When the first is the case, the farmer's care must be to find methods of carrying the wet off; when the latter, he must employ all his care to provide against it. Land that is too wet will never produce corn well, and to prevent the mischief attending this condition of the ground, has been invented the practice of which we now treat, the laying land in ridges.

This is a particular sort of tillage, and its effect is greater than those seem to understand who employ it. They use it only to keep their lands from

being too wet, but it has an effect in regard to the degree of heat, not less than with respect to that of moisture.

We shall see, upon examining this practice and its effects, how well nature has taught people to use it. We see them in the moderate soils that are frequent in Buckinghamshire, and elsewhere, frequently lay four ridges together: in Kent they often lay six, and the lower parts of Essex eight, and in Huntingdonshire, upon their wet and stiff clays, they sow all upon broad lands, raising the middle of the ridges in some places two foot and a half higher than the side furrows. This at once exposes those tough and clammy soils to the sun better than any other method, and drains them of the abundant wet.

The chief design of laying land in ridges is draining of it, and making the corn grow properly dry: but we see that by a proper management it may be made to extend its benefits farther. In this case, of a clayey soil laid in ridges open to the east and west, where the situation is such as to allow it without other damage, the sun acts in a double way upon the soil, not only giving it warmth, when the abundant cold moisture is taken away, but by a gentle calcination of the surface, it reduces that superficial part to a state of greater perfection, and to a kind of manure for the rest.

The natural defects of many lands, otherwise useful and good, are a too great degree of moisture, and a defect of heat. The latter naturally arises from the former; for a quantity of water detained among clay, or any other tough earth, becomes cold, and chills the plants that are laid upon it. The great remedy, in this case, is the laying the land in ridges; and that the careful husbandman may be sure to know when this is required, as well as how to do it, we shall give him the following hints.

The two principal kinds of land, that are liable to be chilled by wet, are those on hills, where there is a bed of clay under the mould; and those in level grounds, which consist of a very deep and very stiff soil.

The occasion of the mischief in these is very obvious, the rains fall upon this ground, and, soaking through the

mould, are detained by the clay.— They cannot enter the clay, and therefore they spread themselves among the mould above; and the mould below stopping it in its descent, and more water falling above, the whole approaches to the nature of a bog; the ground being soft, pappy, and raised above the natural level by the water spread among it.

When this is the case in a very great degree, no method of ploughing can be sufficiently effectual to remedy it. In this case, trenches must be cut across with a descent, to carry the water off. And they may be filled up with rough stones, and covered over with earth again, so that all may be wrought as a level surface: Reason points out this remedy, but it is often too expensive; and such lands, when too wet and too difficult of remedy, are to be neglected; we therefore have named these only to shew, that they are not to be attempted by ridging; for nothing disheartens a husbandman so much, as undertaking what he afterwards finds cannot be done.

When the wet is in a considerably large degree, it may be discharged by laying the land properly in ridges, tho' not where it is thus very abundant; therefore let the farmer first examine carefully, whether the state of the ground will or will not admit a cure; if he thinks it will, this is the manner in which he is to set about it:

Let him plough the land in ridges, almost cross-wise of the hill, but a little slanting; for if they be perfectly carried across, or quite strait down, they will neither way do. When they are thus carried cross-wise, but a little diagonally, their parting furrows lying open, will each serve as a drain to the ridge next below it: for when the plough has made the bottom of these nearly horizontal furrows a few inches deeper than the surface of the clay, the water will naturally and securely run to their ends, without rising into the mould, provided no part of the furrows be lower than their ends.

These parting furrows and their ridges should always be made a little obliquely; and this obliquity, or slanting, should be more or less, according to the form and declivity of the hill.

We are to consider that there are two

ways, in which water that falls upon an hill runs off. The one is on the surface, and the other is between the mould that makes the soil, and the clay that makes the bed under it.—

'Tis this second course, or the running of the water upon the bed of clay, and under the mould, that we are to consider on these occasions; for on that depends the damage we propose to rectify. This is the source of what we have directed, as to the disposition of the ridges; and it will be found, on the most careful examination, that as only this method of ridging could keep that part of the soil dry, so there is no direction in which they could run, that will so well secure the advantage, as the carrying them with this slant cross-wise of the hill.

In this case the consideration of laying the ridges east and west, must give way to this cross direction, with respect to the descent of the hill. We have mentioned, under that head, that there were exceptions; this is the principal; and in this, as in all other cases, the greater convenience is to be consulted, and the lesser is to give place to it.

The farmer who shall make himself perfect master of his business, will often find two things would be right, both of which together are impracticable: he must, in this case, content himself with taking the best.

The way of working on this occasion is to plough the ridges in paces, without throwing any earth into the trenches. In this case, the ridges will be plain at the top; and the rain water will speedily run downward to the next trench, and thence to the head land, and so out of the field.

These are easy and plain directions, and the success of them is certain; it not only is plain to reason, but is vouched by experience; and yet a great deal of land that might be saved by it, is left to produce little or nothing by the common treatment.

Wet land, that lies level, is the second kind of land that is liable to be wet and cold, and that may be greatly mended by the tillage in ridges.— Sometimes there are springs on the hills, that add to the quantity of water which they have from rains, and this makes the cure more difficult: in these deep, wet, and stiff soils that lie on a level,

level, the cause is always to be found in the water that falls by rain alone. But this will sometimes put the land into as bad a condition as if there were springs in many places.

When a deep stiff soil lies flat, and is ploughed sometimes one way, and sometimes another by cros ploughing, it will hold water a long time. By that misfortune the plough is kept out two or three weeks longer than if it were in round ridges. Sometimes its flatness keeps it from drying, till the season of ploughing and sowing too are lost.

The farmers are backward in ploughing the hilly wet grounds in ridges, and more in this. They say it prevents the benefit of cros ploughing, which they count as a great advantage, and they think they lose a part of their ground by the open furrows, which they otherwise fill up with harrows. But these are mistakes and prejudices, of which it becomes us to set the practical farmer right; for on such notions, which he receives upon credit, without being at the pains of examining whether they be true or false, depend the greatest part of his disappointments and losses. Cros ploughing is sometimes a hurt as well as a benefit to land: this is certain, and any one who is accustomed to farming, and will examine what he from time to time sees, instead of taking all things upon trust, will find it so in experience. This, therefore, is an objection arising only from prejudice in favour of common practice, and common opinion: the other is entirely an error; for, instead of losing any ground by ridges, it is possible to gain some. In the most simple and common practice, none is lost; and managing wisely and properly, much may be gained.

Ground is gained for the farmer's purpose, when its surface is increased, and is capable of bearing more corn; and this is plainly practicable in the ploughing in ridges. If in this custom of ploughing, we allow two feet in sixteen for an empty furrow, still the difference of surface between the rest as it lay flat, and as it is ploughed into ridges, is much greater in his favour, than this proportion is in loss of quantity. All the surface thus raised in ridges, is capable of bearing corn, and

therefore it is so much ground gained to the husbandman.

It is certain, the surface of a field measures more in quantity when in ridges, than when flat; and it is equally certain, that all its surface, the empty furrows excepted, is capable of bearing corn. This is a short state of the case. These empty furrows have been taken into the computation, and the difference is in favour of the land in ridges. No sophistry can get the better of so plain a fact; and it is upon this fact, and the evident advantage that wet and cold lands receive from this kind of tillage, that we recommend to the farmer the tilling his stiff, cold, moist, and flat lands, in this method of ploughing in ridges. *Trenching—See Digging*

PLUM-TREE. (*Prunus.*) The varieties of the fruit are,

White Primordian, or Jean Hative Plum.—A smallish, oblong, yellow Plum, with a white bloom; ripe the middle or end of July.

Morocco, or early black Damask Plum. A middle-sized, round, blackish fruit, powdered with blue, is well flavoured, and discharges the stone; ripe end of July.

Little Damask Plum.—A small, round, black, well-flavoured plum; ripe beginning of August.

Great Damask Violet Plum.—A moderately large, roundish-oval, dark-blue Plum, covered with a violet bloom, is of a rich juicy flavour, and quits the stone; ripe in August.

Queen Claudia Plum, sometimes called Green-Gage.—A middle-sized, round, yellowish-green Plum, having a firm deep-green pulp, of a fine rich flavour, and quits the stone; ripe in September.

Little Queen Claudia Plum.—A small, round, whitish-yellow Plum, powdered with white, and parts from the stone; ripe end of August and beginning of September.

Green-Gage Plum.—A middle-sized, roundish, green Plum, sometimes purplish on the sunny side, having a yellowish-green firm pulp, of a most delicious rich flavour, but does not discharge the stone freely; is one of our most valuable plums, and the tree a great bearer; ripe the end of August and beginning of September.

[*Varieties.*] There are several varieties of greenish Plums, that go by the name

of Green-Gages; that are of inferior quality.

Blue Gage Plum.—A middle-size, roundish, blueish Plum, of a rich flavour; ripe beginning or middle of September.

Orleans Plum.—A middle-sized, round, pale-red Plum, often of a whitish-green colour on the side away from the sun; is of but a middling flavour, and quits the stone clean. The tree is of spreading growth, a remarkably great bearer, and very profitable for common use, and for those who supply the markets; ripe end of August and beginning of September.

Drap d'Or, or Cloth of Gold Plum.—A middle-sized, roundish, bright-yellow Plum, spotted with red, of an excellent vinous flavour, and adheres to the stone; ripe beginning or middle of September.

Black Perdignon Plum.—A middle-sized, oval, dark-coloured Plum, powdered with a violet bloom; is of a fine rich flavour; ripe middle or end of August.

Blue Perdignon Plum.—A large, roundish, blueish-coloured Plum, replete with a delicious juice; ripe end of August.

White Perdignon Plum.—A middle-sized, oblong, whitish-yellow fruit, covered with a white bloom; is firm, juicy, rich, and quits the stone; ripe end of August and beginning of September.

Roche Courbon, or Red Diaper Plum.—A middle-size, round, fine red Plum, powdered with a violet bloom, is high flavoured, and adheres to the stone; ripe end of August.

Red Imperial Plum.—A large, oblong-oval, flattish, pale-red Plum, covered with a whitish bloom; is of but a middling relish, and parts from the stone; ripe middle of September.

White Bonum Magnum, Mogul or Egg Plum.—A remarkably large, oblong, egg-shaped, whitish yellow Plum, powdered with a white bloom, having a firm pulp that cleaves to the stone; more esteemed for culinary use, than eating raw: the tree shoots strong, with very large leaves; is a great bearer, and the fruit is the largest of the plum kind; ripe beginning or middle of September.

Red Bonum Magnum, sometimes called the Great Imperial Plum.—A very large oblong, deep-red Plum; not of a rich flavour, but is excellent for preserving and culinary purposes; ripe beginning or middle of September.

Fotheringham Plum.—A large, oblong, fine-red plum, having a fine rich pulp, that quits the stone; ripe end of August and beginning of September.

Brignole Plum.—A largish, oval, yellowish plum, tinged with red next the sun, having a firm, dry, rich pulp, is in much estimation for sweetmeats; ripe in September.

Le Royal Plum.—A large, roundish, light-red, finely-powdered plum, having a juicy sugary pulp, that cleaves to the stone; ripe end of August and in September.

Cheffon Plum.—A middle-sized, oval, blackish-blue Plum, powdered with a violet bloom; ripe towards the middle of September.

Wentworth Plum.—A large, oval, yellowish plum, of an acid relish, and separates from the stone; is a good culinary fruit; ripe in September.

Mirabelle Plum.—A small, round, greenish-yellow plum, having a rich pulp, that discharges the stone, and the tree a great bearer; ripe end of August.

Apricot Plum.—A large, round, yellowish plum, having a firm, dry, sweet pulp, that separates from the stone; ripe beginning or middle of September.

St. Catharine Plum.—A large, oblong, oval, yellowish-amber-coloured plum, powdered with a white bloom, having a rich juicy agreeable pulp; adhering close to the stone: ripe end of September.

Imperatrice Plum.—A middle-sized, roundish, dark-red, finely-powdered plum, of an agreeable flavour, the pulp adhering to the stone; ripe beginning of October.

Little Green Damask Plum.—A small, round, greenish Plum, powdered with a whitish bloom, having a green very agreeable pulp; adhering to the stone; ripe middle or end of September.

Pear Plum.—A moderate-size, oval, whitish-yellow plum, of an inferior flavour, esteemed principally for preserving; ripe late in September.

Muscle Plum.—A smallish, oblong, flat, dark-red plum, but of an indifferent relish; ripe in September.

Damascene Plum.—A small, roundish, dark-blue plum, of a tolerably agreeable acid relish, both for eating and culinary purposes, and the tree a great bearer; ripe in September.

St. Julian Plum.—A small, round, dark-violet-coloured fruit, covered with a mealy powder, but has little relish; ripe end of September.

Cherry Plum.—A very small, round, cherry-shaped red plum, valued chiefly as a curiosity; and the tree is often planted among flowering shrubs, for the sake of its beautiful bloom in spring, and its cherry-like fruit exhibit a pretty variety in summer; though by its flowering very early, the bloom is often cut off, and seldom succeeded by much fruit.

Thus far is principally all the most noted varieties of this fruit cultivated in the English gardens, and in the nurseries for sale; though there are numerous other varieties, particularly of the common sort, growing in the orchards and hedges of farmers, &c. in different parts of the country; all the sorts being varieties of one species, first obtained from seed, and the approved sorts of them have been multiplied and continued by budding and grafting.

But besides the above varieties of the fruit, there are also the following for ornamental plantations.

Double-blossom Plum-tree—Gold striped-leaved—Silver-striped-leaved—and the stoneless plum.

The two following species, *Bullace-tree* and *Sloe-bush*, grow wild in hedges, but are sometimes cultivated both for variety and use.

The general propagation of Plum-trees is, by grafting and budding, and may also be increased occasionally by layers.

By grafting and budding.—This is performed upon stocks of any sorts of the plum-kind, raised from the stones, sowed in autumn in beds of good earth; about two inches deep, and when the plants are a year old, they being planted out in nursery rows two feet and a half asunder, and having from one to two or three years growth, they will be in fit order to graft or bud with the desired sorts, which is performed in

the usual way, either low in the stock for dwarfs, or at several feet height for standards. Observing, that when the first shoots from the graft or bud are one year old, those of the trees designed as dwarfs for walls, &c. should be headed down within five or six inches of the bottom, more particularly of the budded trees, in order to force out laterals from the lower eyes, so as to furnish a proper set of branches, proceeding regularly from the bottom of the tree, to cover every part of the wall and espalier. But as to standards, their first shoots may either be suffered to run and branch in their own way, or headed to a few eyes, if it shall seem necessary, to force out lower laterals to give the head a more regular spreading formation; afterwards, let them all take their own growth.

When the trees thus raised by grafting or budding, are from one to two or three years old, they are of a proper size for final transplanting into the garden, &c. though trees of six or eight years old may be safely transplanted; remarking however, the younger they are planted where they are to remain, the sooner and more firmly they will establish themselves, and form for bearing.

By layers.—This is performed on the young wood, any time from November till March, chusing the last summer's shoots, and lay them by slit-laying; in one year they will be rooted; they must then be separated, and planted in nursery-rows, and trained either for dwarfs or standards, as may be required.

The double blossom plum, the two striped varieties, and stoneless kind, are all propagated by budding or grafting, upon any kinds of plum-stocks, either for dwarfs, or half or full standards.

And the bullace-tree and sloe-bush or black-thorn, are propagated by sowing the berries or stones an inch deep in a bed of common earth in autumn; and the sloe-tree also abundantly by suckers from the root.

Cocoa PLUM, or *American PLUM*, (*Chrysebalanus*.) There are two species; 1. with oval indented leaves, flowers growing in clusters, and a shrubby stalk;—2. with decomposed leaves, whose leaves are oval and entire.—They are both natives of the West-India islands,

islands, and the warmer parts of America, and will not thrive in England, unless preserved in fives. They are propagated by seeds, which must be procured from their native country, and sown in the spring.

INDIAN DATE PLUM. See DATE Plum-tree.

POA GRASS.—Meadow grass, or that common species of grass, which principally forms the green covering of our fields, &c.

POCKET, A large sort of bag, in which wool or hops are packed up, in order to be sent from one part of the kingdom to the other.

POCKWOOD. See GUAIACUM.

POD, A term used to express a pericarpium, consisting of two valves, which open from the base to the point, and are separated by a membranous partition, from which the seeds hang by a kind of minute stalk. *See Peas.*

POISON TREE. (Toxicodendron.) There are several species of this plant growing in most parts of North America.—These plants are preserved by the curious in botany, for the sake of variety; but as there is little beauty in them, there are not many of the sorts cultivated in England. The wood of these trees, when burnt, emits a noxious fume, which will suffocate animals when they are shut up in a room where it is burnt; an instance of this is mentioned in the Philosophical Transactions by Dr. William Sherard, which was communicated to him in a letter from New England, by Mr. Moore, in which he mentions some people who had cut some of this wood for fuel, which they were burning, and in a short time they lost the use of their limbs, and became stupid; so that if a neighbour had not accidentally opened the door, and seen them in that condition, it is generally believed they would soon have perished. This should caution people from making use of this wood for such purpose.

When a person is poisoned by handling this wood, in a few hours he feels an itching pain, which provokes a scratching, which is followed by an inflammation and swelling. Sometimes a person has had his legs poisoned, which have run with water. Some of the inhabitants of America affirm, they can distinguish this wood by the

touch in the dark, from its extreme coldness, which is like ice; but what is mentioned of this poisonous quality is most applicable to a sort like the ash.

The juice of the tree is milky, when it first issues out of the wounded part; but soon after it is exposed to the air, it turns black, and has a very strong foetid scent, and is corroding; on cutting off a small branch from one of these shrubs, the blade of the knife has been changed black in a moment's time, so far as the juice had spread over it, which could not be got off without grinding the knife.

POISON ASH, a species of the poison-tree.

POISON OAK, a species of the poison-tree.

POISON BUSH. See SPURGE.

POKE, a sack or bag.

POLES, the upright poles, or pieces of wood, round which they bind, twist, and support themselves.

POLLARD, a tree that has been frequently polled or lopped, and its top taken off.—Pollards are inferior to coppice trees, in the quantity of wood they yield, and in its value; for the coppice wood is fit for many purposes that the shrowdings of the pollards can never answer, and therefore brings a better price; but on the other hand, pollards are maintained at a smaller expence, indeed it may almost be said at none at all; for they require no fences; they take up no quantity of ground; and they are in their shoots above the reach of cattle.

The most frequent and most profitable trees for pollards, are, the willow for watery places, the ash for hedge rows, and the oak for commons; But each of these situations will support several others to advantage; and there is scarce any tree that may not be brought to a pollard at the owner's pleasure.

In general, the husbandman should shrowd such trees as are not fit for timber; or any from which he desires to have a present advantage, or which he intends shall supply his family, or the market, with fuel quickly and readily: for there is no growth so speedy as that of the tree which is shrowded.

Trees intended for shrowding may be raised in many places, where it would

would not be worth while to have others, because of the injury they would do the ground: for, as to throwed trees, the farmers may have the benefit of grazing under them, while the tops are growing, so that little produce of the ground, where that is of any considerable value, is lost by their growth: and when their heads are so large that they injure the growth of the grass, they make amends another way, for they then afford shelter for the cattle, the necessity of which is sufficiently known to every grazier.

POLE-EVIL, An abscess near the poll of a horse, formed in the sinuses between the noll bone, and the uppermost vertebrae of the neck.

If it proceeds from blows, bruises, or any external violence, at first bathe the swelling often with hot vinegar; and if the hair be fretted off with an oozing through the skin, make use of two parts of vinegar; and one of spirit of wine; but if there be an itching with heat and inflammation, the safest way is to bleed, and apply poultices with bread, milk, and elder flowers: this method, with the assistance of physic, will frequently disperse the swelling, and prevent this evil.

But when the tumour is critical, and has all the signs of matter, the best method then is to forward it by applying the ripening poultices already taken notice of, till it come to maturity, and burst of itself; or if opened with a knife, great care should be taken to avoid the tendinous ligament, that runs along the neck under the mane: when matter is on both sides, the opening must be made on each side, and the ligament remain undivided.

If the matter flows in great quantities, resembles melted glue, and is of an oily consistence, it will require a second incision, especially if any cavities are discovered by the finger or probe; these should be opened by the knife, the prieces made depending, and the wound dressed with the common digestive of turpentine, honey, and tincture of myrrh, and after digestion with the precipitate ointment; or wash the sore with the following, made hot, and fill up the cavity with tow soaked in it.

Take vinegar, or spirit of wine, half a pint, white vitriol dissolved in

spring water, half an ounce, tincture of myrrh, four ounces.

This may be made sharper by adding more vitriol; but if the flesh is very luxuriant, it should first be pared down with a knife before the application; with this wash alone, Mr. Gibson has cured this disorder without any other formality of dressing, washing with it twice a day, and laying over the part a quantity of tow soaked in vinegar, and the white of eggs beat together. This last application will serve instead of a bandage, as it will adhere close to the pole, and come off easy when there is occasion to dress. Some wash with the phagædonic water, and then fill up the abscess with loose dossils of tow soaked in Ægyptiacum and oil of turpentine made hot, and continue this method till the cure is effected.

But the most compendious method of cure, is found by observation to be by scalding, as the farriers term it, and is thus prosecuted when the sore is foul, of a bad disposition, and attended with a profusion of matter.

Take corrosive sublimate, verdigrease in fine powder, and Roman vitriol, of each two drams; green copperas half an ounce; honey or Ægyptiacum two ounces, oil of turpentine and strain oil, of each eight ounces; rectified spirit of wine four ounces: mix together in a bottle.

Some make their scalding mixture milder, using red precipitate instead of the sublimate; and white vitriol instead of blue; the following has been successfully used for this purpose, viz. half an ounce of verdigrease, half a pint of train oil, four ounces of oil of turpentine, and two of oil of vitriol.

The manner of scalding is, first to clean the abscess well with a piece of sponge dipped in vinegar; then put a sufficient quantity of the mixture in a ladle with a spout, and when it is made scalding hot, pour it into the abscess, and close the lips together with one or more stitches. This is to remain in several days, and if good matter appears, and not in an over-great quantity, it will do well without any other dressing, but bathing with spirit of wine; if the matter flows in great abundance

abundance, and of a thin consistence, it must be scalded again, and repeated till the matter lessens and thickens.

These liquid corrosive dressings agree well with horses, whose fibres are stiff and rigid, and whose juices are oily and viscid; in this case they contract the vessels of the tendons on the hind part of the head and upper part of the neck, which are continually spewing out a matter or ichor that can hardly be digested, or the profusion abated without such applications as these.

POLY, (*Policum.*) There are several species of this plant, natives of France, and the warmer parts of Europe; and from thence brought into the English gardens, and are propagated by setts, cuttings, or slips.

POLYPODY, (*Polypodium.*) Polypody is a capillary plant, growing upon old walls, the trunks of decayed trees, &c. That found upon the oak is generally preferred, though not sensibly different from the others. The roots are long and slender, of a reddish brown colour on the outside, greenish within, full of small tubercles, which are resembled to the feet of an insect; whence the name of the plant: the taste of these roots is sweetish and nauseous.

Polypody has been employed in medicine for many ages; nevertheless its virtues remain as yet to be determined. The ancients held it to be a powerful purger of melancholic humours; by degrees, it came to be looked upon as an evacuator of all humours in general; at length, it was supposed only to gently loosen the belly; and afterwards even this quality was denied it: succeeding physicians declared it to be astringent; of this number is Boerhaave, who esteems it moderately styptic and antiscorbutic. For our own part, we have had no direct experience of it, nor is it employed in practice; it is probable that (as Juncker supposes) the fresh root may loosen the belly, and that it has not this effect when dry.

POLYANTHUS, (*Polyantha.*) The several sorts of Polyanthes are produced by sowing of seeds, which should be saved from such flowers as have large upright stems, producing many flowers upon a stalk, which are large, beautifully striped, open, flat, and not

pin-eyed. From the seeds of such flowers, there is room to hope for a great variety of good sorts, but there should be no ordinary flowers stand near them, lest by the mixing of their farina the seeds should be degenerated.

These seeds should be sown in boxes filled with light rich earth in December, being very careful not to bury the seed too deep, for if it be only slightly covered with earth, it will be sufficient. These boxes should be placed where they may have the benefit of the morning sun until ten of the clock, but must by no means be exposed to the heat of the day, especially when the plants begin to appear, for at that time one whole day's sun will entirely destroy them. In the spring, if the season should prove dry, you must often refresh them with water, and as the heat encreases, you should remove the boxes more in the shade, for the heat is very injurious to them.

By the end of May, these plants will be strong enough to plant out, at which time you should prepare some shady borders, which should be made rich with neats dung, upon which you must set the plants about four inches asunder every way, observing to water them until they have taken root; after which they will require no farther care, but to keep them clear from weeds, until the latter end of August following, when you should prepare some borders, which are exposed to the east, with good light rich earth, into which you must transplant your polyanthes, placing them six inches asunder equally in rows, observing, if the season prove dry, to water them until they have taken root. In these borders your plants will flower the succeeding spring, at which time you must observe to mark such of them as are fine to preserve, and the rest may be transplanted into wildernesses, and other shady places in the garden, where, although they are not very valuable flowers, they will afford an agreeable variety.

Those which you intend to preserve may be removed soon after they have done flowering, (provided you do not intend to save seeds from them) and may be then transplanted into a fresh border of the like rich earth, allowing them the same distance as before, observing

erving also to water them, until they have taken root; after which they will require no farther care, but only to keep them clean from weeds, and the following spring they will produce strong flowers, as their roots will be then in full vigour; so that, if the kinds are good, they will be little inferior to a shew of Auriculas.

These roots should be constantly removed and parted every year, and the earth of the border changed, otherwise they will degenerate, and lose the greatest part of their beauty.

If you intend to save seeds, which is the method to obtain a great variety, you must mark such of them, which have good properties. These should be, if possible, separated from all ordinary flowers, for if they stand surrounded with plain-coloured flowers, they will impregnate each other, whereby the seeds of the valuable flowers will not be near so good, as if the plants had been in a separate border, where no ordinary flowers grew; therefore the best way is to take out the roots of such as you do not esteem, as soon as the flowers open, and plant them in another place, that there may be none left in the border but such as you would chuse for seeds.

The flowers of these should not be gathered, except such as are produced singly upon pedicles, leaving all such as grow in large bunches; and if the season should prove dry, you must now and then refresh them with water, which will cause their seeds to be larger, and in greater quantity, than if they were entirely neglected. In June the seed will be ripe, which may be easily known by the pods changing brown, and opening; so that you should at that time look over the plants three times a week, gathering each time such of the seed-vessels as are ripe, which should be laid upon a paper to dry, and may then be put up until the season of sowing.

As the plants which arise from seeds, generally flower much better than offsets, those who would have these flowers in perfection should annually sow their seeds.

POMEGRANATE (*Punica*.) This tree is a native of Spain, Italy, Portugal, &c. but when planted against a warm wall, will often produce fruit

in England. There are several varieties, and may be propagated by layers.

POND, a reservoir or receptacle for collecting and preserving water.

The necessity of water, in all pastures, is self-evident; as cattle cannot live without it, and the driving of them far for it is known to be prejudicial to their health, in hot weather, besides being attended with great trouble, and a considerable loss of time. This is so sensibly felt in many parts of England, that people are obliged to dig wells, even to such a depth as, frequently, to require the assistance of a horse to draw up the water. The means of rendering it easily come at must therefore enhance the value of the land where it can be so procured, and it is of very essential consequence to the husbandman.

Where the surface of the ground is sand or gravel, there seldom is occasion to dig deep for water; because such soils generally lie upon marle, or some other rich earth, through which the water cannot descend. Beds of clay are most commonly thicker than those of sand or gravel; and chalk is, too often, the thickest of all. But wherever water is wanting, the farmer should bore through the incumbent earth, if he intends to fit his land for pasture: and if he finds the expence of obtaining it too great, his best way will be to convert the ground, so circumstanced, into arable, or to plant it with timber-trees suited to the nature of the soil.

Wherever water stagnates in a sandy or gravelly soil, the husbandman sees at once at what depth is the surface of the earth which retains it. But in other soils, and when this does not happen, Palladius, and the authors of the *Maison Rustique*, give the following directions how to seek for water, with the greatest probability of success.

Where rushes, reeds, flags, willows, or other aquatic plants grow spontaneously, or where frogs are observed to lie squatted down close to the ground, in order to receive its moisture, there generally is water underneath. Persons who make it their business to find out springs for fountains, cascades, &c. look upon it as an infallible sign of subterranean water, when they see a vapour arise frequently from the same

spot of ground. Others assure, that wherever swarms of little flies are seen constantly flying in the same place, and near to the ground, in the morning, after sun-rise, there certainly is water under that spot. Again, where water is wanted on land apparently dry, let a man, before sun-rise, lie down flat on his belly, resting his chin upon his fist placed close to the ground, that his view may be directed quite horizontally, and not rise too high, and in that situation let him look stedfastly toward the east. If he then sees a tremulous vapour arise from any particular spot, let him mark the place, by noticing some neighbouring tree, shrub, or other indication, and he will find water underneath it. But this experiment is to be made only on ground whose surface is dry; because other exhalations, from a damp surface, would be apt, in this case, to mislead the enquirer.

Another way is thus: Dig a hole three feet wide, and at least five feet deep, and place at the bottom of it, when the sun is about to set, a pan, or basin, rubbed with oil on the inside: let the bottom of this vessel be uppermost; cover it with dry hay, fern, or rushes, and over that with earth; and if any drops of water are found standing on its inside the next day, a spring is probably not far off. Or, put a new, unbaked, but well dried, earthen vessel into such a hole, and cover it as before; and if there be water in that place, this vessel will be found soft and wet the next day. Likewise, if wool be left all night in a trench of this kind, and water can be squeezed out of it the next day, little doubt remains but that plenty of water may be met with there.

The month of August is generally looked upon as the most proper time to search for water; because, as the heat of the preceding summer will have warmed the earth to a considerable depth, any steam arising from water resting on an impervious soil underneath, and particularly in hollows on the surface of that impervious soil, will then be most exhaled by this warmth. Now it is this steam, or vapour, which produces the before-mentioned signs.

By whatever method water is found, the means of coming easily at it are the next consideration. If it be on a plain,

there is no other way than digging a well. In doing this, the substance under the sand or light soil must be dug into, to form a reservoir of water for occasional wants; and this reservoir should be made deep and large, in proportion to the quantity wanted. If there were no such reservoir, the water, after having risen a little above the impervious body underneath, would glide along its surface, as usual, and very little of it could then be obtained, either by pumps, buckets, or any other way employed to raise it. If the well is made in a sloping ground, and the declivity is sufficient to give it an horizontal vent, it will be worth the husbandman's while to dig such a passage, and, by means of pipes, or any other conveyance, to carry the water across the light soil, through which it would otherwise sink. The greatest quantity of water will be obtained in this manner, because there will then be a continual stream.

If the soil is very deep, and its surface has inequalities in which rain-water runs in any quantity; this may be collected in ponds made in the lowest parts of such grounds.

If a body of clay is found near the surface, it is worth the farmer's while to bore, that he may know at what depth a bed of sand or gravel may be met with, for he will be sure to find plenty of water in this last. If this be in a declivity, he need only cut an horizontal passage, and the water will flow so freely as even to double the value of his land.

Here again the farmer needs not ever to be at a loss, because it cannot be very difficult to make a pond in a clayey soil, which is, of itself, retentive of water. But it may, perhaps, be advisable, even in this, to cover the bottom of the pond with a coat of gravel, in order to prevent its being poached by cattle, whose feet would otherwise be apt to sink deep into the clay.—Some farmers judiciously pave the declivity by which the cattle enter into the pond, and this renders it much more lasting than it would otherwise be, and preserves the water clean.

When ponds are made in a loose soil, much more care is necessary. The bottom and sides there must be covered with a thick coat of the toughest clay.

from a foot to two feet thick, well rammed down. Some have added hair and loam to the outer part of this covering, with a view of rendering it less liable to chap: but a thick coat of gravel is more necessary here, that the feet of the cattle may not pierce through the clay. Perhaps the expence of paving the whole inside of a pond might, in the end, be money well laid out.

The greatest difficulty of finding water is in chalky soils, because these are not, of themselves, very retentive of it, and generally lie in such thick beds, that it is expensive to dig through them. However, it should be tried; and if sand or gravel be found underneath, water may be depended on.— Even here, ponds are easily made, by digging into the chalk, and lining them with a coat of clay, as before directed. If there be a supply of proper manure, such as clay or marle, this situation is well adapted to grain, which loves to stand dry; and as this kind of ground produces more forward crops than clayey or strong soils, it may be sowed early with corn, which will not, in that case, be so apt to be parched up as grass is, by the summer's drought. If a good soil can be made here, a foot deep, it will yield plenty of various sorts of pasture, either roots or grasses, as the farmer shall judge most proper: or it may be planted with different kinds of timber-trees.

POPLAR-TREE, (*Populus*.) A genus of trees, of which botanists enumerate four species, viz. the common white poplar, with large leaves; the common white poplar, with smaller leaves; the common black poplar, and the poplar with trembling leaves, called the aspen-tree. The poplar, whether black or white, may be easily propagated, either by layers, cuttings, or suckers, of which the white kind always produces a great many from the roots. The best season for the transplanting these suckers is in October, when the leaves begin to decay; and they should be removed into a nursery for two or three years, at the end of which time they will have got strength enough to be transplanted into the places where they are to remain.

When they are to be propagated by cuttings, it is best to do that in Fe-

bruary, cutting off large truncheons of eight or ten feet long; which, being thrust down a foot deep in the ground, will take root very quickly, and, if the soil be moist, will grow to a considerable size in a few years.

The black poplar is not so easily raised from these large truncheons, but should be planted in cuttings, of about a foot and a half long, planting them a foot deep in the ground. This will grow on almost any soil, but does much better on a moist one than on any other. They are the fittest of all trees for raising a shade quickly, as they will grow fourteen feet in height sometimes in one season, and in four or five years will be large trees.

A considerable advantage may be obtained by planting these trees upon moist boggy soils, where few other trees will thrive: many such places there are in England, which do not, at present, bring in much money to their owners; whereas, if they were planted with these trees, they would, in a very few years, over-purchase the ground, clear of all expence: but there are many persons in England, who think nothing except corn worth cultivating; or, if they plant timber, it must be oak, ash, or elm; and, if their land be not proper for either of these, it is deemed little worth; whereas, if the nature of the soil were examined, and proper sorts of plants adapted to it, there might be a very great advantage made of several large tracts of lands, which at this time lie neglected.

The wood of these trees, especially of the white, is very good to lay for floors, where it will last many years; and, for its exceeding whiteness, is, by many persons, preferred to oak; but, being of a soft texture, is very subject to take the impression of nails, &c. which renders it less proper for this purpose: it is also very proper for wainscoting of rooms, being less subject to swell or shrink, than most other sorts of wood: but for turnery-ware, there is no wood equal to this for its exceeding whiteness, so that trays, bowls, and many other utensils, are made of it; and the bellows-makers prefer it for their use; as do also the shoemakers, not only for heels, but

also for the soles of shoes: it is also very good to make light carts; the poles are very proper to support vines, hops, &c: and the lopping will afford good fuel, which, in many countries, is much wanted.

POPPY, the name of a plant, of which, several species are cultivated in gardens for the beauty of the flowers. They are all easily propagated by sowing the seeds in autumn. When the young plants come up, they are to be cleared from weeds, and thinned to a proper distance by pulling some up, where they stand too thick; for they never thrive well, if they are to be transplanted. They are to be left, according to their sizes, at six, eight, or ten inches distance.

They are very showy flowers, and make a splendid appearance in gardens, but they are but of a short duration, and are of an offensive smell, which makes them less valued at present than they have been.

Some sow these plants in spring, but it is not so well; because they then have not time to get strength before autumn, when they are to flower; and, for that reason, those sown in spring usually flower weakly.

The heads and stalks of these plants contain a milky juice; which may be collected in considerable quantity, by lightly wounding them when almost ripe: this juice, exposed for a few days to the air, thickens into a stiff tenacious mass, agreeing in quality with the opium brought from abroad. The juices of both the poppies appear to be similar to one another; the only difference is in the quantity afforded, which is generally in proportion to the size of the plants; the larger or white poppy, is the sort cultivated by the preparers of opium in the eastern countries, and for medicinal uses in this.

Poppy heads, boiled in water, impart to the menstruum their narcotic juice, together with the other juices, which they have in common with vegetable matters in general. The liquor strongly pressed out, suffered to settle, clarified with whites of eggs, and evaporated to a due consistence, yields about one-fifth or one sixth the weight of the heads, of extract. This possesses the virtues of opium; but requires to

be given in double its dose to answer the same intention, which it is said to perform without occasioning a nausea and giddiness, the usual consequences of the other. A strong decoction of the heads, mixed with as much sugar as is sufficient to reduce it into the consistence of a syrup, becomes fit for keeping in a liquid form; and is the only officinal preparation of the poppy. Both these preparations are very useful ones, though liable to variation in point of strength: nor does this inconvenience seem avoidable by any care in the prescriber, or the operator; since the poppy heads themselves (according to the degree of maturity, and the soil and season of which they are the produce) contain different proportions of the narcotic matter to the other juices of the plant; as has been observed in the Pharmacopœia reformata.

The seeds of the poppy are by many reckoned soporific; Juncker says, they have the same quality with those of henbane, and Herman looks upon them as a good substitute to opium; misled probably by an observation which holds in many plants, that the seeds are more efficacious than the vessels in which they are contained.

The seeds of the poppy have nothing of the narcotic juice which is lodged in their covering, and in the stalks; an oil expressed from them has been used for the same purposes as oil olive, and the seeds themselves taken as food: their taste is sweetish and farinaceous.

Red Poppy or Red-Weed. The common wild red poppy is one of the most mischievous weeds the farmers are plagued with among their corn, and it is the most difficult to thoroughly destroy of almost any other. Its seed will lie a long time in land unploughed, without ever shooting; but they will be sure to grow with every crop of corn. Mr. Tull gives an instance of the seeds of this plant being buried four and twenty years in a field of saint-foin, and at the end of that time, the land being ploughed for wheat, they all grew up among the corn, though they had lain dormant so long before.

The flowers of this plant yield upon expression a deep red juice, and impart the same colour by infusion to aqueous liquors. A syrup of them is kept in the

*The root dies in
winter, but if seed
drop the land is to be
ploughed, &c. above*

*see
Corn
Note.
1099*

the shops; this is valued chiefly for its colour; though some expect from it a lightly anodyne virtue.

Herod POPY. Celandine.

Priety POPY. [*Argemone.*] Infernal Fig.

Spalling POPY. See *Berry-bearing CHICKWEED.*

Wild POPY. See *Red POPY.*

POTATOES. [*Lycopersicon.*] The name of a well-known plant, the roots of which make a very nourishing food.

Mr. Houghton describes the potatoe to be a bacciferous herb, with esculent roots, bearing winged leaves and a bell-shaped flower, and says, that, according to his information, which is allowed to be very right in this respect, it was first brought from Virginia, by Sir Walter Raleigh, who, stopping at Ireland, about the year 1623, gave away a number of these roots, which were planted there, and multiplied so exceedingly, that, in the wars which happened afterwards in that country, when all the corn above ground was destroyed, potatoes became the chief support of the people; for the soldiers, unless they had dug up all the ground where they grew, and almost sifted it, could not have extirpated them. The Philosophical Transactions observe likewise, that the Irish were relieved from their last severe famine, which lasted two years, during which all their corn failed, merely by the help of this root. From Ireland it was brought to Lancashire, now famous for its potatoes; and the culture of this plant has, within these last thirty years, been extended to almost every part of England. The rich, who, at first, deemed them fit for none but the meaner sort of people, now esteem them so much, that Mr. Miller thinks the quantity of them which is cultivated around London only, exceeds that of any other part of Europe.

The red-rooted potatoes have purplish flowers, and the white-rooted (for Mr. Miller distinguishes only these two general varieties) bear white flowers.

The potatoe seldom perfects its seeds in England; and if it did, the raising of it from them would be much more tedious and uncertain than propagating it by its roots, as is the general and right method: for these multiply exceedingly, and may be made to yield vast crops, with little cost or labour.

“ The Irish husbandman, says Mr. Switzer, after blaming the English for planting this root uncut, because it often contains five or six eyes, or perhaps more, from which the produce of the ensuing year is to spring; and also for not allowing that bulb, or rather the great number of shoots and bulbs that proceed from it, a space of earth sufficient for their nourishment, which is the reason why so many poor, stunted, unserviceable potatoes are dug up in the autumn, relates the practice of his country, which is to chuse middle-sized roots, for the largest are generally eaten, to single out the eyes that seem strongest and most vigorous, and to cut them out in squares of at least half an inch every way: so that one root will sometimes furnish three or four good pieces to set.

“ The ground, prepared for planting, is marked out for beds four or five feet wide, with intermediate alleys of two or three feet. It is then trenched, only a single spit deep, and the bottom of the trench, made as in common garden-trenching, is covered with dung, long and short, taken out of a wheelbarrow which stands at the labourer's elbow. The potatoe-eyes, cut as before directed, are placed upon this dung, at about five or six inches asunder; and this trench is filled up with the mould taken out of the next, which is marked by a line at the distance of two or three feet. This trench is again filled with the mould of the next, and so on to the last, which is filled from the alley.

“ The use of the dung thus laid at the bottom of the trenches, is not only to make the roots grow single, for not above one root, or at most two, will in this case be produced by each eye, and these will be large and well fed; but it is attended with the farther advantage of making the potatoes run, and spread themselves to a certain determinate depth, which is no small help to their growing large.

“ The last thing to be done to them is, in April or May, (for they are planted in February or March) as soon as they begin to rise, to dig the earth out of the alleys as is done for asparagus, and to cover the potatoe bed with it, about five or six inches thick. This will

will give new life and vigour to the roots, will keep the green from running too much to haulm, and will make the bulbs grow much the larger. By this means the crop of fine large potatoes will be almost the double of what is obtained when they are planted promiscuously in the common way; nor will any farther culture be requisite till they are fit to be dug up; except the pulling out of some of the largest weeds."

Mr. Miller's reasons for disapproving of the planting, either of the small offsets entire, or the eyes cut out of larger roots, are, that though the former generally produce a greater number of roots, these roots are always small; and that the cuttings of the larger roots are apt to rot, especially if wet weather happens soon after they are planted. He therefore recommends, to make choice of the fairest roots for setting, and to allow them a larger space of ground, both between the rows, and between the plants in the rows; and he assures us that he has observed, when this method has been followed, that the roots, in general, have been large the following autumn. M. Duhamel, in his Elements of Agriculture, does not object at all to the planting of the cuttings.

The soil in which this plant thrives best, is a light sandy loam, neither too dry nor over moist, but brought to a fine tilth, and ploughed very deep: for the deeper the earth is loosened, the finer and larger the roots will grow. In the spring, just before the last ploughing, a good quantity of rotten dung should be spread on the ground, and this should be ploughed early in March, if the season be mild; otherwise it had better be deferred until the middle or latter end of that month; for if a hard frost should come on soon after the roots are planted, they may be greatly injured, if not destroyed, thereby; but if they can be planted in the spring, without that danger, the better it will be.

The last ploughing should lay on the ground even, and then furrows should be drawn three feet asunder, and seven or eight inches deep. The roots should be laid at the bottom of these furrows, about a foot and a half asunder, and

they should then be covered in with earth.

After all, the ground intended for potatoes is planted in this manner, it must remain in the same state till near the time when the shoots are expected to appear; then it should be well harrowed both ways, as well to loosen the surface and render it smooth, as to tear up the young weeds which will have begun to grow by that time. If much wet has fallen after the planting, it may have caked the surface of the earth, so as to retard the sprouting of the plants; and this harrowing will, in such case, almost answer the intent of a first hoeing.

I have placed the rows of potatoes at three feet distance, continues Mr. Miller, in order to introduce the hoe-plough between them; because that will greatly improve their roots: for by twice stirring and breaking of the ground between these plants, not only weeds will be destroyed, but the soil will be so loosened, that every shower of rain will penetrate to the roots, and greatly quicken their growth. But these operations should be performed early in the season, before the stems or branches of the plants begin to fall and trail upon the ground: for after that, it cannot be done without injuring the shoots.

If these hoe-ploughings are carefully performed, they will prevent the growth of weeds, till the haulm of the plants cover the ground; and after that there will be little danger of their growing so as to injure the crop; for the haulm will keep them under: but as the horse-hoe can only go between the rows, it will be necessary to make use of the hand-hoe to stir the ground, and destroy the weeds in the rows, between the plants. If this be well done in dry weather, immediately after each of the two horse-hoings, it will be sufficient to keep the ground clean until the potatoes are fit to be taken up; which will be very soon after the first frost in the autumn has killed the haulm. They should not remain much longer in the earth, lest the roots themselves be frost-bitten, which spoils them. A four or five pronged fork is better to dig them up with, than a spade, because it is less apt to cut them: but the principal

principal thing to be considered here, is the clearing of the ground thoroughly of them: for if any are left, they will shoot up among the next crop, whatever it be, and do considerable damage, especially if it be wheat, as is generally the case, sown in the common broad-cast way.

The best way of keeping these roots during the winter, is to lay them up in a dry place in very dry sand, or in fine and perfectly dry earth.

The method of laying dung only at the bottom of the furrows in which the roots are planted, "is a very poor one, (says Mr. Miller) because, where the potatoes begin to push out their roots, they are soon extended beyond the width of these furrows, and the new roots are commonly formed at a distance from the old: so will be out of the reach of this dung, and consequently will receive little benefit from it." But rather the contrary would seem to be the case, according to the Irish husbandman, who, seems to speak from experience, when he says, he had intended expressly to answer this very objection, that "the dung is placed at the bottom of the furrows on purpose to make the roots grow single; and that its being so placed is attended with the farther conveniency of making the potatoes run, and spread themselves at a certain determinate depth, which is no small help to their growing large." Facts must here determine which is right: as they also must in regard to some parts of what Mr. Miller adds in the following words: "As most farmers covet to have a crop of wheat after the potatoes are taken off the ground, so the land will not be so thoroughly dressed in every part, nor so proper for this crop, as when the dung is equally spread, and ploughed in all over the land, nor will the crops of potatoes be so good. I have always observed, where this method of planting the potatoes has been practised, the land has produced a fine crop of wheat afterward, and there has scarce one shoot of the potatoe appeared among the wheat, which I attribute to the farmers planting only the largest roots: for when they have forked them out of the ground the following autumn, there have been six, eight, or ten large roots

produced from each, and often many more, and scarce any very small roots; whereas, in such places where the small roots have been planted, there has been a vast number of very small roots produced, many of which were so small, as not to be discovered when the roots were taken up; so have grown the following season, and have greatly injured whatever crop was upon the ground."

Will not a thorough ploughing and good harrowing, after the crop of potatoes has been taken off the ground, intermix the dung laid in the furrows, and the contiguous earth most impregnated thereby, with the rest of the soil; perhaps almost as well as if the dung had been spread equally over the whole field, at the very first? If it will, the presumption seems strong in favour of the Irish method. For certain it is, that the land ought to be well ploughed and harrowed after the potatoes are removed, before it is sown with any other crop; unless the seed for that crop, which generally is wheat, be sprinkled by hand between the rows, as they are dug up, and there covered with the earth then turned over. This is practised in some parts of France: but, as M. Duhamel observes, the grain is so apt to be distributed unequally in this method, that it is better to plough the ground, and sow it, in the regular way.

If the farmer apprehends that his land has not been thoroughly cleared of the potatoes, and is therefore afraid of their damaging his ensuing crop; his best way will be to lay it up very rough against winter; because the frosts of that season are known to kill and rot all potatoes in the ground exposed to them, and it will at the same time be thereby finely prepared for spring corn; especially as it will have been well enriched by the haulm of the potatoes lying upon it.

Though potatoes delight most in a light sandy loam, neither too dry, nor over moist, as was observed before; yet Mr. Maxwell says he has seen them thrive well on ground that seemed to be very bad; even in deep moss, which could not bear horses to plow it, but which is considerably bettered by them; and on coarse heath, where they were succeeded by grain, without more dung than

than was laid on at first. Of so improving a nature are they, and so much is the land enriched by the rotting of their stalks among it, and the digging it gets in raising them.

Several experiments communicated to M. Duhamel concur to prove the extraordinary increase of potatoes cultivated with the horse-hoe: but as this will always be the consequence of the new husbandry, wherever it is properly used, I shall only borrow from him, on this occasion, M. de Villier's account of his method of practice, because it is the clearest and most concise:

"There are, says he, several sorts of potatoes. That which I cultivate is the middle-sized. It is planted about the end of April, or the beginning of May, and it ripens in October. My beds are five feet wide. I give them two ploughings in the spring; at the second of which I half fill the main furrow. Before I plant, I cut a small furrow with the single cultivator, which likewise loosens the earth; but if it be moist, I put a double spring-tree bar to the cultivator, to avoid the poaching of the horses. I then plant the potatoes a foot asunder in the row; choosing for this purpose such as are about the size of a walnut. They are thrust in by hand, two or three inches deep; and if the mould does not then cover them sufficiently of its own accord, a little more is pushed down upon them.

"A slight hand-hoeing can hardly be avoided afterwards, to destroy the weeds which spring up at the same time as the potatoes: but this hoeing need not extend farther than three or four inches on each side of the row; because the plough will do the rest.

"I give the first hoe-ploughing in the spring, as for wheat; but earlier or later, according to the condition of the ground.

"My second hoe-ploughing is given as soon as the plants are tall enough to be earthed up; that is to say, when they are eight or ten inches high. I then turn the earth up towards them as much as possible.

"As this plant spreads greatly, and shoots out very fast, it would be impossible to give more than two of these

shootings, if one should neglect to take advantage of the time when its leaves and branches do not entirely cover the bed.

"The roots are dug up in October or perhaps somewhat earlier or later, according to the season, with a strong iron prong; shaking and clearing them well from the mould. They are then left to dry for some hours, and are afterwards laid in a place where the frost cannot reach them.

"This fruit, which yields surprisingly, is of great service to feed and fatten cattle, especially when it has been boiled a little. They like it very well raw, after it has been kept a few months above ground; but it is best for them after it has been boiled."

The reader is obliged to the ingenious Mr. Irwin for the following account of cultivating potatoes in Ireland, and which we shall give in his own words:—

"The potatoe, says he, is become a root of such immense utility, especially to the poorer sort, within this century, that too much, methinks, cannot be said towards improving and extending the culture of it.

"In Provence, Dauphiny, Switzerland, and several other parts of Europe, and even in America, it yields commodious, abundant relief to the more indigent, as being easily and plenteously propagated in almost every kind of soil.

"In Ireland particularly it is the principal food of the poor during the greater part of the year, without which, since the late unproportionable rise of lands in that kingdom to the trade of it, they could not well subsist. And, indeed, it seems a particular favour of Providence sent to them on this account.

"In times, not very remote, lands were cheap there, and the peasantry, consequently, lived on nourishment somewhat more luxurious, and diversified: their labour also was less burthenome. But now, being obliged to work hard at four-pence and six-pence a day, and their rents considerably augmented, it will not seem surprising, that this root alone has become the staple of their support, and that they have been the first people in Europe, or, perhaps, in the world, that have led the example

example in an extensive improvement of it. This may naturally be supposed to arise from close-pressing necessity, the most cogent and inspiring of all motives.

“ In truth with much reason ; for a poor labourer, in that ill-fated country, is driven to seek his sole refuge for subsistence in this root, from the inexorable imposition of a hard-hearted landlord, (sorry I am to have it to say, too many of them grind the poor ; but hope it will not belong the case) who thinks he cannot get too much for his land out of the persons, or purses, of his dependents, and who hath so inverted the old customs, that a hewer of wood, and drawer of water, (and many of these perhaps descendants of former proprietors) can afford himself but a miserable scanty platter of potatoes, seasoned with a palatable grain of salt, and washed down with a draught from the next rivulet, to support the fatigue of thirteen hours (statute quantity) of unceasing labour, about his ancient mansion-house, or in his elegant gardens, well-laid out closes, or refreshing bog-holes.

“ The potatoe is a root, a little of which is very filling, quickly appeasing hunger ; but by no means a lasting solid nourishment for a labourer, as evidently testify the squalid looks of numbers of the poorer Irish ; though at the same time it is in general wholesome, agreeing with most stomachs that can vary their food ; but, like other productions of the earth, forbid in many cases by the medicinal tribe.

“ There are several ways of breeding potatoes in Ireland, which partly arise from the difference in soil, and kinds of seed. The different soils for this purpose in use in my neighbourhood, for about twenty years past, and which, I believe, are pretty general, are the following, wherein they are abundantly propagated, viz.

“ First, On rich clay land without any manure, vulgarly called grass potatoes.

“ When a lease is near being expired, that is, during the last seven years of it, if there be no covenants grounded on the statute against waste, &c. the tenant, finding no hopes of a renewal, sets considerable tracts in this way, where the soil will admit of it,

“ Secondly, on good ley land well gravelled, (otherwise sanded) which ought to be done a year before planting. But the poorer sort, who are the chief cultivators of this root, are obliged to sand and plant at the same time, or nearly thereabouts ; which is very destructive to themselves, their potatoes not having the proper benefit of the manure ; at least one part in three of the return are on this account exceeding small, and are from hence called poreens by them, being a diminutive expression. Whole fields are set in this way, (commonly called spaddane) in which a considerable trade is driven ; especially in the provinces of Munster and Connaught.

“ Had it been properly and moderately done, it would be a fine preparation for the increase of corn, and the laying down and bringing in, or in other terms the reclaiming of land ; but the poor do it so negligently, and mangle it so intolerably, having but a short temporary use in it, besides paying near double the worth for it, that this manufacture, which might otherwise be of considerable benefit to Ireland, is, as now carried on, rather the contrary.

“ Thirdly, On ground previously gravelled (that is, perhaps six months before) and dunged at setting time. There is but little done in this way, except by the gentry, and renters of land for their private use ; it being as yet out of reach of the peasantry, unless in a few instances.

“ Fourthly, On the ley with dung alone. Marle is not in use in my neighbourhood, though there is plenty of it in several parts of it ; therefore cannot yet inform you how it would do for the potatoes in that district. As to potatoes set in the ley with dung alone, this manufacture also is done, as you may judge, mostly by the more opulent. I have, however, often seen large fields set in this way to the public : but it is not of late years so much the custom, this sort of land being commonly kept for grazing : this hurts the land ; and any preparation out of the ley for potatoes will, if not previously gravelled.

“ Fifthly, In arable or stubble land, (vulgarly called sticking or thrusting of potatoes, because they are sown with a

stick, pointed at the end, about an inch diameter and two feet long, with the ley, otherwise the Irish spade.) In this method dung is also used, which shall be noticed in its place.

“ These are the most general methods that now occur to me, or I believe that are in use. There are, however, some others arising from the quality of the seed, practised only by the curious, in which the plants are put down at nine or twelve inches asunder every way, in little hillocks, (like the hop plant) as practised in several counties in England; and, if you land them at certain proper stated times while vegetation continues, you will have a handsome nest of large oblong potatoes at every landing.

“ I made the experiment of one fort in my garden; and out of half a dozen potatoes cut into several pieces, each having an eye, I had, to the best of my remembrance, without exaggeration, a quantity equal to twelve Winchester bushels.

“ This kind of potatoe is introduced into Ireland but of late years: it is however well known there.

“ A potatoe entirely black is also in use in Fingal, near Dublin, fructifies abundantly, and eats exceeding dry, which principally marks the goodness of this root in almost every instance.

“ There are several kinds of potatoes. Mr. Maxwell, of Arkland in Scotland, a very judicious gentleman, has particularly noticed six sorts, viz. The long red, the round red; the long white, the round white, or Spanish potato; the blue, the leather-coat, and an early kind that comes in a month sooner than the common sort, though planted at the same time.

“ This root being greatly manufactured in Ireland, they mix most of the better sorts promiscuously, both for use and seed.

“ I remember, about twenty-five years ago, the large red potatoe, then called the Castonian, (perhaps from Castile) as also the oblong Spanish white potatoe, to be chiefly in use; but now a lesser sort, such as the Munster or kidney potatoe, of a whitish or lightish yellow colour, the leather-coat, or round red Cronian potatoe, with a rough

thick skin, and particularly that stiled the Spanish white potatoe, are mostly in use.

“ All these sorts are cut for seed according to the number of eyes on them, and thrive generally well with very little care, so that all sorts being now plenty, and answering so well, there are (as we may easily judge) no over-nice distinctions made about them there. The poorer Irish, who affect not to plant this root in bottom lands, or wet swampy grounds, unless hard pressed for soil, are even in this case seldom attentive about the kind of potatoe they put down, the return being commonly wet, unfit for eating, and only proper for seed, which (from my little experience) I think makes but indifferent, though sown in the best prepared upland; for too much moisture, as well as too much dung, makes a potatoe wet: and plant it when you will, I am apprehensive it never loses this quality, which is the worst it can have, except being rotten, or frost-bit; nor will any eat so well, raised from dung, as without.

“ As the potatoe thrives in different soils, so there are different methods of cultivating it: I will therefore now proceed to that most generally in use in my neighbourhood, (and indeed all over the kingdom) called grafs potatoes or spuddane, and by some (improperly) conacres, which seems to be the natural culture, but doubtless not so good to make the land stand long proof, (notwithstanding the gravelling) as if artificial manures were added, such as dung, compost, lime, &c.; for marle, lime-stone, gravel, sea-sand, shells, &c. I consider in the class of natural manures and the best; and providence hath kindly given them in every spot, (even in the unpromising deserts of Zara, &c.) had we known how to come at them.

“ Land in the ley, (as I said before) and that which requires no manure, the Irish seek most greedily after, some of which has not been ploughed perhaps within this century: so that you can only just distinguish that it has been tilled, and the tilth generally curved, the old people inclining the plough with the casual shape of the field, so as

to let the water in the furrow have a drip or fall.

“When a peasant has the good luck to get a bit of such choice ground, (for two or three of them will be concerned in an acre, and few take more than one) he follows the old ridge with his *loy*, or Irish spade, unless compelled by the possessor of the land to make his ridges straight, which he most unwillingly does, and at best but awkwardly, with a rope made of hay or straw, or some of his wife's worst tow; neither of which stretching tight, and often breaking, seldom admit well-looking ridges: these he makes from one end of his ground to the other, the beds being about three, or at most four feet wide, and the furrows, or trenches, about two. When he deposits the seed on his bed, at about four or six inches at most asunder, he divides the turf of his furrow in two equal parts, which he turns alternately in fods on the edge or verge of each bed, the green side on the potatoes, cutting the fods on three sides or angles, leaving that next the bed uncut. This laborious work the poor-fellow does surprizingly quick: two more men follow him, one digging the under-stratum, and throwing up on the middle of the bed as much of the earth as he conveniently can with his *loy*: the remainder the third man casts on with his shovel, settling the bed in the form, or manner, in which it is to remain.

“Some cover their potatoes at first (through want of time) with only the fod, and about four or five inches of earth, and finish them perhaps, that is, cast the last covering on them, not for a month, or six weeks after; which possibly may greatly check their growth. Many account this the best way, and it is become common; but I attribute the neglect of not finishing their potatoes (as the term is) in due time, to no want of proper knowledge in the common Irish, but their inability to give the proper attention to their own little affairs, occasioned by the greedy severity of their masters, as before observed.

“Others there are (and many) who, making the furrows unproportionably narrow to the beds, throw up a third spit or stratum, and perhaps not until two months after the first setting.

“This pernicious method may possibly destroy or check the weeds; but certain I am, it will not contribute to the increase or largeness of the root, in the unphysical or over heavy manner in which I have seen it done; because this lower stratum, which is mostly sand, remains on the top of the richest part of the soil, and being thus unmixed with it, prevents it from receiving the proper benefits of the air, &c. besides, too great a covering on the potatoe is highly prejudicial to it.

“In other cases, these stratams thrown up, and mixed into a good tilth, would answer wonderfully, mixing well being the life of good tillage. I would therefore in this place recommend to our farmers (who are too penurious of their land) to make their potatoe trenches so wide, as not to require throwing up much of the third or sandy stratum on the last covering, or landing, of their potatoes: and they will find a much greater return, and one half (or more) less of *potions*, or small potatoes: which is an object highly worthy of their notice. The experiments I have made, I purpose repeating on my return to Ireland, and hope to prove this simple method to exceed that in the hillock, or in the drill way.

“In this manner all ley land is sown with potatoes by the common people, and most others, whether manured or not. If dunged, the dung is laid out as the ridges are to be, but the sand is spread all over the surface. Commonly little boys and girls precede the fetters on the ridges, laying down the seedlings or potatoe eyes, which they do very quick, and tolerably well, at the appointed distance. This seems a giddy part of the business, and well suited to their years; but custom makes them perfect in it.

“The next general method is planting potatoes in stubble ground, which is, in the common way above-mentioned, by dunging it well, and sometimes by plowing it in, and then shovelling up the ridges, a man going before, lightly digging them, that there may be a sufficient quantity of mould to cover them; but this the poorer sort cannot well compass to do, and always avoid it when they can get a fresh or ley surface.

“ Nor do they sow them to chufe, the fecond year, in the fame ground, with- out dung or fome other artificial ma- nure, (for the natural, fuch as fand, marle, &c. would not do) unlefs it be exceeding good.

“ Lime, indeed, in this cafe would very probably answer, but it is rarely tried.

“ There is alfo a cuftom a good deal in ufe, which is by fticking or thruft- ing potatoes in stubble land fresh ploughed, which is done in this man- ner: a man (but feldom two) goes on the crown of a narrow ploughed fet, and flicks his *ley*, or *Irifh fpace*, in it, every here and there, with his right foot, holding it in his left hand, and with it pushing the fpace once, and fometimes twice from him, to make an opening, (which I have feen done with a good deal of dexterity) and with the right hand, that contains the feed, (a convenient quantity of which he car- ries in an apron or cloth tied round his middle, fo as to let the contents be eafily come at, he throws one, and fometimes two fets, or eyes, into the opening which the *ley* makes behind; and on his drawing it away, the loo- fened earth falls in and covers them: Soon after he dungs the ridges, and covers them up, as in the preceding method, with mould out of the furrows.

“ Sometimes alfo they do this work with a ftick about eighteen inches long, and an inch or fo diameter, point- ed at one end, and fomewhat curved at the other. By this eafy means huf- band, wife, children, and fervants, if they have any) and a friendly neigh- bour or two, (who may be helped in return) affift at it for greater expedi- tion, efpecially when the feafon hap- pens to be advanced.

“ In Scotland they do this work fomewhat differently.

“ In Ireland alfo there are many who fow potatoes after the plough, the ploughman letting the fets drop in as he goes along; and a harrow matched to the fame plough, following him clofe behind, covers them in. There is no great difficulty in this, the land being in tilth. Over all they put dung; but they fhould mind to give it a light covering, that the fubftance of it might impregnate with the adjacent earth, which it would not do, but evaporate

by being left expofed to the air, &c. yet this precaution many are very ne- gligent in.

The other methods, as in the Drill, or hillock, or horfe-hoeing way, &c. are little ufed there, except among the more curious; but they being well known in England, it is needlefs to mention them in this place.

“ The next thing requifite is the fencing, which fhould be done, at fartheft, before the ftalk begins to ap- pear; for if the cattle, that are in that feafon greedy for fresh vegetables, get at them, the roots of fuch as they nip will never come to the fize they otherwife would.

“ This is well known in Ireland; and the poor, chiefly I believe from inability, and partly from a fort of careleffnefs or rather lazinefs they ftill inherit (notwithftanding the mix- ture of Englifh and Norman blood, &c.) from their Spanifh ancestors, are very remifs in this refpect; efpecially in the chiltern or more fertile parts of the country; where, in moft mat- ters of husbandry, they leave too much to chance, relying on the bounty of the foil.

“ About me, and in many other parts, they very commonly do not put on the firft covering till about the mid- dle of May; and the fecond, perhaps, not for a month after; fo that it is often July before they fence them pro- perly: and where many of them are concerned in a plantation (as is ufually the way) it is moft troublefome and difficult to get each man to do his part of the ditching, which commonly is but a forry mound of fods, with fome bufhes fodded down on top, to keep out fheep that fmell this plant when it rifes, (as cattle do corn) and are very dextrous at getting at it.

“ Some of thefe poor people are fo heedlefs, they never can be brought to make their fences; and then the owner of the ground, in his own defence, is obliged to get it done at an advanced price, and they to pay for it, or their potatoes to remain.

“ Many of them, efpecially in cheap years, leave them on the landlord’s hands; and, unlefs a farmer collects himfelf, or has a good fervant to do it, the rent is not had without immenfe trouble, and fome of it never. Not- withftanding

withstanding these difficulties, many farmers have made easy fortunes in this way.

“ Thus it happens, at the time they are often finishing the fencing, they ought to be weeding their potatoes.— The weed that mostly annoys them is the Scotch thistle: this should be cut away in June, and if the soil should be so rich as to require a second weeding (which is very often the case) it should be done in August. There will be no other trouble with them till digging time.

“ The best time for this work is in the latter end of October, or beginning of November, to avoid the early frosts, which are mortal to them: but if, by bad husbandry, they have been planted late, they should be left longer in the ground, and covered with litter, or haulm, to prevent being lost in this way.

“ About Michaelmas, the cattle are let through them, the roots not being then affected by the nipping, or beating down of the stalk: this the peasants know by the colour of it, which becomes a dark brown, losing its verdure; as also by the apple and root.

“ The more needy begin to dig them for use in August, though they are not then near so long in ground as they are in England; which demonstrates the excellence and strength of the Irish soil.

“ When gentlemen farmers dig their potatoes, they set on a great number of hands at once, two to a ridge: boys and girls gather them promiscuously, big and little, into bags containing about two Winchester bushels; and thus they are carried to the farm-house, and thrown into a room, in one heap, part of which is destroyed by the frost, a great part by the kitchen, also by the hogs, who destroy them much while in the ground, there being hardly any fencing against them; a great part are also stole by the followers, or hangers-on; and the remainder rarely suffices for feed;—of so little value is this estimable root considered in those parts: and yet I have often known them at a very high price, from ten to twenty shillings, and upwards, the big barrel, which is the usual measure in the western parts of Ireland; that is, above

two barrels, or eight bushels, Winchester measure.

“ Had they such places as Covent-Garden near them, the case would be far different: but where there are no convenient and brisk markets, the waste in farms is always great.

“ Though, as I remarked before, low or swampy grounds do not answer well for potatoes, yet they sometimes thrive, and are large, the meat being generally scabby, close, wet, and heavy, from the too great impregnation of the water, which renders them unpalatable, and not the best for seed; however, such are chiefly used in this way: yet I have seen them planted in red bogs, which are the wettest and worst; and the bog being previously fanded and dinged, the stalk looked green and healthy, and some of the roots might perchance have eat dry; but those planted in black, or drier bogs, have been found to succeed well.

“ There is no culture perhaps, yet known, will better reclaim waste and unprofitable lands, than that of the potatoe. Ireland can well prove the truth of this assertion, in a numberless variety of instances.

“ I have seen several tracts of woodland stubbed up, and brought into fine tilth, by means of the potatoe husbandry. America, I believe, can say the same.

“ Of late years the hard-hearted sky-farmers, that is, the inferior sort, and even some of our gentlemen-farmers, drive the poor into the mountains, moory grounds, wooded and stony lands, and even into the bogs; and when, by the culture of the potatoe principally, they have reclaimed them, so as to be fit to admit cattle, they are turned out without ceremony. I have in such places seen as fine crops of potatoes, and afterwards flax, and different kinds of corn, as ever I met with any where.

“ The mountain and other surfaces, except bog, seldom fail being blessed by nature with limestone, gravel, (which is the commonest) or some other manure, adapted to them; so that it is nothing but hands, money, and a proper limitation of the grazing-farming, that are wanting to make almost the whole kingdom look like a garden,

garden, or like England; I need go no higher with the comparison.

"It is true, in some few counties of Ireland, in particular districts, nature either has not been so bountiful, or the farmers have not found out the internal manures; being obliged to carry sea-sand, and other sorts, many miles; in which, however, they find their account, notwithstanding the impolitically too much limited trade of the kingdom.

"Before I dismiss this subject, it may be proper to observe, that a second crop of potatoes is sometimes taken out of the same land successively; but this is not common, at least about me, though I believe the land is as good as any in the province. On the contrary, the usual way is, after the first crop of potatoes is taken off, if the soil is strong, they immediately sow bere in it, or keep it till the following spring for flax, which requires an equally strong soil: or if the ground be but of a middling good sort, they sow it, just after the potatoes are taken out, with wheat; or keep it till the April following for barley.

"The sky-farmer generally takes the land into his own hands after the first crop of potatoes, and sows it with bere, wheat, or barley, for two or three seasons; after which, if he refreshes it with a summer, or a winter fallow, he sows the same kinds of grain in it for two or three seasons more; then he takes two or three crops of oats; and when it is well impoverished, or drawn (as they call it there) he lets it for several years together, in con-acres, to the poor people for at least one third more than the real value.

"From hence we may judge how much an alteration of method in husbandry is wanting in those parts."

POUND, *Avordupois*, contains sixteen ounces. A pound Troy, twelve ounces.

POX. A disorder in hogs. This is a name by which the farmers express a disorder of their swine, that shews itself outwardly in a multitude of pimples and blotches; and keeps the creatures miserable, and makes them pine and waste.

It rises from wet and filth in their flies, and from unwholesome food.

The remedy is this: Make a hot

mels for the creature, and give it in an ounce of venice treacle.

After it has taken this, let the whole skin be well cleaned with soap suds, and then wherever the sores and pimples are, use the following ointment. Melt over the fire two pounds of hog's lard, and stir in half a pint of tar. When it is taken off the fire, put to it as much flower of brimstone as will thicken it when cold into a firm ointment. Rub this upon the hog every night for four times, and keep him dry and clean, and it will commonly make a cure in that time.

The farmer must observe, that this disease is infectious; so that he must separate those hogs which have it from the rest, and not put them together again till they have been some time well, and he sees there is no return of the disorder.

PREDIAL TITHES, Are those which are paid of things arising and growing from the ground only, as corn, hay, fruits of trees, and the like.

PRICKS in a horse's foot. Whenever this accident happens, we advise the owner to turn his horse immediately to grass, and to apply nothing external to it. If that cannot be done, only rub on the horse's hoof some ointment of elder two or three times a day. All tents are pernicious, and all spirits.

PRICKLY PEAR. See INDIAN FIG.

PRICK MADAM. [*Sedum*.] House-leek.

PRICKWOOD. [*Eucnymus*.] This grows very common in hedges in different parts of the kingdom, in some places called Dogwood. The best butchers skewers are made of this wood.

PRIMROSE. [*Primula*.] This plant grows in hedges and woods in almost every part of the kingdom; if transplanted into gardens it loses its beautiful pale colour, and becomes reddish.

Tree, or Night PRIMROSE. [*Oenothera*.] There are several species of this plant natives of Virginia and other parts of America, and are propagated by seeds.

PRIVET. [*Ligustrum*.] There are two sorts. 1. The common. 2. The Italian Privet.

The first sort grows common in the hedges in most parts of England, where it rises fifteen or sixteen feet high, with a woody

a woody stem covered with a smooth grey bark, sending out many lateral branches, garnished with spear-shaped leaves, ending with obtuse points, and are of a dark green. The flowers are white, and are produced in thick spikes at the end of the branches, having a tubular petal cut at the top in four parts, which spread open. These are succeeded by small, round, black berries, which ripen in the autumn. The leaves of this sort frequently remain green till after Christmas. There are two varieties of this, one with white, and the other hath yellow variegated leaves; but to preserve these varieties they should be planted in poor land, for if they are in a rich soil they will grow vigorous, and soon become plain.

The second sort grows naturally in Italy; this rises with a stronger stem than the former, the branches are less pliable, and grow more erect; their bark is of a lighter colour, the leaves are much larger, and end in acute points, and are also of a brighter green; they continue in verdure till they are thrust off by the young leaves in the spring. The flowers of this are rather larger than those of the common sort, and are seldom succeeded by berries in this country.

Both these sorts are cultivated in the nurseries near London, to furnish the small gardens and balconies in the city, the first being one of the few plants which will thrive in the smoke of London; but although they will live some years in the close part of the town, yet they seldom produce flowers after the first year, unless it is in some open places where there is free air.

The Italian Privet is now generally preferred to the common sort for planting in gardens, the leaves being larger, and continuing green all the year, render it more valuable; and being so hardy as to resist the greatest cold in this country, it may be planted in any situation where the common sort will thrive.

Mock PRIVET. [*Phillyrea.*] There are seven or eight species of Mock Privet, all natives of France, Spain, and Italy, but hardy enough to thrive in the open air of England, except the winters are very severe. They are all propagated either from seeds or

layers, but the latter is generally preferred.

PRONG. An implement much used in husbandry, consisting of two or three pieces of iron inserted into a handle for taking up corn, straw, dung, &c.

PRONG-HOE. A term used to express an instrument used to hoe or break the ground near, and among the roots of plants.

The ordinary contrivance of the hoe in England is very bad, it being only made for scraping on the surface; but the great use of hoeing being to break and open the ground, besides the killing the weeds, which the antients, and many among us, have thought the only use of the hoe, this dull and blunt instrument is by no means calculated for the purposes it is to serve.

The prong-hoe consists of two hooked points of six or seven inches long, and, when stuck into the ground, will stir and remove it the same depth as the plough does, and thus answers both the ends of cutting up the weeds and opening the land. The ancient Romans had an instrument of this kind, which they called the bidens; but they were afraid of its use in their fields and gardens, and only used it in their vineyards. The prong-hoe comes into excellent use, even in the horse-hoeing husbandry; in this the hoe-plough can only come within three or four inches of the rows of corn, turnips, and the like; but this instrument may be used afterwards, and with it the land may be raised and stirred, even to the very stalk of the plant.

PRUNING. Pruning is an operation of the knife performed upon trees occasionally, in order both to give them any desired form, and to retrench or reduce irregular and redundant or superfluous growths, or whatever creates confusion and disorder.

But this operation is particularly necessary to be practised on many sorts of fruit-trees, more especially the dwarf sorts, such as all kinds of wall and espalier fruit-trees; it is also necessary to be performed occasionally upon standard trees, both dwarfs and half and full standards, to all of which proper pruning is necessary; some sorts annually, as all kinds of wall trees, espaliers,

espaliers, and most other dwarf or trained fruit-trees; to which it is requisite in order to preserve the proper figure, and to keep them within their limited bounds, as well as to promote fruitfulness; but as to common standards whose heads having full scope of growth every way, they require but very little pruning, except just to retrench any occasional redundancy, ill-growing branch, and dead wood. Wall trees and espaliers, however, require a general regulation of pruning twice every year, in summer to retrench the evidently superfluous and ill-placed shoots of the year, and to train in a supply of the most regular ones; and in winter to give a general regulation both to the supply of young wood left in summer and to the old branches where necessary.

For in pruning wall trees and espaliers, it is to be observed, that as these trees having their branches arranged with great regularity to the right and left one above another parallelly, about five or six inches asunder, forming a regular spread, so as the branches of each tree completely cover a certain space of walling, &c. and as the whole spread of branches constantly send forth every year a great number of unnecessary and useless shoots: and each tree being limited to a certain space, an annual pruning is consequently most necessary to retrench the redundancies, and all irregular and bad shoots, to give the proper bearing branches due room, as well as to enable us to confine each tree within its allotted limits, consistent with its regular form.

The first pruning necessary for fruit-trees is when we attempt to give the head its first regular formation, effected by pruning short or heading down in spring all the shoots produced the first year from budding and grafting, that is, the first shoots from the budding, &c. when a year old being generally pruned down in March, within four or five eyes of the bottom, whereby it throws all the sap into the remaining lower buds, and thus, instead of running up to one stem, it pushes forth several strong shoots from the lower part the ensuing summer, so as to fill the allotted space of walling and espalier regularly quite from the bottom; which shoots being trained strait

and regular in a spreading manner, each at full length all summer; and in winter or spring following, if a supply of more principal shoots shall seem necessary to form the head more effectually, prune short also these shoots each to four or five eyes, and each of them will throw out the like number of shoots the same year, which according as they advance in length, train at regular distances at full length during the summer as before observed; for the shoots of wall trees should never be shortened in the summer season, for this would cause them to push forth many trifling lateral shoots; though sometimes, in order to fill a vacancy as soon as possible; strong young shoots being pinched early in the season, as in May or beginning of June, to four or five eyes, will throw out several proper shoots the same summer, repeating however the work of pruning short occasionally one or two years, &c. as above, either in general or to particular shoots, as it may seem proper till a proper set of branches are by that means obtained to give the head of the tree a proper formation; afterwards pruning short is to be omitted except occasionally to any particular shoot to fill a vacant space: but some sorts of wall trees require almost a general shortening of their supply of shoots, such as peach, nectarines, &c. which bear only on the young wood; have that of each year shortened, to force out a supply of shoots for future bearing; other sorts of wall-trees and espaliers are not in the general course of pruning to be shortened, such as pears, apples, plums, and cherries, which bear in the old wood from two or three to many years growth.

After the trees are thus furnished with a proper spread of branches trained regularly to the wall and espalier, they will every year throw out many more shoots than are wanted, or can be converted to use, by being some too numerous, others ill placed, and others of a bad growth, all of which must therefore be regulated accordingly by proper pruning; for as the regular figure of the tree, well furnished in every part equally from the bottom to the top of the wall or espalier with proper branches, capable of producing a reasonable quantity of
good

good fruit, are the principal objects of pruning; all our operations must be directed to these ends.

We must therefore be careful to ease the trees of every thing that is either superfluous, irregular, or hurtful, by pruning twice every year, a summer and a winter pruning. We call that superfluous which, though good and well placed, yet are more than are wanted or can be properly laid in, and that irregular which is so ill placed as it cannot be trained with regularity to the wall or espalier, such as all fore-right shoots, being such as grow immediately from the front or back of the branches in a fore-right direction, which though good of themselves, yet their situation renders them irregular or unfit for training; and we call that hurtful which is in itself of bad growth, such as all very rank or singularly luxuriant rude shoots; so that the superfluous or redundant growths should be thinned by pruning out all that seem to cause confusion, and the irregular and hurtful rank shoots should be displaced, cutting every thing of all these sorts off quite close to the place from whence they proceed, leaving however a proper supply, more or less, of the regular or best placed side-shoots where necessary, so as to preserve every part well furnished with bearing wood, trained straight and close to the wall or espaliers at equal distances; observing, that some sorts of wall-trees, &c. require a general annual supply of young wood, such as peach and all other trees which bear only on the shoots of a year old; others require only an occasional supply of wood, such as apples, pears, &c. and all other kinds that bear on the old wood from two or three to ten or twenty years old or more, so that the same branches continuing in bearing many years, the trees require only a supply of young shoots now and then to replace any worn-out and dead branches.

For the mystery of pruning consists in being well acquainted with the nature of bearing of the different sorts of trees, and forming an early judgment of the future event of shoots and branches, and many other circumstances, for which some principal rules may be given; but there are particular instances which cannot be judged

of but upon the spot, and depend chiefly upon practice and observation.

The nature or mode of bearing of the different sorts of wall and espalier trees, &c. is materially to be considered in pruning.

For example: Peaches, nectarines, apricots, &c. all produce their fruit principally upon the young wood of a year old, that is, the shoots produced this year bear the fruit the year following, and the same of every year's shoots, so that consequently, in all these trees, a general supply of the best regular shoots of each year must be every where preserved at regular distances quite from the very bottom to the extremity of the tree, on every side in such order as to seem coming up regularly one after another, which should be trained principally at full length all summer; but in winter pruning, a general shortening less or more, according to the strength of the different shoots, is necessary, in order to promote their throwing out more effectually a supply of young wood the ensuing summer, in proper places for training in for next year's bearing, the fruit being generally produced all along their sides, immediately from the eyes, they rarely forming any considerable fruit-spurs, as in the apple, pear, &c. but the same shoots both produce the fruit and a supply of shoots at the same time for the succeeding year's bearing.

Vines also produce their fruit always upon the young wood, shoots of the same year arising from the eyes of the last year's wood only, and must therefore have a general supply of the best regular shoots of each year, trained in, which in winter pruning must be shortened to a few eyes, in order to force out shoots from their lower parts only, properly situated to lay in for bearing the following year.

Figs bear also only upon the young wood of a year old, and a general supply of it is therefore necessary every year; but these shoots must at no time be shortened unless the ends are dead, because they always bear principally towards the extreme part of the shoots, which if shortened would take the bearing or fruitful parts away: Besides, these trees for the general part naturally throw out a sufficient supply of shoots every year for

future bearing without the precaution of shortening.

And as to apple, pear, plum, and cherry trees, they generally bear principally on spurs arising in the wood of from two or three to ten or twenty years old, the same branches and spurs continuing bearing a great number of years, so that having once procured a proper set of branches, in the manner already directed, to form a spreading head, no farther supply of wood is wanted than only some occasional shoots now and then to supply the place of any worn-out or dead branch as before hinted; the above-mentioned spurs or fruit-buds are short robust shoots, of from about half an inch to one or two inches long, arising naturally in these trees, first towards the extreme parts of the branches of two or three years old, and as the branch increases in length the number of fruit-buds increase likewise accordingly; this, therefore determines, that in the general course of pruning all these kind of trees, their branches that are trained in for bearing must not be pruned or shortened, but trained at full length; for if they were shortened it would divest them of the very parts where fruit-buds would have first appeared, and instead thereof would throw out a number of strong unnecessary wood shoots, from all the remaining eyes: therefore let all the shoots or branches of these trees be trained principally at full length, and as they advance, still continue them entire; thus they will all readily form the afore-mentioned little spurs or fruit-buds from almost every eye; when indeed there is a vacancy, and there is only one shoot where two or three may be requisite, in this case only pruning or shortening is allowable in these trees, to force out the supply required.

In these trees great care is necessary to preserve all the proper fruit-buds or spurs; which are readily distinguished by their short, thick, robust growth, rarely exceeding one or two inches long.

In the general course of pruning all sorts of wall and espalier trees, that when displacing the superfluous and ill-placed woods, &c. always take them off quite close both in the summer and winter pruning, not leaving

any spurs or stumps of them an inch or two long, as often done, which fills the tree full of disagreeable stumps, and which pushing out strongly from every eye, crowd the tree with a multitude of unnecessary and irregular shoots, and cause great confusion and obscurity, and exhaust the sap to no purpose, as well as occasion a great deal of labour to retrench them; remember, therefore, that all shoots and branches necessary to be retrenched must be taken off quite close to the place from whence they arise; which in the summer pruning if attended to early, while the shoots are quite young and tender, they may readily be rubbed off quite close with the thumb; but when the shoots become older and woody, as they will not readily break, it must be done with a knife, cutting them as close as possible, and all winter pruning must always be performed with a knife.

It should also generally be observed in pruning in summer, that all the necessary supply of regular shoots that are left for training in should never be shortened during this season, unless to particular shoots to fill a vacancy; for by a general shortening in this season, all the shoots so treated would soon push again vigorously from every eye, and run your trees into a perfect thicket of useless wood; therefore all sorts, whether they require shortening in the winter pruning or not, should in the summer dressing, be layed in at full length.

Two seasons of pruning are requisite for all sorts of wall and espalier trees, a summer and a winter pruning.

Summer Pruning.—The summer pruning is a most necessary operation; every one must know that in spring and summer, wall and espalier trees abound with a great number of young shoots that require thinning and other reforms to preserve the beauty of the trees and encourage the fruit, and the sooner it is performed the better; it is therefore adviseable to begin this work in May or early in June, and timely disburthen the trees of all evidently redundant or superfluous growth and ill-placed and bad shoots, which may be performed with considerably more expedition and exactness than when after the trees have shot a considerable length and run into confusion and disorder,

disorder, by their shoots forming a thicket, when it will, in a manner be impossible to see what you are about, besides the disadvantage of choking up the fruit behind such a thicket of wood and leaves; it is therefore of great importance to perform this operation in the month of May or early in June, or when the same year's shoots are sufficiently formed to enable you to make a proper choice, and tender enough to require no other instrument than the thumb to displace the bad growths and superfluities.

However, at any rate, let the work of summer pruning be began before the trees have so far advanced in shooting as to cause much confusion, which would cost you a great deal of pains, precaution, and perplexity, to penetrate and break through the obscurity to determine what is proper to retrench or what to leave.

In this pruning, we observe above, that a great many more shoots arise from all the principal branches than are wanted, or that can possibly be trained with regularity, or that are well placed or proper for the purpose; our business therefore now is to thin and regulate them, by pruning away the superfluous shoots, and all such as are ill-placed and of bad growth as aforesaid; as to superfluous shoots they are to be considered as such when any tree throws out a redundancy of wood, or much more than what is wanted, or that can be trained in; of these you must now retrench the most irregular placed, weakest, and all such as are evidently not wanted for use, and where two or more shoots any where arise from the same eye, clear all away but one of the best, reserving a sufficiency of the moderately strong and most regular placed side shoots, and always a leading one at the end of every branch, all of which to be trained in to choose from in the winter pruning, leaving more or less in proportion, according to what the trees are, or the mode of bearing before hinted; though in all those trees that bear always on the young wood leave rather more shoots at present than what may appear just necessary, especially of peaches, nectarines, apricots, vines, figs, &c. for it is highly requisite to reserve regular wood enough in the

summer to choose out of in winter pruning to lay in for next year's bearing; but as to apples, pears, plums, and cherries, &c. which continue bearing many years on the same branches, should leave only here and there some good shoots towards the lower parts, or in any vacancy till winter, and if then not wanted they are easily retrenched. Ill-placed shoots being such as either grow directly from the front or back of the branches straight foreright, (called foreright shoots) or any other ways so ill placed as not to admit of training with regularity, so must all be cut out quite close; and bad or hurtful growth being considered as any very luxuriant shoots, distinguished from the others by their rank, vigorous shooting, and are like to prove injurious by drawing all the nourishment, and impoverishing the neighbouring ones that are of more moderate growth, should generally be removed; except where any may seem proper to leave to fill a vacant space, in which it may be pinched early to three or four eyes, when it will furnish you with the like number of more moderate shoots to fill the vacancy.

Where, however, a tree is in general inclined to luxuriancy, it is proper to retain as many of the regular shoots as can be commodiously trained in with any regularity, in order to divide and exhaust the too abundant sap which causes the luxuriancy; for by humouring somewhat the natural inclination of luxuriant trees by leaving plenty of branches and these mostly at full length, is the only method by which we can the most readily reduce them to a more moderate state of growth.

Pay particular attention always to the lower parts of your trees, for frequently we shall find proper shoots arising in places necessary to be trained in, either to supply a present or an apparent future vacancy, or as a reserve to replace any decayed, or worn-out, or other bad branch, so that if moderately strong well placed shoots arise in such parts, they are particularly to be regarded at this time; and in winter pruning such of them as are not wanted may be easily cut off.

All weak trifling shoots should now also be taken out, unless any shall

appear useful to fill a vacancy, or likely to be of service hereafter.

Observe in this pruning not to disturb the natural fruit-buds or spurs before described.

After having summer pruned and cleared any tree from all useless shoots as above, let all the remaining proper shoots be directly, or as soon as they are long enough, trained in straight and close to the wall or espaliers, and all of them at full length during the summer season, for the reasons before given; not shortening any at this time except as before observed, when there is any great vacancy, when pinching to three or four eyes may be proper; but let all the rest be trained at full length till winter pruning, when they must undergo another regulation and shorten those of such trees as require it, as peach, nectarine, &c.

The work of training in the shoots in this season is, if against walls, both by nailing by means of proper shreds and nails, and occasionally by fastening in the smaller shoots with little sticks or twigs stuck between the main branches and the wall; and for espaliers tie them with small oziers, rushes, or bafs strings.

Having thus summer dressed and trained your trees, it will be necessary to review them occasionally, in order to reform such branches or shoots as may have started from their places or taken a wrong direction, also that according as any fresh irregular shoots produced since the general dressing may be displaced; and likewise as the already trained shoots advance in length or project from the wall or espalier, they should be trained in close, still continuing them at full length during their summer's growth, for every thing should be kept close and regular all summer, whereby your trees will appear beautiful to the eye, and the fruit will shew itself and attain its due perfection.

For by thus properly summer pruning and training wall and espalier trees early in the summer, you preserve their regularity and prosperity, and by clearing out all the unnecessary and useless growths, training the rest close and regular, the fruit will receive all requisite advantage from the sun, air, rains, &c. and it will of course attain the greater perfection both in size, beauty, and flavour.

Winter Pruning.—In the winter pruning a general regulation must be observed both of the mother branches and the supply of young wood laid in the preceding summer, and the proper time for this work is any time in open weather from the fall of the leaf in November until March.

In performing this work of winter pruning, it is proper to unvail or loosen great part of the branches, particularly of peaches, nectarines, apricots, vines, and such other trees as require an annual supply of young wood.

First look over the principal or mother branches, and examine if any are worn out or not furnished with parts proper for bearing fruit, according to the rules before illustrated, with respect to the nature of bearing of the different sorts of trees; and let such branches be cut down to the great branch from which they proceed, or to any lower shoot or good branch they may support towards their bottom part, leaving these to supply its place; likewise examine if any branches are become too long for the allotted space either at sides or top, and let them be reformed accordingly by shortening them down to some lower shoot or branch properly situated to supply the place, being careful that every branch terminates in a young shoot of some sort for a leader, and not stumped off at the extremity, as is too often practised by unskilful pruners.

From the principal or larger branches pass to the shoots of the year, which were trained up in summer, first cutting out close all foresight and other irregular shoots that may have been omitted in the summer pruning; likewise all very weak shoots, and those of very luxuriant growth, unless it be necessary to keep some to supply a vacant place; then of the remaining regular shoots, you are to select a greater or smaller portion to leave either as a general supply for next year's bearing as in the case for peach, nectarine, apricots, vines, and figs; or only some occasional shoots, as in apple, pear, plum, and cherry trees, to supply the place of any bad or dead branch.

But as peaches, nectarines, apricots, vines, and figs, always bear principally on the year-old wood as before noticed,

noticed, a general supply of young shoots must be left in every part from bottom to top at regular distances, all of which, except the fig, must be more or less shortened according to their situation and strength to encourage their furnishing more readily a proper supply of shoots in spring and summer for next year's bearing, as before observed, leaving the strongest shoots always the longest, as is more fully explained under each of their respective genera; but as the figs always bear towards the end of the shoots, they must not be shortened.

And with respect to the apples, pears, plums, cherries, &c. as they continue to bear on the old branches from two or three to many years standing, they only require an occasional supply of young wood, according as the branches become unfit for bearing and want removing, so should accordingly train in here and there in proper places some good regular young shoots towards the lower part, to be coming gradually forward to a bearing state, to be ready to replace worn-out and other useless branches; and what shoots are not now wanted for that purpose cut them out close, not leaving any spur or stump, as every one of these, as we before observed, would push out several strong unnecessary shoots the next spring, to the prejudice both of the trees and fruit; have particular regard to preserve the shoots at the termination of all the already trained branches entire, not however suffer more than one shoot to terminate each branch; preserve also carefully all the proper fruit-spurs; likewise observe, that the supply of young wood occasionally reserved, and the branches in general of these trees, should all be trained in at full length, and continued so in future, as far as the limited space will admit; and according as any extend above the wall or espalier, or any where beyond their proper limits, they should be pruned down with discretion to some convenient bud, or lateral shoot, or lower branch, which train also entire.

In this pruning, as in the summer dressing, it is of importance to have a strict eye to the lower parts of wall trees, &c. to see if there is any present vacancy or any that apparently will soon happen, in which cases, if

any good shoot is situated contiguous, it should be trained in either at full length, or shorten it to a few eyes to force out two or more shoots if they shall seem necessary; for precaution should ever be observed in taking care to have besides a sufficient stock of young wood coming forward to fill up any casual vacancy, and substitute a new set of branches in place of such as are either decayed or stand in need of retrenchment.

Sometimes in wall-trees and espaliers there are many large disagreeable barren spurs, consisting both of old worn-out fruit spurs, and of clusters of stumps of shortened shoots projecting considerably from the branches, occasioned by unskillful pruning when retrenching the superabundant and irregular shoots, which instead of being cut out close, are stumped off to an inch or two long, and in the course of a few years, forming numerous barren stumps, as above-said, and very little fruit, the trees appear like a stumped hedge; it is therefore, in this season of pruning, advisable to reform them as well as possible, by cutting all the most disagreeable stumps clean out close to the branches, leaving these at full length, especially of apples, pears, &c. as before advised: and reserve an occasional supply of young wood in different parts; and thus in two or three years you may reduce such trees to a regular figure and a proper state of bearing.

Bad pruning ruins many a good tree, as is observable in numerous gardens, where the wall-trees and espaliers appear as just above described, pruned every year, yet never produce any tolerable crop of fruit.

The reason is, the operation or art of pruning is much more generally practised than understood; different pruners have different ideas of pruning; many proceed upon little or no principle, and often prune all trees alike, and their idea of pruning often consists in retrenching annually most of the young shoots, shortening all the branches of every tree without exception, to the great injury of some sorts, and retarding their bearing; likewise many pruners in retrenching the superfluous and irregular shoots, instead of cutting close, as formerly observed,

observed, they often stump them off to about one or two inches long; these remaining stumps shoot out again from every eye, and fill the tree with more numerous useless shoots than before, which being also pruned down to stumps of an inch or two long, as above, practising the same every pruning, so as in the course of a few years every branch is loaded with clusters of large rugged barren spurs, formed wholly of the stumps of shortened shoots, occupying the places where fruit-buds might be expected: It is also observable, that many pruners think every branch of all sorts of wall trees whatsoever must, in the annual pruning, undergo the discipline of the knife, so shorten all without distinction or reluctance, often too with so much severity on trees that should not be shortened, as to destroy the very parts where fruit-buds would have been produced, they thinking this general shortening necessary to strengthen the branches, which, however, in many sorts, promotes a too vigorous growth, particularly in trees that produce their fruit on natural spurs, forming themselves gradually all along the sides of the branches, first towards the extreme parts, that shortening not only cuts off these first fruitful parts of the branches, but throws the sap back with so much vigour to the remaining buds, that instead of forming fruit-spurs, almost every bud pushes out luxuriant shoots, and the trees are continually crowded with unnecessary wood, causing a great annual trouble to retrench it, without the pleasure of having a quarter of a crop of fruit; besides the annually cutting out so much strong wood is very prejudicial to some sorts of fruit-trees.

Too severe pruning is very prejudicial to the health of some sorts of stone fruit-trees in particular, causing them to gum and soon decay.

Plums and cherries in particular are often greatly damaged by a too severe discipline of the knife, these trees being very liable to gum by large amputations; it is therefore of importance to attend to these trees well in the summer pruning, to retrench all the superfluous and irregular shoots betimes in the summer while quite young, and pinch others occasionally where wood is wanted to fill vacan-

cies, so as to require but little pruning out of large wood in winter.

But if our former hints in the summer and winter pruning are attended to in retrenching the useless wood every year at the time advised, you will always preserve your trees free from all incumbrance and every part will be regularly filled with bearing wood, and their general management will prove easy.

A general nailing, &c. must every year be performed according as we advance with the pruning.

Therefore it is proper that every tree as soon as pruned be directly nailed to the wall, or if espaliers, tie them to the treillage, observing, that in the winter pruning, as the work of nailing, &c. will require to be performed more or less upon all the branches, we must be careful to train them with great regularity, nailing them along horizontally, as straight and close as possible; never cross any of the branches, but train them distinct and parallel five or six inches asunder, as formerly advised, or in proportion to the size of the leaves and fruit of the different sorts, making the opposite branches of each side arrange equally in the same position.

Thus far is principally all we have to advance respecting the general mode of pruning wall and espalier trees; particulars for each sort being noticed more fully under their proper genera; but what we have here advanced under this article of *pruning* is to convey some general hints to unexperienced pruners, though there are many expedients and resources not to be discovered but by repeated practice.

Pruning Standards.

Standard fruit-trees require but very little pruning, for as their branches have full scope to extend themselves every way, they must not be shortened; besides, as our standard fruit-trees consist principally of apples, pears, plums, and cherries, these, as before said, bear fruit on natural spurs arising towards the upper parts of the branches, which, as observed in the wall-tree and espalier pruning, determines that we must not shorten them, nor practise any other pruning than just to reform any great irregularity, &c.

The first occasional pruning, however,

ever necessary for standard fruit-trees, is the first two years of their growth, in order to form their heads somewhat regular, by retrenching any irregular shoots, and when designed to have them form more regular spreading heads, it is customary to prune the first shoots when a year old to four or five eyes; in order to force out lateral shoots from these lower buds the following summer, to give the head a proper formation. After this, suffer the branches to take their natural growth, except that, if while the trees are young, any very luxuriant shoots ramble away considerably from all others, and draw moit of the nourishment, it is proper to prune them, either by retrenching entirely very irregular ones, or shorten others more or less, so as to cause them to branch out consistent with the requisite form of the head.

But let it be remarked in general, that except in such cases of reducing irregularities, let the heads of all kinds of standards always branch away as fast as possible, both in length and laterally, agreeable to their natural mode of growing; and they will naturally furnish themselves abundantly with bearing wood.

Observe, however, that as in standard trees of some years growth, irregularities and disorder will occasionally happen, which should be regulated a little by pruning the most conspicuously irregular and redundant growths; performing it always in winter.

For instance: Where any branch grows right across others, or in any awkward direction, to incommode or cause confusion in the head, it should be retrenched close; likewise any branch that rambles considerably from all the rest, should be reduced to order, by cutting it down to some convenient lower branch, so as to preserve some regularity. Where the head is considerably crowded with wood, let the worst of the redundancy be thinned out as regularly as possible, cutting them close to their origin; observe likewise where any vigorous shoots arise in the heart of the tree towards the bottom of the old branches, and grow upright and crowd the middle of the head, they should be constantly retrenched to their very bottom; cut

out also any very cankered parts, and decayed wood, and clear off all suckers from the root and stem.

Standard trees thus disburthened from any considerable irregularities and confusion, so as all the proper branches have full scope to spread free and easy in their natural manner, they will not fail to repay the troubles in the superior quality of their future fruit.

Pruning Forest-Trees, &c.

With respect to pruning of forest and ornamental trees, flowering shrubs, &c. it is very inconsiderable.

Forest-trees, &c. must be suffered to run up as fast as possible, so their heads must not be shortened; all that is necessary is, to prune off lateral branches occasionally from the stem, or if while young, any lateral shoot of the head is of a very rude rambling growth, and draws all the nourishment, it is proper to reduce it as you see convenient; but otherwise suffer the top and all the branches of the head to remain entire, and take their own natural growth; only prune lower stragglers occasionally; observing, however, it is very improper to trim up the stem too high, as often practised to forest-trees, as scarce to leave any head: never, therefore, trim the stem much higher than the full spread of the head, for a full head is both ornamental and essentially necessary to the prosperity of the tree.

And as to the shrub kind, they should also, for the general part, take their own growth at top; and only prune occasionally any lower stragglers, from the lower part of the stem, or any very irregular rambling shoot of the head, and all dead wood; but except in these cases, let their heads mostly shoot in their own way, according to their different modes of growth, in which they will appear always the most agreeable.

Where, however, it is required to keep shrubs low in any particular compartment, you must regulate this as you shall see convenient, either with a knife or garden-sheers, though knife-pruning is the most eligible.

Pruning Implements.

For the purpose of general pruning several implements are necessary, such as pruning knives, saws, chisels, hand-bills, hatchets, &c.

As to pruning-knives, two or three different sizes are requisite in order to enable us to prune neatly; a strong one for cutting out larger branches, shoots, &c. and a small one for the more exact pruning among the smaller branches and shoots of peach and nectarine-trees, &c. These knives are generally made curving at the point; they should not be too long, broad, or clumsy, but have rather a shortish narrow blade, and but very moderately hooked at the point, for when too crooked they are apt to hang in the wood, and not cut clean; it is also proper to be furnished with a strong thick-backed knife, to use by way of a chisel occasionally, in cutting out any hard stubborn stumps, &c. placing the edge on the wood, and with your nailing hammer strike the back of it, and it will readily cut through even and smooth.

Pruning hand-saws are proper for cutting out any large branch too thick and stubborn for the knife; they should be of moderate sizes, one of which should be quite small and narrow, in order to introduce it occasionally between the forks and the branches, to cut to exactness.

As saws generally leave the cut rough, it is proper to smooth it with a knife or a pruning chisel.

Pruning chisels are necessary to use occasionally, both to cut off any thick hard branch or stump, and to smooth cuts after a saw; they should be flat, and from about one to two inches broad; sometimes large strong chisels, fixed on a long pole, are used in pruning or lopping branches from the stems of high standard forest trees, one man holding the chisel against the branch, while another with a large mallet or beetle strikes the end of the pole.

A hand-bill and hatchet are also necessary to use occasionally among larger kinds of the standard trees.

All these pruning tools in their different sizes may be had at the cutlery shops and ironmongers, also of many of the nursery and seedmen; and as the expence of the whole will be but trifling, every one should furnish himself properly.

PUCCOON. [*Sanguinaria.*] It is a native of most of the northern parts of America, where it grows plentifully in the woods; and in the spring,

before the leaves of the trees come out, the surface of the ground is, in many places covered with the flowers, which have some resemblance to our Wood Anemone, but they have short naked pedicles, each supporting one flower at the top. Some of these flowers will have ten or twelve petals, so that they appear to have a double range of leaves, which has occasioned their being termed double flowers. The roots of this plant are tubercous, and the whole plant has a yellow juice, which the Indians use to paint themselves with.

This plant is hardy enough to live in the open air in England, but it should be planted in a loose soil and a sheltered situation, not too much exposed to the sun. It is propagated by the roots, which may be taken up and parted every other year; the best time for doing of this is in September, that the roots may have time to send out fibres before the hard frost sets in. The flowers of this plant appear in April, and when they decay, the green leaves come out, which will continue till Midsummer; then they decay, and the roots remain inactive till the following autumn; so that unless the roots are marked, it will be pretty difficult to find them, after their leaves decay, for they are of a dirty brown colour on the outside, so are not easily distinguished from the earth.

PUCK-BALL, a species of mushroom, full of dust.

PULSE, a term applied to all leguminous plants, as beans, peas, tares, &c.

PUMKIN. Gourd.

PURGING. See **PHYSIC.**

PURGING-NUT. See **PHYSIC-NUT.**

PURGING-FLAX. See **FLAX.**

PURGING OILY GRAIN. See **OILY GRAIN.**

PURSLANE. [*Portulaca.*] This is a fallad herb propagated from seeds, which may be sown upon beds of light rich earth during any of the summer months; but if you intend to have it early in the season, it should be sown upon a hot-bed, for it is too tender to be sown in the open air before April, and then it must be in a warm situation. This seed is very small, so that a little of it will be sufficient to supply a family. There is no other culture which this plant requires, but to keep it clear from weeds, and in dry weather

ther to water it two or three times a week. In warm weather this plant will be fit for use in six weeks after sowing; so that in order to continue a succession of it, you should sow it at three or four different seasons, allowing a fortnight or three weeks between each sowing, which will be sufficient to last the whole summer, while it is proper to be eaten; for being of a very cold nature, it is unsafe to be eaten, except in the heat of summer in England; for which reason it is not to any purpose to sow it upon a hot-bed, since it will come

early enough for use in the open air. If the seeds are intended to be saved, a sufficient number of the earliest plants should be left for this purpose, drawing out all those which are weak, or have small leaves, from among them; and when the seeds are ripe, the plants should be cut up, and spread upon cloths in the sun to dry, and then the seeds may be easily beaten out and sifted, to clear it from the leaves and seed-vessels.

See PURSLAND, a species of Orach.
PYRACANTHA. The ever-green hawthorn.

Q.

QUAKING GRASS. [*Gramen Maximum.*] A large species of grass, rising from fourteen inches to two feet high, with loose panicles, shaken by every wind.

QUARTER. A fourth part. A quantity of corn containing eight bushels, or one-fifth of a load.

False QUARTER. A false quarter is a rift or chink in the quarter of the hoof, from top to bottom; it happens generally on the inside, that being the weakest and the thinnest, and proceeds from the dryness of the hoof, but especially when a horse is ridden in dry, sandy, or stony ground, in hot weather, or in frosty weather, when the ways are flinty and hard: It is likewise caused by bad shoeing, and all the other accidents whereby a horse becomes hoof-bound, for the narrowness of the heels and brittleness of the quarters continually expose a horse to all the said accidents.

This accident is both dangerous and painful, for as often as a horse sets his foot to the ground the chink widens, and when he lifts it up, the sharp edges of the divided hoof wound the tender flesh that covers the coffin-bone, which is, for the most part, followed with blood, and it must of course be apt to render a horse lame, as it is very difficult to form a re-union.

The usual method taken to remedy

this imperfection is, by cutting off that part of the shoe which lies upon the chink, that it may be wholly uncovered; then with a drawing iron to open the rift to the quick, filling it up in all parts with a rowel of hurds dipt in turpentine, wax, and sheep's suet, molten together, renewing it every day until the seam is filled up; after it is closed in the top, or upper part, it is usual to draw the place betwixt the hoof and the coronet, which, by softening the hoof, and bringing a moisture into it, causes it to grow the faster, and shoot downwards. But there are some who fear the coronet above the crack, without piercing the skin just where the hoof begins; and with another iron fear the chink about the middle of the hoof, which succeeds very well, if care be taken to keep the hoof moist with applications of tar, honey, and grease. Some pour aqua-fortis into the rift when the pain is violent, to deaden the part, making a border of wax on each side to hinder it from spoiling the rest of the hoof; and there are others who prepare a flat piece of wood about an inch in breadth, but at the same time so slender, that it will bend like a hoop, and of a sufficient length to go twice round the hoof; and having first drawn the whole length of the cleft, they apply turpentine, pitch, and suet, molten

molten together, to the fore, and fasten the hoof with pieces of lilt or filleting. This is a contrivance to answer instead of bandage, to keep the chink united, and to prevent it from jarring when the foot is moved, which is; indeed, very reasonable, for the least motion will be apt to discompose the tender substance that grows up in the cleft, and cause imposthumation, which will again open the hoof. But I am of opinion, instead of this troublesome way, the following method will be found more easy and successful:

First, draw the whole length of the cleft gently with your drawing iron, then anoint the hoof with tar, honey, and suet, molten together as directed, for nothing can be more proper for the hoof, and lay a thin pledgit dipt in the same along the cleft; after this, take of rope-yarn, such as the sailors use, which is no other than hemp moistened in melted pitch and tar, and spun loose; apply the yarn all down the hoof, beginning at the coronet, and descend downwards, one lay after another, as close as the binding of the hoops of wine-casks, laying a smooth pledgit of flax behind, to keep it from fretting the heel. This should be opened once in three or four days, that the cleft may be drest; and to prevent any inconveniency that can happen by the opening, a thin staple may be also contrived with points like horse-shoe nails, cast off obliquely, to take a slender hold, the plate of it crossing the cleft where part of the shoe is cut off, and the nails coming out on each side the cleft on the upper part, to be rivetted as the other nails. By this method a cleft in any part of the hoof may easily be cured, if the horse be not very old and diseased.

QUEEN of the Meadows. See Meadow-sweet.

QUICK, or *Quickset-Hedge*. A general name for all hedges, of whatever sorts of plants they are composed, to distinguish them from dead hedges; but, in a more confined sense of the word, it is applied to the white or hawthorn, the sets or young plants of which are raised by the nursery gardeners for sale. *See Service* -

QUICKBEAM. See SERVICE.

QUINCUNX, A disposition of trees originally formed into a square, con-

sisting of five trees, one at each corner, and a fifth in the middle; which disposition often repeated forms a regular grove, and then viewed by an angle of the square or parallelogram, represents equal and parallel alleys.

QUINCE-TREE. [*Cydonia*.] The species are, 1. The Pear Quince. 2. The Apple Quince. 3. The Portugal Quince. And 4. The eatable Quince.

All the sorts are easily propagated either by layers, suckers, or cuttings, which must be planted in a moist soil. Those raised from suckers are seldom so well rooted as those which are obtained from cuttings or layers, and are subject to produce suckers again in greater plenty, which is not so proper for fruit-bearing trees. The cuttings should be planted early in the autumn on a moist border. The second year after they should be removed into a nursery at three feet distance row from row, and one foot asunder in the rows; where they must be managed as was directed for Apples. In two years time these trees will be fit to transplant, where they are to remain for good; which should be either by the side of a ditch, river, or some other moist place, where they will produce a greater plenty, and much larger fruit than in a dry soil; though those in the dry soil will be better tasted, and earlier ripe. The trees require very little pruning; the chief thing to be observed is, to keep their stems clear from suckers, and cut off such branches as cross each other; likewise all upright luxuriant shoots from the middle of the tree should be taken entirely out, that the head may not be too much crowded with wood, which is of ill consequence to all sorts of fruit-trees. If they are propagated by budding, or grafting upon stocks raised by cuttings, to multiply the best sorts, the trees so raised will bear fruit much sooner and be more fruitful, than those which come from suckers or layers.

Quince stocks are also in great esteem for to graft and bud pears on, which on a moist soil will greatly improve some sorts, especially those designed for walls and espaliers: for the trees upon these stocks do not shoot so vigorously as those upon free stocks, and therefore may be kept in less compass,

pals, and are sooner disposed to bear fruit: but hard winter fruits do not succeed so well upon these stocks, their fruit being very subject to crack, and are commonly stony, especially all the breaking pears, but more especially if they are planted in dry ground; therefore these stocks are only proper for the melting pears, and for a moist soil. The best stocks are those which are raised from cuttings or layers.

QUIT-RENT, a small rent payable by the tenants of most manors, whereby the tenant is quit or free from all other services, and is said to be an acknowledgment of their subjection to the lord of the manor.

QUITTOR, an ulcer formed between the hair and hoof, usually on the inside quarter of a horse's foot; it often arises from treads and bruises, sometimes from gravel, which by working its way upwards, lodges about the coronet: if it is only superficial, it may be cured with cleansing dressings, bathing the coronet every day with spirit of wine, and dressing the sore with precipitate medicine.

But if the matter forms itself a lodgment under the hoof, there is no way then to come at the ulcer, but by taking off part of the hoof; and if this

be done artfully and well, the cure may be effected without danger.

When the matter happens to be lodged near the quarter, the farrier is sometimes obliged to take off the quarter of the hoof, and the cure is then for the most part but palliative; for when the quarter grows up it leaves a pretty large seam, which weakens the foot: This is what is called a false quarter, and a horse with this defect seldom gets quite sound.

If the matter, by its confinement, has rotted the coffin-bone, which is of so soft and spongy a nature, that it soon becomes so, you must enlarge the opening, cut away the rotten flesh, and apply the actual cautery, or hot iron pointed pyramidically, and dress the bone with dossils of lint, dipped in tincture of myrrh, and the wound with the green, or precipitate ointment. When the sore is not enlarged by the knife, which is the best, and least painful method, pieces of sublimate are generally applied, which bring out with them cores, or lumps of flesh: Blue vitriol powdered, and mixed with a few drops of the oil, is used also for this purpose, and is said to act as effectually, and with less pain and danger.

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RABBIT. The rabbit is a small animal, and may appear of small consequence to the farmer who breeds other animals of more profit, yet this is very well worth his regarding as a part of his stock. It has the recommendation of the goat, that it will thrive where nothing else can live; and the same advantage as the hog, in the great increase by young.

Both the buck and doe rabbit are eager for copulation, and they must not be restrained. The does go but a month with young; and as soon as they have brought forth they are ready to copulate again. When they

run wild they get together in a very little time; and when they are kept tame and separate, they must be put together soon after the bringing forth, otherwise the doe grows fullen, and will take little or no care of her young ones.

The rabbit is distinguished into two kinds, the wild and the tame. These are kept in a distinct manner; the wild running loose, and burrowing themselves holes in the ground; and the tame being kept in houses, huts, or boxes.

Both kinds yield a very large profit, though under different management.

The wild rabbit breeds fast and freely in warrens, or other places where there is room and a free air. They will thrive upon the poorest, and barrenest, gravelly, stony, or sandy soils; by stony we mean such as are full of small stones, not the rocky, for in these last they cannot burrow. In these sort of grounds the farmer will find great advantage from the breeding of rabbits, either altogether or occasionally; for in the latter way they improve these barren lands extremely by their dung and urine, and render the worst of them fit for raising good crops of rye; and such as are but a little better, for the other kinds of corn.

The distinction between wild and tame rabbits is not founded in nature, but on our own practice; for the wild kinds may be as well kept tame as the others. They are used to a kind of imprisonment in their holes, and for that reason they bear confinement better than most other creatures.

As to the wild kind there is properly but one breed of them, and all the direction that is needful in the choice is, that such as are taken to begin a stock, be large and big bodied, with a good deep fur that hangs fast upon their backs, and with stout limbs. The husbandman that has waste ground in his hands, that is fenced well, and not with live hedges, should never omit this part of his stock, for the very worst of his ground will do, and the advantage he receives from them will be very great.

A small number is sufficient to be first turned in; for of all creatures useful to mankind, they are the greatest breeders.

Experience shews that the wild rabbit succeeds better in some places than others; the young growing up much quicker, and the flesh being finer and better tasted. The reason of this is to be searched in the soil and the produce; and this may teach the husbandman on which of such grounds as seem proper, it will be most to his benefit to breed them.

In general, the shorter and scantier the grass, the better is the taste of the rabbit. The drier the ground the better they succeed; where there is

much water, they never are well-flavoured.

Of all creatures, water is the least necessary to a rabbit, for we see the tame ones will live very well altogether without it, on moist food. Where the soil is driest, the air finest, and the water that there is in the way is running and clear, there the rabbits may reasonably be expected to succeed best. Damp grounds, and standing waters, being the greatest disadvantage to this creature.

The common rabbit will very freely be kept tame; for it has been found, many years since, that those which we usually understand as tame rabbits, will live very well wild, especially the hardier kinds. This is a consideration of some consequence, because there is one of the tame kinds that is, in every respect, better than the common wild one. This is that which is known by the name of the silver-haired rabbit. It will live and thrive as well wild as the common sort; and it is always better tasted and fairer to the eye, so that it brings a larger price. The skin also is of much more value, and the demand for it among the farmers is constant and certain.

For these reasons it is, in many cases, advisable to breed this kind wild instead of the other: but though it often is so, it is not always. This, though as hardy as the other, requires a better supply of food, and is poor, and of little value upon those barren and heathy lands, on which the common wild rabbit succeeds very well.

The proper place for this kind is a park, where they may run at liberty among the deer and other cattle, and where there is good grass, though not rank, upon the ground; the other is the proper kind for the miserablest and poorest lands.

Tame rabbits are distinguished into several kinds, according to their colours and other accidental distinctions; but the differences are not great, nor is there any material point of profit attending the choice of one or the other sort.

The silver-haired rabbit last-named is a very good and profitable kind to be kept tame, because of the advantage of the skin. The Dutch rabbit is a much

a much larger kind, and is very good for the table, but the skin is of less value. The most beautiful, when kept cleanly, is the white long-haired rabbit; this is, by some, called the Turkey rabbit, from the place from whence we first had it; and by others the Shagge rabbit, from the length of its hair. This is a very good kind to breed tame also, but if not kept very clear, it is subject to a disorder not unlike what the doctors call the Plica Polonica; the hair growing together in clots and cakes, and this often in such a manner, that blood vessels from the skin run up amongst the clots, and they will bleed on being cut off.

It is not very material which of these, or of the several other kinds that it is the custom to breed at this time, the farmer chooses; for with proper management, any of them will turn to very good account; but whichever sort it be, let him take a more strict and critical care in the choice, than he has been directed to do in those which are to run wild, for a great deal more depends upon it in this kind, than in those. The skin here is of much consequence, and the distinctions in this are nice, and never enough to be regarded in the choice for breed.

In the silver-haired rabbit, for instance, let the husbandman take care to choose his buck of the true kind and colour, for on this, more than on the doe, will depend the value of the breed. Let the fur be thick, deep, smooth, and glossy; and let the ground colour be black, with a moderate quantity of white or silvery hair. It is proper to choose them rather too dark for breeding, because the colour in the young is more apt to grow paler than deeper; and a silver skin that is too dark, always will bring a better price than one that is too light.

In the same manner let the fur of the several other kinds be examined, when they are chosen for breeding; for the rest of the directions already given for the choice of the wild, hold good here; the largest and best shaped being to be fixed upon. In the same manner as these rabbits were first chosen, let them be picked out from time to time for keeping, to preserve the

breed; for upon this will depend a great part of the advantage.

The farmer having thus selected his flock of these little animals, is to take his choice of the several methods which are in use for the breeding and keeping of them. These are many, and among them some allow more and some less liberty to the animal; in general, such as allow most freedom, even in this way, and most air, are best; for though the rabbit will bear confinement very well, yet it will thrive best where that is least strict.

Cleanliness also is a very great article in the breeding of these, as well as other creatures, and where the confinement is least strict, there is naturally least foulness. The dung and urine of the rabbit have a very disagreeable and rank smell; and nothing prejudices the creature more than being kept nasty with these about it.

The general way of keeping tame rabbits is in a kind of boxes made for this purpose: others keep them in pits; but it would be a much better way to keep them in buildings made for that purpose. This might be done at a small expence, and would answer very well; for it would be cleaner and more wholesome than any other way. The boxes are too small, and therefore are apt to grow nasty, and the pits are liable to be damp, which, as we have observed already, is one of the worst things that can happen in a place where rabbits are to breed.

The boxes, for such as prefer them, should be made of thin waincot, and divided into larger and smaller rooms, two for each rabbit. One of these should be for eating, and the other for lodging and bringing forth the young. That for eating should be the larger, and should have a grate before it for light, and the smaller should be entirely dark. Before both there must be placed a trough with the food; and thus the creature will live, thrive, breed, and fatten: But there wants free air, and it is very difficult to keep them cleanly, so that although this method may do, the others are sure to answer better, when they are managed properly.

Those

Those who use this method by boxes, set them one above another, in so many stories, and keep the bucks by themselves, and the does by themselves, unless it be such does as have not bred, and with those they lodge a buck in the same box. The common size of these boxes is two feet long, the same in breadth, and a foot high. It is surprising to see so large a creature as a rabbit live so well as it does in this small compass, but it will always do better when it has more room.

The method of keeping them in pits is preferable, and is thus. A dry soil is to be fixed upon for this purpose, and the pit is to be dug seven foot deep, and of a bigness proportioned to the number intended to be kept in it. This must be walled up on the inside, only leaving spaces for them to make their burrows. A sandy soil, not too destitute of other earth, will answer for the purpose of these pits better than any other. At one end an hollow place is to be made for the buck to rest in, he must be chained to a stump, and have room only to go to the rack where the food is placed in these pits, and thence to his den to rest. At the other parts of the pit, out of the reach of the buck, are to be the places left for the does to make their strops or burrows. The rack is to be placed near the middle of the pit, between the bucks and does, he being on one side by himself, and they on the other.

Three does may very well be kept in the same pit with one buck, and the pit for this purpose should be about ten foot square. Some make them larger, and keep more bucks than one, but it is a better practice to make more of them, only allowing one buck and two or three does to each.

This will naturally appear to those who are not acquainted with these things, a large provision for three or four rabbits, and a great expence for so few small animals; but those who have kept these creatures know that it very well answers the expence. Provided the pit be dry they live more comfortably by much in it, than in the other way of boxes; and the produce is so great that one buck and three does will bring a hundred and

fifty, two hundred, or more young ones in a year.

The young are to be left under the care of the dam till they are about a month old, and they are then to be taken from her either for sale or the table; or if there be no demand either of these ways for them, they must be put into some pit, or other place made for that purpose.

The same practice is to be observed in removing the young, if they are kept in boxes, or whatever other way. In whatever manner the old ones are kept, when they have brought forth a second brood, the first is to be taken away, and reared up elsewhere. The common way in this case is, to remove them to other boxes, keeping those of several broods of about the same age together; and thus they are to be treated in the other way, either rearing them in another pit, or in any manner that is convenient, only allowing them some room and air, the more of both the better.

The reason of chaining up the buck rabbit in the pit, and of keeping him in a separate box in the other way, is his mischievous disposition, for he will kill all the young ones. This the does are themselves so sensible of, that they, in their natural wild life, hide the young ones, and close up their holes, that the buck may not find them.

The two great requisites in these pits are warmth and dryness; their depth, unless the ground be very favourable, making them subject both to damp and cold, in either of which cases the rabbits will not breed well.

The most profitable time of their breeding is in the depth of winter; and they will never breed at this season, at least not successfully, unless they be kept dry and warm.

It is from the danger of the cold and damp in pits, and because of the want of air in boxes, some have been led to think of such other methods as may give rabbits the advantage of both in a fit degree, and yet keep them in such an easy and ready way, that they may be always at hand, easily fed, tended, and looked after, in every respect, and yet have warmth and freedom.

To obtain these several advantages, by means of which tame rabbits of the

the best kinds would be kept in the greatest perfection of health and beauty, and to the greatest advantage of breeding, let the husbandman erect a building purposely for them.

Having chosen his rabbits for breed, let him fix upon a proper spot of ground for his edifice, and draw the plan of it of such extent as to contain conveniently the number he shall think proper to keep.

Let the soil on which he builds this place, be of a dry loamy kind, with a large proportion of sand in it; for this is the sort of earth the rabbit loves best, and in which it is always most healthy.

Let the building be square, and run up of wood in a slight but yet in a tight manner; and let there be a kind of closet carried up at one end.

In each corner of this square let there be a den made for a buck rabbit, and a small post driven in, to which fasten him by a chain, in the same manner as in the pit. At some small distance from the corners let there be racks set up for food, which shall be within reach of the bucks, and one or two others in the middle.

When the house is thus prepared, let the bucks be chained in their places, and the does turned in. They will all live much more comfortably in this house than in the pits; and at the times of taking away their young, let them be put into the smaller rooms or closets, prepared for that purpose, where they will thrive and live very comfortably. A building of this kind will cost little, and the profit arising from the rabbits will be much greater than in any other way, because they will breed freely throughout the winter; and neither the old nor the young will be subject to diseases. Both the old and the young will be, in this manner also, defended better against vermin than by any other way whatsoever.

The feeding of the rabbit is an article of great consequence with regard to its health and increase, and it is less understood than most things of the like kind. Some feed them in a manner entirely with wet meat, others almost altogether with dry: Now, both these methods are wrong. A mixture, or diversity of food, keeps

them better in health and vigour, and occasions their breeding faster, and more successfully than any other kind.

The dry meat of the rabbit is hay, oats, and bran. Their moist or wet food is fresh herbage, or roots, of almost any kind, which they will eat with the greatest eagerness, as coleworts, parsley, and others, from the gardens; and sow-thistles, mallows, and the like, from the fields. Now, these the husbandman should give them interchangeably; always observing this caution, that when he gives his rabbits dry meat, he must set them water; and that when they have the fresh or moist meat, they have no occasion for any; the juices of those leaves and herbs supplying them with a sufficient humidity.

It is a common custom with many to cut up the fresh food for their rabbits from under an hedge, taking every kind of herb that offers, so it be young, and the rabbits will eat almost any; but in this some caution is necessary, for the herb hemlock is very common under hedges, and it is poisonous; the rabbit will eat it greedily, but it dies by the effect.

The hay that is given to rabbits must be the finest, sweetest, and shortest, that can be got. Nor let any one grudge the expence, for they eat but little, so that the amount is scarce worth consideration.

This is the best and healthiest food of all others for rabbits, and should be their standard diet, but about once in five days they should have the fresh herbs, which cool and scour them. And by this management they will be kept healthful and vigorous; always ready for breeding, and their young will be lusty, strong, and thriving.

Among the other food of the rabbit should be mentioned grains; this is of a middle nature between the moist and dry food, and is a very cheap diet; but it is not wholesome, and is therefore dearer in the end. The rabbits will seem to thrive upon it, but there is no food whatsoever that makes them so liable to diseases.

In general, the advantage of their dry meat is, that it prevents diseases; and those who commonly keep them upon fresh and moist food, as many do, giving them carrots and other eatable

roots among it, would do well to change it for dry meat in wet weather; for moist food is the great cause of these creatures having the rot, and they are most of all subject to this in damp seasons.

RACK. A wooden frame made to hold hay or fodder for cattle.

RADIATED Flowers, such as have several semi-floscules round a disk, in form of a radiant star: those which have no such rays, are called *discous* flowers.

RADICLE, that part of the seeds of plants which upon vegetating becomes its root, and is discoverable by the microscope.

RADISH, the name of a well-known vegetable, and which is commonly cultivated in the kitchen-garden for its root.

Radishes are sown in different seasons, according to the time when they are desired for use. Those sown in September will be fit to eat at Christmas, if they are not destroyed by frost: but they must be used whilst very young, for they soon grow hot and stinky. If sown towards the end of October, which is commonly the time of sowing for the earliest crops, they will be fit for the table in the beginning of March. Those sown at Christmas, if the season is mild, and the ground in good order, will, if they escape the frost, be fit for eating about the end of March or beginning of April; and by continuing the sowing once in a fortnight, from the middle of January till the beginning of April, always observing to sow the earliest crop in the warmest and best sheltered situations, and the later ones in a moist soil and open situation, without which they will run up, and grow stinky, before they are fit for use, a regular succession of these roots may be had throughout the season. The tenderest, and mildest to the taste, are those which have been raised in deep, rich, and light mould.

When the radishes are come up, and have got five or six leaves, they must be thinned wherever they stand too close; for otherwise they will run up in tops, and not increase in their roots. Some thin them by hand; but it is much better to use a small hoe, which will stir the ground, destroy the weeds,

and promote the growth of the young plants. They may be left about three inches asunder, if they are intended for drawing up small; but six inches will be little enough, if they are to stand till they are pretty large.

The kitchen gardeners about London, who pay great prices for their ground, and therefore are obliged to make it produce as many crops as possible in the year, sow carrot-seed with their early radishes, in order that if the radishes are killed soon after their coming up, as they sometimes are, the carrots may remain; for the seeds of these last generally lie in the ground five or six weeks before they grow, while those of the radishes sprout in about a fortnight; but when both crops succeed, the radishes must be pulled up while very young, or they will weaken the carrots; so that these last will not be able to support themselves after the former are gone.

It is also the constant practice of these industrious and intelligent men, to sow spinach with their latter crop of radishes; for after the radishes are taken off, and the ground has been cleared between the plants of spinach, these last will grow up so prodigiously as to cover the whole space in a fortnight's time: and if this spinach is of the broad-leaved kind, it will be larger and fairer than it usually is when sown alone; because most people are apt to sow it too thick, when they do not mix it with any other crop.

The small topped, the deep red, the scarlet, and the long topped striped radish, are the varieties generally cultivated in kitchen gardens. The small topped is most commonly preferred, because it takes up the least room; but a small spot of ground will furnish, from each sowing, as many radishes of any kind as can be spent in a family while they are good.

The Naples radish, which has a very white, round, small, and sweet root, may be propagated in the same manner as the common sort, excepting that it should not be sown till the beginning of March, and the plants should be allowed a greater distance. It is not very common in this country, and, indeed, its seeds are apt to degenerate here.

The white and the black Spanish radishes

radishes will be fit for the table by the end of August, or the beginning of September, if they are sown about the middle of July, or a little earlier, and will continue good till the frost spoils them. These should be thinned to a much greater distance than any other sort; for their roots will grow as big as common turnips. If they are drawn out of the ground before a hard frost comes on, and laid up in dry sand, in the same manner as is practised for carrots, they will keep good all the winter.

To save the seeds of radishes, some of the straightest and best-coloured roots should be planted in rows three feet asunder, and at the distance of two feet from each other in the rows, in deep and well dug ground. If the season is dry, they must be watered from time to time till they have taken root, after which they require no further care but keeping them clear from weeds; nor need these be feared after the branching seed-stalks of the radishes have overspread the ground, as they will soon do, in such a manner as to prevent their farther growth.

In this transplanting of the radishes, an allowance should always be made for bad seasons, because the very same plants will not yield a fourth part of the quantity of seeds in dry seasons, that they would do in a moist season.

When the seed begins to ripen, it should be carefully guarded from birds, and when it is ripe (which is known by the pods turning brown) it should be cut, dried in the sun, threshed out, and laid up in a place where mice cannot come at it.

Horse-RADISH. See *HORSE-Radish*.

RAGS. Woollen rags, and the nippings of the pitch-marks upon sheep, are a singularly good manure. The rags should be chopped small, about an inch or two square, and scattered on the earth at the second ploughing; for being thereby covered, they will begin to rot by seed-time. They imbibe the moisture of dews and rain, retain it long, and, as Dr. Home observes, thereby keep loose soils in a moist state. They cost about fourpence a bushel at London, from whence many loads are sent every year to Dunstable, which is thirty-three miles, where they are laid even on stiff lands,

Vol. II.

just after the sowing of the corn, allowing to the acre four sacks of six bushels each.

RAGWORT, [*Othonna*.] or, as it is called in Yorkshire, *Seagrim*, is a very pernicious weed.

The Rev. Mr. Camber, of East-Newton, has obliged the public with the following observations on the growth and destruction of ragwort, or seagrim,

“This plant,” says he, “has a stalk, in its early state, green; but, as it advances in age, inclining to violet, or purple, especially downwards. Its flowers are both yellow, and thick-set, and composed each of a number of small-pointed leaves. It runs to seed in the latter end of summer. The smell, both of the stalk and leaves, which are jagged, (whence probably it obtains one name) and the flower itself, are offensive to all animals, I think; for I have observed that hardly any creatures feed upon it, except almost hungered or starved. I have not indeed observed whether or no asses reject it.

“Like most other weeds, it thrives best in the best soils, either natural or artificial; and I took up a plant of it in my orchard, about two years ago, (with the root) which, when in flower, touched my chin, (my height is about five feet eight or nine inches) and its root, which is round, and thick set with taws, was much larger than a new-born child’s head: but the usual dimensions are much less than these.

“About four years ago, I observed the spreading of this weed in that part of this estate which was in our own hands. I took notice, that neither cows nor horses eat it; and when I smelled it, I ceased to wonder that they did not. It was obvious to remark, that a weed so bulky as this, and so gross, must extract much nourishment from the earth, and that it was advisable to get rid of it as fast as possible. The most easy method was mowing. I therefore ordered a servant to mow these weeds in the pastures as near to the ground as he could: and I hoped that the common mowing in the meadows would be sufficient to destroy them: but I soon found my mistake, for in a very few weeks these offensive stran-

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gers shot up again into a stalk and leaf, and even flower, though all in much smaller size than before, but with this disagreeable circumstance, that the root was so far from being injured with the scythe, that for one stalk several arose, and the root seemed to have gained new vigour from the wound.

“ I now applied myself to plucking up by the roots these odious inmates, and found new difficulties; for while the ground was dry, as it usually is in the latter end of summer, I found the stalks of such of the seagrims as were longest, and afforded the tightest grasp, either break in plucking, and leave the root in the ground entirely, or at best bring with it only a small part of the root; and when the wet weather came on, and loosened the ground, and made it possible, or even easy, to bring away the whole ball of the root, yet the season of seeding was come on also, and the earliest ripe seeds had dispersed themselves, and produced an assurance of a larger crop for succeeding years than the most careful plucking of the present crop could destroy.

“ But if these were the difficulties which attended my attempts to eradicate those seagrims, which had happened not to be mowed, I was much more embarrassed by those which had been; for here it was impossible to get any such fast hold, as to pluck them up with much, or even any root.

“ I now applied myself to enquire what gentlemen or farmers were plagued with this weed, and what methods they had tried with success to destroy it.

“ I was told by a gentleman in my own neighbourhood, that Sir G. Cayley, bart. of Brompton, near Scarborough, had been plagued with this weed, and had pursued the method of plucking with success.

“ Animated by this assurance, I resolved to pursue this method with great attention; and as it seemed to be a work which required great care, both in the choice of season and manner of plucking, I resolved not to depute the work to others, but to endeavour to clear a spot in my cow-pasture with my own hands, that, if my labour succeeded, I might employ

others to follow the same method under my own eye in the rest of this pasture.

“ Accordingly, in the evenings of the summer, or rather autumn, of 1762, after showers, I applied myself to this work: and by the help of a pair of strong gloves, and a tight grasp, I brought up almost every root, in a space of about two hundred yards square, whole; so that I had good hopes I should see this spot clear in the succeeding summer. It is true, I saw leaves of the species of this weed, and of a very vivid green too, around the plants which I pulled up; but as I reasonably concluded these to be fed by the taws which spread themselves from the main root, so I (methought reasonably) concluded also, that this main root being destroyed, the side taws would die, and consequently these young leaves.

“ But how was I disappointed, when, in the summer of 1763, I saw this spot of ground as much over-run with seagrims as any part else of the pasture which had been unpulled!

“ Conversing, however, with G. Watson, esq; of New Malton, towards the latter end of summer, on this subject, I was assured by him, that by a repetition of this labour of plucking for some years, he thought he had lessened the number of his seagrims, though they were still numerous. Urged by this example, I had gone through the whole of my pasture, which is about ten acres, and keeps five cows, at the latter end of last summer, of 1763, with the same care as was used to a small part of it in 1762; yet am I not elated with much hope of success; for a little plot before my garden (in which my horses run, and which was managed with still more accuracy on account of the odious appearance of the seagrims from my windows) seems to threaten another considerable crop.

“ As I did not confine my enquiries about the method of destroying this hateful weed to any one rank of men, I was told by an honest quaker, a farmer in my neighbourhood, that he had found turning of sheep in winter into his cow-pasture the only effectual method of destroying this hateful weed.

“ I thought

“ I thought this method very likely to succeed: for sheep are such close eaters, that I have known them destroy whole beds of the rankest docks, which could not be killed by any other means.

“ I have not been able to try this experiment considerably; for, as I am raising quick fences, both in my meadow and pasture, I keep no sheep. I have, however, occasionally admitted some of my tenants sheep into the small plot before my garden this winter; and, upon an accurate examination this morning, I do not entertain any sanguine hopes of great success from this method. I find that many of the young leaves of this weed, now level with the surface of the ground, are untouched by the sheep; and that such others as appear bitten by them, do not seem in a dying condition.

“ The truth seems to me, that sheep, though they may not have the same aversion to this weed as horses and cows, yet are far from being fond of it; and if any great success is to be hoped for from their bite, (which may prepare beds for the water, and so decay the root) the sheep should be folded pretty close upon it, and obliged to eat it near, and at such a season that the winter-rains may have time to work its destruction. And such a method, if carefully pursued, seems to be most probable for the extirpation of this pernicious weed.

“ If the method of plucking is followed, I would subjoin some cautions:

“ First, In order to prevent the large plants from seeding, I would advise to cut off all the tops, and the tops only, when the flowers begin to die, that then good hold of the stalk may be gotten.

“ Secondly, I would defer the plucking till the rains have moistened the ground sufficiently to bring up the whole main root.

“ Thirdly, I recommend striking the root so brought up against the ground, in order to disperse the earth which adheres to it, by way of manure.

“ Fourthly, I always pile the plants thus pulled up and cleansed from the earth, that, if the season proves favourable, they may be burnt, and the ashes arising from them spread on the ground; or if this cannot be conve-

niently done, (though it is much the better method, and may, with a sufficient fire, be done when they are ever so green) they may be left to rot and manure the soil.

“ The grossness, and even stench, of this weed, is a proof of the great quantity of salts it contains; and in the same proportion as any plant exhausts the ground of its salts it repays when reduced to manure. There can, however, be no question, but whilst weeds are left to rot, a great quantity of the salts, which by burning would mingle with the soil, are carried into the air.

“ I suppose your readers will be curious to know in what manner I account for the sudden appearance of these seagrims in vast abundance, in this estate, where they were hardly ever known before.

“ I will give you an account, which I dare say, you will esteem perfectly satisfactory. About eight years ago I undertook to improve a piece of ground of about fourteen acres, which was over-run with thorns of both sorts, brambles, broom, and furze.

“ When I had got it cleared of all this trash, my next business was to pare the hills off, and pile them, and, after a winter's mellowing, to break and spread them with a mixture of lime, and all other kinds of manure which I could collect. As the soil was very poor, having been exhausted by the great quantity of trash it had nourished for many years, I was not yet satisfied, but resolved to take the advantage of the first dry summer, to lead out the riches of a pond of about thirty yards long, and half as many broad, which had been occupied by a great number of geese, &c. and never thoroughly cleaned during near thirty years. I got through this work, tho' at a great expence, being obliged to employ a considerable number of draughts, lest the rains should make the mud too thin, or the heat bake it too much, the mud being for a considerable space a yard perpendicular.

“ All this mud I laid on my newly improved ground, except a few cart-loads, which were brought and laid by the wall of a kitchen-garden, to be mingled with the other soil.

“ I had divided my improved ground,

referring about four acres for meadow. Behold! the succeeding year gave me a crop of seagrims both in my new meadow, my new cow-pasture, and the plot of ground in which the mud for my garden had been scattered; and more particularly in those parts where the ground had been broke, either to stub the thorns, &c. or to take away the hills, while the adjoining ground on every side was free from this pernicious weed.

"As I knew little or nothing of this weed, I suffered it to feed before I took any necessary precautions for its destruction. The succeeding year presented me with a much larger crop, and I have been ever since struggling for its extirpation, and have the mortification to see its encroachments on adjoining grounds by the seeds which winds have carried.

"This fact, and another of the same kind, in a piece of ground which I improved since, at some distance from the former, have confirmed me in an opinion, which I before thought very probable, viz. "That all soils are originally impregnated with the seeds of almost all grasses and weeds, (though of some in greater quantities) which only want a proper stirring and manure to awaken them to vegetation, though at the expence of one another, some being suffocated by that process which gives life to the others."

"I will add another striking instance in confirmation of this sentiment, notorious in this neighbourhood.

"A considerable quantity of the park at Gilling was over-run with brakes and moss, and that wretched grass which grows in such company. Lord Fairfax, the owner, finding that he could not have his venison fat as it ought to be, destroyed his park, and applied himself seriously to the improvement of it at a vast expence. In course of time by due tillage he brought this worst part of it to be not only good corn land, but even tolerable, though coarsh, meadow and pasture; yet both of them thick set with seagrims, a weed never seen there till the quantity of lime which his Lordship put into that poor soil had warmed it sufficiently.

"I have only to add, on this subject, that I am persuaded seagrims does

more harm in meadow than pasture land; for in the latter it only exhausts the ground on which it stands to no good purpose; but in the former it communicates its disagreeable stench in the sweat to the good hay, and destroys its sweetness. I advise, therefore, that hay-makers be ordered to throw it with their rake-shafts out of the swathe whenever they meet with it." *Museum Rusticum*, vol. v. p. 117.

RAGGED ROBIN. [*Lychnis Flos-cuculi*.] A species of campion common in moist meadows, and by the sides of rivers.

RAMPION, A species of campanula or bell-flower. The crimson rampion is greatly prized by the curious, for the beauty of its rich crimson flowers, which exceed all the flowers we have yet seen in the deepness of its colour; and these commonly when their roots are strong, produce large spikes of these flowers, which continue a long time in beauty, and make a most magnificent shew among other flowers. The time of their flowering is commonly in July or August; and if the autumn proves very favourable, they will sometimes produce good seeds in England. These plants are natives of Virginia and Carolina, where they grow by the sides of rivulets, and make a most beautiful appearance; from whence the seeds are often sent to England. These seeds commonly arrive here in the spring, at which time they should be sown in pots filled with light earth, and but just covered over; for, if the seeds are buried deep, they will not grow. These pots should be placed under a frame, to defend them from the cold, until the season is a little advanced; but they should not be placed on an hot-bed, which will also destroy the seeds.

When the weather is warm, towards the middle of April, these pots should be placed in the open air, in a situation where they may have the morning sun till twelve o'clock, observing to water them constantly in dry weather; and when the plants are come up, and are grown pretty strong, they should be transplanted each into a small pot filled with fresh light earth, and placed in the same situation, observing to water them in dry weather; and,

and, in winter, they should be placed under an hot-bed frame, where they may be sheltered from severe frosts; but, in mild weather, they should be as much exposed to the open air as possible.

The March following these plants should be put into larger pots filled with the same fresh earth, and placed, as before, to the morning sun; observing to water them in dry weather, which will cause them to flower strong the autumn following.

These plants are also propagated by parting of their roots; the best season for which is, either soon after they are past flower, or in March; observing to water and manage them as hath been directed for the seedling plants both in winter and summer.

RAMSONS, Broad-leaved wild garlic.

RANUNCULUS. There are eight or ten species of the ranunculus, some growing wild in different places; but the most beautiful is the Persian, or Turkey ranunculus, the varieties of which are almost numberless, but almost all flower in April or May.

The beds in which the Persian ranunculus roots are planted, should be made with fresh light sandy earth, at least three feet deep; the best soil for them may be composed in this manner, viz. take a quantity of fresh earth from a rich upland pasture, about six inches deep, together with the green sward: this should be laid in heaps to rot for twelve months before it is mixed, observing to turn it over very often to sweeten it, and break the clods; to this you should add a fourth part of very rotten neat's dung, and a proportionable quantity of sea or drift sand, according as the earth is lighter or stiffer; if it be light, and inclining to a sand, there should be no sand added; but if it be an hazel loam, one load of sand will be sufficient for eight loads of earth; but if the earth be strong and heavy, the sand should be added in a greater proportion: this should be mixed six or eight months before it is used, and you should often turn it over, in order to unite their parts well together, before it is put into the beds.

The depth which this should be laid in the beds must be about three feet; this

should be below the surface, in proportion to the dryness or moisture of the place where they are situated; which, in dry ground, should be two feet eight inches below the surface, and the beds raised four inches above; but in a moist place they should be two feet four inches below, and eight above the ground; and, in this case, it will be very proper to lay some rubbish and stones at the bottom of each bed, to drain off the moisture; and if upon this, at the bottom of the beds, some very rotten neat's-dung be laid two or three inches thick, the roots will reach this in the spring, and the flowers will be fairer. This earth I would by no means advise to be skreened very fine; only turning it over each time, you should be careful to break the clods, and throw out all large stones, which will be sufficient; for if it is made very fine, when the great rains in winter come on, it will cause the earth to bind into one solid lump, whereby the moisture will be detained, and the roots, not being able to extend their tender fibres, will rot.

The beds being thus prepared should lie a fortnight to settle, before the roots are planted, that there may be no danger of the earth settling unequally after they are planted, which would prejudice the roots by having hollow places in some parts of the bed, to which the water would run and lodge, and so rot the roots in such places. Then having levelled the earth, laying the surface a little rounding, you should mark out the rows by a line, at about six inches distance each way, so that roots may be planted every way in straight lines; then you should open the earth with your fingers at each cross, where the roots are to be planted, about two inches deep, placing the roots exactly in the middle, with their crowns upright; then with the head of a rake, you should draw the earth upon the surface of the bed level, whereby the top of the roots will be about an inch covered with earth, which will be sufficient at first. This work should be done in dry weather, because the earth will then work better than if it were wet; but, the sooner after planting there happens to be rain the better it will be for the roots, for if it should prove

dry

dry weather long after, and the earth of the beds be very dry, the roots will be subject to mould and decay; therefore, in such a case, it will be proper to give a little water to the beds, if there should no rain happen in a fortnight's time, which is very rare at this season of the year; so that they will seldom be in danger of suffering that way.

When the roots are thus planted, there will no more be required until towards November, by which time they will begin to heave the ground, and their buds appear; when you should lay a little of the same fresh earth of which the beds were composed about half an inch thick all over the beds, which will greatly defend the crown of the root from the frost: and when you perceive the buds to break through this second covering, if it should prove a very hard frost, it will be very proper to arch the beds over with hoops, and cover them with mats, especially in the spring, when the flower buds will begin to appear; for if they are exposed to too much frost, or blighting winds, at that season, their flowers seldom open fairly, and many times their roots are destroyed; but this happens more frequently to the Persian kinds, which are tenderer, than to those sorts which are pretty hardy; for which reason they are commonly planted in open borders, intermixed with other flowers, though in very hard winters these are apt to suffer where care is not taken to guard off the frost.

In the beginning of March the flower stems will begin to rise, at which time you should carefully clear the beds from weeds, and stir the earth with your fingers between the roots, being very careful not to injure them; this will not only make the beds appear handsome, but also strengthen their flowers. When the flowers are past, and the leaves are withered, you should take up the roots and carefully clear them from the earth, then spread them upon a mat to dry in a shady place, after which they may be put up in bags or boxes, in a dry room until the October following, which is the season for planting them again.

RAPE. [*Rapa.*] Rape or coleseed,

This is a produce confined, in a manner, to a few parts of the kingdom, but it might very well be carried to others. We shall shew the profits to the husbandman in general, and if we can tempt him to cultivate the plant, shall not leave him deficient in any article regarding the management.

There is the less reason to wonder that coleseed, so profitable in some parts of the kingdom, is so little raised in others, for this, that the plant itself is less known than any other among the whole number of those cultivated for use. To ask what herb it is that yields this seed, is a question that would puzzle many beside the farmer. Even its name is not commonly known. Coleseed is the name of the seed only, it is also called rape-feed, but this does not lead to the matter: Cole is not the name of any plant, and rape signifies turnip; we shall explain this matter, and before we enter upon the culture shew the farmer what the herb properly is that he is to cultivate.

Coleseed is very well known in Lincolnshire, and some other counties; and rape oil is as well known which is made from it.

The seed is known at the shops, and the plant by the farmers who raise it; but nothing more. In some places the seed is sown among the other kinds of what are called young fallowing; but in this case, as the first leaves are only eaten, no more is seen of it.

All the time that this ignorance remains about the form of a very useful plant, it is common, wild on our ditch banks, and there needs nothing more than to shew its seed to the Lincolnshire farmer, for him to say that is it. These are the inaccuracies and errors which so greatly retard the progress of improvements in husbandry. The articles are themselves unknown to those who should be the authors of the amendments.

The price of coleseed, if the farmer chooses to sell it in that condition, is very considerable, reckoning the quantity an acre yields; and if he will be at the trouble of drawing the oil, the method of doing it is very easy, and his profit vastly greater. Nor are these all the advantages he receives from the growth of this plant: it is like

Like the dyers weed in this, that it will grow on soils which will not yield any thing else to advantage; and though these are of a very different kind from those peculiar to the dyers weed, that flourishing on the moist dry, and this best on marshy grounds; yet there are enough of these last in many parts of the kingdom to shew how advantageous it must be to the nation to render the plant more known, and the culture of it among our farmers more universal.

There is no other name by which we can treat of this intelligibly to the farmer, than this formed from the seed: What herb it is that is thus called in the coleseed countries, or what is the plant that yields coleseed, we are about to shew.

There are three kinds of plants, each containing several species, and distinguished by different names, but are very nearly agreeing in their flowers, seed-vessels, and other general circumstances; these are, 1. The Cabbage kind. 2. The Turnip kind. And 3. The Navew kind. The confusion that has been made amongst these has been one occasion of the uncertainty about the coleseed plant.

The root of the turnip kind, and the stalk of the cabbage kind, are what principally distinguish them; as to the navew, it differs very little from the turnip, and that principally in the smallness and length of the root.

The flowers of these are alike, and the seeds of them all resemble one another, and they will all in the same manner yield that oil which we call rape oil; but there is one kind that yields it in greater quantity than the others. This is the wild navew, called *Napus Sylvestris*, by authors, and this is the proper coleseed plant.

The turnip and cabbage kind we have in our gardens in great variety, and some have for curiosity introduced the garden navew, or *Napus Sativus*, but it is inferior to the turnip, and therefore but little regarded. The authors who figure and describe the garden navew, figure also the wild kind, and this is what we have on the banks of ditches. We have observed that the navew differs little from the turnip, except in the shape and bigness of the root; and this plant, which

otherwise much resembles the turnip kind, yet is properly a navew, because it has a very small root.

Any of these kinds therefore will answer under the farmer's hands; but as the wild navew yields much the finer seed, and much the larger quantity of it, and that is also the richest in oil, so it is best to cultivate that particular kind. This is oftener to be had from Holland than any where else, and we shall inform the purchaser how he is to know it by the eye.

The proper coleseed plant, or wild navew, is four feet high, and of an irregular growth. The root is long, slender, and white; it is of a sweeter taste than the turnip, but with somewhat more warmth. The lower leaves are long, large, deeply divided at the edges, and of a dusky green. One stalk usually rises in the midst of these, sometimes two or more. This is round, smooth, of a pale green colour, and divided into many branches towards the upper part. The leaves upon this stand one by one, not in pairs; they are smaller and narrower than those from the root, and are of a paler colour. The flowers grow at the tops of all the branches, they are small, of a bright yellow, and perfectly resemble those of the turnip: After these come pods which contain the seed. This resembles turnip-seed, but that it is larger and smoother. The common appearance of the plant in summer is with long spikes of pods, and a few flowers at the top of each.

This is the appearance of the wild navew in our fields and on banks. When it is cultivated for coleseed it grows somewhat taller and more branched, otherwise there is no difference; and in good ground the root will be larger and more tender. There is no difference between the wild navew and the garden navew, except that the root of the garden kind is yet tenderer and thicker; but this is principally while it has only the lower leaves, for when it is suffered to run to seed, the root grows sticky in the garden. Indeed there seems no other difference between the garden and the wild navew, but what is made by culture.

The flowers and fructification of the coleseed plant, when nicely examined,

mined, are thus formed. The flowers stand in a cup composed of four little oval-pointed green leaves, and this does not remain after the flower is faded, as in the dyers weed, but perishes and falls off with it. The flower is composed of four plain narrow yellow leaves, placed cross-wise. These are broadest at the ends, and not at all divided; they are of the same length as the leaves of the cup. In the center of this flower rise six filaments, four of which are considerably longer than the other two; they have small pointed buttons growing on them. In the center of these rises a small upright body, which is the rudiment of the seed-vessel; this has a kind of button at its top, in which there are small openings for receiving the fine dust out of the heads of the filaments; for in propagating the seed, when the leaves and cup of the flower are fallen, this part enlarges, and at length becomes a seed-vessel of a longish depressed shape, divided in the inside by a membrane, which shews itself beyond its extremity, and containing several large, round, bright seeds.

This is the construction of the flower and fruit of the coleseed plant, the proper name of which is wild navew, and which grows naturally wild, not only in England, but in Flanders, and other parts of Europe.

The seeds of the natural wild plant may be gathered and sown; but those from such as have been cultivated raise the stoutest plants; these therefore the farmer is to choose, according to the following marks:—

When the farmer has procured a quantity of good seed, let him pick out the most proper piece of ground for the crop. This will depend on the two great articles, soil and situation; as to the first, the richer the land the better; and as to the other, all that is required is, that it lie tolerably dry. There is no part of England where so much coleseed is raised as in the fens; but the lands are first laid dry that are intended for this purpose: In the same manner they cultivate it in Flanders and Holland, on ground originally marshy; but they are at all the necessary pains and expence of making them properly dry first.

No lands are more proper for coleseed than such as have been subject to overflowings, but they must be secure from that accident while the crop is upon them: and must be properly dry, in order to receive it.

Whether this overflowing have been from land floods, great rivers within reach of the sea, or the sea itself, it prepares them equally for the crop of coleseed. Those where salt-water has come, are properer than any others; but they require somewhat more preparation.

There are parts of Essex where the husbandman might raise coleseed to a very great advantage; and in many places where grounds have been newly recovered from the sea by banking, &c. coleseed is an excellent crop.

Every piece of fat rich land is proper for it; and the farmer need not fear to bestow it upon this species, for it will yield to his full content.

If he has a piece of ground that is too rank for wheat, or the other usual growths, let him sow it with coleseed: this will yield an extremely rich increase, and the land that would not before have done for corn, will, by proper management, be perfectly well prepared for it by this means.

The right soil for coleseed is mellow earth. A soft deep black mould, with little other admixture, feeds it better than any other. The plants never grow so robust, and the seed is not formed in such plenty, or ripened in such perfection on any other. This is the reason that marshy and fenny lands, when properly fitted for that purpose, answer so well with coleseed: This black deep mellow earth is the natural soil in these places, one scarce sees any other on breaking the turf in any of them. This is of all others the best soil for coleseed; but we have shewn it is not limited to this only; any deep soil that is mellow, and properly situated, will do.

The soil we have recommended as most proper for coleseed, is one of those that does not require any great labour in tilling; nor does the coleseed demand any particularly to its own management. The black mellow earth whereon this crop should be raised, cuts easily, and turns freely under the plough; and when it is in
a proper

A proper degree of dryness, breaks freely and finely in the working. All that is particularly necessary to fit it for coleseed, is to make it very fine; and this, unless the season prove quite unfavourable, or the husbandman be very unskilful, is a condition whereinto it is brought easily.

In May the land intended for coleseed is commonly fallowed; in June it is twy-fallowed; and in the latter end of that month, or the first week in July, the coleseed is sown.

After the last ploughing, a fine-toothed harrow should be drawn over the field; after this, if the weather be dry, let there be a light roller carried over it; then let it be very gently and tenderly harrowed again. This last harrowing, after the roller has crushed and broke the lumps, usually makes it as even as the flower-border in a garden, and this is the proper condition wherein it is to receive the seed.

If the weather prove too wet, let the rolling be deferred; and afterwards let it be performed with great caution; for though the roller may do great good in this case, it may also do much harm. In some lands the soil is naturally so loose, but once harrowing divides it sufficiently.

Coleseed is to be ordered much in the same manner as turnips. When it is got to some small height, hoers are to be sent into the ground, whose work serves very well to cut down the weeds; and they may also thin the plants where they happen to have risen too thick, as they will always do in some places from this irregular manner of sowing. To thrive well in this way, they should be suffered to stand at about ten inches distance.

In the same manner, when the husbandman shall think proper to raise this crop by the drill and horse-hoeing method; they must be hoed when they have got a little strength. In this respect we need not tediously repeat the particulars, the same management should be observed as in hoeing of turnips, raised by this husbandry.

The weeds in the partitions between the double rows, are to be cut up with the broad hand-hoe; and the plants

should be at the same time thinned till they stand but one every foot and a half, and these not opposite in the two series, but one in each row opposite to the middle of the space between two in the other.

When the plants are thus cleared out and thinned, let the horse-hoe or hoe-plough be sent in as soon as any weeds appear in the intervals. This will thoroughly destroy them, and well break the ground.

This is to be repeated as often as the weeds rise, only observing this caution, that at first the plough tears up only the middle of each interval; and afterwards that it come nearer the edges.

When the coleseed is sown, there are only two things necessary, the singling out the plants to a proper distance, and the keeping them clear of weeds while young; for afterwards they will need no care on that head, the plants are so strong, and draw so much nourishment, that nothing can live among them.

Which ever method of raising the crop be used, it is to be thus prepared for a good growth; and this done, the owner is to consider that it has more uses than one. Though the seed be the principal consideration, it is not the only one; and the more regard is to be shewn to another, because it comes in order of time before it.

We have observed that this plant is of the eatable kind. As it does not grow so much into root as the turnip, its leaves are more delicate. Sheep are very fond of them, and they afford a rich and wholesome nourishment. This, properly managed, is a great article. The sheep are supplied at a time when they extremely want nourishment, and the crop is far from being injured; on the contrary, it is improved by it. This, therefore, is to be considered as a very essential part in the management of a coleseed crop, and we shall give the practical husbandman the method of ordering it to the best advantage.

Coleseed having been sown in the beginning of July, shoots with some strength; after a few weeks keeps itself up during the droughts of autumn, and getting new strength and size in

the leaves from the rains, which introduce the winter, becomes in a condition to resist the strongest frosts. It stands well, and on every open day or two, grows during the depth of winter; so that in January, February, and March, the ground is well-covered.

The leaves which now rise are of no real use to the plant in perfecting its seed, which is to be done the succeeding summer. If they grow very rank they rather are injurious, swallowing up too much of the nourishment that should go to the forming of the young stalk, therefore they may be spared without injury. Here is then a great supply of food for sheep, at a season when grass is low, and it is extremely wanted; and the sheep are to be turned in to eat it without any damage to the succeeding crop of seed.

There are those who sow coleseed in some parts of Northamptonshire for this use alone; and it answers the intent very well. They use the poorest land for this purpose, and on that, although the plant would never grow vigorous and strong so as to yield any profitable quantity of seed, it shoots up very well in leaves.

In the proper lands for this growth, the leaves at this season are much finer and stronger, and they may be eaten without damage to the crop.

There are those who prefer the cole plant on these poor lands for food for sheep, to the young growth on such as is richer, and they say it is more wholesome; they are not without reason; but their experience on this head should not have led them to discard the use of coleseed for feeding on rich ground, but to use it with discretion.

The disadvantage that attends the feeding of sheep on the rank growth of coleseed in rich ground is, that it makes them swell. This is the same consequence that happens from feeding them on clover, but it is easily remedied. It is only at first that this rich food takes so ill an effect, and this may be prevented by proper regulations. When the sheep are first turned in, let it be towards the middle of the day; and an hour before sunset let them be driven out again into a common pasture. The next day let

them be turned in earlier, and driven out later; and so the third, fourth, and fifth; after this, let them be just driven out at night for two or three days more, and let in again as soon as they will in the morning. This will prevent the effect of the coleseed at first, and being now hardened to it by a little custom, they may be left in the fields of it altogether, and will thrive upon it excellently, without the least damage.

Under this article of the effect of coleseed on sheep, it is proper to mention, that the first shoots are not all that serve this purpose. There is another growth of them that is less rank, and that the sheep love better; and which not being liable to affect them with any disorder, is to be trusted to them at their discretion.

The shoots of the coleseed after gathering the stalks for feed, are also a mild, sweet, and wholesome food we have been naming. These grow very strong when there has been rain, but they are never rank, or over-rich. Every one knows the difference there is between the cabbage and coleworts; full-grown leaves first cut for the pot, and the sprouts that grow on the stumps and stalks after cutting; the difference is just the same between the first growth of large leaves from the coleseed plant, and the shoots that rise after the cutting down the full-grown stalks for feed.

Towards the end of June the coleseed plant in whatever way it has been raised, will be fit to cut. The husbandman must therefore keep his eye upon his field very carefully toward that period; for it is of the utmost importance to him to seize it when it comes. No day of the month, or other precise time, can be named for the gathering this crop, because the differences of soils and seasons promote and retard its ripening; and even the variety of management, or the age of the plant, may make ten days or a fortnight difference in the ripening in two fields of the same soil in the same year. We have told the husbandman about what time he is to expect it; and shall add the signs by which he shall know that it is fit for harvest. One caution we must give him withal, that as the soil and method

of culture may make a very great alteration in the time of ripening, he must be upon the watch accordingly, expecting it earlier by a fortnight in rich soils and the most careful conduct, than he need in poor land in the common way. It will be in vain that we lay down the signs of its ripening, if he slips the time.

We have observed that the coleseed plant has small flowers on the tops of the stalks and branches, which when the leaves fall off are succeeded by pods. As the flowers that opened first are thus followed by the seed-vessels, other flowers open upon the tops, which shoot up continually higher and higher. Thus, when the plant begins to flower, nothing is seen but a little button or tuft of buds at the top of the stalk, and of every branch, with one or two flowers opened or opening upon it; but when it has been some time flowering, the aspect differs, for then the branches having lengthened from the time of their beginning to flower, all that part of them which was the top, and where successively the former flowers appeared, is covered with seed-vessels; thus each branch terminates in a spike of seed-vessels, a foot or more in length, with a few flowers at its top.

The quantity of seed is the riches of the crop, therefore it would appear at first sight, that the longer the plant stood, so long as it continued flowering, the more advantageous would be the growth, but there are limits to this increase, beyond which all is waste.

The course of nature is to ripen these seeds, and then shed them upon the ground for producing the plant again; therefore when ripe the pods open of themselves, and the seeds are lost. This no art can prevent; and for that reason the time is to be watched when any of them begin to open, and that is the exact period for gathering.

When some of the pods approach towards ripeness they change colour, and the greenness is only seen at top; when, upon a cursory view, there are some found to grow brownish at the bottom, and those in the middle are yellowish or pale, those at the top only being green, then the time of gather-

ing is at hand. It is the interest of the owner to let them stand so long as all are safe, but no longer. He is therefore now to look into the field once or twice every day, in a more strict manner. He must examine the bottom pods of the ripest spikes; so long as these are close all is safe; but as soon as some of them begin to open, the time of gathering the crop is come, for after this every hour's standing will be attended with loss.

The best method of cutting coleseed is with a strong sickle, in the same manner as wheat is reaped; but this must be done carefully. There is no part of the farmer's occupation that requires more expert and honest labourers than this. The stalks are pretty thick, and by that time the seed is ripened thus far, they have lost their juicy condition, and are grown hard and sticky. They are not easy to be cut, and yet that must be done evenly, and with little shaking. A great deal of care is to be taken that the sickle goes easily through them, and when separated from the root they must be laid gently down in handfuls, that they may dry.

About one-third part of the seed is ripe at the time when the lowest pods are ready to open; in the lying exposed to the heat of the sun at this season, more than another third hardens, and becomes good; so that above two-thirds of the whole quantity of pods yield good seed, and this is all that can be expected; for if the farmer were to stay for the ripening of the other third, while growing, he would lose the seed from the lower pods, which is much more valuable; and the seed is of a sufficient growth to ripen or harden in the sun after the plant is cut down.

When the crop has been once laid on the ground it is not to be stirred till dry, for the seeds in the lower pods are so loose, that they will shake out with the least motion, and be lost. What is required from this exposure is, to dry and harden them, and they will get this sufficiently by lying tolerably thin, without being moved. If the weather be very hot, the business is done the sooner; if otherwise, somewhat more time is required; generally from ten days to a fortnight

proves sufficient. The proof that they are dried enough is, when the pods toward the upper part of the spikes open easily, and the seeds in them are hard.

When the whole is in this condition, nothing is required but to get it to the barn, and thrash it. In Lincolnshire, they save themselves a part of this trouble, by thrashing it in the field; they spread a large sheet upon a level part of the ground, and lay a quantity of the herb on it. A little thrashing does to dislodge the seeds, which are already loose and most of them in danger of falling out of their own accord; but it is an irregular method; it leaves the farmer's produce, after all his toil, very much at the mercy of the winds, and cannot be performed so well as in doors.

The method we would therefore recommend to the husbandman, if the ground be any thing near home, is this: Let a parcel of large sheets be spread in the field, and the dried stalks carefully taken up in their bundles, and laid on them. Each sheet will hold a great deal this way; for though the parcels must be very gently moved to the sheet, they may be pressed hard, and handled roughly there; for what seeds fall out will be saved.

When the sheets have as much in them as they will hold, the edges and corners are to be gathered in and fastened, and the several parcels are to be carried to the barn, and there thrashed with a careful but light hand, that all the seed may be got out, and as little of it as possible bruised, for it is tender and easily hurt, especially when fresh.

After it is separated from the refuse that was mixed among it in the thrashing, it must be spread on a floor pretty thin, and turned often till it is thoroughly dry and hardened; for otherwise, when put up, it will quickly grow damp and mouldy.

The use of the coleseed is not over when the oil has been pressed from it. The cakes that remain are a large quantity, and as the fresh leaves feed sheep, these, in a proper method of giving them, turn to a very good account for feeding of cows. In winter this is an excellent food for them, for keeping them in heart and strength,

at a time when other good food is scarce.

Calves are also to be fed with coleseed cakes very profitably, but that in a particular manner. After the oil is pressed out as clean as the common practice can obtain it, there still remains so much of it in the cakes, that when they are beat to powder, and mixed with hot water, they make it white and milky, in the same manner as sweet almonds beat up with water make an emulsion. This is the way of giving it to calves, and it proves a very rich, wholesome, and strengthening food. Calves may be fed with this from three days old, till they are fit to eat grafs or hay.

Will RAPE. Charleock.

RASPBERRY. [*Rubus Idæus.*] This plant grows naturally in the woods in the northern parts of England, but is cultivated in gardens for its fruit, which supplies the table at the season when they are ripe. There are two or three varieties of this, one with a red, and the other a white fruit, and the third generally produces two crops of fruit annually; the first ripens in July, and the second in October, but those of the latter season have seldom much flavour. These are accidental varieties, but the fourth sort we believe to be a distinct species, for the leaves are trifoliate, larger than those of the common sort, woolly on their under side, and the branches and stalks have no thorns. This produces but few fruit, and those are small, which has occasioned its being neglected.

The raspberry is generally propagated by suckers, though we should prefer such plants as are raised by layers, because they will be better rooted, and not so liable to send out suckers as the other, which generally produce such quantities of suckers from their roots as to fill the ground in a year or two; and where they are not carefully taken off or thinned, will cause the fruit to be small, and in less quantities, especially when the plants are placed near each other; which is too often the case, for there are few persons who allow these plants sufficient room.

In preparing these plants, their fibres should be shortened; but the buds, which are placed at a small distance from the stem of the plant, must

not be cut off, because those produce the new shoots the following summer. These plants should be planted about two feet asunder in the rows, and four or five feet distant row from row; for if they are planted too close, their fruit is never so fair, nor will ripen so kindly, as when they have room for the air to pass between the rows. The soil in which they thrive best, is a fresh strong loam, for in warm light ground they do not produce so great plenty of fruit, for they naturally grow in cold land, and in shade; therefore when they are planted in a warm situation and a light soil, they do not succeed.

The season for dressing of them is in October, at which time all the old wood that produced fruit the preceding summer, should be cut down below the surface of the ground, and the young shoots of the same year must be shortened to above two feet in length; then the spaces between the rows should be well dug, to encourage their roots; and if you bury a very little rotten dung therein, it will make them shoot vigorously the following summer, and their fruit will be much fairer. During the summer season, they should be kept clear from weeds, which, with the before-mentioned culture, is all the management they will require; but it is proper to make new plantations once in three or four years, because when the plants are suffered to remain long, they will produce few and small fruit.

The Virginian Flowering RASPBERRY is commonly propagated in the nurseries as a flowering shrub. The flowers of this sort are as large as small roses, and there is a succession of them for two months or more, so that they make an agreeable variety during their continuance. This sort frequently produces fruit in England, which are not so large as those of the common sort, and have little flavour. These ripen in September, or the beginning of October.

RAT, the name of a well-known animal, very troublesome to the farmer, &c.

We shall here give the two following receipts, as they are said to be effectual, for destroying rats.

The first has the sanction of the

Dublin society, who on the 19th of November 1762, ordered a premium of five guineas to one Lawrence O'Hara, for this discovery; which is, "one quart of oatmeal, four drops of rhodium, one grain of musk, and two nuts of nux vomica finely rasped." This mixture is to be made up in pellets, and laid in the holes and places which the rats frequent.

The other receipt is thus: "Take of the seeds of slaves-acre, or louse-worth, powdered, one fourth part, and of oatmeal three parts; mix them well and make them up into a paste with honey. Lay pieces of it in the holes, and on the places frequented by rats or mice, and it will kill such vermin as eat thereof."

The first step taken by rat-catchers, in order to clear a house, &c. of those vermin, is to allure them all together to one proper place, before they attempt to destroy them; for there is such an instinctive caution in these animals, accompanied with a surprising sagacity in discovering any cause of danger, that, if any of them be hurt, or pursued, in an unusual manner, the rest take the alarm, and become so shy and wary, that they elude all the devices and stratagems of their pursuers for some time after. This place, where the rats are to be assembled, should be some closet, or small room, into which all the openings but one or two may be secured; and this place should be, as near as may be, in the middle of the house, or buildings. It is the practice, therefore, to attempt to bring them all together to some such place, before any attempt be made to take them; and, even then, to avoid any violence, hurt, or fright to them, before the whole be in the power of the operator.

The means used to allure them to one place are various: one of those most easily and efficaciously practised is, the trailing some piece of their most favourite food, which should be of the kind that has the strongest scent, such as toasted cheese, or broiled red herring, from the holes or entrances to their recesses in every part of the house, or contiguous building, whence it is intended to allure them. At the extremities, and in different parts of the course of this trailed tract, small quantities

quantities of meal, or any other kind of their food, should be laid to bring the greater number into the tracks, and to encourage them to pursue it to the center place, where they are intended to be taken; at that place, where time admits of it, a more plentiful repast is laid for them, and the trailing repeated for two or three nights.

Besides this trailing and way-baiting, some of the most expert of the rat-catchers have a shorter, and perhaps more effectual method of bringing them together; which is, the calling them, by making such a kind of whistling noise as resembles their own call; and by this means, with the assistance of the way-baits, they call them out of their holes, and lead them to the repast prepared for them at the place designed for taking them. But this is much more difficult to be practised than the art of trailing; for the learning the exact notes, or cries, of any kind of beasts or birds, so as to deceive them, is a peculiar talent, not easily attained to in other cases.

In the practising either of these methods of trailing or calling, great caution must be used by the operator, to suppress and prevent the scent of his feet and body from being perceived; which is done by overpowering that scent by others of a stronger nature. In order to this, the feet are to be covered with cloths rubbed over with assa-fœtida, or other strong smelling substances; and even oil of rhodium is sometimes used for this purpose, but sparingly, on account of its dearness, though it has a very alluring, as well as disguising effect, as will be observed below. If this caution of avoiding the scent of the operator's feet near the track, and in the place where the rats are proposed to be collected be not properly observed, it will very much obstruct the success of the attempt to take them; for they are very shy of coming where the scent of human feet lies very fresh, and intimates to their sagacious instinct, the presence of human creatures, whom they naturally dread. To the above-mentioned means of alluring by trailing, way-baiting, and calling, is added another of very material efficacy, which is, the use of oil of rhodium,

which, like the marum lyriacum in the case of cats, has a very extraordinary fascinating power on these animals. This oil is extremely dear, and therefore sparingly used. It is exhaled in a small quantity in the place, and at the entrance of it, where the rats are intended to be taken, particularly at the time when they are to be last brought together, in order to their destruction; and it is used also, by smearing it on the surface of some of the implements used in taking them by the method below described: and the effect it has in taking off their caution and dread, by the delight they appear to have in it, is very extraordinary.

It is usual, likewise, for the operator to disguise his figure as well as scent; which is done by putting on a sort of gown or cloak, of one colour, that hides the natural form, and makes him appear like a post, or such inanimate thing; which habit must likewise be scented as above, to overpower the smell of his person; and besides this, he is to avoid all motion, till he has secured his point of having all the rats in his power.

When the rats are thus enticed and collected, where time is afforded, and the whole in any house and out-buildings are intended to be cleared away, they are suffered to regale on what they most like, which is ready prepared for them, and then to go away quietly for two or three nights; by which means those, which are not allured the first night, are brought afterwards, either by their fellows, or the effects of the trailing, &c. and will not fail to come duly again, if they are not disturbed or molested. But many of the rat-catchers make shorter work, and content themselves with what can be brought together in one night or two; but this is never effectual, unless where the building is small and entire, and the rats but few in number.

The means of taking them, when they are brought together, are various. Some entice them into a very large bag, the mouth of which is sufficiently capacious to cover nearly the whole floor of the place where they are collected; which is done by smearing some vessel placed in the middle of the bag with oil of rhodium, and laying in the bag baits of food. This bag,

which

which before lay flat on the ground with the mouth spread open, is to be suddenly closed when the rats are all in it. Others drive, or fright them, by slight noises or motions, into a bag of a long form, the mouth of which, after all the rats are come in, is drawn up to the opening of the place by which they entered, all other ways of retreat being secured. Others, again, intoxicate or poison them, by mixing with the repast prepared for them, the *coculus Indicus*, or the *nux vomica*. A receipt for this purpose has appeared, which directed four ounces of the *coculus Indicus*, with twelve ounces of oatmeal, and two ounces of treacle or honey, made up into a moist paste with strong beer; but if the *nux vomica* be used, a much less proportion will serve than is here given of the *coculus*. Any similar composition of these drugs, with that kind of food the rats are most fond of, and which has a strong flavour, to hide that of the drugs, will equally well answer the end. If, indeed, the *coculus Indicus* be well powdered, and infused in the beer for some time, at least half the quantity here directed will serve as well as the quantity before-mentioned. When the rats appear to be thoroughly intoxicated with the *coculus*, or sick with the *nux vomica*, they may be taken with the hand, and put into a bag or cage, the door of the place being first drawn too, lest those which have strength and sense remaining escape.

By these methods, well conducted, a very considerable part of the rats in any farm, or other house, and the contiguous buildings, may be taken.

RATTLE-GRASS. [*Rhinanthus.*] This is a very troublesome weed growing among grass, and spreading itself over the whole ground.

RATTLESNAKE-Root. [*Seneca.*] The root of a species of *polygala*, which grows spontaneously in Virginia, and bears the winters of our own climate. This root is usually about the thickness of the little finger, variously bent and contorted, and appears as if composed of joints, whence it is supposed to resemble the tail of the animal whose name it bears: A kind of membranous margin runs on each side, the whole length of the root,

Its taste is at first acid, afterwards very hot and pungent.

This root is not at present much known in the shops. The Senegaro Indians are said to prevent the fatal effects which follow from the bite of the rattle-snake, by giving it internally, and applying it externally to the wound. It has of late been strongly recommended in pleurisies, peripneumonies, and other inflammatory distempers; in these cases, Lémery, du Hamel, and Jussieu, experienced its good success (see the French memoirs for the years 1738, 1739.) Its more immediate effects are those of a diuretic, diaphoretic, and cathartic; sometimes it proves emetic: the two last operations may be occasionally prevented, by giving the root in small doses, along with aromatic simple waters, as that of cinnamon. The usual dose of the powder is thirty grains or more.

Some have likewise employed this root in hydropic cases, and not without success: Bouvart (in the memoirs above-mentioned, 1744) relates examples of its occasioning a plentiful evacuation by stool, urine, and perspiration, and by this means removing the disease, after the common diuretics and hydragogues had failed: Where this medicine operates as a cathartic, it generally proves successful: if it acts by liquifying the blood and juices, without occasioning a due discharge, it should either be abstained from, or assisted by proper additions.

RAT-TAILS, Excrescences which creep from the pattern to the middle of the shanks of a horse, and are so called from the resemblance they bear to the tail of a rat. Some are moist, others dry; the former may be treated with drying ointment and washes, the latter with mercurial ointment. If the hardness does not submit to the last medicine, it should be pared off with a knife, and dressed with turpentine, tar, and honey, to which verdigrise or white vitriol may occasionally be added; but before the use of the knife you may apply this ointment.

Take black soap four ounces, quicklime two ounces, vinegar enough to make an ointment.

RED-LAND, a term much used by husbandmen.

husbandmen to express a sandy soil of a reddish hue, interspersed for the most part with pieces of sand-stone of the same colour, or somewhat deeper.

There are several varieties of this soil, one of which is almost entirely made up of sand; another with an admixture of clay with the sand, the whole making a loose loamy earth; and a third, full of fragments, of a poor sandy iron ore, and often containing shining specks of selenite.

REDWEED. Wild Poppy.

REDWOOD. [*Ceanothus A boreseens*]

This plant grows naturally wild in the American islands; it rises with a shrubby stalk eighteen or twenty feet high, sending out several horizontal branches, which are garnished with oval veined leaves; the flowers come out at the wings of the leaves, with very short foot-stalks; they are of a white herbaceous colour, and are succeeded by dry capsules, shaped like those of the first sort.

This plant requires to be placed in a warm stove, otherwise it will not thrive in England; it is propagated by seeds, which must be sown upon a hot-bed in the spring; and when the plants are fit to remove, they should be each planted into a separate small pot, filled with light sandy earth, and plunged into a hot-bed of tanners bark, observing to shade them till they have taken root; then they must be treated in the same manner as other tender exotic plants. In the autumn they must be placed in the bark-stove, and during the winter must be watered with great caution, for too much moisture at that season will destroy them.

RED-WORM, the name of an insect very destructive to young corn.

"I have often (says Mr. Baker, in his report to the Dublin Society) heard of the havoc which red-worms make in young wheat, barley, and oats; and in some few writers upon husbandry have read of them; but never saw them till May 1764; when, to my great mortification, in a few days, they destroyed, almost totally, nine acres of my wheat, for I did not reap above half a barrel per acre. This misfortune induced me to propose to the consideration of the Dublin Society, whether the offer of a premium

might not probably produce a discovery of some effectual method for destroying so injurious an insect, to the infinite advantage of the public: and the society were pleased to offer a premium accordingly.

"I now have the honour to lay before them, what has occurred to me upon that subject.

"The most ingenious M. de Chateauvieux speaks of an insect, which is certainly the same kind, if it be not the very insect which I have now under consideration. This gentleman, after saying, "our wheat, in the month of May 1755, sustained a loss, which even that cultivated according to the New Husbandry, did not escape, describes the worm thus: We found in it many little white worms, which afterwards became of a chestnut colour. They pait themselves between the blades and eat the stems. They are usually found between the first joints of the roots; every stalk which they attacked grew no more, but became yellow, and withered. The same misfortune happened to us in the year 1732. The insects appeared about the middle of May, and made such havoc, that the crops were almost destroyed."

"It perhaps might be expected, that this great man should have made the very enquiry which we are now upon, as the loss appears to have been very great in Geneva, at the two periods which he mentions; but when we consider, how much the high office which he held in the city and republic of Geneva, must have engaged his attention, it is rather astonishing that he could oblige the world so much as he hath done by his repeated experiments in husbandry, and his judicious observations upon them: It is therefore less to be wondered at, that this circumstance escaped him.

"The ingenious Mr. Benjamin Stillingfleet also, in the second edition of his miscellaneous tracts, in a note, p. 175-6, speaks of an insect, which is probably the same as that we are seeking to destroy. His words are,

"Thus in Suffolk, and in some parts of Norfolk, the farmers find it their interest to encourage the breed of rooks, as the only means to free their grounds from the grub, from which the

the

Red. winter see Observation - 1809/1800 -

the tree or blind beetle comes, and which in its grub state destroys the roots of corn and grafs to such a degree, that I myself have seen a piece of pasture-land, where you might turn up the turf with your feet.

“ Mr. Matthews, a very observing and excellent farmer of Wargrave in Berkshire, told me, that the rooks one year, whilst his men were hoeing a turnip field, sat down in part of it, where they were not at work, and that the crop was very fine in that part, whereas in the other part there were no turnips that year.

“ We see, that M. de Chateauxvieux describes this worm as being first white, and afterwards becoming of a chefnut colour. I have carefully sought them at different periods during the past year, but always found them of the same chefnut colour, never varying in any particular, except that of size, which I find to be the case at all seasons in which I have seen them.

“ The insect which Mr. Stillingfleet speaks of, he calls a grub, which, he says, destroys corn and grafs: This induces me to believe that it is the same insect (though the report which he relates from Mr. Matthews seems to contradict it) because I have observed, that the red or chefnut worm never appears voluntarily upon the surface; but when the earth is turned up, either with plough or spade, the rooks and crows are very bold in their approach to pick them up; a circumstance which I own has in some degree abated my enmity to these birds; I therefore never destroy nor frighten them off my land whilst I am ploughing it; but when I sow, when the corn rises, and when it is ripe, I destroy or banish them as well as I can, because the mischief which they do at those times is intolerable.

“ A member of the Dublin Society informed me last summer, that some of his turnips were destroyed by the worm; I had some few which decayed in their leaves, and became of a lemon colour, preceding the putrefaction which followed and destroyed the turnips: I examined their roots, but could not discover any insect which had injured them, and therefore I cannot pronounce that it is the red-worm which destroyed this gentle-

man's turnips; but I shall be very watchful with respect to this circumstance upon every opportunity that may present itself.

“ I have observed my lucerne to decay in its tops soon after it has been up, and upon examining the roots, I have found the red-worm which had cut them off.

“ This insect seems to be every where in Ireland called the red-worm; by some of the English writers who have spoken of an insect which destroys corn in the manner already mentioned, which I think is undoubtedly the same, it is called a grub; by others the large maggot, and the rook worm, because the rooks eat it; but as none of the writers have given any other description of it, than the name by which they respectively call it, I shall endeavour to describe it.

“ Red-worms are about half an inch long, and about one tenth of an inch in diameter; they are jointed in their skins, and are of a very firm texture; they have many short legs, two small black specks, which appear to be their eyes, and two small points springing from their heads, with which I believe they cut the corn, and which, in that work, I apprehend, act like forceps: and all I have seen of this species are of a bright chefnut colour. For this reason, I should conceive it would be more descriptive to call them the chefnut worms.

“ When they are exposed to the air, by turning up the earth which is infested with them, they will very soon cover themselves again in the soil, which they are very capable of doing, by the strength which their make gives them, although they appear to be a sluggish insect, and have not the advantage of a sliminess upon their skins which the common large creeping worm has, which enables that inoffensive worm to penetrate the earth, and get under timber and stones with ease.

“ The red-worm immediately endeavours to cover itself from the air, is certainly from natural instinct, as it will soon die when exposed to the air, as will appear by the experiment Numb. 10, hereafter-mentioned.

“ These worms destroy wheat, barley, oats, and lucerne, whilst in an infant

Description

infant state, in the months of March, April, and May. Late-sown barley and oats they will destroy as late as June. I have not yet experienced that they will destroy any other crops.

"The mischief done by them is in dry weather. Rain sufficient to penetrate the ground, makes them desist from destroying the corn; and, I suppose, every thing else which they at any time injure.

"They cut wheat off just above the crown of the roots; barley and oats in the same place, and also higher up, upon any part of the stem, which is below the surface of the earth.

"These worms seem to abound more in ground which is lightly tilled, than in such as hath been well tilled; but, in lay ground, they seem to be more numerous than any where else; and the fields upon my farm, in which I have found them, are wetter than other fields where they are not; whether that circumstance contributes to their increase, I cannot say, but the following experiments prove that they will live longer in water than they can when exposed to the open air.

Experiments on Red-worms.

"Numb. 1. I put ten red-worms into a wine glass with common salt in it. They were all dead in twenty-four hours.

"Numb. 2. Into a glass with brine in it I put ten red-worms. They were all dead in six hours.

"Numb. 3. Into a glass with lime in it, which had been slaked for a long time, and exposed to the weather, I put the like number. They were all dead in forty-four hours.

"Numb. 4. Into a glass with the above lime, and some water in it, I put the like number. They were dead in twenty hours.

"Numb. 5. Into a glass with lime newly slaked, and when cold, I put the like number. They were dead in fourteen hours.

"Numb. 6. Into lime-water, made with cold water, I put the like number. They were dead in ten hours.

"Numb. 7. Into a glass with foot in it, I put the like number. They were dead in four hours.

"Numb. 8. Into foot and water I put the like number. They were dead in four hours.

"Numb. 9. Into fair water I put the like number. They were dead in fifty-two hours.

"Numb. 10. Into a glass without any thing in it, I put the like number. They were dead in thirty-two hours.

"By these experiments we see all the articles used will kill this insect in a short time, particularly the salt and foot. I thought it necessary to consider different articles, the better to suit different parts of the kingdom.

"Where lime can be conveniently had, and that it is used as a manure, I am apt to believe from the experiments, that no injury can be sustained from these worms, but I am afraid a small quantity will not effectually destroy them; besides, I should fear, if it were not put on before the sowing of the corn, that it might singe the blades of the corn; for, from the experiments, it appears, that lime newly slaked, is more suddenly destructive to them than old lime, and therefore it is to be preferred.

"Where lime is used for no other purpose than to destroy this worm, I should conceive that about eight barrels regularly sown by hand on an acre of ground might be sufficient; it must be first slaked and cold before a man can possibly cast upon the ground with his hand, lime being a very strong caustic; and even when it is cold, the man should have a thick glove upon his hand.

"Where salt shall be used to destroy this worm, it must always be sown upon the ground before the intended crop; for, although corn will vegetate and receive benefit from salt as a manure when it is used antecedent to the sowing the corn, yet, if it be added after the corn is growing, it will certainly destroy it; and therefore, it should never be used for this purpose, but before the corn is sown, or at least before it vegetates.

"I conceive that where salt is used for this purpose only, about four hundred and a half to an acre will answer this purpose, which is a trifle more than one ounce to every square yard.

"We see by the experiment, that foot kills this worm as soon as salt; and, as in most places it is to be had at a much less price than salt, I think

there

there can be no doubt about preferring of it; besides which, it may be safely used after the corn is up.

"I had some parcels of barley under experiments, which these worms began to destroy; and in order to convey the foot as soon as possible to the roots of the plants, I mixed a little of it in water, and poured it on the plants with a garden watering-pot; the consequence was, that I did not lose one plant afterwards.

"It will hardly be imagined, that I mean that the same method is to be pursued upon a whole farm: No; the method I would recommend to the practice of the farmer is this, to spread or cast by hand, as he sows his corn, about six or eight barrels of foot on an acre, and let him be careful to choose a calm day for the work, otherwise, the wind will carry away great part of it, and as what remains cannot be regularly disposed, let him be careful to do it early enough in the spring, that the rain may wash the foot and convey it to the roots of the plants before the worm begins the mischief; if he does this, I am persuaded his crop will be preserved.

"We see by the experiments, that this worm will live longer in water by twenty hours than when exposed to the open air; but at length, i. e. in fifty-two hours, they died in the water; perhaps this might be from the effect of drowning, but if so, I might have expected they would have been totally destroyed in my two fields in the winter of 1763 and 1764, by the immoderate rains which fell at that season for a long continuance, by which the land was often flooded. But they survived that winter, as appeared by the great loss I afterwards sustained by their destroying my wheat; and therefore, whether water be an enemy to them or not, it seems not easy to determine: but if those which died in the glass of water were really drowned, yet, I think we may conclude, that water is necessary to their existence in the earth, and probably aids them in getting their food from it; and what seems to confirm this notion is, that when the land is wet, they do not touch the corn, but as soon as ever the land is dry, they begin their mischief. However, this speculation I

must submit to the consideration of persons more capable of discussing it than I am.

"We see by the experiment, Numb. 10, that they cannot live in the open air; which seems to prove, that, where they abound in land, the oftener it is ploughed, particularly in the summer, when they cannot penetrate the ground so easily as when it is moist, they must be, by such ploughing, greatly diminished; besides which, the frequent ploughing gives the crows more opportunities of picking them up, in which, as I before said, they are very watchful.

"Frequent ploughing has been recommended by some writers, as the only means of destroying this worm; and they have recommended the plough's being stuck with nails, urging, that by those nails the worms are cut to pieces; others have recommended walnut leaves being soaked in water, to sprinkle the land; and steeping feed-corn in various liquors, as infallible remedies: But such methods as these are founded upon mistaken principles; they only mislead the farmer, and must disappoint him.

"Worlidge recommends a strong lye made of fixed salts, but that would be impracticable. Mortimer recommends sea-water for such lands as are near the sea-coast, which I believe would answer very well. He says he used foot once with success, but that it did not succeed with him afterwards. I am persuaded he did not use the foot early enough to have it washed into the ground by rain, or perhaps he used too small a quantity.

"I would not be thought to arrogate any merit to myself on account of what I have offered on this subject, since it appears, that other persons have used the articles which I have recommended against this common enemy; but many persons have been disappointed in their expectations from these remedies, which must have arisen from their either having used too small a quantity, or not having observed the necessary precautions; if those which I have recommended shall be put in practice, and found to answer, I shall think myself amply rewarded."

REED. [*Arundo.*] The species are, 1. The common Marsh Reed. 2. The manured

and placed into pans of water, which should be plunged into a hot-bed; and as the water waxes, so it must, from time to time, be renewed again. In July these plants may be set abroad in a warm situation, still preserving the water in the pans, otherwise they will not thrive; and towards the latter end of August they will produce their grain, which will ripen tolerably well, provided the autumn proves favourable.

RICK, A pile of corn, hay, straw, &c. regularly heaped up in the open air, and sheltered from wet.

RIDDER, or **RIDDLE**. A sieve to clean corn.

RIDGE, the rising ground left between the furrows in ploughing. See.

RIDGES in a horse's mouth, are wrinkles or ridings of flesh in the roof of the mouth, running across from one side of the jaw to the other, with furrows between them.

RING-BONE, A hard swelling on the lower part of the pastern of a horse, that generally reaches half round the fore-part. It has its name from the resemblance to a ring.

It often arises from strains, &c. and when behind, from putting young horses too early upon their haunches; for in that attitude a horse throws his whole weight as much, if not more, upon his pasterns, than on his hocks.

When it appears distinctly round the pastern, and does not run downwards toward the coronet, so as to effect the coffin-joint, it is easily cured; but if it takes its origin from some strain or defect in the joint originally, or if a callosity is found under the round ligament that covers that joint, the cure is generally dubious, and sometimes impracticable; as it is apt to turn to a quitter, and in the end to form an ulcer upon the hoof.

The ring-bones that appear on colts and young horses will often insensibly wear off of themselves, without the help of any application; but when the substance remains, there needs no other remedy besides blistering, unless when by long continuance it is grown to an obstinate hardness, and then it may require both blistering and firing.

To fire a ring-bone successfully, let the operation be performed with a thinner instrument than the common

one, and let the lines or razes be made not above a quarter of an inch distant, crossing them obliquely, somewhat like a chain; apply a mild blister over all, and when quite dried up, the rupture plaister; and then turn the horse to graze for some time.

RIPPLING of *Flax*, The operation of taking off the seed from the flax by drawing it through a ripple, or large comb. See **FLAX**.

ROCKET. [*Eruca*.] This was formerly much cultivated in gardens for medicinal use, and for sallads, but is at present less common. In appearance it resembles mustard, but is easily distinguishable by the smoothness of its leaves, and its disagreeable smell. The seeds have a pungent taste, of the mustard kind, but weaker; they have long been celebrated as aphrodisiacs, and may, probably, have in some cases a title to this virtue, in common with other acrid plants.

Garden **ROCKET**. Dame's violet.

ROCK-ROSE. See **CISTUS**.

ROD. A measure in length containing sixteen feet and a half. In land measure, sixteen feet and a half square.

Golden **ROD**. See **GOLDEN ROD**.

ROLLER, A large piece of wood turning on its axis, and drawn over the surface of the ground to break the small clods, and render it smooth and even. See *Roller & Land-Husbandry*.

ROOD, A quantity of land equal to forty square poles or perches, that is, a quarter of an acre.

ROOP. Hoarseness.

ROOT, The lower part of a plant, by which it adheres to the earth, and by which it draws its nourishment, and transmits the juices to the other parts. *Root-fallon*. See *Moor-Louse*.

ROSACEOUS, An epithet applied to such flowers as are composed of several petals or leaves, disposed in a sort of circular form, like those of the rose; of this kind are the flowers of the piony, ranunculus, &c.

ROSIL, or *Rossils*, Land neither light nor heavy, being a medium between sand and clay.

ROSE-TREE. [*Rosa*.] Of this plant are reckoned fourteen different species, the varieties of which are still more numerous.

1. The dog rose, or hip tree. 2. The

Root-horizontals & perpendiculars
See *Botanical Dictionary*
Honoury

The white rose, and its varieties. 3. The red rose, and its varieties. 4. The hundred-leaved rose, and its varieties, which include the Moss, and Provence. 5. Cinnamon rose. 6. The Alpine rose, or virgin rose, without prickles. 7. Carolina, or Virginia rose. 8. Apple-bearing rose. 9. Burnet-leaved rose. 10. Scotch rose. 11. Musk rose. 12. Evergreen musk rose. 13. The Damask rose. 14. The sweet-briar.

All these are of the shrub kind, and all the fourteen kinds deciduous and hardy.

The propagation of all the sorts is by suckers, layers, budding, and some sorts by seeds; but suckers are the most common and expeditious method for propagating most of the species.

By suckers. Most of the roses send up many suckers annually from the root, attaining from one or two, to three or four feet in height, or more, in one summer, and by these the shrubs may be expeditiously propagated in great plenty; they may be taken up in autumn, winter, or early in spring, with some fibres to their bottom; and the strongest may be planted out finally, and the weakest in nursery lines for a year or two, or longer; they will readily grow, and will most of them produce flowers the following summer.

When these shrubs have grown into large bunches, with many suckers grown up to stems from the root, the whole may be taken up and slipped, or divided into so many separate plants, and planted out, as above.

Observe, that as the moss rose, musk rose, apple-bearing rose, and some others, furnish suckers but sparingly, so in default thereof must have recourse to layers, or budding; particularly for the Moss Provence.

By Layers. All the sorts of these plants will grow by layers of the young shoots; and is an effectual method of propagation, for such sorts particularly as sparingly furnish suckers, as the Moss Provence, &c. and to obtain plenty of shoots for laying, a quantity of the plants should be planted for stools; which being headed down low, they will throw out plenty of shoots near the ground in summer, for laying in autumn or winter following, by slit or

twist-laying, they will be rooted by next autumn, and fit for transplantation in nursery rows; though sometimes the Moss Rose, &c. require two years before they are tolerably well rooted; but of these sorts you may also try layers of the young tender shoots of the year, layed in summer, any time in June, they will probably root a little the same season. However, the layers of all sorts, after being properly rooted, should be taken up in autumn, and planted in the nursery, to have a one or two year's growth, or to remain till wanted.

By Budding. This is sometimes practised in propagating some choice sorts that seldom send up suckers, such as the Moss Provence, &c. also, when intended to have two, three, or more different sorts of roses upon the same tree, for curiosity; working upon the Frankfort, or any other strong shooting rose-stocks raised from suckers.

By Seeds. This is sometimes practised to try to obtain new varieties; also sometimes for raising some particular permanent species, such as the Canine Rose, Burnet-leaved Rose, Scotch Rose, Apple-bearing-rose, single Sweet-Briar, and such others as continue the same by seedlings; sowing them generally in autumn soon after they are ripe, and they will sometimes rise the following spring, as if not sowed till the spring season, most of the sorts are apt to remain till the second year before they rise freely; sow them however in any bed of light earth, either in shallow drills, or all over the surface, covering them half an inch deep; and when the seedlings are a year old, transplant them in nursery rows.

Observe, however, that the double kinds, and other particular varieties of the species in general, cannot be continued the same with certainty by seeds, so must always be propagated by suckers or layers, &c.

But remark, the common single Sweet Briar, when required in any considerable quantity should generally be raised from seed, sowing it in drills half an inch deep, either to remain, or for transplantation; though when designed to form a sort of hedge of this plant to produce a crop of shoots to

to cut for the supply of markets during the summer, it is eligible to sow the seed at once in a drill where the plants are to stand.

Hoffman strongly recommends the flowers of the Damask Rose as of singular efficacy for raising the strength, clearing and recruiting the spirits, and allaying pain; which they perform without raising any heat in the constitution, rather abating it when inordinate. Damask roses, besides their cordial aromatic virtue, which resides in their volatile parts, have a mildly purgative one, which remains entire in the decoction after the distillation: This, with a proper quantity of sugar, forms an agreeable laxative syrup, which has long kept its place in the shops. The other official preparations of this flower are of solutive honey, and the distilled water, which last is an ingredient in the musk-julep, the confection of kermes, and saponaceous lotion, and is used also in making the simple ointment called pomatum.

ROSE-BAY. See OLEANDER.

Dwarf ROSE-BAY. [*Rhododendron*.] There are five species of this plant, two of which are evergreens, all flowering in June. They are propagated by sowing the seeds in autumn.

ROSE CAMPION. [*Agrostemma*.] The single rose campion has been long in the gardens, where sometimes it becomes a troublesome weed. The double sort is now placed in its room, but is only cultivated by parting the roots.

China ROSE. [*Hibiscus Chinenfis*.] This grows naturally in the East Indies, from whence it has been carried to the West-India islands, and obtained the name of Martinico rose. The flowers of this plant at the first opening are white, then change to a blushing red, and at their decay turn purple; it is propagated by seeds, and must be treated tenderly.

Gelder ROSE. See GELDER ROSE.

ROSE of Jericho. [*Anastatica*.] This plant grows naturally in the sands near the borders of the Red Sea, and in many parts of Syria. It is a low annual plant, dividing into many irregular woody branches near the root; at each joint is placed a single, oblong, heavy leaf, and at the same places come

out small single flowers of a whitish green colour, composed of four small leaves, placed in form of a cross, like the other plants of this class. These are succeeded by short wrinkled pods, having four small horns; these open into two cells, in each of which is lodged a single brown seed.

It is propagated by seeds sown the beginning of March on a moderate hot-bed.

South-Sea ROSE. OLEANDER.

ROSE-WORT. [*Rhodiola*.] There are two sorts, one growing in Wales, Yorkshire, and Westmoreland; and another with smaller roots found on the Alps. They are preserved in gardens for the sake of variety, and are propagated by parting their roots about the beginning of September.

ROSEWOOD. [*Rhodium*.] The writers on botany, and the materia medica, are much divided about the lignum rhodium, not only with regard to the plant which affords it, but likewise in their accounts of the drug itself, and have described under this name simples manifestly different. This confusion seems to have arisen from an opinion, that the rhodium and aspalathus are the same; whence different woods brought into Europe for the unknown aspalathus were sold again by the name of rhodium.

The lignum rhodium of the shops is usually in long crooked pieces full of knots, which when cut appear of a yellow colour like box, with a reddish cast; the largest, smoothest, most compact, and the deepest coloured pieces, should be chosen; and the small, thin, or pale ones, rejected. The taste of this wood is lightly bitterish, and somewhat pungent; its smell very fragrant, resembling that of roses; long kept, it seems to lose its smell; but on cutting, or rubbing one piece against another, it smells as well as at first. Distilled with water, it yields an odoriferous essential oil, in very small quantity. Rhodium is at present in esteem only upon account of its oil, which is employed as an high and agreeable perfume in scenting pomatums, and the like. But if we may reason from analogy, this odoriferous simple might be advantageously applied to nobler purposes: a tincture of it in rectified spirit of wine, which

which contains in a small volume the virtue of a considerable deal of the wood, bids fair to prove a serviceable cordial, not inferior perhaps to any thing of this kind.

ROUGHNESS of the Coat. When a horse grows rough in a stable in spite of the usual care, and his heels swell, the following mixture is to be given him with all his food:

Take a pound of flower of brimstone, half a pound of turmeric, and a quarter of a pound of crude antimony in powder. Sift these together, by which means they will be thoroughly mixed, and strew a little of it over and among his victuals.

ROSEMARY. [*Rosmarinus.*] The name of an odoriferous plant very common in almost every garden.

Rosemary may be raised from seeds; but it is more commonly and more easily propagated by planting slips or cuttings of it in a spot of light fresh earth, in the spring of the year just before its buds begin to open. When these plants have taken root (till which they must be watered gently from time to time, and shaded if the sun be too powerful) they should be transplanted into the places where they are to remain. This should be done early in September, or the latter end of March; but in whatever season they are transplanted, it should not be during a cold drying easterly wind, because this would soon shrivel up their leaves and kill them. If a few warm showers fall soon after they are set, they will soon take root, and after that they will require no farther care than keeping them free from weeds. The distances between the plants should be full sufficient to allow for their utmost growth, so that they may not touch one another. The growth will be most luxuriant, especially in the summer, if they are set in a rich mould: but then they will be most subject to be injured by frosts; nor will their odour be near so strongly aromatic, as when raised on a poor gravelly soil.

Rosemary is a native of Spain, Italy, and the southern parts of France, where it grows in great abundance in dry gravelly soils. It has a fragrant smell, and a warm pungent bitterish taste; the leaves and tender tops are strongest; next to these the cup flower; the flowers themselves are considerably the

weakest, but most pleasant. Aqueous liquors extract great share of its virtues by infusion, and elevate them in distillation; along with the water arises a considerable quantity of essential oil; of an agreeable strong penetrating smell. Pure spirit extracts in great perfection the whole aromatic flavour of the rosemary, and elevates very little of it in distillation; hence the resinous mass, left upon abstracting the spirit, proves an elegant aromatic, very rich in the peculiar qualities of the plant.

ROT. A disease incident to sheep, arising frequently from wet seasons, and too moist pasture.

“But the rot in sheep,” says an ingenious and practical writer, “does not always proceed either from moisture alone, or the nature of the soil alone; for all moist grounds do not cause the rot in sheep, and there are some lands which rot sheep in wet years only.

“The rot, in fact, arises from a certain putrefaction, both in the air, and in the grass or herbs that usually grow in such moist years: these, together with their moist food, corrupt their livers, and bring on the disease.

“It is indeed very difficult to cure this disorder, unless it is attempted before the liver is too much wasted: where there is a convenience of doing it, the best remedy is an immediate removal to salt-marshes; but this not being in every farmer’s power, I shall endeavour, from my own experience, to supply the deficiency.

“In such cases as these, a prevention of the evil is to be recommended to the practice of every rational farmer.

“Some grounds naturally yield a soft, spongy grass, which is, more than any other, subject to breed the rot in sheep; I would therefore advise, that other cattle be fed in these grounds, and the sheep kept in the driest, hardest, and healthiest pastures.

“I have known land that has kept sheep in health for many successive years, yet afterwards, when the months of May and June have proved wet, a firm and frothy grass has suddenly sprung up, which, together with the bad air that must of course follow, has caused a rot in the sheep that were then on it; the evil was observed in time, the sheep were removed to a

dry and almost barren heath, and in the succeeding winter they were sodered with good, dry, sweet hay, and a great loss was prevented.

“ This unwholesome grass is most apt to grow in cold land, and in the summer-time; and it is a general opinion, and well founded on experience, that if the summer does not rot sheep, the winter will not, the power of the winter alone not being strong enough to begin a rot.

“ A very sensible writer, whose book I have just turned to, I mean Mr. Lisle, says, that broom is very good for the rot; and indeed I have often experienced it, for in a farm I occupied some years ago there were several broom-fields, and I have often observed that such of my sheep as were part of the year fed in them were never infected with the rot, whilst others in my possession had it to a great degree. I profited however by experience, for I took care thenceforward that all my sheep should, by turns, enjoy the advantages to be derived from their feeding on the young shoots of the broom.

“ As to what Mr. Lisle says, on the authority of Mr. Ray, that the marsh-trefoil will cure the rot, I cannot, from experience, corroborate it: I have heard its efficacy in this disorder often mentioned, but never yet heard any particular fact related so circumstantially as to induce me to depend on its effects.

“ That salt is good, I agree with the above gentleman, and Mr. Boyle; and this gives me an opportunity of communicating a receipt which I know to be a good one.

“ When you perceive by the colour of your sheep's eyes, that the rot has taken them, drive your flock into a barn, a covered fold, or some such convenient place; around this place let there be wooden troughs, like mangers, in which you should feed your sheep with good, dry, clean oats, for forty-eight hours; then have ready some hay salt finely powdered and seared, of which you are to sprinkle a little among the oats, increasing the quantity till it disgusts the sheep, and you perceive they fall off their appetites; afterwards, for the two following days, give them again clean oats;

and then mix your salt with them as before, continuing this process till their eyes have recovered their natural colour, when you will find them perfectly cured; and to be convinced, it will only be necessary to kill one or two out of the flock.

“ To this I shall add a receipt for the rot in sheep, which was communicated to me by a friend, a man of credit and veracity, who says he has often tried it with success.

“ Steep some regulus of antimony in ale, adding thereto some grains of paradise, and a little sugar to sweeten it. Of this infusion somewhat less than a gill is to be given to every one of your affected sheep; they are to have two or three doses, according as they are more or less affected by the distemper, allowing two days intermission between each dose.”

“ This is said, as I have already observed, to be a cure almost certain.

“ I just now take notice, that when rain falls in the months of May and June it is apt to cause the rot in sheep; it will be necessary to add, that folding them in the above months increases the disorder; for after having been deprived of their liberty during the whole night, they bite the noxious grass the more greedily in the morning, having less ceremony in their choice of herbs than if they were not folded. This is a matter of some consequence, therefore worthy of being attended to.

“ One thing more I must, on the authority of Mr. Lisle, communicate to your readers; viz. an observation of a Leicestershire farmer, that sheep, when first touched with the rot, will thrive mightily in fattening for ten weeks, but if they are not disposed of when they are come up to a pitch, they will, in seven or eight days time, fall away to nothing but skin and bone. The same farmer observed, that he had often had them die in the height of their pitch, in half an hour's time, with twenty-seven pounds of tallow in their bellies.” *Museum Rusticum*, vol. i. page 434.

To this account we shall add a receipt communicated to Mr. Mills by a gentleman of Lincolnshire.

“ Steep

“ Steep a handful of rue in a pail of water all night, and at morning put in as much salt as will make it bear an egg. Give each sheep half a pint of this liquor, and repeat it thrice, every other morning.

“ A farmer who kept four hundred sheep tried this receipt in the last general rot (about fourteen years ago) and did not lose any, though his neighbours lost almost all theirs. For the sake of the experiment, he set apart about twenty, and did not give them this drink. Many of these were rotten.”

ROUP. The name of a filthy disease in poultry, consisting of a boil or swelling upon the rump, and is known by the staring or turning back of the feathers.

The roup, if not soon remedied, will corrupt the whole body of the fowl; to prevent which, the feathers should be plucked away, the swelling laid open, and the matter pressed out; after which, the part is to be washed with brine, or salt and water.

ROWEL. A kind of issue made in horses for the cure of various disorders, as inward strains, hard swellings, &c.

The operation is performed in the following manner:

A little slit being made through the skin, about a hand-breadth below the part aggrieved, big enough to put a swan's quill in, the skin is raised from the flesh, the end of the quill put in, and the skin blown from the flesh upwards, and all over the shoulder; then the hole being stopped with the finger, the part blown is beat with a hazel-slick, and the wind spread with the hand all over, and then let go; this done, a skain of horse-hair, or red farsenet, half the thickness of the little finger, is put in a rowelling needle, seven or eight inches long, and the needle is put into the hole, and drawn through again, six or seven inches higher; then the needle is drawn out, and the two ends of the rowel tied together, anointing it every day, as well as before the putting it in, with sweet butter, and hog's grease, and drawing it backwards and forwards in the skin, to make the putrid matter discharge itself more plentifully.

RUE. [*Ruta.*] This is a small shrubby plant, met with in gardens, where it flowers in June, and holds its green leaves all the winter: we frequently find in the markets a narrow-leaved sort, which is cultivated by some in preference to the other, on account of its leaves appearing variegated during the winter, with white streaks.

Rue has a strong ungrateful smell, and a bitterish, penetrating taste; the leaves, when in full vigour, are extremely acrid, inasmuch as to inflame and blister the skin, if much handled. With regard to their medicinal virtues, they are powerfully stimulating, attenuating, and detergent; and hence, in cold phlegmatic habits, they quicken the circulation, dissolve tenacious juices, open obstructions of the excretory glands, and promote the fluid secretions. The writers on the materia medica in general have entertained a very high opinion of the virtues of this plant. Boerhaave is full of its praises, particularly of the essential oil, and the distilled water cohobated, or re-distilled several times from fresh parcels of the herb: After somewhat extravagantly commending other waters prepared in this manner, he adds, with regard to that of rue, that the greatest commendations he can bestow upon it fall short of its merit. “ What medicine (says he) can be more efficacious for promoting sweat and perspiration, for the cure of the hysteric passion, and of epilepsies, and for expelling poison?” Whatever service rue may be of in the two last cases, it undoubtedly has its use in the others; the cohobated water, however, is not the most efficacious preparation of it. An extract made by rectified spirit contains, in a small compass, the whole virtues of the rue; this menstruum taking up by infusion all the pungency and flavour of the plant, and elevating nothing in distillation. With water, its peculiar flavour and warmth arise; the bitterness, and a considerable share of the pungency remaining behind.

Dog's RUE. There are several species of this plant cultivated in gardens for variety, all propagated by seeds, or by planting slips or cuttings.

Dog's RUE, Figwort,

N n 2

Gras;

Rowen - winter
Grass. See Tore.

Goat's RUE. See GOAT'S RUE.

Meadow RUE. See MEADOW RUE.

Wall RUE. See WHITE SAIDEN HAIR.

Syrian RUE. [*Peganum.*] This plant is a native of Syria and Spain, and the stalks decay every autumn, but the roots are perennial. It is propagated by seeds sown the beginning of April, requires a warm situation, and dry soil.

RUPTURE-WORT. [*Herniaria.*] This is a low herb growing wild in sandy and gravelly grounds. It is a very mild restraining, and may, in some degree, be serviceable in disorders proceeding from a weak flaccid state of the viscera: The virtue which it has been most celebrated for, it has little title to, that of curing hernias.

RUSH. [*Juncus.*] Rushes grow on moist, strong, uncultivated lands in most parts of England, and consume the herbage where they are suffered to remain. The best method of destroying these rushes is, to fork them up clean by the roots in July, and after having let them lie a fortnight or three weeks to dry, lay them in heaps and burn them gently, and the ashes which these afford will be tolerable manure for the land; but in order to prevent their growing again, and to make the pasture good, the land should be drained, otherwise there will be no destroying these rushes entirely; but after it is well drained, if the roots are annually drawn up, and the ground kept duly rolled, they may be subdued. Lime is a good manure for rushy land, as likewise wood-ashes from a lime-kiln. *also Cinders.*

Flowering RUSH. [*Butomus.*] There are two varieties of this plant, one with a rose-coloured flower, and the other with a white flower; but these are only accidental variations, therefore not to be enumerated as distinct species.

The rose-coloured sort is pretty common in standing waters in many parts of England; the other is a variety of this, though less common with us near London. These plants may be propagated in boggy places, or by planting them in cisterns, which should be kept filled with water, that should have about a foot thickness of earth in the bottom, into which the roots should be planted, or the seed sown as

soon as they are ripe; these, though common plants, yet produce very pretty flowers, and are worth propagating for variety's sake, especially if in any part of the garden there should be conveniency for an artificial bog, or where there are ponds of standing water, as is many times the case, and persons are at a loss what to plant in such places that may appear beautiful.

Sweet-scented RUSH. [*Juncus Oserata.*] This is a dry smooth stalk, brought to us along with the leaves, and sometimes the flowers, from Turkey and Arabia, tied up in bundles about a foot long. The stalk, in shape and colour, somewhat resembles a barley-straw; it is full of a fungous pith, like those of our common rushes; the leaves are like those of wheat, and surround the stalk with several coats, as in the reed; the flowers are of a carnation colour, striped with a lighter purple. The whole plant, when in perfection, has a hot bitterish, not unpleasant, aromatic taste; and a very fragrant smell; by long keeping, it loses greatly of its aromatic flavour. Distilled with water, it yields a considerable quantity of essential oil. It was formerly often used as an aromatic, and in obstructions of the viscera, &c. but at present is scarce otherwise employed than as an ingredient in mithridate and theriaca.

RUST in corn. Mildew.

RYE. [*Secale.*] Rye has been generally thought the next best bread-corn to wheat, and accordingly was formerly very much used for that purpose, and is so still in some places; sometimes alone, but then it has a peculiar sweetness, which is generally disagreeable to those who are not used to it, and subjects many to cholicks and loosenesses, and the bread made of it is black and heavy.

But a small quantity of it was formerly, and still is in several places, mixed with wheat in the making of bread, on account of its keeping the bread moist, and then is attended with no ill consequences, but is rather thought to render the wheat more tender, fresh, and agreeable to the taste. And it was the more cultivated on account of its being the product of barren, gravelly, sandy land, which was then thought capable of producing

cing nothing else, or very little worth the farmer's care.

The common or winter rye requires a summer's fallow, and more expence and trouble in the management of it, than it is found to answer well; since the great improvements made of those dry sandy soils proper for it, by the advantages made of such sort of soils, by the sowing of turnips, and several artificial grasses, and the great profit made by them; and from the several species of corn, they give the farmer an opportunity of raising much more advantageous crops than rye; this must, of course, sink it in the husbandman's esteem, and make it in general to be much less regarded.

There are two sorts of rye.

First, The common or winter rye.

Second, The lesser or spring rye.

The first sort is what is usually propagated amongst us, and generally on such dry barren land as is above-mentioned, where better corn will not grow.

The second sort, or small rye, is to be sown in the spring, about the same time when oats are. It is apt to run into straw if it prove a wet season, and this sort is generally lighter than the other; however, it may be very conveniently used where wheat or other autumn crops have miscarried.

Two bushels are commonly allowed for seed to an acre, and four loads generally reckoned a middling crop; and it usually carries equal price with barley, and about one half the price of wheat.

In several places they sow rye together with wheat on the same ground, and then it is called Massen, that is, Miscellane, and will then bear a price in proportion to the quantity of wheat which is mixed with it.

The best judges think this sort of husbandry to be a very ill one, since as the rye is ripe before the wheat, and must stand till they are cut together, the consequence must necessarily be, that the rye will shed a good deal of its grain; and what is more, the grains when so mixed seldom make a bread that those persons can well bear, who have been used to wheat. But the rye producing a spirit, it is now said to be much used for that purpose, and so far may save the wheat; though we doubt such a use of it will prove of no advantage to our country.

Rye is a quick grower, and for that reason the common sort, as well as the other, sometimes is sowed in spring, when wheat miscarries, and has answered expectation; and the smaller rye (as before-mentioned) is very proper for this purpose, as it is usually ripe at the common times of harvest. The common sort is sometimes sowed so late, in order to be ploughed in to fertilize the ground for a better species of grain.

But there is another more beneficial prospect of sowing it in autumn, which is, in order to provide food for ewes and lambs in the spring, when turnips and coleseed are gone, or have failed, and before any other sorts of grasses are grown to support them; and it may be sowed for this purpose either on land prepared particularly for this end, or on the wheat land after the corn is carried off, or on other stubbles when ploughed up, or where turnips have failed, and will probably answer expectation whichever method of management is taken with it for this purpose.

It is certainly the best proof of a man's being a good farmer, when he is known to provide proper and sufficient food for his cattle and sheep for the whole year in general, and also has a further particular view for a second provision for his ewes and lambs, in case any of the former intended sorts should miscarry.

All this he may certainly generally do, if he will but carefully consider the several respective times. The common natural, and the several artificial grasses, or turnips, &c. will continue at the latter end of the year; and also when he may expect any of them to come in to his assistance in the spring; and then think of, and provide such other supports for them in the time. None of them are to be had in the usual course of things, by sowing either turnips, rye, or coleseed, by the help of one or other of which (with God's blessing) he need not much fear but he may have a plentiful provision for his stock all the year round.

It is for want of this knowledge and care to provide greens and grasses for their sheep in the winter and the spring, that in many places in the north they are obliged to prevent their
 ewes

ewes from having lambs, till they have natural grass on the ground to help them to milk to support them, which is often not till the end of April, and sometimes not till the beginning of May; and then they are obliged to eat their best mowing grounds sometimes to the twentieth of May, before they can turn their sheep to the commons, and save their grounds for hay. If a dry time then succeeds, these grounds are burnt up, and their expected product of hay from their best land, wholly, or in a great measure, destroyed; to the exceeding disadvantage of the farmers, and sometimes to their ruin.

And why may not rye be sowed for the purposes above-mentioned amongst turnips, and answer the farmer's expectation, especially as the ground on which turnips are commonly sowed, is generally better prepared, and usually of a better nature, and in much better heart than the land commonly allotted for the growth of rye; especially where turnips are sowed after the drill manner.

In plentiful years rye may be given to fowl, or hogs, which last delight in it, and will feed very well on it when ground, and made into a paste, but then they should always have water, and also a few beans or pease at the last, to harden their fat, which is commonly very beneficial in most methods of feeding them.

This grain is very subject to grow in the ear, if any wet comes to it; and it will be soon damaged if any green weeds are mixed with it, so that particular care must be taken of it in both these respects, to let it have time in the field, to prevent the weeds making it to give in the barn, which will make the corn musty, and therefore it should be housed dry, and that as soon as ever you can get it so.

The keeping it in the chaff, on a dry floor, is advised for the preserving it sweet after it is thrashed; the dry chaff imbibing any moisture which may happen. This method has been mentioned for preserving wheat, and is useful in several other grains.

RYE-GRASS. See REY-GRASS.

Writto from the

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SAF-FLOWER. [*Carthamus.*] Bastard saffron is cultivated for the sake of the flower, as the saffron is; and probably the culture of saffron gave rise to this article, for its flower is used to some of the same purposes, and is called for that reason bastard saffron.

The plant however is utterly unlike saffron; it is a kind of thistle, and wherever it grows, whether wild or cultivated, it has very much the appearance of a weed.

It is an annual plant. The stalk is sturdy, robust, and four feet high. The leaves are large and broad, not divided or indented, but beset with prickles at the edges; the flowers grow at the tops of the branches, into which the main stalk divides towards its upper part; and are a kind of large scaly heads, somewhat resembling those of our thistles, with a great

quantity of threads issuing out at their tops. These threads are of a most bright and beautiful yellow, and have been supposed by some to resemble the blades in the flower of saffron; but there is not much likeness. It is for the sake of these the plant is cultivated principally, though the seeds are also an article in trade. The root is white and long, and it perishes as soon as the seeds are ripened. Its first shoot when sown, is in certain large broad leaves, but these perish when the stalk rises.

The flower of the *Carthamus*, examined more accurately, is found to be contained in a large common cup; this serves for the several flowers of which the whole tuft is composed, and forms what we call the head of the *Carthamus*. It is of an oval form, and is composed of a great number of scales placed like tiles one over another,

ther, and they have each the addition of a kind of little leaf of an oval form. The whole tuft is composed of several tubular flowers, each is formed of a single leaf, and has the hollow narrowest at the base, and wider all the way to the mouth, where it is divided into five little, and nearly equal segments.

In this flower rise five short filaments, and at the tops of them stand so many buttons, which are of a cylindrical form, and oblong.

In the base of the flower is deposited the rudiment of the fruit; this is very small and short; from its top there rises a kind of filament longer than the others. This is the part to which the three blades grow in the flower of the right saffron; but in this it is terminated only by a plain little head, which serves to receive the dust from the heads of the short filaments to impregnate the seed.

When the whole tender part of the flower is faded, the scaly head remains, and contains the seeds. One follows every flower.

Several other species have been added to this, and called by the same name, one with blue flowers, and others with divided leaves; but the true and proper plant to be raised for use is that here described.

It is a native of Egypt, and several parts of the east; and is cultivated in many of the warmer parts of Europe; it thrives also very well in England.

The principal place where we have seen it in England, is in some parts of Norfolk; but, if worth while, it might be raised in any other part of the kingdom.

Those who shall think it worth while to raise it, must observe the following directions: In the first place, let the farmer take care to have the seeds from abroad; and as often as he sows it let him get fresh ones, for they do not ripen well in England. These may be had at a very small expence, and with little trouble. The druggists sell them, but theirs are not to be used, for they are commonly old. But such a quantity of it is raised every year in Germany, that good seed may always be had.

When the seed is procured, the second care is the ground. The best

soil is a dry loam, and it does not require a rich piece of land of this kind, so that the charge of this article is not great, nor indeed in any other.

The seeds are to be sown by hand in a sparing manner on the land in spring, and to be harrowed in. When they have shot, and the plants have some strength, they are to be thinned. Hoers should be sent into the field for this purpose, and they should have orders not only to cut up what weeds have risen, but to thin the plants themselves, leaving them about a foot distant, and saving such as appear the strongest and most thriving. From this time no farther care need be taken of them; they will grow quick, and being strong plants, and thus near to one another, no weeds will be able to get nourishment among them. Early in autumn they will begin to flower; and then the field will make a beautiful appearance; there is nothing can exceed the brightness and golden hue of the flowers, nor have we any thing of our own growth that comes near them. The plants branch out towards the top, and the upper part of every branch is loaded with flowers, so that the whole field is covered, and as it were gilded with them.

The gathering of these flowers so far resembles that of saffron, that they are to be taken as they open; for if left for several days together, they will lose their colour, and that is in a manner their whole value.

For this reason as soon as there is any number of them open, the pickers, who are in this article the gatherers also, are to be sent into the field. The flowers are not gathered there and picked afterwards, but the whole business is done at once. The whole tender part of the flower is to be taken, leaving the scaly bud. When those which are open are thus carefully picked off, they are to be spread upon a large floor in an airy place out of the sun to dry; and this is all that is to be done to them.

When they are dried in this manner, they look of as beautiful a colour as while growing, and they are ready for sale without farther care or trouble.

Every day or two the pickers are to be then sent into the field as at first, to gather the flowers as they shew themselves,

feldes, and this is to be the method till the whole quantity are blown; one parcel being put to dry after another. The whole parcel being thus prepared by a simple and natural drying, is ready for the purchaser.

If the season has been favourable, and the crop have flowered early, some feeds may ripen; but as this is such a great uncertainty, there is no dependence upon it; and the better method is to grub up the plants as soon as the flowers are gathered, that the land may be prepared for some other crop.

The dyers are the people who purchase the flowers; some have idly supposed they were of the same nature with saffron, because they resembled that drug in some degree in appearance; but it is so far otherwise, that as saffron is a cordial and sweat, these flowers are a purge, and the feeds a vomit.

We have mentioned the only right and honest use of the flowers of this plant; but there have been some, when it was more cultivated than it is at present in England, who had a way of mixing it with saffron when they worked it in the drying.

How improper this was we may know from the difference of the virtues of one and the other; but there was another reason why the farmer never should have done this, which is, that it reduces the price.

The thready part of the *Carthamus* is narrow, harsh, dry, and paler coloured than the blades of saffron; therefore no art can so blend them together, as to make them capable of imposing upon any but the ignorant; it was the inferior sort of saffron made up from the last gatherings that they mixed up in this manner, and it reduced the price of this still lower.

One reason why the foreign saffron is held in so much contempt in England is, that there is too often *Carthamus* among it.

SAFFRON. See CROCUS.

Meadow SAFFRON. See MEADOW SAFFRON.

SAGAPENUM. A concrete juice brought from Alexandria, either in distinct tears, or run together in large masses. It is outwardly of a yellowish colour, internally somewhat paler, and clear like horn, grows soft upon being

handled, and sticks to the fingers; its taste is hot and biting; the smell disagreeable, by some resembled to that of a leek, by others to a mixture of *assafetida* and *galbanum*.

Sagapenum is an useful aperient and deobitruent; and frequently prescribed either alone, or in conjunction with ammoniacum, or galbanum, for opening obstructions of the viscera, and in hysterical disorders arising from a deficiency of the menstrual purgations. It likewise deterges the pulmonary vessels, and proves of considerable service in some kinds of asthma, where the lungs are oppressed by viscid phlegm. It is most commodiously given in the form of pills; from two or three grains to half a dram, may be given every night or oftner, and continued for some time. When sagapenum is scarce, the druggists usually supply its place with the larger and darker coloured masses of *bdellium*, broken into pieces; which are not easily distinguished from it.

SAGE. [*Salvia.*] Official sage, the varieties of which are, The common broad-leaved green sage; the common culinary red sage; the broad-leaved hoary balsamic sage, having the broadest leaves of all the sorts, standing on long foot-stalks; wormwood sage; narrow-leaved hoary sage, or sage of virtue; lavender-leaved sage; variegated green sage; and variegated red sage.

Sage is most usually propagated by slips, which should be planted about the middle of April in a shady border, and watered if the weather be dry.

There are several other species of sage cultivated in gardens for variety, some of which want the assistance of the stove and green-house occasionally.

The writers on the *materia medica* are full of the virtues of sage, and derive its name from its supposed salutary qualities, (*Salvia salvatrix, naturæ conciliatrix—Cur moriatur homo, cui salvia crescit in horto, &c.*) Its real effects are, to moderately warm and strengthen the vessels; and hence, in cold phlegmatic habits, it excites appetite, and proves serviceable in debilities of the nervous system. The best preparation for these purposes is an infusion of the dry leaves, drank as tea; or a tincture, or extract, made with rectified

gedified spirit, taken in proper doses; these contain the whole virtues of the sage; the distilled water and essential oil, only its warmth and aromatic quality, without any thing of its roughness or bitterishness. Aqueous infusions of the leaves, with the addition of a little lemon juice, prove an useful diluting drink in febrile disorders, of an elegant colour, and sufficiently acceptable to the palate.

SAGE of Jerusalem. Lungwort.

SAGE-TREE. [*Phlomis.*] A shrubby evergreen plant, of which there are many species; but four, chiefly cultivated in the English gardens. They are all propagated by layers and cuttings.

Wood SAGE. This grows wild in woods and hedges. In smell, taste, and medical virtues, it is more like scordium than sage.

SAGO. The medullary part of the tree is beaten with water, and made into cakes, which are used by the Indians as bread: These reduced into granules, and dried, are the sago brought to us. It is moderately nutritious, though not perhaps superior to our own grain.

SAINFOIN, or *SAINFOIN,* the name given by the French, and continued by us, to a species of plant, frequently used for the food of cattle, either fresh or dried; it is called holy-hay, or wholesome hay, from its excellent nutritive quality. The stalks of the plant are commonly about two feet long, but they grow sometimes to five or six feet, and it has tufts of red flowers of three, four, or five inches in length.

This plant will make forty times greater increase in poor ground than the common turf; and this is owing to having a long perpendicular root, of that kind called tap root, which sinks to a great depth to attract its nourishment. The length of this root is scarce to be credited by any but those who have seen it; it is frequently drawn out of the ground to the length of twelve or fourteen feet, but it is said to be often thirty feet or more in length.

The farmers have a general opinion that this plant never succeeds well in any land where there is not an understratum of stone, or chalk, or some

other hard matter, to stop its running; but that otherwise it spends in root, and comes to nothing above ground. This is an error too gross to need much refutation. It is certain, that the roots being to plants what the stomach and guts are to animals, the more and larger roots any plant has, the more nourishment it receives, and the better it thrives.

Sainfoin always succeeds where its roots run deep, and the best crops of all are produced upon lands where there is no hard under soil to obstruct their passage. An under soil of clay may kill the plants by retaining the water, and chilling and rotting their roots.

The long root of sainfoin has, near the surface, many horizontal roots issuing from it, which extend themselves every way; there are of the same kind all the way down as the roots go, but they grow shorter and shorter all the way. Any dry land may be made to produce this valuable and useful plant, though it be ever so poor, but the richest and best land will produce the best crops of it. The best way of sowing it is by drilling, but the earth must be very well prepared, and the seed well ordered, or else very little of it will grow. The heads of these seeds are so large, and their necks so weak, that, if they be much more than half an inch deep, they are not able to rise through the incumbent mould; and, if they are not covered, they will be malted, as the farmers express it; that is, it will send out its root while it lies above-ground, and be killed by the air; and whether the farmer plants bad seed that will not grow, or good seed that is buried or malted, the event will be the same. The ground will be understocked with plants. A bushel of seed to an acre of land is full twenty seeds to each square foot of land; but as there is some difference in the largeness of the seeds, there is no absolute certainty as to this calculation. The worst seasons for planting it are the beginning of winter, and the drougth of summer; the best is the beginning of the spring; and it is always strongest when planted alone, and is not sown together with corn, as is the practice of some farmers. If barley,

St. Anthony's Fire. See Horse. Saw-worm.

oats, or any other corn, sown with the faintfoin, happen to be lodged afterwards, it kills the young faintfoin. If it be planted with any other corn, it is best done by drilling in the horse-hoeing way; in this case it is not much liable to be killed by the lodging of the corn, as the drilled corn seldom falls at all, and when it does, never falls so low as the sown corn.

The quantity of seed to be drilled upon an acre of land will depend wholly upon the goodness of it; for there is some seed of which not one in ten will strike, whereas in good seed not one in ten will fail. The method of knowing the goodness is, by sowing a certain number of the seeds, and seeing how many plants are produced by them. The external signs of the seeds being good are, that the husk is of a bright colour, and the kernel plump, of a light grey or blue colour, and sometimes of a shining black. The seed may be good, though the husk be black, as that is owing sometimes to the letting it receive the wet in the field, not to its being half-rotted in the heap.

If the kernel be cut a-crofs, and appear greenish and fresh, it is a certain sign that it is good. If it be of a yellowish colour, and friable, and look thin and pitted, they are bad signs. The quantity of seeds allowed to the acre in the drill way is much less than that by sowing, and is to be computed according to the number of plants that are to be allowed in that space, allowing for the common casualties. It is not necessary to be exact in this calculation, or to say whether two, three, or four hundred plants are to be allowed to a square perch; neither is it possible to know before-hand the precise number of plants that may live out of those that come up; for sometimes the grub takes them when they have only the two first leaves, and the crop is greatly diminished by this means. Four gallons of good seed to an acre of land will cover it with plants, when judiciously managed.

Single plants of faintfoin make the greatest crops; but the farmers in general plant them so close, that they starve one another. The single plants always run the deepest, and those which do so will always draw most

nourishment. The plants which stand crowded starve one another, and often die after a few years; but the single ones grow to a vast bigness, and are every year better and better.

The best way to calculate how many plants are to be allowed to a perch, is to compute how much hay each single large plant will produce; for if kept single and well cultivated, they will all be large ones. Without culture, these plants never arrive at a fourth part of the size that they do with it. The hay of a large single cultivated plant will weigh more than half a pound; a hundred and twelve plants upon a square perch, weighing but a quarter of a pound a piece, one with another, amount to two tons to an acre. If faintfoin be planted on some sorts of land early in the spring and hoed, it will sometimes produce a crop the following summer; in a garden the seeds sown in February will yield plants of two feet high that will flower in the month of June following; and though March be frosty, the young plants seldom suffer by it. This shews that this plant is naturally a quick grower; but the farmers usually plant it on poor or cold land, and give it too little culture, which makes it backward, and slow of growth with them. The poor land, usually allotted to this plant, also makes it generally yield but one crop a year, but on a rich land it will yield two very good crops annually, with a moderate share of culture and management.

The farmer who expects to make a profit of this plant must not expect a good crop the first year. Nothing is so injurious to faintfoin as its standing too thick: if it be so thick as to cover the ground the first summer, the plants will starve one another for ever after; but if the owner will be content to place them so thinly as to have but a small crop the first year, they will increase prodigiously, and every succeeding crop will be better and better. When faintfoin is well hoed, it will grow as much in a fortnight as it would otherwise do in six weeks; and this quick growing is of advantage to it every way, not only making the plants large, but of better nourishment to the cattle, whether they are eaten green or made into hay.

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The proper distance to drill this plant for the horse-hoeing husbandry is at double rows with eight-inch partitions between them, and thirty-inch intervals between every two and two. These intervals need only be hoed alternately, leaving every other interval for making the hay on. This method of hoeing is of vast advantage, and poor land by means of it will always produce two crops a year. The land is always to be perfectly cleared of grafs before the sowing the faintfoin, and the lumps of earth carefully broken. But no harrowing is to be allowed after it is drilled, for that would bury it; and it is not proper to roll it at all, unless for the sake of barley, when they are sown together; and when that is done, it should be with a light roller, and in dry weather. This should be done lengthwise of the rows, and as soon as it is drilled; if it is not done at this time it is best to stay three weeks before it is done, that the necks of the young faintfoin may not be broken.

No cattle are to be suffered to come in the first winter upon the faintfoin, after the corn is out among which it was sown. Their feet would injure it by treading the ground hard, as much as their mouths by cropping it, and it would never come to good. Sheep should not be suffered to come at it, even the following summer and winter. One acre of drilled faintfoin, considering the difference of the quantity and goodness of the crop, is worth two acres of sown faintfoin on the same land, though the expence of drilling be twenty times less than that of sowing. The first winter is the time to lay on manure after the corn is reaped off. Pot-ashes, or the like, are very proper, and a small quantity of them will do, as there are at this time no other plants to partake of the benefit, but the young crop has it all, and the young plants being thus made strong at first, will continue so, and be long the better for it.

It is observed, however, that in the drilling and horse-hoeing way, there is no necessity for any manure at all. Some farmers sow eight or ten bushels of the seed of faintfoin to an acre along with their corn, with intent that it

should kill all the other weeds; but the consequence is, that the plants stand close, and starve one another, and are no bigger than where the plant grows wild on the hills in Calabria, where it is so small and seemingly despicable a plant, that it seems a wonder that any body should be tempted to think of cultivating it; yet, when rightly managed, it seems capable of being as useful a plant as any in the world. Where these plants stand so thick they draw all the nourishment from the ground in a few years, and so die, though manured ever so carefully. Six or seven years seem their greatest duration; whereas, when the seed is drilled in, and the plants are horse-hoed, they will be as strong and vigorous as ever at 30 years standing.

Some people who have turned their thoughts to husbandry, have been of opinion, that the cytissus would succeed better with us than faintfoin; it is probable enough that it would grow well; but the labour of sheering it would, with us, where the pay of servants is so dear, run away with the profits of the crop.

Lucerne is another thing which many have thought of introducing among us in the place of faintfoin, but it requires so much care to suit it with a proper soil, that, whatever are the profits of it, it never can be so general as faintfoin.

Saintfoin, says Mr. Duhamel, deserves the farmer's utmost attention, as one of the most profitable plants he can cultivate. It will do on almost any land; and though it succeeds best in good soils, yet it will grow even on dry barren spots where scarce any other grafs can live, provided its roots be not chilled by a cold clay, or other substance which retains water; and it has this farther advantage, that it may be mowed at different degrees of ripeness, with nearly the same profit.

1. It may be mowed before it is in bloom, for it is then admirable food for horned cattle; and when cut thus early, it yields a second crop, which makes ample amends for what was lost by not letting the first come to its full growth. This early cutting is likewise attended with another benefit, which is, that it purges cattle in the beginning

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beginning of the summer, and thereby frees them from disorders occasioned by the winter's cold, or dry food.

2. If the weather be rainy, the faintfoin may be left standing till it is in bloom; when it still is excellent fodder for cows. But care must be taken in making it into hay, that the flowers do not drop off, as they are very apt to do: for cattle are so fond of these flowers that they often induce them to eat the rest of the plant.

3. If the rain continues, the faintfoin may be left standing till some of its seeds are formed, and the crop will then be the more plentiful, not only because it will have attained its full growth, but likewise because its leaves being more substantial, diminish less in drying. It is not indeed, then, quite so sweet as before; but horses eat it readily, because they love to feel between their teeth the seeds, which now begin to be formed.

Mr. Tull says, this fodder is so excellent, that horses need no oats when they are fed with it. He affirms, that he kept a team of horses with it a whole year in good plight, without giving them any oats, though they were worked hard all the time. He adds, that he fattened sheep with it in less time than others which were fed with corn. But the hay of this plant can never be so good as when it is cultivated with the horse-hoe; for in the common husbandry, it blossoms almost as soon as it is out of the ground.

4. If the season continues rainy, it may be more advisable to let the faintfoin remain standing, than to run the hazard of having it rot upon the ground; for then the seed will ripen, and nearly make up for the loss of the fodder; not only because it will fetch a good price, but also because two bushels of it will go as far in feeding of horses, as three bushels of oats; and cattle in general, as well as poultry, are extremely fond of it.

The first of these sorts of faintfoin hay, cut before the bloom, is Mr. Tull's virgin hay, which, he says, is the best beyond comparison, and has not its equal in the world except lucerne. He gives the next place to the second sort, cut whilst in bloom, and says that an acre of land, well cultivated, may yield three tons of this

blossomed hay; and he esteems the third sort, which he calls the full-grown, many degrees inferior to either of the former; though it yields a greater crop, because it has grown to its full bulk, and shrinks but little in drying.

Even the faintfoin that has yielded its seed may be cut down and dried; and when other fodder is scarce, this will be better food for horses and large cattle, than the coarse hay of flowered meadows, or any kind of straw.

The manner of making faintfoin hay is thus directed by Mr. Duhamel.

In a day or two after the faintfoin has been mowed, it will be dry on the upper side if the weather be good. The swarths, or mowed rows, should then be turned, not singly, but two and two together; for by thus turning them in pairs, double the space of ground is left betwixt pair and pair, and this needs but once raking, whereas, if the swarths were turned singly, that is, all the same way, the ground would require as much raking again.

As soon as both sides of the swarths are a little dry, they should be made up into small cocks the same day they are turned, if possible; for when the faintfoin is in cock, a less part of it will be exposed to the injuries of the night, than when it lies scattered upon the field. The sun and dew would exhaust almost all its juices in this last case, in less than a week's time.

These little cocks of faintfoin may be safely made into larger ones, without waiting for their being so thoroughly dry as those of common hay ought to be before they are laid together; because common hay, by sinking down closer, excludes the air necessary for keeping it sweet; so that if the weather prevents its being frequently stirred and opened, it will heat, turn yellow, and be spoiled; whereas faintfoin, by admitting the air more freely, because its stalks are less flexible, will remain much longer without any danger of fermenting.

Saintfoin hay is never better than when it has been dried by the wind only, without the assistance of the sun. A little rain, or a mist, which will turn common hay or clover, and even lucerne black, will do no hurt to faintfoin, which is not really spoiled till it

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rots upon the ground. If the weather threatens rain, and the saintfoin is not yet dry, it may be laid in cocks, without fear of its heating, provided a large basket, or bushy taggot, be set up in the middle of each cock, where it will serve for a vent-hole, through which the superfluous moisture of the hay will transpire.

As soon as all danger of heating is over, these cocks should be made into ricks, and thatched. That which is laid up quite dry, will come out of the rick of a green colour; that which has heated much in the rick, will look brown.

It requires some experience to know at what degree of ripeness it is best to cut the seeded saintfoin; because all its seeds do not ripen at the same time. Some ears blossom before others; every ear begins blossoming at its lower part, and continues to blow gradually upward, for many days; so that before the flower is gone off at the top, the seeds are almost filled at the bottom. By this means, if the cutting be deferred till the top seeds are quite ripe, the lower, which are the best, would shed and be lost. The best time, therefore, to cut it, is when the greatest part of the seed is well filled, the first blown ripe, and the last blown beginning to be full. The unripe seeds will ripen after cutting, and be in all respects as good as those that were ripe before. Some for want of observing this, have suffered their saintfoin seed to stand till all of it has shed, and been lost in cutting.

Saintfoin should never be cut in the heat of the day, while the sun shines out; for then much, even of the unripe seed, will shed in mowing. The right time for this work is the morning or the evening, when the dew has rendered the plants supple.

If the weather is fine and clear, the saintfoin will soon dry sufficiently in the swarths, without turning them; but if any rain has fallen, and there is a necessity for turning them, it should be done very gently while they are moist, and not two swarthed together, as in the other hay made of saintfoin before it has seeded. If the swarths are turned with the handle of the rake, it is best to raise up the ear-sides first, and let the stub-side rest on

the ground in turning; but if it is done with the teeth of the rake, let the stub-side be lifted up, and the ears reited on the earth.

If saintfoin be cocked at all, the sooner it is done the better, because if the swarths are dry, much of the seed will be lost in separating them, the ears being entangled together. When moist, the seed sticks fast in the ear; but when dry, it drops out with the least touch or shaking.

There are two ways of thrashing it, the one in the field, the other in the barn. The first cannot be done but in very fine weather, and while the sun shines in the middle of the day. The best manner of performing this is to have a large sheet pegged down to the ground for two men to thrash on with their flails, while two others bring them fresh supplies in a smaller sheet, and two more clear away the hay that has been thrashed. The seed is emptied out of the larger sheet, and riddled through a large sieve, to separate it from the chaff and broken stalks; after which it is put into sacks and carried into the barn to be winnowed. Care should be taken not to let the hay get wet, because it would then be spoiled.

A very important, and at the same time very difficult article is, the keeping of the seed that has been thrashed in the field, without ever having been wetted. If it be winnowed immediately, and only a little of it laid amidst a great heap, or put into a sack, it will ferment to such a degree in a few days, that the greatest part of it will lose its vegetative quality. During that fermentation, it will be very hot, and smell sour. Spreading it upon a barn floor, though but seven or eight inches thick, will answer no end, unless it be frequently and regularly turned both day and night, until the heating is over; but even this will not make its colour keep so bright as that which is well housed, well dried, and thrashed in the winter. This last, laid up unthrashed, will keep without any danger of spoiling, because it does not lie close enough to heat. The best way to preserve the seed thrashed in the field is, to lay a layer of straw upon a barn floor, and upon that a thin layer of seed, then
another

another layer of straw, and another layer of feed, and so on alternately. By this means the feed mixing with the straw, will be kept cool, and come out in the spring with as green a colour as when it is put in.

SALEP, A celebrated restorative among the Turks, is probably the prepared root of certain plants of the orchis kind. This drug, as sometimes brought to us, is in oval pieces, of a yellowish white colour, somewhat clear and pellucid, very hard, and almost horny, of little or no smell, and tasting like gum tragacanth. Stryrion root, boiled in water, freed from the skin, and afterwards suspended in the air to dry, gains exactly the same appearance; the roots thus prepared, dissolve in boiling water into a mucilage. Geoffrey, who first communicated this preparation of orchis, recommends it in consumptions, in bilious dysenteries, and disorders of the breast proceeding from an acrimony of the juices.

SALLENDERS. A disease in horses, consisting in cracks in the bending of the hough, and occasion a lameness behind. This disease is cured in the same manner as the mallenders. *See MALLENDERS.*

SALT-MARSHES. Pasture-lands lying near the sea, and sometimes overflowed by the sea-water.

"It has been observed," says an ingenious writer in the *Museum Rusticum*, "that horses and black cattle thrive better, and get fat sooner, in salt-marshes, than in fresh-water meadows or upland pastures; yet I do not remember ever to have heard any good reason assigned for it.

"Some will tell you that the air of the sea whets their appetites; that the pasture is rich and nourishing; and that the herbs produced by the lands near the sea are more conducive to the health of herbaceous animals, than such as grow on upland pastures, whether natural or artificial.

"But may we not rather attribute the thriving of cattle on these marshes, to the saline particles with which the earth as well as its produce is, when near the sea, strongly impregnated? Perhaps even the dews have their portion of salt; but of this I have made no experiment, therefore mention it

only as a probable conjecture; for as they fall soon after they are exhaled from the sea, without passing through the secretions necessary to separate their saline parts, why should not this be the case?

"But to return to my first subject: I am fully of opinion, that the saline particles only, with which the grass is impregnated in the above-mentioned marshes, cause cattle to thrive in them in the manner they are known to do. These salts purge away the foul humours which the beasts have contracted, either by idleness, or by being over-heated in labour; by which means they are better disposed to be nourished by the aliment they receive.

"It may perhaps be objected, that if the grass of these marshes is apt to purge cattle, this very purging, by being long continued, will be a means of preventing their growing fat. To this I answer, that the cattle take with their food every day nearly the same quantity of these purgative particles; but that the quantity of salt, which at their being first put into the marsh will have that effect, will cease producing it when they are by custom habituated to take a daily portion of it; this must be allowed, as we all know, that a few grains of rhubarb will operate as a cathartic to a person that is not accustomed to take it; yet it is as well known, that a man may take many grains daily, if he uses himself to it, without its being sensibly purgative to him.

"It is not convenient to every one to send their cattle to a salt-marsh: would it not, therefore, be happy, if we could substitute a method that would nearly answer the same purpose? I do not think this impossible; perhaps if common salt-water were to be laid in the fields for horses to lick as often as they pleased, they would thrive much better; were I to say I know it would have that effect, it would be no presumption.

"Cattle are all naturally fond of salt, and if left at their liberty, will take no more of it than what will do them good. With this help, our fresh-water meadows, and natural and artificial pastures, would yield us a greater profit, and of course be worth more to the land-holder and farmer.

"Some

Salt in Horses' Food. See also - 100111 -

"Some will not allow a thing to have merit, unless it is supported by what they call a proper authority; and they do not allow the experiments of a particular person to be sufficient. To satisfy such, I can assure you, that in the inland parts of Switzerland, when their horses and cattle have endured the hardships of a long and severe winter, they turn them in the spring loose into the mountains, laying salt here and there upon the rocks, for them to resort to when they please; and of this they are so fond, that when the farmers want to catch their horses, they take some salt in their hats, as we do oats in a sieve, to allure them.

"Experience has long convinced them, that the salt thus laid in their way answers every good purpose; their cattle are more healthy in general than ours are in England, and almost to this alone do they attribute it.

"In the province of Munster and Connaught, in Ireland, they very frequently lay salt on flates, for the benefit of their horses when at grass: this they find does the cattle great service, and in this we should imitate them, and not be too proud to learn of them, because in Ireland Agriculture is not in so flourishing a state as in England.

"Some few farmers have (to do them justice) practised this method in our own country; but, contenting themselves with the profit resulting from it, they have not propagated the knowledge or the many advantages they are sensible may be derived from this practice of giving salt to cattle.

"The farriers and horse-jockeys know well the use of salt; they mix it often in their medicines, and find by experience, that nothing proves so powerful a stomachic to horses, as a little salt thrown into their oats.

"I must farther observe, that the use of salt is very proper when cattle are turned into clover, lucerne, or cole-feed, to feed; it is well known, that on these occasions they are very apt, unless great care is taken, to be surfeited; the salt would prevent this accident, and thereby greatly accelerate the fattening of the cattle, and make it much safer to the farmer.

"Salt has also been found to be of great service in fattening hogs, by causing them to drink more plentifully than otherwise they would."

SALTWORT. *Glaßwort.*

SALLOW. [*Salix.*] The sorts are, 1. The common willow, with acute-pointed rough leaves. 2. The white willow. 3. Yellow, or golden willow. 4. The purple, or red willow. 5. The osier willow. 6. Broad-leaved sweet-scented willow, with five stamina. 7. Willow, with smooth sawed leaves, and three stamina. 8. Almond leaved willow. 9. Crack willow. 10. Babylonian, or weeping willow; with several others, as Norfolk willow; the upland red willow; Dutch osier; white osier, &c. The flowers of all are katkins; from the sides of the branches they are all easily propagated by cuttings or layers; the former when designed for pollards, and the latter when intended for trees.

SAMPHIRE. [*Crithmum.*] This plant grows wild on rocks, and in maritime places; the leaves are somewhat like those of fennel, but the segments much thicker and shorter; their smell resembles that of smallage; the taste is warm, bitterish, not agreeable. They are said to be stomachic, aperient, and diuretic.

SANICLE, [*Sanicula.*] This plant grows wild in woods and hedges, and flowers in May. The leaves have an herbaceous, roughish taste; they have long been celebrated for *sanative* virtues, both internally and externally: nevertheless, their effects, in any intention, are not considerable enough to gain them a place in the present practice.

Bear's Ear SANICLE. [*Cortusa.*] This plant grows naturally on the Alps, and the mountains of Austria, and Siberia; it is propagated by parting the roots as for the auricula.

SAND. A genus of fossils found in minute concretions, forming together a kind of powder, the genuine particles of which are all of a tendency to one determinate shape, and appear regular, though more or less complete concretions; not to be dissolved or dis-united by water, or formed into a coherent mass by means of it, but retaining their figure in it; transparent, vitrifiable by extreme heat, and not

not dissoluble in, nor effervescing with acids.

These are subject to be variously blended and intermixed either with homogene, or heterogene particles, particularly with flakes of talc; and according to these, and their different colours, are to be subdivided into several kinds, as red, white, &c.

Dr. Lister divides the English sands into two classes: The first, sharp, or rag sand, consisting of small transparent pebbles, naturally found on the mountains, and not calcinable; these he farther divides into fine and coarse, and subdivides each, according to the colours, into white, grey, reddish, brown, &c.

The second, soft or smooth, which he subdivides into that with flat particles broken from lime-stones, that with silver-like particles, and that with gold like particles.

As to sand, its use is to make the clayey earth fertile, and fit to feed vegetables, &c. for earth alone, we find, is liable to coalesce, and gather into an hard coherent mass, as is apparent in clay; and earth thus embodied, and as it were, glued together, is no-ways disposed to nourish vegetables; but if with such earth, sand, &c. i. e. hard crystals, which are not dissolvable in water, and still retain their figure, be intermixed, they will keep the pores of the earth open, and the earth itself loose and incompact, and by that means give room for the juices to ascend, and for plants to be nourished thereby.

Thus a vegetable, planted either in sand alone, or in a fat glebe, or earth alone, receives no growth or increment at all, but is either starved or suffocated; but mix the two, and the mass becomes fertile. In effect, by means of sand, the earth is rendered in some manner organical; pores and interstices being hereby maintained, something analogous to vessels, by which the juices may be conveyed, prepared, digested, circulated, & at length excerned, and thrown off into the roots of plants.

Grounds that are sandy and gravelly easily admit both of heat and moisture; but then they are liable to these inconveniencies, that they let them pass too soon, and so contract no liga-

ture, or else retain it too long, especially where there is a clay bottom; and by that means it either parches or chills too much, and produces nothing but moss, and cankerous infirmities; but if the sand happens to have a surface of good mould, and a bottom of gravel, or loose stone, tho' it do not hold the water, it may produce a forward sweet grass; and tho' it may be subject to burn, yet it quickly recovers with the least rain.

Sea sand is accounted a very good compost for stiff ground, for it effects the two things following, viz. it makes way for the tree or seed to root in stiff ground, and makes a fume to feed it.

Sand, indeed, is apt to push the plants that grow upon it early in the spring, and makes them germinate near a month sooner than those that grow upon clay, because the salts in the sand are at full liberty to be raised and put into motion upon the least approach of the warmth of the sun; but then, as they are hasty, they are soon exhaled and lost.

It is remarkable, that sand, though it appear a very hard, dense, and indissoluble body, yet is contained invisibly in the brine, or salt water of our salt springs; and even on the shooting of the salt after evaporation, there still remain the particles of it in the clear pellucid salt; and this, though wholly soluble in water, yet when a brine made by such a solution is boiled, deposits as much of the sand as the common brine of the pits, or sea-water.

Dr. Plot, who was very curious to know the true history of this singular effect, procured experiments to be made in the following manner: Eight folds of fine holland, and as many of finer cambrick, were put together, and a quantity of the brine of the Staffordshire salt pits being strained thro' this, there was nothing separated from it but a small quantity of black dust, which seemed to have fallen in by accident, and which was not at all like sand; yet, on evaporating this brine, it was found to contain no less than one fourth part as much sand as salt; the quantity of brine, yielding a bushel of salt, yielding also a peck of sand.

Some have supposed from these, and the like observations, that the sand was generated during the time of the boiling

boiling the liquor, but the more careful examiners think otherwise; it appearing to them that the particles of this sand may be seen in the brine by the help of a microscope, before the boiling, in form of rectangular oblong plates, some nearly square; these were so small as readily to pass the strainer with the water, and appearing as numerous in it after, as before the straining, shew that they are no more to be kept by such means than the salt.

The pores of the finest strainers, examined by the microscope, appear twenty times bigger than these plates, or particles of the sand, and therefore it is not to be wondered at, that they let them through. There requires, therefore, no more to the formation of the sand, than the coalescing of several of these particles into one larger granule, and so on; and this is very likely to be done by means of the evaporation of a part of the fluid which kept them separate, and of the motion given to them in boiling, which naturally and necessarily brought them into the spheres of their own mutual attractions, at a time when their attraction with the fluid they swam in was also much diminished with its quantity. This attraction seems even evidently to increase between the particles as the water becomes evaporated, and when finally the salt is drawn from it, and it is examined as it drops from the baskets in which the salt is put to drain, it is seen to contain more numerous particles of this sandy matter than before; and these are found to coalesce into yet larger concretions by degrees, as the remainder of the fluid evaporates from them on the glass.

The particles of this stony matter, when once thus united, are no more to be separated by water, nor is the matter any longer soluble in that fluid. The common spar found in form of stalactites and incrustations on the roofs, walls, and floors of old caverns, shews that it was once dissolved in water, and by that means brought to those places, and made into those forms; and it should seem that this sand, as it is called, was only this sort of spar, which is contained more or less in all water; and which, on the evaporating of that water, and sepa-

rating the salt, which might help in making the water a menstruum proper for the retaining it, shoots out into its own natural concretions; for the figure of these thin plates is the true and natural thin paralleliped or rhomboidal figure of the smaller concretions of that matter, and even of those pieces into which it falls on breaking.

Common sand is a very good addition by way of manure to all sorts of clay lands; it warms them, and makes them more open and loose. The best sand for the farmer's use is that which is washed by rains from roads or hills, or that which is taken from the beds of rivers; the common sand that is dug in pits never answers nearly so well. Sand mixed with dung is much better than laid on alone; and a very fine manure is made by covering the bottom of sheep-folds with several loads of sand every week, which are to be taken away and laid on cold stiff lands impregnated as they are with the dung and the urine of the sheep.

Besides clay land, there is another sort of ground very improveable by sand; this is that sort of black foggy land on which bushes and fedge grow naturally, and which they cut into turf in some places. Six hundred loads of sand being laid upon an acre of this land, according to the Cheshire measure, which is near double the statute acre, meliorate it so much, that without ploughing, it will yield good crops of oats or tares, though before it would have produced scarce any thing. If after this crop is taken off, the land be well dunged and laid down for grass, it will yield a large crop of sweet hay.

Once sanding this land will improve it for a vast number of years, and it will yield two crops of hay in the year, if there be weather to make it in. Some land in Cheshire has been by this means rendered of twelve times its former value to the owner. The bogs of Ireland, when drained, have been rendered very fruitful land, by mixing sand in this manner among the earth, of which they consist. Add to this, that in all the boggy lands, the burning them, or firing their own turf upon them, is also a great advantage.

The common peat, or turf ashes, mixed with the sand for these purposes, add greatly to its virtue.

Sea sand, which is thrown up in creeks and other places, is by much the richest of all sand for manuring the earth; partly its saltness, and partly the fat and unctuous filth that is mixed among it, give it this great virtue. In the western parts of England, that lie upon the sea-coasts, they make very great advantages of it. The fragments of sea-shells also, which are always in great abundance in this sand, add to its virtues; and it is always the more esteemed by the farmers the more of these fragments there are among it.

The sea sand used as manure in different parts of the kingdom is of three kinds: that about Plymouth, and on other parts of the southern coasts, is of a blue grey colour, like ashes, which is probably owing to the shells of muscles, and other fish of that or the like colour, being broken and mixed among it in great quantity. Westward, near the land's end, the sea sand is very white, and about the isles of Scilly it is very glittering, with small particles of talc; on the coast of the north sea the sand is yellowish, brown, or reddish, and contains so great a quantity of fragments of cockle-shells, that it seems to be chiefly composed of them. That sea sand is accounted the best which is of a reddish colour; the next in value to this is the bluish, and the white is the worst of all.

Sea sand is best when taken up from under the water, or from sand banks which are covered by every tide.

The small grained sand is most sudden in its operation, and is therefore best for the tenant who is only to take three or four crops; but the coarse or large-grained sand is much better for the landlord, as the good it does lasts many years.

Where the sand is dredged out of the sea, it is usually twice as dear as where it is taken from the sand banks.

When the land has been well manured with the large sand, they take four crops of corn from it, and then lay it down for pasture for six or seven years before they plough it again. The grass is so good, that they commonly mow it for hay the first year; it

always abounds very much with the white-flowered clover. If the grass grows but short, it is the farmer's interest to feed his cattle upon it, and it will turn to as good account this way, being very sweet and rich, and making the cattle fat, and the cows yield a very large quantity of milk.

SAP. A juice furnished by the earth, and changed into the plant, consisting of fossil, saline, aerial, and other particles from putrified animals, vegetables, &c.

SARCOCOLLA. A concrete juice, brought from Persia and Arabia, in small, whitish, yellow grains, with a few of a reddish, and sometimes of a deep red colour, mixed with them; the whitest tears are preferred, as being the freshest: Its taste is bitter, accompanied with a dull kind of sweetness. This drug dissolves in watery liquors, and appears to be chiefly of the gummy kind, with a small admixture of resinous matter. It is principally celebrated for conglutinating wounds and ulcers, a quality which neither this, or any other drug, has a just title to. It is an ingredient in the *pulvis e cerussa compositus*.

SASSAFRAS. See BAY.

SATTINFLOWER. See HONESTY

SATYRIUM. See DOGSTONES.

SAUCE-ALONE. See HEDGZ MUSTARD.

SAVIN. See JUNIPER. This is a warm irritating aperient medicine, capable of promoting sweat, urine, and all the glandular secretions. The distilled oil is one of the most powerful emmenagogues, and is found of good service in obstructions of the uterus, or other viscera, proceeding from a laxity and weakness of the vessels, or a cold sluggish disposition of the juices.

SAVORY. [*Saturcia*.] A plant much cultivated in the kitchen-garden, and is of two sorts, viz. summer and winter savory, the uses of both which are nearly the same.

The former is an annual plant, raised only from its seed, which should be sown in the beginning of April, in a bed of loose and light earth. If the plants are not intended to be removed, their seeds should be scattered thinly; but if they are to be transplanted, they may be sown thicker. They must

must be kept clear from weeds, and are in other respects to be treated as marjoram.

Winter favory may be propagated from seeds sown at the same time as those of the summer sort; or by slips off its roots, for these are perennial, and will last several years; but as they do not put forth equally tender or well furnished shoots after they are grown old, the best way is to raise a supply of young plants every other year. The slips of the winter favory will soon take root and flourish; and they, as well as the plants of this species raised from seed, will endure the greatest cold of our winters, and have the most aromatic smell and taste, when they are planted in a poor and dry soil. Wet ground is very apt to render them mouldy, and consequently make them rot. Mr. Miller has noticed some of these plants growing upon the top of an old wall, where they were fully exposed to the cold, and they there survived such severe frosts as killed most of those of the same kind that were planted in the ground.

The winter favory flowers in June, and the summer favory in July; but the seed of both ripen in the autumn, and at no great distance of time from each other.

SANDERS. [*Santalum.*] There are three species of this wood, the white, the yellow, and the red. The first is of little value; the second has a pleasant smell, and a bitterish aromatic taste, and though but little regarded might be applied to valuable purposes. The red is principally used as a colouring drug.

SAW-WORT. [*Serratula.*] There are several species of this plant propagated in the gardens, and growing wild, some annual and some perennial; the former are propagated by seeds, and the latter by parting their roots.

SAXIFRAGE. [*Saxifraga.*] The common white saxifrage grows naturally in most parts of England. The roots of this plant are like grains of corn, of a reddish colour without, from which arise kidney-shaped hairy leaves, standing upon pretty long foot-stalks. The stalks are thick, a foot high, hairy, and furrowed; these branch out from the bottom, and have a few

small leaves like those below, which sit close to the stalk; the flowers terminate the stalk, growing in small clusters: they have five small white petals, inclosing ten stamina and the two styles. The roots and leaves of this plant are used in medicine.

There are many species of this plant cultivated in the gardens, and growing naturally in England; among them is reckoned the None-so-pretty, or London-Pride. They are all cultivated by parting the roots, or by off-sets.

Burnt SAXIFRAGE. [*Pimpinella.*] There are three sorts principally noticed by medical writers. 1. The large or white saxifrage. 2. Two others smaller; but they all seem to be possessed of the same qualities, and to differ only in external appearance: and even in this, their difference is so inconsiderable, that Linnæus has joined them into one, under the general name of *pimpinella*. Our college, instead of the first, which has been generally understood as the officinal sort, allow either of the others (which are more common) to be used promiscuously.

The roots of *pimpinella* have a grateful, warm, very pungent taste, which is entirely extracted by rectified spirit; in distillation, the menstruum arises, leaving all that it had taken up from the root united into a pungent aromatic resin. This root promises, from its sensible qualities, to be a medicine of considerable utility, though little regarded in common practice; the only officinal composition in which it is an ingredient is the *pulvis ari compositus*. Stahl, Hoffman, and other German physicians, are extremely fond of it, and recommend it as an excellent stomachic, resolvent, detergent, diuretic, diaphoretic, and alexipharmac. They frequently gave it, and not without success, in scorbutic and cutaneous disorders, foulness of the blood and juices, tumours and obstructions of the glands; and diseases proceeding from a deficiency of the fluid secretions in general. Boerhaave directs the use of this medicine in asthmatic and hydropic cases, where the strongest resolvents are indicated; the form he prefers is a watery infusion; but the spirituous tincture possesses the virtues of the root in much greater perfection,

perfection. There is another species of pimpinella called *nigra*, from its root being externally of a bright black colour, whilst those of the foregoing sorts are whitish; this is remarkable for its yielding an essential oil of a blue colour. It grows wild in some parts of Germany, Switzerland, &c. and is now and then met with in our gardens.

Golden SAXIFRAGE. [*Chryso-splenium.*]

There are two sorts, one with alternate, and the other with opposite leaves. These two plants are found wild in several parts of England, but especially the first, upon marshy soils and bogs, as also in most shady woods, and are seldom propagated in gardens, where, if any person have curiosity to cultivate them, they must be planted in very moist shady places, otherwise they will not thrive. They flower in March and April.

Meadow SAXIFRAGE. See HOG'S FENNEL.

SCAB. A disease incident to sheep, chiefly occasioned by a tedious length of wet weather.

"I imagine," says Mr. Vesey, "your readers will not be displeas'd if I should, with your assistance, communicate to them a remedy for this disorder, which I have several times tried, and almost always found to answer extremely well.

"Some men, whom I have known to breed and feed a great number of sheep, have been grossly mistaken in their comprehension of the nature of this distemper, which they rashly judg'd to be merely cutaneous; whereas, when a sheep has the scab, the blood is always more or less affected by it; therefore the outward applications, which are in general alone resort'd to for a cure, do for the most part more hurt than good, by driving in the eruption, and making it fix on the internals, thereby occasioning the death of the animal.

"Now the true way to treat this disorder is, first to give the animal something inwardly to drive out the eruption; then comes, with propriety, the outward application, which completes the cure by killing the scab.

"When a farmer has any of his flock afflicted with the scab, let him attend to the directions which follow:

"Take a gallon of soft well or pond water, which divide into two equal parts; in one of these parts dissolve eight ounces of old hard soap; to which, when it is dissolved, add two ounces of spirits of hartshorn, and seven ounces of common salt, with four ounces of roll brimstone, beat to a fine powder and sifted; then take the other part of the water, in which put two ounces of tobacco leaf, and one of white hellebore root; boil this second part till you have a strong infusion, after which strain it clear from the leaves and roots.

"When you have got thus far in the process, take that part of the water, first mentioned, and set it over the fire; let it boil for about half an hour, keeping it continually stirring with a wooden ladle during that time; in the mean time heat again the other part, in which the tobacco and hellebore were infused, and when it is hot, mix the two parts gradually together over the fire, keeping the mixture continually stirring till it is taken off the fire, which should be in about a quarter of an hour; when it is quite cold, let it be put into a stone bottle, in order to its being kept in a cool place for use.

"Then take four quarts of new ale or beer; put into it twelve ounces of common salt, two ounces of bay salt, and eight ounces of powdered nitre, together with twelve ounces of pounded roll brimstone; set them over a gentle fire, and when the ale boils, take off the scum; let it boil for about half an hour; after which set it by till it is cold, and put it into a stone bottle for use.

"When you are so far prepared; take one quart of ale, set it on the fire; mix into it by degrees, three ounces of flour of brimstone; when it is just ready to boil take it off the fire, and let it stand to cool; and when it is only blood-warm, give this quantity inwardly to three sheep, which is to be repeated every second day till they have had three doses. This will drive out the disorder, when the first mixture is to be rubbed on the distemper'd parts; and two days afterwards the second, and so alternately for about eight or ten days, till the cure is effected." Sometimes two

rubbings

rubbings will be sufficient. I must observe, that all these mixtures will be best boiled in well glazed earthen or iron pots."

"The two greatest enemies the sheep," says another ingenious gentleman, "or at least their wool (which is the most valuable part of them) have, are the scab and fly. I believe they destroy more wool than all the other diseases incident to that animal.

"Mr. Vesey has given us an approved remedy for the scab, and at the same time enters somewhat into the nature of the distemper. For my own part, I have not presumption enough to look into first causes; secondary ones are all I aim at; I always took nature to be a wise instructor, and the surest guide; but if we will hobble out of the way ourselves, she is not to blame.

"I agree with Mr. Vesey, that in this, and every other distemper a sheep labours under, the blood is more or less affected and disturbed; which disturbance, if I am not mistaken, the faculty call a fever; therefore it must be always considered, that a fever is no more than a struggle of nature to get rid of some enemy in the blood, by throwing it out by some of the outlets of the body, namely, by sweat, urine, or stool; or upon the surface of the skin; and then she seems to say, I have thrown the distemper out to your view, and there destroy it by proper applications.

"It surely is not scab until it is thrown out upon the skin; and when it is thrown out, what avails giving internal remedies, to do that which nature has done before? If it be out, there's your ailment; and I think, it is an axiom in physic, that when a distemper is once known, it is half cured; if it is only coming out, my advice would be, not to disturb nature, who is always acting for our good, in a wiser and better manner than we can do ourselves; she sometimes, indeed, is too weak for her office, and sometimes too strong; in the one case she is to be properly assisted, and in the other, prudently restrained; and when we do more or less, the effects are generally fatal. I hope this will satisfy Mr. Vesey, that he is not

altogether in the right, any more than his neighbours.

"To cure an illness with a few medicines, is as commendable, as to say a great deal in a few words. One great obstacle to Mr. Vesey's treatment of sheep with scab, is its being too compound, troublesome, and laborious, setting aside the expence, and where there are a great number of sheep, hardly to be practised. I would have all remedies for the ailments of sheep be as simple as possible; and to be obtained and prepared with as little trouble; for certain I am, when it is otherwise, many will let their flocks go neglected, or at best leave them to a slovenly shepherd, who knows very little of the matter; and when clip-day comes, when the poor creatures are out of their wool, (if they had any on before) what a sight presents itself to view! most part of their skins being one continued scab, and other parts eat quite through, and deep into the flesh, by the maggot: This I have seen at clip-day, and may speak it; but what must I alledge it was owing to? Sorry am I to say, to the over credulity of the master, who thought he had a shepherd who knew every thing; but the event proved the contrary.

"You must not be surprized when I say, what will destroy the fly will also cure the scab, with little or no alterations; mercury is a mortal foe to both; and the remedy for the fly is as follows:

"Take of corrosive sublimate, half an ounce; dissolve it in two quarts of rain water; to which add a gill of spirits of turpentine: This is the whole of it, which must be used in the following manner:

"When the sheep is struck, the shepherd must make a circle round the maggots with some of the water, by dropping it out of a bottle; this prevents them getting away, for they will not come near the water; then he must shred or open the wool within the circle, and drop a few drops of the water among them, and rub them about with his finger, and there leave them, for they will all die presently.

"I speak this from my own certain knowledge, and many others in this
part

part of the country (Iſle of Ely) can do the ſame.

“ To a quart of the above water I add a pint of the ſimple lime-water of the London Diſpenſatory; and I declare it from experience, there is no more certain cure for the ſcab than it; I am ſure it is the cleaneſt, the ſooner prepared, and when ſo, the cheapeſt; which are an inducement, I think, ſufficient to have every countryman make uſe of it.” *Muſeum Ruſſicum*, vol. ii. p. 369.

SCABIOUS. The name of a flowering ſhrub cultivated in moſt pleaſure gardens.

All the ſhrubby ſorts of ſcabious may be propagated by cuttings, which may be taken off during any of the ſummer months, and ſhould be planted in a ſhady border, and duly watered in dry weather, which will promote their taking root; and then they may be potted and placed in a ſhady ſituation, till they have taken new root, after which time they may be placed amongſt other hardy exotic plants, in a ſheltered ſituation, where they may remain until the end of October, when they muſt be moved into ſhelter. In ſome favourable ſeaſons theſe plants will produce good ſeeds in England, ſo that the plants may be raiſed from theſe, by ſowing them in an open border of light earth about the middle of March; and if the ſpring ſhould prove very dry, it will be neceſſary to water the ground now-and-then, which will forward the vegetation of the ſeed, ſo that the plants will appear in about three weeks after the ſeeds are ſown. When they come up, they muſt be kept clear from weeds, and in dry weather duly watered; and when they are ſtrong enough to tranſplant, they ſhould be planted in pots, and managed in the ſame manner as thoſe plants which are propagated by cuttings.

All the ſorts of ſcabious continue a long time in flower, for which they are regarded; for there is no very great beauty in many of their flowers; but as moſt of the hardy ſorts produce flowers near three months ſucceſſively, ſo they may be allowed a place in the borders of large gardens, becauſe they require very little care to cultivate them. And as the ſhrubby kinds con-

tinue in flower moſt part of the year, ſo they make an agreeable variety amongſt hardy exotic plants in the winter.

SCAMMONY, [*Scammonium.*] Scammony is a concrete juice extracted from the roots of a large climbing plant growing in the Aſiatic Turkey. The beſt comes from Aleppo, in light, ſpongy maſſes, eaſily friable, of a ſhining aſh colour verging to black; when powdered, of a light grey or whitish colour: An inferior ſort is brought from Smyrna, in more compact ponderous pieces, of a darker colour, and full of ſand and other impurities. This juice is chiefly of the reſinous kind: rectified ſpirit diſſolves five ounces out of ſix, the remainder is a mucilaginous ſubſtance mixed with dregs: proof ſpirits totally diſſolve it, the impurities only being left. It has a faint unpleaſant ſmell; and a bitteriſh, ſomewhat acrimonious taſte.

Scammony is an efficacious and ſtrong purgative. Some have condemned it as unſafe, and laid fundry ill qualities to its charge; the principal of which is, that its operation is uncertain, a full doſe proving ſometimes ineffectual, whiſt at others a much ſmaller one occaſions dangerous hypercatharſes. This difference however is owing entirely to the different circumſtances of the patient, and not to any ill quality, or irregularity of operation, of the medicine; where the inteſtines are lined with an exceſſive load of mucus, the ſcammony paſſes through, without exerting itſelf upon them; where the natural mucus is deficient, a ſmall doſe of this or any other reſinous cathartic, irritates and inflames. Many have endeavoured to abate the force of this drug, and correct its imaginary virulence, by expoſing it to the ſume of ſulphur, diſſolving it in acid juices, and the like; but this could do no more than deſtroy as it were a part of the medicine, without making any alteration in the reſt. Scammony in ſubſtance, judiciously managed, ſtands not in need of any corrector; if triturated with ſugar or with almonds, as is frequently recommended for other reſinous purgatives, it becomes ſufficiently ſafe and mild in operation. It may likewiſe be conveniently diſſolved, by trituration, in a ſtrong decoction

coction of liquorice, and then poured off from the feces. The college of Wirtemberg assures us, that by this treatment it becomes mildly purgative, without being attended with gripes, or other inconveniencies; and that it likewise proves inoffensive to the palate. The common dose of scammony is from three to twelve grains.

SCORDIUM. See *Water GERMANDER*.

SCORPION-GRASS. See *CATERPILLAR*.

SCORZONERA. See *Pipers-GRASS*.

SCRATCHES, A distemper incident to the heels of horses.

It has so much affinity with the greafe, and is so often a concomitant with that disease, that the method of curing the scratches may be selected from that article.

The parts affected should be first covered with the linseed and turnip poultice, having a little common turpentine added to relax the vessels; the green ointment may then be applied to promote the discharge, when the scratches may be dried up with the ointments and washes recommended in that article.

It is best afterwards to keep the heels supple, and softening with curriers dubbing, which is made of oil and tallow. This will keep the hide from cracking, and be as good a preservative as it is to leather; and by using it often before exercise, will prevent the scratches, if care be taken to wash the heels with warm water, when the horse comes in. When they prove obstinate, and the sores are deep, use the following; but if any cavities or hollow places are formed, they should first be laid open, for no foundation can be laid for healing, till you can dress to the bottom.

Take Venice turpentine four ounces, quicksilver one ounce; incorporate well together by rubbing some time, and then add honey and sheep's suet, of each two ounces.

Anoint with this once or twice a day; and if the horse is full or fleshy, you must bleed and purge; and if the blood is in a bad state, the alteratives must be given to rectify it.

SCULL-CAP. [*Scutellaria.*] There are several species of this plant grow-

ing in different parts of Europe and America. They are all propagated by seeds.

SCURVY-GRASS. [*Cochlearia.*] Scurvy-grass is a pungent stimulating medicine; capable of dissolving viscid juices, opening obstructions of the viscera and the more distant glands, and promoting the fluid secretions: it is particularly celebrated in scurvies, and is the principal herb employed in these kinds of disorders in the northern countries. It is propagated by sowing seeds in July in a moist shady spot of ground. The Sea Scurvy-Grass is also used in medicine; but this grows in the salt-marshes in Kent and Essex, where the salt water overflows it almost every tide, and can rarely be made to grow in a garden, or at least to last longer there than one year; but it being easily gathered in the places before mentioned, the markets are supplied from thence by the herb-women, who make it their business to gather herbs.

The little Welch scurvy-grass is a biennial plant, and may be preserved in a garden, if planted in a strong soil and shady situation. This plant grows plentifully in Muscovy, as also in Davis's Streights.

SCYTHE, SITHE, OR SYTHE, The instrument used in mowing, being a crooked blade joined at right-angles to a long pole.

SEA BUCKTHORN. See *Sea BUCKTHORN*.

SEAGRIM. See *RAGWORT*.

SEAM. Tallow, greafe, hog's-lard.

SEAM of Corn. A quarter, or eight bushels.

SEAM of Wood. A horse-load of wood.

SEARCHER. See *BOZER*.

SEAVES. Rushes.

SEAVY Ground. Ground over-run with rushes.

SEED, the product of a plant, whereby the species is propagated.

The choice of the seed intended to be sowed is an object of greater importance than many farmers seem to imagine. It is not sufficient that the finest grains be chosen for this purpose, unless they are likewise very clean. Such wheat is not difficult to be had from land cultivated according to the principles of the new husbandry; but we seldom find corn entirely free from seeds

seeds of weeds when it had been raised in the common way.

It is natural to suppose, that the grains of stunted and sickly corn necessarily partake of the weakly disposition of the plant which produced them, and that their productions cannot be so fine as those which grow from the seeds of strong and healthy plants. For this reason Mr. Tull advises to take the seed corn from a richer soil than that in which it is to be sowed, and rather from ground in perfect tilth, than from land which has been less carefully cultivated. This seems to be very right (tho' the contrary opinion is almost generally received) because more may reasonably be expected from the productions of a fine good seed, full of vigour and well conditioned, than from a poor weak plant.

M. de Chateauvieux, who often sowed with no other intention than merely to try, for the benefit of mankind, at what time, in what manner, and what condition, it is best to sow wheat, found that this grain sprouted pretty well even when sowed so green that it had not yet lost its milky quality; but thinks it much more advisable to sow none but what is thoroughly ripe; because the seed has then attained its full perfection, from whence we may most certainly expect the best and strongest plants.

"The wheat, says he, which has been reaped in a warm dry year, seems to me fitter for sowing, than that which has been gathered in a cold wet season: for in such a time as this last, all the productions of the earth are less good; their taste is less savoury; and as that corn in particular in which there is most moisture, is most difficult to keep, I infer from thence that the formation of its grain must be less perfect. I should therefore prefer wheat a year old, provided the year it was gathered in was warm and dry, to that which may have been just gathered in too rainy a season; for the same reason, I always choose for sowing, wheat of my high grounds, rather than that which has been produced in flats. The benefit accruing from all this care may, perhaps, not be extremely great; but at the same time it does not cost any thing. Let us do in Agriculture what is done in all manufactures,

where the very smallest profits, the very least savings, are not neglected. Those small articles, often repeated, make large sums in the long run, and are a real gain.

"Another thing of greater consequence first made known to me by chance, but since confirmed by repeated experiments always attended with the same success, I strongly recommend as extremely serviceable to the first sprouting of the seed. In my experimental sowings, I commonly used wheat taken from the heap in the granary; and likewise frequently, corn picked out of the ears the moment before I sowed it. I counted exactly the grains of both sorts, and suppose that few will think there could be any difference in their productions. Yet I found a considerable one. What was picked out of the ears always rose extremely well; scarce a grain of it ever missed; whereas numbers of those which were taken from the heap, never sprouted at all. I did not perceive this difference at first; but at last it struck me. I relate the fact as it is, without pretending to account for the cause of this difference, which would lead me into too long a digression. The experiment itself may be of real use, by shewing us, that instead of thrashing the wheat intended for seed at any time, without distinction, it ought not to be thrashed till a very few days, at most two or three, before it is sowed. A few hands will be able to supply the seeds-men with as much as they will want: nor will this method, which may be a means of saving somewhat in the seed, be attended with any extraordinary expence.

"Perhaps too this practice may be attended with a very valuable advantage. I have not yet made the trials necessary to satisfy myself of what I imagine; but my desire to be of service to the public induces me to mention it, that the lovers of agriculture may reflect upon it, and try such experiments as will clear up my conjectures.

"Thrashing the seed only just before it is sowed may possibly, in some measure, or perhaps entirely, prevent the cause of smut in wheat. By this I mean, that the seed which has not been mixed with smutty corn, or any way infected

mixed with smutty corn, or any way infected by its black powder, will be exempt from that distemper. Not that I take black powder to be absolutely the original cause of this distemper in corn; but I believe it is very capable of communicating it to grains which are sound.

“That nothing may be neglected which can be of any service to the seed, great care ought to be taken in thrashing the corn, especially in the manner that business is commonly performed, with flails, upon the barn floor: for a great number of grains are frequently so much bruised thereby, that it is impossible they should ever grow. If the wheat thus thrashed for seed is not thoroughly dry and hard, the mischief is still greater; much more of it being then absolutely crushed by the flail.

“As sowing in drills requires less seed than is used in the common method, it will be the easier to execute there an operation which might be too long and troublesome for so great a quantity as is used in the old way. The method which I advise, and which I have practised, is this. Let one or two beams, two feet and a half, or three feet thick, be laid across the barn floor: let the thrashers stand on each side of the beam, and take out of loose sheafs of wheat, one of which should be placed behind every man, a handful at a time, and give it two or three strokes against the beam. This will bring out a great deal of grain, which is to be reserved for seed. The ears thus shaken may be bundled up again, and afterwards thrashed out with the flail, for other uses. This method is not so tedious as some may imagine: we are sure that not a grain is bruised; and those are the most perfect which drop out thus. I think I may compare this operation with what is done in the making of wine, where the first running is always the highest flavoured and best.”

Another excellent way to separate the fullest, and consequently heaviest grains, which are undoubtedly the fittest for seed, from those which are of less value for that purpose, and at the same time to clear them from many seeds of weeds, is, to make a stout

man, with a broad wooden shovel, throw the corn with all his force towards an opposite corner of the barn, or rather a large boarded hall, which generally is fittest for this work. All the light, small, shrivelled grain, unfit for sowing, and the seeds of cockle, darnel, &c. not being so heavy as the sound solid corn, will fall short, and lie nearest to the man who throws them; while such as are large, plump, and weighty, out-flying all the rest, are separated widely, and may easily be gathered up. Experience will shew the vast advantages of sowing seed thus chosen.

The use of steeples was introduced very early into husbandry, not only as a means of preserving corn from several distempers to which it is subject, but also with a view to render the seed more fruitful. That some of them have sometimes answered the former of these intentions is undeniable: but with regard to the latter, much stronger and oftner repeated evidences than any that have yet been produced, are still wanted to confirm their boasted efficacy. We shall however give a concise account of some of the most famous of both kinds; with this previous observation, that even such of them as have not succeeded in some cases, through causes perhaps unknown to us, may possibly do well in others, when tried with proper judgment, and attention. Experiments of this kind should by all means be continued on a double account; first, to take off a prejudice which seems to gain ground, though it be not founded on any rational principle; and next, to be well assured whether these preparations do, or do not, produce any sensible effect. Experiments seldom prove useless to careful accurate observers. If they do not always answer the end proposed, they at least sometimes lead the way to other important discoveries.

The Romans had their lees of oil, decoction of cypress leaves, juice of house-leek, &c. on which they have bestowed full as much commendation as they merit. Lord Bacon seems to have been the first who paid any attention to this subject in England: but he has only pointed out the path to others: nor do I know any author

*See
Bacon
Linnæus*

who has yet given us a set of experiments with this view, long enough continued absolutely to determine what effects some kind of sleeps may have towards rendering grain more fruitful.

With regard to the seeds of plants sown in the kitchen-garden, all of them should be gathered in dry weather, when there is not any moisture upon them; and the best way to preserve them is, to hang them up in bags, in a dry room, where vermin cannot come at them. The temperature of this place should be moderate; left either too much warmth, or a too strong current of air, should make them dry, and consequently decay, sooner than they would otherwise do: and at the same time care must be taken not to exclude the air totally from them; it having been repeatedly experienced, that seeds kept long in bottles closely stopped have entirely lost the power of growing. They will keep longest in their pods, when they can be so laid up, because those coverings not only defend them from the injuries of the outward air, but, so long as they are not disjoined from them, continue to supply them with a degree of nourishment which helps to maintain them in a plump state, fit for vegetation. The seed of all soft fruits, such as cucumbers, melons, &c. are of course excepted from this general rule; for they must be well cleansed from their surrounding pulp, the rotting of which would otherwise soon corrupt them. Those of melons in particular, are so far benefited by being kept in a warmer state than would suit any others, that the plants produced from them are thereby rendered the less luxuriant, and therefore more fruitful: for which reason it is that many people carry them in an inner pocket of their breeches for six weeks or two months before they sow them, in order to exhale part of their moisture; and in effect, this will weaken them as much as two years keeping them in the common way.

Those seeds which swim upon the surface of water, when they are put to that trial of their goodness, should be rejected for sowing; because, though many of them will grow, they never

produce so good plants, or so fine fruit, as the fuller, plumper, and more perfect ones, which sink to the bottom.

The age at which it is best to sow the seeds of the plants before treated of, and the time to which they will keep good, are thus ascertained by Mr. Miller, after many years experience and very accurate observation:—

The seeds of asparagus, basil, beans, beet, borage, capficum, carrots, celeri, chervil, cressies, endive, fennel, finocchia, hyffop, kidney-beans, lavender, leeks, lentils, marjoram, marigolds, onions, parsley, parsneps, peas, purslain, radishes, favory, skirrets, spinnage, thyme, and turneps, are best sown the first spring after they have been saved; and indeed many of them will not grow if they are kept longer.

Those of cabbages, colliflowers, endive, lavender, lettuce, mustard, and sorrel, will not be the worse for keeping two years, if they are well preserved; though all of these are equally good for use the first year.

The seeds of cabbages, cucumbers, lettuces, melons, and favoys, will grow very well at the end of three years, if they have been properly saved and kept. Some of them, and particularly those of cucumbers and melons, are generally reckoned best when they are three years old; because, when they are new, the plants produced by them will grow too vigorous, and yield but a small quantity of fruit. However, none of these seeds should be kept longer than four or five years, though they will grow at the end of nine or ten: but then their plants will be weak, and their fruit small.

The seeds of fennel will frequently remain in the earth a whole year, especially if they are sown in the spring; so that whenever the plants do not come up the first year, the ground should be left undisturbed till the following spring, except only keeping it clear from weeds, and the plants will then appear.

SEEDLINGS. Young plants which have not been removed from the beds where they have been sown. It is also used to distinguish plants raised from seeds from those of the same kind which

which have been propagated by layers or cuttings.

SEED-LIP, SEED-LEAF, or SEED-LOP. A seed-basket, or the vessel in which the sower carries his seed, in order to sow it.

SEELING. A term used by horse-dealers to imply the time when a horse begins to have white eye-brows; that is, when there grows on that part about the breadth of a farthing, a parcel of white hair, mixed with those of his natural colour. This is a mark of old age, a horse never feeling before he is fourteen, and always before he is sixteen years old.

SELF-HEAL, [Prunella.] This plant grows wild in meadows and pasture grounds, and produces thick spikes of purplish flowers during the latter part of the summer. It has an herbaceous roughish taste: and hence stands recommended in hæmorrhages and alvine fluxes: it has been principally celebrated as a vulnerary, whence its name; and in gargarisms for aphthæ, and inflammations of the fauces.

It is easily propagated by seeds sown in autumn. There are several species brought from different parts of Europe and America, but all hardy enough to bear the open air of England.

SEGGRUM. Ragwort.

SEMBRADOR, an instrument used in Spain for sowing corn.

SEMIFISTULAR Flowers, are those whose upper part resembles a pipe cut off obliquely.

SEMIFLOSCULOUS Flowers, are those whose petals are hollow in their lower part; but in their upper flat, and continued in the shape of a tongue.

SEMINARY. A seed plat, or place allotted for raising plants from seed, and keeping them till they are fit to be removed into the garden or nursery.

SENA. The leaves of a shrubby plant cultivated in Persia, Syria, & Arabia; from whence they are brought, dried & picked from the stalks, to Alexandria in Egypt; and thence imported into Europe. They are of an oblong figure, sharp pointed at the ends, about a quarter of an inch broad, and not a full inch in length, of a lively yellowish green colour, a faint not very disagreeable smell, and a subacid, bitterish, nauseous taste. Some inferior

forts are brought from Tripoli and other places: these may easily be distinguished by their being either narrower, longer, and sharper pointed; or larger, broader, and round pointed, with small prominent veins; or large and obtuse, of a fresh green colour, without any yellow cast.

Sena is a very useful cathartic, operating mildly, and yet effectually; and, if judiciously dosed and managed, rarely occasioning the ill consequences which too frequently follow the exhibition of the stronger purges. The only inconveniences complained of in this drug are, its being apt to gripe, and its nauseous flavour.

Bastard SENA. See **CASSIA.**

Bladder SENA. See **BLADDER SENA.**

Jointed Podded SENA, [Coronilla.]

This is a shrubby plant of which there are several species differing in height, some rising about two feet from the ground, others trailing on the ground, and one rising to the height of five or six feet. Some are annuals, and others perennial, the latter as well as the former are propagated by seeds.

Scorpion SENA. Jointed Podded SENA.

SENGREEN. Houfteleek.

SENEKA ROOT. Senecka, rattlesnake root; the root of a species of *polygala*, which grows spontaneously in Virginia, and bears the winters of our own climate. This root is usually about the thickness of the little finger, variously bent and contorted, and appears as if composed of joints, whence it is supposed to resemble the tail of the animal whose name it bears: a kind of membranous margin runs on each side, the whole length of the root. Its taste is at first acid, afterwards very hot and pungent.

This root is not at present much known in the shops. The Senegaro Indians are said to prevent the fatal effects which follow from the bite of the rattle-snake, by giving it internally; and applying it externally to the wound. It has of late been strongly recommended in pleurisies, peripneumonies, and other inflammatory distempers; in these cases, Lemery, du Hamel, and Jussieu, experienced its good success. (see the French memoirs for the years 1738, 1739.) Its more immediate effects are those of a diu-

retic, diaphoretic, and cathartic; sometimes it proves emetic: the two last operations may be occasionally prevented, by giving the root in small doses, along with aromatic simple waters, as that of cinnamon. The usual dose of the powder is thirty grains or more.

Some have likewise employed this root in hydropic cases, and not without success: Bouvart (in the memoirs above-mentioned, 1744.) relates examples of its occasioning a plentiful evacuation by stool, urine, and perspiration, and by this means removing the disease, after the common diuretics and hydragogues had failed: where this medicine operates as a cathartic, it generally proves successful: if it acts by liquifying the blood and juices, without occasioning a due discharge, it should either be abstained from, or assisted by proper additions.

Gum SENECÁ. This is brought from the coast of Guinea, and usually mixed with, and commonly sold in the shops for Gum Arabic.

SENSITIVE PLANT, [*Mimosa.*] There are several kinds more or less irritable of this uncommon plant, natives of the West-India islands, and the warmer parts of America; some of them are annual, and others perennial. They require the same general management with other exotics of a warm climate; under this genus of plants are ranged the different species of *Acacia*.

SEPTEMBER. The ninth month of the year.

Products of the Kitchen-Garden.

Cabbages, carrots, artichokes, parsneps, potatoes, shallots, onions, leeks, garlick, cellery, endive, cabbage lettuce of several sorts, scorzonera, falfasy, mushrooms, cucumbers for pickling, melons, kidney-beans, rouncival peas, marrowfat pease, garden beans planted late, beets, turneps, radishes, large rooted parsley, black and white Spanish radishes, sprouts from the early cabbage stalks; and for soups, chervil, sorrel, tomatos, gourds, squashes, burnet, cardoon, chard beets, parsley, origanum: as also thyme, basil, marjoram, hyssop, winter-favory, and all sorts of young salad herbs.

Fruits in Prime, or yet passing.

Peaches; the nivette, Portugal peach, belle-garde or gailande, rosfanna, pourpree tardive, purple alberge, old Newington, teton de Venus, pavy ropal, admirable, monstrous pavy of Pomponne, Catharine, rambouillette, malacoton.

Plums; white pear plum, bonum magnum, green gage, reine claudie, perdrigon, St. Catharine, and imperatrice, damsons, and bullace.

Pears; poir de Prince, autumn bergamot, swiss bergamot, brute bonne, beurre-rouge, Doyenne or St. Michael, verte-longue, mouille bouche d'autonne, summer boncretien, rouffelet de reins.

Grapes; the chasselas, white muscadine, red muscadine, black, red, and white morillon, currant or corinth grape, parsley-leaved grape, black, red, and white frontinias, Warner's red hampburgh, black hampburgh, St. Peter or Hesperian grape, orleans, malmsey, miller grape, damask grape, pearl grape, party-coloured grape, with some others.

Several sorts of figs, walnuts, filberts, hazle-nuts; and, against north walls, some currants and morella cherries, melons, quinces, medlars, lazaroles.

Apples; embroidered apple, pearmain, golden rennet, red calville, white calville, courpendu, aromattick pippin, rennet grise, catthead, quince apple, spice apple, with some others.

In the bark-bed, the ananas, or pineapple.

Plants in Flower.

Annual stock-gilliflowers, scabiouses, sweet sultan, marvel of Peru, female balsamine, china pinks, Africans, French marigolds, hollyhocks, chrysanthemums, capsicums, lupines of several sorts, sweet-scented peas, Tangier peas, double parmica or sneezwort, true saffron, carthamus or bastard saffron, autumnal crocuses, cyclamens, colchicum, autumnal hyacinth, asters of several sorts, five or six sorts of golden-rod, double sopenwort, double camomile, larkspurs, tree primrose, polyanthuses, spiderwort, auriculas, snap-dragon, Venus looking-glass, Venus navelwort, candy tuft, China starwort, ox-eye, helianthemums.

themums, heliotropium, lychnis, campanulas, autumnal gentians, scarlet bean, oriental perficaria, stramoniums, solanums, alkekengi with large blue flowers, fantolina, chrysocoma, chelone with white and red flowers, poliums, amaranthoides, xeranthemums, jaceas, oriental mallow, lavatera, dwarf annual stock, ketmia vesicaria, several sorts of sun-flower, elichrysums, eupatoriums, hearts-ease, red garden valerian, catanance quorundam, ruyschiana, rudbeckia, silphium, large blue aconite, wholesome wolfsbane, cerinthe, alysson fruticosum, alyssoides, dianthera, hydrangea, tetragenotheca, monarda, ambrosia, old man's head pink, anonifes two or three sorts, scrophularias, dodartia, echinums, bugloss of three or four kinds, convolvulus of several sorts, double and single Indian nasturtium, with some others.

Hardy Trees and Shrubs now in Flower.

Jasmine, monthly rose, musk rose, passion-flower, arbutus, pomegranate with double flowers, shrub cinquefoil, mallow tree, althæa frutex, ketmia syriaca, laurustinus, honeysuckle, scorpion fena, agnus castus, rhus of several sorts, celastrus, medicago frutescens, shrubby St. Johnswort, Itea, clethra, kalmia, azalea, dwarf medlar from Crete, Spanish broom, Pocock's bladder fena, hamamelis symphoricarpus, cistuses, lucca broom, cytissus hirsutus, tamarisk with some others.

Medicinal Plants, which may now be gathered for Use.

Calamus aromaticus, winter cherry, arum or cuckow-pintle roots, wholesome wolfsbane roots, barberry fruit, hemp seed, capsicum or Indian pepper, bastard saffron, cucumber seed, bitter vetch seed, fennel seed, fenugreek seed, alfander seed, walnut fruit, lettuce seed, lentil seed, lovage seed, gromwell seed, flax seed, hops, millet seed, sweet fern seed, garden cress seed, macedonian parsley seed, candy carrot seed, common parsley seed, radish seed, elderberries, favin, fesceli seed, flixweed seed, mustard seed, nightshade, goldenrod.

Plants now in Flower in the Green-House and Stove.

Oleanders with double and single flowers, colutea Æthiopia, amomum

Plinii, myrtles, tree candy tuft, scabious tree, houseleek tree, several sorts of ficoidefes, cotyledons, aloes, Indian fig, double nasturtium, Spanish jasmine, azorian jasmine, yellow Indian jasmine, arabian jasmine, polyanthuses, Guernsey lily, belladonna lily, leonurus, cyttus incanus, capers, granadillas, sensitive and humble plants, heliotropium arborefcens, amber tree, apocynums, lantanas of several sorts, abutilons, fritilaria crassa, canna indica, bean caper, Indian arrow-root, African alcea, African groundfel tree, indigo, palma chritti, spurges, euphorbium, physick nut, elichrysums, grewia, papaw, turnera, tramcniums, diefmas, chironia, anemonospermofes, solanums, spartiums, dorias, lotus hæmorrhoidalis, cardinal's flower, cassias, fena alexandrina, fena spuria, ketmias, piercea, pancratiums, crinum two sorts, hæmanthus, plumeria, bauhinia, martynia, milleria, cestrems, helleborine, rauwolfia, malpighia, convolvuluses, bassella, alkekengi three or four sorts, spigelia, aldenlandia, maurocena, cliffortia, Lotus with black flowers, African wood sorrel, ornithogalum luteum, kleinia, saururus, anthericums, ginger, coltus, kempferia, volkhameria, galingale, d'ayena, ruellias, barberia, sweet-scented heliotrope from Peru, physica, commelina, rondelitia, upright torch thistle, clutia, geraniums of several sorts, arums, tournefortia, with some others.

SEPTOIL. See TORMENTIL.

SERMOUNTAIN. See LASERWORT.

SERPENT'S TONGUE. See ADDER'S TONGUE.

SERVICE TREE, [*Sorbus.*] The right service tree is a tall and beautiful tree, and very well worth planting for its timber. There are two or three other kinds which are called by the same general name, and they agree in the nature of the wood, as well as in the flowers, and the shape of the fruit; but they vary in the shape of the leaf, and the degree of goodness. These other kinds are distinguished by the names of, 1. The Service Tree, with the fruit red in the middle. 2. The short fruited service; and, 3. The wild service or quick beam.

The first is the most valuable, and the

the two next come nearest its nature. The last differs more, and is not generally accounted of the service kind, but called by a distinct name. The flowers of the others are much alike; they appear early in spring, and the fruit is very rough to the taste till thoroughly mellow. All the summer it makes a beautiful appearance.

The best soil for the Service Tree is a tough and firm loam, with some rich earth among it. Such are very common toward the foot of hills, or on any gentle ascent, and these are the best situations also for this tree. When the soil is too light, the tree grows very slowly; and when it is too dry, the fruit ripens very poorly, neither do the leaves stand their time. When the service is judiciously planted, it grows quick, and answers very well to the husbandman; but when the plantation is made at random, none answers worse. Few know its value; because few have given it a fair trial; nor is its timber so much known, or so common to be had, as it ought to be, for this very reason. He who will fall into the method of raising these trees, will do a service to the public, as well as to himself; for there needs but a beginning to incite others, and the consequence would be a ready market for the timber, and it would prevent the importation of a great deal of foreign fine wood; which, however called by sounding names, is inferior to the service tree in beauty, and in value.

The service may be raised from seed, but the better way is by layers, which take root very freely, and are naturally produced in great abundance. Those who have a mind to raise them from seed, must sow them in shallow trenches, in a nursery, and keep them clear from weeds. At two years old they must be planted out at a yard distance, and three or four years after that, be set where they are to stand. Such as want only a few trees, may conveniently enough raise them from suckers, which grow about the old trees in great abundance. These are to be transplanted early in spring.

Which ever way the service tree be raised, it should be carefully trimmed up for the first eight or ten years, that it may not spread into branches till at a certain height, when there will be a

handsome trunk for timber. After this it is best left to itself.

It is a very proper tree for avenues, clumps and hedge rows, and 'tis great pity that it is not more frequent. Its beauty should be an inducement to the gentleman, and its quick growth and valuable wood to the husbandman.

The Quick Beam, or, as some call it, the Quicken Tree, or according to others, the Wild Service, or Mountain Ash, for it has all these names, is properly a kind of service tree. It is a beautiful but a small tree, being one of the least of those that are accounted timber trees, or planted for that purpose.

The bark is pale and smooth, the leaves are beautifully formed, each being composed of many smaller, which are long, narrow, and finely dented at the edges. The flowers stand in great bunches at the end of the branches, and are whitish, large and handsome: and after these come beautiful berries red like coral.

This elegant little tree is a native of England, and is a great beauty and ornament to our coppices and hedge-rows, in those counties where it is most frequent. Its fair appearance has occasioned its being taken also into gardens, where it makes a fine figure in the wilderness quarters.

The best soil for the quick beam is a light and dry loam; and it grows best on a somewhat rising situation. No tree is better suited to thrive in hedge-rows, where the soil is light and dry. It roots itself very firmly; and shoots up in a moderate time to its full stature.

The best way of raising the quick beam is from seed. The berries are to be gathered when full ripe, and sown after they have been spread a fortnight in a dry airy garret. They shoot up very regularly and freely, and should be removed from their first bed to some other part of the nursery at two years growth, and planted at two foot distance. Three or four years after this, they are fit to be transplanted to the places where they are to stand; and a small nursery will thus, with little or no trouble, raise such a quantity as will stock a large piece of ground; where being set in hedges, or the banks of coppice woods, & other such places, they will quickly grow to some value.

Those

Those who would only raise a few trees, may take up suckers from about the old ones, for they rise in abundance, and grow freely.

The quick beam should have very little trimming or lopping; for, as it is not to be carried to a large tree, 'tis best left to nature, the branches of themselves growing with a pretty irregularity.

— **HORN-BEAM**, [*Cassinus*.] This by mistake in its alphabetical arrangement is referred to **SERVICE**, and accordingly we have on that account placed it here.

The horn-beam is a beautiful and regularly growing tree. Its bark is brown and tolerably smooth, and the wood firm. The leaves are short and indented at the edges, they are somewhat like those of the elm, but of a more beautiful green. The flowers are small and inconsiderable. They hang in catkins like those of the hazel; and the fruit, which is dry and light, grows on a different part of the tree.

There are four kinds of this tree raised in nurseries. 1. The common Horn-Beam. 2. The Hop Horn-Beam. 3. The flowering Horn-Beam; and, 4. The Horn-Beam with striped leaves: but the husbandman who would plant for advantage, has nothing to do with any of these except the common kind.

The horn-beam is an extremely hardy tree, it will grow in the worst soil and bleakest situation. For this reason it is very proper to be planted on the tops of cold hills, and in places so exposed, that others will not grow on them. It will thrive very well in hedges, and in woods; and is excellent for clumps in the bleakest and worst parts of parks, and it every where engages the eye by its beauty.

The best way of propagating the horn-beam is by layers. It may also be raised from seeds, but this is a more tedious method, and the other does as well. If the seeds are preferred, they must be gathered in September, and sown three weeks or a month after, laying them in the mean time in a dry airy place. They will sometimes come up in five or six months, sometimes they will lie till the following spring. They are to be thinned soon after they

appear, and kept clear of weeds, and at two years old to be removed to another part of the nursery, where they must be planted at a greater distance, and 3 or 4 years after they are to be finally removed, and set where they are to remain. But the method by layers is much more expeditious, and the trees grow as beautiful that way as the other.

SETTER. A kind of fetter or issue, made by cutting a hole in the dewlap of an ox or cow, and putting into the wound a sort of tent formed out of the root of helleboraster; by which the ill humours vent themselves.

SETTERWORT. Bearsfoot.

SETWELL. Valerian.

TO SEW, or **GO SEW**, to go dry; *object,* spoken of a cow.

SHADDOCK. See **ORANGE TREE**.

SHAKING. A disease incident to sheep, consisting of a weakness in their hinder quarters, so that they cannot rise up when they are down. No cure is yet known for it.

SHARE of a Plough. That part which cuts the ground, the extremity forward being covered with a sharp-pointed iron, called the point of the share; and the end of the wood behind, the tail of the share. See the *artical* **PLOUGH**. *Coulter*.

SHAVE GRASS. Horse tail.

SHAW. A wood that encompasses a clove.

SHEAT of a Plough. That part of the plough which passes through the beam, and is fastened to the share.

The sheat, or as it is sometimes called the fore-sheat, there being another piece of timber behind it called the hinder-sheat, should be seven inches wide, and fastened to the beam by a retch (a piece of iron with two legs) and by a wedge driven by it into the hole of the beam. The angle contained between the sheat and the beam of the plough should be about forty-two degrees.

SHEAVES. Bundles of corn bound up in the field. See *Stacks*.

SHED. A slight temporary covering.

SHEEP. Next in value and consideration to the larger of the horned cattle comes the sheep; an article of vast concernment to the farmer: cheap in the purchase; easily fed; and returning

object,
to be raised in nurseries
— Sheat of a Plough. See Coulter.

ing a great profit by many several ways: even its dung upon the land often paying for all it eats while fed upon it.

We have already advised the farmer in the choice of his larger cattle, to proportion their kind to the degree of richness in his land: it is not the fortune of every husbandman to labour upon a fruitful soil: but the worst is not without its uses; and sheep are a flock for such as will not support the larger kinds. We see them thrive upon the most barren downs; and the farmer will always find them ready to fatten upon such grounds as will not keep the other kinds alive.

As the oxen of England are of very different breeds, though all the same in kind, so it is with the sheep, which differ extremely according to the several breeds in different places; and are therefore suited one to one kind of land, and another to another.

We shall advise the husbandman to great caution, in the stocking his farm with sheep: and this under two heads, first, with respect to the breed, and secondly, for his choice of the creatures themselves; for there are, in every breed, many that are much finer than others, and these he should chuse. Half the profit that might be made by this part of the husbandman's stock, is lost by carelessness in the first choice, and in the following management: but an error in the first choice is the most fatal, because it is irrecoverable, except by beginning over again. We shall therefore first consider that, and laying before the practical husbandman the properties and particular uses of the several different breed of sheep that we have in England, shall advise him in his choice according to his main design, his best advantage, and the nature of the land he has to stock with them.

With respect to the fineness of the wool, there is a small breed, distinguished by their black face and thin coat, that exceed all others. They bear but a small quantity in comparison of many, but the quality of it makes amends. These are easily known by sight. They were first raised in Herefordshire and Worcestershire. And for that reason are known in many

places by the name of the Herefordshire or the Worcestershire breed. A dry, barren, and exposed pasturage will very well feed this kind, for they are hardy; and the shorter the grass on which they feed, it is observed the finer the wool. They are also excellent for the table, the joints being small and full of a fine gravy. We see this kind kept in many parts of England, in gentlemen's parks and lawns, and they every where make a pretty appearance.

The kind most opposite to these are a large, tall, and heavy-loaded sheep: these have strong limbs, and a stout gait in walking: they carry a great deal of wool, but it is coarse. These were first bred in Lincolnshire, and in some of the adjoining counties; and are fond of living in salt marshes. They have been taken into many parts of the kingdom, to other ground, where they do not keep entirely to their own nature: and yet are called, from the place whence they were brought, the Lincolnshire breed.

The flesh of these is large grained, but moderately tailed, and no where very much esteemed. However, as they are observed to succeed better than the other breeds, in places toward the sea, it may be proper for the husbandman who has land in such a situation, to take some of them: though not for his whole stock in this kind.

Thirdly, there is a breed between these two kinds, which in general should be preferred to either. This is a large, tall, and strong sheep, of the best shape of any, & having the deepest coat of wool. This was originally fed in several of our midland counties, and has thence been called by some the Midland Breed; and by others, from some particular counties famous for them, the Leicestershire or Northamptonshire breed. The wool of this kind, though not altogether so good as that of the small black-faced sheep, is greatly preferable to that of the Lincolnshire breed; and the quantity is so much greater than that of the smaller kind, that it very well makes amends for its inferior quality.

The flesh of this sheep is the common mutton, not in any thing particular for goodness or badness: and it will

do very well upon the common pasture grounds, and thrive upon every common kind of food. For these reasons it is fit that these sheep should be most generally bred.

When the husbandman has very poor pasture grounds, let him take the Herefordshire breed; and when he borders upon the sea-coast, or upon the shores of large salt-water rivers, let him prefer, in part at least, the Lincolnshire kind; but when he has none of these particular reasons to byass him, let him prefer this midland breed to any other.

To these three, which may be called the general breeds of sheep, we shall add a few words on two other kinds.

The sheep bred in the northern parts of this kingdom, are a large and big-boned sort; they approach to the Lincolnshire kind in shape; but their wool is harsh, rough, and hairy; these are called by some the Yorkshire breed.

Their flesh is inferior to that of several other kinds, as well as their wool; but they have an advantage over the others, in that they will stand the coldest weather, and take care of themselves where some of the tenderer breeds would be lost. This may recommend them to the husbandman whose lot has thrown him far north, where the other kinds will not thrive; but he should not introduce them into his farm in any other situation, for they are less profitable than any others.

The last kind, or breed, to be mentioned, is in a manner peculiar to mountainous countries; and is most frequent in Wales. It may therefore be called the Welch breed. This is a small, but well-shaped sheep; and so hardy that it will live any where. The flesh is excellent for the table. But the wool is not only small in quantity, but is the worst produced by any breed of sheep in this country.

The husbandman will see by this account, that it never can be his interest to admit this breed among his stock, unless compelled to it by the particularity of his situation. The little black-faced sheep of Herefordshire has the same advantage in the excellence of its flesh; and it has, into the bargain, the finest wool. Therefore it is highly to be preferred, where it will thrive: and it will do on very poor and very ex-

posed ground. However, if at any time the farmer finds his pastures so poor, so exposed, and miserable, that they will not support this kind, all he has to do is to call in the other, or Welch breed, which will live any where.

Having laid before the husbandman this account of the three principal different breeds of sheep in England, and the two other kinds that are in a manner particular to certain places, the next part of our care must be, the instructing him in his choice, not only of the breed he shall fix upon, for the grounds of that choice have been laid down already, in their several characters; but of the particular creatures he shall fix upon in the breed that is most suited to his purpose.

But to this particular let us premise a few words upon his general choice, that is, as to the breed. He sees here five several kinds of sheep, some large, others smaller; and some yielding a greater, some a smaller quantity of wool, which is also on one breed fine, and on another coarser. He has his choice given him among all these, for we suppose him not yet to have begun stocking his farm with this article: it would be natural for him to prefer at once the finest kind as most profitable; but let him not only remember, but strictly observe what we have just laid down, that every breed will not suit every pasture.

He has now seen what are the kinds of sheep; let him examine what is the nature of his land; and when he has impartially considered this, let him fix upon that breed which will thrive best on that kind of pasturage he has at his command, for this we have expressly told him with respect to each; and let him then purchase for his farm that breed which he sees will be most suited to thrive on it.

This he may be assured of, and he may extend the rule farther than barely to his sheep, that he will have more profit from the very worst kind that shall thrive upon his land, than he possibly can from the very best that shall starve upon it.

One thing farther is to be noted before we come to the particular choice, that is, the difference of the land which he is to bring them to from that whence he purchased them: this must be in

tures, and finds that his lambs want milk, it is best to sell them at once to the butcher: for it is not the running by the ewe that will preserve them, she can be of no service against such an accident, if she wants milk for their full support.

Those lambs that are intended to be bred as Rams, should be separated from the rest, and the others gelt in time. The sooner this is done the better: for every creature bears this operation best while it is tender, and is with the dam. If this operation have been neglected at a proper time, it must be done toward the end of September, at which season it is best to separate the breed or this purpose, and see it be done perfectly.

SHEEP'S FESCUE Grass, [*Festuca ovina*.] This grass is much esteemed for feeding of sheep in Sweden, where they have not such downs as we have.

Gmelin says, that the Tartars choose to fix, during the summer, in those places where there is the greatest plenty of this grass, because it affords a most wholesome nourishment to all kinds of cattle, but chiefly sheep: and he observes, that the sepulchral monuments of the ancient Tartars are mostly found in places which abound with this grass, which shews, adds he, that it has long been valued among them.

This grass abounds in many parts of England and Wales, and particularly on all the finest sheep pastures in Herefordshire, Oxfordshire, Norfolk, &c. Mr. Stillingfleet observes, that it is a very early grass, and that, contrary to what Linnæus says, either sheep, or some other animals do eat the flowering stems of this grass; for, when he searched for it upon Benstead downs, he could see no part of it but the radical leaves, except among bushes near the hedges, where it was guarded from the sheep.

SHEARING of Sheep. There are two articles in the condition of the wool which enhance its price. These are, fattynefs and cleanness. And it is in the owner's power to give it these in a much greater degree than they otherwise would be, by his care and attention. The first will be increased by the time of shearing, the other by cleanliness.

The fattynefs of the wool will never give it any value, unless it be at the

same time clean; and the cleanness will discover its imperfection, instead of enhancing the price, if it be not fatty.

This fattynefs of the wool is owing to the creature's sweating, and therefore there must be some hot weather past before it is sheared, that it may have sweated well: not once or twice, for that will answer no purpose: but several times for days together, that the moisture may have lodged itself about the wool, and in a manner oiled it so, that the necessary washing of the creature for cleanliness, shall not be able to carry it off.

Unless the sheep have sweated well before the washing, that will do harm equal to its good, for as much as it increases the price by cleanness, it diminishes it by taking off the fatnefs. It is very necessary sheep should be well washed before they are sheared: but the farmer is to know at the same time, that unless they have well sweat in their wool first, this will hurt it.

Upon this foundation depends all the art of sheep-shearing. The best season of the year for doing it is toward midsummer. But let the weather determine, and let not the farmer be carried away by the name of any day, or month, against the use of his reason.

SHEPHERD'S Needle. See *Sweet Fern*. *Chenop.*

SHEPHERD'S POUCH. } [*Bursa Pa-*
SHEPHERD'S PURSE. } *floris*.] This plant is common in waste places; and is found in flower all the summer. Shepherd's purse has long been celebrated as an astringent, and strongly recommended in diarrhoeas, dysenteries, uterine fluors, and in general in all diseases where astringents of any kind can avail; but present practice pays little or no regard to it.

SHEPHERD'S STUFF. Teazel.

SHOODS. Oat hulls.

SHOULDER-WRENCH. To understand the nature of these infirmities, it will be necessary to remember, that the blade-bone of the shoulder is fixed to the body, not by articulation or jointing, but by apposition, being laid to the ribs, and fastened by the muscles which lie under and above it; so when a horse happens to receive a blow or strain in the shoulder, the tendons of those muscles are stretched and relaxed; and when

sploit,

Shors
Pe-cut.

Shors.

Shoch of 1024. See p 1101.

that is violent, it is called a *shoulder-splait*, and becomes more or less dangerous, as the horse is more or less hardy.

Every one sufficiently knows, that a slip, false step, or any undue position of a horse's leg, will strain and weaken the shoulder, by stretching those ligaments; and sometimes the shoulder is affected by a hurt or bruise on the withers, the reason of which may be easily enough conceived, by any one who will examine into the structure of these parts; but when the accident proves not so violent as to shew a looseness and swelling, it is not easily discerned whether the lameness be in the shoulder, in the foot, or any other joint. The best judges have therefore, in all such cases, thought it proper to examine all parts from the shoulder downwards, and even to unshoe the horse, that they may know certainly where to apply their remedies. But the infirmities of the shoulders may be distinguished from those of the feet, by having a horse put to exercise; for if the lameness be in the feet, he will halt most when he is ridden; but if it be in the shoulder, the warmer he grows, the less he will halt; and, if the wrench be violent, he will be apt to cast his leg outwards, forming a circle as he goes. But if none of these signs are perceivable in his gait, the surest way is to turn him short on the lame side, for that tries the muscles the most of any thing; so that if the grief be in the shoulder, he will set his foot on the ground hardly, and endeavour to favour his shoulder.

But in order to the cure, a distinction ought to be made between an old grief, and a hurt that is newly received; for, in a fresh strain, the first intention is to apply such things as are proper to allay the heat and inflammation, and prevent a too great afflux of matter to the part; whereas in an old grief, those things are chiefly made use of that attenuate and render the superfluous humours fit to pass thro' the pores; and therefore, as soon as you perceive your horse lamed in the shoulder, by a fall, or any other accident, after he has been bled on the opposite side, a cold restraining charge may be applied of vinegar, bole, and the whites of eggs. Verjuice may be used instead of vinegar upon the road,

which may be had at any farm-house; for the sooner a cold application is made, the better. The part ought, in the beginning, to be refreshed 3 or 4 times a day, with a sponge dipt in vinegar and bole; and after that the following plaister may be applied:

Take common pitch half a pound,
de Minio plaister or diachylon six
 ounces, common turpentine
 four ounces: melt them altogether in a pipkin over hot embers, continually stirring; and when these are dissolved, add bole in fine powder four ounces, myrrh and aloes, of each an ounce. Spread this upon the horse's shoulder, before it grows cold, and put fine stocks of the colour of the horse all over it.

But when the lameness happens to be of an old standing, the following ointment will be of great service.

Take of the soldiers ointment, or nerve ointment, half a pound,
 ointment of marshmallows six
 ounces, rectified oil of amber
 four ounces. Mix them all together, & with a hot bar of iron held as near as possible, chafe the part twice a day; and, at some intervals, with camphorated spirits.

The soldiers ointment is made as follows:

Take fresh bay-leaves three pounds,
 rue two pounds and a half, marjoram two pounds, mint one pound, sage, wormwood, costmary, basil, of each half a pound,
 oil olive twenty pounds, yellow wax four pounds, Malaga wine two pounds.

Bruise all the leaves, and boil to the consistence of an ointment, and keep it for use. This may be made in a smaller quantity by those who keep but few horses.

Sollysell recommends the ointment of *Montpellier* as an excellent remedy in all strains in the shoulders, &c. It is composed of the ointment of roses, marshmallows, populeon and honey, of each equal quantities. The oils of turpentine, earth-worms, oil of *Petre*, *St. John's* wort, nerve oil, bear's greafe, horse greafe, mules greafe, deers suet, badgers greafe, and many such things, are also used in the same intention.

But

But if the lameness does not yield to these things, recourse may be had to roweling, or to the fire; but the last is preferable, and less painful than the usual method of roweling, by bruising and blowing up the shoulder.

And, therefore, with a hot iron, make a circle the breadth of a trencher round the joint, and within the whole circle pierce the skin, leaving about an inch between the holes, and to each apply yellow wax and rosin melted together, until the escars fall off, and then dress them every day with turpentine and honey, applying plaisters as directed, until the sores are dried up.

Some advise swimming a horse for a shoulder-splait, from an opinion of the joint being out; but if it were really so, he must swim with three legs, which is almost as impossible as for a door to move without hinges. But yet swimming is not always unsuccessful; and, in all old griefs, it becomes serviceable in the same manner as a cold bath, by helping perspiration, and giving a more lively motion to the obstructed matter; and therefore the morning is the properest time, because the water is then the coldest, and it should be a continued custom for some time to do effectual service.

But, in all other respects, the horse should be put to no kind of labour, neither ought any one to ride him, for a weight upon his back must needs add to the infirmity, as the greatest stress lies upon the shoulders; but it will be very proper for him to be walked out every day, when the weather is favourable; and his exercise may be increased as his shoulder recovers strength; a patten shoe may also be set upon the opposite foot, if he leans too much upon it.

SHOVEL. A well-known instrument, consisting of a long handle, and a broad blade, with raised edges.

SHOWEL. A blind for a cow's eyes.

SHROUD. A shelter, or harbour.

SHUCK. A hulk or shell.

SICKLE. A toothed hook, with which corn is reaped.

SIDE-SADDLE. A saddle for women to ride on horseback.

SIDE-SADDLE Flower, [*Sarracena.*] There are two species; one growing in the bogs of most parts of North-

America, which has a strong fibrous root, which strikes deep into the soft earth, from which arise five, six, or seven leaves, in proportion to the strength of the plant; these are hollow like a pitcher, narrow at their base, but swell out large at the top; their outer sides are rounded, but on their inner they are a little compressed, and have a broad leafy border running longitudinally the whole length of the tube; and to the rounded part of the leaf there is on the top a large appendage or ear standing erect, of a brownish colour; this surrounds the outside of the leaves, about two-thirds of the top. From the center of the root, between the leaves, arises a strong, round, naked foot-stalk about a foot high, sustaining one nodding flower at the top, which has a double empalement; the outer one is of one leaf, divided into five parts to the bottom, where they are connected to the foot-stalks; these segments are obtuse, and bend over the flower, so as to cover the inside of it; they are of a purple colour on the outside, but green within, having purple edges; the inner empalement, which is composed of three green leaves, falls off; within these are five oval petals of a purple colour, which are hollowed like a spoon; these cover the stamina and summits, with part of the stigma also. In the center is situated a large, roundish, channelled germen, supporting a short style, crowned by a very broad five-cornered stigma, fastened in the middle to the style, covering the stamina like a target; this is green, but the five corners, which are stretched out beyond the brim, are each cut into two points, and are purplish. Round the germen are situated a great number of short stamina, joining the sides of the germen closely, which are terminated by target-shaped furrowed summits, of a pale sulphur colour. When the flower decays, the germen swells to a large roundish capsule with five cells, covered by the permanent stigma, filled with small seeds.

The second sort grows naturally in Carolina, upon bogs and in standing shallow waters. The leaves of this sort grow near three feet high, small at the bottom, but widening gradually to the top. They are hollow, and

arched

arched over at the mouth like a friar's cowl. The flowers of this grow on naked pedicles, rising from the root to the height of three feet; the flowers are green.

These plants are esteemed for the singular structure of their leaves and flowers, which are so different from all the known plants, as to have little resemblance of any yet discovered; but there is some difficulty in getting them to thrive in England, when they are obtained from abroad; for as they grow naturally on bogs, or in shallow standing waters, so unless they are constantly kept in wet they will not thrive; and although the winters are very sharp in the countries where the first sort naturally grows, yet being covered with water, and the remains of decayed plants, they are defended from frost.

SIEVE. Hair, lawn, or basket-work, strained on a hoop, for separating the flour from the bran, the dust from corn, &c. See *Strain*.

SIG. Urine, chamber-lie.

SIKE. A little rill, a water furrow, a gutter.

SILK GRASS. Dogbane.

SILVER BUSH. Jupiter's beard.

SILVER TREE, [*Protia*.] This is a native of the Cape of Good Hope, of which there are no less than twenty species, but all require the assistance of a stove or green-house.

SILVER WEED, [*Potentilla*.] Cinquefoil.

SIMAROUBA. A bark with pieces of the wood adhering to it, brought from Guiana, in long tough pieces, of a pale yellowish colour, and a pretty strong bitter taste. It has lately come into esteem in dysenteric fluxes: a decoction of half a dram is given for a dose, and repeated at intervals of three or four hours.

SIT-FAST. A part of a horse's hide turned horny, and which if it cannot be dissolved, and softened by rubbing with mercurial ointment, must be cut out, and afterwards healed as a fresh wound. It generally proceeds from a warble. *Spina-Corina*.

SIZZING. Yeast, or barm.

SKID. The chain by which the wheel of a waggon is fastened, so as to prevent its turning round, upon descending a steep hill.

SKILLING. An isle, or bay of a barn.

SKIRRETS. A kind of parsnep, which thrive best in a light and moist soil. They are propagated either by seeds, or by slips from the root, which is composed of several fleshy fibres, about the thickness of a man's little finger, terminating in one head. This root, for which only the skirret is cultivated, is reckoned wholesome and nourishing: but it is flatulent, and too sweet tasted for many palates. The seeds of this plant, which generally produce larger roots than the slips, should be sown about the end of March or the beginning of April, and if they are good, the plants will appear in five or six weeks. When they have put out their leaves so as to be well distinguished from weeds, the ground should be carefully hoed; and this should be repeated three several times, in the same manner as is practised for carrots. In these hoeings, which should be performed in as dry weather as possible, the better to destroy the weeds, the skirrets, whether sown in broad-cast, or in drills, should be thinned the distance of at least three inches from each other. In autumn, when the leaves begin to decay, the roots will be fit for use. These may be preserved all the winter, and till they begin to shoot in the spring, when they will become hard and sticky. So will also those which run up to feed the first summer, and which should therefore be pulled up and thrown away.

The season for propagating skirrets by offsets is in the spring, before they begin to shoot. The old roots should be dug up then, and the side roots should be split off with an eye or bud to each. These should be planted four inches asunder, in rows sufficiently distant to leave room for digging between them.

SLAB. The out-side plank of a piece of timber when sawn into boards.

SLECKS. Small pit-coal.

Ladies SLIPPER, [*Cypripedium*.] This plant must be taken in the place where it grows, and transplanted into the gardens.

SLOE TREE. See *PLUM TREE* and *BLACKTHORN*.

SMALLAGE, [*Apium graveolens*.] A plant growing naturally by the sides of brooks and ditches in many parts of England.

England, and is rarely cultivated in gardens. Those however, who are fond of it in their pottage, may raise it in a moist soil, either by slips, or from seeds sown in March. This seed is reddish, and pretty big, of a roundish oval shape, a little more full and rising on one side than on the other, and streaked lengthwise.

SMUT. A disease in corn, which partially or totally destroys the grain in the ear. When it is in the full height of its mischief, the whole inner substance of the corn is black as ink, of a faint, nauseous taste, a bad smell, and of offensive qualities, occasioning sickness in those who eat bread made of flour in which there was much of it. In this case, if the corn be bruised, and steeped in water, it presently shews innumerable worms, like little eels, living in every part of it.

When the disorder is not arrived to this full height, the inner substance of the corn is not then entirely hurt, but the outside is spotted with black; and, in some corns, a part of the flour within. This makes a great change in the matter; for the first is wholly destroyed, whereas the other may sometimes be recovered for certain uses, though not for all services.

England is more subject to this disorder of corn than any other country we know; and this is owing to our wet summers: in the warm and naturally dry countries it is not known at all, or not in a degree worth notice.

In Egypt no age ever saw a black grain of any corn; for in Egypt they have no rain: and even in Italy it is little regarded now; and was so slighted in earlier time, that all the Roman writers have not a name for it. There is not a word of smut in the Latin language. The reader must not censure this assertion, if some modern writers, in that language, have attempted to name it: they use words which properly express blight and mildew: to both these the old Roman fields were subject, therefore they have terms to express them; but this was little known, and less regarded.

For the best known prevention of this disease, we recommend good tillage, with a due course of crops and fallows; and particularly change of seed. In fallows we include turnips, &c.

SNAIL TREFOIL. See **BASTARD MEDIC.**

SNAKE WEED. Butort.

SNAKE ROOT. Bignewort.

Virginian SNAKE ROOT. Is a small, light, bushy root, consisting of a number of strings or fibres, matted together, issuing from one common head; of a brownish colour on the outside, and paler or yellowish within. It has an aromatic smell, like that of valerian, but more agreeable; and a warm, bitterish, pungent taste. This root is a warm diaphoretic and diuretic: it has been greatly celebrated as an alexipharmac, and esteemed one of the principal remedies in malignant fevers and epidemic diseases. In these intentions, it is given in substance from ten to thirty grains, and in infusion to a dram or two.

SNAIL-COD. A name given by Mr. Worlidge to a species of manure found at the bottom of deep rivers. It is a kind of mud or sledge, very soft, full of wrinkles, and intermixed with many little shells and snails, to which it is thought to owe a great part of its fatness.

SNAPDRAGON. See **CALVES SNOOT.**

American SNAPDRAGON. [*Ruellia.*] This plant grows naturally in the West-India Islands and Carolina, it is propagated by seeds, but requires the assistance of a bark stove.

SNAP-TREE, [*Jussiaea.*] This plant is a native of India, rising with a shrubby stalk to the height of three or four feet, & is propagated by cuttings.

SNATHE. The handle of a scythe.

SNEEZEWORD, [*Parmica.*] This grows wild upon heaths and in moist shady places; the flowers, which are of a white colour, come forth in June and July. The roots have an acid smell, and a hot biting taste: chewed, they occasion a plentiful discharge of saliva; and when powdered and snuffed up the nose, provoke sneezing. These are the only intentions to which they have been usually applied.

SNOWDROP, [*Galanthus.*] This flower is valued for its early appearance in the spring, for it usually blows in February when the ground is often covered with snow. The single sort comes out the first, and though the flowers are but small, yet when the roots

See also No. 8.

Snatched. See Smugglers.

See.

- See also *Barren Corn* -
- _____ *Worms* -
- _____ *Blight* -
- _____ *Barren Grain* -
- _____ *Barren Corn* -

See also

roots are in bunches they make a very pretty appearance; therefore these roots should not be planted single, as is sometimes practised by way of edging to borders; for when they are so disposed, they make very little appearance. But when there are twenty or more roots growing in a close bunch, the flowers have a very good effect; and as these flowers thrive well under trees or hedges, they are very proper to plant on the sides of wood-walks, and in wilderness quarters, where, if they are suffered to remain undisturbed, the roots will multiply exceedingly. The roots may be taken up the latter end of June, when their leaves decay, and may be kept out of the ground till the end of August; but they must not be removed oftner than every third or fourth year: these plants are got scarce in the gardens near London.

SNOWDROP-TREE. See **FRINGE-TREE.**

SOAP ASHES. See **ASHES.**

SOLDANEL, [*Soldanella.*] This plant is a native of the Alps, and the mountains of Germany, and may be propagated by parting the roots.

WATERSOLDIER, [*Stratiotes.*] Water Aloes, or Freshwater Soldier. This plant is like the aloes in shape, but the leaves are thinner and serrated on the edges very sharply. It grows naturally in standing waters of the Isle of Ely, and other parts of England.

SOLOMON'S SEAL, [*Polygonatum.*] This grows wild in woods, but is not very common: the root has several joints, with some flat circular depressions, supposed to resemble the stamp of a seal. It has a sweetish mucilaginous taste. As to its virtues, practitioners do not now expect any considerable ones from it, and pay very little regard to the vulnerary qualities which it was formerly celebrated for.

SOOT. Soot is of two general kinds, the one, that which arises from wood, the other that of coal. These differ very much in many respects, but they are nearly the same in their effects and value to the farmer. The wood foot is solid and shining, the coal foot looser, and of a deader colour. The wood foot sells in London at a great price, in comparison of the other, for the use of chymists and apothecaries, because it is scarcer, the fuel of Lon-

don being, in general, coal: but in the country, where this is as common and cheap as the other, the farmers rather prefer coal foot.

Those who have written on husbandry, differ much in the kind to which they give the preference. Mortimer says sea-coal foot is by much the best, and Worlidge tells us, that foot is a good manure, especially such as is made of wood: these are both very honest and good writers; but experience is to be preferred to either. The truth is, that neither kind deserves a general preference, but that wood is better for some soils, and coal foot for others. Indeed the latter is best on the greatest number of soils, and therefore the farmer is right in valuing it the more. However, this difference is not so great, that any danger can arise from a mistake about it, for such land as will do well with one kind of foot, will also with another: all that the best choice can do gives only a little advantage.

As to the suiting the particular kinds of foot to the different soils, the rule is this. For all clayey, chalky, and mossy lands, the coal foot is best. And this is the reason why the coal foot is most in repute in London for this traffick, because the Hertfordshire farmers, who buy it almost entirely, have, for the most part, clayey or chalky soils to cultivate.

For gravelly, sandy, and loamy soils, the wood foot is preferable to that of coal: and in its nature indeed this kind is better and richer than the other, because, being made from a vegetable substance, it is richer and warmer than that other which comes from a mineral origin; but the great reason of the difference which suits one kind to one soil, and another to another, is the consistence. The wood foot is in firmer and harder lumps; the coal foot is crumbly; now in a clayey or a mossy soil, the lumps of the wood foot would lie a long time unbroken, whereas the coal foot breaks and mixes immediately. Experience shews also, that the wood foot will lie in large pieces a long time in a chalky land; whereas the gravelly sands, and sandy loams, cut and break it to pieces in two or three ploughings, and spread and mix it thoroughly.

SOPEBERRY-TREE, [*Sapindus*.] This plant grows naturally in the West-Indies, and rises with a woody stalk, to the height of 20 to 30 feet, bearing flowers in loose spikes at the end of its branches, succeeded by oval berries as large as middling cherries; the covering of these berries is sometimes used for soap to wash, when it is propagated by seeds.

SOPEWORT, [*Saponaria*.] This grows wild, though not very common, in low wet places, and by the sides of running waters; a double-flowered sort is frequent in our gardens. The leaves have a bitter, not agreeable taste; agitated with water, they raise a saponaceous froth, which is said to have nearly the same effects with solutions of soap itself in taking out spots from cloths, and the like. The roots taste sweetish and somewhat pungent; and have a light smell like those of liquorice: digested in rectified spirit they yield a strong tincture, which loses nothing of its taste or flavour in being inspissated to the consistence of an extract. This elegant root has not come much into practice among us, though it promises, from its sensible qualities, to be a medicine of considerable utility: it is greatly esteemed by the German physicians as an aperient, corroborant, and sudorific: and preferred by the college of Wirtemberg, Stahl, Neumann, and others, to sarsaparilla.

SORREL, [*Acetosa*.] Sorrel grows wild in fields and meadows throughout England. The leaves have astringent acid taste, without any smell or particular flavour: their medical effects are, to cool, quench thirst, and promote the urinary discharge: a decoction of them in whey affords an useful and agreeable drink in febrile or inflammatory disorders: and is recommended by Boërhave to be used in the spring as one of the most efficacious aperients and detergents. Some kinds of scurvy have yielded to the continued use of this medicine: the Greenlanders, who are very subject to this distemper, are said to employ, with good success, a mixture of the juices of sorrel and of scurvygrass. The only officinal preparation of this plant is an essential salt from the juice of the leaves.

WOOD SORREL, [*Luzula*.] This is

a small plant, growing wild in woods. In taste and medical qualities, it is similar to the common sorrel, but considerably more grateful, and hence is preferred by the London college. Boiled with milk, it forms an agreeable whey; and beaten with sugar, a very elegant conserve, which has been for some time kept in the shops, and is now received in the dispensatory.

SOURSOP. See *Custard APPLE*.

SOIL. A general name for all sorts of land. See *Meadow-Pasture*.

SOURLAND. A cold, hungry, clayey soil.

SOUTHERNWOOD, [*Abrotanum Mas*.] This is a shrubby plant, clothed with very finely divided leaves, of a greyish green colour: the flowers, which are very small and yellowish, hang downwards, several together, from the middle of the branches to the top. It is a native of the warmer countries; in this it is cultivated in gardens: the leaves fall off every winter: the roots and stalks abide many years.

Southernwood has a strong, not very disagreeable smell; and a nauseous, pungent, bitter taste; which is totally extracted by rectified spirit, less perfectly by watery liquors. It is recommended as an anthelmintic; and in cold leucophlegmatic habits, as a stimulant, detergent, aperient, and sudorific. The present practice has almost entirely confined its use to external applications. The leaves are frequently employed in discutient and antiseptic fomentations; and have been recommended also in lotions and unguents for cutaneous eruptions, and the falling off of the hair.

SOW. The female of the swine.

SOWING. The act of distributing seed on the ground to produce a crop.

SOWBREAD, [*Cyclamen*.] This plant is met with in the gardens of the curious. The root has, when fresh, an extremely acrimonious burning taste, which it almost entirely loses on being dried. It is recommended as an emine; in cataplasms for schirrous and scrophulous tumours; and internally as a cathartic, detergent, and aperient; it operates very slowly, but with great virulence, inflaming the fauces and intestines; and hence is deservedly rejected from the London dispensa-

dispensatory, though retained in that of Edinburgh.

SOWTHISTLE, [*Sonchus*.] This is a troublesome weed both in gardens and fields, and should be taken care of, that the seeds be not suffered to ripen, and be scattered by the wind.

SPANISH NUT. See FILEZERT.

SPANISH ROSEMARY, [*Papavina*.] Sparrow-wort. This plant grows naturally at the Cape of Good Hope, rising with a shrubby stalk five or six feet high, and may be propagated by cuttings; sheltering the plants in the greenhouse during winter.

SPANISH BROOM, [*Spartium*.] This plant has long held a place in the English gardens, and is easily propagated by seeds. There are several species kept for variety.

SPANISH ELDER. See *Spanish Elder*.

SPANISH PICKTOOTH, [*Mispaga*.] A species of carrot, growing naturally in Spain and Italy; the footstalks of the flowers are used as tooth-picks.

SPANISH MARJORAM, [*Uffica Dodartia*.] This is a species of nettle, growing naturally in Spain, and is easily propagated by seeds.

SPADE. A well-known instrument used in digging.

SPANCEL. A rope to tie a cow's hinder legs. *Spancel*.

SPATLING-POPPY. See CHICK-WEED.

SPARSE-LEAVES. Are those which are placed irregularly about the several parts of a plant.

SPAVIN. A disease in horses, being a swelling in or near some of the joints, that causes a lameness.

There are two kinds of spavin, called a blood-spavin, and a bog-spavin.

A blood-spavin is a swelling and dilatation of the vein that runs along the inside of the hock, forming a little soft swelling in the hollow part, and is often attended with a weakness and lameness of the hock.

The cure should be first attempted with restringents and bandage, which will contribute greatly to strengthen all weaknesses of the joints, and frequently will remove this disorder, if early applied: but if by these means the vein is not reduced to its usual dimensions, the skin should be opened, and the vein tied with a crooked needle and wax thread passed underneath

it, both above and below the swelling, and the turgid part suffered to digest away with the ligatures: for this purpose, the wound may be dressed with turpentine, honey, and spirit of wine, incorporated together.

A bog-spavin is an encysted tumour on the inside the hough, or, according to Dr. Bracken, a collection of brownish gelatinous matter, contained in a bag, or cyst, which he thinks to be the lubricating matter of the joint altered, the common membrane that incloses it forming the cyst: this case he has taken the pains to illustrate in a young colt of his own, where he says, when the spavin was pressed hard on the inside of the hough, there was a small tumour on the outside, which convinced him the fluid was within-side the joint: he accordingly cut into it, discharged a large quantity of this gelatinous matter, dressed the sore with doffils dipped in oil of turpentine, putting into it, once in three or four days, a powder made of calcined vitriol, alum and bole: by this method of dressing, the bag sloughed off, and came away, and the cure was successfully compleated without any visible scar.

This disorder, according to the above description, will scarcely submit to any other method, except firing, when the cyst ought to be penetrated to make it effectual; but in all obstinate cases that have resisted the above methods, both the cure of this, and the swellings called wind-galls, should, we think, be attempted in this manner. If, through the pain attending the operation or dressings, the joint should swell and inflame, foment it twice a day, and apply a poultice over the dressings till it is reduced.

SPAYING. The operation of castrating the females of several kinds of animals, as fows, bitches, &c. to prevent any farther conception, and promote their fattening.

It is performed by cutting them in the mid flank, on the left side, with a sharp knife or lancet, taking out the uterus and cutting it off, and so stitching up the wound, anointing the part with tar, and keeping the animal warm for two or three days. The usual way is to make the incision alope two inches and a half long, that the fore finger may be put in towards the back

to feel for the ovaries, which are two kernels as big as acorns on both sides of the uterus, one of which is drawn to the wound, the string thereof cut, and thus both taken out.

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corn.

Kings SPEAR. See ASPHODEL.

SPEAR MINT. See MINT.

SPEEDWELL, [*Veronica*.] There are several species of this plant growing wild in different parts of the kingdom, as also in other parts of Europe, the Female Speedwell is admitted into the *Materia Medica*, as is also the Male Speedwell. The Male Speedwell is a rough procumbent plant, not unfrequently met with on dry commons, and in sandy grounds. In taste, smell, and medical virtues, it is similar to the betonica, of which in its place: though the veronica is commonly supposed to have more of an aperient and pectoral virtue, and betony to be rather nervine and cephalic. Hoffman and Joh. Francus have written express treatises on this plant, recommending infusions of it, drank in the form of tea, as very salubrious in many disorders, particularly those of the breast. For Female Speedwell, see FLUPELLIN.

SPELT. The name of a species of grain, which though commonly reckoned a summer corn, is sowed either in autumn or in the spring, at the same time as wheat and rye. This grain, of which there are two sorts, one with a single, and the other with a double chaff, though both have always two seeds in each husk, was formerly much esteemed in Italy and Egypt, and is now very common in Germany, where they make of it bread, which is very nourishing and well tasted, but hard to digest. They likewise brew beer from it in some places. It was of this grain that the ancients made their frumenty, of which they were very fond. Though commonly ranked as a species of wheat, which it is not unlike when growing, its grain is smaller and of a blackish hue, its stalk thinner and less firm, and its ear flat and bearded, with seeds only on each side. Some writers distinguish a third sort, by the name of white-rye, which they take to be the *olyra* of the Greeks and Latins; and seems to be what Mr. Mortimer calls *taítico-spetum*, a sort of naked barley, or wheat barley, cultivated in Staffordshire, shaped like barley, but with a

grain like wheat. It is much sown at Rowley, Hamstal, and Redmore, where they call it French barley. It makes good bread and good malt, and yields a good increase; and therefore would do well to be tried in other places. It ripens early, does best in a dry soil, and is not apt to be much hurt by birds, from which its beard and double husk preserve it.

SPIDERWORT. See *African Asphodel*.

SPIGNEL, [*Athamanta*.] Spignel is an unbelliferous plant, found wild in Italy, and the warmer parts of Europe, and sometimes also in England. The roots have a pleasant aromatic smell, and a warm, pungent, bitterish taste: in virtue, they are similar to the Lovage, from which this root seems to differ only in being weaker, and somewhat more agreeable. It is an useful aromatic and carminative, tho' at present little regarded.

SPIKE. A large nail.

SPIKE,

SPIKE LAVENDER. } See *Lavender*.

SPINACH, [*Spinacia*.] A well-known plant, cultivated in kitchen gardens.

It requires a rich, light, and well loosened soil. It is propagated by its seeds only, of which there are two sorts, namely, the rough and prickly, which produces the prickly spinach with arrow-pointed leaves, and the smooth, from which springs the spinach with oblong oval leaves.

The seeds of the first of these kinds, which is by much the hardiest, and therefore fittest to be cultivated for winter use, should be sown upon an open spot of ground, in August, just before a shower of rain, if it can luckily be so timed: for if the season should prove dry for a long while after the sowing, many of them will not sprout at all, and the plants of those that do grow will come up so irregularly, that half the crop will frequently be lost. It therefore is highly adviseable to water these seeds within two or three days after their being sown, if rain does not fall in the mean time.

When the plants begin to be strong, the ground on which they grow should be well hoed, to destroy the weeds, and to thin the plants to the distance of three or four inches asunder. This, like

like all other hoeings, should always be performed in dry weather, the more effectually to kill the weeds: or, if it be rainy, they should be carried off the ground as soon as they are cut up, to prevent their taking fresh root: for if many of them spring up, and the season prove wet, they will stifle the plants of the spinach, and make them rot. A second careful hoeing is therefore necessary: in about a month or five weeks after the first; and with the help of this the spinach will begin to be fit for use by the end of October. The best way of gathering it is, to crop off only the largest outer leaves, and to leave the middle ones to grow bigger: for by this means a regular supply may be had during the whole winter, and even till the subsequent spring sowing shall have produced plants large enough for use, which generally is in April. The winter spinach will also then be ready to run up, and should therefore be entirely cleared off, unless a parcel be left for seed, if wanted. But if early cabbages, which will want earthing up, have been planted among this spinach, as is the usual practice of the gardeners about London, a separate small spot of ground should be allotted purposely for sowing some of this spinach for feed, without any other plants among it, and to cut up all the remains of the other winter crop, as soon as the spring spinach is fit for use.

The oblong oval leaved spinach, commonly called plantain spinach, which has thicker leaves and more succulent stalks than the former sort, is sown in the spring, likewise upon an open spot of fine rich earth. The London gardeners, who always endeavour to have as many crops in a season as they possible can, generally mix radish seed with those of the spinach which they sow at this season: but the best way for those who have ground enough, is to sow their spinach seeds alone. This crop must be hoed, cleared from weeds, and thinned, in the manner before directed for the winter spinach; and when the plants, which were at first left three or four inches asunder, have grown so as to meet, it will be right to cut them out here and there for use, and to thin them in this manner, as they are wanted for the ta-

ble, till those that are left stand eight or ten inches asunder. The thinnings in the mean time will give the remaining plants room to spread; and if, after this last, the ground between them is well stirred to a good depth, and kept perfectly clear from weeds, this sort of spinach will frequently produce leaves as large as those of the broad-leaved dock, and extremely fine.

A succession of spinach may be had throughout the whole season, by sowing it every three weeks, from about the middle of January to near the end of May; only observing, that the earliest sowings must be upon the naturally driest soils, and that the latest should be thinned most at their first hoeing, because the remains of the former crops will furnish a supply till these are full grown, and the plants will not be so apt to run up to seed when they stand at a distance from each other, as when they are close together.

In order to have good seeds of spinach, each particular sort should be sown by itself, in an open spot of rich and well dug ground. This sowing should be in February, as soon as the danger of the frost is over; and when the plants are come up, they should be thinned with a hoe till they are six or eight inches asunder every way. All weeds should at the same time be carefully cut up and carried off: and in about three weeks or a month after this, the plants should be hoed and thinned a second time. Their distance from each other should then be enlarged to at least twelve or fourteen inches: for they will cover the ground very sufficiently after they have shot out their side branches. Particular care is requisite at this time to keep them very clear from weeds; because these would make the plants of spinach run up weak, and thereby greatly injure them.

Mr. Miller is here extremely judicious in his directions for the farther management of spinach intended for seed. "When the plants, says he, have run up to flower, you will easily perceive two sorts among them, viz. male and female. The male will produce spikes of staminate flowers, which contain the farina, and are ab-

solutely

though it is a much lower plant than the common sort, but they esteem it a much better grass. The seeds of this kind are smaller and flatter than those of the common sort, and have a white border round each.

To SPRIT. To shoot or sprout, as corn in vegetation.

SPARREWAY. A horse-way through inclosed lands.

SPROUTHILL. Anthill.

SQUASH. See Gourd.

SQUILL, [*S. ill.*] There are two sorts, one with a red, and the other a white root, which are supposed to be accidental varieties, but the white are generally preferred for medicinal use. The roots are large, somewhat oval-shaped, composed of many coats, lying over each other like onions; at the bottom come out several fibres. From the middle of the root arise several shining leaves, which continue green all the winter, and decay in the spring; then the flower-stalk comes out, which rises two feet high, is naked half way, and terminated by a pyramidal thyrse of flowers, which are white, composed of six petals, which spread open like the points of a star. This grows naturally on the sea-shores, and in the ditches, where the salt water flows with the tide, in most of the warm parts of Europe, so cannot be propagated in gardens, the frost in winter always destroying the roots, and for want of salt water they do not thrive in summer. Sometimes the roots, which are brought for use, put out their stems, and produce flowers without being planted in earth, as they lie in the druggists shops.

The root for medicinal use should be chosen plump, sound, fresh, and full of a clammy juice; some have preferred the red sort, others the white, though neither deserves the preference to the other; the only difference perceivable betwixt them, is that of the colour; and hence the college allow both to be used promiscuously. This root is to the taste very nauseous, intensely bitter and acrimonious: much handled, it exulcerates the skin. With regard to its medical virtues, it powerfully stimulates the solids, and attenuates viscid juices; and by these qualities, promotes expectoration, urine, and (if the patient is kept warm)

sweat: if the dose is considerable, it proves emetic, and sometimes purgative. The principal use of this medicine is where the primæ viz abound with mucous matter, and the lungs are oppressed by tenacious phlegm. Dr. Wagner (in his clinical observations) recommends it given along with nitre, in hydropical swellings, and in the nephritis; and mentions several cures which he performed, by giving from four to ten grains of the powder for a dose, mixed with a double quantity of nitre: he says, that thus managed, it almost always operates as a diuretic, though sometimes it vomits or purges. The most commodious form for the taking of squills, unless when designed as an emetic, is that of a bolus or pill: liquid forms are to most people too offensive, though these may be rendered less disagreeable both to the palate and stomach, by the addition of aromatic distilled waters.

There are several species of squills, kept for the beauty of their flowers, besides those for medicinal purposes; among which are the flowers called the Starry Hyacinth, and the Hyacinth of Peru; they are all hardy, and propagated by seeds or offsets.

STABBING of Cattle. See HOVEN.

STAGGERS. See APOPLEXY.

STAFF Tree. See SPINDLE TREE.

STAGGERWORT. See Ragwort.

STAKE. A piece of wood, or a strong stick fixed in the ground.

STALE. Urine.

STALK. The stem or stock of a plant.

STALL. A crib at which an ox is fed, or where any horse is kept in a stable.

STALL-FEED. Fed with dry feed, not with grass.

STALLION. A stone horse, designed for the covering of mares, in order to propagate the species.

STAMINA. Those fine threads or capillaments growing up within the flowers of tulips, lillies, and most other plants, around the style or pistil.

STAMINEOUS. An epithet applied to those flowers of plants which have no petals or flower-leaves, but consist only of a number of stamina and pistils placed in a cup.

STAMWOOD. The roots of trees grubbed up.

STANDARDS.

STANDARDS, or STANDBRELS. Young trees reserved at the felling of woods, for the growth of timber.

STANDARDS. Fruit-trees, intended to grow in an open exposure, and not to be hacked and mangled with the knife, as the dwarf trees, and those planted against walls are.

These stocks should not exceed two years growth from the bud or graft when they are planted. They should be fastened to stakes till they have acquired sufficient strength not to be in danger of being blown down.

STANK. A dam, or bank to stop water. *A Tank.*

STAR APPLE, [*Chrysephyllum.*] This tree grows naturally in the West-Indies, rising to the height of thirty or forty feet, bearing an austere fruit about the size of a golden pippin, which however becomes mellow and agreeable by keeping. It is propagated by seeds, but in England requires the general assistance of tender exotics.

STAR of Bethlehem, [*Ornithogalum.*] This plant grows naturally near Bristol, and some other parts of England. It has a pretty large bulbous root, from which come out several long keel-shaped leaves, which spread on the ground. There are several other species growing naturally in Spain, Portugal, Africa, and Arabia.

STARCH. The finest parts of wheat flour, manufactured into cakes.

STAR HYACINTH. See **SQUILL.**

STARWORT. See **ASTER.**

Yellow STARWORT. Elecampane.

STAVES ACRE, [*Staphidifragria.*] This is a species of the larkspur, growing naturally in the Levant and some parts of Italy. The seeds are large and rough, of an irregular triangular figure, of a blackish colour on the outside, and yellowish or whitish within; they are usually brought from Italy: the plant is not very common in this country, though it bears our severest colds.

They have a disagreeable smell, and a very nauseous bitterish burning taste. Staveacre was employed by the ancients as a cathartic; but it operates with so much violence both upwards and downwards, that its internal use has been, among the generality of practitioners, for some time laid aside. It is chiefly employed, in external applications, for some kind of cutaneous

eruptions, and for destroying lice and other insects; inasmuch, that it has from this virtue received its name in different languages, *herba pedicularis, herbe aux yeux, lauskrout, lausewort.*

STEE. A ladder.

STEM. That part of a plant arising from the root, and which sustains the leaves, flowers, fruits, &c.

STEEPS. Certain preparations for steeping of corn intended to be sown.

STELE. A stalk, a handle.

STEER. A young bullock. *Choice of the best.*

STEG. A gander.

STERCORARY. A collection of dung properly secured from any injuries of the weather.

STERILE. Barren, unfruitful.

STEW. A small kind of fish-pond, the peculiar intention of which is to maintain fish, and keep them for the daily uses of a family.

STICKADORE. See **CASSIDONY.**

STOCK. The trunk or body of a fruit-tree, into which the graft, or bud is inserted.

STOCK GILLIFLOWER. See **GILLIFLOWER.**

DWARF STOCK GILLIFLOWER. Dame's violet.

STONE. A certain quantity or weight of some commodities.

A stone of beef in London is the quantity of eight pounds; in Herefordshire, twelve pounds; in the north 16 pounds; in other parts, 14 pounds.

A stone of wool, according to a statute made in the eleventh year of the reign of Henry VII. is to weigh fourteen pounds, but in some places it is more, in others less; as in Gloucestershire fifteen pounds, in Herefordshire twelve pounds.

A stone, among horsemen, is the weight of fourteen pounds.

STONE BREAK. A perennial plant common in pasture grounds. The root has a sharpish and aromatic taste. The stalks are round, streaked, and reddish towards the bottom. The leaves are smooth, of a dark green, and divided twice into long, narrow, sharp segments. The foot-stalks are membranous at the base. The flowers grow in loose umbels; and are of a pale yellow colour. The seeds are oval, streaked, and red at the top.

STONY Lands. Such as are full of flints, pebbles, or small fragments of free-stone.

Hoch. Ridge.

See Brim.

Choice of the best.

free-stone. These lands, in many places, yield good crops, and the general rule is, that in stiff and cold lands the stones should be as carefully picked out as possible, but in light and dry grounds they should be left. In Oxfordshire they have great quantities of a lean earth, and a small rubble stone, or a four sort of land mixed with it; this is sometimes very full of weeds, and sometimes very clear of them. If they are weedy they fallow them late; but if they are scary, as they call it, that is, if they have a sward upon them, they either fold them in winter, and add some hay-feed to the sheep's dung, to bring up the grass; or else they lay old thatch or straw, and dung upon it; for they reckon that if those lands have no sward upon them before they are fallowed, they will by no means be brought to bear a good crop, but a great deal of May-weed, and other useless weeds. In September, November, and December, they fallow as the sward directs them; if this be done in either of the two last months, they call it a winter fallowing; and never stir it again, till they plow it, and sow it with barley; and those lands are reckoned to do better than if finely tilled. They will bear wheat and meslin in a kindly year, and large crops of barley, if they are well managed, and kept in good heart.

They always fallow these lands every other year, unless they sow pease upon them; sometimes they sow them with lentils, and when they are quite worn out, they lay them down for clover or rey-grass. *See - Gravel - Land.*

STONE CROP. Wall pepper.

Free STONE CROP. Goose foot.

STOOMING of Wine. Putting bags of herbs, or other ingredients into it.

STOOP. A post fixed in the earth.

STOT. A young bullock; a steer.

STOVES. Buildings erected in gardens for the preservation of tender exotic plants, which will not live in these northern countries, without artificial warmth in winter. These are built in different methods, according to the ingenuity of the artist, or the different purposes for which they are intended; but in England they are at present reducible to two.

The first is called a dry stove, being so contrived, that the flues through

which the smoke passes are either carried under the pavement of the floor, or else are erected in the back part of the house, over each other, and are returned 6 or 8 times the whole length of the stove. In these stoves are commonly placed the tender sorts of aloes, cereus's, euphorbiums, tithymals, and other succulent plants, which are impatient of moisture in winter; and therefore require, for the most part, to be kept in a separate stove, and not placed among trees, or herbaceous plants, which perspire freely, and thereby often cause a damp air in the house, which is imbibed by the succulent plants, to their no small prejudice.

These stoves may be regulated by a thermometer, so as not to over-heat them, nor to let the plants suffer by cold; in order to which all such plants as require nearly the same degree of heat, should be placed by themselves in a separate house; for if in the same stove there are plants placed of many different countries, which require as many different heats, by making the house warm enough for some plants, others, by having too much heat, are drawn and spoiled.

The other sorts of stoves are commonly called bark stoves, to distinguish them from the dry stoves already mentioned. These have a large pit, nearly the length of the house, three feet deep, and six or seven feet wide, according to the breadth of the house; which pit is filled with fresh tanner's bark, to make an hot-bed; and in this bed the pots of the most tender exotic trees, and herbaceous plants, are plunged: the heat of this bed being moderate, the roots of the plants are always kept in action; and the moisture, detained by the bark, keeps the fibres of their roots in a ductile state, which, in the dry stove, where they are placed on shelves, are subject to dry too fast, to the great injury of the plants. In these stoves, if they are rightly contrived, may be preserved the most tender exotic trees and plants, which, before the use of the bark was introduced, were thought impossible to be kept in England; but, as there is some skill required in the structure of both these stoves, we shall describe them as intelligibly as possible, particularly the bark stove; by which it is hoped every curious person

person will be capable of directing his workmen in their structure.

The dimension of this stove should be proportioned to the number of plants intended to be preserved, or the particular fancy of the owner; but their length should not exceed forty feet, unless there are two fire-places; and in that case, it will be proper to make a partition of glass in the middle, and to have two tan-pits, that there may be two different heats for plants from different countries, for the reasons before given in the account of dry stoves; and a range of stoves, they should be all built in one, and only divided with glass partitions, at least the half way toward the front; which will be of great advantage to the plants, because they may have the air in each division shifted by sliding the glasses of the partitions, or by opening the glass-door, which should be made between each division, for the more easy passage from one to the other.

This stove should be raised above the level of the ground, in proportion to the dryness of the place; for, if it be built on a moist situation, the whole should be placed upon the top of the ground; so that the brick-work in the front must be raised three feet above the surface, which is the depth of the bark-bed, whereby none of the bark will be in danger of lying in water; but, if the soil be dry, the brick work in front need not be more than one foot above-ground, and the pit may be sunk two feet below the surface. Upon the top of this brick work, in front, must be laid the plate of timber, into which the wood work of the frame is to be mortised; and the upper timber in front must be placed four feet asunder, or somewhat more, which is the proportion of the width of the glass-doors or sashes: these should be about six feet and a half, or seven feet long, and placed upright; but from the top of these should be sloping glasses, which should reach within three feet of the back of the stove, where there should be a strong crown-piece of timber placed, in which there should be a groove made for the glasses to slide into. The wall in the back part of the stove should be at least thirteen inches thick; but eighteen inches is still better; be-

cause, the thicker the outside wall is built, the more the heat of the flues will be kept in the house; and carried up, about nine feet above the surface of the bark-bed; and from the top of this wall, there should be a sloping roof to the crown-piece where the glasses slide in. This crown-piece should be about sixteen feet high from the surface of the bark-bed or floor, which will give a sufficient declivity to the sloping glasses to carry off the wet, and be of a reasonable height for containing many tall plants. The back roof may be slated, covered with lead, or tiled, according to the fancy of the owner: for the manner of this outside building is often very various, and differently built.

In the front of the house there should be a walk, about eighteen or twenty inches wide, for the convenience of walking; next to which the bark pit must be placed; which should be in width proportioned to the breadth of the house: if the house is twelve feet wide, which is a due proportion, the pit may be seven feet wide; and behind the pit should be a walk eighteen inches wide, to pass in order to water the plants, &c. then there will be twenty-two inches left next the back wall, to erect the flues, which must be all raised above the top of the bark-bed; these flues ought to be one foot wide in the clear, that they may not be too soon stopped with the soot; and the lower flue, into which the smoke first enters from the fire, should be two feet deep in the clear; and this may be covered either with cast-iron plates, or broad tiles; over this the second flue must be returned back again; which may be eighteen inches deep, and covered on the top as before; and so, in like manner, the flues may be returned over each other three or four times, that the heat may be spent before the smoke passes off. The thickness of the wall in front of these flues need not be more than four inches; but it must be well jointed with mortar, and plastered within side to prevent the smoke from getting into the house; and the outside should be faced with mortar, and covered with a coarse cloth, to keep the mortar from cracking, as is practised in setting up coppers. If this be carefully done

there will be no danger of the smoke entering the house, which cannot be too carefully avoided; for there is nothing more injurious to plants than smoke, which will cause them to drop their leaves; and if it continue long in the house, will entirely destroy them.

The fire place may be made either at one end, or in the middle, according as there is most conveniency; for, wherever it is placed, it should have a shed over it, and not be exposed to the open air; for it will be impossible to make the fire burn equally, where the wind has full ingress to it; and it will be troublesome to attend the fire in wet weather, where it is exposed to the rain.

The contrivance of the furnace must be according to the fuel which is designed to burn; but as turf is the best firing for stoves, where it can be had, because it burns more moderately, and lasts longer than any other sort of fuel, and so requires less attendance, I shall describe a proper sort of furnace for that purpose.

The whole of this furnace should be erected within the house, which will be a great addition to the heat; and the front wall on the outside of the fire-place, next the shed, should be three bricks thick, the better to prevent the heat from coming out that way. The door of the furnace, at which the fuel is put in, must be as small as conveniently may be to admit of the fuel; and this door should be placed near the upper part of the furnace, and made to shut as close as possible; so that there may but little of the heat pass off through it. This furnace should be about twenty inches deep, and sixteen inches square at the bottom, but may be sloped off on every side, so as to be two feet square at the top; and under this furnace should be a place for the ashes to fall into, which should be about a foot deep, and as wide as the bottom of the furnace: this should also have an iron door to shut as close as possible; but just over the ash-hole, above the bars which support the fuel, should be a square hole about four inches wide to let the air in to make the fire burn: this must also have an iron frame, and a door to shut close when the fire is perfectly lighted, which will make the

fuel last the longer, and the heat will be more moderate.

The top of this furnace should be nearly equal to the top of the bark-bed; that the lowest flue may be above the fire; so that there may be a greater draught for the smoke; and the furnace should be covered with a large iron plate, closely cemented to the brick-work, to prevent the smoke from getting out; or it may be arched over with bricks; but you should be very careful, wherever the fire is placed, that it be not too near the bark-bed; for the heat of the fire will, by its long continuance, dry the bark; so that it will lose its virtue, and be in danger of taking fire; to prevent which, it will be the best method to continue an hollow between the brick-work of the fire and that of the pit, about eight inches wide; which will effectually prevent any damage arising from the heat of the fire; and there should be no wood-work placed anywhere near the flues, or the fire-place, because the continual heat of the stove may in time dry it so much, as to cause it to take fire; which ought to be very carefully guarded against.

The entrance into this stove should be either from a green-house, the dry stove, or else through the shed where the fire is made, because in cold weather, the front-glasses must not be opened.

The other sort of stove, which is commonly called the dry stove, as was before said, may be either built with upright and sloping glasses at the top, in the same manner, and after the same model of the bark-stove; or else the front-glasses, which should run from the floor to the ceiling, may be laid sloping, to an angle of forty-five degrees, the better to admit the rays of the sun in spring and autumn: the latter method has been chiefly followed by most persons who have built this sort of stoves; but it is a better method to have it built after the model of the bark stove, with upright glasses in front, and sloping glasses over them, because this will more easily admit the sun at all the different seasons; for in summer, when the sun is high, the top glasses will admit the rays to shine almost all over the house; and in winter, when the sun is low, the front

front glasses will admit its rays; whereas, when the glasses are laid to any declivity in one direction, the rays of the sun will not fall directly thereon above a fortnight in autumn, and about the same time in spring; and, during the other parts of the year, they will fall obliquely thereon; and in summer, when the sun is high, the rays will not reach above five or six feet from the glasses.

Besides, the plants placed towards the back part of the house will not thrive in the summer season for want of air; whereas, when there are sloping glasses at the top, which run within four feet of the back of the house; these, by being drawn down in hot weather, will let in perpendicular air to all the plants; and, of how much service this is to all sort of plants, every one who has had opportunity of observing the growth of plants in a stove, will easily judge; for when plants are placed under cover of a ceiling, they always turn themselves towards the air and light, and thereby grow crooked; and if, in order to preserve them straight, they are turned every week, they will nevertheless grow weak, and look pale and sickly, like a person shut up in a dungeon; for which reasons, whoever has made trial of both sorts of stoves, will recommend the model of the bark-stove for every purpose. *Miller's Gardener's Dictionary.*

STOVER. Fodder for cattle.

STOUND. A wooden vessel to put small beer in.

STOWK. The handle of a pail; also a shock of twelve sheaves.

STOWRE. A round of a ladder; a hedge-stake; also the staves in the sides of a waggon, in which the evelings are fastened.

STRAIN, or SPRAIN. A violent extension of the sinews or tendons of some muscle, whereby the tendinous fibres are over-stretched, and sometimes ruptured or broken.

As soon as a Horse is strained, we advise to turn the horse to grass immediately, external applications will then not be wanted, and if this be not done, applications will be of little or no use. Perhaps as good an embrocation as can be used is four ounces of good Vinegar and two ounces of Camphorated Spirit of Wine, with which the part may be bathed twice a day.

STRANGLES. A distemper to which colts and young horses are very subject; it begins with a swelling between the jaw-bones, which sometimes extend to the muscles of the tongue; and is attended with so great heat, pain, and inflammation, that sometimes till matter is formed, the horse swallows with the utmost difficulty.

Keep your horse tolerably warm, give him doses of nitre and sulphur twice a day, with messes of bran and water barely warm.

STRANGURY. A disease in Cattle to be cured by giving decoctions of Marshmallow roots, in which a little Nitre and Gum Arabic is dissolved; keeping the body open with clysters.

STRAW the stalk of Corn.

STRAWBERRY [*Fragaria.*] The distinct species are, 1. the Wood-Strawberry; 2. the Virginian or scarlet Strawberry; 3. the Hawthoy; 4. the Chili Strawberry; with several other varieties.

An ingenious writer in the *Museum Rusticum* has obliged the world with the following method of cultivating strawberries.

"I have them, says he, of several kinds; and the fruit, in the season, is in great perfection, being large, and possessing a fine flavour. These I procure with no great trouble or difficulty in the cultivation.

"I plant them in regular rows on beds three feet wide. The soil I chuse for them is a good, natural, fresh, rich loam: the less it requires of manure the better, the fruit being the sweeter and finer.

"On each of these beds above-mentioned, I plant three rows of plants, in quincunx order, at fifteen inches distance every way; and I rather chuse to plant them each on a little hillock, as it were, something in imitation of hops.

"Between the beds are intervals of the same width.

"My next care is, by frequent hoeing, to keep my plants as clear from weeds as possible, by which they are sure to be supplied with plenty of nourishment; a matter of great consequence, particularly when the fruit is set, as then they require most, and the weeds are also at that season most luxuriant;

luxuriant: I therefore then stir the earth with the hoe often, which answers as I have said before, a double purpose.

“ I observe to keep my plants as clear as possible from runners; by which means my fruit is larger, and sooner ripe than it would otherwise be.

“ When my strawberry plants have borne fruit two successive years on the beds, I get the alleys, or intervals, dug up and prepared, into which I transplant them in the same manner they were planted in the first-mentioned beds, which then become in their turn the intervals.

“ Here they remain two years more, when I again remove them into fresh land prepared for the purpose, in this manner never letting them bear fruit more than two years in one spot.

“ I cannot easily describe to you the great benefit this method of management is of to the plants, which are thereby greatly invigorated, and the fruit prodigiously improved, both in point of size and flavour, inasmuch that they appear to be quite of a different nature from those of my neighbours, who first furnished me with the plants.”

STRAWBERRY BLITE. See Blite.

STRAWBERRY SPINACH. See Blite.

STRAWBERRY TREE, [*Arbutus*.]

The species are, 1. Strawberry-tree with smooth sawed leaves, berries having many seeds, and an upright trunk. This sort grows naturally in Italy, Spain, and also in Ireland, and is now very common in the English gardens. It produces the following varieties, viz. one with an oblong flower and oval fruit; another with a double flower; and a third with red flowers.

2. Strawberry tree with smooth entire leaves, berries full of seeds, and an erect woody stem. This kind grows in the east, particularly about Magnesia, where it is so plenty, as to be the principal fuel used by the inhabitants of the country. This grows to a middle-sized tree; the branches are irregular, and are garnished with large oval leaves, somewhat like those of the Bay tree, but not quite so long; these are smooth and entire, having no serratures on their edges; the flowers are shaped like those of the common *Arbutus*, but grow thinly on the branches. The

fruit is oval, and of the same colour and consistence with the common sort, but the seeds of this are flat, whereas those of the common sort are pointed and angular.

3. *Arbutus* with trailing stalks, oval leaves, somewhat indented, flowers growing loosely, and many seeds. This sort grows naturally in Acadia, and other northern parts of America; upon swampy land, which is frequently overflowed with water; this is a low, bushy shrub, with slender trailing branches, which are garnished with oval leaves, a little sawed on their edges; the flowers come out from the wings of the leaves, growing in thin loose bunches. The fruit of this sort is never produced in England, and it is with great difficulty the plants are kept alive here.

4. *Arbutus* with trailing stalks and rough sawed leaves. This grows naturally on the Alps and the Helvetic mountains. It never rises high, but sends out from the root many slender branches, which trail upon the ground, garnished with oblong rough leaves, of a pale green colour; the flowers are produced from the wings of the leaves, upon long slender foot-stalks, and are succeeded by berries about the size of the common black Cherry, which are first green, afterwards red, and when ripe are black. These are of a pleasant taste; so are frequently eaten by the inhabitants of those countries where they grow naturally. This is a very difficult plant to keep alive in gardens, for it is an inhabitant of bogs, growing among moss. Where the ground is never dry.

5. *Arbutus* with trailing stalks and entire leaves. This grows naturally upon the mountains in Spain, and in most of the northern parts of Europe. The branches trail on the ground, which are closely garnished with smooth thick leaves of an oval form, placed alternately; the flowers are produced in small bunches towards the extremity of the branches, which are shaped like those of the common sort, but smaller; and are succeeded by berries, of the same size with those of the former sort, which are red when ripe.

The common Strawberry tree is well known, being at present in most

of the English gardens, and one of their greatest ornaments in the months of October and November, that being the season when the trees are in flower, and the fruit of the former year is ripe, for the fruit is a whole year growing to perfection; so that the fruit which is produced from the flowers of one year do not ripen till the blossoms of the succeeding year are fully blown; when there is plenty of fruit and flowers upon the trees they make a fine appearance, and at a season when most other trees are past their beauty.

Those trees which have large oval fruit make the greatest figure, their flowers being larger, and oblong. The sort with double flowers is a curiosity; but as the flowers have only two orders of leaves, so they make no great appearance; nor do the trees produce fruit in any plenty, therefore the other is preferable. The sort with red flowers makes a pretty variety, when intermixed with the other; for the outsides of them are of a fine red colour at their first appearance, and afterwards they change to purple before they fall off. The fruit of this is the same with the common sort. All these varieties are preserved by inarching or grafting them upon the common Arbutus, for the seeds of either do not produce the same kind; though from the seeds of the oval fruit, there are generally many more of the same produced than from the seeds of the common sort.

The best method to propagate the Arbutus is from seeds; therefore when the fruit is perfectly ripe, it should be gathered and mixed with dry sand, to preserve it till the time for sowing; the surest method of raising the plants is to sow the seeds in pots, which should be plunged into an old bed of tanner's bark, which has lost its heat, covering the bed with glasses, &c. to keep out the frost; this should be done in December; if the seeds are good, and as the spring advances the pots are refreshed with water, the plants will come up the beginning of April, when they should be frequently but sparingly watered, and constantly kept clean from weeds.

As the summer advances, if the plants are shaded in the heat of the day, it will greatly promote their

growth; but in warm weather they must be open all night to receive the dew, so should only be covered in the middle of the day: with this management the plants will rise to the height of five or six inches the first summer.

STRICKLE. The whet-stone placed upon the extremity of the shaft of a scythe.

STRIKE. A bushel, or four pecks of corn.

STRINGHALT. A disease in horses, consisting in a twitching and snatching up of the hinder leg much higher than the other. *See Spring-halt.*

STUBBLE. The stalks of corn left in the field by the reaper. *Harsh.*

STUM. The unfermented juice of the grape, after it has been several times racked off, and separated from its sediment.

STUMP. The part of any solid body, particularly of trees, &c. remaining after the rest are taken away.

STUMPY. Full of stumps; hard, stiff.

STURK. A young bullock.

STY. A cabin, or small building to keep hogs in. *Was Count.*

SUCCORY. See **ENDIVE.**

GUM SUCCORY. See **GUM SUCCORY.**

SACCHARUM. The sugar cane. This plant grows naturally in the West-Indies, Arabia, &c. where its juice is boiled, and made into sugar.

SUGAR MAPLE. See **MAPLE.**

SUCKER. A young twig, or shoot from the root.

SUFFOLK GRASS. The same with meadow-grass, or poa. *See King. See Clo.*

SUILLAGE. A drain of filth. *Annual Grass.*

SULL. A plough.

SULL-PADDLE. A plough paddle.

SULPHURWORT. Hogs fennel.

SULTAN FLOWER, } A spe-

SWEET SULTAN, } cies of

centaury, which may be propagated by sowing the seeds, on a hot-bed in the spring, and then managing them as other annuals, not very hardy.

SUMACH, [*Rhus.*] This tree, or shrub, is cultivated in some places on account of the culinary uses of its fruits, and for the purposes of the dyers, &c. among us, it is met with only in the gardens of the curious. The seeds or berries are of a red colour, in shape round and flat. Both these and the

Specie - See 200.

the leaves are moderately astringent, and have sometimes been exhibited in this intention, but are now become strangers to the shops.

There are several species, no less than 15, reckoned by Miller, which are kept in the gardens for variety or ornament; some of which, natives of Africa, are too tender to bear the open air of the winters in England. They are all propagated by cuttings or layers.

SUMMER. The season in which the sun arrives at the northern solstice, and the days are at the greatest length.

SUMMER, also implies the large piece of timber, or principal beam, of a floor.

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ff.
To **SUMMER-LAND,** or To **SUMMER-STIR.** To fallow land in the summer. *See Fallow Crops.*

SUNDEW. See *ROS SOLIS.*

SUN-FLOWER. The name of a well-known flower, much cultivated in large gardens.

The sun-flower is an annual plant, and the seeds should be sown every spring in a bed of good light earth. When the shoots are about three inches they should be transplanted into nursery beds, and set at eight inches distance every way; they should remain there till they are a foot high, and then be carefully taken up with a ball of earth at their roots, and planted in large borders, or intermixed with flowering shrubs, and other large plants; they must be frequently watered till they have taken root, after which they require no other care. The flowers appear in July, and stand a considerable time: the largest of them should be preserved for seed. The birds are very fond of the seed of the sun-flower, and must therefore be carefully guarded from them, and the head left on the plant till October, at which time it should be cut off, and hung up to dry in an airy place, and in a month more the seeds will be perfectly hardened.

Draw of **SUN-FLOWER,** [*Rudbeckia.*] This is a native of North-America, but will bear sometimes in the open air of our English climate; there are several species, which are propagated by parting the roots.

SUN-SCORCHED. A term used in some parts of England to express a distemper of fruit-trees, owing to the sun's affecting them too forcibly on a sudden; the consequence of which

is the loss and withering of the fruit. Such trees only are subject to this, as are planted in places sheltered from the spring sun, and open to that of the summer; and may be always cured by proper waterings.

SUNSPURGE. Euphorbium.

SURBATING. A term used by farriers to signify the sole of a horse's foot being worn, bruised, or spoiled by beating the hoof against the ground in travelling without shoes, or going in hot sandy lands, or with a shoe that hurts the sole, or the like. It also sometimes happens by over riding a horse while young, before his feet are sufficiently hardened, or even by the hardness of the ground, and high lifting of his feet. The signs of this defect are his halting on both fore legs, going stiffly, and creeping as if foundered.

There is nothing better for surbated feet than tar melted into the foot, or vinegar boiled with foot to a proper consistence and poured into the foot boiling hot, with huds over it, and splints to keep it in.

SURFEIT. A disease incident to horses and other cattle.

Surfeits arise from various causes; but are commonly the effects of some diseases not attended to, or that have been ill cured.

A horse is said to be surfeited, when his coat stares, and looks rusty and dirty, though proper means have not been wanting to keep him clean. The skin is full of scales and dander, that lays thick and mealy among the hair, and is constantly supplied with a fresh succession of the same, for want of due transpiration. Some horses have hurdles of various sizes like pease or tares: some have dry fixed scabs all over their limbs and bodies; others a moisture attended with heat and inflammation; the humours being so sharp, and violently itching, that the horses rub so incessantly, as to make themselves raw. Some have no eruptions at all, but an unwholesome look, and are dull, sluggish, and lazy: some appear only lean and hide-bound: others have flying pains and lameness, resembling a rheumatism: so that in the surfeits of horses, we have almost all the different species of the scurvy, and other chronic distempers.

The

The following method is usually attended with success in the dry species. First take away about three or four pounds of blood; and then give the following mild purge, which will work as an alterative, and should be repeated once a week or ten days for some time.

Take Succotrine aloes six drams, or one ounce; gum guaiacum half an ounce; diaphoretic antimony, and powder of myrrh, of each two drams: make into a ball with syrup of buckthorn.

In the intermediate days, an ounce of the following powder should be given morning and evening in his feeds.

Take native cinnabar, or cinnabar of antimony, finely powdered, half a pound; crude antimony, in fine powder, four ounces; gum guaiacum, also in powder, four ounces: make into sixteen doses for eight days.

This medicine must be repeated till the horse coats well, and all the symptoms of surfeit disappear. If the horse is of small value, two or three common purges should be given, and half an ounce of antimony, with the same quantity of sulphur, twice a day, or the alterative balls with camphor and nitre.

If the little scabs on the skin do not peel off, anoint them with the mercurial ointment; during the time of using which, it will be proper to keep the horse dry, and to give him warm water. This ointment properly rubbed into the blood, with the assistance of purging physick, has frequently cured these kinds of surfeits, without any other assistance.

The wet surfeit, which is no more than a moist running scurvy, appears on different parts of the body of a horse, attended sometimes with great heat and inflammation; the neck sometimes swells so in one night's time, that great quantities of a hot briny humour issue forth, which, if not allayed, will be apt to collect on the poll or withers, and produce the poll-evil or fistula. This disease also frequently attacks the limbs, where it proves obstinate, and hard to cure: and in some horses shews itself spring and fall.

In this case bleed plentifully, avoid

externally all repellers, and give cooling physic twice a week; as, four ounces of lenitive electuary, with the same quantity of cream of tartar; or the latter, with four ounces of Glauber salts, quickened, if thought proper, with two or three drams of powder of jalap, dissolved in water-gruel, and given in a morning fasting.

After three or four of these purges, two ounces of nitre made into a ball with honey may be given every morning for a fortnight; and if attended with success, repeated for a fortnight longer.

The powders above-mentioned may also be given with the horse's corn; or a strong decoction of guaiacum shavings, or logwood, may be given alone to the quantity of two quarts a day. These, and indeed all alterative medicines, must be continued for a long time, where the disorder proves obstinate.

The diet should be cool and opening, as scalded bran or barley; and if the horse is hide-bound, an ounce of senu-greek seeds should be given in his feeds for a month or longer; and as this disorder often proceeds from worms, give the mercurial physic too, and afterwards the cinnabar powders, as above directed; but as in general it is not an original disease, but a symptom only of many, in the cure, regard must be had to the first cause: thus, as it is an attendant on surfeits, fevers, worms, &c. the removal of this complaint must be variously effected.

In a mangy horse the skin is generally tawny, thick, and full of wrinkles, especially about the mane, the loins and tail, and the little hair that remains in those parts stands almost always strait out or bristly: the ears are commonly naked and without hair, the eye and eye-brows the same; and when it affects the limbs, it gives them the same aspect; yet the skin is not raw, nor peels off, as in the hot inflamed surfeit.

Where this distemper is caught by infection, if taken in time it is very easily cured; and we would recommend a sulphur ointment as most effectual for that purpose, rubbed in every day. To purify and cleanse the blood, give antimony and sulphur for some weeks after. There are a great

variety of external remedies for this purpose, such as train oil and gunpowder, tobacco steeped in chamberlye, &c. Solleyfell recommends the following:

Take burnt allum and borax in fine powder, of each two ounces; white vitriol and verdigreafe powdered, of each four ounces; put them into a clean pot, with two pounds of honey, stirring till they are incorporated; when cold, add two ounces of strong aquafortis.

But when this disorder is contracted by low feeding, and poverty of blood, the diet must be mended, and the horse properly indulged with hay and corn. The following ointments are effectually used for this disorder, rubbed into the parts affected every day:

Take powdered brimstone, train oil, and tar, of each equal quantities; to which may be added ginger, or white hellebore. Or, Take sulphur vivum, half a pound, crude sal ammoniac one ounce; hogs lard, or oil, a sufficient quantity to form into an ointment.

Or this:

Take quicksilver, and oil of vitriol, of each one ounce; hogs lard, one pound, sulphur vivum four ounces, oil of turpentine one ounce and half.

These are both very powerful remedies for this disorder, and can scarce fail of success.

To the two first, occasionally, may be added a third part of mercurial ointment; but as sulphur is in general allowed to be the specific in the itch, and being found both more safe and efficacious than mercury; so we apprehend it will sufficiently answer the purpose here; for as this disorder seems best accounted for by Leuwenhoek, from certain small insects he discovered in the pustules by the microscope; so it seems as if they were destroyed by the steams of brimstone, though only raised by the heat of the body; for in the human body, the itch may be cured by partial sulphureous unctions on the legs only; but where the mange proves obstinate in horses, let the parts be washed with sublimate water before the application of the ointment, and subjoin the in-

ternal use of sulphur, in order to diffuse the steams more certainly through the skin; there being reason to believe, as in the itch, that the animalcule may sometimes lie too deep to be thoroughly destroyed by external applications only.

SUGAR. The essential salt of the *arundo saccharifera*, a beautiful large cane growing spontaneously in the East-Indies, and some of the warmer parts of the Welt, and cultivated in great quantity in our American plantations. The expressed juice of the cane is clarified with the addition of lime water (without which it does not assume the form of a true sugar) and boiled down to a due consistence; when, being removed from the fire, the saccharine part concretes from the grosser unctuous matter, called treacle, or melasses. This, as yet impure or brown sugar, is farther purified, in conical moulds, by spreading moist clay on the upper broad surface: the watery moisture, slowly percolating through the mass, carries with it a considerable part of the remains of the treacle matter. This clayed sugar, imported from America, is by our refiners dissolved in water, the solution clarified by boiling with whites of eggs and despumation, and after due evaporation poured into moulds: as soon as the sugar has concreted, and the fluid part drained off, the surface is covered with moist clay as before. The sugar, thus once refined, by a repetition of the process, becomes the double-refined sugar of the shops. The candy, or crystals, are prepared by boiling down solutions of sugar to a certain pitch, and then removing them into a hot room, with sticks set across the vessel for the sugar to shoot upon: these crystals prove of a white or brown colour, according as the sugar was pure or impure.

The uses of sugar as a sweet, are sufficiently well known. The impure sorts contain an unctuous, or oily matter, in consequence of which they prove emollient and laxative. The crystals are most difficult of solution, and hence are properest where this soft lubricating sweet is wanted to dissolve slowly in the mouth.

SURVEYING. The art or act of measuring of lands; that is, of taking the

the dimensions of any field, parcel, or tract of land, laying down the same in a map or draught, and finding the area or content thereof.

SWALLOW WORT, [*Vincetoxicum*]
Tame poison.

SWAMP. A hollow, watery place, in any part of a field; a bog. See Bog.

SWANG. A fresh piece of green sward lying in a bottom among arable or barren land.

SWARD. The surface of the ground.

SWARM. A large number of bees, seeking a proper settlement. See BEE.

SWATH, or *Swarth*. A line of grafs, &c. cut down by the mower.

SWATH-BUCK. A swarth, or line of new-mown grafs or corn.

SWATH-RAKE. A rake about two yards long, with iron teeth, and a bearer in the middle, to which a man fixes himself with a belt; and when he has gathered as much as his rake will hold, he raises it and begins again. This instrument is in some counties called a *dow-rake*, and much used in Essex for gathering barley after mowing.

SWEET APPLE. See Custard Apple.

SWEET PEA. See Everlasting Pea.

SWEET JOHN, } See CARNA-

SWEET WILLIAM, } TION.

SWEET WILLOW. Candleberry-tree.

SWEAL. To singe, or burn off the hair, &c.

SWILL. A vessel to wash in, standing on three feet. *Hog-Drink*.

SWINE. See Hog.

SWINE-CRUE. A hog's-sty.

SWINE-HERD. A keeper of swine.

SWINHULL. A hog's-sty.

SWINE'S CRESS. Scurvy-grafs,

Swalled or Swalled Stock.

See Cluck-

SYCAMORE, or *Wild Fig-Tree*, falsely so called, is our acer majus, or broad-leaved Mas, one of the maples, and is much more in reputation for its shade than it deserves; for the honey-dew leaves, which fall early, like those of the ash, turn to mucilage and noxious insects, and putrefy with the first moisture of the season, so as they contaminate and marr our walks; and are therefore, by my consent, to be banished from all curious gardens and avenues. It is raised of the keys in the husk, as soon as ripe, and they come up the first spring; also by roots and layers, in ground moist, not over wet or stiff, and must be governed as other nursery plants. There is in Germany a better sort of sycamore than ours (nor are ours indigenous) where with they make saddle-trees, and divers other things of use. Our own is excellent for trenchers, cart and plow-timber, being light, tough, and not much inferior to ash itself; and if the trees be very tall and handsome, they are the more tolerable for distant walks, especially where other better trees prosper not so well, or where a sudden shade is expected: Some commend them to thicken copes, especially in parks, as least apt to the spoil of deer, and that it is good fire-wood. This tree being wounded, bleeds a great part of the year; the liquor emulating that of the birch. The sap is sweet and wholesome, and in a short time yields sufficient quantity to brew with, so as with one bushel of malt is made as good ale as four bushels with ordinary water, upon Dr. Tongue's experience. Phil. Transf. vol. iv. fol. 917.—*Evelyn*.

SYRINGA. Lilac.

SYTHE. See SCYTHZ.

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TABERN. A cellar.

TAGGE. A sheep of the first year.

TAIL-SOAKED. A disease incident to cows, by which the joint of the tail near the rump, will, as it were, rot away. The cure is generally performed by cutting a deep gash into the part affected, then rubbing a handful of salt into the wound, and binding it with a rag. Others mix foot and a clove of garlick with the salt.

TACAMAHACCA - TREE. A species of the poplar.

TACAMAHACCA. A resin obtained from a tall tree, which grows spontaneously on the continent of America, and in a sheltered situation bears the winters of our own climate. Two sorts of this resin are sometimes to be met with. The best, called (from its being collected in a kind of gourd-shells) tacamahacca in shells, is somewhat unctuous and softish, of a pale yellowish or greenish colour, an aromatic taste, and a fragrant delightful smell, approaching to that of lavender and ambergris. This sort is very rare: that commonly found in the shops is in semitransparent grains or gleses, of a whitish, yellowish, brownish, or greenish colour; of a less grateful smell than the foregoing. The first is said to exude from the fruit of the tree, the other from incisions made in the trunk. This resin is said to be employed among the Indians, externally, for discussing and maturing tumours, and abating pains and aches of the limbs: it is an ingredient in the anodyne, hysteric, cephalic, and stomachic plasters of the Edinburgh pharmacopœia. The fragrance of the finer sort sufficiently points out its being applicable to other purposes.

TALCK. Talcky earth is scarcely alterable by a vehement fire. The masses of this earth are generally of a

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fibrous or leafy texture; more or less pellucid, bright or glittering; smooth and unctuous to the touch; too flexible and elastic to be easily pulverized; soft, so as to be cut with a knife. In these respects some of the gypseous earths greatly resemble them, but the difference is readily discovered by fire; a weak heat reducing the gypseous to powder, while the strongest makes no other alteration in the talcky, than somewhat diminishing their flexibility, brightness, and unctuousity.

TAMARIND. This tree grows naturally in both Indies, and also in Egypt; but it has been supposed by some eminent botanists, that the tamarind which grew in the East-Indies was different from that of the West, because the pods of the first are almost double the length of those of the latter. The pods which have been brought from the East-Indies have generally been so long as to contain five, six, and sometimes seven seeds, whereas those of the West-Indies have very rarely more than four; but the plants raised from the seeds of both sorts are so like as not to be distinguished.

This tree grows to a very large size in those countries where it is a native, but in England it will not thrive out of a stove, especially in winter. The stem is very large, covered with a brown bark, and divides into many branches at the top, which spread wide every way, and are closely garnished with winged leaves, composed of sixteen or eighteen pair of lobes, without a single one at the end. The lobes are about half an inch long, and a sixth part of an inch broad, of a bright green, a little hairy, and sit close to the midrib. The flowers come out from the side of the branches, five, six, or more together upon the same foot-stalk in loose bunches; these are composed of five reddish petals, one of which

which is reflexed upward like the standard in some of the butterfly flowers, two others stand on each side like the wings, and the other two are turned downwards; these (in the countries where the plants grow naturally) are succeeded by thick compressed pods, two, three, four or five inches long, having a double skin or cover, and swell in every place where the seeds are lodged, full of an acid stringy pulp, which surrounds smooth, compressed, angular seeds.

The tamarinds which are brought from the East-Indies are darker and drier, but contain more pulp, being preserved without sugar, and are fitter to be put into medicines than those from the West-Indies, which are redder, have less pulp, and are preserved with sugar, so are pleasanter to the palate.

The pulp of these fruits, taken in the quantity of two or three drams, or an ounce or more, proves gently laxative or purgative; and at the same time, by its acidity, quenches thirst, and allays immoderate heat. It increases the action of the purgative sweets, cassia and manna, and weakens that of the resinous cathartics. Some have supposed it capable of abating the virulence of antimonial preparations; but experience shews that it has a contrary effect, and that all vegetable acids augment their power. Tamarinds are an ingredient in the electuary of cassia, the lenitive electuary, and decoction of tamarinds with senna.

The plants are preserved in the gardens of those who have conveniency to maintain rare exotic-trees and shrubs.

They are easily propagated by sowing their seeds on a hot-bed in the spring; and when the plants are come up, they should be planted each into a separate small pot, filled with light rich earth, and plunged into a hot-bed of tanner's bark to bring them forward, observing to water and shade them until they have taken root; and as the earth in the pots appear dry, they must be watered from time to time, and should have air given to them in proportion to the warmth of the season, and the bed in which they are placed. When the pots in which they are planted are filled with their roots, the plants should be shifted into pots of a larger size, which must

be filled up with rich light earth, and again plunged into the hot-bed, giving them air as before, according to the warmth of the season. In very hot weather the glasses should be shaded with mats in the heat of the day, otherwise the sun will be too violent for them through the glasses, nor will the plants thrive if they are exposed to the open air, even in the warmest season; so that they must be constantly kept in the bark-stove both summer and winter, where if rightly managed, they will grow very fast.

TAMARISK, [*Tamarix.*] There are two species of this tree; one with flowers having five stamina; the other whose flowers have ten stamina. The first grows naturally in the south of France, in Spain and Italy, where it arrives to a tree of middling size; but in England is seldom more than fourteen or sixteen feet high. The other grows naturally in Germany, in moist land: it is rather a shrub than a tree, having several ligneous stalks arising from the same root, which grow erect, sending out many side-branches which are also erect.

Both these sorts cast their leaves in autumn, and it is pretty late in the spring before the young leaves push out, which renders them less valuable; they are now frequently planted in gardens for ornament, and when mixed with other shrubs, make a pretty variety.

The culture of both sorts of tamarisk is very easy: every cutting will grow that is set in winter, and will be a good plant by the autumn following. The cuttings should be of the last summer's shoot; and a moist part of the garden is most eligible for them to be planted in. In two years they will be good plants for the wilderness or shrubbery, and may then be planted out in almost any soil, though they best like a light moist earth, especially the German sort; for in countries where it grows naturally, it is generally found in low watery grounds.

The bark and leaves of this tree are moderately astringent; they are never met with in prescription, and have long been entire strangers to the shops.

TAME-POISON, [*Vincitoxicum.*] Swallow-wort. This is a native of the warmer climates: it is sometimes

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met with in our gardens, but rarely perfects its seeds. It is reckoned by botanists a species of apocynum, or dogbane; from all the poisonous forts of which it may be distinguished, by yielding a limpid juice, whilst that of the others is milky. The root has a strong smell, especially when fresh, approaching to that of valerian, ornard; the taste is at first sweetish and aromatic, but soon becomes bitterish, subacid, and nauseous. This root is esteemed sudorific, diuretic, and emmenagogue, and is frequently employed by the French and German physicians as an alexipharmac, sometimes as a succedaneum to contrayerva, whence it has received the name of *contrayerva Germanorum*. Among us, it is very rarely made use of: it appears from its sensible qualities, to be a medicine of much the same kind with valerian, which is indisputably preferable to it.

TAN. The bark of oak, chopped and ground by a tanning mill into a coarse powder, to be used in the tanning or dressing of skins.

Tan is of great use in gardening: first, by its fermentation, when laid in a body, which is always moderate and of long duration, which renders it of great service to hot-beds: and secondly, after it is well rotted, it becomes excellent manure for all sorts of cold stiff land; upon which one load of tan is better than two of rotten dung, and will continue longer in the ground.

The use of tan for hot-beds has not been many years known in England; the first hot-beds of this sort, which were made in England, were at Blackheath, in Kent, about fifty-five years ago: these were designed for raising of orange-tees; but, the use of these hot-beds being but little known at that time, they were made but by two or three persons, who had learned the use of them in Holland and Flanders, where the gardeners seldom make any other hot-beds: but in England there were very few hot-beds made of Tanner's bark, before the ananas were introduced into this country, which was in 1719, since which time the use of these hot-beds have been more general; and are now made in all those gardens where the ananas plants are cultivated, or where there are collections of tender exotic plants preserved.

Tank. see Stank.

TANSEY, [Tanacetum.] The name of a plant often cultivated in kitchen-gardens, and of which there are three varieties, that have all been produced accidentally from the seeds of the common tansey. All the varieties are easily propagated by the creeping roots, which, if allowed to remain undisturbed, will overspread the ground where they are permitted to grow; so that wherever tansey is planted in a garden, the slips should be placed two feet asunder, and in particular beds, where the paths round them may be often dug, to keep their roots within bounds. They may be transplanted either in spring or autumn, and will thrive in almost any soil or situation.

Considered as a medicine, it is a moderately warm bitter, accompanied with a strong, not very disagreeable flavour: some have had a great opinion of it in hysteric disorders, particularly those proceeding from a deficiency, or suppression of the uterine purgations. The leaves and seeds have been of considerable esteem as anthelmintics: the seeds are less bitter, and more acrid and aromatic, than those of rue, to which they are reckoned similar: or of fantonicum, for which they have been frequently substituted.

Wild TANSEY, [Potentilla.] Cinquefoil.

TARES. [Vicia.] Vetches. The Tare is a low climbing or drooping plant, resembling the pea in its manner of growth, but smaller. The stalks are weak, and lean on the ground. The leaves are each composed of several pairs of smaller, of a pale green colour, and there are tendrils for climbing or hanging upon any thing. The flower resembles that of the pea in shape, but is smaller, and of a mixed purple colour in the common kinds, tho' of various hues in others. The seeds are contained in slender pods, and are round and small. The colour varies like that of the flowers.

There are two kinds of Tares, the white and the black. These are named after the colour of the seeds, and have little other difference: they properly are only seminal varieties of the same species; the white Tare rising originally from the seed of the black, as the common blue and red flowers of many kinds, in our gardens, will occasionally

*See
Goa
Velo
See*

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asionally yield such as are white. In the same manner the first variation in this kind of Tare is, that the flower is white, whereas it is purple in the other and the seeds afterwards are of the same colour. Either of these may be sown in fields, and they will answer the same purpose; but the common or black Tare is the hardier kind, and the best bearer.

There may be a great advantage in the sowing Tares properly, among the variety of articles with which the present practice of husbandry gives the farmer an opportunity of varying his crop. They excellently prepare the land for corn, and their produce is of a certain and not inconsiderable price, being the proper food of pigeons, and useful to many other purposes.

Wherever there are pigeons there must be Tares raised or bought; and this is not their only use, for the straw when ~~when~~ dried is an excellent food for cattle. So that upon the whole, the Tare, though greatly inferior to many other articles, is a very profitable, and very useful crop at proper seasons; as a very poor land will support it, and it demands little preparation.

It is a hardy product, approaching to the nature of a weed; and it will therefore grow either on land naturally poor or such as is exhausted: this is what makes the farmer find his principal advantage in its culture: for it not only thus stands in the place of barrenness, but prepares the ground for better crops.

The most favourable land for Tares is a good sandy loam. They will succeed excellently on mellow earth, if not too moist for them, which is a very common inconvenience in that sort of ground, that is not rich in any respect; and we see great crops of them in the lime-stone countries, and that frequently where there is very little depth of soil.

The worst ground for the Tare is a tough wet clayey soil. In Hertfordshire, where a great quantity is raised, they find them always succeed better on the hilly grounds than in the vales.

Though the field where they are to stand has been pretty well exhausted by the last crop of corn, no prepara-

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tion by manure, or repeated tillage, is wanted: all that is needful is to plough in the stubble; and let this lie to rot; and in spring to open the ground for the seed: these kind of crops are so far from demanding manure, that they serve as manure to the land themselves; and of them all none more than this species.

In his choice of the seed, the Husbandman should not be negligent: a little care costs nothing, and it ensures a profitable crop. Let the seed Tares be bought or purchased by exchange from some farmer, at ten or twelve miles distance, and let the farmer who is to sow them take care to purchase such as have grown on a different kind of soil from his own.

Thus, if his field be mellow earth, let him chuse the seed Tares from a loamy or sandy soil; and on the contrary, if his be sandy, let him chuse the seeds from one that is not.

These Tares are in general best for sowing that are of a middling size, round, full, and plump, of a smooth and bright surface, and heavy. There is reason the husbandman be careful in this choice, because few seeds are so apt to spoil; and all pains are thrown away upon land where there is a defect in the seed.

In sowing, five pecks are generally allowed to the acre, but a bushel is fully sufficient: three pecks will be very well. The best time for sowing them is in the middle of February. Very little trouble need be taken about them, for the most slight stirring of the ground is sufficient; but there must never be more sown in a day than can be well covered before evening; for if they lie exposed to the dews of the night, they contract a damp that decays a great part of them; and the rest grow poorly.

In general, a poorer is better than a more rich land for Tares. In the former they pod well; in the latter, they are to run into stalks and leaf with less bearing. There is also another misfortune attending the sowing of Tares on rich ground, especially if it be a little moist, which is, they are more apt to lie upon the ground, because of the weight of the stalk, and then they rot. There is an old custom among the farmers of Essex, and some other

other counties, of sowing tares and horse-beans together, they thrive tolerably well in this way, but they do better singly. There is no difficulty attending the reaping of them, for they may be very well cut together, when ripe, as they will be about the same time; and the different sizes of the bean and tare make them easily separated in the barn by a riddle.

There are two seasons of cutting them, the one for the straw, as it is called; that is, for the green plant for the food of cattle, the other for seed. The first may be continued at different times for several weeks, and it is a very wholesome and profitable food; the other is only to be done at one time, that is, when the tares are ripe in the pods; and for the knowing the exact period for this, the tare is to be watched in the same manner as the pea.

The cutting them for fodder is often the most important service they can be put to; as to the letting them stand for ripening, it is for seed, or for food for pigeons; and they must be left to dry in the field in little heaps, before they are carried home for getting out the seed.

The farmer has seen how easily tares are damaged by wet, the consequence of which is, their growing mouldy, or musty: after this they never recover their right condition, look, or value: but, beside this, there is another accident to which they are very liable, that is, the being infested with worms, mites, and other little vermin. Now in this case the pulpy part is eaten, and they become light, dusty, imperfect, and of little value.

The preservation of tares from both these accidents depends principally on the drying of them; for, as it is damp that moulds them, the same makes way for those little mischievous vermin, which are always found in damp tares, but rarely in such as have been properly dried.

If the air be very warm and dry, the spreading and turning them on a floor for some days will answer the purpose; if otherwise, they should be laid upon a kiln: but, in this case, the heat must be very gentle, and well moderated, otherwise it may do more harm than the damp, destroying the vegetative power in the seed, and injuring it in its nourishing quality.

When the tares are thus properly ordered, they must be kept in a dry place, and properly secured from vermin. The thorough drying is very essential, for otherwise they will breed disorders in the pigeons that are fed with them; and, when used as feed, not one in ten will grow.

When they are to be kept any long time, the best way is to put them up in large barrels; then setting them in a dry, cool place, they will be out of all danger whatsoever, and keep good for all purposes for many years.

TAR. A thick, black, unctuous substance; obtained from old pines and fir-trees, by burning them with a close smothering heat. It differs from the native resinous juice of the trees in having received a disagreeable impression from the fire, and containing a portion of the saline and other juices united with the resinous and oily; by the mediation of these, a part of the terebinthinate oil proves dissoluble in aqueous liquors, which extract little or nothing from the purer turpentine. Water impregnated with the more soluble parts of tar proves, in consequence of this hot pungent oil, warm and stimulating: it sensibly raises the pulse, and quickens the circulation: by these qualities, in cold languid phlegmatic habits, it strengthens the solids, attenuates viscid juices, opens obstructions of the minuter vessels, and promotes perspiration and the fluid secretions in general; whilst in hot bilious temperaments, it disposes to inflammation, and aggravates the complaints which it has been employed to remove.

TAR PILLS. Take any quantity of tar, and mix with it as much powdered elecampane root as will reduce it to a proper thickness for being formed into pills.

The powder here mixed with the tar, though of no great virtue, is nevertheless a very useful addition, not only for procuring it a due consistence for taking, but likewise as it divides the resinous texture of the tar, and thus contributes to promote its solution by the animal juices. In the Edinburgh infirmary, half a drachm of the mass, made into middle-sized pills, is given every morning and evening, in disorders of the breast, scurvy, &c.

TAR

TAR WATER. Take of tar, two pounds; water, one gallon. Stir them strongly together with a wooden rod; and after standing to settle for two days, pour off the water for use.

Tar water has lately been recommended to the world as a certain and safe medicine in almost all diseases; a slow yet effectual alterative in cachexies, scurvies, chlorotic, hysterical, hypochondriacal, and other chronic complaints; and a sudden remedy in acute distempers which demand immediate relief, as pleurisies, peripneumonies, the small-pox, and all kinds of fevers in general. The medicine, though certainly far inferior to the character that has been given of it, is doubtless in many cases of considerable utility: it sensibly raises the pulse, and occasions some considerable evacuation, generally by perspiration or urine, though sometimes by stool or vomit: hence it is supposed to act by increasing the vis vitæ, and enabling nature to expel the morbid humours.

We shall here insert, from the first public recommender of this liquor (Bishop Berkeley) some observations on the manner of using it:—

“Tar water, when right, is not paler than French, nor deeper-coloured than Spanish white-wine, and full as clear; if there be not a spirit very sensibly perceived in drinking, you may conclude the tar water is not good. It may be drank either cold or warm: In cholics, I take it to be best warm. As to the quantity, in common chronic indispositions, a pint a day may suffice, taken on an empty stomach, at two or four times, to wit, night and morning, and about two hours after dinner and breakfast; more may be taken by strong stomachs. But those who labour under great and inveterate maladies, must drink a greater quantity, at least a quart every twenty-four hours: all of this class must have much patience and perseverance in the use of this; as well as of all other medicines, which, though sure, must yet in the nature of things be slow in the cure of inveterate chronic disorders. In acute cases, fevers of all kinds, it must be drank in bed, warm, and in great quantity (the fever still enabling the patient to drink) perhaps a pint every

hour, which I have known to work surprizing cures. But it works so quick, and gives such spirits, that the patients often think themselves cured before the fever hath quite left them.”

TARRAGON. The name of a spicy plant, often cultivated in kitchen gardens.

It is propagated by seeds, slips, or cuttings. March or April is the proper time for setting them, and they may be transplanted again in the summer. The plants should stand at least a foot asunder every way, and they should be kept clean from weeds. They will endure great cold; and even extraordinary drought will not hurt them, if they are but a little watered, or if the earth about them is kept loose and well stirred. A very few of their leaves mixed with a salad, particularly of lettuces, give it a high aromatic flavour. The tenderest and freshest are the best for this purpose.

TARTAR, [*Tartarum*.] Tartar is a saline substance, thrown off from wines, after fermentation, to the sides and bottom of the cask: it proves of a red or white colour, and more or less foul or droffy, according to the colour and quality of the wine; the white is generally looked upon as the purest: of either sort, such as is clean, solid, somewhat transparent, and has its outside covered over with small shining chrystals, is preferable to such as appears porous, droffy, opaque, and less bright. This substance, though truly saline, is scarce acted upon by cold water; the purest sort, or such as has been purified by art, requires twenty-four times its weight of boiling water to dissolve in: the solutions of both the tartars pass the filter colourless, and shoot, in the cold, into small, white, semitransparent chrystals. All such earths as are soluble in vinegar, and alkaline salts, render tartar more easily soluble in water; hence the refiners at Montpellier are said to employ a certain earth for promoting its solutions with some particular managements for making it shoot into large chrystals. This addition may occasion a considerable alteration in the salt, inasmuch that the finer sorts of white tartar are perhaps preferable on many occasions to the common chrystals. The virtues of tartar are those of a mild,

cooling, aperient, laxative medicine. Taken from half an ounce to an ounce, it proves a gentle, though an effectual purgative.

TEA, [*Thea*.] The leaves of a shrub cultivated in China.

The several sorts of tea met with among us, are the leaves of the same plant, collected at different times, and cured in a somewhat different manner: the small young leaves very carefully dried, are the finer green: the older afford the ordinary green and bohea. The two first have a sensible flavour of violets; the other of roses: the former is the natural odour of the plant; the latter, as Neumann observes, is probably introduced by art. Some of the dealers in this commodity in Europe, are not ignorant that bohea tea is imitable by the leaves of certain common plants, artificially tinged and impregnated with the rose flavour. The taste of both sorts is lightly bitterish, subastringent, and somewhat aromatic. The medical virtues attributed to these leaves are sufficiently numerous, though few of them have any just foundation: little more can be expected from the common infusions, than that of a diluent, acceptable to the stomach: the diuretic, diaphoretic, and other virtues which they have been celebrated for, depend more on the quantity of warm fluid, than any particular qualities which it gains from the tea. Nothing arises in distillation from either sort of tea with rectified spirit; water elevates the whole of their flavour.

South-Sea TEA. Cassioberry.

TEAZLE, [*Dipsacus*.] The Fuller's Teazle is the only kind cultivated for use. Teazle is not one of those universal commodities for which there is every where a market. It may be raised in any place, and it is of cumbersome carriage; therefore he must be very imprudent, who sets about to cultivate it at a distance from the parts of the kingdom where it is used, because nothing need prevent those from doing it who are upon the spot; but to such as are, it proves on many occasions a very profitable growth.

The teazle is propagated by sowing the seeds in March, upon a dry soil. About one peck of the seed will sow an acre, for the plants should have room to grow; otherwise the heads will no

be so large, nor in so great quantity. When the plants are come up, you must hoe them in the same manner as is practised for turneps, cutting down all the weeds, and singling out the plants to about six or eight inches distance; and as the plants advance, and the weeds grow again, you must hoe them a second time, cutting out the plants to a wider distance; for they should be at last left a foot asunder; and you should be particularly careful to clear them from weeds, especially the first summer; for when the plants have spread so as to cover the surface of the ground, the weeds will not so readily grow between them. The second year after sowing, the plants will shoot up heads, which will be fit to cut about the beginning of August, at which time they should be cut and tied up in bunches, setting them in the sun, if the weather be fair; but if not, they must be set in rooms to dry. The common produce is about 160 bundles or staves upon an acre, and they will sell for about one shilling a staff.

TEAM. A number of horses or oxen drawing at once.

To TEAM. To pour or ladé out of one vessel into another.

To TED. To spread abroad new-mown grass, which is the first thing done in order to its being dried, and made into hay. *To Show* -

TEDDER or TETHER. A rope with which a horse is tied in the field, that he may not pasture too wide.

To TEEM. To be pregnant; to engender young.

TENDRIL. The clasper of a vine, or other climbing plant.

TENEMENT. Any thing held by a tenant, as a house, &c.

TENURE. The manner in which tenants hold their lands, &c. of their lord.

THATCH. Straw laid on the top of a building, rick, &c. to keep out the weather.

THEAVE. An ewe of the first year.

THETCHES. See VETCHES.

THICKET. A close knot or tuft of trees; a close wood.

THILL-HORSE. The last horse in a team; the horse that goes between the thills or shafts.

THISTLE, [*Carduus*.] A prickly weed; growing among corn, &c.

The

1711. 1712. 1713. 1714. 1715. 1716. 1717. 1718. 1719. 1720. 1721. 1722. 1723. 1724. 1725. 1726. 1727. 1728. 1729. 1730. 1731. 1732. 1733. 1734. 1735. 1736. 1737. 1738. 1739. 1740. 1741. 1742. 1743. 1744. 1745. 1746. 1747. 1748. 1749. 1750. 1751. 1752. 1753. 1754. 1755. 1756. 1757. 1758. 1759. 1760. 1761. 1762. 1763. 1764. 1765. 1766. 1767. 1768. 1769. 1770. 1771. 1772. 1773. 1774. 1775. 1776. 1777. 1778. 1779. 1780. 1781. 1782. 1783. 1784. 1785. 1786. 1787. 1788. 1789. 1790. 1791. 1792. 1793. 1794. 1795. 1796. 1797. 1798. 1799. 1800.

The following observations on thistles is selected from the papers of the Bath Agriculture Society;—

“Some observations on Thistles as injurious in agriculture, more particularly the *Serratula Arvensis* of Linnæus. By William Curtis, Author of the *Flora Londinensis*.”

“Gentlemen,

“While some of your correspondents are laudably engaged in enriching agriculture, by discovering and promoting the cultivation of new plants, permit me whom you have been pleased to elect an honorary member of your Society, to lay before you a few observations on some of the plants which are more particularly noxious to the farmer. Should they be considered as contributing to advance even in the smallest degree the design of your institution, he may be again excited to trouble you on other subjects, as information may arise from a cultivation of most of the British plants on a small scale.

“There are no plants over which the economical farmer ought to keep a more watchful eye than the thistle tribe. He is sensible that they are not only useless, as resisting the bite of most animals, the hardy ass excepted, but that they occupy much ground; and being furnished with downy seeds, are capable of being multiplied to almost any distance. Hence in many parts of the kingdom, the farmers whose lands are contiguous unite in preventing the increase, by cutting them down before they seed; but this operation, though destructive to some species, will only palliate the bad effects of others.

“To be acquainted with the qualities of each kind, we must observe them with much attention, and view them in a botanical and philosophical light: this alone will enable us to judge with certainty how far and by what means their destruction may be effected.

“The English thistles meriting notice, as more or less noxious, are,

1. *Carduus Lanceolatus*, or *Spear Thistle*
2. *Carduus Nutans*, — *Musk Thistle*
3. *Carduus Palustris*, — *Marsh Thistle*
4. *Carduus Marianus*, — *Milk Thistle*
5. *Carduus Acanthoides*, *Wetted Thistle*
6. *Carduus Crispus*, — *Curled Thistle*
7. *Onopordum Acanthium* *Cotton Thistle*
8. *Serratula Arvensis*, — *Cursed Thistle*

“The *Spear Thistle* is a large strong plant, about four feet high, the extremity of each leaf running out into a long point; its heads are large, and it grows very commonly by the sides of roads, near dunghills, and not unfrequently in fields and pastures.

“The *Musk Thistle* grows to the height of two or three feet, the heads hang down, and the flowers smell somewhat like musk; it is often found occupying whole fields, particularly on chalky or barren land.

The *Marsh Thistle* is very tall and prickly; its heads are numerous, small, and of a red colour; it grows abundantly in wet meadows, also in woods.

“The *Milk Thistle* has very large leaves, which are most commonly beautifully marbled with white. Near London it appears frequently on banks by road sides; in which situation we also meet with the *Curled* and *Wetted Thistles*. These three seldom intrude into fields or pastures.

The *Cotton Thistle* is distinguished by its size, (being perhaps the largest of the British herbaceous plants) and its white woolly leaves. It grows in the same situation as the three last-mentioned.

“The *Cursed Thistle* is more general in its growth than any of the others, being found not only by the sides of roads universally, but also in arable land, and is not uncommon in meadows, even in such as are yearly mown. It is remarkably prickly, grows about three feet high; its heads are small, the flowers purple, and frequently white. The scales of the heads are smooth, and may in a particular manner be distinguished from all the others before mentioned, by having a perennial root about the size of a goose-quill, which runs deep into the earth, and afterwards creeps along horizontally.

“Of these thistles, all except the last are either annual or biennial; that is, remain in the ground not more than one or two years, unless renewed by seed. The last, having a perennial root, continues in the earth, increasing, and throwing up new shoots every year.

“Hence it will appear obvious, that if the first seven species of thistles are cut down before they perfect their seed, the ground will be entirely cleared of them; and that the last-mentioned

can no otherwife be destroyed, than by rooting it out, a process which the following experiments will sorrowfully convince the rural œconomist to be impracticable in large fields, and scarce to be perform'd even in an inclosed garden.

“ Experiment 1. *To ascertain the effects of mowing the Seratula Arvensis.*

“ The Hon. Daines Barrington, who is ever anxious to promote useful enquiries, desired me to try whether this kind of thistle could not be destroyed by mowing. A small patch of them, about two feet square, was accordingly planted in a good garden, in the year 1777. In the course of the summer they were mown three several times, but without any other good effect than that of preventing their feeding; for instead of being destroyed, the next spring they came up extremely vigorous, not only on the bed where they were first planted, but all around it to the distance of six feet.

“ Experiment 2. *To ascertain the annual increase of the root of the Seratula Arvensis.*

“ April 1, 1778, I planted in a garden a piece of the root of this thistle, about the size of a goose-quill, and two inches long, with a small head of leaves, cut off the main-root, just as it was springing out of the ground. By the 2d of November 1778; this small root had thrown out shoots, several of which had extended themselves to the distance of eight feet; some had even thrown up leaves six feet from the original root. Most of these shoots which had thus far extended themselves were about six inches under ground—others had penetrated to the depth of two feet and a half; the whole together, when dug up and washed from the earth, weighed four pounds.

“ In the spring of 1779, contrary to my expectation, this thistle again made its appearance on and about the spot where the small piece was originally planted. There were between fifty and sixty young heads, which must have sprung from those roots, which had penetrated deeper than the gardener was aware of, although he was particularly careful in extracting them.

“ From these experiments it appears

deducible, that no plants are more easily destroyed than the generality of thistles, or with more difficulty than this one; there being no soil, however poor, in which it will not vegetate, nor earth so stiff but it will penetrate; in proportion, however, as the soil is rich, will be its increase.

“ It were much to be wished, that an investigation of this evil had afforded a remedy; at present, none appears. It is, therefore, to be feared, that spudding, or cutting them down close to the ground, once or twice in the spring, is the only operation the farmer can perform to prevent their bad effects in destroying his crops on arable land, and rendering his pastures unfeemly.

“ As nature in the preservation of this plant seems to have exerted her greatest powers, it is possible that in some future period, uses may be discovered to which it has not yet been applied.

“ To the ass it is the highest treat; and I have been credibly informed, that in some parts of Scotland, it is cut down as food for horses.

“ It would be well, if a plant so noxious in some respects could be rendered beneficial in others.

“ I am, &c. WM. CURTIS.”

Blessed THISTLE. See CARDUS BENEDICTUS.

Carline THISTLE. See CARLINE THISTLE.

Distaff THISTLE. See DISTAFF THISTLE.

Fuller's THISTLE. See TEAZLE.
Globe THISTLE. See GLOBE THISTLE.

Melon or Thorn THISTLE. See MELON THISTLE.

Melancholy THISTLE. See MELANCHOLY THISTLE.

THISTLING. The action of cutting or pulling up thistles.

Thorn Apple. See THORN APPLE.

Black Thorn. The Sloe tree.

Box Thorn. See BOX THORN.

Christ's Thorn. See CHRIST'S THORN.

Cockspur Thorn. Service.

Egyptian Thorn. Acacia.

Evergreen Thorn. See EVERGREEN THORN.

Glastonbury Thorn. See GLASTONBURY THORN.

Goat's THORN. See TRAGACANTH.

Haw THORN. See HAWTHORN.

Purging THORN. See BUCKTHORN.

White THORN. See HAWTHORN.

THOROUGH WAX. Hare's ear.

THREE-LEAVED GRASS. Trefoil, Clover.

THRASHING. The action of getting the corn out of the straw.

THRASHING Floor. The floor on which the corn is thrashed.

THRAVE. A shock of corn, consisting of twenty-four sheaves.

THREAF. A handful, a bundle.

THRIFT, [*Statice.*] There are two or three kinds of this herb, natives of the Alps and salt-marshes of many parts of England; some years ago it was much esteemed for borders, but at present it is not much regarded. It may be propagated by parting the roots in autumn.

THROATWORT, [*Trachelium.*]

This plant will grow on old walls, and is easily propagated by throwing the seeds on old walls where there is the least earth to hold them.

THYME, [*Thymus.*] A well-known aromatic plant propagated in kitchen gardens.

Botanists enumerate nine different species of thyme, besides several varieties; but they are all propagated either by seeds or parting the roots.

The most useful sort, either for culinary purposes, or for medicine, is the broad-leaved thyme, most commonly cultivated in the kitchen-garden; for the narrow-leaved kind never grow so large. Their culture is, however, exactly the same.

The seeds of thyme, if it be raised from thence, should be sown either in March or October, but the former of these months is best, in a well-dug bed of light earth: taking care, as they are very small, not to drop them too close together, nor to bury them deep, for this last would make them rot. When the plants are come up, they should be carefully over-looked and cleared from weeds, and if the season be dry, their growth will be greatly promoted by watering them twice a week, for some time: In June, if it be a spring sowing, the plants should be thinned to the distance of six inches asunder every way, that they may have room to spread: and those which are drawn out

may be set in other beds, at the same distance from each other. They must be watered till they have taken root, and will then require no farther care, except weeding them, till the winter, when they may be pulled up, and laid by in a dry place, for use. The autumnal sowing should be thinned as before, early the next spring, if it be left stand till then; for there will be little danger of its resisting the severest winter of this country, especially if the plants grow on a dry, poor, and stony land. In rich ground, indeed, where they grow luxuriantly, they are sometimes destroyed by severe frosts. Thyme will even flourish upon a stone wall.

If the plants are propagated by parting their roots, this should also be done in March or October. The old plants should be taken up, their roots should be split into as many parts as can be, and these slips should be set six or eight inches asunder every way, in beds of fresh light earth. If the season be dry, they must be watered there till they have taken root; and with only one weeding of them afterwards, they will soon be fit for use.

To save the seeds of thyme, some of the plants should be left unremoved till the next spring. They will then flower in June, and their seeds will ripen in July. These must be pulled up and beaten out as soon as they are ripe, for the first shower of rain would otherwise wash them all out of their husks.

Thyme is so great an impoverisher of the earth, that no crop will thrive well where that stood the year before, unless the ground be trenched deeper than the thyme rooted, and at the same time enriched with dung, or some other suitable manure.

Lemon THYME. A variety of the common thyme.

Mother of THYME, [*Serpillum.*] A species of thyme growing wild on heaths.

TICHING. Setting up turfs in such a manner as they may be dried by the sun, and fit for being burnt for their ashes upon the land.

TIKE. An insect found in dogs, sheep, cows, &c.

TILLABLE. Arable, fit for the plough.

TILLAGE.

TILLAGE. The act or practice of tilling, or cultivating land.

TILLER. A branch of corn.

To TILLER. To spread or shoot out.

TILLS. Tares or vetches.

TILTH. The condition of the earth after ploughing, &c.

TIMOTHY-GRASS. The name of a grass now cultivated in England, of which it is a native, though the seeds of it were carried from Virginia, by one Mr. Timothy Hanson, to North Carolina, where it is now cultivated by the inhabitants; and from this circumstance it received the name it now bears.

It thrives most in low, damp, marshy grounds; for in such soil and situation it will produce a fine turf in three weeks from the time of sowing the seed. It is very luxuriant, grows to a considerable height, and has in some sort the appearance of wheat or rye, having a broad blade or leaf.

All sorts of cattle are very fond of this herb whilst in a green growing state; and it will not be improper to add, that they are nearly, if not quite, as fond of it, when dried and made into hay; but when it is intended for this use, it should always be mown when it is in full sap; just before it flowers, for if it is left longer before it is cut, being so luxuriant and quick a grower, it becomes harsh, and is much dryer and more chirkly food, than when it is cut in its prime.

TINE. A tooth or spike. And hence the common phrase of giving two or three tinings, signifies to draw the harrows twice or thrice over the same spot of ground.

TIT. A small horse.

TOAD-FLAX. See **TOAD-FLAX.**

TOBACCO. [*Nicotiana.*] There are many species of this plant, but they are in general supposed too tender to grow from seeds in the full ground, to any degree of perfection in this country, so require to be raised in a hot-bed, after the following manner:

The seeds must be sown upon a moderate hot-bed in March, and when the plants are come up fit to remove, they should be transplanted into a new hot-bed of a moderate warmth, about four inches asunder each way, observing to water and shade them until they have taken root; after which you must let

them have air in proportion to the warmth of the season, otherwise they will draw up very weak, and be thereby less capable of enduring the open air: you must also observe to water them frequently, but while they are very young it should not be given them in too great quantities; though when they are pretty strong, they will require to have it often, and in plenty.

In this bed the plants should remain until the beginning of May, by which time (if they have succeeded well) they will touch each other, therefore they should be inured to bear the open air gradually; after which they must be taken up carefully, preserving a large ball of earth to each root, and planted into a rich light soil, in rows four feet asunder, and the plants three feet distance in the rows, observing to water them until they have taken root; after which they will require no farther care, but only to keep them clear from weeds, until the plants begin to shew their flower-stems; at which time you should cut off the tops of them, that their leaves may be better nourished, whereby they will be rendered larger, and of a thicker substance. In August they will be full grown, when they should be cut for use; for if they are permitted to stand longer, their under leaves will begin to decay. This is to be understood for such plants as are propagated for use, but those plants which are designed for ornament should be planted in the borders of the pleasure-garden, and permitted to grow their full height; where they will continue flowering from July till the frost puts a stop to them.

TOLU. See **BALSAM OF TOLU.**

TOOTH-PICK. See **SPANISH**

TOOTH-PICK.

TOOTHWORT. [*Dentaria.*] There are three species, the five-leaved, the seven-leaved, and the three-leaved. The second sort is found growing naturally in some parts of England, the others are natives of the mountains of Italy and Austria. They are cultivated by seeds, or by parting the roots in October.

TORMENTIL. [*Tormentilla.*] The species are, 1. Tormentil with an erect stalk. 2. Creeping Tormentil.

The first sort grows wild on dry pastures and commons in most parts of England,

See Fal-
low-

See Jobb. See Puck-
Mush-room. See Puck-
Balls

England, so is never cultivated in gardens; this is so commonly known as to need no description. The roots of this plant have been frequently used for tanning of leather, in places where oak-bark is scarce. This root is also much used in medicine, and is accounted the best astringent in the whole vegetable kingdom.

The second sort is found in some particular places of England growing wild, but particularly in Oxfordshire. The stalks of this sort spread on the ground, and emit roots from their joints, whereby they propagate very fast: this is rarely preserved, unless in some botanic gardens for the sake of variety. It requires no care to propagate these plants, since, if their roots are once planted in almost any soil or situation, the plants will flourish without any other care but to prevent their being over-run with great weeds.

TORE. Rowen, rowet, or winter grass.

TOSET or TOVET. Half a bushel.

TOUCH ME NOT. Yellow balsamine. See BALSAMINE.

TOWER MUSTARD, [*Turritis.*] This plant is kept in botanic gardens for variety, and is easily propagated by sowing the seeds on old walls in autumn.

Ladies TRACES. Dogstones.

TRAMEL. An instrument or device, made sometimes of leather, but more usually of ropes, fitted to a horse's legs, to regulate his motion, and teach him to amble. See *Amble*.

Tramel also signifies an iron instrument hanging in the chimney, whereon to hang pots or kettles over the fire.

TRANSPLANTING. The act of removing trees or plants from the places where they are sowed; or raised, and planting them in others.

TRAGACANTH, [*Tragacantha.*] There are four species of this plant, natives of Italy, Spain, and the islands of the Archipelago. These plants may be propagated by seeds, when they can be procured from the countries where the plants grow naturally, which should be sown on a bed of fresh earth in April; and when the plants come up, they should be carefully kept clean from weeds. They may also be propagated by slips; the most proper time for which is April.

See *Asclepias*.

The gum tragacanth of the shops is the produce of this shrub.

TRAVELLER'S JOY. Climbers.

TREE. The first and largest of the vegetable kind; consisting of a single trunk, out of which spring forth branches and leaves. See *Planting*.

Standard trees are such as naturally rise to a great height and are not topt. For the choice of trees of this kind, kind, to be transplanted out of a nursery, Quinteyne recommends us to such as are strait, six feet high at least, and five or six inches thick at bottom, and three or four at top; the bark pretty smooth and shining, as a token of their youth, and the good soil they grew in.

Dwarf trees are such as are kept low, and never suffered to have above half a foot or stem.

TREE GERMANDER. See **TREE GERMANDER.**

TREE of Life. See **ARBOR VITAE.**

TREFOIL. See **CLOVER.** *3 Leaf Grass, &c.*

Bean TREFOIL. See **BEAN TREFOIL.** *&c.*

Bird's-Foot TREFOIL. See **BIRD'S-FOOT TREFOIL.**

Marsh TREFOIL. Buckbean.

Moon TREFOIL. Lucern.

Shrub TREFOIL, [*Ptelea.*] This plant is a native of North America, and rises with an upright stem to the height of twelve or fourteen feet; there is another species, a native of the West-India islands: They are both propagated by seeds; the latter requires the assistance of a stove in winter.

Snail TREFOIL. See **BASTARD MEDICA.**

TREACLE MUSTARD. See **Treacle MUSTARD.**

TRELLISES; A contrivance for supporting the branches of fruit trees, consisting of laths of wood crossing each other in the form of a lattice.

Some persons who are very curious in their fruit, and who do not mind a little extraordinary expence, erect trellises against their walls, extending from the inside of one pier to the nearest inside of the next; where the walls are built with piers, as they must be for this purpose. This framework is constructed in the same manner as that for espaliers, like which it need not be set up till the trees are well-spread, and begin to bear fruit plentifully; for they may be trained till then against any ordinary low espalier

Sonic-wood. See *Agave* & *Agave*

lier of ash-poles or other slender sticks, in order not needlessly to expose the trellises to the injuries of the weather; because these, being generally made of regularly cut yellow-deal, or oak, and run up higher, cost more. Every fourth upright rail or post of the trellis should be much stronger than the rest, and fastened to the wall with iron hooks, which it is best to fix in the wall at the time of building it. These strongest upright posts should be about three, but by no means more than four feet from each other. The cross rails may be slight, as for common espaliers, but they must be laid much closer together. For peach, nectarine, and apricot trees, for example, which, for the most part, produce their fruit on the young wood, the squares of the trellis frame should not exceed three or four inches; but for trees which continue to bear on the old wood, they may be five or six inches wide, and for vines, eight or nine inches. The shoots of the trees are fastened to this frame with osier twigs, rope yarn, or any other soft bandage, in the same manner as they are to espaliers: for they must not be nailed to either, because that would injure the wood-work.

These trellises, which should project about two inches from the wall, are thought to contribute greatly to preserve the beauty of the fruit, by preventing its lying too close to the wall, whilst it has at the same time all the advantages of the heat reflected therefrom: nor are the walls where these are used hurt by driving nails into their joints, and drawing them out again every year, at the hazard of pulling out some of the mortar with them, and consequently of weakening the wall, and making holes in which snails and other vermin take shelter and breed.

*See Dig-
ging.*
TRENCH. A furrow cut in the earth for draining land.

TRENDLE. Any thing that turns round.

To TREFALLOW. To plough land the third time before sowing.

TROUGH. A long vessel for holding water, &c.

TRUG or TRUGG. A hod for mortar.

TRUNDLE. A sort of carriage with low wheels, for carrying heavy and cumbersome loads. *Trumbel.*

TRUNK. The stem or body of a tree; or the part between the ground and the place where it divides into branches.

TRUSS. A bundle of hay, straw, &c. A truss of hay must contain 56 pounds, or half a hundred weight; 36 trusses make a load. In June, July, and August, a truss of new hay must weigh 60 pounds.

TRUSS of Flowers. Signifies many flowers growing together on the head of a stalk, as in the cowslip, auricula, &c. &c.

TRUELOVE. One berry.

TRUMPET FLOWER. Scarlet Jasmine.

TRUMPET Honeysuckle. See HONEYSUCKLE.

TUBEROSE, [*Polianthes.*] The varieties of this plant are the tuberose with a double flower, the striped-leaved tuberose, and the tuberose with a smaller flower; the last is mentioned by several authors as a distinct species, but is certainly a variety.

This sort is frequent in the south of France, from whence the roots have been often brought to England early in the spring, before those roots have arrived from Italy which are annually imported; the stalks of this are weaker, and do not rise so high, and the flowers are smaller than those of the common tuberose, but in other respects is the same.

The tuberose grows naturally in India, from whence it was first brought to Europe, where it now thrives in the warmer parts, as well as in its native soil. The Genoese are the people who cultivate this plant, to furnish all the other countries where the roots cannot be propagated without great trouble and care, and from thence the roots are annually sent to England, Holland, and Germany. In most parts of Italy, Sicily, and Spain, the roots thrive and propagate without care, where they are once planted.

This plant has been long cultivated in the English gardens, for the exceeding beauty and fragrancy of its flowers; the roots of this are annually brought from Genoa, by the persons who import orange-trees; for as these roots are too tender to thrive in the full ground in England, so there are few persons who care to take the trou-
ble

ble of nursing up their offsets till they become blowing roots, because it will be two or three years before they arrive to a proper size for producing flowers; and as they must be protected from the frost in winter, the trouble and expence of covers is greater than the roots are worth, for they are generally sold pretty reasonable by those who import them from Italy.

TUBULATED FLOWERS. A term used to express those smaller flowers, a great number of which go to compose one large compound flower. These are called tubulated in distinction from another kind of them, which are from their shape called ligulated. The tubulated floscules generally compose the disk, and the ligulated ones the radius of the compound flowers. The tubulated ones are formed into a hollow cylinder, which expands into a mouth at the top, and is divided into five equal segments, which stand expanded, and in some measure bent backwards.

TULIP; [Tulipa.] The distinct species are two, 1. The tulip with a nodding flower, or Italian tulip. 2. The tulip with an erect flower. But the varieties are innumerable. The properties of a good tulip as distinguished by Miller, are, 1. It should have tall strong stem. 2. The flower should consist of six leaves, three within, and three without; the former ought to be larger than the latter. 3. Their bottom should be proportioned to their top, and their upper part should be rounded off, and not terminate in a point. 4. These leaves, when opened, should neither turn inward, nor bend outward, but rather stand erect, and the flower should be of a middling size, neither over large, nor too small. 5. The stripes should be small and regular, arising from the bottom of the flower, for if there are any remains of the former self-coloured bottom, the flower is in danger of losing its stripes again. The chives should not be yellow, but of a brown colour. When a flower has all these properties, it is esteemed a good one.

Tulips are generally divided into three classes, according to their seasons of flowering; as præcoces, or early blowers, medias, or middling blowers, and serotines, or late blowers; but

there is no occasion for making any more distinctions than two, viz. early and late flowers.

The early-blowing tulips are not near so fair, nor rise half so high, as the late ones, but are chiefly valued for appearing so early in the spring; some of which will flower the middle of March in mild seasons, if planted in a warm border near a wall, pale, hedge, or other shelter, and a month after the others will succeed them; so that they keep flowering until the general season for the late flowers to blow, which is toward the end of April.

The roots of the early-blowing tulips should be planted the beginning of September in a warm border, near a wall, pale, or hedge, because if they are put into an open spot of ground, their buds are in danger of suffering by morning frosts in the spring. The soil for these should be renewed every year, where people intend to have them fair. The best soil for this purpose is that which is taken from a light loamy pasture, with the turf rotted amongst it; and to this should be added a fourth part of sea-sand. This mixture may be laid about eighteen inches deep, which will be sufficient; for these need not be planted more than four or five inches deep at most. The offsets should not be planted amongst the blowing roots, but in a border by themselves, where they may be planted pretty close together, especially if they are small; but these should be taken up when their leaves decay, in the same manner as the blowing roots, otherwise they would rot; for these are not so hardy as the late blowers, nor do they increase half so fast as those, so that a greater care is required to preserve the offsets of them.

When the tulips come up in the spring, the earth upon the surface of the borders should be gently stirred and cleared from weeds; and as the buds appear, if the season should prove severe, it will be of great service to cover them with mats, for want of which many times they are blighted, and their flower-buds decay before they blow, which is often injurious to the roots, as is also the cropping of the flowers, so soon as they are blown, because their roots, which are formed new every year, are not at that time arrived to

their full magnitude, and are hereby deprived of proper nourishment.

If, when these flowers are blown, the season should prove very warm, it will be proper to shade them with mats, &c. in the heat of the day; as also if the nights are frosty, they should be in like manner covered, whereby they may be preserved a long time in beauty; but, when their flowers are decayed, and their seed-vessels begin to swell, they should be broken off just at the top of the stalks, because if they are permitted to seed, it will injure the roots.

When the leaves of these flowers are decayed (which will be before the late blowers are out of flower,) their roots should be taken up, and spread upon mats in a shady place, to dry; after which they should be cleared from their filth, and put up in a dry place, where vermin cannot come to them, until the season for planting them again, being very careful to preserve every sort separate, that you may know how to dispose of them at the time for planting them again, because it is the better way to plant all the roots of each sort together and not to intermix them, as is commonly practised in most other kinds of flowers; for as there are few of them which blow at the same time, so, when the several roots of one sort are scattered through a whole border, they make but an indifferent appearance; whereas, when twenty or thirty roots of the same sort are placed together, they will all flower at the same time, and have a better effect.

When the flowers are faded, the heads of all the fine sorts should be broken off to prevent their seeding; for if this be not observed, they will not flower near so well the following year, nor will their stripes continue so perfect; this will also cause their stems to decay sooner than otherwise they would do, so that their roots may be taken up in June; for they should not remain in the ground after their leaves are decayed. In taking the roots out of the ground, you must be very careful not to bruise

upon mats in a shady place to dry; after which they should be put up in a dry place, where vermin cannot get to them, observing to keep every sort separated; but they should not be kept too close from the air, nor suffered to lie in heaps together, lest they should grow mouldy, for if any of the roots once take the mould, they commonly rot when they are planted again.

The offsets of these roots, which are not large enough to produce flowers the succeeding year, should be also put by themselves, keeping each sort distinct; these should be planted about a month earlier in autumn than the blowing roots, in particular beds by themselves in the flower nursery, where they may not be exposed to public view; but the earth of the beds should be prepared for them in the same manner as for larger roots; these should not be planted above five inches deep, because they are not strong enough to push through so great covering of the earth as the old roots; they may also be placed much nearer together, than those which are to flower, and in one year most of them will become strong enough to flower, when they may be removed into the flower-garden, and placed in the beds amongst those of the same kind.

African TULIP. Bloodflower.

TULIP TREE, [*Tulipifera*.] The tulip-tree is a native of North-America; it is a tree of the first magnitude, and is generally known through all the English settlements by the title of poplar. Of late years there have been great numbers of these trees raised from seeds in the English gardens, so that now they are become common in the nurseries about London; and there are many of them in several parts of England which do annually produce flowers. The first tree of this kind which flowered here, was in the gardens of the late Earl of Peterborough, at Parson's Green, near Fulham, which was planted in a wilderness among other trees; before this was planted in the open air, the few which were then in the English gardens, were planted in pots and nourished in winter, supposing they were too tender to live in the open air; but this soon after it was placed in the ground, convinced the gardeners of their mistake, by the great profusity

pots and tubs increased slowly in their growth; so that afterward there were many others planted in the full ground, which are now arrived to a large size, especially those which are planted in a moist soil. One of the handsomest trees of this kind, near London, is in the garden of Waltham Abbey; and at Wilton, the seat of the Earl of Pembroke, there are some trees of great bulk; but the old tree at Parsons Green is quite destroyed by the other trees which were suffered to overhang it, and rob it of its nourishment, from the fear of taking them down, lest, by admitting the cold air, the tulip-tree might be injured. The young shoots of this tree are covered with a smooth purplish bark; they are garnished with large leaves, whose foot-stalks are four inches long; they are ranged alternate; the leaves are of a singular form, being divided into three lobes; the middle lobe is blunt and hollowed at the point, appearing as if it had been cut with scissars. The two side lobes are rounded, and end in blunt points. The leaves are from four to five inches broad near their base, and about four inches long from the foot-stalk to the point, having a strong mid-rib, which is formed by the prolongation of the foot-stalk. From the mid-rib run many transverse veins to the borders, which ramify into several smaller. The upper surface of the leaves is smooth, and of a lucid green, the under is of a pale green. The flowers are produced at the end of the branches; they are composed of six petals; three without and three within; which form a sort of bell-shaped flower, from whence the inhabitants of North-America give it the title of tulip. These petals are marked with green, yellow, and red spots, so make a fine appearance when the trees are well charged with flowers. The time of this tree's flowering is in July, and when the flowers drop, the germen swells and forms a kind of cone, but these seldom ripen in England.

Mr. Catesby, in his Natural History of Carolina, says, "There are some of these trees in America which are thirty feet in circumference; the boughs are unequal and irregular, making several bends or elbows, which render the trees distinguishable at a great distance, even

when they have no leaves upon them. They are found in most parts of the northern continent of America, from the Cape of Florida to New-England, where the timber is of great use, the trunk being frequently hollowed, and made into boats big enough to carry a number of men."

This tree is propagated by seeds, brought from North-America.

Laurel-leaved TULIP TREE, [*Magnolia*.] There are four species of this tree, growing in North-America, some growing to the height of twenty feet, others to eighty feet. They are cultivated in England and are beautiful ever-greens. They are propagated by seed, which must be procured from the place of their natural growth.

TUMBREL. A dung-cart, *See Trundle*.

TUPP. A ram.

TUPPING TIME. RANMING TIME.

TURBITH, [*Turpethum*.] The cortical part of the root of an Indian convolvulus, brought to us in oblong pieces, of a brown or ash colour on the outside, and whitish within: the best is ponderous, not wrinkled, easy to break, and discovers a large quantity of resinous matter to the eye: its taste is at first sweetish; chewed for a little time, it becomes acrid, pungent, and nauseous. This root is a cathartic, not of the safest or most certain kind.

TURF. A blackish sulphureous earth, used in several parts of England, Holland, and Flanders, as fuel.

In Flanders, their turf is dry or pared from off the surface of the earth, and cut in form of bricks. The sedge, or species of grass growing very thick on the turf earth, contributes greatly, when dry, to the maintenance of the fire.

TURKEY. The turkey is a very large and fine bird, and exceedingly well worth the regard of the prudent husbandman. There are advantages and disadvantages attending upon the raising of this, as other kinds of fowl; but all being weighed together, the former far outweigh the latter, and the interest of the farmer will lead him to think very seriously of receiving them as a part of his stock.

There is also this farther encouragement to his industry, that a great many of the disadvantages attending the keeping of this fowl, may be remedied

or prevented by prudent management: and that there is no kind among all the poultry which will afford so many opportunities of improvement. There are several breeds of the turkey, much more different than those among the cock and hen kinds; and the properly choosing among these, will greatly add to the profit and ease of keeping them.

Among the advantages of the turkey may be reckoned his size, the price he fetches at market when in good condition, and the quantity of his dung, which is as valuable as any other kind whatsoever. He is fit for sale also in the common condition at a good price; and his feathers are not to be neglected, in counting up these benefits.

Among the disadvantages of turkeys are to be reckoned their straggling disposition, their being liable to many accidents, the difficulty of raising them, and the frequent destruction of them by vermin; as also the quantity of corn they devour. If fed altogether with this, they will eat more than they can ever be worth; but to this it may be answered, that the feeding them with corn is not necessary, for they will in general provide very well for themselves; and in the same manner we shall shew that every other objection made against them may be removed: and that it will be greatly to the farmer's advantage to raise them in most places.

This kind of bird always succeeds best for the owner in open countries, because these are not so much infested with vermin; and they are subject to ramble and be destroyed more than any kind, as observed already. This may be a very reasonable caution for the husbandman not to keep them in improper places; but we have counties enough in England that are not at all liable to that objection.

The first article to be considered in respect of the breeding of turkeys is the age of the cock and her. The cock must be young, for the brood is never good unless he be in the vigour of his life; the hen may be older, for her care in sitting and leading them is all that is required of her, and in the latter article the cock often assists her, when he is of a kindly sort.

The turkey cock for breeding should be about two years old; and the best

time for the hen is at about four years; she may be employed in breeding till she is six, but when she is too young, she is most apt to neglect the brood; and when the cock is at all declined from his strength, they are weakly.

Turkeys are not natural to our kingdom, and there is therefore always a wildness about them. The female of this kind does not lay familiarly and conveniently about houses as the common hen, but rambles to a distance, and makes her nest among thickets; for this reason her brood is from the beginning more liable to accidents. The farmer must therefore be watchful about the time of her laying, and take care to get her into the hen-house, and compel her to lay there; for this is the first precaution, and it is a very essential one about the brood.

It is a custom with some, if there be convenience of thickets, or a little wood near the house, to let them take their own way, and lay and sit there; and in the hardier breeds, with a little care of the young when new hatched, this will do very well; but there is never any harm in the other method, whatever be the breed; and there is a much greater certainty of success.

The turkey naturally begins to lay in the month of March, and will sit in April. The eggs are very large, and are excellent in the way of food, particularly they have a restorative virtue.

The proper number of eggs to let the hen sit upon is eleven, some advise thirteen, but commonly there is less success in that avaricious method, for they cannot all be well covered.

The turkey sits about seven or eight and twenty days. Some of the eggs will sometimes be hatched at five or six and twenty, and some will lie till thirty, but the middle time is the most natural.

The hatching of the brood is the time when the great care is required in their management. The turkey being naturally a bird of a warmer climate, is chilly in this; and particularly the tender young. They must be kept very carefully at first, especially such as happen to hatch before others of the same brood; the best way is to put them into a basket with wool in it, and set them before the fire, at such a distance as to be gently warmed.

From

*The turkey is propagated
 and from such a number
 of hen produce the
 above birds -*

From this time the farmer is to depute somebody to act as a parent for them, for the hen is not to be expected to do much; they will follow her, and should be permitted to do so in the warm part of the day, and she should be managed to take care of them. The cock also will often watch over them, keep them together, and defend them better than the hen; but neither are to be trusted without careful looking after. The proper method of managing them is this. They are to be kept in a warm and close place altogether, while they are very young; and when they have got some strength, they are to be let out two hours after the sun is up in the morning, and taken in again before he sets in the evening; and in the mean time they should only be let into some walled place, or some inclosure so secure that they cannot stray. ✕

At first they are to be fed in the house, and afterwards in this open place; and at all times they must be allowed a sufficient supply of food, for their parents take at best but little care to help them to any. The very best food for them is green fresh cheese, and while they are young, their drink should be only new milk; afterwards milk and water, making it weaker and weaker till they come to water alone, which they will then drink wherever they can find it. Curds are a very good food for them, but not so well as cheese. A very wholesome food also is a kind of thick hasty pudding made of oatmeal, water, and a little new milk among it.

As the tenderness of the young is one great article in the disadvantage of the turkey, indeed the greatest, care must be taken that the hen do not set herself at too early a season. If the young are hatched in cold weather, it is scarce possible to rear them without considerable loss; but if they be produced toward the latter end of May, which indeed is the most natural time, as well as the best, they will have a much better chance.

It is only while young that this bird is so exceedingly tender; for, when grown up, they are not only strong enough to defend themselves; but they always love to keep in flocks together.

“Most of our housewives, says a Swedish author on husbandry, have

long despaired of success in rearing turkeys, and complained that the profit rarely indemnifies them for their trouble and loss of time; whereas, continues he, little more is to be done than to plunge the chick into a vessel of cold water, the very hour, or if that cannot be, the day it is hatched, forcing it to swallow one whole peppercorn, and then restoring it to its mother. From that time it will become hardy, and fear the cold no more than a hen's chick. After which it must be remembered that these useful creatures are subject to one particular malady which they are young, which carries them off in a few days. When they begin to droop, examine carefully the feathers on their rump, and you will find two or three, whose quill part is filled with blood. Upon drawing these the chick recovers, and after that requires no other care than what is commonly bestowed on poultry that range the court-yard.

“These articles are too true to be denied; and in proof of the success, three parishes in Sweden have, for many years, gained several hundred pounds by rearing and selling turkeys.”

TURNIP, [*Rapa*.] Miller reckons three distinct species of turnips, the round, the oblong, and the French turnip; the first is the common field turnip, and of this there are several varieties, but the large green topped is chiefly preferred above all the rest.

Perhaps there has never been a greater improvement in husbandry than sowing turnips, not only for the advantage of keeping a larger quantity of stock than could otherwise be done, but also the great advantage which the ground will receive from the turnips themselves, especially if they are eaten off the land by sheep. Turnips will grow on strong land as well as on light land, but light land will best bear the foot of the sheep, when feeding off.

Turnips should be sown according as they may be wanted, from Midsummer to a fortnight following, and will require a winter and summer fallow of the land thoroughly to clean it; dung will be proper where it can be afforded, as the turnips will grow the faster, and be sooner out of the reach of the fly. About a pint of seed is enough for an acre; and soon after they put forth the

See *Rapa*

Insia li
to Midsum
Autumn

See *Cato*
lib 12

first

to be used in the
ones to be the best
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of cold.

9th
first leaf, they should be hoed and thoroughly thinned, and soon after they should be hoed again with a six or seven inch hoe; this will keep down all annual weeds, and wonderfully assist the vegetation and growth of the turnips, by drawing the earth to the roots and leaving them sufficient room to spread.

We would advise the farmer to be very careful to obtain his seed of a good sort, and at a distance, from a person on whom he can rely.

If the fly should attack the turnips, we advise him to sow some lime-kiln wood-ashes which have never been wetted over the turnips, while the dew is on them, as from our own experience we can warrant it successful.

There has been another method practised in the turnip husbandry, and that is by drilling, which by those who have tried it, is much recommended, but still, we fancy the broad-cast will outlive the other. Farmers are a prudent set of men, and not easily misled into the schemes of uncertainty; whenever they find the practice is really good they will follow it, but they must have better evidence than is generally given.

When caterpillars attack the turnips, Mr. Miller recommends to turn in hungry poultry.

When the turnips are all off, Mr. Miller says one ploughing will do for barley;—it may be so, but we will take upon ourselves to say that three will do better; nor would we chuse to trust to one ploughing for barley. Indeed when the season ran backward, we might venture to trust white oats to one ploughing, but nothing but necessity should induce us to do that.

TURNIP-ROOTED Cabbage. See CABBAGE.

TURNSOLE. See HELIOTROPE.

TURPENTINE, [*Terebinthia*.] The species of turpentine kept in the drug-gift shops are, the Chian or cypress turpentine, the Venice turpentine, the Strasburg turpentine, and the common turpentine.

The Chian or cypress turpentine is generally about the consistence of thick honey, very tenacious, clear, and almost transparent, of a white colour, with a cast of yellow, and frequently of blue; it has a warm, pungent, bitterish taste,

and a fragrant smell, more agreeable than any of the other turpentine.

This juice is the produce of the common terebinth, an evergreen tree or shrub, which grows spontaneously in the warmer climates, and endures the colds of our own. The turpentine brought to us, is extracted in the islands whose names it bears, by wounding the trunk and branches a little after the buds have come forth; the juice issues limpid, and clear as water, and by degrees thickens into the consistence in which we meet with it. A like juice exuding from this tree in the eastern countries, inspissated by a slow fire, is of frequent use, as a masticatory, among the Persian ladies, who (as Kœmpfer informs us) are continually chewing it, in order to fasten and whiten the teeth, sweeten the breath, and promote appetite.

Venice turpentine is usually thinner than any of the other sorts, of a clear, whitish, or pale yellowish colour, a hot, pungent, bitterish, disagreeable taste, and a strong smell, without any thing of the fine aromatic flavour of the Chian kind.

The true Venice turpentine is obtained from the larch, a large tree growing in great abundance upon the Alps and Pyrenean mountains, and not uncommon in the English gardens. What is usually met with in the shops, under the name of Venice turpentine, comes from New England; of what tree it is the produce, we have no certain account: the finer kinds of it are in appearance and quality not considerably different from the true sort above described.

Strasburgh turpentine is, as we generally meet with it, of a middle consistence betwixt the two foregoing, more transparent, and less tenacious than either; its colour a yellowish brown. Its smell is very fragrant, and more agreeable than that of any of the other turpentine, except the Chian; in taste it is the bitterest, yet the least acrid.

Common turpentine is the coarsest, heaviest, in taste and smell the most disagreeable, of all the sorts; it is about the consistence of honey, of an opaque brownish white colour.

This is obtained from the wild pine, a low unhandsome tree, common in different

different parts of Europe: this tree is extremely resinous, and remarkably subject to a disease from a redundancy and extravasation of its resin, inso-much that, without due evacuation, it swells and bursts. The juice, as it issues from the tree, is received in trenches made in the earth, and afterwards freed from the grosser impurities by colature through wicker baskets.

All these juices yield in distillation with water, an highly penetrating essential oil, a brittle insipid resin remaining behind. With regard to their medical virtues, they promote urine, cleanse the parts concerned in the evacuation thereof, and deterge internal ulcers in general; and at the same time, like other bitter hot substances, strengthen the tone of the vessels: they have an advantage above most other acrid diuretics, that they gently loosen the belly. They are principally recommended in gleans, the fluor albus, and the like; and by some in calculous complaints: where these last proceed from sand or gravel, formed into a mass by viscid mucous matter, the turpentine, by dissolving the mucus, promote the expulsion of the sand; but where a calculus is formed, they can do no service, and only ineffectually irritate or inflame the parts. In all cases accompanied with inflammation, these juices ought to be abstained from, as this symptom is increased, and not unfrequently occasioned by them. It is observable, that the turpentine impart, soon after taking them, a violet smell to the urine; and have this effect, though applied only externally to remote parts; particularly the Venice

sort. This is accounted the most powerful as a diuretic and detergent; and the Chian and Strasburgh as corroborants: the Strasburgh is an ingredient in the mercurial pills and Locatellus's balsam, and the Chian in mithridate and theriaca. The common turpentine, as being the most offensive, is rarely given internally. Its principal use is in plaisters and ointments, among farriers, and for the distillation of the oil or spirit, as it is called. The dose of these juices is from a scruple to a dram and a half: they are most commodiously taken in the form of a bolus, or dissolved in watery liquors by the mediation of the yolk of an egg or mucilage. Of the distilled oil, a few drops are a sufficient dose: this is a most potent, stimulating, detergent diuretic, oftentimes greatly heats the constitution, and requires the utmost caution in its exhibition.

TURPENTINE Tree. See MASTIC TREE.

Venice TURPENTINE Tree. The Larch tree.

TUTSAN. St. John's Wort.

TWIFALLOWING. Ploughing the ground a second time.

HERB TWOPENCE, [*Nummularia*.] This grows spontaneously in moist watery places, and creeps on the ground, with two little roundish leaves at each joint. Their taste is subastringent, and very lightly acid; hence they stand recommended by Boerhaave in the hot scurvy, and in uterine and other hemorrhages. But their effects are so inconsiderable, that common practice takes no notice of them.

TWYBLADE. See BIFOLI.

Jurisi-grass. See Couch-grass.

Turn cow-Calf never breeds. See Tree martin.

— Bull — is not to be bred by.

V.

V A L

VALE. Low ground; a valley.
VALERIAN, [*Valeriana*.] There are many species of this plant, but that chiefly esteemed, is the mountain, or wild valerian, the roots of which are much used in medicine.

This root consists of a number of strings or fibres matted together, issuing from one common head; of a whitish or pale brownish colour: its smell is strong, like a mixture of aromatics with fetids; the taste unpleasantly warm, bitterish, and subacid. There is another wild valerian, with broader leaves, of a deeper and shining green colour, met with in watery places. Both sorts have hitherto been used indiscriminately, and Linnæus has joined them into one species, under the name of *valeriana foliis omnibus pinnatis*. Our college have restrained the shops to the first, which is considerably the strongest, and loses of its quality, if transplanted into such soils as the other naturally delights in. The roots, produced in low watery grounds, have a remarkably faint smell in comparison of the others, and sometimes scarce any at all. Wild valerian is a medicine of great use in nervous disorders, and is particularly serviceable in epilepsies proceeding from a debility of the nervous system. It was first brought into esteem in these cases by Fabius Columna, who by taking the powdered root, in the dose of half a spoonful, was cured of an inveterate epilepsy after many other medicines had been tried in vain. Repeated experience has since confirmed its efficacy in this disorder; and the present practice lays considerable stress upon it. The common dose is from a scruple to a dram, in infusion from one to two drams. Its unpleasant flavour is most effectually concealed by a suitable addition of mace.

V E G

Greek VALERIAN. See **GREEK VALERIAN.**

VAN. An instrument to winnow corn.

VASCULIFEROUS Plants. Such whose seeds are contained in vessels divided into cells.

VAT. A vessel for holding wine, ale, beer, cyder, &c. in the time of their preparation. *Also Cheese Vat.*

UDDER. That part of a cow, mare, ewe, &c. where the milk is prepared, answering to the breasts in women.

VEGETABLE. A term applied to all plants, considered as capable of growth, i. e. all natural bodies which have parts organically formed for generation and accretion, but not sensation.

Vegetables, according to the analyses made of them by chemistry, are distinguishable into two grand tribes, the acid and the alkaline; the first affording a volatile acid, and the second a volatile alkali, upon a dry distillation; thus guaiacum, cedar, box, cinnamon, cloves, sorrel, mint, balm, &c. afford an acid; but garlic, onions, horse-radish, scurvy-grass, mustard, &c. afford an alkali, which rectified, is hardly distinguishable from that of animal substances, so as nearly to resemble the spirit and salt of hartshorn.

VEGETATION. The act whereby plants receive their nourishment and growths; of which, three principal functions are understood, viz. nutrition, increase, and generation.

From Scripture we learn, that the earth has been endued, from the beginning, with a certain seminal virtue to produce plants; which virtue, proceeding from God, was not confined to the first production of things, but extends likewise to all future consequences of times; and this faculty which the earth has of producing plants,

plants, is from this commandment of the Almighty: "Let the earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit after his kind, whose seed is in itself upon the earth; and it was so."

VELLING. Ploughing, or cutting up the turf, or upper surface of the ground, in order to its being burnt.

VENTILATOR. A machine by which the noxious air of any close place (as an hospital, jail, ship, chamber, granary, &c.) may be changed for fresh air.

VENUS' COMB. See *Sweet FERN*.

VENUS' LOOKING GLASS. Corn Violet.

VENUS' NAVELWORT. See *Venus' NAVELWORT*.

VERJUCE. A liquor obtained from grapes or apples too acid for wine or cyder. It is generally made in England from the juice of the crab, or wild apple.

VERMIN. A collective name including all kinds of small animals, that are troublesome to men, beasts, corn, fruits, &c.

VERNAL. Something belonging to the spring season.

VERTICULATE Plants. Such as produce their flowers round the joints of the stalks in whorles; as hyssop, mint, thyme, &c.

VERVAIN, [Vervena.] This plant is very common on the sides of roads, foot-paths, and farm-yards, near habitations; for although there is scarce any part of England, in which this is not found in plenty, yet it is never found above a quarter of a mile from a house; which occasioned its being called *Simpler's Joy*, because wherever this plant is found growing, it is a sure token of a house being near; this is a certain fact, but not easy to be accounted for. It is rarely cultivated in gardens, but is the first directed by the College of Physicians for medicinal use, and is brought to the markets by those who gather it in the fields.

There are many other species of vervain, natives of different counties, some of which are too tender to bear the cold of our climate, and require the assistance of the green-house and stove.

VERVAIN MALLOW. Hollyhock.

VETCH. See *TARZ*.

Bitter VETCH. See *BITTER VETCH*.

Chicklin VETCH. See *CHICKLIN*

VETCH. See *Red Clover*.

Crimson Grass VETCH. *Chicklin Vetch.*

Hatched VETCH, [Securidaca.] This plant grows naturally in the corn-fields in Spain and Italy; it is annual, and hath trailing herbaceous stalks, which grow a foot and a half long, dividing into many branches, which spread on the ground, garnished with winged leaves, composed of seven or eight pair of oval obtuse lobes terminated by an odd one, of a deep green and smooth.

It is propagated by sowing the seeds in borders of light earth in the spring, in the places where the plants are to abide, for they seldom succeed well if they are transplanted; they should be allowed at least two feet distance, because their branches trail upon the ground. When the plants come up, they will require no other care but to thin them where they are too close, and keep them clean from weeds. A few of these plants may be admitted into every good garden for variety, though there is no great beauty in their flowers.

Horse-foot VETCH. See *HORSE VETCH*.

Liquorice VETCH. See *WILD LIQUORICE*.

Milk VETCH. *Liquorice Vetch.*

VETCHLING, [Apaca.] This plant is found wild in divers parts of England on arable land, but is seldom preserved in gardens. It is an annual plant, which perishes soon after the seeds are perfected.

VINE, [Vitis.] There are a great number of grapes cultivated in the gardens, and are all propagated either from layers or cuttings, the latter of which is the more preferable method; for the roots of vines do not grow strong and woody, as in most sorts of trees, but are long, slender, and pliable; therefore when they are taken out of the ground they seldom strike out any fibres from the weak roots, which generally shrivel and dry; so that they rather retard than help the plants in their growth, by preventing the new fibres from pushing out; for which reason it is better to plant a good cutting than a rooted plant, provided it be well chosen,

chosen, for there is little danger of its growing.

But as there are few persons who make choice of proper cuttings, or at least that form their cuttings rightly in England, so it will be proper to give directions for this in the first place. You should always make choice of such shoots as are strong and well ripened of the last year's growth; these should be cut from the old vine, just below the place where they were produced, taking a knot or piece of the two-years wood to each, which should be pruned smooth; then you should cut off the upper part of the shoots, so as to leave the cutting about sixteen inches long. When the piece or knot of old wood is cut at both ends, near the young shoot, the cuttings will resemble a little mallet; from whence Columella gives the title of malleolus to the vine-cuttings. In making the cuttings after this manner, there can be but one taken from each shoot; whereas most persons cut them into lengths of about a foot, and plant them all, which is very wrong, for the upper part of the shoots are never so well ripened as the lower, which was produced early in the spring, and has had the whole summer to harden; so that if they take root, they never make so good plants, for the wood of those cuttings being spongy and soft, admits the moisture too freely, whereby the plants will be luxuriant in growth, but never so fruitful as such whose wood is closer and more compact.

When the cuttings are thus prepared, if they are not then planted, they should be placed with their lower part in the ground in a dry soil; laying some litter upon their upper parts to prevent them from drying: in this situation they may remain till the beginning of April, (which is the best time for planting them) when you should take them out, and wash them from the filth they have contracted; and if you find them very dry, you should let them stand with their lower parts in water six or eight hours, which will distend their vessels, and dispose them for taking root. Then the ground being before prepared, where the plants are designed to remain (whether against walls or for standards, for they should not be removed again) the cuttings should be planted; but in preparing the ground you should consider the na-

ture of the soil, which, if strong, and inclinable to wet, is by no means proper for grapes; therefore where it so happens, you should open a trench where the cuttings are to be planted, which should be filled with lime rubbish, the better to drain off the moisture; then raise the border with fresh light earth about two feet thick, so that it may be at least a foot above the level of the ground; then you should open the holes at about six feet distance from each other, putting one good strong cutting into each hole, which should be laid a little sloping, that their tops may incline to the wall; but it must not be so deep, as that the uppermost eye may be level with the surface of the ground; for when any part of the cutting is left above ground, as is the common method used by the English gardeners, most of the buds attempt to shoot, so that the strength of the cuttings is divided to nourish so many shoots, which must of course be weaker than if only one of them grew; whereas, on the contrary, by burying the whole cutting in the ground, the sap is all employed on one single shoot, which consequently will be much stronger; besides, the sun and air are apt to dry that part of the cutting which remains above ground, and so often prevents their buds from shooting.

Then having placed the cutting into the ground, you should fill up the hole gently, pressing down the earth with your foot close about it, and raise a little hill just upon the top of the cutting, to cover the upper eye quite over, which will prevent it from drying; this being done, there is nothing more necessary but to keep the ground clear from weeds until the cuttings begin to shoot; at which time you should look over them carefully, to rub off any small shoots, if such are produced, fastening the first main shoot to the wall, which should be constantly trained up, as it is extended in length, to prevent its breaking or hanging down; you must continue to look over these once in about three weeks during the summer season, constantly rubbing off all lateral shoots which are produced; and be sure to keep the ground constantly clear from weeds, which, if suffered to grow, will exhaust the goodness of the soil and starve the cuttings.

The Michaelmas following, if your cuttings have produced strong shoots, you should prune them down to two eyes.

In the spring, after the cold weather is past, you must gently dig up the borders to loosen the earth; but you must be very careful in doing this, not to injure the roots of the vines; you should also raise the earth up to the stems of the plants, so as to cover the old wood, but not so deep as to cover either of the eyes of the last year's wood. After this they will require no farther care until they begin to shoot, when you should look over them carefully, to rub off all weak dangling shoots, leaving no more than the two shoots, which are produced from the two eyes of the last year's wood, which should be fastened to the wall; and so from this, until the vines have done shooting, you should look them over once in three weeks or a month, to rub off all lateral shoots as they are produced, and to fasten the main shoots to the wall as they are extended in length, which must not be shortened before the middle or latter end of July, when it will be proper to nip off their tops, which will strengthen the lower eyes, and during the summer season you must constantly keep the ground clear from weeds; nor should you permit any sort of plants to grow near the vines, which would not only rob them of nourishment, but shade the lower parts of the shoots, and thereby prevent their ripening; which will not only cause their wood to be spongy and luxuriant, but render it less fruitful.

As soon as the leaves begin to drop in autumn, you should prune these young vines again, leaving three buds to each of the shoots, provided they are strong; otherwise it is better to shorten them down to two eyes if they are good, for it is a very wrong practice to leave much wood upon young vines, or to leave their shoots too long, which greatly weakens the roots; then you should fasten them to the wall, spreading them out horizontally each way, that there may be room to train the new shoots the following summer, and in the spring the borders must be digged as before.

The third season you must go over the vines again, as soon as they begin to shoot, to rub off all dangers as be-

fore; and train the strong shoots in their proper places, which this year may be supposed to be two from each shoot of last year's wood; but if they attempt to produce two shoots from one eye, the weakest of them must be rubbed off, for there should never be more than one allowed to come out of each eye. If any of them produce fruit, as many times they will the third year, you should not stop them so soon as is generally practised upon the bearing shoots of old vines, but permit them to shoot forward till a month after Midsummer, at which time you may pinch off the tops of the shoots; for if this were done too soon, it would spoil the buds for the next year's wood, which in young vines must be more carefully preserved than on older plants, because there are no other to be laid in for a supply of wood, as is commonly practised on old vines.

During the summer you must constantly go over your vines, and displace all weak lateral shoots as they are produced, and carefully keep the ground clear from weeds, as was before directed, that the shoots may ripen well, which is a material thing to be observed in most sorts of fruit-trees, but especially in vines, which seldom produce any fruit from immature branches. These things being duly observed, are all that is necessary in the management of young vines.

Spanish Arbor VINE. Bindweed.

White VINE. } Briony.

Wild VINE. }

VINEGAR, [*Acetum.*] An acid penetrating liquor, prepared from wine, cyder, beer, &c. of considerable use both as a medicine and sauce.

The process of turning vegetable matters to vinegar, is thus delivered by Dr. Shaw; Take the skins of raisins, after they have been used in making wine, and pour three or four times their own quantity of boiling water upon them, so as to make a thin aqueous mixture; Then set the containing cask, loosely covered, in a warmer place than is used for vinous fermentation; and the liquor in a few weeks time will become a clear and sound vinegar; which being drawn off from its sediment, and preserved in another cask, well stopped down, will continue perfect, and fit for use.

This experiment shews us a cheap and ready way of making vinegar from refuse materials; such as the husks of grapes, decayed raisins, the lees of wine, grounds of ale, beer, &c. which are frequently thrown away as useless. Thus, in many wine countries, the marc, rape, or dry pressing of grapes, are thrown in heaps, and suffered to putrify unregarded, though capable of affording as good vinegar as the wine itself. In some places they bury copper plates in these husks, in order to make verdigrease; but this practice seems chiefly confined to the southern parts of France. Our present experiment shews us how to convert them to another use; and the direction extends to all the matters that have once undergone, or are fit to undergo a vinous fermentation, for that all such matters will afford vinegar. Thus all our summer-fruits in England, even blackberries; all the refuse washings of a sugar-house, cyder-pressings, or the like, will make vinegar, by means of water, the open air, and warmth.

The whole process, whereby this change is effected, deserves to be attentively considered; and first, the liquor to be thus changed, being kept warmer than in vinous fermentation; it begins in a few days to grow thick or turbid; and without throwing up bubbles, or making any considerable tumult, as happens in vinous fermentation, deposits a copious sediment.

The effect of this separation begins to appear first on the surface of the liquor, which gathers a white skin, that daily increases in thickness, till at length it becomes like leather; and now, if continued longer in this state, the skin turns blue, or green, and would at last grow solid, and putrify; therefore, in keeping down this skin as it grows, and thrusting it gently down to the bottom of the vessel, consists much of the art of vinegar-making, especially from malt.

Method of making Cyder Vinegar. The cyder (the meanest of which will serve the purpose) is first to be drawn off *fine* into another vessel, and a quantity of must, or pouz of apples, to be added; the whole is to be set in the sun, if there be a conveniency for the purpose; and at a week or nine days end, it may be drawn off.

Method of making Beer Vinegar. Take a middling sort of beer, indifferently well hopped; into which, when it has worked well, and is grown fine, put some rape, or hulk of grapes, usually brought home for that purpose; mash them together in a tub, then, letting the rape settle, draw off the liquid part, put it into a cask, and set it in the sun as hot as may be (the bung only covered with a tile or slate-stone) and in about thirty or forty days, it will become a good vinegar, and may pass in use as well as that made of wine, if it be refined, and kept from turning musty.

Or thus: to every gallon of spring-water, add three pounds of Malaga-raisins; which put into an earthen jar, and place them where they may have the hottest sun from May till Michaelmas; then pressing all well, tun the liquor up in a very strong iron-hooped vessel, to prevent its burbling; it will appear very thick and muddy, when newly pressed; but will refine in the vessel, and be as clear as wine.

Thus let it remain untouched for three months, before it be drawn off, and it will prove excellent vinegar.

Method of making Wine Vinegar. Any sort of vinous liquor, being mixed with its own faeces, flowers, or ferment, and its tartar, first reduced to powder; or else with the acid and austere stalks of the vegetable from whence the wine was obtained, which hold a large proportion of tartar; and the whole being kept frequently stirring in a vessel which has formerly held vinegar, or set in a warm place full of the steams of the same, will begin to ferment anew, conceive heat, grow sour by degrees, and soon turn into vinegar.

The remote subjects of acetous fermentation are the same with those of vinous; but the immediate subjects of it are all kinds of vegetable juices, after they have once undergone that fermentation which reduces them to wine; for it is absolutely impossible to make vinegar of must, the crude juice of grapes, or other ripe fruits, without the previous assistance of vinous fermentation.

The proper ferments for this operation, whereby vinegar is prepared, are, 1. The faeces of all acid wines. 2. The leys of vinegar. 3. Pulverised tartar;

tartar; especially that of Henish wine, or the cream, or crystals thereof. 4. Vinegar itself. 5. A wooden vessel well drenched with vinegar, or one that has been long employed to contain it. 6. Wine that has often been mixed with its own feces. 7. The twigs of vines, and the stalks of grapes, currants, cherries, and other vegetables of an acid austere taste. 8. Baker's leaven, after it is turned acid. 9. All manner of ferments, compounded of those already mentioned.

The French use a method of making vinegar different from that above described. They take two large oaken vessels, the larger the better, open at top; in each of which they place a wooden grate, within a foot of the bottom; upon these grates they first lay twigs, or cuttings of vines, and afterwards the stalks of the bunches without the grapes themselves, or their stones; till the whole pile reaches within a foot of the brim of the vessels; then they fill one of these vessels with wine to the very top, and half fill the other; and with liquor drawn out of the full vessel, fill up that which was only half full before; daily repeating the same operation, and pouring the liquor back from one vessel into another; so that each of them is full, and half full, by turns.

When this process has been continued for two or three days, a degree of heat will arise in the vessel, which is then but half full, and increase for several days successively, without any appearance of the like in the vessel which happens to be full; during those days; the liquor whereof will still remain cool; and as soon as the heat ceases in the vessel that is half full, the vinegar is prepared: which, in the summer, happens on the fourteenth or fifteenth day from the beginning; but in the winter, the fermentation proceeds much slower, so that they are obliged to forward it by artificial warmth, or the use of stoves.

When the weather is exceeding hot, the liquor ought to be poured off from the full vessel into the other twice a day; otherwise the liquor will be over-heated, and the fermentation prove too strong; whence the spirituous parts will fly away, and leave a vapid wine, instead of a vinegar behind.

The full vessel is always to be left open at the top, but the mouth of the other must be closed with a cover of wood, in order the better to keep down and fix the spirit in the body of the liquor; otherwise, it might easily fly off in the heat of fermentation. The vessel that is only half full seems to grow hot rather than the other, because it contains a much greater quantity of the vine-twigs and stalks, than that, in proportion to the liquor; above which, the pile rising to a considerable height, conceives heat the more, and so conveys it to the wine below.

Vinegar is a medicine of excellent use in all kinds of inflammatory and putrid disorders, either internal or external; in ardent bilious fevers, pestilential and other malignant distempers, it is recommended by Boerhaave as one of the most certain sudorifics. Weakness, fainting, vomiting, hysterical and hypochondriacal complaints have also been frequently relieved by vinegar applied to the mouth or nose, or received into the stomach. Distilled vinegar has the same virtues, only in a stronger degree.

There are also medicated vinegars; as vinegar of antimony, of elder, litharge, roses, squills, treacle, &c. which derive their chief virtues from the vinegar.

VINEYARD. A plantation of vines without the assistance of walls.

VINOUS. Something that relates to wine, or that hath the taste and smell of it.

VINTAGE. A crop of grapes, or the produce of a vineyard each season.

VIOLET, [*Viola*.] This is often found wild in hedges and shady places, and flowers in March; the shops are generally supplied from the gardens. In our markets we meet with the flowers of a different species; these may be distinguished from the foregoing by their being larger, of a pale colour, and of no smell. The officinal flowers have a very pleasant smell, and a deep purplish blue colour, denominated from them violet. They impart their colour and flavour to aqueous liquors: a syrup made from this infusion has long maintained a place in the shops, and proves an agreeable and useful laxative for children.

Dame's VIOLET. See **DAME'S VIOLET.**

Galbus VIOLET. Snowdrop.

Dog's Tooth VIOLET. See **DOG'S TOOTH.**

Corn VIOLET. See **CORN VIOLET.**

VIPER. The name of a well-known serpent, common in many parts of England.

The bathing the part bit by a viper with olive oil, is said to effectually prevent the fatal consequences that would otherwise attend it.

VIPER'S BUGLOSS, [*Echium.*] This plant grows naturally on chalky lands in most parts of England. There are several species brought into the English gardens, from Germany, France, Portugal, and other countries, some of which are annual, and some biennial plants. They are propagated by seeds.

VIPER'S GRASS, [*Scorzonera.*] This plant is cultivated in the English gardens for food and physic; it grows naturally in Spain. The root is carrot-shaped, about the thickness of a finger, covered with a dark brown skin, is white within, and has a milky juice; the lower leaves are long, ending with a long acute point; they are waved and sinuated at their edges. The stalk rises three feet high, is smooth, branching at the top, and garnished with a few narrow leaves, whose base half embrace the stalk. The flowers terminate the stalks in scaly empalements, composed of many narrow, tongue-shaped hermaphrodite florets, lying imbricatum over each other like the scales on fish; they are of a bright yellow colour. After these are decayed, the germen which sits in the common empalement turns to oblong cornered seeds, having a roundish ball of feathery down at the top. There are several species kept in the gardens, all propagated by seeds.

VIRGIN'S BOWER. See **CLIMBERS.**

VIRGINIAN SILK, [*Periploca.*] This plant grows naturally in Syria, but is hardy enough to thrive in the open air in England. It hath twining shrubby stalks, covered with a dark bark, which twist round any neighbouring support, and will rise more than forty feet high, sending out slender branches from the sides, which twine round each other, and are gar-

nished with oval spear-shaped leaves near four inches long, and two broad in the middle, of a lucid green on their upper side, but pale on their under, standing by pairs upon short footstalks.

This is hardy enough to thrive in this country with a little protection from the frost of the winter. Another sort brought from Vera Cruz requires the assistance of a warm stove.

VIRGINIAN ACACIA. See **ACACIA.**

VITRIOL. A saline chryselline concrete, composed of metal, and an acid, similar to those of sulphur and allum. There are but three metallic bodies, which this acid is capable of perfectly dissolving or being united with, into a chryselline appearance, zinc, copper, and iron; with the first it forms a white, with the second a blue, and with the third a green salt.

White VITRIOL. Found in the mines of Goslar, sometimes in transparent pieces, but more commonly in form of white efflorescences, which are dissolved in water, and afterwards reduced by evaporation and chrysellization into large masses.

Blue VITRIOL. Greatest part of the blue vitriol at present met with in the shops, is said to be artificially prepared by uniting copper with the vitriolic acid.

Green VITRIOL. This is prepared in large quantity at Deptford, by dissolving iron in the acid liquor, which runs from certain sulphureous pyrites exposed for a length of time.

ULIGINOUS. An appellation given to a moist, moorish, and fenny soil.

UMBEL. The extremity of a stalk or branch of a plant, divided into several peduncles, or rays, beginning from the same point, and opening in such a manner, as to form an inverted cone.

UMBELLIFEROUS Plants. Those whose flowers are produced in an umbel, on the top of the stalks, somewhat resembling an umbrella. Of this kind are the fennel, parsley, parsnip, carrot, hemlock, &c.

UNDERWOOD. Coppice, or any wood not accounted timber.

VOOR. Fallow land.

URE. The udder of a cow, sheep, or other animal.

URITH.

URITH. Etherings, or windings of hedges.

URRY. A sort of blue or black clay, lying near a vein of coal.

URINE. A serous and saline matter separated from the blood of animals, and emitted by the canal of the urethra.

It is of excellent use as a manure, when deprived of its hot fiery particles by time, which will so alter its nature as to render it an extraordinary fertilizer of every kind of soil. Columella certifies that old urine is excellent for the roots of trees. Mr. Hartlib commends the Dutch for preserving the urine of cows as carefully as they do the dung, to enrich their lands; and instances a woman he knew near Canterbury, who saved in a pail all the urine she could, and when the pail was full, sprinkled it on her meadow, the grass of which looked yellow at first, but afterwards grew surprisngly. Similar to this is what Mr. Bradley relates, as of his own knowledge. Human urine was thrown into a little

pit constantly every day, for three or four years. Two years after, some earth was taken out of this pit, and mixed with twice as much other earth, to fill up a hollow place in a grass walk. The turf which was laid upon this spot grew so largely and vigorously, besides being much greener than the rest, that by the best computation he could make, its grass, in a month's time, was above four times as much in quantity as that of any other spot of the same size, though the whole walk was laid on very rich ground. The author of the English Improver is therefore very right in saying, that human urine is of greater worth, and will fatten land more, than is generally imagined by our farmers, whom he advises to take all opportunities of preserving this, and every sort of urine, for their ground, as carefully as is done in Holland.

USTILAGO. The same with burnt grain.

UTENSIL. A domestic moveable of any kind.

W.

WAD, black lead.

WAGGON, a vehicle or carriage, of which there are various forms, accommodated to the different uses they are intended for. See the article **WHEEL.**

WAIF, an estray, which for want of the owner's appearance after it has been cried and published in the neighbouring markets, is forfeited to the lord of the manor.

WAKE ROBIN. See **ARUM.**

WALKS are made either of gravel, sand, or grass; these three sorts of walks are the most common in England; but where gravel or sand cannot be procured, they are sometimes laid with powdered coal, sea-coal ashes, and sometimes of powdered brick, but these are rarely used, when either gravel or sand can be procured; however, where sea-coal ashes can be had, it is preferable to the powdered coal or

bricks, because they bind very hard, and never stick to the feet in frosty weather, which is a good quality, but the darkness of its colour has been an objection to the use of it in gardens; however, for wilderness-walks we think it is preferable to most other materials; but we shall proceed to give directions for the making of the several sorts of walks, and first of the gravel-walks.

In order to the laying of walks in gardens, when they are marked out, the earth should be taken away to a certain depth, that the bottom of them may be filled with some lime-rubbish, or coarse gravel, flint stones, or other rocky materials, which will be serviceable to prevent weeds from growing through the gravel, and also to keep away worm-casts. This bottom should be laid ten inches or a foot thick, over which the coat of gravel should be six or eight inches; which gravel should

be

be fine, but yet not skreened, because that spoils it. This should be laid on a heap, rounding, that the larger rough stones may run down on the sides, which being every now and then raked off, the gravel by that means will be sufficiently fine.

After the gravel has been laid to the thickness above-mentioned, then the walks must be exactly levelled, and raked true from all great drips, as well as little holes. By this means most of the stones of the walks will be raked under your feet, which should rather be gently sprinkled back again, over the last length that is raked, than buried, (as is the practice of many gardeners) for by this means the walk will lie much harder, and the coarsest stones will very much contribute to its firmness.

There is also a great fault committed frequently, in laying walks too round, and some to that degree, that they cannot be walked on with that ease and pleasure that ought to be.

The common allowance for a gravel-walk of five feet breadth, is an inch rise in the crown; so that if a walk be twenty feet wide, according to this proportion, it will be four inches higher in the middle than on each side, and a walk of twenty-five feet will be five inches, one of thirty feet six inches, and so on.

When a walk has been thus carefully laid, trodden down, and raked, or rather, after every length or part of it, (which commonly is about fifteen feet each) then it should be rolled well both in length, and also cross-ways. The person who rolls it should wear shoes with flat heels, that he may not make holes in the walks, for when these are once made in a new walk, it will not be easy to roll them out again.

In order to lay gravel-walks firm, it will be necessary to give them three or four water-rollings, that is, they must be rolled when it rains so very fast, that the walks swim with water; this will cause the gravel to bind, so that when the walks come to be dry, they will be as hard as terrace.

Iron-mould gravel is accounted the best for binding, or gravel with a little binding loam in it; which latter, tho' it be apt to stick to the heels of shoes

in wet weather, yet nothing binds better in dry weather.

When the gravel is over sandy, some sharp loam is frequently mixed with it, which, if they be cast together in heaps, and well mixed, will bind like a rock; whereas, loose gravel is as uncomfortable and uneasy to walk on as any other fault in a walk can render it.

The best gravel for walks is such as abounds with smooth pebbles (as is that dug at Blackheath) which being mixed with a due proportion of loam, will bind like a rock, and is never injured by wet or dry weather, and the pebbles being smooth, are not so liable to be turned up and loosened by the feet in walking, as are those which are angular and rough; for where walks are laid with such gravel as is full of irregular stones, they appear untightly in a day's time after rolling, because the stones will rise upon the surface whenever they are walked upon, but the smooth pebbles will remain handsome two or three days without rolling.

Gravel-walks are not only very necessary near the house, but there should always be one carried quite round the garden, because, being soon dry after rain, they are proper for walking on in all seasons; but then these should be narrow, and those adjoining to the house ought to be large and magnificent, proportionable to the grandeur of the house and garden. The principal of these walks should be elevated, and carried parallel with the house, so as to form a terrace; this should extend itself each way, in proportion to the width of the garden; so that from this there may be a communication with the side-walks, without going on the grass, that there may be a dry walk continued quite through the gardens; but there is not a more ridiculous sight, than that of a strait gravel-walk leading to the front of a house, intersecting the grass, so as to make it appear like the stiff formal grass-plats frequently made in little court-yards by persons of low taste.

Grass-walks in gardens were formerly in great esteem, and looked upon as necessary ornaments to a garden; but of late years they have justly been banished by every person of true taste.

Having given directions for the making

King of gravel-walks, we come next to treat of sand-walks, which are now very frequently made in gardens, as being less expensive in the making, and also in the keeping, than the former; and in very irregular gardens, which are such as most persons esteem, this is a very great article; for as the greatest part of the walks which are made in gardens are carried about in an irregular manner, it would be very difficult to keep them handsome if they were laid with gravel, especially where they are shaded by trees; for the dripping of the water from their branches in hard rains, is apt to wash the gravel in holes, and render the walks very unsightly; and when these wood-walks are of grass, they do not appear sightly, nor are they very proper to be walked on; for after rain they continue so long damp as to render them unfit for use, and the grass generally grows spiry and weak for want of air, and by the dropping of the trees, will by degrees be destroyed; therefore it is much better to lay these walks with sand, which will be dry and wholesome; and whenever they appear mossy, or any weeds begin to grow on them, if they are scuffled over with a Dutch hoe in dry weather, and then raked smooth, it will destroy the weeds and moss, and make the walks appear as fresh and handsome as if they had been new laid.

In the modern way of laying out gardens the walks are carried through woods and plantations, so that these are shady and convenient for walking in the middle of the day. These are usually carried about, winding as much as the ground will admit of, so as to leave a sufficient thickness of wood to make the walks private; and that the persons who are walking in one part of them may not be seen by those who are walking in any of the other parts.

Where these walks are contrived with judgment, a small extent of ground will admit of a great many turns, so that a person may walk some miles in a small garden. But these turns should be made as natural as possible, so as not to appear too much like a work of art, which will never please so long as the former.

The breadth of these walks must be proportioned to the size of the ground, which in a large extent may be eight

or ten feet wide, but in small gardens five or six feet will be sufficient. As the walks are designed to wind as much as the ground will allow, so this width will be sufficient; because the wider they are, the greater must be the turns, otherwise the walks will not be private for any distance. Besides, as it will be proper to line the sides of these walks with honeysuckles, sweet-briar, roses, and many other sweet-flowering shrubs, so the tall trees should be placed at least five or six feet from the walk, to allow room for these.

When the ground is traced out in the manner as the walks are designed, the earth should be taken out of the walks and laid in the quarters. The depth of this must be proportioned to the nature of the soil, for where the ground is dry, the walks need not be elevated much above the quarters, so the earth should be taken out four or five inches deep in such places; but where the ground is wet, the bottom of the walks need not be more than two inches below the surface, that the walks may be raised so high as to throw off the wet into the quarters, which will render them more dry and healthy to walk on.

After the earth is taken out to the intended depth, the bottom of the walks should be laid with rubbish, coarse gravel, or whatever of the like nature can be most readily procured. This should be four, five, or six inches thick, and beaten down as close as possible, to prevent the worms from working through it, then the sand should be laid upon this about 3 inches thick, and after treading it down as close as possible, it should be raked over to level and smooth the surface. In doing this, the whole should be laid a little rounding to throw off the wet, but there will be no necessity of observing any exactness therein; for as the whole ground is to have as little appearance of art as possible, the rounding of these walks should be as natural, and only so contrived as that the water may have free passage from them.

The sand with which these walks are laid should be such as will bind, otherwise it will be very troublesome to walk on them in dry weather; for if the sand be of a loose nature, it will be moved with strong gales of wind, and in dry

weather will slide from under the feet. If, after these walks are laid, they are well rolled two or three times, it will settle them, and cause them to be firm. If the sand is too much inclinable to loam, it will also be attended with as ill consequence as that which is too loose, for this will stick to the feet after every rain; so that where sand can be obtained of a middle nature, it should always be preferred.

In some countries where sand cannot be easily procured, these walks may be laid with sea-shells well pounded, so as to reduce them to a powder, which will bind extremely well, provided they are rolled now and then; but where none of these can be easily procured, sea-coal ashes, or whatever else can be gotten, which will bind and be dry to the feet, may be used for this purpose; and where any of these can only be had in small quantities, the walks should have a greater share of rubbish laid in their bottom, and these spread thinly over them; and in most places rubbish, rough stones, or coarse gravel, may be easily procured.

WALLS, are absolutely necessary in gardens, for the ripening of all such fruits as are too delicate to be perfected in this country without such assistance. These are built with different materials; in some countries they are built of stone, in others with brick, according as the materials can be procured best and cheapest.

Of all materials proper for building walls for fruit-trees, brick is the best, in that it is not only the handsomest, but the warmest and kindest for the ripening of fruit; besides that, it affords the best conveniency of nailing, for smaller nails will serve in them than in stone walls, especially if the joints are not too large; and brick walls with copings of free-stone, and stone-pilasters or columns at proper distances, to separate the trees, and break off the force of the winds, make not only the most beautiful, but the most durable walls.

In some parts of England there are walls built both of brick and stone, which have been very commodious. The bricks of some places are not of themselves substantial enough for walls, nor are they any where so durable as stone; and therefore some persons, that

they might have walls both substantial and wholesome, have built double ones, the outside being of stone and the inside brick, or a stone wall lined with brick; but when these are built, there must be great care taken to bind the bricks well into the stone, otherwise they are very apt to separate one from the other, especially when hard frost comes after much wet; which swells the mortar, and frequently throws down the bricks, when the walls are only faced with them, and not well tied into the stone.

Where the walls are built entirely of stone, there should be trellises fixed up against them, for the more convenient fastening the branches of the trees; the timbers of these espaliers need not be more than an inch and a half thick, and about two inches and a half broad; these should be fixed cross each other, at about four inches distance: for if they are at a much greater distance, it will be difficult to fasten the shoots of the trees properly. As this trellis will be laid close to the wall, the branches of the trees will lie about two inches from the wall, in which position the fruit will ripen better than when it lies close to the wall; so that there should always be these espaliers framed against them, which will render these walls very good for fruit-trees, which, without the espaliers, seldom are found to answer the purpose of ripening the fruits well, besides the inconvenience of having no good fastening for the branches of the trees.

There have been several trials made of walls built in different forms; some of them having been built semicircular, others in angles of various forms, and projecting more towards the north, to screen off the cold winds; but there has not been any method as yet, which has succeeded near so well, as that of making the walls strait and building them upright.

The fairest trial Mr. Miller says, he has seen made of circular walls was at Good wood in Suffex, the seat of the Duke of Richmond, where in the middle of two south walls, there were two large segments of circles, in which there were the same sorts of fruit-trees planted, as against the strait parts of the walls; but there never was any fruit upon the trees of the circular part

part of the walls which came to maturity, nor were the trees of long continuance; being blighted every spring, and in a few years were totally destroyed; and when the branches of those trees which grew upon the strait part of the walls, had extended themselves so far as to admit of their being led into the circular parts of the walls, they were constantly blighted & killed.

When the trees which had been planted in the circular parts were destroyed, the walls were filled with vines; but the grapes of the same sort were full a month later than those growing against the strait part of walls; so that they rarely ripened, which occasioned their being rooted out, and figs were afterwards planted, but the fruit of these succeeded little better; nor can it be supposed that any trees or plants will thrive so well in these circles where there is a constant draught of air round them, which renders the situation much colder than the open free air.

WALL-Flower. See GILLIFLOWER.

WALEWORT. Dwarf Elder.

WALNUT, [Juglans.] The species are, 1. The common walnut. Of the common walnut there are several varieties, which are distinguished by the following titles: the large walnut, the thin-shelled walnut, the French walnut, the late-ripe walnut, and the double walnut; but these do all of them vary when raised by the seed, so that the nuts from the same tree will produce plants whose fruit will differ; therefore there can be no dependance upon the trees which are raised from nuts, till they have produced fruit; so that those persons who plant the trees for their fruit, should make choice of them in the nurseries when they have their fruit upon them, otherwise they may be deceived, by having such as they would not choose.

2. Black Virginia Walnut. This grows to a large size in North-America. The leaves are composed of five or six pair of spear-shaped lobes, which end in acute points, and are sawed on their edges; the lower pair of lobes are the least, the other gradually increase in their size to the top, where the pair at the top, and the single lobe which terminates the leaf, are smaller; these leaves, when bruised,

emit a strong aromatic flavour, as do also the outer cover of the nuts, which are rough, and rounder than those of the common walnut. The shell of the nut is very hard and thick, and the kernel small, but very sweet.

3. Black Virginia Walnut, with an oblong fruit very deeply furrowed. This sort grows naturally in North-America, where the trees grow to a large size. The leaves are composed of seven or eight pair of long heart-shaped lobes, broad at their base, where they are divided into two round ears, but terminate in acute points; they are rougher and of a deeper green than those of the second sort, and have nothing of the aromatic scent which they have. The fruit is very long; the shell is deeply furrowed, and very hard; the kernel is small, but well flavoured.

4. White Virginia Walnut, called Hickery Nut. This is very common in most parts of North-America, where it is called Hickery Nut. The leaves are composed of two or three pair of oblong lobes, terminated by an odd one; these are of a light green, and sawed on their edges; the lower pair of lobes are the smallest, and the upper the largest. The fruit is shaped like the common walnut; but the shell is not furrowed, and is of a light colour.

5. White Walnut, with a smaller fruit, and a smooth bark. This sort is not so large as the last. The leaves are composed of two pair of lobes, terminated by an odd one; these are narrow at their base, but broad and rounded at their ends; they are sawed on their edges, and are of a light green. The nuts are small, have a smooth shell, and are very hard and white.

6. White Walnut, with an oval compressed fruit, a sweet kernel, and a scaly bark, commonly called Shag-bark in America. This kind grows naturally in North-America, where it rises to a middling stature. The leaves are composed of three pair of smooth spear-shaped lobes, of a dark green colour, sawed on their edges, and ending in acute points. The fruit is oval; the shell white, hard, and smooth; the kernel small, but very sweet. The young shoots are covered with a very smooth brownish bark, but the stems and older branches have a rough scaly bark, whence it is called shag-bark.

The walnut, in the Linnæan system, belongs to the class and order *Monocœcia Polyandria*. The flowers begin to open about the middle of April, and are in full blow by the middle of May, before which time the leaves are fully displayed.

These trees are propagated by planting their nuts, which seldom produce the same sort of fruit as sown; so that the only way to have the desired sort is to sow the nuts of the best kinds; and if this is done in a nursery, the trees should be transplanted out when they have had three or four years growth, to the place where they are designed to remain; for these trees do not bear transplanting when they are of a large size, therefore there should be a good number of trees planted, which need not be put at more than six feet apart, which will be distance enough for them to grow till they produce fruit; when those, whose fruit are of the desired kind, may remain, and the others cut up, to allow them room to grow.

But as many people do not care to wait so long for the fruit, the next best method is to make choice of some young trees in the nurseries, when they have their fruit upon them. But though these trees will grow and bear fruit, yet they will never be so large or long-lived, as those which are planted young.

All the sorts of walnut which are intended for timber, should be sown in the places where they are to remain; for the roots of these trees always incline downward, which being stopped or broken, prevent their aspiring upward, so that they afterwards divaricate into branches, and become low spreading trees; but such as are propagated for fruit, are greatly mended by transplanting; for hereby they are rendered more fruitful, and their fruit is generally larger and fairer; it being a common observation, that downright roots greatly encourage the luxuriant growth of timber in all sorts of trees; but such trees as have their roots spreading near the surface of the ground, always produce the greatest quantity and best-flavoured fruit.

In transplanting these trees, you should observe never to prune either their roots or large branches, both

which operations are very injurious to them; nor should you be too busy in lopping or pruning the branches of these trees when grown to a large size, for it often causes them to decay; but when there is a necessity for cutting any of their branches off, it should be done early in September, (for at that season the trees are not so subject to bleed) that the wound may heal over before the cold increases; the branches should always be cut off quite close to the trunk, otherwise the stump which is left will decay, and rot the body of the tree.

The best season for transplanting these trees is as soon as the leaves begin to decay, at which time if they are carefully taken up, and their branches preserved entire, there will be little danger of their succeeding.

The distance these trees should be placed, ought not to be less than forty feet, especially if regard be had to their fruit; though when they are only designed for timber, if they stand nearer, it promotes their upright growth. The black Virginia walnut is much more inclinable to grow upright than the common sort, and the wood is generally of a more beautiful grain.

WANG-TOOTH, a jaw tooth.

WANT, a mole. See Mole.

WANTY, a broad girth of leather, by which the load is bound upon a horse.

WAPENTAKE, the same with what is called a hundred, and is the term generally used in the northern counties beyond the Trent.

WARBLES, small hard tumours on the saddle part of a horse's back, occasioned by the heat of the saddle in travelling, or its uneasy situation. *ice
sit-
sant*

A hot greasy dish-clout, at first frequently applied, will sometimes remove them. Camphorated spirits of wine are also very effectual for this purpose to disperse them, especially if a little spirit of sal ammoniac be added to the camphorated spirit. If there be a necessity for working the horse, care should be taken to have the saddle nicely chambered.

WARREN, a franchise, or place privileged, either by prescription or grant from the king, to keep beasts and fowl of warren in; as rabbits, hares, partridges, &c.

WARP,

*Wart or pimples in Mouth
of Horses &c. The Cause &
Cure - See Canary or
Frounce -*

WARP, miscarry, sink her calf.

WARTWORT. Euphorbium.

WASTE, a name given to such lands as are in no man's possession, but lie common.

WATER is one of the most considerable requisites belonging to a garden; if a garden be without it, it brings a certain mortality upon whatsoever is planted. By waterings the great droughts in summer are allayed, which would infallibly burn up most plants; besides as to noble seats, the beauty that water will add, in making cascades. *See also Pond* -

Water not only acts as a vehicle to the nourishment of plants, but carries with it many particles which enrich the soil; especially after heavy rains. It then deposits a fertilising sediment, which turns the mould to a blackish colour. Watering likewise promotes the putrefaction of every vegetable and animal substance found in the earth, and thereby contributes greatly to meliorate the soil underneath the sward.

Plants which grow on dry pastures contain richer and more nourishing juices, than those which grow in moist places. Care should therefore be taken, that the quantity of moisture brought upon the pasture, be only such as shall give vigour to the plants, without over-charging their vessels.

Extreme heat should also be avoided in watering; because heat draws the moisture too hastily up into the plant, which is thereby filled with a watery juice, and rendered of so tender a texture, as easily to be killed afterwards by drought or cold.

Water CALAMINT. Horsemint.

WATER-CRESS. *See Water-Cress.*

WATER DROPWORT. *See Water DROPWORT.*

Water FLAG. [*Gladiolus Luteus.*] Yellow water-flag, Iris, bastard acorus, or water flower-de-luce. This plant grows common by the brinks of rivers and in other watery places. The root has a very acrid taste, and proves when fresh a strong cathartic: its expressed juice, given to the quantity of eighty drops every hour or two, and occasionally increased, has occasioned a plentiful evacuation, after jalap, gamboge, &c. had proved ineffectual. By drying, it loses its acrimony and purgative virtue. The *pulvis ari* of

our dispensatory contains about one-fifth of the dry root.

Water GERMANDER. *See Water GERMANDER.*

Water HEMP AGRIMONY. *See Water AGRIMONY.*

Water HOREHOUND. *See Water HOREHOUND.*

Water LILY. *See Water LILY.*

Water PARSNEP. Skirret.

Water PEPPER. Biting Arsmart.

WATTLE. A kind of hurdle formed with split wood, and used for making folds for sheep.

WAX, or BEES-WAX. A substance formed by bees from the farina of flowers. *See BEE.*

WAY-BREAD. Plantain.

WAYFARING-TREE. [*Libinum.*] This tree grows naturally in many parts of Europe and America, and is either propagated from seeds or layers.

WEANEL. An animal newly weaned. *See Calf &c.*

WEED. Dyer's Weed. *See WOAD.*

WEED. Any plant growing in a field different from what the farmer intended.

WHEAT. [*Triticum.*] The sorts of wheat cultivated in England now, and to answer all purposes, are known to the farmer under the names of red wheat, white wheat, and cone wheat; there are abundance of varieties, but when every thing is considered, these are enough, and distinction enough to make. We cannot with the greatest precision, perhaps, point out where each is particularly cultivated; but the red is much found in Bedfordshire, the white about Taunton, in Somersetshire, and the country about London, and the cone in Staffordshire, Herefordshire, &c.

Whatever distinctions might have been made of each grain to different sorts of land, we believe that each will grow on each, not that cone wheat is so well adapted to light land as white wheat, or as white wheat is to strong land. *See Title Blight*

It has been very justly observed by ancients, as well as moderns, that wheat will grow in almost any part of the world, and that, as it is the plant most necessary to mankind, so it is the most general, and the most fruitful. It thrives not only in temperate climates, but also in very hot and very cold

*Wrought - All-wares for use of Lark - See Blight -
Drought.*

cold regions; and, when sown in places where it never grew spontaneously, succeeds as well as where it has been always common. The success of the crops of wheat in America plainly prove this: and, in Peru and Chili in particular, where this grain was not known till the Europeans introduced it there, it now produces as large crops as in most parts of Europe.

Wheat should be sowed in autumn, and always when the ground is moist. In the downs of Hampshire, Wiltshire, and Dorsetshire, farmers begin to sow their wheat in August, if any rain has fallen; and even employ their people to sow one place, while they reap another, if wet weather interrupts them in the harvest; for if the corn be not forward in autumn, so as to cover the ground before winter, it seldom does well on those high dry lands, especially if the ensuing spring proves likewise dry. In low strong lands, some husbandmen think they are in good season, if they get their wheat into the ground by the middle of November; nay, it is sometimes Christmas, or even later, before all their wheat is sown. But this late sown wheat, besides being apt to run too much to straw, especially if the spring be moist, is liable to be thrown out of the ground by frosts.

Some gentlemen have been curious enough to procure their seed wheat from Sicily, and it has succeeded very well as to the growth; but the grain of this species has proved too hard for our English mills to grind.

The best time for sowing wheat is about the beginning of September, especially if any rain has fallen; a circumstance so essential, that if the earth be very dry, the farmer had better stay till friendly showers have moistened his soil, than put his corn in ground where it will not grow before it has been wet, let the time be ever so long. Mr. Mortimer says, he has known wheat to be so mustied and spoiled by laying long in the ground before rain has come, that it has never grown at all; to which he adds, that he has likewise seen very good crops grow from seed sown in July. At all events, the husbandman should certainly have his wheat sowing finished by the middle of October. Whoever neglects this, shows in so doing a want of proper

economy in his affairs, and will have cause to repent his delay.

Early sowings require less seed than late ones, because the plants then rise better, and acquire strength to resist the winter's cold. More seed should always be allowed for poor lands than for rich, because a greater number of plants will perish on the former. Rich lands, sowed early, require the least seed of any.

Another circumstance which the husbandman should carefully attend to in sowing is, that his estimate of seed be formed, not from the capacity of any particular measure, but from the number of grains which that measure will contain; because the grains of some growths of wheat are much larger than those from off other lands, though of the same species, and perhaps equally good. By not considering this, the ground will of course frequently be sown too thick, or too thin; though we believe, farmers are seldom apt to run into this last extreme. That they too often commit the former error, so manifestly contrary to their interest in every respect, is demonstrated by reason, and by daily experience:—but neither of these is sufficient to make them deviate from the beaten track. Instead of the usual allowance of three bushels of seed wheat to an acre of land, repeated trials have shewn that half or two-thirds of that quantity is generally more than sufficient; consequently a great deal of corn is actually thrown away; for the expence of purchasing seed, which most skilful husbandmen generally do, at least every other year, amounts to a considerable article in large farms, and in a whole country, merits the attention of the public, especially in scarce years; besides which, the future plants, crowded together by being thus sown too thick, and not having a sufficient space allowed them for a sustenance, cannot yield near so fine and plentiful a crop as they would otherwise produce. A fair trial, made with proper care, would soon convince farmers of their error in this respect; for if they but examine a field of corn sown in the common way, they will find few plants with more than two or three stalks, unless by chance, where some of them stand so as to have room to spread.

These

*Plowing for wheat
N. to Plowing, Sea Bury*

down in 1702 upon the Sea Bury -

These will have six, eight, or ten stalks, and frequently many more; but a field of wheat sown with only a bushel of corn, has been known to be well covered with healthy vigorous plants, each of which has had from six to fourteen or more stalks, crowned with long well-nourished ears, full of fine plump grain, of which it has yielded a much greater quantity than any of the neighbouring grounds, sown with the common allowance. If the land be good, and the plants stand at a proper distance from each other, few of them will produce less than the above number of stalks and ears. But farmers think they shall have no crops if the ground be not covered with the blades of corn by the spring: whereas if they would have patience to wait till the plants put out all their stems, they would be amply convinced of the contrary. Every one must have observed, in places where foot-paths are made through corn fields, that, by the sides of those paths, where the corn is thin, and has been trodden down in winter and spring, the plants have stood erect, when most of the corn in the same field has been laid flat upon the ground; an advantage which can arise from no other cause, than that their stalks are stronger from their having more room: for those of the other plants are drawn up tall and slender, by being too close together.

Cow WHEAT. See COW WHEAT.

Indian WHEAT. See GUINEA WHEAT.

WHEE or WHEY. A heifer.

WHICKEN TREE. Service tree.

WHINS. Furze.

WHISKET. A basket.

WHITE-CLOVER. A well known plant, and reckoned the sweetest feed of any of the sown grasses; and it is of most advantage to the farmer, because it is perennial, or lasts a great number of years on the land.

This plant sends forth roots at every joint, so that it thickens, and soon makes a thick sward. When land is to be laid down for pasture, the farmer will reap great profit, if, with about four bushels of clean-sifted hayseed to an acre, he sows eight pounds of this clover, but it is to be remarked, that it is never to be sown with corn.

It may be sown either in spring or autumn; if in spring, it may be cut

about the latter end of July; if sown in autumn; the crop will be much earlier. As soon as ever the hay is off the land, it should be rolled with a heavy roller. In laying down land with these grasses, it will be proper for the farmer to be very careful that he cleans the land of all sorts of weeds; and the hay-seeds are to be sown first, immediately after which the clover is to be regularly scattered. After sowing, the land should be lightly harrowed, with a short tined harrow, to bury the seed; and a few days after, if the weather be dry, it should be rolled, to break the clods, and close it.

It will be good husbandry, if, after the plants are come up, the farmer should send in some weeders, to pull up all the tall rampant weeds which might injure the crop, for, if they are suffered to seed, they will soon stock the land.

It will be proper to take the advantage of dry weather, and roll the land three or four times, after the plants have attained some size; for the clover taking root at every joint, the sward will thereby be greatly thickened.

If a farmer knows his own interest, he will sow some of this white cloverseed by itself, in order to supply himself with what seed he may want, for it is sometimes very dear. The best season for sowing is autumn, upon dry lands, about the beginning or middle of September; but in open, cold lands, much exposed, a month sooner is better: all the caution required in this autumnal sowing is to let the land be very well rolled in the month of October, before the frosts come on, and again in March.

WHITE-SCORE. A disease with which sheep are too often affected and by which great numbers of them die.

The following medicine has been often given with success, provided the sheep are at the same time removed into a dry pasture.

Take a pint of old verjuice, half a pound of common or bay salt, dried well before the fire, pounded, and sifted through a sieve. Then mix the verjuice with the salt by degrees; and add half a pint of common gin, and bottle it up for use. When any of your sheep are seized with this disorder,

separate

White's House - see page 42 and -

But the wheaten tree. Service tree. Whins. Furze. Whisket. A basket. White-clover. A well known plant, and reckoned the sweetest feed of any of the sown grasses; and it is of most advantage to the farmer, because it is perennial, or lasts a great number of years on the land. This plant sends forth roots at every joint, so that it thickens, and soon makes a thick sward. When land is to be laid down for pasture, the farmer will reap great profit, if, with about four bushels of clean-sifted hayseed to an acre, he sows eight pounds of this clover, but it is to be remarked, that it is never to be sown with corn. It may be sown either in spring or autumn; if in spring, it may be cut

Separate them from the flock, and give each of them three large table spoonfuls of the mixture for a dose, repeating it two days after if they are not better.

WHITE-LANDS. Chalky lands.

WILDS. A term used by our farmers to express that part of a plough by which the whole is drawn forward.

WILDERNESS. A kind of grove of large trees, in a spacious garden, in which the walks are made either to intersect each other in angles, or have the appearance of meanders and labyrinth.

WHORTLEBERRY. Bilberry.

WIDOWWAIL. [*Cneorum*.] This is a low evergreen shrub, and might form an agreeable variety in wildernesses, &c. It is easily propagated by scattering the seeds.

WILLOW. See **SALLOW.**

Dutch or Sweet **WILLOW.** Candleberry-tree.

French **WILLOW.** See *French Willow*.

Sweet **WILLIAM.** See *Carnation*.

WINDFLOWER. See **ANEMONE**.

To WINNOW. To clear corn of the chaff.

WITHERS. The part of a horse where the shoulder-bones join at the bottom of the neck and mane.

WITHWIND. Bindweed.

WINTER *Aconite.* Hellebore.

WINTER *Cherry.* See *Winter Cherry*.

WINTER *Green.* See *Winter Green*.

WINTER *Cress.* Water-Cress.

WINTER'S BARK. [*Cortex Winteranus*.] The produce of a tree growing in Jamaica, Barbadoes, &c. called by Sir Hans Sloane *periclymenum rectum, foliis laurinis, cortice acri aromatico*. It was first discovered on the coast of Magellan, by Captain Winter, in the year 1567; the sailors then employed the bark as a spice, and afterwards found it serviceable in the scurvy; for which purpose it is at present also sometimes made use of in diet-drinks. The true winter's bark is not often met with in the shops, canella alba being generally substituted for it, and by many reckoned to be the same; there is, nevertheless, a considerable difference betwixt them in appearance, and a greater in quality; the winter's bark is in larger pieces, of a more cinnamon-colour than the canella; and tastes much warmer and more pungent.

WITCH HAZEL, [*Hamamelis*.]

This plant grows naturally in North-America, from whence the seeds have been brought to Europe, and many of the plants have been raised in the English gardens, where they are propagated for sale by the nursery gardeners. It hath a woody stem from two to three feet high, sending out many slender branches, garnished with oval leaves, indented on their edges, having great resemblance to those of the hazel; they fall away in autumn, and when the plants are destitute of leaves, the flowers come out in clusters from the joints of the branches; these sometimes appear the latter end of October, and often not till December, but are not succeeded by seeds in this country.

As the flowers of this shrub make very little appearance, so it is only preserved in the gardens of the curious, for the sake of variety.

It is propagated by laying down the young branches in autumn, which will take root in one year, and may then be taken from the old plants, and planted where they are to remain. The seeds of this plant always remain a whole year in the ground, so they should be sown in pots.

WOAD. Weld, or Dyer's Weed. The English plant, called by botanists *Isatis sativa, vel latifolia*.

A light, black, kindly, and rich soil, or a meadow newly broken up, is chosen for the cultivation of Woad; but it must not by any means be sown on stony or shallow land. It thrives well in plains, but still better on the south side of a hill; the essential point is, that the soil be good, and that it have the above-mentioned qualities.

Though the land which is intended for Woad be never so good, it must be dunged a year before it is sown with this plant, and be made first to bear a crop of wheat, or of onions, &c. After these are taken off, three deep stirrings should be given with the plough, or which is much better, with the spade: the first stirring should be in November, and the other two in February, March, or April. If the land which is intended for woad lies flat, and has not slope enough to carry off the wet, channels must be cut of a greater or less size, according as the ground is more or less disposed to retain the water.

In warm climates, Woad is sown so early as the beginning of April, unless the weather chance then to be too cold, in which case this sowing is deferred till the beginning of May; but for countries like ours, where the spring is attended with frosts, particularly in the night, Mr. Miller is certainly right in advising to lay the land up in narrow high ridges just before winter, that the frost may mellow it; to cross plough it in the spring, laying it again in narrow ridges, and between this time and the ensuing month of June to harrow it well twice at different intervals, in order to root up whatever weeds may have appeared; then, in June, to give the ground a third ploughing as deep as the plough will go, making the furrows narrow; after this, to harrow it again when any new weeds are come up; and finally, towards the end of July, or the beginning of August, to plough it for the last time, laying it as smooth as possible. A good harrowing after this will fit it completely to receive the seeds, which if rain falls soon after their being sown, or if they are steeped in water during the night before their sowing, as Mr. Miller advises, will appear in a fortnight, if the season be favourable. They should be but lightly covered, and should be sowed so thin as that the plants may stand six inches asunder. Some strew pigeon's dung on the land just after having sown it with Woad, and the plants become much the finer for this manure.

When the Woad is grown large enough to be distinguished, it should be carefully cleared of all weeds, for these would hurt it greatly; and at the same time the plants should be thinned wherever they stand too close: without this precaution, the Woad would produce but very few leaves, and would remain extremely stunted in its growth.

Woad generally affords two crops in the same year, and sometimes, when the season has been favourable, it has yielded even four. The two first are the best, and these are commonly mixed together in the manufacturing of this plant; but the after-crops are always kept separate; for if these are mixed with the other, the whole will be spoiled.

VOL. II.

The first crop should be gathered towards the end of August, and the last at the end of October, or in the beginning of November: but this last crop must be got in before the first frosts come on; for the leaves that might be gathered afterwards would not be worth any thing. When the plant is ripe, which is known by its first leaves beginning to dry, all the leaves are cut off by a man who grasps the plant by handfuls, and they are then laid in a heap to wither. Whilst they are in this situation, they must be sheltered from the sun and rain, and they must be frequently turned, in order that they may heat equally: they are then carried to a mill somewhat like that which is used for pressing the oil out of linseed, and are there ground till they are reduced into a paste, which is afterwards formed into cakes of about a pound weight, and these are laid to dry in a covered place where neither the sun nor rain can come at them. This paste is dried thus for about a fortnight, that is to say till it has acquired consistence enough to be formed into small roundish lumps, by means of little wooden moulds into which it is put for that purpose. As fast as these lumps are taken out of the moulds, they are laid upon wicker hurdles loosely woven, so as not to touch one another, and in such manner that the air may come at every part of them, as is practised in the drying of starch. These lumps become very hard, and in this condition it is that they are sold. When they are to be used, they must be steeped a long while in water before they can be broken.

The Woad thus prepared yields an excellent blue dye, very lasting, and with which all the degrees of this colour may be made. It is not long since this plant was preferred to indigo; afterwards, through a kind of toleration, the dyers were allowed to put a small quantity of indigo into their vats of Woad; but now, that the making and manner of using indigo have been greatly improved, it is looked upon as a matter of indifference whether that or Woad be used for dying blue.

WOLFSBANE, [*Acenitum.*] The plants, of which there are several

P 66

cies, grow naturally on the Alps, and on the mountains of Austria and Tartary. Most if not all are hurtful in a greater or less degree, so care should be taken where they are planted.

Wholesome WOLF-BANE, [*Anthora*.] This plant may be distinguished from the poisonous aconites by its leaves being more finely divided, and not at all bright or shining: it grows wild on the Alps. The root has been supposed useful against poisons, particularly that of the *thera*, (whence its name.) Some nevertheless look upon this pretended antidote itself as unsafe.

WOOD. A large plantation of trees.

WOODCOCK *Soil*. Ground whose soil under the turf is of the colour of a woodcock, and is not good.

WOODLAND. Ground covered with woods. It is also a term used by the farmers of many counties in England, for a sort of soil, from its constant humidity and dark colour, resembling the soil in woods, which, of whatever nature it originally is, will always be made to appear thus from the continual dropping of trees, and the want of a free air and sun, together with the fall of leaves, destroyed and washed to pieces by the wet.

WOODY. Abounding with wood.

WOODBINE. See HONEYSUCKLE.

WOODROOF. Petty Madder.

WOOD-SAGE. Tree Germander.

WOOD-SORREL. See *Wood Sorrel*.

WOOL. The covering of sheep. Each fleece consists of wool of several qualities and degrees of fineness, which the dealers therein take care to separate.

The English and French usually separate each fleece into three principal sorts, viz. 1. Mother-wool, which is that of the back and neck. 2. The wool of the tails and legs. 3. That of the breast and under the belly. The English wool most esteemed is, chiefly that about Leominster, Coltswold, and the Isle of Wight; the Spanish, principally that about Vega-via; and the French, about Berry.

Both wool, and woollen rags, make an excellent manure. The rags should be chopped small, about an inch or two square, and scattered on the earth at the second ploughing; for being thereby covered, they will begin to rot by seed-time. They imbibe the mois-

ture of dews and rain, retain it long, and, as Dr. Home observes, thereby keep loose soils in a moist state. They cost about four-pence a bushel at London, from whence many loads are sent every year to Dunstable (which is 30 miles) where they are laid even on stiff lands, just after the sowing of the corn, allowing to the acre four sacks of six bushels each.

WORMS, are very prejudicial to corn fields, eating up the roots of the young corn, and destroying great quantities of the crop. Sea-salt is the best of all things for destroying them. Sea water is proper to sprinkle on the land where it can be had; where the salt-springs are, their water will serve, and were neither are at hand, a little common or bay-salt does as well. Soot will destroy them in some lands, but is not to be depended upon, for it does not always succeed. Some farmers strew on their lands a mixture of chalk and lime; and others trust wholly to their winter-fallowing to do it, if this is done in a wet season, when they come up to the surface of the ground, and some nails with sharp heads be driven into the bottom of the plough. If they are troublesome in gardens, the refuse brine of salted meat will serve the purpose, or some walnut leaves steeped in a cistern of water for a fortnight or three weeks, will give it such a bitterness that it will be a certain poison to them. A decoction of wood-ashes, sprinkled on the ground, will answer the same purpose; and any particular plant may be secured both from worms and snails by strewing a mixture of lime and ashes about its roots. It is a general caution among the farmers to sow their corn as shallow as they can, where the field is very subject to worms. See *Nicarides*.

WORMWOOD, [*Abisinthium vulgare*.] Common wormwood. The leaves of this sort of wormwood are divided into roundish segments, of a dull green colour above, and whitish underneath. It grows wild in several parts of England; about London, large quantities are cultivated for medicinal use: it flowers in June and July, and after having ripened its seeds, dies down to the ground, excepting a tuft of the lower leaves, which generally abides the winter.

See
Anno
Dun
Caro

See
Red
Worm
Caro
Grub

Sea WORMWOOD. The leaves of sea wormwood are much smaller than those of the common, and hoary on the upper side as well as the lower; the stalks also are hoary all over. It grows wild about our salt marshes, and in several parts about the sea coasts. In taste and smell, it is weaker and less unpleasant than the common wormwood. The virtues of both are supposed to be of the same kind, and differ only in degree.

Roman WORMWOOD. This species is very different in appearance from the two foregoing: it is in all its parts

smaller than either; the leaves are divided into fine filaments, and hoary on the lower side; the stalks, either entirely or in part, of a purplish hue. It is a native of the warmer countries, and at present difficultly procurable in this, though as hardy and as easily raised as any of the other sorts.

Roman wormwood appears to be the most eligible of the three as a stomachic; and is likewise recommended by some in dropsies.

WOUNDWORT. Golden Rod.
WOUNDWORT of *Achilles*. Milfoil.

Hard Dissar in Recolt. Soil. Yeast. See Barill.

Y E W

Y E W

YARD-LAND. A quantity of land, in some countries fifteen acres, in some twenty, and in others twenty-four, thirty, and thirty-four acres.

YARROW. Milfoil.

Water YARROW. This plant grows naturally in standing waters in many parts of England; the leaves which are for the most part immersed in the water, are finely winged and flat, like most of the sea plants, and at the bottom have long fibrous roots, which strike into the mud: the flower-stalks rise five or six inches above the water; they are naked, and toward the top have two or three whorls of purple flowers, terminated by a small cluster of the same. These flowers have the appearance of those of the stock-gilliflower, so make a pretty appearance on the surface of the water.

YELLOW. See JAUNDICE.

YEW. [*Taxus*.] This tree grows naturally in England, and also in most of the Northern Counties of Europe, and in North-America. If suffered to grow, it will rise to a good height, with a very large stem. It naturally sends out branches on every side, which spread out, and are almost horizontal; these are closely garnished

with narrow, stiff, blunted pointed leaves, of a very dark green. The flowers come out from the side of the branches in clusters; the male flowers having many stamina, are more conspicuous than the female; these for the most part are upon different trees, but sometimes are upon the same tree; they appear the latter end of May, and the berries ripen in autumn.

The Yew tree has been generally cultivated for the pleasure-garden, both to clip into the figures of beasts, birds, &c. and also for hedges. Whoever is pleased with such figures in his garden, can raise no tree more proper for his purpose, as the branches and leaves may be clipped and fashioned into almost any form or shape. But as this method is justly exploded, and as every one who has the least pretension to taste must always prefer a tree in its natural growth to those monstrous figures, the Yew is now chiefly planted for wilderness quarters, as also for hedges, for which service it is excellently well adapted, as no tree bears clipping so well.

These trees may be easily propagated by sowing their berries in autumn, as

soon as they are ripe, (without clearing them from the pulp which surrounds them, as hath been frequently directed) upon a shady bed of fresh undunged soil, covering them over about half an inch thick with the same earth.

In the spring the bed must be carefully cleared from weeds, and if the season proves dry, it will be proper to refresh the bed with water now and then, which will promote the growth of the seeds, many of which will come up the same spring, but others will remain in the ground until autumn or the spring following; but where the seeds are preserved above ground till spring before they are sown, the plants never come up till the year after; so that by sowing the seeds as soon as they are ripe, there is often a whole year saved.

These plants, when they come up, should be constantly cleared from weeds, which, if permitted to grow amongst them, will cause their bottoms to be naked, and frequently destroy the plants when they continue long undisturbed.

In this bed the plants may remain two years; after which, in autumn, there should be a spot of fresh undunged soil prepared, into which they should be remov'd the beginning of October, planting them in beds about four or five feet wide, in rows about a foot asunder, and the same distance from each other in the rows, observing to lay a little mulch upon the surface of the ground about their roots, as also to water them in dry weather until they have taken root; after which they will require no farther care, but to keep them clear from weeds in summer, and to trim them according to the purpose for which they are designed.

In these beds they may remain two or three years, according as they have grown, when they should again be removed into a nursery, placing them in rows at three feet distance, and the plants eighteen inches asunder in the rows; observe to do it in autumn, as was before directed, and continue to trim them in the summer season, according to the design for which they were intended; and after they have continued three or four years in this nursery, they may be transplanted where they are to remain; always observing to remove them in autumn where the ground is very dry, but on cold moist land it is better in the spring.

These trees, though of slow growth, do sometimes arrive at a considerable size. Mr. Pennant mentions one in Fontingal church-yard, in the Highlands of Scotland, whose ruins measured fifty-six feet and a half in circumference.

Of the Yew there is a variety with short leaves, which appear very ornamental in plantations. There is also another with striped leaves of great value amongst the variegated tribes. These are increased by layers, but the striped sort must be planted upon a barren soil, otherwise it will become plain.

YEOMAN. The first, or highest degree of the plebeians of England. The yeomen are properly freeholders, who cultivate their own lands.

YOAK, or YOKE. A frame of wood, fitted over the necks of oxen, whereby they are coupled together, and harnessed to the plough. *For Hoagsloo.*

YOAK of Land. The quantity of land which a yoke of oxen might plough in a day.



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