fruitful; and another thing ſhould be obſerved in planting of the ſucceeding crops, which is, to make choice of moiſt ſtrong land for the later crops; for if they are planted on dry ground, they rarely produce a crop.

Theſe after-crops ſhould be planted at about a fortnight diſtance from each other, from the middle of February to the middle of May; after which time it is generally too late to plant, unleſs the land is very ſtrong and moiſt; for in warm dry light land all the late crops of Beans are generally attacked by the black inſects, which cover all the upper part of their ſtems, and ſoon cauſe them to decay.

Where the ſeeds of theſe Beans are deſigned to be ſaved, a ſufficient number of rows ſhould be ſet apart for that purpoſe, according to the quantity deſired; theſe ſhould be managed in the ſame way as thoſe which are deſigned for the table; but none of the Beans ſhould be gathered, though there are ſome covetous perſons, who will gather all the firſt ripe for the table, and are contented to ſave the after-crop for ſeed, but theſe are never ſo large and fair as the firſt; ſo that if theſe are for ſale, they will not bring near the price as the other; therefore, what is gained to the table is loſt in the value of the ſeed; but thoſe who are deſirous to preſerve the ſeveral varieties as pure as poſſible, ſhould never ſuffer two of the varieties to grow for ſeeds in the ſame place; for by their farina mixing with each other they will not continue ſo pure, but be apt to vary; and in order to keep the early kinds perfect, thoſe which come the earlieſt ſhould be ſaved for ſeeds; but this is what few people chuſe to do, becauſe they are then the moſt valuable.

When the ſeed is ripe, the ſtalks ſhould be pulled up, and ſet upright againſt a hedge to dry, obſerving to turn them every third day, that they may dry equally; then they may be threſhed out, and cleaned for uſe, or otherwiſe ſtacked up in a barn, till there is more leiſure for threſhing them out; and afterward the ſeed ſhould be drawn over to take out all thoſe that are not fair, preſerving the beſt for uſe or ſale.

It is a very good method to change the ſeeds of all ſorts of Beans, and not to ſow and ſave the ſeeds long in the ſame ground, for they do not ſucceed ſo well; therefore, if the land is ſtrong where they are to be planted, it will be the beſt way to procure the ſeeds from a lighter ground, and ſo vice verſa; and by this method the crops will be larger, and the Beans fairer, and not ſo liable to degenerate.

Having given directions for the culture of the Garden Beans, I ſhall next proceed to that of the Horſe Bean, which is cultivated in the fields: there are two or three varieties of theſe Beans, which differ in their ſize and colour; but that which is now in the greateſt eſteem, is called the Tick Bean; this doth not grow ſo high as the other, is a more plentiful bearer, and ſucceeds better on light land than the common Horſe Bean, ſo preferred to it.

The Horſe Bean delights in a ſtrong moiſt ſoil, and an open expoſure, for they never thrive well on dry warm land, or in ſmall incloſures, where they are very ſubject to blight, and are frequently attacked by a black inſect, which the farmers call the black dolphin; theſe inſects are often in ſuch quantities as to cover the ſtems of the Beans entirely, eſpecially all the upper part of them; and whenever this happens, the Beans ſeldom come to good; but in the open fields, where the ſoil is ſtrong, this rarely happens.

Theſe Beans are uſually ſown on land which is freſh broken up, becauſe they are of uſe to break and pulverize the ground, as alſo to deſtroy weeds; ſo that the land is rendered much better for corn, after a crop of Beans, than would have been before, eſpecially if they are ſown and managed according to the new huſbandry, with a drill plough, and the horſe hoe, uſed to ſtir the ground between the rows of Beans, which will prevent the growth of weeds, and pulverize the ground, whereby a much greater crop of Beans may, with more certainty, be expected, and the land will be better prepared for whatever crop it is deſigned for after.

The ſeaſon for ſowing of theſe Beans is from the middle of February to the end of March, according to the nature of the ſoil; the ſtrongeſt and wet land ſhould always be laſt ſown; the uſual quantity of Beans ſown on an acre of land is about three buſhels; but this is double the quantity which need be ſown, eſpecially according to the new huſbandry; but I ſhall firſt ſet down the practice according to the old huſbandry, and then give directions for their management according to the new. The method of ſowing is after the plough, in the bottom of the furrows; but then the furrows ſhould not be more than five, or at moſt ſix inches deep. If the land is new broken up, it is uſual to plough it early in autumn, and let it lie in ridges till after Chriſtmas; then plough it in ſmall furrows, and lay the ground ſmooth; theſe two ploughings will break the ground fine enough for Beans, and the third ploughing is to ſow the Beans, when the furrows ſhould be made ſhallow, as was before mentioned.

Moſt people ſet their Beans too cloſe; for, as ſome lay the Beans in the furrows after the plough, and others lay them before the plough, and plough them in; ſo, by both methods the Beans are ſet as cloſe as the furrows are made, which is much too near; for when they are on ſtrong good land, they generally are drawn up to a very great height, and are not ſo apt to pod as when they have more room, and are of lower growth; therefore I am convinced by many late trials, that the better way is to make the furrows two feet and a half aſunder, or more; which will cauſe them to branch out into many ſtalks, and bear in greater plenty than when they are cloſer; by this method, half the quantity of Beans will be ſufficient for an acre of land; and by the ſun and air being admitted between the rows, the Beans will ripen much earlier and more equally than in the common way.

What has been mentioned muſt be underſtood as relating to the old huſbandry; but where Beans are planted according to the new, the ground ſhould be four times ploughed before the Beans are ſet, which will break the clods, and render it much better for planting; then with a drill plough, to which a hopper is fixed for ſetting of the Beans, the drills ſhould be made at three feet aſunder, and the ſpring of the hopper ſet ſo as to ſcatter the Beans at three inches diſtance in the drills. By this method leſs than one buſhel of ſeed will plant an acre of land. When the Beans are up, if the ground is ſtirred between the rows with a horſe plough, it will deſtroy all the young weeds; and when the Beans are advanced about three or four inches high, the ground ſhould be again ploughed between the rows, and the earth laid up to the Beans; and if a third ploughing, at about five or ſix weeks after is given, the ground will be kept clean from weeds, and the Beans will ſtalk out, and produce a much greater crop than in the common way.

When the Beans are ripe, they are reaped with a hook, as is uſually practiſed for Peas; and after having lain a few days on the ground they are turned, and this muſt be repeated ſeveral times, until they are dry enough to ſtack; but the beſt method is to tie them in ſmall bundles, and ſet them upright; for then they will not be in ſo much danger to ſuffer by wet, as when they lie on the ground; and they will be more handy to carry and ſtack, than if they are looſe. The common produce is from twenty to twenty-five buſhels on an acre of land; but I have known thirty-ſix on an acre.

The Beans ſhould lie in the mow to ſweat, before they are threſhed out; for as the haulm is very large and ſucculent, ſo it is very apt to give and grow moiſt; but there is no danger of the Beans receiving damage, if they are ſtacked tolerably dry, becauſe the pods will preſerve the Beans from injury; and they will be much eaſier to threſh after they have ſweat in the

mow than before; and after they have once ſweated and are dry again, they never after give.

By the new huſbandry, the produce has exceeded the old by more than ten buſhels on an acre; and if the Beans which are cultivated in the common method are obſerved, it will be found that more than half their ſtems have no Beans on them; for by ſtanding cloſe, they are drawn up very tall; ſo the tops of the ſtalks only produce, and all the lower part is naked; whereas in the new method, they bear almoſt to the ground; and as the joints of the ſtems are ſhorter, ſo the Beans grow cloſer together on the ſtalks.

In the year 1745 I made the following experiment, in planting a piece of eleven acres of Beans in Berkſhire, viz. the gentleman's bailiff, who was wedded to the old practice of huſbandry, was very unwilling to depart from it; and having been an old ſervant in the family, his maſter was inclinable to hear all he could ſay in favour of his opinion: however, at laſt I prevailed on the gentleman to let his bailiff plant one half of the land in his way, giving him the choice which half he would have: accordingly the land was divided and planted; but the ſummer proving wet, the Beans on that part of the field he had choſen grew ſo tall and rank, that they produced no pods but on the upper part of the ſtalks; and when they were threſhed out, there was no more than twenty-two buſhels on an acre, whereas the other half produced near forty.

FABA ÆGYPTIACA, is the Arum Ægyptiacum.

FABA CRASSA, is Anacampſeros.

FABAGO. See ZYGOPHYLLUM.

FAGARA. Brown. Hiſt. Jam. tab. 5. f. 1. Ironwood.

The CHARACTERS are,

It hath male and hermaphrodite flowers upon different plants; the male flowers have a ſmall empalement, ſlightly cut into four ſegments, but have no petals, and ſix ſtamina, terminated by roundiſh ſummits: theſe are barren. The female flowers have a larger concave permanent empalement with four ſpreading petals, and four ſtamina, crowned with oval ſummits, and an oval germen, ſupporting a ſlender ſtyle, terminated by an obtuſe ſtigma; the germen afterward becomes a globular capſule with two lobes, incloſing two ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, intitled Tetrandria Monogynia; whereas it ſhould be put into his ſixth ſection of the twenty-third claſs, as the flowers are male and hermaphrodite on different plants, and the flowers have ſix ſtamina: but this miſtake he was led into by Jacquin, who had ſeen and deſcribed the hermaphrodite flowers only.

The SPECIES are,

1. FAGARA (*Pterota*) foliolis emarginatis. Amœn. Acad. 5. p. 393. *Fagara, whoſe lobes (or ſmall leaves) are indented at the top.* Lauro affinis jaſmini alato folio, coſta media membranulis utrinque extantibus alata, ligno duritie ferro vix cedens. Sloan. Hiſt. Jam. 2. p. 25. *Ironwood.*
2. FAGARA (*Tragodes*) articulis pinnarum ſubtus aculeatus. Jacq. Amer. 13. *Fagara with ſpines under the leaves at the joints.* Schinoides petiolis ſubtus aculeatis. Hort. Cliff. 489.

The firſt ſort grows naturally in the warmeſt parts of America. The late Dr. Houſtoun found it growing at Campeachy, from whence he ſent me dried ſpecimens of the plants in flower, by which I am convinced there are male trees which are barren. It riſes with a woody ſtem upwards of twenty feet high, ſending out branches great part of its length, garniſhed with ſmall winged leaves, having three or five lobes to each. The flowers come from the ſide of the branches, ſtanding four or five together upon ſhort foot-ſtalks.

The ſecond ſort I have placed here after Linnæus, but am not ſure it ſhould be ranged with it; for although I have pretty ſtrong plants of it growing in the Chelſea garden, they have not yet flowered; but by the external face of the plant, it ſeems to agree with the firſt.

Theſe are both tender plants, ſo muſt be kept in the bark-ſtove conſtantly, and are propagated by ſeeds, and alſo by cuttings, if properly managed.

FAGONIA. Tourn. Inſt. R. H. 265. tab. 141. Lin. Gen. Plant. 475. This plant was ſo named by Dr. Tournefort, in honour of Dr. Fagon, who was ſuperintendant of the royal garden at Paris.

The CHARACTERS are,

The flower hath a ſpreading empalement, compoſed of five ſmall leaves; it hath five heart-ſhaped petals, which ſpread open, and are narrow at their baſe, where they are inſerted in the empalement. It hath ten ſtamina which are erect, terminated by roundiſh ſummits. In the center is ſituated a five-cornered germen, ſupporting an awl-ſhaped ſtyle, crowned by a ſingle ſtigma. The germen afterward becomes a roundiſh capſule having five lobes, ending in a point, and five cells, each having a ſingle roundiſh ſeed.

Linnæus ranges this plant in the firſt ſection of his tenth claſs, intitled Decandria Monogynia, from the flower having ten ſtamina and one ſtyle.

The SPECIES are,

1. FAGONIA (*Erecta*) ſpinoſa, foliolis lanceolatis planis lævibus. Hort. Upſal. 103. *Prickly Fagonia, whoſe leaves are ſpear-ſhaped, plain, and ſmooth.* Fagonia Cretica ſpinoſa. Tourn. *Thorny Trefoil of Candia.*
2. FAGONIA (*Hiſpanica*) inermis. Lin. Sp. Plant. 386. *Fagonia without ſpines.* Fagonia Hiſpanica non ſpinoſa. Tourn. *Spaniſh Fagonia without thorns.*
3. FAGONIA (*Arabica*) ſpinoſa, foliolis linearibus convexis. Lin. Sp. Plant. 386. *Prickly Fagonia with narrow convex leaves.* Fagonia Arabica, longiſſimis aculeis armato. Shaw. Pl. Afr. 229. *Arabian Fagonia, armed with very long ſpines.*

The firſt ſort is a native of the iſland of Candia: this has been deſcribed by ſome botaniſts under the title of Trifolium ſpinoſum Creticum, which occaſioned my giving it the Engliſh name of Thorny Trefoil of Crete; though there is no other affinity between this and the Trefoil, than that of this having three leaves or lobes on the ſame foot-ſtalk.

This is a low plant, which ſpreads its branches cloſe to the ground, which are extended to the length of a foot or more every way, garniſhed with ſmall trifoliate oval leaves, placed oppoſite; and at each joint, immediately below the leaves, come out two pair of ſpines, one on each ſide the ſtalk; and at the ſame places come out a ſingle blue flower, ſtanding upon a ſhort foot-ſtalk, compoſed of five ſpear-ſhaped petals, which are narrow at their baſe, where they are inſerted into the empalement; after theſe fall away, the germen turns to a roundiſh five-lobed capſule, ending in an acute point, having five cells, each containing one roundiſh ſeed. It flowers in July and Auguſt, but unleſs the ſeaſon proves warm, the ſeeds do not ripen in England.

The ſecond ſort grows naturally in Spain; this differs from the firſt in being ſmooth, the branches of this having no thorns; and the plant will live two years, whereas the firſt is annual.

The third ſort was diſcovered by the late Dr. Shaw in Arabia; this is a low plant with a ſhrubby ſtalk, from which come out ſeveral weak branches armed with long thorns; the leaves of this are thick, narrow, and convex on their lower ſide; the flowers come out in the ſame manner as in the firſt ſort.

Theſe plants are propagated by ſeeds, which ſhould be ſown upon a border of freſh light earth, where the plants are deſigned to remain, for they do not bear tranſplanting well; when the plants come up, they may be thinned out to the diſtance of ten inches or a foot; and if they are kept clean from weeds, they will require no other care.

The firſt ſort is an annual plant, which ſeldom perfects its ſeeds in England, unleſs the ſeaſons prove very warm; therefore the beſt way is to ſow the ſeeds upon a warm border in the autumn, and in froſty weather ſhelter the plants with mats, or ſome covering to ſecure them; or if they are ſown in

pots and placed under a frame in the winter, and the following ſpring ſhaken out of the pots, and planted in a warm border, they will come early to flower, and thereby ripe ſeeds may be more certainly obtained.

The other two ſorts may be treated in the ſame way; for as theſe ſeldom flower the firſt year from ſeeds, ſo the plants ſhould be either kept in pots, and ſheltered under a frame in winter, or placed in a warm border, where they may be ſheltered with mats, or ſome other covering, to preſerve them from the froſt; and the following ſummer the ſecond ſort will flower and produce ripe ſeeds, but the third has not perfected any ſeeds as yet in England.

FAGOPYRUM. See HELXINE.

FAGUS. Tourn. Inſt. R. H. 584. tab. 351. Lin. Gen. Plant. 951. [ſo called from φάγω, *Gr.* becauſe ſuppoſed to be the food of the firſt race of mankind.] The Beech-tree; in French, *Hêtre.*

The CHARACTERS are,

It hath male and female flowers on the ſame tree; the male flowers are collected into globular heads; theſe have no petals, but have ſeveral ſtamina included in an empalement of one leaf, which are terminated by oblong ſummits. The female flowers have a one-leaved empalement cut into four parts, but have no petals; the germen is fixed to the empalement, ſupporting three ſtyles, crowned by reflexed ſtigmas. The germen afterward becomes a roundiſh capſule, armed with ſoft ſpines, opening in three cells, each containing a triangular nut.

This genus of plants is ranged in the eighth ſection of Linnæus's twenty-firſt claſs, which includes thoſe plants that have male and female flowers on the ſame plant, and the male flowers have many ſtamina. To this genus he has joined the Cheſnut; but as the male flowers of the Cheſnut are collected in long katkins, and thoſe of the Beech are globular, and the fruit of the latter being triangular, there is ſufficient reaſon for keeping them ſeparate.

We know but one SPECIES of this genus, viz.

FAGUS (*Sylvatica*) foliis ovatis obſolete ſerratis. Hort. Cliff. 447. Fagus. Dod. Pempt. 832. *The Beech-tree with oval ſawed leaves.*

There are ſome planters, who ſuppoſe there are two diſtinct ſpecies of this tree; one they call the Mountain Beech, which they ſay is a whiter wood than the other, which they diſtinguiſh by the title of Wild Beech; but it is certain, that this difference in the colour of the wood ariſes from the difference of the ſoils in which they grew, for I have not ſeen any ſpecific difference in the trees. There have been ſeeds of a Beech-tree brought from North-America, by the title of Broad-leaved Beech, but the plants which were raiſed from them proved to be the common ſort; ſo that we know of no other variety, excepting thoſe with ſtriped leaves, which is accidental; and when the trees are in vigour, the leaves become plain again.

This tree is propagated by ſowing the maſt; the ſeaſon for which is any time from October to February, only obſerving to ſecure the ſeeds from vermin when early ſowed; which, if carefully done, the ſooner they are ſown the better, after they are full ripe: a ſmall ſpot of ground will be ſufficient for raiſing a great number of theſe trees from ſeed, but you muſt be very careful to keep them clear from weeds; and if the plants come up very thick, you ſhould not fail to draw out the ſtrongeſt of them the autumn following, that thoſe left may have room to grow; ſo that if you huſband a ſeed-bed carefully, it will afford a three years draught of young plants, which ſhould be planted in a nurſery; and, if deſigned for timber trees, at three feet diſtance row from row, and eighteen inches aſunder in the rows.

But if they are deſigned for hedges (to which the tree is very well adapted) the diſtance need not be ſo great; two feet row from row, and one foot in the rows will be ſufficient. In this nurſery they may remain two or three years, obſerving to clear them from weeds, as alſo to dig up the ground between the rows, at leaſt once a year, that their tender roots may the better extend themſelves each way: but be careful not to cut or bruiſe their roots, which is injurious to all young trees; and never dig the ground in ſummer, when the earth is hot and dry; which, by letting in the rays of the ſun to the roots, is often the deſtruction of young trees.

This tree will grow to a conſiderable ſtature, though the ſoil be ſtony and barren; as alſo upon the declivities of hills, and chalky mountains, where they will reſiſt the winds better than moſt other trees; but then the nurſeries for the young plants ought to be upon the ſame ſoil; for if they are raiſed in good ſoil and a warm expoſure, and afterwards tranſplanted into a bleak barren ſituation, they ſeldom thrive, which holds true in moſt other trees; therefore I would adviſe the nurſery to be made upon the ſame ſoil where the plantation is intended, but of this I ſhall ſay more under the article of NURSERY.

The tree is very proper to form large hedges to ſurround plantations, or large wilderneſs quarters; and may be kept in a regular figure, if ſheared twice a year, eſpecially if they ſhoot ſtrong; in which caſe, if they are neglected but a ſeaſon or two, it will be difficult to reduce them again. The ſhade of this tree is very injurious to moſt ſorts of plants which grow near it, but is generally believed to be very ſalubrious to human bodies.

The timber is of great uſe to turners for making trenchers, diſhes, trays, buckets; and likewiſe to the joiner for ſtools, bedſteads, coffins, &c. The maſt is very good to fat ſwine and deer; it alſo affords a ſweet oil, and the nuts have in ſcarce times ſupported ſome families with bread.

This tree delights in a chalky or ſtony ground, where it generally grows very faſt; and the bark of the trees in ſuch land is clear and ſmooth; and although the timber is not ſo valuable as that of many other trees, yet as it will thrive on ſuch ſoils and in ſuch ſituations where few better trees will ſcarce grow, the planting of them ſhould be encouraged; eſpecially as the trees afford an agreeable ſhade, and the leaves make a fine appearance in ſummer, and continue green as long in autumn as any of the deciduous trees: therefore in parks, and other plantations for pleaſure, this tree deſerves to be cultivated among thoſe of the firſt claſs, eſpecially where the ſoil is adapted to it.

The two ſorts with variegated leaves may be propagated by budding or grafting them upon the common Beech, obſerving not to plant them in a good earth; which will cauſe the buds or cyons to ſhoot vigorouſly, whereby the leaves will become plain, which often happens to moſt variegated plants.

FARINA FŒCUNDANS is the impregnating meal or duſt on the apices or ſummits of flowers; which, being conveyed into the uterus or vaſculum ſeminale of plants, fecundates the rudiments of the ſeeds in the ovary, which otherwiſe would decay and come to nothing. See GENERATION OF PLANTS.

FEATHERFEW, or FEAVERFEW. See MATRICARIA.

FENCES. In hotter climates than England, where they have not occaſion for walls to ripen their fruit, their gardens lie open, where they can have water fence and proſpects; or elſe they bound their gardens with groves, in which are fountains, walks, &c. which are much more pleaſing to the ſight than a dead wall: but in colder countries, and in England, we are obliged to have walls to ſhelter and ripen our fruit, although they take away much from the pleaſant proſpect of the garden.

Since therefore we are under a neceſſity to have walls to ſecure our gardens from the injury of winds, as well as for the conveniency of partitions or incloſures, and alſo to ripen our fruit, brick walls are accounted the warmeſt and beſt for this purpoſe: and theſe walls being built pannel-ways, with pillars at equal diſtances, will ſave a great deal of charge, in that the

the walls may be built thinner, than if they were built plain without theſe pannels, for then it would be neceſſary to build them thicker every where: and beſides, theſe pannels make the walls look the handſomer.

Stone walls are by ſome preferred to thoſe of brick, eſpecially thoſe of ſquare hewn ſtones; but where they are deſigned for fruit, they ſhould be faced with brick. Thoſe that are made of rough ſtones, though they are very dry and warm, yet, by reaſon of their unevenneſs, are inconvenient to nail up trees to, except pieces of timber be laid in them here and there for to faſten a trellis to them.

But in large gardens it is better to have the proſpect open to the pleaſure-garden, which ſhould be ſurrounded with a foſſe, that from the garden the adjacent country may be viewed, but this muſt depend on the ſituation of the place; for if the proſpect from the garden is not good, it had better be ſhut out from the ſight by a wall, or any other fence, than to be open. As alſo, where a garden lies near a populous town, and the adjoining grounds are open to the inhabitants, if the garden is open, there will be no walking there in good weather, without being expoſed to the view of all paſſengers, which is very diſagreeable.

Where theſe foſſes are made round a garden which is ſituated in a park, they are extremely proper; becauſe hereby the proſpect of the park will be obtained in the garden, which renders theſe gardens much more agreeable than thoſe which are confined.

In the making theſe foſſes there have been many inventions; but, upon the whole, I have not ſeen any which are in all reſpects preferable to thoſe which have an upright wall next the garden; which (where the ſoil will admit of a deep trench) ſhould be ſix or ſeven feet high, ſo as to be above the reach of boys; and from the foot of this wall, the ground on the outſide ſhould riſe with a gradual eaſy ſlope to the diſtance of eighteen or twenty feet; and where it can be allowed, if it ſlopes much farther, it will be eaſier and leſs perceptible as a ditch to the eye, when viewed at a diſtance. But if the ground is naturally wet, ſo as not to admit of a deep foſſe, then, in order to make a fence againſt cattle, if the wall be four feet high, and ſlight poſts of three feet and a half high are placed juſt behind the wall, with a ſmall chain carried on from poſt to poſt, no cattle or deer will ever attempt to jump againſt it, therefore it will be a ſecure fence againſt them; and if theſe are painted of a dark lead colour, they will not be diſcerned at a diſtance; and at the ſame time the chain will ſecure perſons walking in the garden from tumbling over: and if another chain is carried through the poſts at one foot from the ground, it will more effectually prevent cattle from creeping under.

In ſuch places where there are no good proſpects to be obtained from a garden, it is common to make the incloſure of park-paling; which, if well performed, will laſt many years, and has a much better appearance than a wall: and this pale may be hid from the ſight within, by plantations of ſhrubs and Evergreens; or there may be a quick hedge planted within the pale, which may be trained up, ſo as to be an excellent fence by the time the pales begin to decay.

There are ſome perſons who make ſtuckade fences round their gardens to keep out cattle, &c. which, when well made, will anſwer the purpoſe of a fence; but this being very expenſive in the making, and not of very long duration, has occaſioned their not being more commonly in uſe.

As to fences round parks, they are generally of paling; which, if well made of winter-fallen Oak, will laſt many years; but a principal thing to be obſerved in making theſe pales, is not to make them too heavy; for when they are ſo, their own weight will cauſe them to decay; therefore the pale ſhould be cleft thin, and the rails ſhould be cut triangular, to prevent the wet lodging upon them; and the poſts ſhould be good, and not placed too far aſunder, burning that part of them as goes into the ground. If theſe things are obſerved, one of theſe pales will laſt, with a little care, upward of forty years very well. The common way of making theſe fences is, to have every other pale nine or ten inches above the intermediate ones; ſo that the fence may be ſix feet and a half high, which is enough for fallow deer; but where there are red deer, the fence ſhould be one foot higher, otherwiſe they will leap over.

Some incloſe their parks with brick walls; and in countries where ſtone is cheap, the walls are built with this material; ſome with, and others without mortar.

A kitchen-garden, if rightly contrived, will contain walling enough to afford a ſupply of ſuch fruits as require the aſſiſtance of a wall for any family; and this garden being ſituated on one ſide, and quite out of ſight of the houſe, may be ſurrounded with walls, which will ſcreen the kitchen-garden from the ſight of perſons in the pleaſure-garden; and being locked up, the fruit will be much better preſerved than it can be in the public garden: and the having too great a quantity of walling is often the occaſion that ſo many ſcandalous trees are frequently to be ſeen in large gardens, where there is not due care obſerved in their management.

And beſides, the borders of pleaſure-gardens are generally too narrow for the roots of fruit-trees, as will be ſhewn in its proper place, therefore it is in vain to plant them there.

The height of garden-walls ſhould be from ten to twelve feet, which is a moderate proportion; and if the ſoil be good, it may in time be well furniſhed with bearing wood in every part, eſpecially thoſe parts planted with Pears, notwithſtanding the branches being trained horizontally from the bottom of the walls.

I would recommend the White Thorn, the Holly, the Black Thorn and Crab, for outward fences to a good ground, but I do not approve of the intermixing them.

The White Thorn is the beſt quick to plant, becauſe it is the moſt common, and may be clipped ſo as to render it the cloſeſt and hardieſt fence of any other tree; and being very durable, is preferred to all others for outward fences, or for the diviſion of fields, where they are expoſed to cattle, &c.

The Black Thorn and Crab make very good fences, and are to be raiſed as the White Thorn; but if the kernels of Apples or Crabs be ſown, it is beſt to ſow the pommace with them, and they will come up the ſooner, i. e. the firſt year, if ſown in the autumn, ſoon after the fruit is ripe.

If Crab-ſtocks be planted while young, in the ſame manner as quick, they make excellent hedges ſoon, and ſo will ſome ſorts of Plumbs, I mean ſuch as have thorns.

The Black Thorn is not accounted ſo good for fences as the White Thorn, becauſe it is apt to run more into the ground, and is not certain as to the growing, eſpecially if the plants are not ſet very young; but then on the other hand, the buſhes are by much the better, and are alſo more laſting than the White Thorn, or any other, for dead hedges, or to mend gaps; nor are they ſubject to be cropt by cattle, as the others are. The richer the mould is, the better they will proſper, but yet they will grow on the ſame ſort of ſoil that the White Thorn does.

The Holly will make an excellent fence, and is preferable to all the reſt, but is a ſlow grower; but when once it does grow, it makes amends by its height, ſtrength, and thickneſs.

It is raiſed of young ſeedling plants or berries, as the White Thorn is, and the berries will lie as long in the ground before they come up. It delights moſt in ſtrong grounds, but will grow upon the drieſt gravel, amongſt rocks and ſtones.

The berries lie till the ſecond ſpring before they come up, therefore they ſhould be prepared before they are ſown (for this ſee the article AQUIFOLIUM.) It will be beſt to ſow them in the place where you deſign

they ſhould grow, but they ſhould be well weeded both before they come up and afterwards.

French Furz will alſo do well upon dry ſandy banks, where few other plants will grow; but they muſt be kept very clean at the bottom, and cut thin, and never ſuffered to grow too high: nor ſhould they be cut in dry weather, or late in autumn, nor early in the ſpring; the doing either of which is ſubject to make it die in patches, which is irrecoverable; nor will it ever break out again from old wood, if cut cloſe in, after it has been ſuffered long to grow out.

Fences may likewiſe be made of Elder: if the ſoil be any thing good, you may put ſticks of Elder, or truncheons ten or twelve feet long, ſlopeways in your banks, ſo as to make a chequer-work; and they will make a fence for a garden the quickeſt of any thing, and be a good ſhelter. But theſe fences are improper for a fine garden, becauſe they ſhoot very irregular, and are ungovernable; as likewiſe the roots of theſe trees ſpread very far, and draw away all the heart of the ground, ſo as to ſtarve whatever plants grow near them: and add to this the ſcattering of the berries, which will fill the ground near them with young plants; which, if not timely weeded out, will get the better of whatever grows near them; therefore this ſort of fence is ſeldom planted, where a hedge of White Thorn can be had.

Elder planted on a bank, the ſide of which is waſhed with a river or ſtream, will make an extraordinary fence, and will preſerve the bank from being undermined by the water, becauſe it is continually ſending ſuckers from the roots and lower branches, which is of great advantage where the ſtream waſhes away the bank.

For middle fences in a garden, the Yew is the moſt tonſile, governable, and durable plant.

For ſurrounding wilderneſs quarters, Elm, Lime, Hornbeam and Beech, are very proper.

FENNEL. See FOENICULUM.

FENNEL-FLOWER. See NIGELLA.

FERRUM EQUINUM. See HIPPOCREPIS.

FERULA. Lin. Gen. Plant. 305. Tourn. Inſt. R. H. 321. tab. 170. [takes its name of Ferendo, *Lat.* becauſe the ſtalks of this plant are made uſe of in ſupporting the branches of trees; or of Feriendo, becauſe in old time ſticks were made of them, with which ſchool-maſters uſed to correct their ſcholars.] Fennel Giant; in French, *Ferule.*

The CHARACTERS are,

It hath an umbellated flower; the principal umbel is globular, and is compoſed of ſeveral ſmaller called rays, of the ſame form; the involucrum is compoſed of ſeveral narrow leaves which fall off; the principal umbel is uniform. The flowers have five oblong erect petals which are equal, and five ſtamina of the ſame length, terminated by ſingle ſummits; under the flower is ſituated a turbinated germen, ſupporting two reflexed ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes an elliptical, compreſſed, plain fruit, dividing in two parts, each having a large elliptical plain ſeed, marked with three lines on each ſide.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, intitled Pentandria Digynia, which contains thoſe plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. FERULA (*Communis*) foliolis linearibus longiſſimis ſimplicibus. Hort. Cliff. 95. *Ferula with the ſmaller leaves, very narrow, long, and ſingle.* Ferula major, ſeu fœmina Plinii. M. Umb. *Pliny's Female Fennel Giant.*
2. FERULA (*Galbanifera*) foliolis multipartitis, laciniis linearibus planis. Hort. Cliff. 95. *Ferula whoſe ſmaller leaves are divided into many narrow parts which are plain.* Ferula galbanifera. Lob. Obſ. *Galbanum-bearing Fennel Giant.*
3. FERULA (*Tingitana*) foliolis laciniatis, lacinulis tridentatis inæqualibus. Hort. Cliff. 95. *Ferula whoſe ſmaller leaves are cut, and ſegments ending in three unequal parts.* Ferula Tingitana, folio latiſſimo lucido. H. Edin. *Broad-leaved ſhining Fennel Giant from Tangier.*
4. FERULA (*Ferulago*) foliis pinnatifidis, pinnis linearibus planis trifidis. Hort. Cliff. 95. *Ferula with wing-pointed leaves, whoſe pinnæ are narrow, plain, and trifid.* Ferula latiore folio. Mor. Hiſt. 3. p. 309. *Fennel Giant with a broader leaf.*
5. FERULA (*Orientalis*) foliorum pinnis baſi nudis, foliolis ſetaceis. Hort. Cliff. 95. *Ferula with the wings of the leaves naked at the baſe, and the ſmaller leaves briſtly.* Ferula Orientalis, Cachyros folio & facie. Tourn. Cor. 22. *Eaſtern Fennel Giant with the leaf and appearance of Cachrys.*
6. FERULA (*Meoides*) foliorum pinnis utrinque baſi acutis, foliolis ſetaceis. Hort. Cliff. 95. *Ferula with the wings of the leaves pointed at their baſe on every ſide.* Laſerpitium Orientale mei folio, flore luteo. Tourn. Cor. 23. *Eaſtern Laſerwort with a Spignel leaf and yellow flower.*
7. FERULA (*Nodiflora*) foliolis appendiculatis, umbellis ſubſeſſilibus. Lin. Sp. Plant. 247. *Ferula with appendages to the ſmaller leaves, and umbels ſitting cloſe to the ſtalks.* Libanotis ferulæ folio & ſemine. C. B. P. 158. *Libanotis with a Fennel Giant leaf and ſeed.*
8. FERULA (*Glauca*) foliis ſupradecompoſitis, foliolis lanceolato-linearibus planis. Hort. Cliff. 95. *Fennel Giant with linear, ſpear-ſhaped, decompounded leaves.* Ferula folio glauco, ſemine lato oblongo. J. B. 3. p. 45.

The firſt of theſe plants is pretty common in the Engliſh gardens: this, if planted in a good ſoil, will grow to a great height, and divide into many branches: the lower leaves of this ſort ſpread more than two feet every way, and branch out into many diviſions, which are again ſubdivided into many ſmaller, garniſhed with very long, narrow, ſmall leaves that are ſingle; they are of a lucid green, and ſpread near the ground. From the center of the plant comes out the flower-ſtalk, which, when the plants are ſtrong, will be near as large as a common broomſtick, and will riſe ten or twelve feet high, having many joints; if the ſtalks are cut, there iſſues from the veſſels a fœtid yellowiſh liquor, which will concrete on the ſurface of the wound. The ſtalks are terminated by large umbels of yellow flowers, which come out the latter end of June, or in the beginning of July; theſe are ſucceeded by oval compreſſed ſeeds, which have three lines running longitudinally on each ſide. Theſe ripen in September, and the ſtalks decay ſoon after. When the ſtalks are dry, they are full of a light dry pith, which will ſoon take fire.

Mr. Ray ſays, that the people of Sicily uſe the pith of this plant for tinder to light their fires. And if this was practiſed by the ancients, we may eaſily gueſs why the poets feigned, that Prometheus ſtole fire from heaven, and carried it to the earth in a hollow Ferula.

The leaves of theſe plants decay ſoon after the ſeeds are formed, ſo that before they are ripe, there are ſeldom any leaves remaining, and the ſtalks afterward dry and become very tough; ſo it is not unlikely theſe may have been uſed for correction in the ſchools, as they are very light, and cannot do much injury. The roots of this ſort will continue ſeveral years, eſpecially on a dry ſoil, and will annually produce flowers and ſeeds.

The ſecond ſort doth not grow quite ſo large as the firſt, but the ſtalks of this will riſe ſeven or eight feet high; the lower leaves are large, and greatly divided; the ſmall leaves are flat, and not ſo long as thoſe of the former, and are of a lucid green colour; the umbels of flowers are ſmaller, and the ſeeds are leſs. This flowers and ripens its ſeeds about the ſame time as the former ſort.

The third ſort hath large ſpreading leaves near the root, which are divided and ſubdivided into many parts; the ſmall leaves of this are much broader than in any of the other ſorts, and theſe are divided at their end into three unequal ſegments; the leaves are of a very lucid green. The ſtalks are ſtrong, and riſe to the height of eight or ten feet, and are terminated by large umbels of yellow flowers, which are

ſucceeded by large, oval, compreſſed ſeeds, like thoſe of the firſt ſort. This flowers and ripens its ſeeds about the ſame time as the former ſort; it grows naturally in Spain and Barbary.

The fourth ſort grows to much the ſame height as the ſecond; the leaves of this branch out on every ſide pretty wide, and the ſmaller leaves on the diviſions of the leaves, are broader than thoſe of the others (excepting the third) but they are longer than thoſe, and are of a darker green colour, ending in three points. The umbels of flowers are large, the flowers are yellow, and are ſucceeded by oval compreſſed ſeeds, like thoſe of the other ſpecies. This grows naturally in Sicily.

The fifth ſort is of much humbler growth than either of the former; the ſtalks of this ſeldom riſe much more than three feet high; the lower leaves branch into many diviſions, which are cloſely garniſhed with very fine briſtly leaves; the umbel of flowers is but ſmall, when compared with the others, and the ſeeds are ſmaller. It grows naturally in the Levant.

The ſixth ſort hath very branching leaves, the foot-ſtalks are angular and channelled; this ſends out at every joint two ſide branches oppoſite; thoſe toward the bottom are nine or ten inches long, and the others are diminiſhed gradually to the top; theſe ſide branches ſend out ſmaller at each joint in the ſame manner, which are garniſhed with very fine leaves like thoſe of Spignel, which ſtand quite round the ſtalks in ſhape of whorls; the flower-ſtalks grow three feet high, having a pretty large umbel of yellow flowers at the top; theſe are ſucceeded by oval flat ſeeds, which ripen in the autumn. It grows naturally in the Levant.

The ſeventh ſort riſes about three feet high; the leaves of this ſort are much divided, and the ſmall leaves on the diviſions are very narrow and entire; the umbels of flowers are ſmall, and are ſituated cloſe to the ſtalks between the leaves at the joints; theſe are like thoſe of the other ſorts. It grows naturally in Iſtria and Carniola.

The eighth ſort grows naturally in Italy and Sicily. The leaves of this are compoſed of many narrow flat ſegments, of a gray colour, and are divided into many parts: the ſtalk riſes from three to four feet high, and is terminated by an umbel of yellow flowers in July, which are ſucceeded by oval compreſſed ſeeds which ripen in autumn.

All theſe ſorts have perennial roots, which will continue ſeveral years; theſe have thick ſtrong fibres, which run deep in the ground, and divide into many ſmaller, ſpreading to a conſiderable diſtance every way: the ſtalks are annual, and decay ſoon after they have perfected their ſeeds. As theſe plants ſpread very wide, ſo they ſhould have each four or five feet room; nor ſhould they ſtand near to other plants, for their roots will rob whatever plants grow near them of their nouriſhment.

They are all propagated by ſeeds, which ſhould be ſown in the autumn; for if they are kept out of the ground till the ſpring, they frequently fail, and thoſe which ſucceed remain a year in the ground, ſo that much time is loſt. The ſeeds may be ſown in drills, by which method the ground may be eaſier kept clean; they muſt not be nearer than a foot row from row, and the ſeeds may be ſcattered two or three inches aſunder in the drills; when the plants come up, they muſt be kept clean from weeds; and where they are too cloſe together, they ſhould be thinned, to allow them room to grow, for they will not be ſtrong enough to remove till they have had two years growth; then in the autumn ſo ſoon as their leaves decay, the roots ſhould be taken up with great care, ſo as not to cut or injure the tap or downright root, and then planted in the places where they are deſigned to remain, for after this tranſplanting they ſhould not be removed. They delight in a ſoft, gentle, loamy ſoil, not too wet, and are very rarely injured by the hardeſt froſt.

FERRARIA. Burman. Lin. Gen. 1018.

The CHARACTERS are,

It hath two keel-ſhaped ſpathæ (or ſheaths) which alternately incloſe the flowers, which have ſix oblong pointed petals curled at their borders, revolving, and are alternately larger; and three ſtamina ſitting on the ſtyle, terminated by twin roundiſh ſummits; and a roundiſh three-cornered germen under the flower, ſupporting a ſimple erect ſtigma, crowned by three bifid, hooded, curled ſtigma; the germen afterward becomes an oblong three-cornered capſule, having three cells, filled with roundiſh ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's twentieth claſs, intitled Gynandria triandria, the flower having three ſtamina which ſit upon the ſtyle.

The SPECIES are,

1. FERRARIA (*Undulata*) foliis lanceolatis. Burm. Icon. *Ferraria with ſpear-ſhaped leaves.* Iris ſtellata, Cyclaminis radice, pullo flore. Barrel. Icon. 1216. *Starry Iris with a root like the Sowbread.*
2. FERRARIA (*Enſiformi*) foliis enſiformibus. Burm. Icon. *Ferraria with ſword-ſhaped leaves.*

Theſe plants grow naturally at the Cape of Good Hope; the roots of the firſt ſort were ſent me by Dr. Job Baſter, of Zirkzee, who received them from the Cape. The root of this is ſhaped like that of the Bizantine Cornflag; it has a bright brown ſkin or cover; on the upper ſide is a hollow like a navel, from whence the flower-ſtalk ariſes. The ſtalk riſes a foot and a half high, and is about the ſize of a man's middle finger, garniſhed with leaves the whole length; theſe are keel-ſhaped, embracing the ſtalks with their baſe. The upper part of the ſtalk divides into two or three branches, which are garniſhed with the ſame ſhaped leaves, but they are ſmaller; each of the branches are terminated by a large ſpathæ or ſheath of the ſame colour with the leaves, but this afterward withers and decays; theſe ſheaths are double, and ſplit at the top, where the flower peeps out its petals; theſe ſix petals are three alternately larger than the other, and are curiouſly fringed on their borders; they are of a pale greeniſh colour on their outſide, but of a tawney purple within, and are of a ſhort duration; in the centre of the flower is ſituated the ſtyle, having the three ſtamina fixed on the ſide, and is terminated by twin ſtigmas; the germen is ſituated under the flower, which afterward becomes an oblong ſmooth capſule with three cells, filled with roundiſh ſeeds.

The ſecond ſort is rare in England; this differs from the former in having ſmaller roots, and longer ſword-ſhaped leaves, which have deeper veins; the ſtalk alſo does not divide ſo much, and the flowers are ſmaller, and leſs fringed on their borders.

They are both progagated by offsets ſent out from the roots, in the ſame way as the Ixia, and ſhould be cultivated in the ſame manner as is directed for thoſe and the African Gladiolus, being too tender to thrive in the open air in England, nor do they ſucceed well in a green-houſe; therefore the beſt method is, to make a border four feet wide, either in the front of the green-houſe or ſtoves, covering it with a proper frame and glaſſes, ſo that the plants may enjoy the free air in mild weather, but be protected from froſt. In ſuch a frame, moſt of the African bulbous and tuberous rooted plants may be brought to great perfection.

There is a great ſingularity in the root of the firſt ſpecies, which is in its vegetating only every other year, and the intermediate years it remains at reſt.

FICOIDES. See MESEMBRYANTHEMUM.

FICUS. Lin. Gen. Plant. 1032. Tourn. Inſt. R. H. 662. tab. 420. The Fig-tree; in French, *Figuier.*

The CHARACTERS are,

It hath male and female flowers, which are included within the covering, or ſkin of the fruit, ſo do not appear unleſs the covering is opened; the male flowers are but few in number, and are ſituated in the upper part of the fruit; the female flowers are numerous, and ſituated in the lower part.

part. The male flowers ſit each upon a ſeparate foot-ſtalk, and have an empalement divided into three parts; they have no petals, but three briſtly ſtamina as long as the empalement, terminated by twin ſummits; the female flowers ſit upon diſtinct foot-ſtalks; their empalements are divided into five parts; they have no petals, but a germen as the empalement, ſupporting an inflexed ſtyle, crowned by two reflexed pointed ſtigmas. The germen afterward becomes a large ſeed, ſitting in the empalement.

This genus of plants is ranged in the third ſection of Linnæus's twenty-third claſs, intitled Polygamia Polycœcia; the male and hermaphrodite flowers being ſituated in the ſame common covering, but in the wild Fig they are in diſtinct plants.

The SPECIES are,

1. FICUS (*Carica*) foliis palmatis. Hort. Cliff. 471. *Fig-tree with hand-ſhaped leaves.* Ficus communis. C. B. P. 457. *The common Fig-tree.*
2. FICUS (*Sycomorous*) foliis cordatis ſubrotundis integerrimis. Hort. Cliff. 471. *Fig-tree with roundiſh heart-ſhaped leaves, which are entire.* Ficus folio mori, fructum in caudice ferens. C. B. P. 459. *Fig-tree with a Mulberry leaf, bearing fruit on the body or ſtem, commonly called Sycamore.*
3. FICUS (*Religioſa*) foliis cordatis oblongis integerrimis acuminatis. Hort. Cliff. 471. *Fig-tree with entire heart-ſhaped leaves, ending in acute points.* Ficus Malabarienſis, folio cuſpidato, fructu rotundo parvo gemino. Pluk. Alm. 144. *Malabar Fig with a long pointed leaf, and ſmall double round fruit.*
4. FICUS (*Benghalenſis*) foliis ovatis integerrimis obtuſis, caule infernè radicato. Hort. Cliff. 471. *Fig-tree with oval, obtuſe, entire leaves, and the lower part of the ſtalk putting out roots.* Ficus Benghalenſis, folio ſubrotundo, fructu orbiculato. Hort. Amſt. 1. p. 119. *Bengal Fig with a roundiſh leaf, and orbicular fruit.*
5. FICUS (*Indica*) foliis lanceolatis petiolatis, pedunculis aggregatis, ramis radicantibus. Lin. Sp. Plant. 1060. *Fig-tree with ſpear-ſhaped leaves having petals, the foot-ſtalks of the fruit growing in cluſters, and branches ſending out roots.* Ficus Indica Theophraſti. Tabern. Hiſt. 1370. *Indian Fig of Theophraſtus.*
6. FICUS (*Maximus*) foliis lanceolatis integerrimis. Hort. Cliff. 471. *Fig-tree with entire ſpear-ſhaped leaves.* Ficus Indica maxima, folio oblongo, funiculis è ſummis ramis dimiſſis radices agentibus ſe propagans, fructu minori ſphærico ſanguineo. Sloan. Cat. Jam. 189. *The largeſt Indian Fig with an oblong leaf, ſending out roots from the tops of the branches, and a ſmall ſpherical blood-coloured fruit.*
7. FICUS (*Racemoſa*) foliis ovatis acutis integerrimis, caule arboreo, fructu racemoſa. Lin. Sp. Plant. 1060. Amœn. Acad. 1. p. 30. *Fig-tree with oval, entire, acute leaves, tree-like ſtalk, and branching fruit.* Alty-alu. Hort. Mal. 1. p. 43.
8. FICUS (*Pumila*) foliis ovatis acutis integerrimis, caule repente. Lin. Sp. Plant. 1060. Amœn. Acad. 1. p. 30. *Fig-tree with oval, acute, entire leaves, and a creeping ſtalk.* Ficus ſylveſtris procumbens, folio ſimplici. Kœmpf. Amœn. 803. *Trailing wild Fig-tree having ſingle leaves.*
9. FICUS (*Nymphæfolia*) foliis ovato-cordatis integerrimis glabris. *Fig-tree with oval, heart-ſhaped, entire, ſmooth leaves*, vulgarly called Ficus nymphææ folio. *Fig-tree with a Water Lily leaf.*
10. FICUS (*Citrifolia*) foliis oblongo-cordatis acuminatis, petiolis longiſſimis. *Fig-tree with oblong, heart-ſhaped, pointed leaves, and very long foot-ſtalks.* Ficus citrii folio, fructu parvo purpureo. Cateſb. Hiſt. Carol. 3. p. 18. *Fig-tree with a Citron-leaf, and ſmall purple fruit.*
11. FICUS (*Calyculata*) foliis ovatis integerrimis obtuſis, oppoſitis, fructu globoſo calyculato. *Fig-tree with oval, obtuſe, entire leaves placed oppoſite, and a globular fruit having a calyx.* Ficus folio lato ſubrotundo, fructu globoſo, magnitudine nuces moſchatæ. Houſt. MSS. *Fig-tree with broad roundiſh leaves, and a globular fruit about the bigneſs of a nutmeg.*

The firſt ſort, which is the Fig whoſe fruit is valuable, is cultivated in moſt parts of Europe; of this there are great varieties in the warm countries, which have been obtained from ſeeds, therefore may be increaſed annually, if the inhabitants were careful in propagating the trees from the ſeeds of their beſt ſorts. In England we had not more than four or five ſorts till within a few years paſt; for as the generality of the Engliſh were not lovers of this fruit, ſo there were few who troubled themſelves with the culture of it. But ſome years paſt I had a large collection of theſe trees ſent me from Venice, by my honoured friend the Chevalier Rathgeb, which I planted and preſerved to taſte of their fruits, ſeveral of which proved excellent; theſe I have preſerved and propagated, and thoſe whoſe fruit were inferior have been neglected. And as the variety of them is very great, ſo I ſhall here mention only ſuch of them as are the beſt worth cultivating, placing them in the order of their ripening.

1. The brown or Cheſnut-coloured Iſchia Fig. This is the largeſt fruit of any I have yet ſeen, it is ſhort, globular, with a pretty large eye, pinched in near the foot-ſtalk, of a brown or Cheſnut colour on the outſide, and purple within; the grains are large, and the pulp ſweet and high-flavoured; this ſort very often burſts open when it ripens. It ripens the latter end of July, or the beginning of Auguſt. I have had this fruit ripen well on ſtandards, in a warm ſoil. If this ſort is planted againſt hot walls, two plentiful crops of fruit may be annually ripened.
2. The black Genoa Fig. This is a long fruit, which ſwells pretty large at the top where it is obtuſe, but the lower part is very ſlender toward the ſtalk; the ſkin is of a dark purple colour, almoſt black, and hath a purple farina over it like that on ſome Plumbs; the inſide is of a bright red, and the fleſh is very high flavoured. It ripens early in Auguſt.
3. The ſmall white early Fig. This hath a roundiſh fruit a little flatted at the crown, with a very ſhort foot-ſtalk; the ſkin, when fully ripe, is of a pale yellowiſh white colour; the ſkin is thin, the inſide white, and the fleſh ſweet, but not high-flavoured. This ripens in Auguſt.
4. The large white Genoa Fig. This is a large globular fruit, a little lengthened toward the ſtalk; the ſkin is thin, of a yellowiſh colour when fully ripe, and red within. This is a good fruit, but the trees are not good bearers.
5. The black Iſchia Fig. This is a ſhort fruit, of a middling ſize, a little flatted at the crown; the ſkin is almoſt black when ripe, and the inſide is of a deep red; the fleſh is very high flavoured, and the trees produce a good crop of fruit, but the birds are great devourers of them if they are not protected from them. This ripens in Auguſt.
6. The Malta Fig. This is a ſmall brown fruit, much compreſſed at the top, and greatly pinched toward the foot-ſtalk; the ſkin is of a pale brown colour, as is alſo the inſide; the fleſh is very ſweet, and well flavoured. If this ſort is permitted to hang upon the trees till the fruit is ſhrivelled, it becomes a fine ſweetmeat.
7. The Murrey, or brown Naples Fig. This is a pretty large globular fruit, of a light brown colour on the outſide, with ſome faint marks of a dirty white, the inſide is nearly of the ſame colour; the grains are pretty large, and the fleſh is well flavoured. It ripens the latter end of Auguſt.
8. The green Iſchia Fig. This is an oblong fruit, almoſt globular at the crown; the ſkin is thin, of a green colour, but when it is fully ripe, it is ſtained through by the pulp to a browniſh caſt; the inſide is purple, and will ſtain linen, or paper; the fleſh is high flavoured, eſpecially in warm ſeaſons. It ripens toward the end of Auguſt.
9. The Madonna Fig, commonly called here the Brunſwick, or Hanover Fig, is a long pyramidal fruit of a large ſize; the ſkin is brown; the fleſh is of a lighter brown colour, coarſe, and hath little flavour. This ripens the end of Auguſt and the beginning of September;

September; the leaves of this ſort are much more divided than of moſt other.

10. The common blue, or purple Fig is ſo well known, as to need no deſcription.

11. The long brown Naples Fig. The leaves of this tree are deeply divided. The fruit is long, ſomewhat compreſſed at the crown. The foot-ſtalks are pretty long; the ſkin is of a dark brown when fully ripe, the fleſh inclining to red; the grains are large, and the fleſh well flavoured. It ripens in September.

12. The yellow Iſchia Fig. This is a large fruit, of a pyramidal form; the ſkin is yellow when ripe, and the fleſh is purple and well flavoured, but the trees do not produce much fruit here; they grow very luxuriant in branches, the leaves are very large, and not much divided. This ripens in September.

13. The ſmall Brown Iſchia Fig. This is a ſmall pyramidal fruit with a very ſhort foot-ſtalk; the ſkin is of a light brown, the fleſh inclining to purple, of a very high flavour; it ripens late in September; the leaves of this tree are leſs divided than any of the other ſorts. This is not a good bearer.

14. The Gentile Fig. This is a middle ſized globular fruit; the ſkin, when ripe, is yellow; the fleſh alſo inclines to the ſame colour; the grains are large, and the fleſh is well flavoured, but it ripens very late, and the trees are bad bearers, ſo that it is not propagated much in England.

There are ſeveral other ſorts which have been lately introduced from Italy, but all thoſe which I have yet taſted, are inferior to thoſe above-mentioned; ſome of them rarely ripen their fruit, and others are very ill bearers, not worth propagating, therefore I have omitted the mentioning of them here; for as thoſe which are enumerated, continue in ſucceſſion during the ſeaſon for theſe fruits, and being preferable to the other, few perſons will care to fill their gardens with a greater variety of theſe trees than are of real uſe, eſpecially as they require good walls, and a very large ſhare of room.

The firſt, ſecond, third, ninth, and tenth ſorts will ripen their fruits on ſtandards, where they are in a warm ſituation; but the others require the aſſiſtance of walls expoſed to good aſpects, otherwiſe their fruit will not ripen in England.

Fig-trees generally thrive in all ſoils, and in every ſituation; but they produce a greater quantity of fruit upon a ſtrong loamy ſoil, than on dry ground; for if the ſeaſon proves dry in May and June, thoſe trees which grow upon very warm dry ground, are very ſubject to caſt their fruit; therefore, whenever this happens, ſuch trees ſhould be well watered and mulched, which will prevent the fruit from dropping off; and the fruit upon theſe trees are better flavoured, than any of thoſe which grow upon cold moiſt land. I have always obſerved thoſe Fig-trees to bear the greateſt quantity of well-flavoured fruit, which were growing upon chalky land, where there has been a foot or more of a gentle loamy ſoil on the top. They alſo love a free open air; for although they will ſhoot and thrive very well in cloſe places, yet they ſeldom produce any fruit in ſuch ſituations; and all thoſe which are planted in ſmall gardens in London, will be well furniſhed with leaves, but I have never ſeen any fruit upon them which have grown to maturity.

Theſe trees are always planted as ſtandards in all warm countries, but in England they are generally planted againſt walls, there being but few ſtandard Fig-trees at preſent in the Engliſh gardens; however, ſince ſome of the ſorts are found to ripen their fruit well upon the ſtandards, and the crop of Figs is often greater upon them, than upon thoſe trees againſt walls, it is worthy of our care, to plant them either in ſtandards or eſpaliers; the latter, I think, will ſucceed beſt in England, if they were managed as in Germany, where they untie the Fig-trees from the eſpalier, and lay them down, covering them in winter with ſtraw or litter, which prevents their ſhoots being injured by the froſt; and this covering is taken away gradually in the ſpring, and not wholly removed until all the danger of froſt is over, by which management they generally have a very great crop of Figs; whereas in England, where the trees grow againſt warm walls, if the ſpring proves warm, the young Figs are puſhed out early, and the cold, which frequently returns in April and May, cauſes the greateſt part of the fruit to drop off; ſo that our crop of Figs is generally more uncertain than moſt other ſorts of fruit: and it frequently happens, that trees which are planted againſt north and eaſt-aſpected walls, produce a greater quantity of fruit in England, than thoſe which are planted againſt ſouth and ſouth-eaſt aſpects; which muſt happen from the latter putting out their fruit ſo much earlier in the ſpring than the former; and if there happen cold froſty nights after the Figs are come out (which is frequently the caſe in this country) the forwardeſt of the Figs are generally ſo injured as to drop off from the trees ſoon after. In Italy, and the other warm countries, this firſt crop of Figs is little regarded, being few in number; for it is the ſecond crop of Figs which are produced from the ſhoots of the ſame year, which is their principal crop, but theſe rarely ripen in England; nor are there above three or four ſorts which ever ripen their ſecond crop, let the ſummer prove ever ſo good, therefore it is the firſt crop which we muſt attend to in England; ſo that when theſe trees are growing againſt the beſt aſpected walls, it will be a good method to looſen them from the wall in autumn; and after having diveſted the branches of all the latter fruit, to lay the branches down from the wall, faſtening them together in ſmall bundles, ſo that they may be tied to ſtakes, to keep them from lying upon the ground; the damp whereof, when covered in froſty weather, might cauſe them to grow mouldy, and hereby they will be ſecured from being broken by the wind. When they are thus managed in autumn, if the winter ſhould prove very ſevere, the branches may be eaſily covered with Peas-haulm, ſtraw, or any other light covering, which will guard the tender fruit-bearing branches from the injury of froſt; and when the weather is mild, the covering muſt be removed, otherwiſe the Figs will come out too early; for the intention of this management is, to keep them as backward as poſſible: then in the ſpring, when the Figs are beginning to puſh out, the trees may be faſtened up to the wall again. By this management I have ſeen very great crops of Figs produced in two or three places.

I have alſo ſeen great crops of Figs in ſome particular gardens, after very ſharp winters, when they have, in general, failed in other places, by covering up the trees with Reeds made into pannels, and fixed up againſt the walls.

In the pruning of Fig-trees, the branches muſt never be ſhortened, becauſe the fruit are all produced at the upper part of the ſhoots of the former year; if theſe are cut off, there can be no fruit expected, beſide the branches are very apt to die after the knife; ſo that when the branches are too cloſe together, the beſt way is to cut out all the naked branches quite to the bottom, leaving thoſe which are beſt furniſhed with lateral branches at a proper diſtance from each other, which ſhould not be nearer than a foot; and when they are well furniſhed with lateral branches, if they are laid four or five inches farther aſunder, it will be better.

The beſt ſeaſon for pruning of Fig-trees is in autumn, becauſe at that time the branches are not ſo full of ſap, and will not bleed ſo much, as when they are pruned in the ſpring; and at this ſeaſon, the branches ſhould be diveſted of all the autumnal Figs, and the ſooner this is done, when the leaves begin to fall off, the better will the young ſhoots reſiſt the cold of the winter. There are ſome ſeaſons ſo cold and moiſt, that the young ſhoots of the Fig-trees will not harden, but are ſoft, and full of juice; when this happens, there is little hope of a crop of Figs the ſucceeding year, for the firſt froſt in autumn will kill the upper part of theſe ſhoots, for a conſiderable length downward; whenever this happens, it is the beſt way to cut off all the decayed part of the ſhoots, which will

prevent

prevent the infection from deſtroying all the lower part of the branches; and, by this method, I have ſeen a moderate crop of Figs put out from the lower part of the ſhoots; where, if the ſhoots had not been injured, there would have been no fruit produced, becauſe it is chiefly from the four or five uppermoſt joints of the ſhoots that the fruit comes out; and it is for this reaſon, that as many of the ſhort lateral branches ſhould be preſerved as poſſible, thoſe being the moſt productive of fruit; for where the long ſtrait ſhoots are faſtened up, there will be no fruit, but at their extremities, ſo that all the lower part of the trees will be naked, if there is not a particular regard had to ſupply young ſhoots in every part of the trees.

Thoſe trees which are laid down from the eſpaliers, ſhould not be faſtened up again till the end of March, for the reaſons before given, and thoſe againſt walls may remain ſome time longer; and when the large ſhoots of theſe are nailed up, if the ſmall lateral branches are thruſt behind theſe, to keep them cloſe to the wall, it will ſecure the young Figs from being injured by the morning froſts; and when this danger is over, they may be brought forward to their natural poſition again: during the ſummer ſeaſon theſe trees will require no other pruning, but to ſtop the ſhoots in the ſpring, where lateral branches are wanting; and as the branches are often blown down by wind, therefore, whenever this happens, they ſhould be immediately faſtened up again, otherwiſe they will be in danger of breaking; for the leaves of theſe trees being very large and ſtiff, the wind has great power on them; ſo that where the branches are not well ſecured, they are frequently torn down.

Thoſe trees which are planted againſt eſpaliers may be protected from the injury of froſt in the ſpring, by placing Reeds on each ſide the eſpalier, which may be taken down every day, and put up again at night; but this need not be practiſed in warm weather, but only at ſuch times as there are cold winds and froſty mornings; and although there is ſome trouble and expence attending this management, yet the plentiful crop of Figs which may this way be obtained, will ſufficiently recompenſe for both: the beſt way of making this covering is, to faſten the Reeds with rope yarn in ſuch a manner as that it may be rolled up like a mat, that the whole may with great facility be put up or taken down; and if theſe Reeds are carefully rolled up, after the ſeaſon for uſing them is over, and put up in a dry ſhed, they will laſt ſeveral years.

There are ſeveral perſons who of late have planted Fig-trees in ſtandards, which have ſucceeded very well; this practice was revived, by obſerving ſome old ſtandard Fig-trees in ſome gardens, which had been growing many years, and generally produced a much greater plenty of fruit than any of thoſe trees which were growing againſt warm walls; indeed, theſe ſtandard Fig-trees are in much greater danger of having their branches killed by ſevere froſt, but in mild winters they generally do better than thoſe againſt walls; ſo that where theſe trees can be covered in very hard winters, there will always be plenty of fruit; and theſe may be covered by faſtening as many of the branches together as can be conveniently brought into a bundle, and winding ſome Hay-bands, Straw, Peas-haulm, or any ſuch light covering as can be readily procured, which in the ſpring may be gradually taken off, ſo as not to expoſe the ſhoots all at once to the open air; and if there is ſome ſuch light covering laid round the ſtems, and upon the ſurface of the ground about their roots, it will more effectually ſecure them from the danger of froſt; but when this is practiſed, great care ſhould be taken that no mice or rats harbour in this covering, for theſe will eat off the bark from their ſhoots, and kill them: and I have often obſerved thoſe trees which were againſt walls, have ſuffered greatly by theſe vermin, by having many of their largeſt branches diſbarked near the ground, which has abſolutely killed them; and it is in the winter that theſe vermin do this miſchief to them, therefore they ſhould be carefully watched at that ſeaſon.

The common blue and white Figs, which are the ſorts which have been the moſt generally cultivated in England, are not ſo proper to plant for ſtandards, as ſome other ſorts which have been lately introduced; for they are much tenderer, and are often killed almoſt to the root, when ſome of the other ſorts, which have been growing in the ſame ſituation, have received very little injury from the froſt; indeed the white ſort is generally a great bearer, and the fruit is very ſweet; but to thoſe palates which are accuſtomed to Figs, that ſort is not much in eſteem, from its want of flavour: thoſe which have ſucceeded beſt with me, are the firſt and third ſorts. Their branches are rarely hurt by froſt in winter, and their fruit will always ripen well; for in favourable ſeaſons, many of theſe ſorts, which were growing againſt walls, have ripened their ſecond crop of fruit tolerably well. I have alſo planted many of theſe ſorts of Fig-trees againſt north-eaſt and north-weſt aſpects; ſome of thoſe which were firſt planted, have produced a good quantity of well taſted fruit, but were ripe much later, which has encouraged me to plant many more of theſe trees to the ſame aſpects, and alſo to increaſe my number of ſtandard trees.

I am aware, that what I have here advanced, in relation to the pruning and dreſſing of Fig-trees, will be condemned by great numbers of people, who will not give themſelves time to conſider and examine the reaſons upon which I have founded this practice, nor to make one ſingle experiment to try the truth of it, as being vaſtly different from the general practice of moſt gardeners, who always imagine, that Fig-trees ſhould never have much pruning; or, at leaſt, that they ſhould always be ſuffered to grow very rude from the wall, to ſome diſtance. That by this management I have often ſeen great quantities of fruit I cannot deny, but then this has been only after mild winters; for it is very certain, that in ſharp froſts few of theſe outſide ſhoots eſcape being greatly injured where they are not covered; whereas it rarely happens that thoſe ſhoots which are cloſely nailed to the wall in autumn, or laid down and covered, ſuffer the leaſt damage; and the fruits are always produced a fortnight ſooner upon theſe branches, than they are upon thoſe which grow from the wall: but although the trees which are ſuffered to grow rude from the walls may produce a good quantity of fruit for a year or two, yet afterward the trees will only bear at the ends of the ſhoots, which will then be ſo far from the wall, as to receive little benefit from it; nor can the trees be reduced again to any regularity, without cutting away the greateſt number of their branches, by which a year or two will be loſt before they will come to bear again.

The ſeaſon alſo for pruning, which I have laid down, being vaſtly different from the common practice and opinion of moſt gardeners, will alſo be objected againſt; but I am ſure, if any one will but make trial of it, I doubt not his experience will confirm what I have here advanced; for as one great injury to this tree proceeds from the too great effuſion of ſap at the wounded parts, by this autumn pruning this is prevented; for, at that ſeaſon, all the parts of European trees which caſt their leaves, are leſs replete with moiſture than at any other time of the year; for by the long continuance of the ſummer's heat, the juices of plants having been exhauſted in the nouriſhment and augmentation of wood, leaves, fruits, &c. and alſo great quantities being evaporated by perſpiration, the root not being able to ſend up a ſupply equivalent to this great conſumption, the branches muſt contain a much leſs quantity of ſap than in the ſpring, when it has had ſeveral months ſupply from the root; which, though but ſmall in proportion to what is ſent up when the heat is greater, yet there being little or no waſte, either by perſpiration or augmentation, there muſt be a greater quantity contained in the branches; which alſo is eaſily to be obſerved, by breaking or cutting off a vigorous branch of a Fig-tree at both ſeaſons (the ſap, being milky, may be readily diſcerned) when that cut in au-

tumn ſhall be found to ſtop its bleeding in one day's time, or leſs; whereas that cut in the ſpring will often flow a week or more, and the wound will be proportionably longer before it heals.

Of late years there has been ſome of theſe trees planted againſt fire-walls, which have ſucceeded very well where they have been properly managed; but where they have been kept too cloſe, and drawn by glaſſes, they have not produced much fruit; therefore whenever this is practiſed, the heat ſhould not be too great, nor the glaſſes, or other covering, kept too cloſe, but at all times, when the weather is favourable, a good ſhare of free air ſhould be admitted; and if the trees are young, that their roots are not extended beyond the reach of the covering, they muſt be frequently watered when they begin to ſhew fruit, otherwiſe it will drop off; but old trees, whoſe roots are extended to a great diſtance, will only require to have their branches now and then ſprinkled over with water. If theſe trees are properly managed, the firſt crop of fruit will be greater than upon thoſe which are expoſed to the open air, and will ripen ſix weeks or two months earlier, and a plentiful ſecond crop may alſo be obtained, which will ripen early in September, and ſometimes in Auguſt, which is about the ſeaſon of their ripening in the warmer parts of Europe; but the fires ſhould not be uſed to theſe trees till the beginning of February; becauſe when they are forced too early, the weather is frequently too cold to admit a ſufficient quantity of freſh air to ſet the fruit; but the covers ſhould be put over the trees a month before, to prevent the ſhoots from being injured by the froſt.

It may not be improper in this place to mention the great pains which the inhabitants of the Levant are at in the culture of their Figs; and without which (it is generally ſaid by all the travellers who have written on this ſubject, as alſo by Pliny, and other old naturaliſts) their fruit will fall off, and be good for nothing. I ſhall here ſet it down, as I find it in the travels of Monſ. Tournefort, chief botaniſt to the late king of France.

"Pliny, ſays he, obſerved, That in Zia they uſed "to dreſs the Fig-trees with much care; they ſtill "continue to do ſo. To underſtand aright this huſ"bandry of Figs (called in Latin, Caprificatio) we "are to obſerve, that in moſt of the iſlands of the "Archipelago, they have two ſorts of Fig-trees to "manage; the firſt is called Ornos, from the old "Greek, Erinos, a wild Fig-tree; or Caprificus, "in Latin; the ſecond is the domeſtic, or garden "Fig-tree; the wild ſort bears three kinds of fruit, "Fornites, Cratitires, and Orni, of abſolute neceſſity "towards ripening thoſe of the garden Fig.

"The Fornites appear in Auguſt, and continue to "November, without ripening; in theſe breed ſmall "worms, which turn to a ſort of gnats, no where to "be ſeen but about theſe trees. In October and No"vember theſe gnats of themſelves make a puncture "into the ſecond fruit, which is called Cratitires, "and do not ſhew themſelves till towards the end "of September; and the Fornites gradually fall away "after the gnats are gone; the Cratitires, on the "contrary, remain on the tree till May, and incloſe "the eggs, depoſited by the Fornites, when they "pricked them. In May the third ſort of fruit be"gins to put forth from the ſame wild Fig-trees "which produced the other two; this is much "bigger, and is called Orni; when it grows to a "certain ſize, and its bud begins to open, it is pricked "in that part by the gnats of the Cratitires, which "are ſtrong enough to go from one fruit to the "other, to diſcharge their eggs.

"It ſometimes happens, that the gnats of the Crati"tires are ſlow to come forth in certain parts, while "the Orni in thoſe very parts are diſpoſed to receive "them; in which caſe the huſbandman is obliged to "look for the Cratitires in another part, and fix them "at the end of the branches of thoſe Fig-trees, whoſe "Orni are in fit diſpoſition to be pricked by the gnats; "if they miſs the opportunity the Orni fall, and the "gnats of the Cratitires fly away. None but thoſe "that are well acquainted with this ſort of culture, "know the critical minutes of doing this; and in "order to it, their eye is perpetually fixed on the "bud of the Fig; for that part not only indicates "the time that the prickers are to iſſue forth, but "alſo when the Fig is to be ſucceſsfully pricked; if "the bud be too hard, and too compact, the gnat "cannot lay its eggs, and the Fig drops when this "bud is too open.

"Theſe three ſorts of fruit are not good to eat; "their office is to help to ripen the fruit of the gar"den Fig-trees, in manner following: during the "months of June and July, the peaſants take the Orni "at a time that their gnats are ready to break out, "and carry them to the garden Fig-trees; if they do "not nick the moment, the Orni fall, and the fruit "of the domeſtic or garden Fig-tree not ripening, "will, in a very little time, fall in like manner. The "peaſants are ſo well acquainted with theſe precious "moments, that every morning, in making their "inſpection, they only transfer to their garden Fig"trees ſuch Orni as are well conditioned, otherwiſe "they loſe their crop. It is true, they have one re"medy, though an indifferent one, which is, to "ſtrew over the garden Fig-trees the Aſcolimbros, "a very common plant there, and in whoſe fruit "there is a ſort of gnats proper for pricking; "perhaps they are the gnats of the Orni, which are "uſed to hover about and plunder the flowers of this "plant.

"To ſum up all in one word, The peaſants ſo well "order the Orni, that their gnats cauſe the fruit of "the garden Fig-tree to ripen in the compaſs of forty "days. Theſe Figs are very good green; when they "would dry them, they lay them in the ſun for ſome "time, then put them in an oven to keep them the "reſt of the year. Barley bread and dried figs are "the principal ſubſiſtence of the boors and monks of "the Archipelago; but theſe Figs are very far from "being ſo good as thoſe dried in Provence, Italy, "and Spain; the heat of the oven deſtroys all their "delicacy and good taſte; but then, on the other "hand, this heat kills the eggs which the prickers "of the Orni diſcharged therein, which eggs would "infallibly produce ſmall worms that would preju"judice theſe fruits.

"What an expence of time and pains is here for a "Fig, and that but an indifferent one at laſt! I "could not ſufficiently admire the patience of the "Greeks, buſied above two months in carrying theſe "prickers from one tree to another. I was ſoon told "the reaſon, one of their Fig-trees uſually produces "between two and three hundred pounds of Figs, "and ours in Provence ſeldom above twenty-five.

"The prickers contribute, perhaps, to the maturity of "the fruit of the garden Fig-tree, by cauſing them to "extravaſate the nutritious juice, whoſe veſſels they "tear aſunder in depoſiting their eggs; perhaps too, "beſides their eggs, they leave behind them ſome "ſort of liquor proper to ferment gently with the "milk of the Fig, and to make their fleſh tender. "Our Figs in Provence, and even at Paris, ripen much "ſooner for having their buds pricked with a Straw "dipped in olive oil. Plumbs and Pears, pricked by "ſome inſects likewiſe ripen much the faſter for it; "and the fleſh round ſuch puncture is better taſted "than the reſt. It is not to be diſputed but that con"ſiderable change happens to the contexture of fruits "ſo pricked, juſt the ſame as to parts of animals "pierced with any ſharp inſtrument.

"It is ſcarce poſſible well to underſtand the antient "authors who have treated of caprification (or huſ"banding and dreſſing the wild Fig-tree) if one is "not well appriſed of the circumſtances, the particu"lars whereof were confirmed to us not only at Zia, "Tinos, Mycone, and Scio, but in moſt of the other "iſlands."

Fig-trees are propagated in England, either by the ſuckers, which are ſent out from their roots, and by layers made, by laying down of their branches, which in one year will put out roots ſufficient to be removed, or by planting of cuttings, which, if properly managed, will take root; the firſt of theſe is a bad method, becauſe all thoſe trees which are raiſed from ſuckers, are very ſubject to ſend out great quantities of ſuckers again from their roots; and the branches of the ſuckers are not ſo compact, as thoſe of the layers, but are fuller of ſap, ſo in greater danger of being injured by the froſt; thoſe plants which are propagated by layers, are the beſt, provided the layers are made from the branches of fruitful trees; for thoſe which are made from the ſuckers, or ſhoots, produced from old ſtools, are very ſoft, and full of ſap, ſo are in danger of ſuffering by the froſt, and theſe will ſhoot greatly into wood, but will not be very fruitful; for, when trees have acquired a vicious habit while young, it is ſeldom they are ever brought to be fruitful afterward; therefore the ſhoots which are laid down, ſhould be ſuch as are woody, compact, and well ripened, not young ſhoots, full of ſap, whoſe veſſels are large and open. The beſt time for laying down of the branches is in autumn; and if the winter ſhould prove very ſevere, if they are covered with ſome old tan, or any other mulch, to keep the froſt from penetrating the ground, it will be of great ſervice to them; by the autumn following, theſe will be ſufficiently rooted for removing, when they ſhould be cut off from the old plants, becauſe at that ſeaſon the branches are not ſo full of ſap as in the ſpring, ſo will not bleed ſo much as when cut off in the ſpring. If the place is ready to receive them, the layers ſhould be tranſplanted in autumn, where they are to remain; but if it is not, then the layers may remain till the ſpring, provided they are ſeparated from the old plants in autumn. As theſe plants do not bear tranſplanting well when they are large, it is the better way to plant them at firſt in places where they are to remain; and after they are planted, the ſurface of the ground about their roots ſhould be covered with mulch to keep out the froſt; and if the winter ſhould prove very ſevere, it will be proper to cover the branches with Reeds, Peas-haulm, Straw, or ſome other light covering, which will prevent their tender ends being killed by the froſt, which frequently happens where this care is wanting.

The other method of propagating theſe trees, is by cuttings, which ſhould be taken from the trees in autumn, for the reaſon before given: theſe muſt be choſen from ſuch branches as are compact, whoſe joints are near each other; and they ſhould have a part of the former year's wood at their bottom, and the top of each ſhould be left entire, not ſhortened as is uſually practiſed with other cuttings; then they ſhould be planted eight or nine inches deep, in a bed of loamy earth, in a warm ſituation, covering the ſurface of the ground, three or four inches thick, with old tanner's bark, to keep out the froſt; and in ſevere froſt their tops ſhould be covered with Straw, Peas-haulm, Fern, or other light covering, to protect them from froſt, which ſhould be removed in the ſpring; but the tan may remain, for that will prevent the drying winds of the ſpring, and the ſun in ſummer, from penetrating the ground, and will be of great uſe to ſecure the cuttings from injury; theſe cuttings will be rooted ſufficiently by the following autumn, when they ſhould be tranſplanted, and treated in the ſame manner as the layers.

If fruitful branches of theſe trees are cut off, and planted in pots, or tubs, filled with good earth, and theſe are plunged into a good hot-bed of tanners bark in the ſtove, they will put out fruit early in the ſpring, which will ripen in the middle of May.

We ſhall now return to the other ſorts of Figs, which grow naturally in warm countries, but are preſerved in the gardens of thoſe who are curious in collecting rare exotic plants, for theſe do not bear eatable fruit in their native ſoil; but their leaves being large and beautiful, the plants make a pleaſing variety in the ſtove.

The ſecond ſort grows naturally in the Levant, where it becomes a large tree, dividing into many branches, which are garniſhed with leaves ſhaped like thoſe of the Mulberry, and affords a friendly ſhade in thoſe hot countries. The fruit is produced from the trunk and larger branches of the tree, and not on the ſmaller ſhoots, as in moſt other trees; the ſhape is like the common Fig, but is little eſteemed. This is called the Sycamore, or Pharaoh's Fig-tree.

The third ſort grows naturally in India, where it is ſacred, ſo that none dare deſtroy them; it is called by ſome the Indian God-tree; this riſes with a woody ſtem to a great height, ſending out many ſlender branches, which are garniſhed with ſmooth heart-ſhaped leaves, ending in a long tail, or point; they are entire, ſmooth, and of a light green, having pretty long foot-ſtalks; they are between ſix and ſeven inches long, and three inches and a half broad toward their baſe, diminiſhing gradually to the top, where they run out in a narrow point, an inch and a half long. The fruit comes out on the branches, which are ſmall, round, and of no value.

The fourth ſort riſes with many ſtalks, which grow to the height of thirty or forty feet, dividing into a great number of branches, which ſend out roots from their under branches, many of which reach to the ground; ſo that in ſuch places where the trees grow naturally, their roots and branches are ſo interwoven with each other, as to render the places impaſſable. In India, the Banyans trail the branches of theſe trees into regular archades, and ſet up their pagods under them, theſe being the places of their devotion. In America, where theſe trees are equally plenty, they form ſuch thickets, as neither man nor beaſt can paſs through. The leaves of this ſort are of a thick ſubſtance, ſmooth, and oval; they are ſix inches long, and four inches broad, with obtuſe ends. The fruit is the ſize of a marble, and round, but of no uſe.

The fifth ſort grows naturally in both Indies; this riſes with a woody ſtalk to the height of thirty feet, ſending out many branches, which are garniſhed with oblong leaves ſtanding upon pretty long foot-ſtalks; they are about ſix or eight inches long, and two inches and a half broad, ending in an obtuſe point, of a dark green, and ſmooth on their upper ſide, but of a light green, and veined on their under ſide. The fruit is ſmall, and of no value. The branches of theſe trees ſend out roots from their lower ſide, which ſometimes reach the ground.

The ſixth ſort grows naturally in the Weſt-Indies, where it riſes to the height of thirty or forty feet, ſending ont many ſlender branches, which put out roots in the ſame manner as the former. The leaves of this are eight or nine inches long, and two inches broad, ending in points. The fruit is ſmall, round, and of a blood colour when ripe, but is not eatable.

The ſeventh ſort grows naturally in India, where it riſes to the height of twenty-five feet, and divides into many branches, which are garniſhed with oval-pointed leaves, which are ſmooth, and of a lucid green. The fruit is ſmall, and grows in cluſters from the ſide of the branches; theſe are not eatable.

The eighth ſort grows naturally in India; this is a low trailing ſhrub, whoſe ſtalks put out roots at their joints, which ſtrike into the ground, ſo is propagated plentifully where it naturally grows. The leaves are two inches and a half long, and near two inches broad, ending in points; they are of a lucid green, and are placed without order on the branches; the fruit is ſmall, and not eatable.

The ninth ſort riſes with a ſtrong, upright, woody ſtalk twenty feet high, ſending out ſeveral ſide branches, which are garniſhed with large, oval, ſtiff leaves, about fourteen inches long, and near a foot broad, and are rounded at the ends; they have ſeveral tranſverſe veins, which run from the midrib to the ſides. The foot-ſtalks are long, and frequently turned next to the branches; the upper ſide of the

leaves

leaves are of a lucid green, and the under ſide is of a gray, or ſea-green colour, they are of a thick ſubſtance, and very ſmooth; this grows naturally in India, from whence it was brought to the gardens in Holland.

The tenth ſort grows naturally in the Weſt-Indies, where it riſes twenty feet high, ſending out many ſide branches, which are covered with a white bark, and garniſhed with oblong heart-ſhaped leaves, ending in acute points; they are about three inches long, and one inch and a half broad, near the baſe; of a lucid green on their upper ſide, but of a pale green on their under, ſtanding upon very long foot-ſtalks. The fruit comes out from the ſide of the branches, toward their ends; they are about the ſize of large gray Peas, and of a deep purple colour, ſitting cloſe to the branches; theſe are not eatable.

The eleventh ſort grows naturally at La Vera Cruz, from whence it was ſent me by the late Dr. Houſtoun; this riſes with many ſhrubby ſtalks to the height of twelve or fourteen feet, and divides into many ſmaller branches, which are garniſhed with oval ſtiff leaves, which are obtuſe; they are four inches long, and three broad, of a light green, and ſtand upon very ſhort foot-ſtalks, which are joined to a cup, in which the fruit ſits; this is globular, and the ſize of a middling nutmeg, of a deep yellow, when ripe, but is not eatable.

The ſecond ſort, I believe, is not in England at preſent; I raiſed two or three of theſe plants from ſeeds in the year 1736, which were deſtroyed by the ſevere froſt in 1740, ſince which time I have not been able to procure any of the ſeeds. The other ſorts are preſerved in ſeveral curious gardens; they are eaſily propagated by cuttings during the ſummer ſeaſon. When the cuttings are taken from the plants, they ſhould be laid in a dry ſhady place for two or three days, that the wounds may be healed over, otherwiſe they are apt to rot; for all theſe plants abound with a milky juice, which flows out whenever they are wounded; for which reaſon, the cuttings ſhould have their wounded part healed over and hardened before they are planted; after which they ſhould be planted in pots filled with ſandy light earth, and plunged into a moderate hot-bed, where they ſhould be ſhaded from the ſun, and two or three times a week gently refreſhed with water, if the ſeaſon is warm; but they muſt not have too much moiſture, for that will infallibly deſtroy them. When the cuttings have taken root ſufficient to tranſplant, they ſhould be each planted into a ſeparate ſmall pot filled with light undunged earth, and plunged into the hot-bed again, being careful to ſhade them until they have taken freſh root; then they ſhould have a large ſhare of free air admitted to them at all times when the weather is favourable, to prevent their drawing up weak, and to give them ſtrength before the cold comes on. In autumn the pots ſhould be removed into the ſtove, and plunged into the tan-bed, where they ſhould conſtantly remain, and muſt be treated in the ſame manner as other tender plants from the ſame countries; for although two or three of the ſorts may be treated in a hardier manner, yet they will not make much progreſs.

FICUS INDICA. See OPUNTIA.

FILAGO. There are ſeveral ſpecies of this genus, ſome of which grow naturally upon barren land in moſt parts of England. They are called by ſome Cottonweed, by others Cudweed, their leaves being white, and, when broken, have cottony threads. Theſe have been ranged under the genus of Gnaphalium by moſt botaniſts, and one of the ſpecies which is uſed in medicine, ſtands in the liſt of ſimples by that appellation. As theſe plants are not cultivated in gardens, I ſhall not trouble the reader with a farther account of them.

FILBERT. See CORYLUS.

FILIPENDULA. See SPIRÆA.

FILIUS ANTE PATREM [i. e. the ſon before the father] an expreſſion which botaniſts apply to plants, whoſe flower comes out before their leaves; or thoſe plants which ſend forth ſide branches of flowers, which advance above the middle.

FILIX, Fern. There are great varieties of this plant in the different parts of the world, but particularly in America, as may be ſeen in the Natural Hiſtory of Jamaica, publiſhed by Sir Hans Sloane, Bart. and in Plumier's American Ferns: but as they are plants which are ſeldom propagated in gardens, I ſhall paſs them over in this place.

FILM, that woody ſkin which ſeparates the ſeeds in the pods of plants.

FIMBRIATED [of Fimbria, *Lat.* a fringe] a term relating to the leaves of plants when they are jagged on the edges, having, as it were, a fringe about them; theſe are often called furbelowed leaves.

FIRE. However foreign, at the firſt view, this article may ſeem to our preſent purpoſe, yet I am of opinion, that a tolerable acquaintance with its nature, as far as it can be attained, and its effects, will contribute no ſmall aſſiſtance in forwarding the work of vegetation. And though the theory of fire is indeed philoſophical, yet the conſideration of its effects, and how it operates on vegetables, will be of no ſmall uſe in the culture of them.

That which beſt defines and diſtinguiſhes fire from every thing elſe, is its heating; and ſo it may be defined, Whatſoever warms or heats bodies.

Heat is ſomething, the preſence of which is beſt perceived by the dilatation of the air or ſpirit in the thermometer. So then, fire is a body, and a body in motion too. The motion of it is proved by its expanding the air, and that it is a body by experiment. Pure mercury, being incloſed in a phial with a long neck, and kept in a gentle heat for the ſpace of a year, will be reduced into a ſolid, and the weight alſo will be increaſed conſiderably; which increaſe cannot proceed from any thing elſe but the acceſſion of fire.

The nature of fire is ſo obſcure and wonderful, that it was held by many of the ancients as a deity; and ſeveral authors of prime note have taken great pains to diſcover the myſtery of it, without having been able to explain many of the principal effects thereof. The learned Herman Boerhaave has uſed no leſs induſtry in making a new ſet of experiments, in order to come to a clearer knowledge of them; and having laid down a new doctrine of fire, in a courſe of public lectures, I ſhall briefly take notice of ſuch of them as I apprehend may be of uſe.

"Fire (ſays he) in effect, appears to be the general "inſtrument of all the motion in the univerſe. The "conſtant tenor of a great number of experiments "leaves no room to doubt, but that, if there were no "fire, all things would inſtantly become fixed and "immoveable. Of this there are inſtances every winter; for while froſt prevails, the water, which before was fluid, by a mere privation of heat, becomes "ſolid, i. e. hardens into ice, and ſo remains till diſſolved again by fire. Thus, were a man entirely "deſtitute of heat, he would immediately freeze into "a ſtatue; and thus the air itſelf, which is found in "continual motion, being always either expanding "or condenſing, would, upon the abſence of fire, contract itſelf, and cohere into a firm rigid maſs; ſo "alſo animals and vegetables, all oils, ſalts, &c. "would, upon the like occaſion, immediately congeal."

Although this doctrine of fire, here laid down by Boerhaave, ſeems new and extraordinary, at leaſt to thoſe who have been uſed to conſider fire in the light that it has been ſet in by the Lord Bacon, Mr. Boyle, and Sir Iſaac Newton; and though we ought to pay great veneration to thoſe illuſtrious authors, yet, in the judgment of themſelves, we ſhould be in excuſable, if we ſhould abſolutely acquieſce in what they have done, and ſhut the door againſt farther and better information.

It may reaſonably be ſuppoſed, that Dr. Boerhaave has had an opportunity of going beyond them; in that, beſides all the experiments and obſervations that they have

have had to build upon, he has had the advantage of a new ſet, which they were unacquainted with.

As to the nature of fire, the great and fundamental difference is, whether it be originally ſuch, formed thus by the great Creator himſelf, at the beginning of things? or, whether it be mechanically producible from other bodies, by inducing ſome alteration in the particles of it?

Among the modern writers, Homberg, Boerhaave, the younger Lemery, and Dr. Graveſande, maintain the former, and the Engliſh authors chiefly maintain the latter.

Monſ. Homberg holds, That the chymical principle or element, ſulphur, which is ſuppoſed one of the ſimple, primary, pre-exiſtent ingredients of all natural bodies, is real fire; and, of conſequence, fire is coeval with all bodies. Eſſai de Souffre Principe, Mem. de l'Academie, anno 1705.

Dr. Graveſande proceeds much on the ſame principle: according to him, fire enters the compoſition of all bodies, is contained in all bodies, and may be ſeparated or procured from all bodies, by rubbing them againſt each other, and thus putting their fire in motion: and he adds, That fire is by no means generated by ſuch motion. Elem. Phyſ. Tom. II. cap. 1.

Mr. Lemery the younger, aſſerts the abſolute and ingenerable nature of fire, and alſo extends it farther; not contented to confine it, as an element, to bodies, he endeavours to ſhew, that it is "Equably diffuſed "through all ſpace; is preſent in all places; in the "void ſpace between bodies, as well as the inſenſible "interſtices between their parts." Mem. de l'Acad. anno 1713.

This laſt ſentiment falls in with that of Boerhaave.

Of the contrary opinion is the Lord Bacon, who, in his treatiſe de Forma Calidi, deduces from a great number of particulars, that heat in bodies is no other than motion, only a motion ſo and ſo circumſtantiated; ſo that to produce heat in a body, nothing is required but to excite ſuch motion in the parts of it.

His opinion is ſeconded by Mr. Boyle, in his treatiſe of the Mechanical Origin of Heat and Cold; where he maintains the ſame doctrine, with new obſervations and experiments, of which two are as follow:

He ſays, "In the production of heat there appears "nothing on the part either of the agent or patient "but motion, and its natural effects. When a ſmith "briſkly hammers a ſmall piece of iron, the metal "thereby becomes exceedingly hot; yet there is no-"thing to make it ſo, except the forcible motion of "the hammer, impreſſing a vehement and variouſly "determined agitation on the ſmall parts of the iron; "which, being a cold body before, becomes by that "ſuperinduced commotion of its ſmall parts hot; "firſt, in a more looſe acceptation of the word, with "regard to ſome other bodies, compared with which "it was cold before; then ſenſibly hot, becauſe this "agitation ſenſibly ſurpaſſes that of the parts of our "fingers. And in this inſtance oftentimes the ham-"mer and anvil continue cold after the operation; "which ſhews, that the heat acquired by the iron "was not communicated by either of theſe imple-"ments, as heat, but produced in it, by a motion "great enough ſtrongly to agitate the parts of ſo "ſmall a body as the piece of iron, without being "able to have the like effect upon ſo much greater "maſſes of metal as the hammer and anvil; though "if the percuſſions were often and briſkly renewed, "and the hammer were ſmall, this alſo might be "heated; whence it is not neceſſary, that a body it-"ſelf ſhould be hot to give heat.

"If a large nail be driven by a hammer into a "plank of wood, it will receive ſeveral ſtrokes on its "head, ere it grows hot; but when it is once driven "to the head, a few ſtrokes ſuffice to give it a con-"ſiderable heat; for while at every blow with the "hammer the nail enters farther into the wood, the "motion produced is chiefly progreſſive, and is of the "whole nail tending one way; but, when the mo-"tion ceaſes, the impulſe given by the ſtroke being "unable to drive the nail farther on or break it, muſt "be ſpent in making a various, vehement, and in-"teſtine commotion of the parts among themſelves, "wherein the nature of heat conſiſts."

That fire is the real cauſe of all the changes in nature, will appear from the following conſideration.

All bodies are either ſolid or fluid; the ſolid of themſelves are either commonly ſuppoſed to be inactive or motionleſs; the fluid both move and are moved.

And all ſolids are found to be ſo much the more firm and contracted, as they have the leſs fire in them. This is evident in iron, which, when heated, expands itſelf into a much greater ſpace than when it was cold; ſo that any ſolid and hard body, by being freed from all fire, would ſink into a much leſs bulk, and its parts would cohere more nearly, and with greater force than before.

As to fluids, they all harden, ſo as to be viſible to the eye upon the abſence of fire; as water, by the cold of a ſevere winter, will form itſelf into a ſolid globe, and yet even then contains a great deal of fire, as appears evidently upon applying a thermometer to it, which is capable of falling twenty diviſions lower before it arrive at the point of the moſt intenſe cold: and hence it is, that the ſpirit of wine is kept from freezing in the thermometer, which would undergo the common fate of other things, were there not abundantly more fire in it.

The air itſelf expands by a greater quantity of fire, and condenſes by a leſs; but it ſtill contains a large quantity of fire, where it is moſt of all contracted; this is evident from the ſtriking of a flint againſt a ſteel, which is followed by ſparks of fire.

Likewiſe if this fire could be taken from the air, it would become ſolid and perfectly at reſt, and, by conſequence, uncapable of change.

"Fire (ſays Dr. Graveſande, in Element. Phyſ.) na-"turally unites itſelf with bodies; and hence it is, "that a body brought near to the fire grows hot, "in which caſe it alſo expands or ſwells; which ex-"panſion is not only obſerved in very ſolid bodies, "but in thoſe whoſe parts do not cohere; in which "caſe they likewiſe acquire a great degree of elaſ-"ticity, as is obſerved in air and vapours."

Fire being thus acknowledged the inſtrumental cauſe of all motion, it remains that itſelf be moved; nay, to move, muſt be more natural and immediate to fire, than to any other body; and hence ſome have ventured to make motion eſſential to fire: but as this is inconſiſtent with the notion of matter, which is defined to be inert and paſſive, and as fire is capable of being proved material, we ought rather to agree, that the motion of fire itſelf is derived from ſome higher and metaphyſical cauſe. A property of perpetual mobility may indeed be ſuperadded to the other properties of fire, but it has no natural neceſſary connexion with them; nor can it be maintained with them otherwiſe than by ſome extrinſic efficacy of a ſuperior cauſe.

However, that it is by motion that fire produces its effects, is evident; and hence the action of fire cannot make any alteration in the elementary ſubſtance of bodies; for it is neceſſary, that what acts upon an object, be without that object, i. e. the fire muſt not penetrate the elementary parts, but only enter the pores and interſtices of bodies; ſo that it does not ſeem capable of making thoſe tranſmutations, which Sir Iſaac Newton aſcribes to it.

In effect, as to all our purpoſes, it may perhaps be ſaid, that fire is always in motion. For inſtance, take ſix ſeveral ſorts of thermometers, and two veſſels of water with ſal armoniac mixed therein, and apply the thermometers to it; and the conſequence will be, that the air being condenſed in them, the ſpirit will deſcend in all of them: remove the veſſels of water, and the air growing warmer, and rarefying, the ſpirit will aſcend again; ſo that the active force in air, which produces ſo many effects, does really all ariſe from the fire contained in it.

Again: As all bodies placed in a very ſolid air, do, by degrees, grow cold, motionleſs, rigid, &c. i. e. though there be ſtill ſome remains of fire, and in proportion as that is diminiſhed, the effect is accelerated; it follows, that cold, a leſs degree of heat, is the effect of a leſſer action of fire: and all action riſes apparently from the ſame ſource.

Then, as fire can render the moſt ſolid bodies, as ſtone, metals, &c. (as appears very evident in large burning-glaſſes, in which gold itſelf immediately calcines, and emits fumes, i. e. becomes fluid) ſo the want of fire would convert the moſt fluid bodies, as ſpirits of wine, &c. into ſolids.

Fire is diſtinguiſhed into two kinds, called elementary or pure fire, which is ſuch as exiſts in itſelf, and alone is properly called fire; or common or culinary fire, which is raiſed and kindled from the former, and is that which agitates and affects ignited, combuſtible, and moveable bodies, the particles of which, joining with thoſe of the pure fire, conſtitute pure flame.

This latter is improperly called fire, in that not only a ſmall part of it is real or pure fire; and in ignited bodies, that which flames, ſmokes, &c. is not ſimply fire; whereas pure fire, ſuch as is collected in a burning-glaſs, yields no flame, ſmoke, aſhes, or the like.

Fire may be preſent in the greateſt abundance, yet without any heat: this is evident in the tops of the higheſt mountains, illuminated by the ſun, where the cold is always extremely pinching, and this even under the equator, there being mountains there which are perpetually covered with ſnow, though there can be no want of fire.

So a large burning-glaſs has no effect: the ſmalleſt warmth cannot be felt in its focus in a place where the ſun does not ſhine, or when the ſun is covered with a cloud, but a piece of metal may be ſeen to melt the very moment the ſun emerges.

Fire may be in exceeding ſmall quantity, and yet burn with great violence: thus ſpirit of wine when ſet on fire, does not burn the hands; and though poured on a piece of red-hot iron, does not take fire; ſo that the fire that is in, ſhould not appear very great: yet if it meet with ſome harder body while it is burning, the particles of which body it is capable to agitate by the attrition of its own, it will yield a fierce flame, capable of burning a harder body than the hand.

From this it appears, that the relation of heterogeneous particles, agitated by the fire, has more effect in reſpect to heat than the action of the fire itſelf: nor need we be far to ſeek for the mechanical reaſon of this, for the particles of fire, being all equal and ſpherical, muſt of themſelves be harmleſs; but if they carry certain ſpicula, or any other bodies along with them, then they become capable of doing much harm.

Hence, though the flame of a piece of wood may give a ſenſe of heat, and burn ſuch things as are applied to it, it does not therefore neceſſarily follow, that there is any pure fire in it, ſo that the diſtinction of pure and common fire is abſolutely neceſſary: though this diſtinction has been overlooked by moſt or all the authors before Dr. Boerhaave, who have written on fire; which has led them into egregious miſtakes, inſomuch that moſt of them have held, that the flame of a piece of wood is all fire, which appears to be falſe from what has been already ſaid, and alſo what follows.

Elementary or pure fire is of itſelf imperceptible, and only diſcovers itſelf by certain effects that it produces in bodies, and theſe effects are only to be learnt by the changes which ariſe in bodies. Theſe effects are three; 1ſt, heat; 2dly, dilatation in all ſolid bodies, and rarefaction in all fluids; 3dly, motion.

The firſt effect of elementary fire on bodies is heat: heat ariſes wholly from fire, and in ſuch a manner, that the meaſure of heat is always the meaſure of fire; and that of fire, of heat; ſo the heat is inſeparable from the fire.

The ſecond effect of elementary fire is dilatation in all ſolid bodies, and rarefaction in all fluids.

Numerous experiments make it evident, that both theſe are inſeparable from heat. If you heat an iron rod, it will increaſe in all its dimenſions; and the more it is heated, the farther it will be increaſed; and being again expoſed to the cold, it will contract, and ſucceſſively return through all degrees of its dilatation, till it arrive at its firſt bulk, being never two minutes ſucceſſively of the ſame magnitude.

The like may be obſerved in gold, the heavieſt of all bodies, which takes up more ſpace when it is fuſed than it did before; nay, even mercury, the heavieſt of all fluids, has been known to aſcend above thirty times its height, being placed over the fire in a tube.

The laws of this expanſion are;

1ſt, That the ſame degree of fire rarefies fluids ſooner, and in a greater degree than it does ſolids. Without this, the thermometer would be of no uſe; ſince, if it were otherwiſe, the cavity of the tube would be dilated in the ſame proportion as the fluid is rarefied.

2dly, By how much the liquor is lighter, by ſo much the more it is dilated by fire: thus air, which is the lighteſt of all fluids, expands the moſt, and ſpirit of wine the next after air.

The third effect of fire on bodies is motion; for fire, in warming and dilating bodies, muſt neceſſarily move their parts. And in effect, all the motion of nature ariſes from fire alone; and if this were taken away, all things would become immoveable. All oils, fats, waters, wines, ales, ſpirits of wine, vegetables, animals, &c. become hard, rigid, and inert, upon the abſence of only a certain degree of fire; and this induration will be both the ſooner, and the more violent, the leſs the degree of fire is.

Hence, if the fire was abſolutely taken away, and there were the greateſt degree of cold, all nature would grow into one concrete body, ſolid as gold, and hard as a diamond; but, upon the application of fire, it would recover its former mobility.

And, of conſequence, every diminution of fire is attended with a proportionable diminution of motion.

Pure fire is found in two different manners, either as it exiſts every where, and is diffuſed equally in all places; or as it exiſts in certain bodies, in which it makes no great alteration.

That fire ſhould exiſt in the ſame quantity in all places, will ſeem a ſtrange paradox; and yet that it does ſo, is demonſtrable from innumerable experiments.

This elementary fire is preſent every where, in all bodies, all ſpace, and at all times, and that in equal quantities; for let a perſon go where he will, to the top of the higheſt mountains, or deſcend into the loweſt cavern, whether the ſun ſhine or not; either in the moſt ſcorching ſummer, or the ſharpeſt winter; fire may be collected by ſeveral methods, as attrition or otherwiſe. In a word, there is no phyſical point aſſignable without fire, no place in nature where the attrition of two ſticks will not render it ſenſible.

The Carteſians, as Marriotte, Perrault, &c. hold, That there is a large ſtock of fire in a perfect vacuum, i. e. a ſpace out of which all the air has been exhauſted, as ſuppoſing an abſolute vacuum impoſſible: now, the moſt perfect vacuum that we can arrive at, is that of Mr. Hugyens's contrivance, which is as follows: heat a quantity of the pureſt mercury to the heat of boiling water, and pour it into a hot tube of about forty inches long; and when the tube is filled, apply a finger upon the orifice of it, and thus invert it into a baſon full of mercury: the mercury will now be ſuſpended in the tube to the whole height; but then, if you give it but a little ſhake, it will ſink down to the height of about twenty-nine inches, and thus leave a vacuity of eleven inches.

Yet here the philoſophers above-mentioned deny there is any vacuum, and urge, that now ſo much the more fire is entered into the ſpace as there was of other matter;

matter; but this is contrary to experience; at leaſt, the fire contained there is no hotter than the mercury itſelf; for if a drop or two of water be in a froſty ſeaſon ſprinkled both upon the upper part of the tube, ſuppoſed to be full of fire, and on the lower that is full of mercury, they will in each place freeze alike; ſo that there is no more pure fire in a perfect vacuum, than in any other place.

But whereas it has been ſaid, that fire is found in all bodies, to prove this, ſet gold againſt the vacuum before-mentioned, and this gold, though the moſt ponderous of all bodies, will not contain more fire than Huygens's vacuum, as appears from the thermometer.

But the fire in gold, when ready to fuſe, is pure fire; for a maſs of this being once heated red hot, will retain this fire perfectly for three days; nay, the prince of Mirandola and others, have kept gold ignited for two months, without any diminution of weight.

Mr. Graveſande, Phyſ. Element, ſays, That bodies of any kind, being violently moved againſt one another, will grow hot by ſuch friction; and this to a conſiderable degree, which ſhews that all bodies have fire in them; for fire may be put in motion, and ſeparated from a body by ſuch rubbing, but can never be generated that way.

Mr. Boyle, Mech. Prod. of Heat, ſays, That although quickſilver is allowed to be the coldeſt of all fluids, inſomuch that many deny, that it will produce any heat by its immediate action on any other body, and particularly on gold; yet ſeveral trials have aſſured him, that a particular mercury may by preparation be enabled ſuddenly to inſinuate itſelf into the body of gold, whether calcined or crude, and become manifeſtly hot with it in leſs than two or three minutes.

Mr. Graveſande ſays, That quickſilver contains fire, is evident hence, that if you ſhake it about in an exhauſted glaſs, it will appear all luminous.

Elementary fire of itſelf always lies concealed; nay, it may be perfectly undiſcoverable, where it is in the greateſt quantity; as is evident in the torrid zone, where the ſnow never melts, notwithſtanding the great abundance of fire.

This fire, in itſelf thus perfectly latent, may diſcover itſelf to be preſent by five effects; 1ſt, by rarefying bodies, and particularly air; 2dly, by light; 3dly, by colour; 4thly, by heat; and 5thly, by burning.

That there is a good quantity of fire even in the coldeſt places, and in the coldeſt bodies, is confirmed by the following experiment: if you take two large iron plates, and rub them briſkly together in Iceland, which is only twelve degrees ſhort of the north pole, in the moſt froſty ſeaſon, and at midnight, they will grow warm, glow, ſhine, and heat to ſuch a pitch as not only to rarefy the ſpirit in the thermometer, but even to ignite, and at laſt to fuſe.

Now the fire here found is either created de novo, or it was there before, but nobody will aſſert its creation; and accordingly, unleſs it be furniſhed with a proper fuel, it will be ſoon diſſipated again, but not annihilated; and of conſequence it pre-exiſted, and it appears to be true fire by its rarefying the ſpirit in the thermometer.

From this, and many other experiments, it is evident, that fire is always found in all parts of ſpace, and in all bodies equally ſpread on the utmoſt top of the higheſt mountain, as in the ſubject valley, or in the deepeſt cavern under ground, and in every climate, and at every ſeaſon.

The equable diſtribution of fire in all places being proved, it ſhould thence follow, that there is the ſame degree thereof every where; which would really be ſo, were it not that fire happens by one means or other to be more collected in one place than another.

But, notwithſtanding the equable difference, &c. of fire through all the mundane ſpace does not hinder, but that, to our ſenſes, it appears very unequal in different places; and hence we have two vulgarly reputed ſources or funds of fire, viz. in the ſun, and the center of the earth.

As for the firſt, we have the concurrent opinions of the philoſophers of all ages, but one excepted, who held the ſun to be cold.

As to the ſecond, the central fire, it is manifeſt that there is an ample proportion of fire under ground; and even, that fire appears much more abundant there than on the ſurface; ſo that at leaſt, a ſubterraneous fire muſt be granted.

Thus they who dig mines, wells, &c. conſtantly obſerve, that while they are but a little below the ſurface, they find it a little cool; and as they proceed lower, it proves much colder, as being beyond the reach of the ſun's heat, inſomuch that water will freeze almoſt inſtantaneouſly, and hence is the uſe of houſes.

But a little lower, about forty or fifty feet deep, it begins to grow warmer, ſo that no ice can bear it; and then the deeper they go, ſtill the greater heat; till at length it endangers the ſtoppage of reſpiration, and puts out their candles. If they venture yet farther with a lighted candle, the place ſhall be immediately found full of flame, as once happened in the coal-pits in Scotland, where a hardy digger, deſcending to an unuſual depth, with a light in his hand, the fumes, which were there found very copious, caught fire thereby, and burnt the whole mountain down.

Therefore it ſeems as if nature had lodged another ſun in the center of the earth, to contribute on its part to the giving motion to bodies, and for the promoting of generation, nutrition, vegetation, germination, &c. of animals, vegetables, and foſſils.

As to the origin of this ſubterraneous ſun, ſome doubt whether it were formed there in the beginning, like the ſun in the firmament, or gradually produced by a ſecondary collection of vague fire into this place.

What makes in favour of the former opinion, are volcanos or burning mountains, which ſeem to have exiſted from the firſt ages; for the flames of mount Ætna are mentioned as of great antiquity, and there are likewiſe ſuch mountains found in the coldeſt regions, viz. Nova Zembla and Iceland, as well as the hotteſt, as Borneo, &c.

It cannot be reaſonably pretended, ſays Mr. Boyle, that the ſubterraneous heat proceeds from the rays of the ſun, ſince they heat not the earth above ſix or ſeven feet deep, even in the ſouthern countries; and if the lower part of the earth were of its own nature cold, and received the heat it affords only from the ſun and ſtars, the deeper men deſcend therein, the leſs degree of heat and ſteams they would meet with.

The ſun contributes much in bringing fire to light, by reaſon of his rapid motion round his axis; whereby the fiery particles, every where diffuſed, are directed and determined in parallel lines toward certain places where its effects become apparent.

And from thence it is, that the fire is perceived by us when the ſun is above; but that when he diſappears, his impulſe or preſſion being then taken away, the fire continues diſperſed at large through the ethereal ſpace.

There is not, in effect, leſs fire in our hemiſphere in the night time, than there is in the day time; only it wants the proper determination to cauſe it to be perceived.

The effects of elemental fire may be increaſed divers ways, viz. firſt, by attrition, or a ſwift rubbing or agitating one body againſt another. This is very manifeſt in ſolids. The attrition of a flint againſt a ſteel produces ſparks of fire; and likewiſe in fluids, the violent agitation of cream, by churning, will produce a ſenſible warmth, and ſeparate it into butter; and this effect is rendered ſtill more diſcernible by a thermometer.

And the heat of animal bodies is owing to the agitation and attrition of the parts of theſe juices againſt each other, and the ſides of the veſſels.

The ſecond manner of increaſing the effect of elementary fire is, by throwing a quantity of moiſt or green

green vegetables, cut down while full of ſap, into a large heap, and preſſing them cloſe down; by which they grow warm, hot, ſmoke, and break out into flame,

A third way is by mixing certain cold bodies: thus water, and ſpirit of wine, being firſt warmed, grow much hotter by being mixed; alſo oil of cloves, cinnamon, &c. being mixed with ſpirit of wine, become exceeding hot, and burſt forth like volcanos.

The like effects may be had from ſeveral hard and dry bodies, as ſulphur and ſteel filings.

To conclude: on fire and the effects thereof, depend all fluidity of humours, juices, &c. all vegetation, putrefaction, fermentation, animal heat, &c.

As all the four elements, water, air, earth, and fire, are very conducive to the work of vegetation, and no one of them more than this of fire; I conclude, that theſe few hints, which I have collected from the moſt approved authors, concerning the nature and properties of it, as they may be uſeful, would not be unacceptable to the ingenious and ſtudious practiſers of horticulture, which induced me to inſert them here.

FIR-TREE. See ABIES.

FISTULAR FLOWERS [Flores Fiſtulares, of Fiſtula, *Lat.* a pipe] ſuch as are compounded of many long, hollow, ſmall flowers, like pipes.

FLAMMULA JOVIS. See CLEMATIS.

FLESH, among botaniſts, is all the ſubſtance of any fruit that is between the outer rind and the ſtone, or that part of any root that is fit to be eaten.

FLORIFEROUS [florifer, *Lat.*] bearing flowers.

FLORIST, one who is converſant with, or ſkilled in flowers.

FLORULENT, FLORULOUS [florentulus, florulus, *Lat.*] Flowery, full of flowers; alſo bloſſoming.

FLOS AFRICANUS. See TAGETES.

FLOS PASSIONIS. See PASSIFLORA.

FLOS SOLIS. See HELIANTHUS.

FLOS TRINITATIS. See VIOLA.

FLOWER: a flower is a natural production which precedes the fruit, which includes the grain or ſeed. Though a flower is a thing ſo well known, yet the definition of this part of a plant is as various almoſt as the authors who define it. Jungius defines it to be the more tender part of a plant, remarkable for its colour, or form, or both, cohering with the fruit. Yet this author himſelf confeſſes, that this definition is too narrow; for ſome of thoſe bodies which he allows to be flowers are remote from the fruit.

Mr. Ray ſays, it coheres, for the moſt part, with the rudiments of the fruit. Thus the words, for the moſt part are hardly to be admitted into definitions.

Tournefort defines it to be a part of a plant very often remarkable for its peculiar colours, for the moſt part adhering to the young fruit, to which it ſeems to afford the firſt nouriſhment, in order to explicate its moſt tender parts. Which definition is ſtill more deficient than the former, by this uncertain mode of expreſſion.

Pontedera, the profeſſor of botany at Padua, defines it to be a part of a plant unlike the reſt in form and nature; if the flower has a tube, it always adheres to the embryo, or is very near it, for whoſe uſe it is ſubſervient; but if it wants a tube, there is no embryo adhering.

This definition is far from being clear, for it is ſcarce intelligible, and is liable to this objection, that it may include ſome parts of a plant which no perſon ever called by that name; for a root, a ſtalk, or a leaf, are parts of a plant unlike the reſt in form and nature, having no tube, and ſo do not adhere to any embryo, and thus by Pontedera's definition are flowers.

Monſ. Juſſieu, the Paris profeſſor, ſeems not to have ſucceeded much better in this affair: he ſays, That is properly called a flower, which is compoſed of chives, and a piſtillum, and is of uſe in generation. But this is too defective; for there are many plants in which the piſtillium or ſtyle is found a conſiderable diſtance from the chives; there are many flowers that have no piſtillum, whether that word be taken to ſignify the embryo of the fruit, or its appendix, and many which have no chives.

But the late Monſieur Vaillant ſeems to be happier, in forming a clearer idea of this part of a plant. We find in the lecture he read in the Royal Garden at Paris, that the flowers, ſtrictly ſpeaking, ought to be reckoned the organs which conſtitute the different ſexes in plants; ſeeing they are ſometimes found without any covering, and that the coats or petals, which immediately encompaſs them, are deſigned only to cover and defend them: but (ſays he) as theſe coats are the moſt conſpicuous and moſt beautiful part of the compoſition, which is called by the name of flower; to theſe coats therefore I give the name of flower, of whatſoever ſtructure or colour they be; whether they encompaſs the organs of both ſexes together, or contain only one of them, or only ſome parts depending on one of them, provided always that they be not of the ſame figure of the leaves of the plant.

But, in my opinion, Dr. Martyn has been happier, in his definition of a flower, than all thoſe abovementioned: he defines a flower to be the organs of generation of both ſexes adhering to a common placenta, together with their common coverings; or of either ſex ſeparately, with its proper coverings, if it have any.

The parts of a flower are, 1. The germen or ovary; which is the rudiment of the fruit, and ſo is properly the female organ of generation.

2. The ſtyle, which is a body accompanying the ovary, either ariſing from the top of it, or ſtanding as an axis in the middle, with the embryos of the ſeeds round it.

3. The ſummits, or apices, which are thoſe bodies that contain the prolific powder, analogous to the male ſperm in animals; and generally hang upon ſlender threads, which are called the chives or ſtamina.

The petals are thoſe tender fine coloured leaves, which are generally the moſt conſpicuous parts of a flower.

The empalement, or calyx, is thoſe tender leaves which cover the other parts of a flower.

Flowers, according to the number of their petals, are called monopetalous, dipetalous, tripetalous, tetrapetalous, &c.

The ſtructure of flowers is indeed very various; but, according to Dr. Grew, the generality have theſe three parts in common, viz. the empalement, the foliation, and the attire.

Mr. Ray reckons, that every perfect flower has the petals, ſtamina, apices, and ſtylus or piſtil; and ſuch as want any of theſe parts, he accounts imperfect flowers.

In moſt plants there is a perianthum, calyx, or flower-cup; which is of a ſtronger conſiſtence than the flower itſelf, and deſigned to ſtrengthen or preſerve it.

Flowers are diſtinguiſhed into male, female, or hermaphrodite.

The male flowers are thoſe in which are the ſtamina, but have no germen or ſtyle, the ſame which botaniſts call ſtamineous flowers; theſe have no fruit.

The female flowers are ſuch as contain the germen and ſtyle, or piſtil, which is ſucceeded with fruit, and are called fruitful, or knitting flowers.

The hermaphrodite flowers are ſuch in which the two ſexes are contained, i. e. the male and female parts are found in the ſame flower, which are the moſt general kind; ſuch are the Daffodil, Lily, Tulip, Althæa, Geranium, Roſemary, Sage, Thyme.

The ſtructure of parts is much the ſame in thoſe where the ſexes are divided; the difference between them conſiſting in this, that the ſtamina and ſummits or apices, i. e. the male parts in theſe are ſeparate from the ſtyles or piſtils; being ſometimes on the ſame plants, and ſometimes on different ones.

Among the plants which bear both male and female parts, but at a diſtance from each other are reckoned the

the Cucumber, Melon, Gourd, Turky-Wheat, Walnut, Oak, Beech, &c.

FLUIDITY. [Fluiditas, of fluere, *Lat.* to flow.] Having occaſion to mention fluids and fluidity, in ſpeaking of the properties of the elements air, water, fire, &c. I thought it neceſſary, in this place, to give the following account of that property, which I have extracted from the moſt approved authors.

A fluid, or fluid body, is by ſome defined to be a body, whoſe particles are but weakly connected, their mutual coheſion being, in a great meaſure, prevented from ſome external cauſe: in which ſenſe, a fluid ſtands oppoſed to a ſolid; and is, by the excellent Sir Iſaac Newton, defined to be one whoſe parts eaſily give place, or move out of the way, on any force impelled upon them, and by that means do ſo eaſily move one over another. Which definition is much better than that of Deſcartes, That a fluid is a body whoſe parts are in continual motion, becauſe it is neither apparent that the parts of all fluids are ſo, nor that the parts of ſome ſolid bodies are not ſo.

Fluidity is the ſtate or affection of bodies, which denominates or renders them fluid, and ſtands in direct oppoſition to firmneſs and ſolidity.

It is diſtinguiſhed from liquidity and humidity, in that the idea of fluidity is abſolute, and the property contained within the thing itſelf; whereas that of humidity is relative, and implies wetting, or adhering, i. e. ſomething that gives us the ſenſation of wetneſs or moiſture, and would have no exiſtence, but for our ſenſes.

Thus melted metals, air, æther, and even ſmoke, and flame itſelf, are fluid bodies, and not liquid ones; the parts of them being actually dry, and not leaving any ſenſe of moiſture.

Fluidity ſeems to conſiſt in this, that the parts of any body, being fine and ſmall, are ſo diſpoſed by motion and figure, as that they can eaſily ſlide over one another's ſurfaces all manner of ways. Mr. Boyle alſo obſerves, That it is requiſite they ſhould be variouſly and ſeparately agitated to and fro, and that they ſhould touch one another but in ſome parts only of their ſurfaces. And the ſame gentleman ſays, in his Hiſtory of Fluidity, That the conditions requiſite to conſtitute a fluid body, are chiefly the three following.

1ſt, The minuteneſs or ſmallneſs of its parts: thus we ſee the fire, by dividing metals into parts very fine and ſmall, will melt them, and make them fluid; and after the ſame manner do acid menſtruums diſſolve them, ſuſpend their liquor, and render them fluid; and that fire turns the hard body of common ſalt almoſt wholly into a liquor by diſtillation: though it is not improbable, but that the ſhape and figure of theſe ſmall parts may conduce much towards producing this quality of fluidity; for it is found in the diſtillation of Olive oil (which is a fluid made only by preſſure) that moſt of the oil will, by the action of the parts of the fire (if it be done in a retort) be turned into a kind of conſiſtent ſubſtance like butter.

Likewiſe mercury, whoſe parts are, without doubt, much groſſer than thoſe of oil and water, is yet more fluid than either of them.

2dly, It ſeems requiſite to fluidity, that there be ſtore of vacuities, or vacant ſpaces, interſperſed between the corpuſcles of the fluid body; for elſe there will not be room for each particle to continue its motion and agitation on the ſurfaces of the neighbouring ones. For,

3dly, The chief condition requiſite to conſtitute a fluid body is, that its particles be agitated variouſly and apart, either by their own proper motion, or by ſomething of ſubſtance, that tumbles them up and down by its paſſage through them.

That this qualification is chiefly requiſite to fluidity, you may gather from that common experiment of putting a little dry powder of alabaſter, or plaſter of Paris, finely ſifted, in a flat-bottomed veſſel over the fire; for in a little time it will boil like water, and imitate all the motions of a boiling liquor; it will tumble variouſly over in great waves like that; it will bear ſtirring with a ſtick or ladle without reſiſting, as it will do when cold; nay, if it be ſtirred ſtrongly near the ſide of the veſſel, its waves will apparently daſh up againſt the ſides: yet if any of it be ſpeedily taken out, and laid on a piece of paper, you will ſee nothing but a dry powder.

So that it is evident from hence, that there is a real difference between a fluid body and a wetting liquor; for not only this boiling powder and melted metals, but the air and æther, and even flame itſelf, are properly fluid bodies, though not moiſt liquors.

This ingenious gentleman found alſo, that by blowing the ſmoke of Roſemary into a glaſs pipe, and then holding the pipe (when filled) upright, the ſurface of the ſmoke would accommodate itſelf to a level ſituation; and which way ſoever the tube was inclined, the ſuperficies of the ſmoke would be parallel to the horizon; and when the glaſs was much inclined, would run along it like water.

From whence he infers, that, in order to the rendering a body fluid, there is no need that its parts ſhould be cloſely condenſed, as thoſe of water are.

And Dr. Hook, in his Micrograph. p. 12. preſents us with a very pretty experiment or two, to prove this account of fluidity, viz. That a diſh of ſand being ſet on a drum head, briſkly beaten by the ſticks, or on the upper ſtone of a mill, turning ſwiftly round on the (empty) lower one, it in all reſpects, emulate the properties of a fluid body; for a heavy body will immediately ſink in it to the bottom, and a light one emerge to the top; each grain of ſand hath a conſtant vibrating, dancing motion; and if a hole be made in the ſide of the diſh, the ſand will ſpin out like water.

The corpuſcular philoſophy, before it was wonderfully improved by Sir Iſaac Newton, did not go to the bottom of this matter; for it gave no account of the cauſe of the chief condition requiſite to conſtitute a fluid body, viz. the various motions and agitations of its particles: but this may, in a great meaſure, be accounted for, if it be ſuppoſed to be one of the primary laws of nature, That as all particles of matter attract one another when they come within a certain diſtance, ſo likewiſe they fly away from, and avoid one another, at all greater diſtances from one another.

For then, though their common gravity may keep them together in a maſs (it may ſometimes be) together with the preſſure of other bodies upon them; yet their continual endeavour to avoid one another ſingly, and the adventitious impulſes of light, heat, or other external cauſes, may make the particles of fluids continually move round about one another, and ſo produce this quality.

It is indeed a difficulty not eaſily got over, to account for the particles of fluids always keeping at ſuch a diſtance from one another, as not to come within the ſphere of one another's attraction.

The fabric and conſtitution of that fluid body, water, is amazing; that a body ſo very rare, and which has a vaſt over-proportion of pores, or interſperſed vacuity, to ſolid matter, ſhould yet be perfectly incompreſſible by the greateſt force; and yet this fluid is eaſily reducible into that firm, tranſparent, friable body which we call ice, by being only expoſed to a certain degree of cold.

One would think, that though the particles of water cannot come near enough to attract each other, yet the intervening frigorific matter doth, by being mingled per minima, ſtrongly attract them, and is itſelf likewiſe ſtrongly attracted by them, and wedges or fixes all the maſs into a firm body; which ſolid body loſes its ſolidity again, when by heat the vinculum is ſolved, and theſe frigorific particles are diſjoined from thoſe of the water, and are forced to fly out of it; and, perhaps, juſt thus may the fumes of lead fix quickſilver.

When a firm ſolid body, ſuch as a metal, is by heat reduced into a fluid, doth not the fire disjoin and ſe-

parate its conſtituent particles, which mutual attraction cauſed to cohere before, and keep them at ſuch a diſtance from each other, as that they are without the ſphere of one anothers attraction as long as that violent motion laſts? And do not they, when that is over, and the heat is flown out, come nearer to, attract one another, and coaleſce again?

As therefore the cauſe of coheſion of the parts of ſolid bodies appears to be their mutual attraction, ſo the chief cauſe of fluidity ſeems to be a contrary motion impreſſed on the particles of fluids, by which they avoid and fly one another, as ſoon as they come at, and as long as they keep at, ſuch a diſtance from each other.

It is obſerved alſo in fluids, that the direction of their preſſure againſt the veſſels which contain them, is in lines perpendicular to the ſides of ſuch veſſels; which property being the neceſſary reſult of the particles of any fluid's being ſpherical, it ſhews that the parts of all fluids are ſo, or of a figure nearly approaching thereto.

Dr. Clarke ſays, That if the parts of a body do not touch each other, or eaſily ſlide over one another, and are of ſuch a magnitude as that they may be eaſily agitated by heat, and the heat be ſufficiently great to agitate them; though perhaps it may be leſs than ſuffices to prevent water from freezing; or even though the parts be not actually moved, yet if they be ſmall, ſmooth, ſlippery, and of ſuch a figure and magnitude as diſpoſes them to move and give way, that body is fluid.

And yet the particles of ſuch fluid bodies do, in ſome meaſure, cohere; as is evident hence, that mercury, when well purged of air, will be ſuſtained in the barometer to the height of ſixty or ſeventy inches; that water will aſcend in capillary tubes, even in vacuo; and that the drops of liquors in vacuo run into a ſpherical form, as adhering by ſome mutual coheſion, like that between poliſhed marble planes.

To this may be added, that theſe ſaid bodies, if they conſiſt of particles which are eaſily entangled with each other, as oil; or if they be capable of being ſtiffened by cold, and joined by the interpoſition of certain cunei or wedges, as water, they are eaſily rendered hard; but if their particles are ſuch as can neither be entangled as air, nor ſtiffened by cold, as quickſilver, then they never grow hard and fixed.

In ſhort, the Carteſians define a fluid to be a body, the parts of which are in continual inteſtine motion; and Dr. Hook, Mr. Boyle, and Dr. Boerhaave, tho' they differ in opinion widely from Carteſianiſm, ſubſcribe to the definition, and alledge arguments to prove, that the parts of fluids are in continual motion, and even that it is this motion which conſtitutes fluidity; and the latter of them aſcribes this, and all motion, to fire. See FIRE.

Fluids then are either natural, as water and mercury; or animal, as blood, milk, bile, lympha, urine, &c. or factitious, as wines, ſpirits, oils, &c.

FŒNICULUM. Tourn. Inſt. R. H. 311. tab. 164. Anethum. Lin. Gen. Plant. 326. *Fennel*; in French, *Fenouil*.

The CHARACTERS are,

It hath an umbellated flower; the great umbel is compoſed of many ſmaller, which have no involucrum; the umbel is uniform; the flowers have five incurved petals, and five ſtamina, terminated by roundiſh ſummits: the germen is ſituated under the flower, ſupporting two ſmall ſtyles, crowned by roundiſh ſtigmas. The germen afterward turns to an oblong fruit, deeply channelled, dividing into two parts, each containing a ſingle ſeed, flat on one ſide, but convex and channelled on the other.

This genus of plants is ranged in the ſecond ſection of Tournefort's ſeventh claſs, which includes the herbs with umbellated flowers diſpoſed circularly, whoſe empalement turns to two narrow, oblong, thick ſeeds. Dr. Linnæus has joined this genus to Anethum, which is placed in the ſecond ſection of his fifth claſs, with thoſe plants whoſe flowers have five ſtamina and two ſtyles. But as the ſeeds of Fennel are oblong, thick, and channelled, and thoſe of Dill flat and bordered, it is much better to keep them ſeparate, than to join them in the ſame genus.

The SPECIES are,

1. FOENICULUM (*Vulgare*) foliis decompoſitis, foliolis brevioribus multifidis, ſemine breviore. *Fennel with decompounded leaves, whoſe ſmall leaves are ſhorter and end in many points, and a ſhorter ſeed.* Fœniculum vulgare Germanicum. C. B. P. 147. *Common Fennel.*
2. FOENICULUM (*Dulce*) foliis decompoſitis, foliolis longioribus, ſemine longiori. *Fennel with decompounded leaves, whoſe ſmall leaves are very long, and a longer ſeed.* Fœniculum dulce, majore & albo ſemine. J. B. 3. p. 2, 4. *Sweet Fennel having a larger white ſeed.*
3. FOENICULUM (*Azoricum*) humilius, radice caulescente carnoſo, ſeminibus recurvis; radice annuâ. *Dwarf Fennel with a fleſhy ſtalk, recurved ſeeds, and an annual root.* Fœniculum dulce Azoricum. Pluk. Alm. *Sweet Azorian Fennel, called Finochio.*

The firſt ſort is the common Fennel, which is cultivated in the gardens, and has ſown itſelf in many places, where it has been introduced in ſuch plenty, as to appear as if it were a native in England; but it is no where found at a great diſtance from gardens, ſo has been undoubtedly brought into England. There are two varieties of this, one with light green leaves, and the other with very dark leaves; but theſe I believe are only varieties which ariſe from the ſame ſeeds; but this is very difficult to aſcertain; for unleſs the ſeeds were ſown ſeparately in ſome place where neither of theſe plants have been growing before, it cannot be done; for the ſeeds of theſe plants which have ſcattered, will remain in the ground ſome years, and when expoſed near the ſurface will grow; ſo that the plants become troubleſome weeds, wherever their ſeeds have been ſuffered to ſcatter; and they frequently come up where other ſeeds are ſown, and thereby the two ſorts may accidentally mix.

The common Fennel is ſo well known, as to need no deſcription. This hath a ſtrong fleſhy root, which penetrates deep into the ground, and will continue ſeveral years. It flowers in July, and the ſeeds ripen in autumn. The beſt time to ſow the ſeeds, is ſoon after they are ripe; the plants will come up in the autumn or the following ſpring, and require no other care but to keep them clean from weeds, and thin the plants where they are too cloſe; it will grow in any ſoil or ſituation. The leaves, ſeeds, and roots of this, are uſed in medicine; the root is one of the five opening roots, and the ſeed one of the greater carminative ſeeds. There is a ſimple water made from the leaves, and a diſtilled oil from the ſeed.

The ſweet Fennel has been by many ſuppoſed only a variety of the common ſort, but I have cultivated it in the ſame ground with that, where it has always retained its differences. The leaves of this are very long and ſlender, growing more ſparſedly, and do not end in ſo many points as thoſe of the common ſort; the ſtalks do not riſe ſo high, and the ſeeds are longer, narrower, and of a lighter colour. Theſe ſeeds are generally imported from Germany or Italy, and are by ſome preferred to thoſe of the common ſort for uſe, being much ſweeter.

This may be propagated in the ſame manner as the former ſort, being very hardy, but the roots are not of ſo long duration.

The third ſort is ſuppoſed to have been originally brought from the Azorian Iſlands; it has been long cultivated in Italy as a ſallad herb, under the title of Finochio; and there are ſome few gardens in England, where it is now cultivated, but in ſmall quantities, for there are not many Engliſh palates which reliſh it, nor is it eaſy to be furniſhed with good ſeeds; thoſe which are annually brought from Italy ſeldom prove good; and it is difficult to ſave it in England, becauſe the winter frequently kills thoſe plants which are left for ſeeds; and when any good plants of the early ſowing are left for ſeeds, they do not ripen, unleſs the winter proves very favourable.

This ſort hath very ſhort ſtalks, which ſwell juſt above the ſurface of the ground, to four or five inches in breadth, and almoſt two thick, being fleſhy and tender: this is the part which is eaten when blanched, with oil, vinegar, and pepper, as a cold ſallad. When theſe plants are permitted to run for ſeeds, the ſtalks do not riſe more than a foot and a half high, having a large ſpreading umbel ſtanding on the top. The ſeeds of this ſort are narrow, crooked, and of a bright yellow colour; they have a very ſtrong ſmell like Aniſeed, and are very ſweet to the taſte.

The manner of cultivating this plant is as follows: Your firſt care muſt be to procure good ſeeds from ſome perſon who has been careful in the choice of the plants, otherwiſe there will be little hope of having it good; for the plants will run up to ſeeds before they ſwell to any ſize, ſo will not be fit for uſe: then make choice of a good ſpot of light rich earth, not dry nor very wet, for in either extreme this plant will not thrive. The firſt crop may be ſown about a fortnight in March, which, if it ſucceeds, will be fit for uſe in July; and by ſowing at ſeveral times, there may be a ſupply for the table till the froſt puts a ſtop to it. After having well dug and levelled the ground ſmooth, you muſt make a ſhallow drill by a line, into which you muſt ſcatter your ſeeds pretty thin; for if your plants are ſix inches aſunder in the rows, it will be full near enough; but however, you muſt expect ſome of your ſeeds to fail, and therefore you ſhould ſcatter them about two inches diſtance; then cover the ſeeds about half an inch thick with earth, laying it ſmooth: theſe drills ſhould be made eighteen inches aſunder, or more, that there may be room to clean the ground, as alſo to earth up the plants when they are full grown. When the plants come up, which will be in about three weeks or a month after ſowing, you muſt with a ſmall hoe cut up all the weeds between them, and where the plants are too cloſe, they ſhould be thinned to about three inches diſtance; and as they advance, and the weeds ſpring again, they ſhould, from time to time, be hoed; and at the laſt time of thinning them, they ſhould be left ſeven or eight inches aſunder at leaſt. If your kind be good, the ſtems of the plants will increaſe to a conſiderable bulk juſt above the ſurface of the ground; which part ſhould be earthed up in the manner of Celery, to blanch, about a fortnight or three weeks before it is uſed, and this will cauſe it to be very tender and criſp.

Your ſecond crop ſhould be ſown about three weeks after the firſt, and ſo continue ſowing every three weeks or a month till the end of July, after which time it will be too late for the plants to come to any perfection. But you ſhould obſerve to ſow in April, May, and June, on a moiſter ſoil than that which you ſowed the firſt on; as alſo what you ſow in the latter part of July, ſhould be ſown on a drier ſoil, and in a warmer ſituation; becauſe this crop will not be fit for uſe till late in autumn, and therefore will be ſubject to injuries from too much wet or cold weather, if on a moiſt ſoil. But as the ground is often extreme dry in June and July, and the ſeeds more apt to miſcarry and not come up, you ſhould therefore obſerve to water and ſhade the beds where this ſeed is ſown at that ſeaſon, until the plants come up. And if the ſeaſon ſhould prove dry, the plants muſt be duly watered, otherwiſe they will run up to ſeed before they are of any ſize; therefore there ſhould be a channel made where every row of plants grow, to detain the water which is poured on them, to prevent its running off. In the autumn, if there ſhould happen ſharp froſts, it will be very proper to cover the plants with ſome Peas-haulm, or other light covering, to prevent their being pinched; by which method they may be continued for uſe till the middle of winter.

A ſmall bed of this plant will be ſufficient at each ſowing for a middling family; and for a large family, a bed of about twenty feet long, and four feet broad, will be full enough at a time.

FŒNUM BURGUNDIACUM. See Medica Sativa.

FŒNUM GRÆCUM. See Trigonella.

FOOT-STALKS, are thoſe ſmall ſtalks which immediately ſuſtain the leaves, flowers, or fruit.

FOUNTAINS are ſources or ſprings of living water, ariſing out of the ground. As to the original of them, ſee under the article Springs.

Of artificial fountains there are great variety, the mechaniſm of which not being to my purpoſe, I will not dwell upon it; though I may aſſert, that they are not only great ornaments to a fine garden, but alſo of great uſe. But they ought not to be placed too near the houſe by reaſon of the vapours that ariſe from the water, which may be apt to ſtrike a damp to the wall, and ſpoil the paintings, &c. and the ſummer vapours may cauſe a malignity in the air, and ſo be prejudicial to the health of the family; and likewiſe the noiſe may be incommodious in the night.

Fountains in a garden ſhould be ſo diſtributed, that they may be ſeen almoſt all at one time, and that the water-ſpouts may range all in a line one with another, which is the beauty of them; for this occaſions an agreeable confuſion to the eye, making them appear to be more in number than they really are. See Jet d'Eau, Springs, Vapours, Water, &c.

FRAGARIA. Lin. Gen. Plant. 558. Tourn. Inſt. R. H. 295. tab. 152. [is ſo called for its fragrant aromatic ſcent.] Strawberries; in French, *Fraſier*.

The Characters are,

The empalement of the flower is of one leaf, which is cut into ten parts at the top. The flower hath five roundiſh petals, which are inſerted in the empalement, and ſpread open. It hath twenty ſtamina, which are inſerted in the empalement, terminated by moon-ſhaped ſummits. It hath a great number of germen collected into a head, each having a ſingle ſtyle, inſerted in the ſide of the germen, crowned by ſingle ſtigmas; this head afterward becomes a large, ſoft, pulpy fruit, which, if left, falls away, leaving many ſmall angular ſeeds in the empalement.

This genus of plants is ranged in the fifth ſection of Linnæus's twelfth claſs, which includes thoſe plants whoſe flowers have at leaſt twenty ſtamina and many ſtyles, which are inſerted to the empalement.

The Species are,

1. Fragaria (*Veſca*) foliis ovatis ſerratis, calycibus brevibus, fructu parvo. *Strawberry with oval ſawed leaves, ſhort empalements, and a ſmall fruit.* Fragaria vulgaris. C. B. P. 226. *The common or Wood Strawberry.*
2. Fragaria (*Virginiana*) foliis oblongo-ovatis ſerratis, infernè incanis, calycibus longioribus, fructu ſubrotundo. *Strawberry with oblong, oval, ſawed leaves, hoary on their under ſide, longer empalements, and a roundiſh fruit.* Fragaria Virginiana fructu Coccineo. Hiſt. Ox. 2. 186. *Virginia Strawberry with a ſcarlet fruit, commonly called the Scarlet Strawberry.*
3. Fragaria (*Muricata*) foliis ovato-lanceolatis rugoſis, fructu ovato. *Strawberry with oval, ſpear-ſhaped, rough leaves, and an oval fruit.* Fragaria fructu parvi pruni magnitudine. C. B. P. 327. *Strawberry with fruit as large as a ſmall Plumb, commonly called Hautboy Strawberry.*
4. Fragaria (*Chiloenſis*) foliis ovatis carnoſis hirſutis fructu maximo. *Strawberry with oval, fleſhy, hairy leaves, and a large fruit.* Fragaria Chiloenſis, fructu maximo foliis carnoſis hirſutis. Hort. Elth. 145. tab. 120. *Strawberry of Chili with a large fruit, and hairy fleſhy leaves, called Frutilla, in America.*

There are ſome other varieties of this fruit, which are now cultivated in England; but I have not ſeen any other which can be called a diſtinct ſpecies, than are here enumerated, and theſe, I think, may be allowed to be ſo, for they never alter from one to the other, by any cultivation, though the fruit is frequently improved, ſo as to be of a larger ſize thereby; therefore thoſe who have ſuppoſed them but one ſpecies, have greatly erred in ſo doing; I ſhall therefore mention the ſeveral varieties of Strawberry, which are

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at preſent to be found in the gardens under the ſpecies to which they naturally belong.

The firſt ſort is the common Wood Strawberry, which grows naturally in the woods in many parts of England, and is ſo well known as to need no deſcription; of this there are three varieties, 1. The common ſort with red fruit. 2. The white Wood Strawberry, which ripens a little later in the ſeaſon, and is by many perſons preferred to it for its quick flavour, but as it ſeldom produces ſo large crops of fruit as the red ſort, it is not very generally cultivated. 3. The green Strawberry, by ſome called the Pine Apple Strawberry, from its rich flavour. The fruit of this is greeniſh when ripe; it is very firm, and hath a very high flavour; this is a late ripe fruit, but unleſs it is planted in a moiſt loamy ſoil, it is a very bad bearer; but in ſuch land where it does ſucceed, it merits cultivation as much as any of the ſorts.

The Scarlet Strawberry is the ſort which is firſt ripe, for which reaſon it merits eſteem, had it nothing elſe to recommend it; but the fruit is ſo good, as by many perſons of good taſte to be preferred to moſt other ſorts. This was brought from Virginia, where it grows naturally in the woods, and is ſo different from the Wood Strawberry in leaf, flower, and fruit, that there need be no doubt of their being diſtinct ſpecies.

There is a variety of this which hath been of late years introduced from the northern parts of America, which has the appearance of a diſtinct ſpecies. The leaves of this are rounder, and not ſo deeply veined; the crenatures on their edges are broader and more obtuſe. The leaves which compoſe the empalement are much longer, and are hairy, and the fruit is larger; but as in other reſpects it approaches near to the Scarlet Strawberry, I have choſen to join it to that, rather than make a diſtinct ſpecies of it; this I have been informed grows naturally in Louiſiana.

There has alſo been another variety of this (if not a diſtinct ſpecies) lately introduced to our gardens, which is commonly known by the title of Alpine Strawberry; the plants of this greatly reſemble thoſe of the Scarlet Strawberry, but the fruit is more pointed; it is a well flavoured fruit, and continues bearing from the common ſeaſon of Strawberries, until the froſt in autumn puts a ſtop to it, which renders the ſort very valuable: I have frequently gathered the fruit in the beginning of November; this has occaſioned the Dutch gardeners titling it Everlaſting Strawberry.

The Hautboy Strawberry, which the French call Capitons, came originally from America, but it has been long cultivated in the Engliſh gardens, and is very different from the other ſorts in leaf, flower, and fruit, as that no one can doubt of their being different ſpecies; there is an improvement of this ſort, which is commonly called the Globe Hautboy. The fruit of this is larger, and of a globular form, but this difference has certainly ariſen from culture; for where theſe have been neglected a year or two, they have degenerated to the common Hautboy again; where the ground is proper for this plant, and their culture is well managed, the plants will produce great plenty of fruit, which will be large, and well flavoured, and by ſome perſons are preferred to all the other ſorts.

The Chili Strawberry was brought to Europe by Monſ. Frazier, an engineer, who was ſent to America by the late king of France, and was firſt planted in the Royal Garden at Paris, from whence it was communicated to ſeveral curious perſons in Holland, and in the year 1727, I brought a parcel of the plants to England, which were communicated to me by Mr. George Clifford, of Amſterdam, who had large beds of this ſort growing in his curious gardens at Hartecamp. The leaves of this ſort are hairy, oval, and of a much thicker ſubſtance than any ſort yet known, and ſtand upon very ſtrong hairy foot-ſtalks; the runners from the plants are very large, hairy, and extend to a great length, putting out plants at ſeveral diſtances. The foot-ſtalks which ſuſtain the flowers are very ſtrong; the leaves of the empalement are long and hairy. The flowers are large, and are often deformed; and ſo is the fruit, which is very large, and when cultivated in very ſtrong land, the plants produce plenty of fruit, which is firm, and very well flavoured; but as it is a bad bearer in moſt places where it has been cultivated, it has generally been neglected.

The Strawberries in general love a gentle hazelly loam, in which they will thrive and bear greater plenty of fruit than in a light rich ſoil. The ground ſhould alſo be moiſt, for if it is very dry, all the watering which is given to the plants in warm dry ſeaſons, will not be ſufficient to procure plenty of fruit; nor ſhould the ground be much dunged, for that will cauſe the plants to run into ſuckers, and grow luxuriant, and render them leſs fruitful.

The beſt time to remove theſe plants is in October, that they may get new roots before the hard froſt ſets in, which looſens the ground; ſo that if the roots of the plants are not pretty well eſtabliſhed in the ground, the plants are frequently turned out of the ground by the firſt thaw; therefore the ſooner they are planted when the autumnal rains begin, the better will their roots be eſtabliſhed, ſo there will be leſs danger of their miſcarrying, and ſometimes thoſe which are well rooted, will produce a few fruit the firſt year; there are ſome who tranſplant their plants in the ſpring; but where that is done, they muſt be duly ſupplied with water in the dry weather, otherwiſe they will not ſucceed.

The ground in which theſe are planted ſhould be thoroughly cleaned from the roots of Couch, and all other bad weeds; for as the Strawberry plants are to remain three years before they are taken up, ſo if any of the roots of thoſe bad weeds are left in the ground, they will have time to multiply ſo greatly as to fill the ground, and overbear the Strawberry plants. The ground ſhould alſo be well trenched and made level; then the uſual method is to lay it out into beds of four feet broad, with paths two feet or two feet and a half broad between each; theſe paths are neceſſary for the convenience of gathering the fruit, and for weeding and dreſſing of the beds, and alſo for watering the plants; after the beds are marked out, there ſhould be four lines drawn in each, at a foot diſtance, which will leave ſix inches ſpace on each ſide, between the outſide rows and the paths; then the plants ſhould be planted at about a foot diſtance from each other in the rows, in a quincunx order, being careful to cloſe the ground to the roots of the plants when they are planted; and if there ſhould not happen rain ſoon after, the plants ſhould be well watered to ſettle the earth to their roots.

The diſtance here mentioned for the plants to be placed muſt be underſtood for the Wood Strawberries only, for as the other ſorts grow much larger, their diſtances muſt be proportioned to their ſeveral growths; therefore the Scarlets and Hautboys ſhould have but three rows of plants in each bed, which ſhould be at fifteen inches diſtance, and the plants in the rows ſhould be allowed the ſame ſpace from each other, and the Chili Strawberry muſt have but two rows of plants in each bed, which ſhould alſo be two feet apart in the rows; for as theſe grow very ſtrong, if they have not room to ſpread, they will not be very fruitful.

In chuſing proper plants of any of the ſorts, depends the whole ſucceſs; for if they are promiſcuouſly taken from beds without care, great part of the plants will become barren; theſe are generally called blind, which is when there are plenty of flowers, but no fruit produced; if theſe flowers are well examined, they will be found to want the female organs of generation, moſt of them abounding with ſtamina, but there are few, if any ſtyles; ſo that it frequently happens among theſe barren plants, that ſome of them will have a part of an imperfect fruit formed, which

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will ſometimes ripen; this barrenneſs is not peculiar to Strawberries, but is general to all thoſe plants which have creeping roots, or ſtalks; and the more they increaſe from either, the ſooner they become barren, and this in ſome degree runs through the vegetable kingdom; for trees and ſhrubs which are propagated by cuttings, are generally barren of ſeeds in two generations, that is, when they are propagated by cuttings, which were taken from plants raiſed by cuttings; this I have conſtantly found to hold in great numbers of plants, and in fruit-trees it often happens, that thoſe ſorts which have been long propagated by grafts and buds, have no kernels. But to return to the choice of the Strawberry plants; theſe ſhould never be taken from old neglected beds, where the plants have been ſuffered to ſpread or run into a multitude of ſuckers, nor from any plants which are not very fruitful; and thoſe offsets which ſtand neareſt to the old plants, ſhould always be preferred to thoſe which are produced from the trailing ſtalks at a farther diſtance; and the Wood Strawberry is beſt when the plants are taken freſh from the woods, provided they are taken from fruitful plants, becauſe they are not ſo liable to ramble and ſpread, as thoſe which are taken from plants, which have been long cultivated in gardens; therefore thoſe who are curious in cultivating this fruit, ſhould be very careful in the choice of their plants.

When the plants have taken new root, the next care is if the winter prove ſevere, to lay ſome old tanners bark over the ſurface of the bed between the plants, to keep out the froſt: this care is abſolutely neceſſary to the Chili Strawberry, which is frequently killed in hard winters, where they are expoſed without any covering; therefore where tanners bark cannot eaſily be procured, ſaw-duſt, or ſea-coal aſhes may be uſed; or in want of theſe, if decayed leaves of trees, or the branches of Evergreen-trees with their leaves upon them, are laid over the beds, to prevent the froſt from penetrating deep into the ground, it will ſecure the plants from injury.

The following ſummer the plants ſhould be conſtantly kept clean from weeds, and all the runners ſhould be pulled off as faſt as they are produced; if this is conſtantly practiſed, the plants will become very ſtrong by the following autumn; whereas when this is neglected (as is too frequently ſeen) and all the runners permitted to ſtand during the ſummer ſeaſon, and then pulled off in the autumn, the plants will not be half ſo ſtrong as thoſe where that care has been taken; therefore there will not be near the ſame quantity of fruit upon them the following ſpring, nor will the fruit be near ſo large and fair; and where proper care is taken of the plants the firſt ſummer, there is generally a plentiful crop of fruit the ſecond ſpring; whereas when this is neglected, the crop will be thin and the fruit ſmall.

As this fruit is very common, there are but few perſons who cultivate it with proper care; therefore I ſhall give ſome directions for the doing of it, which, if carefully practiſed, will be attended with ſucceſs.

The old plants of Strawberries are thoſe which produce the fruit, for the ſuckers ſeldom produce any till they have grown a full year; therefore it appears how neceſſary it is to diveſt the old plants of them; for wherever they are ſuffered to remain, they rob the fruitful plants of their nouriſhment in proportion to their number; for each of theſe ſuckers ſend out a quantity of roots, which interfere, and are ſo cloſely matted together, as to draw away the greateſt part of the nouriſhment from the old roots, whereby they are greatly weakened; and theſe ſuckers alſo render each other very weak, ſo that from hence the cauſe of barrenneſs ariſes; for I have known where the old plants have been conſtantly kept clear from ſuckers, they have continued very fruitful four or five years without being tranſplanted; however, it is the beſt way to have a ſucceſſion of beds, that after three years ſtanding they may be taken up; becauſe by that time they will have exhauſted the ground of thoſe vegetable

ſalts, neceſſary for the nouriſhment of that ſpecies of plants; for it is always obſerved, that Strawberries planted on freſh land are the moſt fruitful.

The next thing to be obſerved, is in autumn to diveſt the plants of any ſtrings, or runners, which may have been produced, and alſo of all the decayed leaves, and the beds cleared from weeds; then the paths ſhould be dug up, and the weeds buried which were taken from the beds, and ſome earth laid over the ſurface of the beds between the plants; this will ſtrengthen the plants, and prepare them for the following ſpring; and if after this, there is ſome old tanners bark laid over the ſurface of the ground between the plants, it will be of great ſervice to them. In the ſpring, after the danger of hard froſt is over, the ground between the plants in the beds ſhould be forked with a narrow three-pronged fork, to looſen it, and break the clods; and in this operation, the tan which was laid over the ſurface of the ground in autumn will be buried, which will be a good dreſſing to the Strawberries, eſpecially in ſtrong land; then about the end of March, or the beginning of April, if the ſurface of the beds is covered with moſs, it will keep the ground moiſt, and prevent the drying winds from penetrating the ground, and thereby ſecure a good crop of fruit; and the moſs will preſerve the fruit clean, that when heavy rains may fall after the fruit is full grown, there will be no dirt waſhed over them, which frequently happens, ſo that the fruit muſt be waſhed before it is fit for the table, which greatly diminiſhes its flavour; therefore where this method is practiſed, the fruit may be had in perfection.

The ſoil in which the Chili Strawberry is found to ſucceed beſt, is a very ſtrong brick earth, approaching near to clay; in this ſoil I have ſeen them produce a tolerable good crop, and the fruit has been extremely well flavoured; and if ſome care be taken to pull off the runners as they are produced, ſo as to leave only the old plants, I make no doubt but theſe plants may be as fruitful as the common Hautboy: this I mention from one or two experiments, which have been made by my direction, and not from theory.

There are ſome perſons who are ſo fond of Strawberries, as to be at any expence to obtain them early in the year, and to continue them as late in the ſeaſon as poſſible; and ſhould I omit to give ſome directions for both theſe managements, they would ſuppoſe the book very defective; therefore I ſhall mention the practice of ſome few, who have ſucceeded beſt in the management of theſe fruits; I ſhall begin with directions for obtaining theſe fruits early in the ſpring.

Where there are any hot walls erected in gardens for the producing early fruit, it is very common to ſee Strawberries planted in the borders, that the fire which is applied for ripening the fruit againſt the walls, may alſo ſerve the purpoſe of bringing forward the Strawberries; but where this is practiſed, the Strawberry plants ſhould be annually renewed, taking up the plants as ſoon as their fruit is over, and all the earth of the borders ſhould be taken out, at leaſt two feet deep, and freſh earth brought in, which will be equally good for the wall trees; but, as was before obſerved, that the old plants of Strawberries only are thoſe which produce the fruit, there ſhould be a ſufficient number of plants brought up in pots, to ſupply the border annually; and the ſame muſt be done if they are to be raiſed in a common hot-bed, or in ſtoves; therefore I ſhall begin with giving directions for raiſing and preparing plants for thoſe purpoſes.

The ſorts which are the moſt proper for forcing early, are the Scarlet, the Alpine, and the Wood Strawberries, for the Hautboy grows too large for this purpoſe.

In the choice of the plants, there ſhould be an eſpecial care taken to have them from the moſt fruitful plants, and thoſe which grow immediately to the old plants; they ſhould be taken off in autumn, and each planted in a ſeparate ſmall pot filled with loamy ſoil, and placed in a ſhady ſituation till they have taken root; after which they may be removed to an open ſituation, where they may remain till the middle or

end of November, when the pots ſhould be plunged into the ground up to their rims, to prevent the froſt from penetrating through the ſide of the pots; if theſe are placed near a wall, pale, or hedge, expoſed to an eaſt aſpect, or north-eaſt, they will ſucceed better than in a warm ſituation, becauſe they will not be forced too forward; the only care they require, is to ſecure them from being turned out of the pots after froſt. The ſpring following the plants will be ſo far advanced as to have filled the pots with their roots by the end of April, when they ſhould be turned out of the pots, and their roots pared; then planted into penny pots filled with the like loamy ſoil, and plunged into the ground in a ſhady ſituation, where they ſhould remain the following ſummer; during which time they muſt be duly kept clean from weeds, and all the runners muſt be taken off as faſt as they are produced; likewiſe if there ſhould be any flowers come out, they ſhould alſo be pinched off, and not ſuffered to bear fruit, which would weaken the plants, for there cannot be too much care taken to have the plants as ſtrong as poſſible, that they may produce plenty of fruit, without which they are not worth the trouble of forcing.

About the middle of October, or earlier, if the autumn proves cold, the pots ſhould be removed into a warmer ſituation, to prepare them for forcing; for they ſhould not be ſuddenly removed from a very cold ſituation immediately into the ſtove or hot-bed, but be gradually prepared for it; but where they are deſigned for the borders near a hot wall, they may then be turned out of the pots, and planted into the borders, that they may have time to get freſh rooting, before the fires are made to heat the walls; when theſe are planted, they may be placed very cloſe to each other; for as they are deſigned to remain there no longer than till they have ripened their fruit, they will not require much room, as their roots will find ſufficient nouriſhment below, and alſo from the earth which is filled into the ſpaces between the balls of earth, about their roots; and it is of conſequence to get as much fruit as poſſible in a ſmall ſpace, where there is an expence to force them early. If the fires are lighted about Chriſtmas, the Strawberries in theſe borders will be ripe the end of March; or if the ſeaſon ſhould prove very cold, it may be the middle of April before they will be fit for the table.

In the management of the plants there muſt be care taken to ſupply them with water when they begin to ſhew their flowers, otherwiſe they will fall off without producing any fruit; and, in mild weather, there ſhould be freſh air admitted to them every day; but as fruit-trees againſt the wall muſt be ſo treated, the ſame management will agree with the Strawberries.

If the Strawberries are intended to be forced in a ſtove, where there are Pine-apples, and no room to plunge them in the tan-bed, then the plants ſhould be tranſplanted into larger pots in September, that they may be well rooted before they are removed into the ſtove, which ſhould not be till December; but if they are placed under a frame the beginning of November, where they may be ſcreened from the froſt, it will prepare the plants better for forcing; and thoſe who are deſirous to have them very early, make a hot-bed under frames, upon which they place their plants the latter end of October, which will bring them forward to flower, and then they remove the plants into the ſtove; when theſe plants are removed into the ſtove, they ſhould be placed as near to the glaſſes as poſſible, that they may enjoy the full ſun and air; for when they are placed backward, the plants will draw up weak, and the flowers will drop without producing fruit. As the earth in the pots will dry pretty faſt when they ſtand dry upon the pavement of the hot-houſe, or on ſhelves, ſo the plants muſt be duly watered; but it muſt be done with diſcretion, and not too much given to them, which will be equally hurtful to them; if theſe plants are properly managed, they will produce ripe fruit in February, which is as early as moſt people will chuſe to eat them. When the fruit is all gathered from the plants, they ſhould be turned out of the ſtove; for as they will be of no farther ſervice, they ſhould not remain to take up the room; nor ſhould thoſe plants which are planted in the borders near the hot walls be left there after their fruit is gathered, but immediately taken up, that they may rob the fruit-trees of their nouriſhment as little as poſſible.

Where there is no conveniency of ſtoves, or hot-walls for this purpoſe, the fruit may be ripened upon common hot-beds; and though they may not be quite ſo early as with the other advantages, yet I have ſeen great crops of the fruit ripe in April, which were upon common hot-beds under frames, and executed at a ſmall expence in the following manner.

The plants were prepared in pots after the manner before directed, which were placed in a warm ſituation in the beginning of October, and about Chriſtmas the hot-bed was made in the ſame manner as for Cucumbers, but not ſo ſtrong; and as ſoon as the firſt violent ſteam of the dung was over, ſome old rotten dung laid over the hot-bed to keep down the heat, or where it can be eaſily procured, neats dung is preferable for this purpoſe; then the plants ſhould be turned out of the pots, and placed upon the bed as cloſe together as poſſible, filling up the interſtices between the plants with earth; afterward the plants muſt have air admitted to them every day; and if the heat of the bed is too great, the plants ſhould be raiſed up, to prevent their roots being ſcorched; and if the bed is too cold, the ſides of it ſhould be lined with ſome hot dung: this firſt bed will bring the plants to flower by the latter end of February, or the beginning of March, by which time the heat of the bed will be ſpent, therefore another hot-bed ſhould be prepared to receive the plants, which need not be ſo ſtrong as the firſt; but upon the hot dung ſhould be laid ſome neats dung about two inches thick, which ſhould be equally ſpread and ſmoothed; this will prevent the heat of the bed from injuring the roots of the plants, upon this ſhould be laid two inches of a loamy ſoil; when this has laid two days to warm, the plants ſhould be taken out of the firſt hot-bed, and turned carefully out of the pots, preſerving all the earth to their roots, and placed cloſe together upon this new hot-bed, filling up the vacuities between the balls with loamy earth: the roots of the plants will ſoon ſtrike out into this freſh earth, which will ſtrengthen their flowers, and cauſe their fruit to ſet in plenty; and if proper care is taken to admit freſh air to the plants, and ſupply them properly with water, they will have plenty of ripe fruit in April, which will be full two months before their natural ſeaſon.

The methods practiſed to retard this fruit, is firſt by planting them in the coldeſt part of the garden, where they may be as much in ſhade as poſſible, and the ſoil ſhould be ſtrong and cold; when there are ſuch places in a garden, the fruit will be near a month later than in a warm ſituation; the next is to cut off all the flowers when they firſt appear, and if the ſeaſon proves dry, to water them plentifully, which will cauſe them to put out a freſh crop of flowers; and if they are ſupplied with water, there will be a late crop of fruit, but theſe are not ſo well flavoured as thoſe which ripen in their natural ſeaſon.

But ſince the Alpine Strawberry has been introduced in the Engliſh gardens, there is little occaſion for practiſing this method of retarding the fruit; becauſe this ſort will ſupply the table the whole ſummer, eſpecially if care is taken to pull off the runners; and in dry ſeaſons to water the plants, without which the bloſſoms will fall off, without producing fruit.

There are ſome perſons ſo curious as to raiſe the plants from ſeeds, by which they have greatly improved ſome of the ſorts; and if this was more practiſed, I am certain it would be found of ſingular ſervice, where the faireſt of the fruit of each kind are choſen. The ſeeds ſhould be immediately ſown when the fruit is eaten; the beſt way is to ſow the ſeeds in pots, placing them in the ſhade.

In the ſpring of the year 1724, there was ſcarce any rain from February till about the middle of July, ſo that moſt of the Strawberries and Raſpberries in the gardens near London, were burnt up, and came to no perfection; but upon plenty of rain falling in July, they recovered and put out plenty of flowers, which were ſucceeded by fruit, which ripened in September, when the markets of London were ſupplied with a great plenty of both thoſe fruits at that ſeaſon of the year.

FRANGULA. Tourn. Inſt. R. H. 612. tab. 383. Rhamnus. Lin. Gen. Plant. 235. [is ſo called of frangendo, breaking, becauſe of the brittleneſs of its wood.] Berry-bearing Alder.

The CHARACTERS are,

The empalement of the flower is of one leaf, cut at the top into five ſegments, which are erect. The flower hath one petal, which is cut into five acute ſegments; theſe are placed between the ſegments of the empalement, into which they are inſerted, but are ſhorter, and ſtand erect. It hath five ſtamina, which are the length of the petal, terminated by obtuſe ſummits; in the center is ſituated a globular germen, ſupporting a ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a round berry, incloſing two plain roundiſh ſeeds.

This genus of plants is ranged in the ſecond ſection of Tournefort's, twenty-firſt claſs, which includes the trees and ſhrubs with a Roſe flower, whoſe pointal turns to a berry. Dr. Linnæus has joined this genus with the Paliurus, Alaternus, and Ziziphus, to the Rhamnus, making them only ſpecies of one genus; but according to his own ſyſtem, they ſhould be ſeparated to a great diſtance from Rhamnus, and be placed in his twenty-ſecond claſs, becauſe it hath male and female flowers on different plants; whereas it is placed in the firſt ſection of his fifth claſs, from the flower having five ſtamina and but one ſtyle.

The SPECIES are,

1. FRANGULA (*Alnus*) foliis ovato-lanceolatis glabris. *Frangula with oval, ſpear-ſhaped, ſmooth leaves.* Frangula, ſive alnus, nigra baccifera. Park. Theat. Black Berry-bearing Alder.
2. FRANGULA (*Latifolia*) foliis lanceolatis rugoſis. *Frangula with rough ſpear-ſhaped leaves.* Frangula rugoſiore & ampliore folio. Tourn. Berry-bearing Alder with a larger and rougher leaf.
3. FRANGULA (*Rotundifolia*) foliis ovatis nervoſis. *Frangula with oval veined leaves.* Frangula montana pumila ſaxatilis, folio ſubrotundo. Tourn. Low mountain, rocky, berry-bearing Alder, with a round leaf.
4. FRANGULA (*Americana*) foliis oblongo-ovatis nervoſis, glabris. *Frangula with oblong, oval, ſmooth veined leaves.* Frangula Americana foliis glabris. Dale. *American Berry-bearing Alder with ſmooth leaves.*

The firſt ſort grows naturally in the woods in many parts of England, ſo is ſeldom planted in gardens; this riſes with a woody ſtem to the height of ten or twelve feet, ſending out many irregular branches, which are covered with a dark bark, and garniſhed with oval ſpear-ſhaped leaves, about two inches long, and one inch broad, having ſeveral tranſverſe veins from the midrib to the ſides, and ſtand upon ſhort foot-ſtalks. The flowers are produced in cluſters at the end of the former year's ſhoots, and alſo upon the firſt and ſecond joints of the ſame year's ſhoot, each ſtanding upon a ſhort ſeparate foot-ſtalk, on every ſide the branches; theſe are very ſmall, of an herbaceous colour, and do not expand; they are ſucceeded by ſmall round berries, which turn firſt red, but afterward black when ripe. The flowers appear in June, and the berries ripen in September; this ſtands in the Diſpenſary as a medicinal plant, but is ſeldom uſed.

The ſecond ſort hath larger rough leaves than the firſt. It grows naturally on the Alps and other mountainous parts of Europe, and is preſerved in ſome gardens for the ſake of variety.

The third ſort is of humble growth, ſeldom riſing above two feet high; this grows on the Pyrenean Mountains, and is ſeldom preſerved unleſs in botanic gardens for variety; it may be increaſed by laying down the branches, but muſt have a ſtrong ſoil.

The fourth ſort grows naturally in North America, from whence I received the ſeeds; this is pretty like the firſt ſort, but the leaves are longer and broader; they are ſmooth, of a lucid green, and have many veins. The flowers are very like thoſe of the firſt ſort.

Theſe ſhrubs are eaſily propagated by ſeeds, which ſhould be ſown as ſoon as they are ripe, and then the plants will come up the ſpring following; but if they are kept out of the ground till ſpring, the plants will not come up till the year after. When the plants come up, they muſt be kept clean from weeds till autumn, then they may be taken up and planted in a nurſery in rows, two feet aſunder, and at one foot diſtance in the rows; in this nurſery they may remain two years, and may then be planted where they are to remain; they may alſo be propapated by layers and cuttings, but the ſeedling plants are beſt.

The fruit of the firſt ſort is often brought into the markets of London, and ſold for Buckthorn berries; of which cheat, all ſuch as make ſyrup of Buckthorn ſhould be particularly careful; they may be eaſily diſtinguiſhed by breaking the berries, and obſerving how many ſeeds are contained in each, the berries of this tree having but two, and thoſe of Buckthorn generally four ſeeds in each berry, and the juice of the latter dies paper of a green colour.

FRAXINELLA. See DICTAMNUS.

FRAXINUS. Lin. Gen. Plant. 1026. Tourn. Inſt. R. H. 577. tab. 343. The Aſh-tree; in French, *Frêne.*

The CHARACTERS are,

It hath hermaphrodite and female flowers on the ſame tree, and ſometimes on different trees. The hermaphrodite flowers have no petals, but a ſmall four-pointed empalement, including two erect ſtamina, which are terminated by oblong ſummits, having four furrows. In the center is ſituated an oval compreſſed germen, ſupporting a cylindrical ſtyle, crowned by a bifid ſtigma. The germen afterward becomes a compreſſed bordered fruit, ſhaped like a bird's tongue, having one cell, incloſing a ſeed of the ſame form. The female flowers are the ſame, but have no ſtamina.

This genus of plants is ranged in the ſecond ſection of Linnæus's twenty-third claſs, which includes the plants which have flowers of different ſexes on the ſame or different plants, which are fruitful.

The SPECIES are,

1. FRAXINUS (*Excelſior*) foliolis ſerratis, floribus apetalis. Lin. Sp. Plant. 1057. *Aſh-tree whoſe ſmaller leaves are ſerrated, and flowers having no petals.* Fraxinus excelſior. C. B. P. 416. *The common Aſh.*
2. FRAXINUS (*Rotundifolia*) foliolis ovato-lanceolatis ſerratis, floribus coloratis. *Aſh-tree whoſe ſmaller leaves are oval, ſpear-ſhaped, and ſawed, and the flowers coloured.* Fraxinus rotundiore folio. C. B. P. 416. *Aſh-tree with a rounder leaf, commonly called Manna Aſh.*
3. FRAXINUS (*Ornus*) foliolis ſerratis, floribus coloratis. Lin. Sp. Plant. 1057. *Aſh-tree whoſe ſmaller leaves are ſawed, and flowers having petals.* Fraxinus humilior ſive altera Theophraſti, minore & tenuiore folio. C. B. P. 416. *Dwarf Aſh of Theophraſtus with ſmaller and narrower leaves.*
4. FRAXINUS (*Paniculata*) foliolis lanceolatis glabris, floribus paniculatis terminatricibus. *Aſh-tree with ſmooth ſpear-ſhaped leaves, and flowers growing in panicles at the ends of the branches.* Fraxinus florifera botryoides. Mor. Præl. 265. *The flowering Aſh.*
5. FRAXINUS (*Nova Anglia*) foliolis integerrimis, petiolis teretibus. Flor. Virg. 122. *Aſh-tree with the ſmall leaves entire, and taper foot-ſtalks.* Fraxinus ex Novâ Angliâ, pinnis foliorum in mucronem productioribus. Rand. Cat. Hort. Chelſ. *New England Aſh with long acute points to the wings of the leaves.*
6. FRAXINUS (*Caroliniana*) integerrimis petiolis terretibus fructu latiore. Prod. Leyd. 533. *Aſh-tree with entire leaves and taper foot-ſtalks.* Fraxinus Caroliniana, latiore fructu. Rand. Cat. H. Chelſ. *Carolina Aſh with a broad fruit.*

The

The firſt ſort is the common Aſh-tree, which grows naturally in moſt parts of England, and is ſo well known as to need no deſcription. The leaves of this ſort have generally five pair of lobes, and are terminated by an odd one; they are of a very dark green, and their edges are ſlightly ſawed. The flowers are produced in looſe ſpikes from the ſide of the branches, which are ſucceeded by flat ſeeds, which ripen in autumn; there is a variety of this with variegated leaves, which is preſerved in ſome gardens.

The ſecond ſort grows naturally in Calabria, and is generally ſuppoſed to be the tree from whence the manna is collected, which is an exſudation from the leaves of the tree. The ſhoots of this tree are much ſhorter, and the joints cloſer together than thoſe of the firſt ſort; the ſmall leaves are ſhorter, and deeper ſawed on their edges, and are of a lighter green. The flowers come out from the ſide of the branches, which are of a purple colour, and appear in the ſpring before the leaves come out. This tree is of humble growth, ſeldom riſing more than fifteen or ſixteen feet high in England.

The third ſort is a low tree, which riſes about the ſame height as the ſecond; the leaves of this ſort are much ſmaller and narrower than thoſe of the firſt, but are ſawed on their edges, and are of the ſame dark colour. The flowers of this ſort have petals, which are wanting in the common Aſh.

The fourth ſort was raiſed by the late Dr. Uvedale at Enfield, from ſeeds which were brought from Italy by Dr. William Sherard, where the trees grow naturally; but it was ſuppoſed to be a different ſort from that mentioned by Dr. Morriſon, in his Præludia Botanica, but by comparing them together they appear to be the ſame.

The leaves of this ſort have but three or four pair of lobes (or ſmall leaves) which are ſhort, broad, and ſmooth, of a luçid green, and irregularly ſawed on the edges; the midrib of the great leaf is jointed, and ſwelling where the leaves come out. The flowers grow in looſe panicles at the end of the branches; theſe are moſt of them male, having two ſtamina in each, but no germen or ſtyle; they are of a white herbaceous colour, and appear in May. As this ſort very rarely produces ſeeds in England, it is propagated by grafting or budding it upon the common Aſh.

The fifth ſort was raiſed from ſeeds, which were ſent from New England in the year 1724, by Mr. Moore. The leaves of this tree have but three, or at moſt but four pair of lobes (or ſmall leaves) which are placed far diſtant from each other, and are terminated by an odd lobe, which runs out into a very long point; they are of a light green and entire, having no ſerratures on their edges: this tree ſhoots into ſtrong irregular branches, but doth not grow to a large ſize in the trunk. It is propagated by grafting it upon the common Aſh.

The ſixth ſort was raiſed from ſeeds which were ſent from Carolina in the year 1724, by Mr. Cateſby. The leaves of this ſort hath ſeldom more than three pair of lobes, the lower being the leaſt, and the upper the largeſt; theſe are about five inches long and two broad, of a light green colour, and ſlightly ſawed on their edges; the foot-ſtalk, or rather the midrib, of the leaves is taper, and has ſhort downy hairs; the ſeeds are broader than thoſe of the common Aſh, and are of a very light colour. As this ſort hath not yet produced ſeeds in England, it is propagated by grafting it upon the common Aſh.

Theſe trees are now propagated in plenty in the nurſeries for ſale, as there has been of late years a great demand for all the hardy ſorts of trees and ſhrubs, which will live in the open air; but all thoſe trees which are grafted upon the common Aſh, are not ſo valuable as thoſe which are raiſed from ſeeds, becauſe the ſtock grows much faſter than the grafts; ſo that the lower part of the trunk, ſo far as the ſtock riſes, will often be twice the ſize of the upper; and if the trees ſtand much expoſed to the wind, the grafts are frequently broken off to the ſtock, after they are grown to a large ſize, which is a great diſappointment to a perſon after having waited ſeveral years, to ſee their trees ſuddenly deſtroyed. Beſide, if the wood of either of the ſorts is valuable, it can be of little uſe when the trees are ſo raiſed.

The fourth ſort is generally planted for ornament, the flowers making a fine appearance when they are in beauty, for almoſt every branch is terminated by a large looſe panicle; ſo that when the trees are large, and covered with flowers, they are diſtinguiſhable at a great diſtance.

All the other ſorts ſerve to make a variety in plantations, but have little beauty to recommend them; and as their wood ſeems to be greatly inferior to that of the common Aſh, ſo there ſhould be few of theſe planted, becauſe they will only fill up the ſpace where better trees might grow.

The common Aſh propagates itſelf in plenty by the ſeeds which ſcatter in the autumn, ſo that where the ſeeds happen to fall in places where cattle do not come, there will be plenty of the plants come up in the ſpring; but where any perſon is deſirous to raiſe a quantity of the trees, the ſeeds ſhould be ſown as ſoon as they are ripe, and then the plants will come up the following ſpring; but if the ſeeds are kept out of the ground till the ſpring, the plants will not come up till the year after, which is the ſame with all the ſorts of Aſh; that when any of their ſeeds are brought from abroad, as they ſeldom arrive here before the ſpring, the plants muſt not be expected to appear till the next year; therefore the ground ſhould be kept clean all the ſummer where they are ſown, and not diſturbed, leſt the ſeeds ſhould be turned out of the ground, or buried too deep to grow; for many perſons are too impatient to wait a year for the growth of ſeeds, ſo that if they do not come up the firſt year, they dig up the ground, and thereby deſtroy the ſeeds.

When the plants come up, they muſt be kept clean from weeds during the ſummer; and if they make good progreſs in the ſeed-bed, they will be fit to tranſplant by the autumn; therefore there ſhould be ſome ground prepared to receive them, and as ſoon as their leaves begin to fall, they may be tranſplanted. In taking them up, there ſhould be care taken not to break or tear off their roots; to prevent which, they ſhould be taken up with a ſpade, and not drawn up, as is frequently practiſed; for as many of the plants which riſe from ſeeds will out-ſtrip the others in their growth, ſo it is frequently practiſed, to draw up the largeſt plants, and leave the ſmaller to grow a year longer before they are tranſplanted; and to avoid hurting thoſe which are left, the others are drawn out by hand, and thereby many of their roots are torn off or broken; therefore it is much the better way to take all up, little or big together, and tranſplant them out, placing the larger ones together in rows, and the ſmaller by themſelves. The rows ſhould be three feet aſunder, and the plants a foot and a half diſtance in the rows; in this nurſery they may remain two years, by which time they will be ſtrong enough to plant where they are to remain; for the younger they are planted out, the larger they will grow; ſo that where they are deſigned to grow large, they ſhould be planted very young; and the ground where the plants are raiſed, ſhould not be better than that where they are deſigned to grow; for when the plants are raiſed in good land, and afterward tranſplanted into worſe, they very rarely thrive; ſo that it is much the beſt method to make the nurſery upon a part of the ſame land, where the trees are deſigned to be planted, and then a ſufficient number of trees may be left ſtanding upon the ground, and theſe will outſtrip thoſe which are removed, and will grow to a larger ſize.

Where people live in the neighbourhood of Aſh-trees, they may ſupply themſelves with plenty of ſelf-ſown plants, provided cattle are not ſuffered to graze on the land, for they will eat off the young plants, and not ſuffer them to grow; but where the ſeeds fall in hedges, or where they are protected by buſhes, the

plants will come up and thrive; and in theſe hedges the trees frequently are permitted to grow till they have deſtroyed the hedge, for there is ſcarce any tree ſo hurtful to all kinds of vegetables as the Aſh, which robs every plant of its nouriſhment within the reach of its roots, therefore ſhould never be ſuffered to grow in hedge rows; for they not only kill the hedge, but impoveriſh Corn, or whatſoever is ſown near them. Nor ſhould Aſh-trees be permitted to grow near paſture grounds, for if any of the cows eat of the leaves or ſhoots of the Aſh, all the butter which is made of their milk will be rank and of no value; which is always the quality of the butter which is made about Guildford, Godalmin, and ſome other parts of Surry, where there are Aſh-trees growing about all their paſtures, ſo that it is very rare to meet with any butter in thoſe places which is fit to eat; but in all the good dairy countries, they never ſuffer an Aſh-tree to grow.

If a wood of theſe trees is rightly managed, it will turn greatly to the advantage of its owner; for by the under-wood, which will be fit to cut every ſeven or eight years, for poles or hoops, there will be a continual income more than ſufficient to pay the rent of the ground, and all other charges; and ſtill there will be a ſtock preſerved for timber, which in a few years will be worth forty or fifty ſhillings per tree.

This timber is of excellent uſe to the wheelwright and cartwright, for ploughs, axle-trees, wheel-rings, harrows, bulls, oars, blocks for pullies, and many other purpoſes.

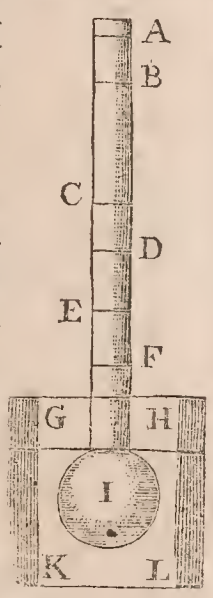
The beſt ſeaſon for felling of theſe trees is from November to February; for if it be done either too early in autumn, or too late in the ſpring, the timber will be ſubject to be infeſted with worms, and other inſects; but for lopping pollards, the ſpring is preferable for all ſoft woods.

FREEZING is the fixing of a fluid, or the depriving it of its natural mobility by the action of cold; or it is the act of converting a fluid ſubſtance into a firm, coherent, rigid one, called ice.

The principal phænomena of freezing are,

1ſt, That Water being dilated or rarefied, and all fluids, oil excepted, i. e. in freezing, take up more ſpace, and are ſpecifically lighter than they were before. That the bulk and dimenſions of water are increaſed by freezing, is found by many experiments, and it may not be improper here to take notice of the proceſs of nature.

A glaſs veſſel then, I A, full of water to A, being immerged in a veſſel of water mixed with ſalt G H K L, the water preſently riſes from D to C; which ſeems owing to the ſudden conſtriction of the veſſel, haſtily plunged into ſo cold a medium: ſoon after, from the point C, it continually deſcends condenſing, till it arrives at the point F; where, for ſome time, it ſeems to remain at reſt: but it ſoon recovers itſelf, and begins to expand, riſing from F to E, and from thence ſoon after, by one violent leap, mounts to B; and here the water in I is immediately ſeen all thick and cloudy, and, in the very inſtant of this leap, is converted into ice. Add, that while the ice is growing harder, and ſome of the water near the neck of the veſſel I is freezing, the flux of the water is continued above B towards A, and at length runs out at the veſſel.



2dly, That they loſe not only of the ſpecific, but alſo of their abſolute gravity, by freezing; ſo that when they are thawed again, they are found conſiderably lighter than before.

3dly, That frozen water is not quite ſo tranſparent as when it was liquid, and that bodies do not perſpire ſo freely through it.

4thly, That water, when frozen, evaporates almoſt as much as when fluid.

5thly, That water does not freeze in vacuo, but requires the preſence and contiguity of air.

6thly, That water which has been boiled, does not freeze ſo readily as that which has not.

7thly, That water, being covered over with a ſurface of oil of Olives, does not freeze ſo readily as it does without it; and that nut oil abſolutely preſerves it under a ſtrong froſt, when Olive oil will not.

8thly, That ſpirit of wine, nut oil, and oil of turpentine, do not freeze at all.

9thly, That the ſurface of the water, in freezing, appears all wrinkled; the wrinkles being ſometimes in parallel lines, and ſometimes like rays proceeding from a center to the circumference.

The theories of freezing, or the method of accounting for theſe phænomena, are very many.

The chief principles that different authors have gone upon, are, either that ſome foreign matter is introduced within the pores of the fluid, by means of which it is fixed, its bulk increaſed, &c.

Or that ſome matter which was naturally contained in the fluid is now expelled, by reaſon of the abſence of which, the body becomes fixed.

Or that there is ſome alteration produced in the texture or form, either of the particles of the fluid itſelf, or of ſomething that is contained within it.

To ſome one of theſe principles all the ſyſtems of freezing are reducible.

The Carteſians explicate freezing by the receſs or going out of the ethereal matter from the pores of the water, or other liquor; which being once done, the finer parts are too ſmall and flexible to keep the long, ſlender, and eel-like particles of water fluent, or in the form of a liquor.

But the Corpuſcularians, or Gaſſendiſts, aſcribe the freezing of water, with more probability, to the ingreſs of multitudes of cold or frigorific particles, as they call them; which, entering the liquor in ſwarms, and diſperſing themſelves every way through it, croud into the pores of the water, and hinder the wonted agitation of its parts, and wedge it up, as it were, into the hard or conſiſtent body of ice; and from hence proceeds its increaſe of dimenſions, coldneſs, &c.

That ice is ſpecifically lighter than the water out of which it is by freezing made, is certain by its ſwimming in it; and that this lightneſs of ice proceeds from thoſe numerous bubbles which are produced in it by its congelation, is equally plain; but how thoſe bubbles come to be generated in freezing, and what ſubſtance they contain in them, if they are not quite empty, is an inquiry of great importance; and, perhaps, if diſcovered, may contribute much to the underſtanding the nature of cold.

Mr. Hobbes will have it common air, which, intruding into the water in congelation, entangles itſelf with the particles of the fluid, prevents their motion, and produces thoſe numerous bubbles, thus expanding its bulk, and rendering it ſpecifically lighter.

But, in anſwer to this, no ſuch ingreſs of air into water appears in its coagulation; and that it does not get into frozen oil is plain, becauſe that body is condenſed by being frozen.

And Mr. Boyle has alſo ſhewn, by undoubted experiments, that water will freeze in veſſels hermetically ſealed; and in braſs bodies or veſſels cloſely ſtopped, and into which the air can have no ingreſs, hath yet been turned into ice, abounding with theſe bubbles as numerous as thoſe frozen in the open air.

He alſo has proved by experiment, that water kept a while in the exhauſted receiver, till all its bubbles were emerged and gone, being afterwards turned into ice by a freezing mixture, the ice had ſcarce any bubbles in it; whence it is plain, that theſe bubbles are filled with ſome matter which is within the water, if they are filled with any thing. But he proves alſo, by plain experiments, that they have none, or exceedingly little, true elaſtic air contained in them.

Others, and thoſe of the greateſt number, are of opinion, that the freezing matter is a ſalt; and they argue that an exceſs of cold will render water torpid, but never congeal it without ſalt: they ſay that thoſe

particles that are the chief cauſe of freezing are ſaline, mixed in a due proportion, congelation bearing a near relation to cryſtallization.

This ſalt is ſuppoſed to be of the nitrous kind, and to be furniſhed by the air, which is generally found to abound in nitre.

It is indeed no difficult matter, to account for the particles of nitre preventing the fluidity of water. Theſe particles are ſuppoſed to be ſo many rigid pointed ſpicula, which are eaſily impelled or driven into the ſtamina or globules of water; which, by this means, becoming variouſly mingled and entangled with it, do, by degrees, weaken and deſtroy the motion of it.

The reaſon that this effect ariſes only in ſevere winter weather, is, that it is then only that the retracting action of the nitrous ſpicula is more than equal to the power or principle by which the fluid is otherwiſe kept in motion, or diſpoſed for motion.

Several experiments of artificial freezing ſupport this opinion.

For if you mix a quantity of common ſaltpetre with ſnow, or ice pulverized, and diſſolve the mixture in the fire, and then immerge a tube full of water in the ſolution; the water, that part of it next the mixture, will freeze preſently, even in a warm air.

Whence they argue, that the ſpicula of the ſalt are driven through the pores of the glaſs, and mixed with the water, by the gravity of the mixture, and of the incumbent air; for that it is evident, that the ſalt has this effect, inaſmuch as it is certainly known, that the particles of water cannot find their way through the pores of the glaſs.

In theſe artificial freezings, in whatever part the mixture is applied, there is preſently a ſkin or lamina of ice produced, whether at the top, bottom, or ſides, by reaſon that there is always a ſtock of ſaline corpuſcles, ſufficient to overpower the particles of fire; but natural congelations are confined to the top of the water, where the laſt moſt abounds.

But this ſyſtem is oppoſed by the author of the Nouvelle Conjecture pour expliquer la Nature de la Glace, who objects, that it does not appear, that the nitre always enters the compoſition of ice; but if it did, it would fall ſhort of accounting for ſome of the principal effects; as,

How ſhould the particles of nitre, by entering the pores of the water, and fixing the parts, cauſe the water to dilate, and render it ſpecifically lighter? They ſhould naturally augment its weight.

This and ſome other difficulties, ſhew the neceſſity of a new theory; and therefore the ingenious author advances this which follows, which ſeems to ſolve the phænomena in a manner that is more eaſy and ſimple, as not depending upon the admiſſion or extruſion of any heterogeneous matter.

The water freezes in the winter only, becauſe its parts, then being more cloſely joined together, mutually embarraſs one another, and loſe all the motion they had; and that the air, or rather an alteration in the ſpring and force of the air, is the cauſe of this cloſer union of water.

It is evident from experiment, that there are an infinite number of particles of groſs air interſperſed among the globules of water; and it is allowed, that each particle of air has the virtue of a ſpring; and hence this author argues, that the ſmall ſprings of groſs air, mixed with water, have more force in cold winter weather, and do then unbend themſelves more, than at other times. Hence thoſe ſprings thus unbending themſelves on one ſide, and the external air continuing to preſs the ſurface of the water on the other, the particles of the water, being thus conſtringed and locked up together, muſt loſe their motion and fluidity, and form a hard, conſiſtent body, till a relaxation of the ſpring of the air, from an increaſe of heat, reduce the particles to their old dimenſions, and leave room for the globules to flow again.

But this ſyſtem ſeems to be built upon a falſe principle, for the ſpring or elaſticity of the air is not increaſed by cold, but diminiſhed; air condenſes by cold, and expands itſelf by heat; and it is demonſtrable in pneumatics, that the elaſtic force of expanded air is to that of the ſame air condenſed, as the bulk when rarefied is to its bulk when condenſed.

Indeed, ſome authors, in order to account for the increaſe of the bulk and dimenſion of the ſpecific gravity of frozen water, have advanced as follows, viz. That the aqueous particles, in their natural ſtate, were nearly cubes, and ſo filled their ſpace without the interpoſition of many pores; but that they are changed from cubes to ſpheres, by congelation; from whence it will neceſſarily follow, that there muſt be a great deal of empty ſpace between them.

But, in oppoſition to this hypotheſis, the nature of fluidity and firmneſs eaſily ſuggeſts, that ſpherical particles are much properer to conſtitute a fluid than cubical ones, and leſs diſpoſed to form a fixed than cubic one.

But after all, in order to come to a conſiſtent theory of freezing, we muſt either have recourſe to the frigorific matter of the Corpuſcularians, conſidered under the new light and advantages of the Newtonian philoſophy, or to the ethereal matter of the Carteſians, under the improvements of Monſ. Gauteron.

The true cauſe of freezing, or the congelation of water into ice, ſay the former, ſeems plainly to be the introduction of the frigorific particles into the pores or interſtices between the particles of the water, and by that means getting ſo near them, as to be juſt within the ſpheres of one another's attracting force, and then they muſt cohere into one ſolid or firm body; but heat afterwards ſeparating them, and putting them into various motions, breaks this union, and ſeparates the particles ſo far from one another, that they get out of the diſtance of the attracting force, and into the verge of the repelling force, and then the water re-aſſumes its fluid form.

Now, that cold and freezing proceed from ſome ſubſtance of a ſaline nature floating in the air, ſeems probable from hence:

That all ſalts, and more eminently ſome particular ones, do prodigiouſly increaſe the force and effects of cold, when mixed with ſnow or ice. It is alſo evident, that all ſaline bodies produce a ſtiffneſs and rigidity in the parts of thoſe bodies into which they enter.

It appears, by microſcopical obſervations upon ſalts, that the figure of ſome ſalts, before they ſhoot into maſſes, are thin, double wedged, like particles which have abundance of ſurface, in reſpect to their ſolidity; and is the reaſon why they ſwim in water, when once raiſed in it, though ſpecifically heavier.

Theſe ſmall points, getting into the pores of the water, whereby they are alſo, in ſome meaſure, ſuſpended in the winter time, when the heat of the ſun is not ordinarily ſtrong enough to diſſolve the ſalts into a fluid, to break their points, and to keep them in perpetual motion, being leſs diſturbed, are at more liberty to approach one another; and, by ſhooting into cryſtals of the form above-mentioned, do, by both their extremities, inſinuate themſelves into the pores of the water, and by that means freeze it into a ſolid form. And it is apparent, that the dimenſions of water are increaſed by freezing, the particles of it being kept at ſome diſtance from one another, by the intervention of the frigorific matter.

But beſides this, there are many little volumes, or ſmall particles of air, included at ſeveral diſtances, both in the pores of the watery particles, and in the interſtices formed by their ſpherical figure. Now, by the inſinuation of the cryſtals, the volumes of air are driven out of the watery particles, and many of them uniting, form larger volumes, which thereby have a greater force to expand themſelves than when they are diſperſed; and ſo both enlarge the dimenſions, and leſſen the ſpecific gravity of water thus congealed into ice.

And hence (ſays Dr. Cheyne, from whom this laſt account is taken) we may gueſs at the manner how water,

ter, impregnated with ſalts, ſulphurs, or earths, which are not eaſily diſſolvable, may form itſelf into metals, minerals, gums, and other foſſils; the parts of theſe mixtures becoming a cement to the particles of water, or getting into their pores, change them into theſe different ſubſtances.

For the ſecond: as an ethereal matter or medium is generally allowed to be the cauſe of the motion of fluids, and as the air itſelf has all its motion from the ſame principle, it follows, that all fluids muſt remain in a ſtate of reſt or fixity, when that matter loſes of its neceſſary force. And conſequently, the air being leſs warmed in the winter time, by reaſon of the obliquity of the ſun's rays, is more denſe and fixed in winter than any other ſeaſon of the year.

But farther: it is evident, from divers experiments, that the air does contain a ſalt which is ſuppoſed to be of the nature of nitre. If this be granted, and the denſity of the air allowed, it will follow, that the particles of this nitre muſt likewiſe be brought nearer together, and thickened by the condenſation of the air; as on the contrary, a rarefaction of the air, and an augmentation of its fluidity, muſt divide and ſeparate them.

And if the ſame happens to all liquors that have imbibed or diſſolved any ſalt, if the warmth of the liquid keep the ſalt exactly divided, and if the coolneſs of a cellar, or of ice, cauſe the particles of the diſſolved ſalt to approach, run into each other, and ſhoot into cryſtals; why ſhould the air, which is allowed to be a fluid, be exempt from the general law of fluids?

It is true, that the nitre of the air, being groſſer in cold weather than in hot, muſt have a leſs velocity; but ſtill the product of its augmented maſs into the velocity that remains, will give it a greater momentum, or quantity of motion. Nor is there any thing farther required to make this ſalt act with greater force againſt the parts of fluids, and this may probably be the cauſe of the great evaporation in froſty weather.

This aereal nitre muſt neceſſarily promote the concretion of liquids; for it is not the air, nor yet the nitre that it contains, which gives the motion to fluids; it is the ethereal medium, therefore a diminution of the motion of reſt ariſes from the diminution of that force.

Now the ethereal matter, which in the winter time is weak enough, muſt ſtill loſe more of its force by its action againſt air condenſed, and loaded with large particles of ſalt. It muſt therefore loſe of its force in cold weather, and become leſs diſpoſed to maintain the motion of the fluids.

In fine, the air, during froſt, may be eſteemed like the ice impregnated with ſalt wherewith liquors are iced in ſummer time. It is very probable that theſe liquors freeze by reaſon of a diminution of the motion of the ethereal medium, by its acting againſt the ice and ſalt together, and the air is not able to prevent its concretion by all its ſcorching heat.

The air (ſays Mr. Boyle) being a fluid as well as water, and impregnated with ſalts of different kinds, it is not improbable, that what happens in water impregnated with ſuch ſalts, may alſo happen in the air. Two proper quantities of different ſalts being diſſolved in hot water, they floated undiſtinguiſhably in it, and retained a capacity to act in conjunction upon ſeveral occaſions; yet when the liquor becomes cold, the ſaline particles of one kind being no longer agitated by a due degree of heat, ſhot into cryſtals; and, loſing their fluidity and motion, viſibly ſeparated themſelves from the other, which ſtill continued fluid in the liquor, and capable of acting ſeparately.

We have divers accounts in the Philoſophical Tranſactions, of a freezing rain which fell in the weſt of England in December 1672. This rain, as ſoon as it touched any thing above the ground, as a bough, or the like, immediately ſettled into ice; and, by multiplying and enlarging the icicles broke all down with its weight; the rain that fell on the ſnow immediately froze into ice, without ſinking into the ſnow at all.

It made an incredible deſtruction of trees beyond any thing in all hiſtory. A certain gentleman weighed a ſprig of an Aſh-tree of juſt three quarters of a pound, the ice which was on it weighed 16 pounds; that ſome perſons were frighted with the noiſe in the air, till they underſtood that it was the clatter of icy boughs daſhed againſt each other.

Dr. Beale remarks, that there was no conſiderable froſt obſerved on the ground during the whole time; whence he concludes, that a froſt may be very fierce and dangerous on the tops of ſome hills and plains, while in other places it keeps at two, three, or four feet diſtance above the ground, rivers, lakes, &c. and may wander about very furious in ſome places, and remiſs in others not far off. The froſt was followed by glowing heats, and a wonderful forwardneſs of flowers and fruits. The effects of freezing vegetables, is farther explained under the article of FROST.

FRITILLARIA. Lin. Gen. Plant. 372. Tourn. Inſt. R. H. 376. tab. 201. Corona Imperialis. Tourn. Inſt. R. H. 372. tab. 197, 198. Fritillary, or Chequered Tulip and Crown Imperial.

The CHARACTERS are,

The flower hath no empalement; it hath ſix oblong petals, is bell-ſhaped, and ſpreading at the baſe; in the hollow, at the baſe of each petal, is ſituated a nectarium; the flower hath ſix ſtamina ſtanding near the ſtyle, which are terminated by oblong four-cornered ſummits. In the center is ſituated an oblong three-cornered germen, ſupporting a ſingle ſtyle which is longer than the ſtamina, crowned by a ſpreading obtuſe ſtigma. The germen afterward becomes an oblong capſule with three lobes having three cells, which are filled with flat ſeeds, ranged in a double order.

The capſule of Fritillaria is oblong and ſmooth, but that of Corona Imperialis hath acute borders, or membranaceous wings.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which includes the plants which have ſix ſtamina in their flowers, and but one ſtyle.

Theſe two genera of Fritillary and Crown Imperial, have been always ſeparated, till Dr. Linnæus joined them together; indeed by their flowers they may be properly enough placed in the ſame genus; but, if their fruit may be allowed as a characteriſtic note, they ſhould be ſeparate; however, as this new ſyſtem is generally received, I ſhall, in compliance with the preſent taſte, join them together.

The SPECIES are,

1. FRITILLARIA (*Melagris*) foliis linearibus alternis, floribus terminalibus. *Fritillary with narrow leaves placed alternate, and flowers terminating the ſtalk.* Fritillaria præcox, purpurea, variegata. C. B. P. 64. *Early, purple, variegated, chequered Tulip.*
2. FRITILLARIA (*Aquitanica*) foliis infimis oppoſitis. Hort. Cliff. 81. *Fritillary whoſe lower leaves are oppoſite.* Fritillaria Aquitanica, flore luteo obſcuro. Swert. Floril. *Aquitain chequered Tulip, with an obſcure yellow flower.*
3. FRITILLARIA (*Nigra*) floribus adſcendentibus. *Fritillary with flowers growing above each other.* Fritillaria nigra. Lob. Adver. 2. 496. *Black chequered Tulip.*
4. FRITILLARIA (*Lutea*) foliis lanceolatis, caule unifloro maximo. *Fritillary with ſpear-ſhaped leaves, and one large flower on each ſtalk.* Fritillaria lutea maxima Italica. Park. Parad. 43. *Largeſt yellow Italian Fritillary.*
5. FRITILLARIA (*Umbellata*) floribus umbellatis. *Fritillary with flowers growing in umbels.* Fritillaria umbellifera. C. B. P. 64. *Umbellated chequered Tulip.*
6. FRITILLARIA (*Perſica*) racemo nudiuſculo, foliis obliquis. Hort. Upſal. 82. *Fritillary with a naked ſpike of flowers and oblique leaves.* Lilium Perſicum. Dod. Pempt. 220. *The Perſian Lily.*
7. FRITILLARIA (*Racemoſa*) floribus racemoſis. *Fritillary with flowers growing in bunches.* Fritillaria ramoſa, ſeu lilium Perſicum minus. Mor. Hort. Reg. Bleſ. *Branching Fritillary, or ſmaller Perſian Lily.*

8. FRI-

8. FRITILLARIA (*Imperialis*) racemo comoſo infernè nudo, foliis integerrimis. Lin. Hort. Upſal. 82. *Fritillary with a tufted bunch of leaves over the flowers, which is naked below, and entire leaves.* Corona Imperialis. Dod. Pempt. 202. *Crown Imperial.*

9. FRITILLARIA (*Regia*) racemo comoſo infernè nudo, foliis crenatis. Lin. Sp. Plant. 303. *Fritillary with a tufted bunch of leaves over the flowers, which is naked below, and crenated leaves.* Corona regalis lilii folio crenato. Hort. Elth. 110. *Royal Crown with a crenated Lily leaf.*

10. FRITILLARIA (*Autumnalis*) racemo infernè nudo, foliis oblongis mucronatis. *Fritillary with a naked ſtalk, and oblong pointed leaves.*

The firſt ſort grows naturally in Italy, and other warm parts of Europe; and from the ſeeds of this there have been great varieties raiſed in the gardens of the floriſts, which differ in the ſize and colour of their flowers; and as there are frequently new varieties produced, ſo it would be to little purpoſe to enumerate thoſe which are at preſent in the Engliſh and Dutch gardens, which amount to a great number in the catalogues of the Dutch floriſts, who are very fond of any little diſtinction, either in the colour or ſhape, to enlarge their liſts.

The ſorts which are here enumerated, I think may be allowed as diſtinct ſpecies, notwithſtanding Dr. Linnæus has reduced them to five; for I have raiſed many of all the ſorts from ſeed, which have conſtantly produced the ſame as the ſeeds were taken from, and have only differed in the colour or ſize of the flowers; for the ſort with broad leaves produced the ſame ſort again, and the umbellated and ſpiked ſorts produced the ſame, though there are ſeveral varieties in the colours of their flowers.

The firſt hath a round compreſſed root, in ſhape like that of Cornflag, but is of a yellowiſh white colour; the ſtalk riſes about fifteen inches high, having three or four narrow long leaves placed alternately, and the top is divided into two ſlender foot-ſtalks which turn downward, each ſuſtaining one bell-ſhaped inverted flower, compoſed of ſix petals, which are chequered with purple and white like a cheſs-board; and in the center is ſituated a germen ſupporting one ſtyle, crowned by a trifid ſtigma; the ſix ſtamina ſtand about the ſtyle, but are ſhorter. At the bottom of each petal there is a cavity, in which is ſituated a nectarium, filled with a ſweet liquor; after the flower is fallen, the germen ſwells to a pretty large three-cornered blunt capſule, and then the foot-ſtalk is turned and ſtands erect; when the ſeeds are ripe, the capſule opens in three parts and lets out the flat ſeeds, which were ranged in a double order. The flowers of this appear the latter end of March or beginning of April, and the ſeeds are ripe in July. There is a variety of this with a double flower.

The ſecond ſort grows naturally in France; the leaves of this are broader, and of a deeper green than the former; the lower leaves are placed oppoſite, but thoſe above are alternate; the ſtalk riſes a foot and a half high, and is terminated by two flowers of an obſcure yellow colour, which ſpread more at the brim than thoſe of the firſt ſort, but are turned downward in the ſame manner. This flowers three weeks after the firſt. There is a variety of this with greeniſh flowers, which grows naturally in ſome parts of England.

The third ſort ſeldom riſes more than a foot high, the leaves are narrow like thoſe of the firſt ſort, but are ſhorter; each ſtalk is terminated by three or four flowers, which ariſe above each other; they are of a very dark purple, chequered with yellowiſh ſpots. This flowers in April, about the ſame time with the ſecond.

The fourth ſort riſes about a foot high, the ſtalk is garniſhed with ſpear-ſhaped leaves four inches long and one broad, of a graſs-green colour; theſe are ſometimes placed oppoſite, but are generally alternate; the ſtalk is terminated by one large bell-ſhaped flower of a yellowiſh colour, chequered with light purple. This ſort flowers about the ſame time as the firſt. There are two or three varieties of this, which differ in the ſize and colour of their flowers and the breadth of their leaves, but retain their ſpecific difference, ſo as to be eaſily diſtinguiſhed from the other ſorts.

The fifth ſort riſes a foot and a half high; the ſtalk is garniſhed with ſhorter and broader leaves than the firſt ſort, which are of a grayiſh colour; the flowers are produced round the ſtalks like thoſe of the Crown Imperial; they are of a dark purple colour, chequered with a yellowiſh green. This flowers about the ſame time with the ſecond ſort.

The ſixth ſort is commonly called the Perſian Lily, and is ſuppoſed to grow naturally in Perſia, but has been long cultivated in the Engliſh gardens; the root of this ſort is round and large, the ſtalk riſes three feet high; the lower part of it is cloſely garniſhed with leaves which are three inches long, and half an inch broad, of a gray colour, ſtanding on every ſide of the ſtalks, but are twiſted obliquely; the flowers grow in a looſe ſpike at the top of the ſtalk, forming a pyramid; they are ſhaped like thoſe of the other ſpecies, but are much ſhorter, and ſpread wider at their brims, and are not bent downward like thoſe. They are of a dark purple colour, and appear in May, but are ſeldom ſucceeded by ſeeds in England, ſo are only propagated by offsets.

The ſeventh ſort hath a much ſhorter ſtalk than the laſt, but is garniſhed with leaves like thoſe, only they are ſmaller; the ſtalks branch out at the top into ſeveral ſmall foot-ſtalks, each ſuſtaining one dark coloured flower. This is commonly called the ſmall Perſian Lily, from its reſemblance to the former ſort.

Theſe plants are propagated either by ſeeds, or offſets from the old roots; by the firſt of which methods new varieties will be obtained, as alſo a larger ſtock of roots in three years, than can be obtained in twenty or thirty years in the latter method: I ſhall therefore firſt treat of their propagation by ſeeds.

Having provided yourſelf with ſome good ſeeds, ſaved from the faireſt flowers, you muſt procure ſome ſhallow pans or boxes, which muſt have ſome holes in their bottoms to let out the moiſture; theſe you ſhould fill with light freſh earth, laying a few pot-ſheards over the holes, to prevent the earth from ſtopping them; then, having laid the earth very level in the boxes, &c. you muſt ſow the ſeeds thereon pretty thick, covering it with fine ſifted earth a quarter of an inch thick. The time for ſowing the ſeed is about the beginning of Auguſt, for if it be kept much longer out of the ground it will not grow; then place the boxes or pans where they may have the morning ſun until eleven o'clock, obſerving, if the ſeaſon proves dry, to water them gently, as alſo to pull up all weeds as ſoon as they appear; for if they are ſuffered to remain until they have taken deep root into the earth, they would draw the ſeeds out of the ground whenever they are pulled up. Toward the latter end of September you ſhould remove the boxes, &c. into a warmer ſituation, placing them cloſe to a hedge or wall expoſed to the ſouth; if they are ſown in pots, theſe ſhould be plunged into the ground, but they are beſt in tubs; theſe ſhould be covered in ſevere froſt. In this ſituation they may remain until the middle of March, by which time the plants will be come up an inch high; you muſt therefore remove the boxes, as the weather increaſes hot, into a more ſhady ſituation; for while the plants are young, they are liable to ſuffer by being too much expoſed to the ſun: and in this ſhady ſituation they may remain during the heat of the ſummer, obſerving to keep them clear from weeds, and to refreſh them now and then with a little moiſture; but be careful not to give them much water after their leaves are decayed, which would rot their roots. About the beginning of Auguſt, if the roots are very thick in the boxes, you ſhould prepare a bed of good light freſh earth, which muſt be levelled very even, upon which you ſhould ſpread the earth in the boxes in

which

which the ſmall roots are contained, equally covering it about one fourth of an inch thick with the ſame freſh earth: this bed ſhould be ſituated in a warm poſition, but not too cloſe to hedges, walls, or pales, which would cauſe their leaves to be long and ſlender, and make the roots weaker than if placed in a more open expoſure.

In this bed they may remain until they flower, which is generally the third year from ſowing; at which time you ſhould put down a mark to the roots of all ſuch as produce fair flowers, that at the time of taking them out of the ground (which ought to be ſoon after their green leaves are decayed) they may be ſelected into a bed amongſt your old roots of this flower, which, for their beauty, are preſerved in the beſt gardens; but the other leſs valuable flowers may be planted in the borders of the parterre-garden for their variety, where, being intermixed with other flowers of different ſeaſons, they will make a good appearance,

The fine ſorts of this flower ſhould remain undiſturbed three years, by which time they will have produced many offsets; and ſhould be taken up when their leaves are decayed, and planted into a freſh bed, taking ſuch of their offsets as are large enough to produce flowers to plant in the flower-garden; but the ſmaller roots may be planted into a nurſery-bed, until they have obtained ſtrength enough to flower; but you muſt never ſuffer theſe roots to lie out of the ground when you remove them, but plant them again immediately, otherwiſe they will periſh.

During theſe three years which I have adviſed the roots to remain in the beds, the ſurface of the earth ſhould be ſtirred every autumn with a trowel, obſerving not to go ſo deep as to bruiſe the root, and at the ſame time lay a thin cover of very rotten dung or tanners bark upon the ſurface of the beds; which, being waſhed into the ground, will cauſe the flowers to be larger, as alſo the roots to make a greater increaſe: you muſt alſo obſerve to keep them conſtantly clear from weeds, and thoſe roots which you would preſerve with care, ſhould not be ſuffered to ſeed.

When a ſtock of good flowers are obtained, they may be preſerved and increaſed in the ſame manner as other bulbous rooted flowers, which is by offsets ſent out from their roots, which ſhould be taken off every other year from the fineſt ſorts; but the ordinary flowers may remain three years undiſturbed, in which time they will have multiplied ſo much, as that each root will have formed a cluſter; ſo that if they are left longer together, the roots will be ſmall, and the flowers very weak; therefore, if theſe are taken up every other year, the roots will be the ſtronger. Theſe roots may be treated in the ſame manner as Tulips, and other bulbous rooted flowers, with this difference only, that the roots will not bear to be kept out of the ground ſo long; therefore, if there ſhould be a neceſſity for keeping them out of the ground any time, it will be beſt to put the roots into ſand to prevent their ſhrinking,

As theſe flowers come out early in the ſpring, they make a pretty appearance in the borders of the pleaſure-garden, where they are planted in ſmall clumps; for when they ſtand ſingle in the borders, they make but a poor figure.

The eighth ſort is the Crown Imperial, which is now very common in the Engliſh gardens. This grows naturally in Perſia, from whence it was firſt brought to Conſtantinople, and about the year 1570, was introduced to theſe parts of Europe; of this flower there are a great variety now preſerved in the gardens of floriſts, but as they have been produced accidentally from ſeeds, they are but one ſpecies; however, for the ſatisfaction of the curious, I ſhall here mention all the varieties which have come to my knowledge.

1. The common Crown Imperial; this is of a dirty red colour.
2. The yellow Crown Imperial; this is of a bright yellow.
3. The bright red Crown Imperial, called Fuſai.
4. The pale yellow Crown Imperial.
5. The yellow ſtriped Crown Imperial.
6. The large flowering Crown Imperial.
7. The broad leaved late red Crown Imperial.
8. The double and triple crowned Imperial Crown.
9. The double red Crown Imperial.
10. The double yellow Crown Imperial.
11. The ſilver ſtriped leaved Crown Imperial.
12. The yellow ſtriped leaved Crown Imperial.

There are ſome few other varieties which are mentioned in the catalogues of the Dutch floriſts, but their diſtinctions are ſo minute, that they are not diſtinguiſhable, ſo I ſhall paſs them over, as thoſe here inſerted are all that I have ſeen growing either in England or Holland, which deſerved any diſtinction.

The Crown Imperial hath a large round ſcaly root of a yellow colour, and a ſtrong odour of a fox; the ſtalk riſes to the height of four feet or upward; it is ſtrong, ſucculent, and garniſhed two-thirds of the length on every ſide, with long narrow leaves ending in points, which are ſmooth and entire; the upper part of the ſtalk is naked, a foot in length; then the flowers come out all round the ſtalk upon ſhort foot-ſtalks, which turn downward, each ſuſtaining one large, ſpreading, bell-ſhaped flower, compoſed of ſix ſpear-ſhaped petals; at the baſe of each petal is a pretty large cavity, in which is ſituated a large white nectarium, filled with a mellous liquor. In the center of the flower is fixed a three-cornered oblong germen, upon which reſts the ſingle ſtyle, which is the length of the petals, and is crowned by a ſpreading obtuſe ſtigma; round the ſtyle there are ſix awl-ſhaped ſtamina which are ſhorter than the ſtyle, and are terminated by oblong four-cornered ſummits. Theſe flowers hang downward, and above them riſes a ſpreading tuft of green leaves, which are erect, and from between theſe come out the foot-ſtalks of the flowers: when the flowers decay, the germen ſwells to a large hexagonal capſule, ſhaped like a water-mill, having ſix cells, which are filled with flat ſeeds. This plant flowers the beginning of April, and the ſeeds are ripe in July.

The ſort with yellow flowers, that with large flowers, and thoſe with double flowers, are the moſt valuable; but that which hath two or three whorls of flowers above each other, makes the fineſt appearance; though this ſeldom produces its flowers after this manner the firſt year after removing, but the ſecond and third year after planting, the ſtalks will be taller, and frequently have three tier of flowers, one above another, which is called the Triple Crown. The ſtalks of this ſort frequently run flat and broad, when they produce a greater number of flowers than uſual; but this is only a luxuriancy of nature, not conſtant, though many of the writers have mentioned it as a particular variety.

As this is one of the earlieſt tall flowers of the ſpring, it makes a fine appearance in the middle of large borders, at a ſeaſon when ſuch flowers are much wanted to decorate the pleaſure-garden: but the rank fox-like odour which they emit, is too ſtrong for moſt people, ſo hath rendered the flowers leſs valuable than they would have been: for there is ſomething very pleaſing in the ſight of them at a diſtance, ſo that were it not for the offenſive ſmell of the leaves and flowers, it would be more frequently ſeen in all gardens for pleaſure.

This may be propagated by ſeeds, or offsets from the root; the firſt is too tedious for moſt of the Engliſh floriſts, becauſe the plants ſo raiſed, are ſix or ſeven years before they flower; but the Dutch and Flemiſh gardeners, who have more patience, frequently raiſe them from ſeeds, ſo get ſome new varieties, which rewards their labour. The method of propagating theſe flowers from ſeeds, being nearly the ſame as for the Tulip, the reader is deſired to turn to that article, where there are full directions for performing it.

The common method of propagating them here, is by offsets ſent out from the old roots, which will

flower ſtrong the ſecond year after they are taken from the roots; but in order to have plenty of theſe, the roots ſhould not be tranſplanted oftener than every third year, by which time each root will have put out ſeveral offsets, ſome of which will be large enough to flower the following year, ſo may be planted in the borders of the flower-garden, where they are to remain; and the ſmaller roots may be planted in a nurſery-bed, to grow a year or two according to their ſize; therefore they ſhould be ſorted, and the ſmalleſt roots planted in a bed together, which ſhould remain there two years, and the larger by themſelves to ſtand one year, by which time they will have acquired ſtrength enough to flower, ſo may then be removed into the pleaſure-garden.

The time for taking up theſe roots is in the beginning of July, when their ſtalks will be decayed; and they may be kept out of the ground two months, but they ſhould be laid ſingle in a dry ſhady room, but not in heaps, or in a moiſt place, which will cauſe them to grow mouldy and rot. The offsets ſhould be firſt planted, for as theſe are ſmall, they will be apt to ſhrink if they are kept long out of the ground.

As the roots are large, they muſt not be planted too near other flowers; and when they are planted in beds by themſelves, they ſhould not be nearer than a foot and a half in the rows, and two feet row from row; they ſhould be planted ſix inches deep at leaſt, eſpecially the ſtrong roots: they delight in a light ſoil, not too wet, nor very full of dung; therefore, if any dung is laid upon the borders where they are planted, it ſhould be buried pretty deep, ſo as to be two or three inches below the roots.

The ninth and tenth ſorts grow naturally at the Cape of Good Hope, from whence they were brought into the European gardens. The ninth has been many years an inhabitant, where it has been uſually titled Corona Regalis. This has a tuberoſe root, from which ariſe in the autumn ſix or eight obtuſe leaves, near five inches long and two broad toward the top, growing narrower at their baſe, and are crenated on their borders, lying flat on the ground; theſe continue all the winter: in the ſpring ariſes the flower-ſtalk in the center of the leaves, about ſix inches high, naked at the bottom; but the upper part is ſurrounded by bell-ſhaped flowers, compoſed of ſix greeniſh petals, with an oval germen ſituate at the bottom, ſurrounded by ſix ſtamina, ſupporting a triangular ſtyle, crowned by a trifid ſtigma; the germen afterwards becomes a roundiſh capſule, but rarely perfects ſeeds in England. This flowers in April, and the leaves decay in June.

The ſecond ſort I raiſed from ſeeds, which were ſent me from the Cape of Good Hope: the root of this is like that of the ninth ſort, but the leaves are more than a foot long, broad at their baſe, but are narrowed to the top, where they end in acute points; the flower-ſtalk riſes rather higher than that of the ninth, but the flowers are of the ſame ſhape and colour: this ſeldom flowers till Auguſt. The roots of this ſort were ſtolen out of the Chelſea garden the following ſpring after it had flowered, and were ſold to ſome perſons whoſe love for rare plants exceeded their honeſty.

FRITILLARIA CRASSA. See ASCLEPIAS.

FRONDOSE [frondoſus, *Lat.*] full of leaves, or ſhoots.

FROST may be defined to be an exceſſive cold ſtate of the weather, whereby the motion and fluidity of the liquors are ſuſpended; or, it is that ſtate of the air, &c. whereby fluids are converted into ice.

By froſt metals contract, or are ſhortened. Monſ. Auzout found by an experiment, that an iron tube twelve feet long, upon being expoſed to the air in a froſty night, loſt two lines of its length; but this may be ſuppoſed to be wholly the effect of cold.

On the contrary, froſt does not contract fluids, but, on the other hand, ſwells or dilates them near one tenth of their bulk.

Mr. Boyle gives us ſeveral experiments of veſſels made of metals exceeding thick and ſtrong, which being filled with water, cloſe ſtopped, and expoſed to the cold, the water, being expanded by freezing, and not finding either room or vent, burſt the veſſels.

A ſtrong barrel of a gun, with water in it, being ſtopped cloſe, and frozen, was rent the whole length; and a ſmall braſs veſſel, five inches deep, and two in diameter, filled with water, &c. and frozen, lifted up its lid, which was preſſed with a weight of fifty-ſix pounds.

There are alſo related many remarkable effects of froſt on vegetables. Morery, Hiſt. de France, ſays, That trees are frequently ſcorched and burnt up with froſt, as with the moſt exceſſive heat, and that even in ſo warm a climate as Provence.

Mr. Bobart relates, That in the great froſt anno 1683, Oaks, Aſhes, Walnut-trees, &c. were miſerably ſplit and cleft, ſo as they might be ſeen through, and this too with terrible noiſes like the exploſion of fire arms; that the clifts were not only in the bodies, but continued to the larger boughs, roots, &c. Philoſ. Tranſact. N° 105.

Dr. Derham ſays, That the froſt in 1708, was remarkable through the greateſt part of Europe; and the greateſt in degree, if not the moſt univerſal, in the memory of man; that it extended throughout England, France, Germany, Denmark, Italy, &c. but was ſcarce felt in Scotland and Ireland. All the Orange-trees and Olives in Italy, Provence, &c. and all the Walnut-trees throughout France, with an infinity of other trees, periſhed by the froſt.

Monſ. Gouteron ſays, They had a gangrene on them, which he takes to be the effect of a corroſive ſalt, which corrupted and deſtroyed their texture. He adds, That there is ſo much reſemblance between the gangrene befalling plants through froſt, and that which the parts of animals are liable to, that they muſt have ſome analogous cauſe. Corroſive humours burn the parts of animals, and the aëreal nitre, condenſed, has the ſame effects on the parts of plants. Memoires de l' Academie Royale de Sciences, an. 1709.

Dr. Derham ſays, That the greateſt ſufferers in the animal kingdom were birds and inſects, but vegetables were much the greateſt ſufferers; that few of the tender ſorts of vegetables eſcaped the ſeverity of the froſt; Bays, Laurels, Roſemary, Cypreſs, Alaternuſes, Phillyreas, Arbutuſes, Lauruſtinuſes, and even Furz, with moſt ſort of the fruteſcent herbs, as Lavenders, Abrotanums, Rue, Thyme, &c. were generally deſtroyed. He adds, that the ſap of the finer wall-fruit was ſo congealed and deſtroyed, that it ſtagnated in the limbs and branches, and produced diſorders like to chilblains in human bodies, which would turn to mortifications in many parts of the trees; that the very buds of the finer trees, both in the leaf, buds, and bloſſom buds, were quite killed, and dried into a farinacious matter.

Dr. Derham relates it as a common obſervation, That vegetables ſuffered more from the ſun than from the froſt, in that the ſun-ſhine, melting the ſnow, and opening the ground, left it more expoſed to the rigour of the enſuing night. It was likewiſe obſerved, at a meeting of the Royal Society, That the calamities which befel trees, aroſe not purely from their being frozen, but principally from the winds ſhaking and rocking them when they are frozen, which rent and parted their fibres. Philoſ. Tranſact. N° 324.

Hoar froſt, or white froſt, is the dew frozen, or congealed early in cold mornings, chiefly in autumn. This (as Mr. Regis obſerves) is an aſſemblage of little parcels of ice or cryſtals, which are of various figures, according to the diſpoſition of the vapours which meet and are condenſed by cold.

Dew is, to all appearance, the matter of hoar froſt, though many of the Carteſians ſuppoſe it to be formed of a cloud, and either congealed in the cloud, and ſo let fall, or ready to be congealed as ſoon as it arrives at the earth.

In the year 1728-9, there was a remakable froſt, which continued for ſome months, and deſtroyed a great number of trees and plants in ſeveral parts of Europe,

a brief

a brief account of which may not be improper to be here inſerted.

The autumn began with cold north and eaſt winds, and early in November the nights were generally froſty; though the froſt did not enter the ground deeper than the ſun thawed the following day; but toward the end of November the winds blew extremely cold from the north, which was ſucceeded by a great ſnow, which fell in ſuch quantities in one night, as to break off large arms, as alſo the tops of many Evergreen-trees, on which it lodged. After the ſnow had fallen, it began to freeze again, the wind continuing to blow from the north; the days were dark and cloudy for ſome time, but afterwards it cleared up, and the ſun appeared almoſt every day, which melted the ſnow where expoſed to it, whereby the froſt penetrated deeper into the ground. It was obſervable, that, during theſe clear days, a great miſt or vapour, appeared in the evenings, floating near the ſurface of the ground until the cold of the night came on, when it was ſuddenly condenſed, and diſappeared. About the 8th of December, the nights were extremely cold; the ſpirits in the thermomoter fell 18 degrees below the freezing point, and on the 10th of the ſame month the froſt was as ſevere as had been known in the memory of man; the ſpirits of the thermometer fell to 20 degrees below the freezing point. At this time vaſt numbers of Lauruſtinuſes, Phillyreas, Alaternuſes, Roſemary, Arbutus, and other Evergreen-trees and ſhrubs began to ſuffer; eſpecially ſuch as had been trimmed up to heads with naked ſtems, or had been clipped late in autumn. At this time alſo there were great numbers of large deciduous trees diſbarked by the froſt, as Pear-trees, Plane-trees, Walnut-trees, with many other ſorts, and it was chiefly on the weſt and ſouth-weſt ſide of the trees, that the bark came off.

About the middle of December the froſt abated of its intenſeneſs, and ſeemed to be at a ſtand till the 23d of the ſame month, when the wind blew extremely ſharp and cold from the eaſt, and the froſt increaſed again, continuing very ſharp till the 28th day, when it began to abate again, and ſeemed to be going off, the wind changing to the ſouth; but it did not continue long in this point, before it changed to the eaſt again, and the froſt returned, though it was not ſo violent as before.

Thus the weather continued for the moſt part froſty, till the middle of March, with a few intervals of mild weather, which brought forward ſome of the early flowers; but the cold returning, ſoon deſtroyed them: ſo that thoſe plants which uſually flower in January and February, did not this year appear till March, and before they were fully blown, were cut off by the froſt; of this number were all the Spring Crocuſes, Hepaticas, Perſian Iriſes, Black Hellebores, Mezereons, with ſome others.

The Cauliflower plants, which were planted out of the beds in the open ground, during the intervals between the froſt, were moſt of them deſtroyed, or ſo much cut, that they loſt moſt of their leaves; the early Beans and Peas were moſt of them killed, and many fruit and foreſt trees, which had been lately removed, were quite deſtroyed. The loſs was very great to ſome curious perſons, who had been many years endeavouring to naturalize great numbers of exotic trees and ſhrubs, abundance of which were either totally killed, or deſtroyed to the ſurface of the ground; amongſt this number there were many ſorts deſtroyed, which had endured the open air many years, without receiving the leaſt injury from the cold, ſuch as Paſſion Flowers, Cork-trees, Ciſtuſes, Roſemary, Stœchas, Sage, Maſtich, and ſome others. In ſome places the young Aſh and Walnut-trees were killed; but when the froſt went off, there appeared to have been much more damage done in the gardens, than there really was, which occaſioned many people to dig up and deſtroy large quantities of trees and ſhrubs, which they ſuppoſed were killed; whereas thoſe who had more patience, and ſuffered them to remain, fared better; for great numbers of them ſhot out again, ſome from their ſtems and branches, and others from their roots, the following ſummer.

Nor was the froſt more ſevere in England, than in other parts of Europe; but, on the contrary, in compariſon, favourable; for in the ſouthern parts of France, the Olives, Myrtles, Ciſtuſes, Alaternuſes, and ſeveral other trees and ſhrubs, which grow there almoſt ſpontaneouſly, were either deſtroyed, or at leaſt were killed to their roots; and about Paris, and the northern parts of France, the buds of their fruit-trees were deſtroyed, although they remained cloſed, ſo that there were very few bloſſoms which opened that ſpring. The Fig-trees were in ſeveral parts of France quite killed, and in England their tender branches were deſtroyed, ſo that there was very little fruit on thoſe trees the following ſummer, except where they were protected from the froſt.

In Holland the Pines and Firs, with ſeveral other trees, which are natives of cold countries, were greatly injured by the cold; and moſt of the trees and ſhrubs, which were brought from Italy, Spain, or the ſouth parts of France, which had been planted in the full ground, in that country, were entirely killed, though many other ſorts, which had been brought from Virginia and Carolina, eſcaped very well in the ſame gardens; but the perſon who ſuffered moſt in that country, was the learned Dr. Boerhaave, who had been ſeveral years endeavouring to naturalize as many exotic trees and ſhrubs as he could poſſibly obtain from the ſeveral parts of the world, great numbers of which were entirely deſtroyed by the froſt this winter.

In ſome parts of Scotland they not only loſt many of their curious flowers, plants, and trees, but great numbers of ſheep, and other cattle, were buried under the ſnow, where they periſhed; and many poor people, who went to look after their cattle, were equal ſufferers with them, being buried in the ſnow, which in ſome places fell eight or nine feet deep in one night.

It has been obſerved by thermometers, when that kind of hovering lambent fog ariſes (either mornings or evenings) which frequently betokens fair weather, that the air, which in the preceding day was much warmer, has, upon the abſence of the ſun become many degrees cooler than the ſurface of the earth, which being near 1500 times denſer than the air, cannot be ſo ſoon affected with the alteration of heat and cold; whence it is probable, that thoſe vapours which are raiſed by the warmth of the earth, are by the cooler air ſoon condenſed into a viſible form. The ſame difference has been obſerved between the coolneſs of the air, and the warmth of water in a pond, by putting a thermometer, which hung all night in the open air in ſummer time, into the water, juſt before the riſing of the ſun, when the like reek, or fog, was riſing on the ſurface of the water.

In the year 1739-40, we had another ſevere winter, which did great miſchief to the gardens, fields, and woods, the effects of which are yet, and will be many years, felt in Europe. Some particulars of theſe depredations, may not, perhaps, be unacceptable to the reader, if they are here mentioned.

The wind ſet in blowing from the north and north-eaſt, about the autumnal equinox, and continued to blow from the ſame quarter, with little variation, upward of ſix months. Early in November, there was a continued ſharp froſt for nine days, in which time the ice upon large ponds, and other ſtanding waters, was frozen ſo hard as to bear perſons who ſkated thereon; but toward the end of November the froſt abated, and there was little more than ſlight morning froſts until Chriſtmas day, when it froze pretty hard that morning, and continued every morning ſo to do; but on the 28th day of December, the wind blew with great ſtrength from the north-eaſt, and brought on ſevere cold; that night the froſt penetrated very deep into the ground, and the next day, viz. the 29th, the wind changed to the ſouthward of the eaſt, and blew with great fury; the thermometer fell this day to twenty-

twenty-five degrees below froſt; in the morning ſome little ſnow fell, but the violence of the wind carried it off; but cold ſtill increaſing, the waters were all frozen over, and that day it was ſo intenſe, as to freeze the water of the river, which was raiſed by the force of the wind into ice, before it fell down again. The wind continued to blow with the ſame force, and from the ſame quarter, all the 30th day, the cold ſtill increaſing, ſo that at this time the froſt penetrated into moſt of the green-houſes in England, but eſpecially into all thoſe whoſe fronts had the leaſt inclination to the eaſt; and ſuch of them as fronted the ſouth-weſt eſcaped beſt, where the back walls were of a ſufficient thickneſs to keep out the froſt; the ſpirits in the thermometer fell in the night of the 30th day to thirty-two degrees below the freezing point, which was lower than it had been known in England before; the violence of the wind made it very troubleſome for perſons of the moſt robuſt conſtitutions to be abroad, and this alſo cauſed the froſt to penetrate through thick walls, and in the ſpace of two days, the Evergreen-trees and ſhrubs appeared as if they had been ſcorched by fire, ſo that they ſeemed to have no life; the only trees of all the ſorts of Evergreens which retained their verdure at this time, were the Portugal Laurel, Savin, and ſhrubby Hartwood; theſe in the midſt of this ſevere froſt remained unhurt, when all the others were as brown as if they had been dead a year; and it was very late in the ſpring, before any of them reſumed their uſual verdure: during theſe ſevere days there had but little ſnow fallen, ſo that the froſt penetrated deep in the ground, and deſtroyed the roots of great part of the vegetables, where they were not well ſecured; the Artichoke roots were moſt of them killed in all the kitchen-gardens, ſome few only eſcaped, theſe were ſuch as were not intended to be preſerved. A ſingle row of theſe roots, which were growing in a place where a great quantity of dung had been wheeled over them, whereby the ground was rendered as hard as that of a common foot-way, though there was no covering upon theſe roots, yet they ſurvived the froſt and did well; another parcel which was growing near a tan-yard, where, by accident, ſome tan had been thrown, were preſerved, ſo that from ſome of theſe accidents we were ſo lucky as to retrieve the good kind of Artichoke, which the Engliſh gardens were ſo famous for being ſtocked with.

By the ſharp piercing winds the Graſs was almoſt totally burned up, ſo that there was not the leaſt verdure to be ſeen in the fields, and in many places the ſweeteſt and beſt kinds of the herbage were entirely killed, ſo that there remained only the ſtrong rough kinds of graſs, whereby the paſtures were in general much damaged; but on the 31ſt day in the evening, the wind being much abated, the ſeverity of the froſt was not ſo great, and there ſeemed an appearance of a thaw on the firſt and ſecond of January, but on the third in the evening the froſt ſet in again with great violence; and on the fourth of January in the morning, the thermometer was fallen one degree lower than it had been before. The ſame morning there was the greateſt hoary froſt which had been ſeen, the woods, trees, and hedges, appeared as if they had been covered with ſnow; and although there was no wind ſtirring, yet the air was ſo ſharp and penetrating, as to render it difficult to endure the cold, even with great exerciſe.

The timber-trees ſuffered greatly that morning, eſpecially the Oaks, which were ſplit with great violence; and the noiſe in the woods that morning, reſembled that of great branches breaking down in every part of the woods, and when heard at a diſtance, like the firing of guns. This was little attended to at the time, but the timber which has been ſince fallen, ſufficiently proves the great damage which the woods then ſuſtained; nor was it here the calamity ſtopped, for the Oaks in general had received ſo much injury from the froſt, as to occaſion ſuch a weakneſs and diſtemper among them, that the following ſpring they were infeſted with inſects to ſuch a degree, as that their leaves were eaten and entirely deſtroyed by them; ſo that at Midſummer the trees were as naked as if it had been the beginning of April; and this diſtemper continued for two years after, almoſt as bad as at firſt, and has leſſened by degrees, as the trees have recovered their ſtrength; and where the trees were old and weak, they have not yet gotten the better of this diſtemper.

The herbage was alſo ſo much weakened by the ſeverity of the froſt, as not to be able to reſiſt the attack made upon it by inſects, ſo that innumerable quantities of them were diſcovered in the paſtures in many parts of Europe, beginning firſt in the northern countries, and afterward ſpreading to the ſouth; and theſe inſects in many places were ſo numerous, as to deſtroy the ſward of Graſs, and it is to be feared the diſtemper which ſo long raged among the cattle may have been owing to this cauſe; for wherever the diſtemper ſpread, it has been obſerved, that numbers of theſe inſects have harboured about the roots of the Graſs: and as a farther proof of this, it has conſtantly been remarked, that, when theſe grubs are changed into a ſort of beetle, and take their flight (which is commonly about the beginning of May,) the diſtemper ceaſes; and when theſe beetles have depoſited their eggs in autumn, the diſtemper has raged again. Another remark has been made, that theſe beetles always chuſe to depoſit their eggs not at a great diſtance from rivers, or large pieces of water, and in ſuch places the cattle have been moſt attacked. There might be many other circumſtances mentioned in favour of this opinion, as alſo the ſeveral experiments which have been made by ſome of the members of the Academy of Sciences at Paris, which are ſufficient to prove, that the diſtemper was not infectious, nor can be communicated by the cattle, notwithſtanding it has been treated as ſuch in many countries, where has been an immenſe loſs to the public of ſuch numbers of cattle and their hides; but this may require a particular treatiſe, therefore I ſhall not enlarge farther on this head at preſent.

The froſt ſtill continued very hard till toward the end of January, but not ſo violent as at the beginning; for had the wind continued to blow with ſo much force as it had done the three firſt days of the froſt, for any conſiderable time longer, there would have been few vegetables able to have reſiſted the cold, nor would the animal kingdom have fared much better; for the cold was ſo intenſe during thoſe few days, as to kill ſeveral of the weaker ſort of cattle, where they were much expoſed to the wind.

The Walnut-trees, Aſh, and ſeveral other trees, had moſt of their ſhoots of the former year deſtroyed, which cauſed them to be very late before they put out their new ſhoots the following ſpring, and theſe ſhoots were produced from the two and three years branches.

The Fig-trees in many places were killed almoſt to the ground, eſpecially thoſe which were growing againſt the beſt aſpected walls, for thoſe on the north and north-weſt aſpects, as alſo the old ſtandard Fig-trees eſcaped better; but all thoſe ſtools and layers of theſe trees, which were growing in the nurſery-gardens, were ſo much injured by the froſt, as not to be recovered under three years, during which time there were ſcarce any of theſe plants to be ſold. The layers of Vines, as alſo of the Oriental Plane-tree, in the nurſeries, were likewiſe killed to the ground, and the old ſtools ſo much injured, that they had better have been dug up and thrown away, than to have continued them; for in ten years after they did not recover their former vigour, making their ſhoots ſo late in the ſummer, that their wood had not time to harden, and the firſt froſt in autumn frequently killed them half way to the ground.

Many other deciduous trees were equal ſufferers by this ſevere froſt, and the Evergreens were more generally injured, and abundance of them killed. The Pine and Pinaſter were ſo much hurt, as to loſe all their verdure, and in ſome places the young plants of the

the former ſort were entirely killed. The Roſemary, Lavender, Stœchas, Sage, and many other aromatic plants, were in many places quite deſtroyed, ſo that it was two or three years before the markets could be ſupplied with theſe; and in general the eſculent plants in the kitchen-gardens were killed, ſo that for ſome months the markets were not ſupplied with any quantity of garden ſtuff. The flower-gardens alſo were great ſufferers by this winter; for as the ſeaſons for ſome years before had been very temperate, few perſons had made any proviſion for a hard winter; and the cold ſetting in ſo very intenſe at the beginning, the miſchief was done before people could be provided with covering.

The Wheat in many parts of England, but eſpecially in the open common fields, was very much hurt, particularly on the top of the ridges, where, in ſeveral places there were broad naked ſpaces on the middle of the ridges, which in the ſpring appeared like ſo many foot-paths. And as the ſpring following was very dry, and the wind continuing to blow from the north and eaſt; theſe piercing winds entered the ground, which had been looſened by the froſt, and dried up the tender roots of the Corn, to the great prejudice of it; but ſome of the more expert farmers, who rolled their Wheat after the froſt was over, were well repaid by the great crops which their land produced them.

Were I to enter into all the particulars of the damages ſuſtained by this ſevere froſt in the gardens and fields, it would ſwell this work beyond the limits intended; ſo I hope, on the other hand, I ſhall not be condemned for having inſerted thus much, ſince, by the mention of theſe things, perſons may be inſtructed how to ſave many of their valuable plants in future winters, as alſo what ſorts are more liable to danger from froſts than others.

FRUCTIFEROUS [fructifer, *Lat.*] fruit-bearing, fruitful.

FRUCTUS. See FRUIT.

FRUIT is the production of a tree or plant, for the propagation or multiplication of its kind; in which ſenſe fruit includes all kinds of ſeeds, with their furniture, &c. botaniſts uſe it to ſignify properly, that part of a plant wherein the ſeed is contained, which the Latins call Fructus, and the Greeks Καρπός.

The fruit of ſome plants are produced ſingly, as are their flowers, and ſometimes they are produced in cluſters, as in moſt fruit-trees, which are alſo fleſhy, but in many plants they are dry.

The word fruit is alſo uſed to ſignify an aſſemblage of ſeeds in a plant; as in a Pea, Bean, Ranunculus, &c. and in its general ſignification, for all kinds of grain, whether naked, or incloſed in cover, capſula, or pod, whether bony, fleſhy, ſkinny, membranous, or the like.

Fruit is the product or reſult of the flower, or that for whoſe production, nutrition, &c. the flower is intended.

The ſtructure and parts of different fruits are different in ſome things, but in all the ſpecies the eſſential parts of the fruit appear to be only continuations or expanſions of thoſe which are ſeen in the other parts of the tree.

Dr. Beale ſuggeſts ſome very good reaſons for a direct communication between the remoteſt parts of the tree and the fruit; ſo that the ſame fibres which conſtitute the root, trunk, and boughs, are extended into the very fruit.

Thus, if you cut open an Apple tranſverſly, you will find it to conſiſt chiefly of four parts, viz. 1ſt, a ſkin, or cortex, which is only a production of the ſkin or outer bark of the tree. 2dly, A parenchyma or pulp, which is an expanſion and intumeſcence of the inner bark of the tree. 3dly, The fibres, or ramifications of the woody part of the tree. 4thly, The core, which is the produce of the pith, or medulla of the plant, indurated or ſtrengthened by twigs of the wood and fibres inoſculated therewith. This ſerves to furniſh a cell, or lodge, for the kernels, filtrates the juice of the parenchyma, and conveys it thus prepared to the kernel.

Of the fibres, authors generally reckon fifteen branches, of which ten penetrate the parenchyma, and incline to the baſis of the flower; the other five aſcend more particularly from the pedicle or ſtalk, and meet with the former at the baſe of the flower, to which branches the capſulæ, or coats of the kernels are faſtened.

Theſe branches being firſt extended through the parenchyma to the flower, furniſh the neceſſary matter for the vegetation of it; but as the fruit increaſes, it intercepts the aliment, and thus the flower is ſtarved, and falls off.

In a Pear there are five parts to be diſtinguiſhed, viz. the ſkin, parenchyma, ramification, kernel, and acetarium.

The three firſt parts are common to the Apple. The kernel, obſerved chiefly in Choke Pears, or Breaking Pears, is a congeries of ſtrong corpuſcles, that are diſperſed throughout the whole parenchyma, but in the greateſt plenty, and cloſeſt together about the center, or acetarium; it is formed of the ſtony or calculous part of the nutritious juice.

The acetarium is a ſubſtance of a tart acid taſte, of a globular figure, incloſed in an aſſemblage of ſeveral of the ſtony parts before-mentioned.

In a Plumb, Cherry, &c. there are four parts, viz. a coat, parenchyma, ramification, and nucleus, or ſtone. The ſtone conſiſts of two very different parts; the external or harder part, called the ſtone, or ſhell, is a concretion of the ſtony, or calculous parts of the nutritious juice, like the kernel in Pears, within it. The inner, called the kernel, is ſoft, tender, and light, being derived from the pith, or medulla of the tree by ſeminal branches, which penetrate the baſe of the kernel.

The nut, or acorn, conſiſts of a ſhell, cortex, and medulla; the ſhell conſiſts of a coat and parenchyma, derived from the bark and wood of a tree.

The cortex conſiſts of an inner and outer part, the firſt is a duplicature of the inner tunic of the ſhell; the ſecond is a moſſy ſubſtance, derived from the ſame ſource as the parenchyma of the ſhell. But authors are not agreed, whether the medulla, or pulp of the kernel does ariſe from the pith of the tree, or the cortical part thereof.

Berries, as the Grape, &c. contain (beſides three general parts, viz. coat, parenchyma, and ramification) grains of a ſtony nature, to do the offices of ſeeds.

Fruits in general are ſerviceable in guarding, preſerving, and feeding the incloſed ſeed, in filtrating the coarſer more earthy, and ſtrong parts of the nutritious juice of the plant, and retaining it to themſelves, ſending none but the moſt pure, elaborated, and ſpirituous parts to the ſeed, for the ſupport and growth of the tender delicate embryo or plantule, which is therein contained.

FRUMENTACEOUS [Frumentaceous, *Lat.*] a term applied by botaniſts to all ſuch plants as have a conformity with Wheat (called in *Latin* Frumentum,) in reſpect either of their fruits, leaves, ears, or the like.

FRUMENTUM INDICUM. See ZEA.

FRUTEX, a ſhrub; a vegetable of a genus between a tree and an herb, but of a woody ſubſtance. It is pretty difficult to determine wherein moſt of the writers on gardening and agriculture have made the diſtinction between trees and ſhrubs, or where to fix the difference or boundary, between the trees and ſhrubs, to ſay where one ends, and the other begins, for that cannot be determined by their growth; therefore the beſt definition which can be made of a ſhrub, to diſtinguiſh it from a tree, is its ſending forth many ſtems from the roots, whereas the trees have a ſingle trunk or body.

FRUTEX PAVONIUS. See POINCIANA.

FRUTICOSE [Fruticoſus, *Lat.* ſhrubby.] are thoſe plants which are of a hard woody ſubſtance, and do not riſe to the height of trees.

FUCHSIA. Plum. Nov. Gen. 14. Lin. Gen. Plant. 1097. This plant was ſo named by Father Plumier, who diſcovered it in America, in honour of the memory of Leonard Fuchſius, a learned botaniſt.

The CHARACTERS are,

The flower hath no empalement; it hath one petal, with a cloſed tube, which is ſlightly cut into eight parts at the brim, ending in acute points; it hath four ſtamina the length of the tube, which are terminated by obtuſe ſummits. The oval germen is ſituated under the flower, ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a ſucculent berry with four furrows, having four cells, containing ſeveral ſmall oval ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, intitled Tetrandria Monogynia, the flower having four ſtamina and one ſtyle.

We know but one SPECIES of this genus at preſent, viz.

FUCHSIA (*Triphylla.*) Lin. Sp. Plant. 1191. *Three-leaved Fuchſia.* Fuchſia triphylla, flore coccineo. Plum. Nov. Gen. *Three-leaved Fuchſia with a ſcarlet flower.*

This plant is a native in the warmeſt parts of America; it was diſcovered by Father Plumier, in ſome of the French Iſlands in America, and was ſince found by the late Dr. William Houſtoun, at Carthagena in New Spain, from whence he ſent the ſeeds into England.

This is propagated by ſeeds, which muſt be ſown in pots filled with rich light earth, and plunged into a hot-bed of tanners bark, and treated in the ſame way as other ſeeds from warm countries. In about a month or ſix weeks after the ſeeds are ſown, the plants will begin to appear, when they ſhould be carefully cleared from weeds, and frequently refreſhed with water to promote their growth; and when they are about two inches high, they ſhould be ſhaken out of the pot, and ſeparated carefully; then plant each into a ſmall pot filled with light rich earth, and plunge them again into a hot-bed of tanners bark, being careful to ſcreen them from the ſun until they have taken new root; after which time they muſt have freſh air admitted to them every day in proportion to the warmth of the ſeaſon, and ſhould be frequently watered. As the ſeaſon advances and becomes warm, the glaſſes of the hot-bed ſhould be raiſed higher, to admit a greater ſhare of air to the plants, to prevent their drawing up weak; and when the plants are grown ſo tall as to reach the glaſſes, they ſhould be removed into the bark-ſtove, and plunged into the tan-bed. In winter theſe plants require to be kept very warm, and at that ſeaſon they muſt not have much water, but in ſummer it muſt be often repeated.

Theſe plants are too tender to thrive in the open air in this country, even in the hotteſt part of the year; therefore they ſhould conſtantly remain in the ſtove, obſerving to let in a large ſhare of freſh air in ſummer, but in winter they muſt be kept warm; with this management the plants will produce their flowers, and make a beautiful appearance in the ſtove, amongſt other tender exotic plants.

FUMARIA. Lin. Gen. Plant. 760. Tourn. Inſt. R. H. 421. tab. 237. Fumatory; in French, *Fumeterre.*

The CHARACTERS are,

The empalement of the flower is compoſed of two equal leaves placed oppoſite. The flower is of the ringent kind, approaching near to the butterfly flowers. The upper lip is plain, obtuſe, indented at the top, and reflexed; the nectarium at the baſe of this is obtuſe, and a little prominent. The under lip is like the upper in all its parts, but the baſe is keel-ſhaped; the nectarium at the baſe is leſs prominent. The chaps of the flower is four-cornered, obtuſe, and perfectly bifid; there are ſix equal broad ſtamina in each flower, divided in two bodies, included in the two lips, each being terminated by three ſummits. In the center is ſituated an oblong germen, ſupporting a ſhort ſtyle, crowned by an orbicular compreſſed ſtigma. The germen afterward becomes a ſhort pod with one cell, including roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Hexandria, which includes the plants whoſe flowers have their ſtamina in two bodies, and have ſix ſtamina. To this genus Dr. Linnæus has joined the Capnoides of Tournefort, the Cyſticapnos of Boerhaave, the Corydalis of Dillenius, and the Cucularia of Juſſieu, making them only ſpecies of the ſame genus.

The SPECIES are,

1. FUMARIA (*Officinalis*) pericarpis monoſpermis racemoſis, caule diffuſo. Lin. Sp. Plant. 700. *Fumatory with ſeed-veſſels growing in a racemus, with a ſingle ſeed and a diffuſed ſtalk.* Fumaria officinarum & Dioſcoridis, flore purpureo. C. B. 143. *The common Fumatory with a purple flower.*
2. FUMARIA (*Spicata*) pericarpiis monoſpermiis ſpicatis, caule erecto, folioliis filiformibus. Sauv. Monſp. 263. *Fumatory with ſeed-veſſels growing in a ſpike, with one ſeed, an upright ſtalk, and thread-like leaves.* Fumaria minor tenuifolia. C. B. 143. *Leſſer narrow-leaved Fumatory.*
3. FUMARIA (*Alba*) ſiliquis linearibus tetragonis, caulibus diffuſis acutangulis. Lin. Sp. Plant. 700. *Fumatory with narrow four-cornered pods, and diffuſed ſtalks, having acute angles.* Fumaria ſempervirens & floreas, flore albo. Flor. Bat. *Evergreen Fumatory with a white flower.*
4. FUMARIA (*Capnoides*) ſiliquis teretibus, caulibus diffuſis, angulis obtuſis. *Fumatory with taper pods and diffuſed ſtalks, having obtuſe angles.* Fumaria lutea. C. B. 143. *Yellow Fumatory.*
5. FUMARIA (*Claviculata*) ſiliquis linearibus, foliis cirrhiferis. Lin. Sp. Plant. 701. *Fumatory with narrow pods, and leaves having claſpers.* Fumaria claviculis donata. C. B. P. 143. *Fumatory with tendrils.*
6. FUMARIA (*Capreolata*) pericarpiis monoſpermis racemoſis, foliis ſcandentibus ſubcirrhoſis. Lin. Sp. Plant. 701. *Fumatory with ſeed-veſſels growing in a racemus, with one ſeed, and climbing leaves having ſhort tendrils.* Fumaria major ſcandens, flore pallidiore. Raii Hiſt. 405. *Greater climbing Fumatory with a paler flower.*
7. FUMARIA (*Cava*) caule ſimplici, bracteis longitudine florum. Lin. Sp. Plant. 699. *Fumatory with a ſingle ſtalk, and bracteæ as long as the flowers.* Fumaria bulboſa, radice cavâ, major. C. B. P. 143. *Greater bulbous Fumatory with a hollow root.*
8. FUMARIA (*Bulboſa*) caule ſimplici, bracteis brevioribus multifidis, radice ſolida. *Fumatory with a ſingle ſtalk, ſhorter many pointed bracteæ, and a ſolid root.* Fumaria bulboſa, radice non cavâ, major. C. B. P. 144. *Greater bulbous Fumatory with a ſolid root.*
9. FUMARIA (*Cucularia*) ſcapo nudo. Hort. Cliff. 351. *Fumatory with a naked ſtalk.* Capnorchis Americana. Boerh. Ind. alt. 1. 309. and the Fumaria tuberoſa inſipida. Cornut. 129. *Tuberous inſipid Fumatory.*
10. FUMARIA (*Veſicaria*) ſiliquis globoſis inflatis. Hort. Upſal. 207. *Fumatory with globular inflated pods.* Cyſticapnos Africana ſcandens. Boerh. Ind. alt. 1. 310. *Climbing African Cyſticapnos.*
11. FUMARIA (*Eneaphylla*) foliis triternatis, foliolis cordatis. Lin. Sp. Plant. 700. *Fumatory with leaves compoſed of three trifoliate ſmall leaves, which are heart-ſhaped.* Fumaria enneaphyllos Hiſpanica ſaxatilis. Bocc. Muſ. 2. p. 83. *Five-leaved Rock Fumatory of Spain.*
12. FUMARIA (*Sempervirens*) ſiliquis linearibus paniculatis, caule erecto. Hort. Upſal. 207. *Fumatory with narrow pods growing in panicles, and an upright ſtalk.* Capnoides. Tourn. Inſt. R. H. 423. *Baſtard Fumatory.*

The firſt ſort is the common Fumatory which is uſed in medicine. This grows naturally on arable land in moſt parts of England; it is a low annual plant, and flowers in April, May, and June; and very often from plants which riſe late in the ſummer, there will be a ſecond crop in autumn. The juice of this plant is greatly commended for bilious cholics. It is never cultivated in gardens.

The ſecond ſort grows naturally in the ſouth of France, Spain, and Portugal, but is preſerved in botanic gardens for the ſake of variety. It is an annual plant,

plant, which riſes from the ſcattered ſeeds better than when it is ſown with care; the ſtalks of this grow more erect, the leaves are very finely divided, and the flowers grow in a cloſe ſpike; they are of a deep red colour, and flower about the ſame time as the common ſort.

The third ſort grows naturally on the borders of the Mediterranean Sea; it was firſt brought to England from Tangier. This is a perennial plant, which ſends out from the root many branching ſtalks, which riſe about ſix or eight inches high, growing in tufts or bunches; the leaves are very much divided, the ſtalks are angular, and the flowers grow in looſe panicles upon naked foot-ſtalks, which come out from the diviſions of the branches; they are of a whitiſh yellow colour, and there is a ſucceſſion of them moſt part of the year.

The fourth ſort hath an appearance very like the third, and by ſome it is ſuppoſed to be only a variety of that, but is undoubtedly a diſtinct ſpecies; for I have cultivated both more than forty years, and never yet found either of them to vary. The ſtalks of this ſort have blunt angles, whereas thoſe of the third are acute; they are of a purpliſh colour, and the flowers grow in looſer panicles, each having a longer foot-ſtalk than thoſe of the other; they are of a bright yellow colour, and there is a ſucceſſion of them great part of the year.

Theſe two ſorts continue green all the year, and except in very ſevere froſt, are always in flower, which make a pretty appearance; they grow beſt on walls or rocks, and are very proper for the joints of grottos, or any rock-work; where, if a few plants are planted, or the ſeeds ſcattered, they will multiply faſt enough from their ſcattering ſeeds, which are caſt out of the pods by the elaſtic ſpring of the valves when ripe, to a conſiderable diſtance; and as the plants will require no care to cultivate them, they ſhould not be wanting in gardens.

The fifth ſort grows in ſtony and ſandy places in ſome parts of England; it is an annual plant with trailing ſtalks, ſending out claſpers from the leaves, which faſten to any of the neighbouring plants. It flowers in May and June, but is never cultivated in gardens.

The ſixth ſort is an annual plant with many trailing ſtalks, which grow about a foot long, ſending out a few ſhort tendrils, whereby they faſten to any neighbouring ſupport; the flowers come out from the ſide of the ſtalks in looſe bunches; they are of a whitiſh herbaceous colour, with a purple ſpot on the upper lip. This flowers in May and June. It grows in France and Italy, on ſtony places in the ſhade.

The ſeventh ſort grows naturally in the ſouth of France and Italy, and was ſome years paſt preſerved in the Engliſh gardens by way of ornament, but is now rarely to be found here; it was titled Radix cava, or hollow root, from its having a pretty large tuberous root hollowed in the middle. The ſtalk of this ſort riſes about ſix inches high, and does not divide, but is garniſhed toward the bottom with one ramous leaf, ſomewhat like the common Fumatory, but the lobes are broader; the flowers grow in a ſpike at the top of the ſtalk; they are of a pale herbaceous colour, and appear in April. This plant delights in the ſhade, and is multiplied by offsets, for it rarely ripens ſeeds in England.

The eighth ſort is pretty common in many of the old gardens in England; it grows naturally in the ſouth of France, in Germany and Italy. This hath a pretty large round ſolid root of a yellowiſh colour, from which come out branching leaves like thoſe of the laſt ſort, but the lobes are longer; the flowers grow in ſpikes on the top of the ſtalks; they are of a purple colour, and come out early in April. The ſtalks of this ſort are ſingle, and riſe about four or five inches high.

There is a variety of this with green flowers, which is mentioned in moſt of the books; but all the plants of this ſort which I have yet ſeen, are only abortive, having no real flower, only a green bractea, which has been generally taken for the flowers: there is alſo mentioned a larger ſort; but if there is one which is really different from the common ſort, I have not ſeen it in the Engliſh gardens, nor the yellow and white flowering ſorts, which are alſo mentioned in many of the books.

The ninth ſort grows naturally in North America; this hath a ſcaly root about the ſize of a large Hazel Nut, from which come out three or four leaves upon ſlender foot-ſtalks; theſe are divided into three parts, each of theſe parts is compoſed of many ſmaller diviſions, which have narrow lobes, divided into three parts almoſt to the bottom; the flower-ſtalk is naked, and eight or nine inches long; this is terminated by four or five flowers, growing in a looſe ſpike; theſe have two petals, which are reflexed backward, and form a ſort of fork toward the foot-ſtalk, and at their baſe are two horned nectariums, which ſtand horizantal. The flowers are of a dirty white colour and appear in May, but rarely produce ſeeds here.

This is propagated by offsets from the root; it loves a ſhady ſituation and a light ſoil; the beſt time to tranſplant the roots is in autumn, when the leaves are decayed, for it ſhoots pretty early in the ſpring, therefore it would not be ſafe to remove them at that ſeaſon.

The tenth ſort grows naturally at the Cape of Good Hope; this is an annual plant, with trailing ſtalks which are two or three feet long, dividing into many ſmaller, which are garniſhed with ſmall branching leaves ſhaped like thoſe of the common Fumatory, but end with tendrils, which claſp to any neighbouring plants, and thereby the ſtalks are ſupported; the flowers are produced in looſe panicles, which proceed from the ſide of the ſtalks; they are of a whitiſh yellow colour, and are ſucceeded by globular ſwollen pods, in which are contained a row of ſmall ſhining ſeeds.

This is propagated by ſeeds, which ſhould be ſown upon a moderate hot-bed in the ſpring; and when the plants are fit to remove, they muſt be each planted in a ſmall pot filled with light earth, and plunged again into the hot-bed, where they muſt be ſhaded from the ſun till they have taken new root; after which they ſhould have a large ſhare of air admitted to them at all times in mild weather, to prevent their drawing up weak; and as ſoon as the ſeaſon is favourable, they ſhould be inured to bear the open air, to which they may be removed the beginning of June, when they may be ſhaken out of the pots, preſerving all the earth to their roots, and planted in a warm border, where their ſtalks ſhould be ſupported with ſticks to prevent their trailing on the ground; and in July the plants will flower, and continue a ſucceſſion of flowers till the froſt deſtroys the plants; the ſeeds ripen in autumn.

The eleventh ſort grows naturally upon old walls, or rocky places in Spain and Italy; this hath weak trailing ſtalks which are much divided, and are garniſhed with ſmall leaves divided into three parts, each of which hath three heart-ſhaped lobes; the flowers are produced in ſmall looſe panicles from the ſide of the ſtalks, they are of a greeniſh white, and appear moſt of the ſummer months. It is an abiding plant, which propagates itſelf by the ſeeds that ſcatter, and thrives beſt in a ſhady ſituation, and on old walls or buildings.

The twelfth ſort is an annual plant with an upright ſtalk, which grows a foot and a half high, round and very ſmooth, ſending out ſeveral branches upward; theſe are garniſhed with ſmooth branching leaves, of a pale colour, which are divided like the common ſort, but the ſmall leaves are larger and more obtuſe; the flowers are produced in looſe panicles from the ſides of the ſtalks, and at the extremity of the branches; they are of a pale purple colour, with yellow chaps (or lips); theſe are ſucceeded by taper narrow pods an inch and a half long, which contain many ſmall ſhining black ſeeds. This flowers during moſt of the ſummer months, and the ſeeds ripen in July, Auguſt,

guſt, and September. If the ſeeds of this plant are permitted to ſcatter, the plants will come up without any trouble, and require no other care but to thin them where they are too cloſe, and keep them clean from weeds.

Theſe plants may be ſuffered to grow on walls, and in ſome abject part of the garden; for if they are admitted into the borders of the pleaſure-garden, they will ſcatter their ſeeds, and become troubleſome weeds; but they are very proper plants to grow on ruins, or on the ſides of grottos or rock-work, where, by their long continuance in flower, they will have a good effect.

The fifth, ſixth, ſeventh, and eighth ſorts are propagated by offsets, as other bulbous-rooted flowers; theſe produce their flowers in the beginning of April, and are very pretty ornaments to borders in a ſmall flower-garden. They are extreme hardy, but do not increaſe very faſt, ſeldom producing ſeeds with us; and their bulbs do not multiply very much, eſpecially if they are often tranſplanted. They love a light ſandy ſoil, and ſhould be ſuffered to remain three years undiſturbed, in which time they will produce ſeveral offsets. The beſt ſeaſon for tranſplanting them is from May to Auguſt, when the leaves begin to die off; for if they are taken up when their leaves are freſh, it will greatly weaken their roots.

FURZ. See GENISTA.

G.

GALANTHUS. Lin. Gen. Plant. 362. Narciſſo-leucoium. Tourn. Inſt. R. H. 387. tab. 208. The Snow-drop; in French, *Perce-neige.*

The CHARACTERS are,

The ſpatha or ſheath of the flower is oblong, blunt, and compreſſed. This opens ſideways, and becomes a dry ſkin; the flower has three oblong concave petals, which ſpread open, and are equal; in the bottom is ſituated the three-leaved nectarium, which is cylindrical, obtuſe, and indented at the top; under the flower is ſituated the oval germen, ſupporting a ſlender ſtyle, which is longer than the ſtamina, crowned by ſingle ſtigma; this is attended by ſix ſhort hairy ſtamina, terminated by oblong pointed ſummits, which are gathered together. The germen afterward becomes an oval capſule which is obtuſe and three-cornered, opening in three cells, which are filled with roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, intitled Hexandria Monogynia, which includes the plants whoſe flowers have ſix ſtamina and one ſtyle.

This plant, as alſo the great Snow-drop, was by Dr. Tournefort ranged together under the title of Narciſſo-leucoium; which being a compound name, Dr. Linnæus has altered it to this of Galanthus; and has ſeparated the great Snow-drop from this, and given the ſimple name of Leucoium to that genus.

We know but one SPECIES of this genus, viz.

GALANTHUS (*Nivalis.*) Lin. Hort. Cliff. 134. The common Snow-drop. *Leucoium bulboſum trifolium minus.* C. B. P. The leaſt bulbous Snow-drop with three leaves.

There is a variety of this with double flowers.

Theſe flowers are valued for their early appearance in the ſpring, for they uſually flower 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 they 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 the 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 oftener than every third year.

GALE. See MYRICA.

GALEGA. Lin. Gen. Plant. 770. Tourn. Inſt. R. H. 398. tab. 222. Goat's-rue.

The CHARACTERS are,

The empalement of the flower is ſhort, tubulous, and of one leaf, indented in five parts. The flower is of the butterfly kind; the ſtandard is oval, large, and reflexed; the wings are near the length of the ſtandard; the keel is erect, oblong, and compreſſed; the under ſide toward the point is rounded, but the upper is acute; there are ten ſtamina, which join above their middle, and are terminated by ſmall ſummits. In the center is ſituated a narrow, cylindrical, oblong germen, ſupporting a ſlender ſtyle, crowned by a ſtigma terminated by a puncture. The germen afterward becomes a long pointed pod, incloſing ſeveral oblong kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria, which includes thoſe plants whoſe flowers have ten ſtamina joined in two bodies.

The SPECIES are,

1. GALEGA (*Officinalis*) leguminibus ſtrictis erectis, foliolis lanceolatis ſtrictis nudis. Lin. Sp. Plant. 1062. *Goat's-rue with erect cloſe pods, and ſpear-ſhaped naked leaves.* Galega vulgaris, floribus cæruleis. C. B. P. 352. *Common Goat's-rue with blue flowers.*
2. GALEGA (*Africana*) foliolis lanceolatis obtuſis, floribus ſpicatis longioribus, ſiliquis craſſioribus. *Goat's-rue with obtuſe ſpear-ſhaped leaves, flowers growing in longer ſpikes, and thicker pods.* Galega Africana, floribus majoribus ſiliquis craſſioribus. Tourn. Inſt. R. H. 399. *African Goat's-rue, with larger flowers and thicker pods.*
3. GALEGA (*Fruteſcens*) foliis ovatis, floribus paniculatis alaribus, caule fruticoſo. *Goat's-rue with oval leaves, and flowers growing in panicles from the ſides of the ſtalks, which are ſhrubby.* Galega Americana, foliis ſubrotundis, floribus coccineis. Houſt. MSS. *American Goat's-rue with roundiſh leaves and ſcarlet flowers.*
4. GALEGA (*Virginiana*) leguminibus retrofalcatis compreſſis villoſis ſpicatis, calycibus lanatis, foliolis ovali-oblongis acuminatis. Amœn. Acad. 3. p. 18. *Goat's-rue with hairy, compreſſed, ſickle-ſhaped pods, oblong oval-*

oval-pointed leaves, and woolly empalements. Orobus Virginianus, foliis fulva lanugine incanis, foliorum nervo in ſpinam aberunte. Pluk. Mant. 142.

5. GALEGA (*Purpurea*) leguminibus ſtrictis adſcendentibus glabris racemoſis terminalibus; ſtipulis ſubulatis, foliis oblongis glabris. Flor. Zeyl. 301. *Goats-rue with cloſe, ſmooth, aſcending pods, terminating the ſtalks in an oblong bunch, awl-ſhaped ſtipulæ, and oblong ſmooth leaves.* Coronilla Zelanica herbacea, flore purpuraſcente. Burm. Zeyl. 77.

The firſt ſort grows naturally in Italy and Spain, but is propagated in the Engliſh gardens for medicinal uſe. This hath a perennial root, compoſed of many ſtrong fibres, which are frequently jointed, from which ariſe many channelled hollow ſtalks, from two to three feet high, which are garniſhed with winged leaves, compoſed of ſix or ſeven pair of narrow ſpear-ſhaped lobes, terminated by an odd one, which are ſmooth and entire; the flowers terminate the ſtalks growing in ſpikes, they are of the Pea-bloſſom ſhape, and of a pale blue colour, and are diſpoſed in looſe ſpikes. They appear in June, and are ſucceeded by taper pods about one inch and a half in length, having one row of kidney-ſhaped ſeeds, which ripen toward the end of Auguſt.

There is a variety of this with white flowers, and another with variegated flowers, which have accidentally been produced from ſeeds, ſo are not conſtant, therefore are only mentioned here.

The ſecond ſort grows naturally in Africa; this differs from the former, in having larger leaves, which are compoſed of eight or ten pair of lobes, broader and blunter at their ends than thoſe of the common ſort; the flowers are larger, and the ſpikes are longer; the ſeed-pods are alſo much thicker than thoſe of the common ſort, but in other reſpects are very like it.

Theſe plants are propagated by ſeeds, which may be ſown either in the ſpring or autumn, upon a bed of ground in an open ſituation; and when the plants come up, they muſt be kept clean from weeds till they are ſtrong enough to remove; then a ſpot of ground ſhould be prepared, in ſize proportionable to the quantity of plants deſigned; this ſhould be well dug, and cleared from the roots of all noxious weeds; then the plants ſhould be carefully taken up, and planted in rows at a foot and a half diſtance, and in the rows one foot aſunder, obſerving to water them till they have taken new root; after which they will require no farther care to keep them clean from weeds, which may be eaſily done by hoeing of the ground frequently between the plants, and in the ſpring the ground between the rows ſhould be dug, which will encourage their roots, and cauſe them to ſhoot out vigorous ſtalks; and if their ſtalks are cut down before the ſeeds are formed every year, the roots will continue the longer, eſpecially if they grow on a light dry ſoil. The ſeeds of theſe will grow whereever they are permitted to ſcatter, ſo that plenty of the plants will come up without any care, and theſe may be tranſplanted and managed in the ſame manner as is before directed.

The firſt ſort is uſed in medicine; it is accounted cordial, ſudorific, and alexipharmic, ſo very good againſt peſtilential diſtempers, expelling the venom through the pores of the ſkin, and is of uſe in all kinds of fevers. Mr. Boyle, in his treatiſe of the Wholſomeneſs and Unwholſomeneſs of the Air, beſtows three or four pages, in celebrating the virtues of Goats-rue in peſtilential and malignant diſeaſes, from his own obſervation and experience.

The third ſort was diſcovered by the late curious botaniſt Dr. William Houſtoun, at Campeachy, from whence he ſent the ſeeds into Europe. This plant is propagated by ſeeds, which muſt be ſown on a hot-bed early in the ſpring; and when the plants come up, and are fit to tranſplant, they muſt be tranſplanted each into a ſeparate ſmall pot, and plunged into a hot-bed of tanners bark, ſhading them from the ſun till they have taken new root; then they muſt be treated as hath been directed for other tender plants, which are kept in the bark-ſtove. With this management they will flower in July, and in September they will perfect their ſeeds, but the plants may be preſerved through the winter in the bark-ſtove.

The fourth ſort grows naturaly in Virginia and Carolina; this hath a perennial root, and an annual ſtalk which riſes three feet high; the lobes of the leaves are oblong and oval, generally ſeven or nine to each leaf: the whole plant is covered with a ſilvery down. The flowers are of a red colour, and are produced in ſpikes at the end of the branches: theſe are ſucceeded by ſickle-ſhaped compreſſed pods of a ſilvery colour, containing one row of kidney-ſhaped ſeeds.

This plant, although it is tolerable hardy, yet it is with difficulty preſerved in gardens; for the ſeeds rarely ripen in England, and the plants are often deſtroyed by froſt in winter. The only method in which I have been able to keep the plant, has been by potting them, and placing them in a common frame in winter, where they enjoyed the free air in mild weather, but were protected from froſt; in this way I have kept the plant three years, but it has not ripened ſeeds here.

The fifth ſort grows naturally in Ceylon, and in many parts of India, from whence I have received the ſeeds. This ſort was annual here, and decayed before the ſeeds were ripe. It hath an herbaceous ſtalk, which riſes two feet high, garniſhed with winged leaves, compoſed of eight or nine pair of oval lobes, terminated by an odd one; the foot-ſtalks of the flowers come out oppoſite to the leaves; theſe ſuſtain a long looſe ſpike or thyrſe of ſmall purple flowers, which are ſucceeded by ſlender erect pods.

This may be cultivated in the ſame way as the third ſort; and if the plants are brought forward early in the ſpring, if the ſummer proves warm, the ſeeds may ripen.

GALENIA. Lin. Gen. Plant. 443. Sherardia. Ponted. Epiſt. 14.

The title of this genus was given to it by Dr. Linnæus, from the famous phyſician Galen.

The CHARACTERS are,

The flower hath a ſmall quadrifid empalement of one leaf; it hath no petals, but hath eight hairy ſtamina the length of the empalement, terminated by double ſummits. In the center is ſituated a roundiſh germen, ſupporting two reflexed ſtyles, crowned by ſimple ſtigmas. The empalement afterward becomes a roundiſh capſule with two cells, containing two oblong angular ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's eighth claſs, intitled Octandria Digynia, which includes thoſe plants whoſe flowers have eight ſtamina and two ſtyles.

We know but one SPECIES of this genus, viz.

GALENIA (*Africana.*) Hort. Cliff. 150. *Shrubby Galenia.* Sherardia. Ponted. Epiſt. 14. and the Atriplex Africana, lignoſa fruteſcens, roſmarini foliis. Hort. Piſ. 20. *Shrubby African woody Atriplex, with Roſemary leaves.*

This ſhrub grows naturally at the Cape of Good Hope, and in other parts of Africa; it riſes with a ſhrubby ſtalk about four or five feet high, ſending out many weak branches, garniſhed with very narrow leaves, which are placed irregularly on every ſide the branches; they are of a light green, with a furrow running longitudinally through the middle; the flowers are produced in looſe panicles from the ſide and at the end of the branches; they are very ſmall, and have no petals, ſo make little appearance. The flowers come out in July and Auguſt, but are not ſucceeded by ſeeds in England.

This plant will not live through the winter in the open air in England, ſo muſt be placed in the greenhouſe, or under a frame, with other hardy exotic plants, where it may have a large ſhare of air in mild weather, for it only requires to be protected from froſt. In the ſummer it may be expoſed in the open air, with other plants of the ſame country, and in dry weather it muſt be frequently watered. This may be

propagated by cuttings, which, if planted during any of the ſummer months, and watered frequently, will take root in about five or ſix weeks, and may then be treated as is directed for the old plants.

GALEOPSIS. Lin. Gen. Plant. 637. Tourn. Inſt. R. H. 185. tab. 86. Stinking Dead Nettle.

The CHARACTERS are,

The empalement of the flower is tubulous, of one leaf, cut into five ſegments, which end in acute points. The flower is of the lip kind, having a ſhort tube; the chaps are a little broader, but the length of the empalement; from the baſe to the under lip, it is on both ſides ſharply indented; the upper lip is concave, roundiſh, and ſawed at the top; the under lip is trifid, the middle ſegment being the largeſt, which is crenated. It hath four ſtamina incloſed in the upper lip, two being ſhorter than the other, terminated by roundiſh bifid ſummits. In the center is ſituated a quadrifid germen, ſupporting a ſlender ſtyle, crowned by a bifid acute ſtigma. The germen afterward become four naked ſeeds, ſitting in the rigid empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, intitled Didynamia Gymnoſpermia, which includes thoſe plants whoſe flowers have two long and two ſhort ſtamina, and the ſeeds are naked.

The SPECIES are,

1. GALEOPSIS (*Ladanum*) internodiis caulinis æqualibus, verticillis omnibus remotis. Lin. Sp. Plant. 579. *Stinking Hedge Nettle, with equal diſtances between the joints, and whorls growing at a diſtance.* Sideritis arvenſis anguſtifolia rubra. C. B. P. 233. *Red narrow-leaved Field Ironwort.*
2. GALEOPSIS (*Tetrahit*) internodiis ſupernè incraſſatis, verticillis ſummis ſubcontiguis. Lin. Sp. Plant. 579. *Stinking Hedge Nettle, whoſe joints are thicker above, and the whorls at the top growing near each other.* Lamium cannabino folio vulgare. Raii Syn. Ed. 3. p. 240. *Common Dead Nettle with a Hemp leaf.*
3. GALEOPSIS (*Speciosa*) corollâ flavâ, labio inferiore maculato. Flor Lapp. 193. *Stinking Hedge Nettle with a yellow flower, whoſe under lip is ſpotted.* Lamium cannabinum aculeatum flore luteo ſpecioſo, labiis purpureis. Pluk. Alm. 204. *Prickly Hemp Dead Nettle, with a beautiful yellow flower and purple lips.*
4. GALEOPSIS (*Galeobdolon*) verticillis ſexfloris, involucro tetraphyllo. Lin. Sp. Plant. 780. *Stinking Hedge Nettle with ſix flowers in each whorl, and a four-leaved involucrum.* Galeopſis ſive urtica iners flore luteo. J. B. 3. 323. *Stinking or Dead Nettle with a yellow flower.*
5. GALEOPSIS (*Orientale*) verticillis biſloris, foliis oblongo-cordatis. *Stinking Hedge Nettle with two flowers in each whorl, and oblong heart-ſhaped leaves.* Galeopſis Orientalis ocimaſtri folio, flore majore flaveſcente. H. R. Par. *Eaſtern ſtinking Hedge Nettle, with an Ocimaſtrum leaf, and a larger yellowiſh flower.*
6. GALEOPSIS (*Hiſpanica*) caule piloſo, calycibus labio corollæ ſuperiore longioribus. Lin. Sp. Plant. 580. *Stinking Hedge Nettle with a hairy ſtalk, and the empalement longer than the upper lip of the petal.* Galeopſis annua Hiſpanica, rotundiore folio. Inſt. R. H. 186. *Annual Spaniſh ſtinking Hedge Nettle, with a rounder leaf.*

Theſe are all of them annual plants, except the fourth ſort; the three firſt grow naturally in England. The firſt is found upon arable land in many places; the ſecond grows upon dunghills, and by the ſide of paths, in many parts of England. The third ſort grows chiefly in the northern counties, but I have found it growing wild in Eſſex, within ten miles of London. Theſe plants are ſeldom cultivated in gardens, for if their ſeeds are permitted to ſcatter, the plants will come up as weeds wherever they are allowed a place.

The fourth is a perennial plant with a creeping root; this grows in the woods and under hedges in moſt parts of England. The fifth grows in the Levant; this is a biennial plant, which periſhes ſoon after the ſeeds are ripe. It is preſerved in botanic gardens for the ſake of variety, but hath no great beauty.

GALEOPSIS FRUTESCENS. See PRASIUM.

GALIUM. Lin. Gen. Plant. 117. Tourn. Inſt. R. H. 114. tab. 39. Ladies Bedſtraw, or Cheeſe-rennet; in French, *Caillelait*.

The CHARACTERS are,

The flower hath a ſmall empalement indented in four parts, ſitting upon the germen. It hath one petal, divided into four ſegments almoſt to the bottom; and four awl-ſhaped ſtamina which are ſhorter than the petal, terminated by ſingle ſummits. It hath a twin germen ſituated under the flower, ſupporting a ſlender half bifid ſtyle, crowned by a globular ſtigma. The germen afterward become two dry berries, which are joined together, each incloſing a large kidney-ſhaped ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, intitled Tetrandria Monogynia, which includes thoſe plants whoſe flowers have four ſtamina and one ſtyle.

The SPECIES are,

1. GALIUM (*Verum*) foliis octonis linearibus ſulcatis, ramis floriferis brevibus. Hort. Cliff. 34. *Ladies Bedſtraw with eight narrow furrowed leaves, and ſhort flowering branches.* Galium luteum. C. B. P. 335. *Yellow Ladies Bedſtraw.*
2. GALIUM (*Mollugo*) foliis octonis ovato-linearibus ſubſerratis patentiſſimis mucronatis, caule flaccido, ramis patentibus. Lin. Sp. Plant. 107. *Ladies Bedſtraw with eight oval narrow leaves, which are ſpread open, ſawed, and pointed, a weak ſtalk, and ſpreading branches.* Mollugo montana latifolia ramoſa. C. B. P. 333. *Branching broad-leaved Mountain Mollugo.*
3. GALIUM (*Purpureum*) foliis verticillatis lineari-ſetaceis, pedunculis folio longioribus. Hort. Cliff. 34. *Ladies Bedſtraw with narrow briſtly leaves growing in whorls, and foot-ſtalks of the flowers longer than the leaves.* Galium nigro-purpureum montanum tenuifolium. Col. Ecphr. 1. p. 298. C. B. P. 335. *Narrow-leaved Mountain Ladies Bedſtraw, with a black purple flower.*
4. GALIUM (*Glaucum*) foliis verticillatis linearibus pedunculis dichotomis, ſummo caule floriferis. Prod. Leyd. 256. *Ladies Bedſtraw with narrow leaves growing in whorls, foot-ſtalks divided by pairs, and flowers growing at the top of the ſtalk.* Galium ſaxatile glauco folio. Bocc. Muſ. 2. p. 172. *Rock Ladies Bedſtraw with a gray leaf.*
5. GALIUM (*Rubrum*) foliis verticillatis linearibus patulis, pedunculis breviſſimis. Hort. Cliff. 34. *Ladies Bedſtraw with narrow leaves growing in whorls, and ſhort foot-ſtalks.* Galium rubrum. C. B. P. 335. *Red Ladies Bedſtraw.*
6. GALIUM (*Boreale*) foliis quaternis lanceolatis trinerviis glabris, caule erecto, ſeminibus hiſpidis. Flor. Lappon. 60. *Ladies Bedſtraw with four ſmooth ſpear-ſhaped leaves having three veins, an upright ſtalk, and rough ſeeds.* Rubia pratenſis lævis acuto folio. C. B. P. 333. *Smooth Meadow Madder with an acute leaf.*
7. GALIUM (*Album*) foliis verticillatis, lineari-lanceolatis, ramis floriferis longioribus. *Ladies Bedſtraw with narrow ſpear-ſhaped leaves growing in whorls, and longer branches of flowers.* Galium album vulgare. Tourn. Inſt. R. H. 113. *Common white Ladies Bedſtraw.*
8. GALIUM (*Linifolium*) foliis lineari-lanceolatis glabris, caule erecto ramoſiſſimo. *Ladies Bedſtraw with ſeven narrow, ſmooth, ſpear-ſhaped leaves, and an upright branching ſtalk.* Galium album linifolium. Barrel. Obſer. 99. *White Ladies Bedſtraw with a Flax leaf.*
9. GALIUM (*Paluſtre*) foliis quaternis obovatis inæqualibus, caulibus diffuſis. Flor. Suec. 119. *Ladies Bedſtraw with four unequal oval leaves, and a diffuſed ſtalk.* Galium paluſtre album. C. B. P. 335. *White Marſh Ladies Bedſtraw.*

The firſt of theſe plants (which is the ſort commonly uſed in medicine) is very common in moiſt meadows, and in paſture grounds, in ſeveral parts of England. The other varieties are preſerved in curious botanic gardens, but as they are plants of very little beauty, and are ſubject to ſpread very far, and over-run whatever plants grow near them, they are ſeldom cultivated in other gardens.

Theſe ſorts may any of them be propagated by parting their roots, which ſpread and increaſe very faſt, either

in the ſpring or autumn, and will grow almoſt in any ſoil or ſituation, eſpecially the firſt ſort; the other ſorts require a drier ſoil, but will all grow in any ſituation.

GALLERIES, are ornaments made with trees of various kinds, which are very common in all the French gardens, but are ſeldom introduced into the Engliſh gardens, eſpecially ſince the taſte for clipped trees has been exploded; but as there may be ſome who yet fancy theſe obſolete ornaments, I ſhall juſt mention the way of conſtructing them.

In order to make a gallery in a garden with porticoes and arches, a line muſt firſt be drawn of the length you deſign the gallery to be; which being done, it is to be planted with Hornbeam, as directed under the article HORNBEAM; which Hornbeam thus planted, is to be the foundation of the gallery.

The management of them is not very difficult; they require only to be digged about, and ſheared a little when there is occaſion.

The chief curioſity required is in the ordering the fore-part of the gallery, and in forming the arches.

Each pillar of the porticoes or arches ought to be four feet diſtant one from the other; the gallery twelve feet high, and ten feet wide, that there may be room for two or three perſons to walk a-breaſt.

When the Hornbeams are grown to the height of three feet, the diſtance of the pillars well regulated, and the ground-work of the gallery finiſhed, the next thing to be done is to form the frontiſpiece: to perform which you muſt ſtop the Hornbeam between two pillars at the height, and run up a trellis made for that purpoſe, which forms the arch.

As it grows up you muſt with your ſhears even thoſe boughs that outſhoot the others; in time they will grow ſtrong, and may be kept in form by the ſhears.

Portico galleries may be covered with Lime-trees.

GARCINIA. Lin. Gen. Plant. 526. The Mangoſteen.

The CHARACTERS are,

The flower hath a one-leaved empalement, which is permanent. It hath four roundiſh concave petals, which ſpread open, and are larger than the empalement. It hath ſixteen ſtamina which are erect, and form a cylinder, terminated by roundiſh ſummits. In the center is ſituated an oval germen, with ſcarce any ſtyle, but is crowned by a buckler-ſhaped plain ſtigma divided into eight parts, and is permanent. The germen afterward becomes a thick globular berry with one cell, including eight hairy fleſhy ſeeds, which are convex and angular.

This genus of plants is ranged in the firſt ſection of Linnæus's eleventh claſs, intitled Dodecandria Monogynia, which includes thoſe plants whoſe flowers have twelve ſtamina and one ſtyle.

We have but one SPECIES of this genus, viz.

GARCINIA (*Mangoſtana.*) Hort. Cliff. 182. *The Mangoſtan, or Mangoſteen.* Arbor peregrina aurantio ſimili fructu. Cluſ. Exot. 12. *Foreign Tree with a fruit like the Orange.*

This tree grows naturally in the Molucca Iſlands, and alſo in the inland parts of New Spain, from whence I received perfect ſpecimens, which were ſent me by Mr. Robert Millar, who gathered them near Tolu, but did not know the tree. It riſes with an upright ſtem near twenty feet high, ſending out many branches on every ſide, which are placed oppoſite, and ſtand oblique to each other, and not at right angles; the bark of the branches is ſmooth, of a gray colour, but on the tender ſhoots it is green, and that of the trunk is of a darker colour and full of cracks: the leaves are of the ſpear-ſhape, and entire; they are ſeven or eight inches long, and about half ſo much in breadth in the middle, gradually diminiſhing to both ends, of a lucid green on their upper ſide, and of an Olive colour on their under, having a prominent midrib through the middle, with ſeveral ſmall veins running from that to both ſides of the leaf. The flower is like that of a ſingle Roſe, compoſed of four roundiſh petals, which are thick at their baſe, but are thinner toward their ends; they are of a dark red colour. The fruit which ſucceeds the flower is round, the ſize of a middling Orange; the top is covered by a cap, which was the ſtigma on the top of the ſtyle, and remains to the top of the fruit, and is indented in rays to the number of ſix or ſeven, which are obtuſe. The ſhell of the fruit is like that of the Pomegranate, but ſofter, thicker, and fuller of juice; it is green at firſt, but changes to a dark brown with ſome yellowiſh ſpots; the inſide of the fruit is of a Roſe colour, and divided into ſeveral parts by thin partitions, as in Oranges, in which the ſeeds are lodged, ſurrounded by a ſoft juicy pulp of a delicious flavour, partaking of the Strawberry and the Grape, and is eſteemed one of the richeſt fruits in the world; the trees naturally growing in the form of Pyrabolas, whoſe branches are well garniſhed with large ſhining green leaves: they have an elegant appearance, and afford a kindly ſhade in hot countries, therefore are worthy of cultivation, in all thoſe countries where there is warmth enough to ripen the fruit. As there are but few of the ſeeds in theſe fruit which come to perfection (for the greateſt part of them are abortive) ſo moſt of thoſe which have been brought to Europe have failed; therefore the ſureſt way to obtain the plants, is to ſow their ſeeds in tubs of earth in the country, and when the plants have obtained ſtrength, they may be brought to Europe; but there ſhould be great care taken in their paſſage, to ſcreen them from ſalt water and the ſpray of the ſea, as alſo not to give them much water, eſpecially when they are in a cool or temperate climate, for theſe plants are very impatient of wet. When the plants arrive in Europe, they ſhould be carefully tranſplanted, each into a ſeparate pot, filled with light kitchen-garden earth, and plunged into the tan-bed, obſerving to ſhade them from the ſun till they have taken new root; then they muſt be treated in the ſame manner as other tender plants from hot countries.

GARDENS are diſtinguiſhed into flower-gardens, fruit-gardens, and kitchen-gardens: the firſt, being deſigned for pleaſure and ornament, are to be placed in the moſt conſpicuous parts, i. e. next to, or juſt againſt the back front of the houſe; the two latter being principally intended for uſe and ſervice, are placed leſs in ſight.

Though the fruit and kitchen-gardens are here mentioned as two diſtinct gardens, and have by the French gardeners, as alſo by ſome of our own countrymen been contrived as ſuch, yet they are now uſually in one; and with good reaſon, ſince they both require a good ſoil and expoſure, and will equally require to be placed out of the view of the houſe. And as it will be proper to incloſe the kitchen-garden with walls, and to ſecure the gates, that no perſons may have acceſs to it, who have no buſineſs in it, for the ſake of preſerving the product, ſo theſe walls will anſwer the purpoſes of both. Moreover, in the diſpoſition of the kitchen-garden, when it is properly divided into quarters, the planting of eſpaliers of fruit-trees round each of the quarters, will be of uſe in ſcreening from the view the kitchen-herbs growing in the quarters; and, by that means, give an elegancy to both parts, and ſave beſides a great expence. The only objection which has been made to this of any conſequence is, that the gardeners are too apt to crowd the borders near the walls with kitchen-herbs, whereby the trees are deprived of their nouriſhment; but this is in every gentleman's power to redreſs, by not ſuffering the borders to be thus crowded. But I ſhall treat more fully of this under the article of KITCHEN-GARDEN.

In the choice of a place to plan a garden in, the ſituation and expoſure of the ground are the moſt eſſential points to be regarded; ſince, if a failure be made in that point, all the care and expence will in a manner be loſt.

In a garden for pleaſure, the principal things to be conſidered, are, 1ſt, the ſituation; 2dly, the ſoil, aſpect, or expoſure; 3dly, water; 4thly, proſpect.

1ſt, Si-

1ſt, Situation: this ought to be ſuch an one as is wholſome, in a place that is neither too high nor too low; for if a garden be too high, it will be expoſed to the winds, which are very prejudicial to trees; if it be too low, the dampneſs of the ground, the vermin, and venomous creatures that breed in ponds and marſhy places, add much to their inſalubrity.

A ſituation on a riſing ground, or on the ſide of a hill, is moſt happy, eſpecially if the ground be not too ſteep; if the ſlope be eaſy, and in a manner imperceptible; if a good deal of level may be had near the houſe; and if it abounds with ſprings of water; for, being ſheltered from the fury of the winds, and the violent heat of the ſun, a temperate air will be there enjoyed; and the water that deſcends from the top of the hills, either from ſprings or rain, will not only ſupply fountains, canals, and caſcades, for ornament, but when it has performed its office, will water the adjacent valleys, and render them fertile and wholſome, if it be not ſuffered to ſtagnate in them.

Indeed, if the declivity of the hill be too ſteep, and if the water be too abundant, a garden on the ſide of it may often ſuffer, by having the trees torn up by the torrents and floods; and the earth above tumbling down, the walls may be demoliſhed, and the walks ſpoiled.

It cannot however be denied, that the ſituation on a plain or flat, has ſeveral advantages that the higher ſituation has not: floods and rains make no ſpoil; there is a continued proſpect of champaigns, interſected by rivers, ponds, brooks, meadows and hills, covered with buildings or woods; and the level ſurface is leſs tireſome to walk on, and leſs chargeable, than that on the ſide of a hill; the terrace-walks and ſteps are not neceſſary; but the greateſt diſadvantage of flat gardens is the want of an extenſive proſpect, which riſing grounds afford.

2dly, The ſecond thing to be conſidered in chuſing a plat for a garden, is a good earth or ſoil.

It is ſcarce poſſible to make a fine garden in a bad ſoil; there are indeed ways to meliorate ground, but they are very expenſive; and ſometimes, when the expence has been beſtowed of laying good earth two feet deep over the whole ſurface, which for a large garden is an expence too great for moſt perſons; and after this a whole garden has been ruined, notwithſtanding the expoſure has been ſoutherly and healthful, when the roots of the trees have come to reach the natural bottom.

To judge of the quality of the ſoil, obſerve whether there be any Heath, Thiſtles, or ſuch like weeds, growing ſpontaneouſly in it, for they are certain ſigns that the ground is poor. Likewiſe if there be large trees growing thereabouts, obſerve whether they grow crooked, ill-ſhaped, of a faded green, and full of moſs, or infeſted with vermin; if ſo, the place is to be rejected: but on the contrary, if it be covered with good Graſs fit for paſture, then you may be encouraged to try the depth of the ſoil.

To know this dig holes in ſeveral places, ſix feet wide and four feet deep; if you find three feet of good earth it will do well, but leſs than two will not be ſufficient.

The quality of good ground is neither to be ſtony, nor too hard to work; neither too dry, nor too moiſt; nor too ſandy and light, nor too ſtrong and clayey, which is the worſt of all for gardens.

3dly, The third requiſite is water. The want of this is one of the greateſt inconveniencies that can attend a garden, and will bring a certain mortality upon whatever is planted in it, eſpecially in the greater droughts that often happen in a hot and dry ſituation in ſummer; beſides the uſefulneſs of it in fine gardens, for making jets d'eau, canals, caſcades, &c. which are the greateſt ornaments of a garden.

4thly, The fourth thing required in a good ſituation is, the view and proſpect of a fine country; and though this is not ſo abſolutely neceſſary as water, yet it is one of the moſt agreeable beauties of a fine garden: beſides, if a garden be planted in a low place that is buried, as I may ſay, and has no kind of proſpect, it will be not only diſagreeable but unwholſome, by being too much ſhaded and obſcured; as the trees will rather retain inſalubrious damps, than communicate the refreſhing air, that is ſo purifying to vegetable nature.

In ſhort, a garden neceſſarily requires (beſides the care of the gardener) the ſun, a good ſoil, a full, or at leaſt an open proſpect, and water, the laſt above all; and it would be egregious folly to plant a garden where any of theſe are wanting.

Of the Deſigning or Manner of Laying out a Pleaſure Garden.

The area of a handſome garden may take up thirty or forty acres, not more.

And as for the diſpoſition and diſtribution of this garden, the following directions may be obſerved.

1ſt, There ought always to be a deſcent from the houſe to the garden not fewer than three ſteps, but if there are ſix or ſeven it will be better. This elevation of the building will make it more dry and wholſome, alſo from the head of theſe ſteps there will be a farther proſpect or view of the garden.

In a fine garden, the firſt thing that ſhould preſent itſelf to the ſight, ſhould be an open lawn of Graſs, which, in ſize, ſhould be proportionable to the garden; in a large garden it ſhould not be leſs than ſix or eight acres; but in middling or ſmall gardens, the width of it ſhould be conſiderably more than the front of the houſe; and if the depth be one half more than the width, it will have a better effect. The figure of this lawn need not be regular, and if on the ſides there are trees planted irregularly, by way of open grove, ſome of which may be planted forwarder upon the lawn than the others, whereby the regularity of the lawn will be broken, it will render it more like nature, the beauties of which ſhould always be ſtudied in the laying out and planting of gardens; for the nearer theſe gardens approach to nature, the longer they will pleaſe; for what is a garden, but a natural ſpot of ground dreſſed and properly ornamented? there are thoſe who have erred in copying of what they call nature, as much as thoſe who have drawn a whole garden into ſtrait lines, great alleys, ſtars, &c. by bringing the rougheſt and moſt deformed part of nature into their compoſitions of gardens: as for inſtance, where the ground has been naturally level, they have at great expence, made hollows and raiſed mole-hills; ſo that the turf has been rendered not only more unpleaſant to walk upon, but much worſe to keep: and after all the pains that have been taken to ape nature, the whole is as eaſily diſcovered to be the work of art, as the ſtiffeſt ſlopes and the moſt finiſhed parterres.

The great art in laying out of gardens, is to adapt the ſeveral parts to the natural poſition of the ground, ſo as to have as little earth to remove as poſſible; for this is often one of the greateſt expences in making of gardens; and it may with truth be affirmed, that wherever this has been practiſed, nine times in ten it has proved for the worſe; ſo that if inſtead of levelling hills to form large terraces, ſtiff ſlopes, and even parterres, as have been too often practiſed; or the ſinking of hollows, and raiſing of hills, as hath by others been done; if the ſurface of the ground had only been ſmoothed and well turfed, it would have had a much better effect, and been more generally approved than the greateſt number of theſe gardens, which have been made with an infinite expence both of time and money.

The next thing to be obſerved is, to contrive a dry walk, which ſhould lead quite round the whole garden; for as gardens are deſigned to promote the exerciſe of walking, the greater the extent of this dry walk, the better it will anſwer the intent; ſince in bad weather, or in dewy mornings and evenings,

when

when the fields are unpleaſant or unſafe to walk over, theſe dry walks in gardens become uſeful and pleaſant; and ſuch walks, if laid either with gravel or ſand, may lead through the different plantations, gently winding about in an eaſy natural way, which will be more agreeable than thoſe long ſtrait walks, which are too frequently ſeen in gardens.

But as the taſte of deſigning gardens has of late altered from the former method, there are many perſons who have gone into the oppoſite extreme; and in the forming of what they term ſerpentine walks, have twiſted them about in ſo many ſhort turns, as to render it very diſagreeable to walk on them; and at the ſame time they ſtrike the ſight with as much ſtiffneſs and appearance of art, as any of the methods formerly practiſed. In ſhort, the fewer turns there are in theſe walks, and the more they are concealed, the better they will pleaſe; and yet the turns being eaſy, and at great diſtances, will take off all the appearance of ſtraitneſs. And here let me obſerve, that there can be no better, or more eaſy or natural method of laying out theſe walks, than by tracing the eaſy turns made on a road, where it bends by the track of the coach wheels.

Theſe walks ſhould be ſo contrived, as to lead into ſhade as ſoon as poſſible; as alſo into ſome plantations of ſhrubs, where perſons may walk in private, and be ſheltered from the wind; for no garden can be pleaſing where there is want of ſhade and ſhelter.

Another thing abſolutely neceſſary is, where the boundaries of the garden are fenced with walls or pales, they ſhould be hid by plantations of flowering ſhrubs, intermixed with Laurels, and ſome other Evergreens, which will have a good effect, and at the ſame time conceal the fences, which are diſagreeable, when left naked and expoſed to the ſight.

In ſituations where there is a good ſupply of water, the deſigner has room for adding one of the greateſt beauties to the garden, eſpecially if it will admit of a conſtant ſtream; for in ſuch places, if the water is properly conducted through the garden, it will afford infinite pleaſure; for although theſe ſtreams may not be ſufficient to ſupply a large ſurface, yet if theſe narrow rivulets are judiciouſly led about the garden, they will have a better effect than many of the large ſtagnating ponds or canals, ſo frequently made in large gardens; for where theſe pieces of water are large, if all the boundaries can be ſeen from one point of view, they cannot be eſteemed by perſons of judgment; and frequently theſe ſtanding waters are brought ſo near the houſe, as to render the air damp and unhealthy; and many times they are ſo ſituated, as to occaſion this inconvenience, and at the ſame time are not ſeen to any advantage from the houſe.

Where wilderneſſes are intended, theſe ſhould not be cut into ſtars, and other ridiculous figures, nor formed into mazes or labyrinths, which in a great deſign is trifling, but the walks ſhould be noble, and ſhaded by tall trees; and the ſpaces of the quarters planted with flowering ſhrubs and Evergreens, whereby they will be rendered pleaſant at all ſeaſons of the year; and if there are hardy ſorts of flowers (which will thrive with little care) ſcattered about near the ſides of the walks, they will have a very good effect, in making a variety of natural beauties almoſt through the year.

The ſituation of theſe wilderneſſes ſhould not be too near the houſe, leſt they ſhould occaſion damps; therefore it is much better to contrive ſome open groves, through which there may be a communication under ſhade, from the houſe to theſe wilderneſſes; which are much the beſt when they are planted at the fartheſt part of the garden, provided they do not obſtruct the view of fine objects.

Buildings are alſo very great ornaments to a garden, if they are well deſigned and properly placed; but the modern taſte of crowding gardens with large uſeleſs buildings, I preſume to think is cenſurable, with regard as well to propriety as expence.

Statues and vaſes are alſo very beautiful objects, but theſe ſhould by no means be placed too near each other; for when ſeveral of them appear at once, they fill and confound the eye, and loſe the beautiful effect which they would have, if now and then one properly ſituated engages the ſight.

What an expence might be ſpared, and applied to nobler purpoſes, if nature only were to be imitated, if ſimplicity were ſtudied in this delightful art, rather than oſtentation! for any thing may be ſaid to be more of nature, than what we miſcall grandeur.

Fountains are alſo very ornamental to a garden, if they are magnificently built, and where a conſtant ſupply of water can be obtained; but if they are meanly erected, or have not water to keep them conſtantly running, they ſhould never be introduced into gardens, for nothing can be more ridiculous than to ſee a dry fountain; which, perhaps, at a great expence, may have water forced up, to ſupply it for an hour or two, and no more; and this perhaps not in dry ſeaſons, when there is a general ſcarcity of water.

The ſame may alſo be obſerved of caſcades, and other falls of water, which ought never to be contrived in gardens, where there cannot be a conſtant run of water; but where the ſituation of a garden is ſo happy, as to be naturally ſupplied with water, theſe falls and jet's d'eau, may be rendered very great beauties, eſpecially if they are well deſigned, and not made in the low mean taſte, in which too many of thoſe now in being appear, and where the water is made to fall over a parcel of regular ſteps of ſtone; but the fall ſhould be in one ſheet from top to bottom, where ſhould be placed many large rough ſtones to break and diſperſe the water, and to increaſe the noiſe of the fall.

Where the ground is naturally uneven, and has gentle riſes and falls, theſe may be ſo humoured in the laying out of the ground, as to be rendered very great beauties; but theſe inequalities of the ground muſt by no means be cut into regular ſtiff ſlopes, nor amphitheatres, as has been too much the practice: but if the knolls are properly planted with clumps of trees or ſhrubs, and the ſloping ſides ſmoothed and left in their natural poſition, they will have a much better effect, than can be given them by all the regular angles, lines, and flat ſlopes, which have been till of late, introduced by all the deſigners of gardens.

The taſte in laying out of gardens has greatly altered, and has been as greatly improved in England, in the compaſs of a few years; for, with the revolution, the Dutch taſte of laying out gardens was introduced, which conſiſted of little more than flower-borders laid out in ſeveral ſcrolls of Box-work, clipped Evergreens, and ſuch low expenſive things; as alſo the walling round, and dividing the ſeveral parts of gardens by croſs walls; ſo that a garden conſiſting of eight or ten acres, was generally divided by brick walls, into three or four ſeparate gardens; and theſe were reduced to exact levels, having many gravel-walks, and the borders on each ſide crowded with clipped trees and Evergreen hedges, dividing theſe ſmall incloſures again; ſo that the firſt making and planting of theſe ſmall gardens was attended with a greater expence, as was the keeping of them afterward, than gardens of ſix times the extent, when deſigned after nature.

Whether this taſte ſo univerſally prevailed in England, in complaiſance to his late Majeſty King William, or was owing to the low grovelling taſte of thoſe perſons, who had the deſigning of moſt of the Engliſh gardens, it is difficult to determine; but it is very certain, that the gentlemen, at that time, attended very little themſelves, to the diſpoſition of their gardens, but were contented to leave the whole direction of them to perſons of the meaneſt talents that ever profeſſed the art; ſo that ſoon after, when another taſte prevailed, theſe gardens were almoſt totally demoliſhed, and it would have been well, if a good, that is to ſay, a natural taſte had ſucceeded the other; but this was not the caſe; for though a more open and extenſive way of laying out gardens was introduced, yet this was lit-

tle more than copying after the French, whoſe taſte was in making long avenues, ſtrait walks, ſtiff regular ſlopes, cabinets, fret-work, tall hedges cut into various ſhapes, jets d'eau, fountains, &c. ſo that there was little of nature ſtudied; but, on the contrary, all the geometrical figures introduced in wilderneſs-work, as alſo in the parterres, and other compartments of the garden: nor is it ſo much to be wondered at, that this taſte prevailed in France, when the deſigns of all the principal gardens were there formed by architects, who were as ſtudious to have the ſymmetry of the oppoſite, or correſponding part of the garden, as exact as the apartments of a habitation; nor has length of time, nor the improvements already made in other countries, amended their taſte, or convinced them of its abſurdity.

As the gardens of Verſailles, Marli, and others, were extolled for their magnificence, ſo the plans of them were almoſt univerſally copied; the deſigners, or imitators rather, only varying the parts according to the ſituation or figure of the ground; and this was practiſed for ſeveral years, at a time, when great ſums of money were expended in gardens, which might have rendered this country the moſt beautiful of any in Europe, had a natural taſte then prevailed in the deſigning of gardens; which is the more to be lamented, as the plantations then made, have been many of them rooted out, to make way for the alterations and improvements which have been ſince introduced.

Many perſons, I am ſenſible, will have it, that, in the deſigns of gardens, the taſte ſhould alter from time to time, as much as the faſhion of apparel; but theſe cannot be perſons of judgment; for wherever there are natural beauties in a country, they will always pleaſe perſons of real knowledge; and frequently it is obſerved, that perſons of but little ſkill in the art of gardening, are ſtruck with theſe beauties without knowing the cauſe; therefore where the beautiful parts of nature are juſtly imitated in gardens, they will always be approved by judicious perſons, let the taſte of gardening alter as it will.

When trees have been long growing in a garden, nothing can be more diſagreeable than to have them deſtroyed, to alter the garden according to the faſhion of the time, becauſe it requires much time to bring up trees to ſuch a height as to afford ſhade and ſhelter; and, as time is precious, ſo, where the diſpoſition of the garden is altered, there ſhould be great attention given to the preſervation of all the good trees, wherever they can be either uſeful or ornamental.

There is another eſſential part of gardening, which cannot be too much conſidered by perſons who deſign gardens, which is that of adapting the ſeveral ſorts of trees and ſhrubs, to the ſituation and ſoil of the garden, as alſo to allow the trees a proper ſhare of room; but, however neceſſary this will appear, yet very few perſons have made this their ſtudy, inſomuch that when one views many modern gardens, and ſees the great number of trees and ſhrubs, which are crowded into them, one would be induced to believe, that private intereſt has had a greater influence than any other motive, with the deſigners. Indeed this fault may often be aſcribed to the maſter, who, perhaps, is too much in haſte for ſhade and ſhelter, ſo will have three or four times the number of trees and ſhrubs planted as ſhould have been, or that can remain long without injury, where the plantations ſucceed; and to this over-haſte are owing the miſerable plantations of large trees, ſo often ſeen in gardens and parks, where trees of all ſorts, and of any age are taken out of woods, hedge-rows, &c. and removed at a great expence to ſtand and decay annually, till they become ſo many dead ſticks, than which nothing can be a more diſagreeable ſight to the owner; who, after an expectation for ſeveral years, attended with an expence of watering, digging, and cleaning, finds himſelf under a neceſſity either of replanting, or giving up the thoughts of having any. Numbers of perſons have indeed amuſed themſelves with the hopes of ſucceſs, by ſeeing theſe new planted trees put out branches for a year or two, which they generally do; but in three or four years after, inſtead of making a progreſs, they begin to decay at the top, and continue to do ſo gradually, until they quite periſh, which, perhaps, may not happen in eight or ten years, eſpecially if no ſevere winter, or very dry ſummer, intervenes, either of which generally proves fatal to theſe plantations; ſo that perſons may be led on with hopes, for ſo many years, in the beſt part of their lives, when there is a certainty of their failing, or at leaſt of their never increaſing in ſize; but of this I ſhall treat more fully in the article of PLANTING, and ſhall proceed.

In the buſineſs of deſigns, a mean and pitiful manner ſhould be ſtudiouſly avoided, and the aim ſhould be always at that which is noble and great, not to bring too many little things into a garden, nor to make ſmall pieces of water, narrow walks, &c. eſpecially in large gardens; for it is much better to have a few great things, than four times the number of ſmall ones, which are trifling. In ſmall gardens there is more excuſe for this, nor indeed would it be right, to have either large lawns, broad walks, or large pieces of water in ſuch; but yet even in theſe there ought to be a medium, and perſons ſhould never attempt to crowd too many things in theſe, whereby the whole will appear only as a mean and trifling model of a large garden.

Before the deſign of a garden is entered upon, it ought to be conſidered, what it will be in twenty or thirty years time, when the trees and ſhrubs are grown up, and ſpread; for it often happens, that a deſign, which looks handſome when it is firſt planted, and in good proportion, in proceſs of time becomes ſo ſmall and ridiculous, that there is a neceſſity either of altering or totally deſtroying it.

The general diſtribution of a garden, and of its parts, ought to be accommodated to the different ſituations of the ground, for a deſign may be very proper for a garden on a perfect level, which will by no means do for one where there are great inequalities in the ground; ſo that, as I have before intimated, the great art of deſigning is, in properly adapting the deſign to the ſituation, and contriving to ſave the expence of removing earth, to humour the inequalities of the ground, to proportion the number and ſorts of trees and ſhrubs to each part of the garden, and to ſhut out, from the view of the garden, no objects that may become ornamental.

There are, beſides theſe, many other rules relating to the proportions, conformity, and diſpoſition of the different parts and ornaments of gardens, of which more may be ſeen under their ſeveral articles.

GARDENIA. See JASMINUM.

GARIDELLA. Tourn. Inſt. R. H. 655. tab. 430. Lin. Gen. Plant. 507. [This plant was ſo named by Dr. Tournefort, in honour of Dr. Garidel, who was profeſſor of phyſic, at Aix, in Provence.]

The CHARACTERS are,

The flower hath a ſmall, oblong, erect empalement of five leaves; it hath no petals, but five oblong equal nectariums occupy their place; theſe are bilabiate. The outer part of the under lip is bifid and plain; the interior part of the upper lip is ſhort and ſingle. The flower hath eight or ten awl-ſhaped ſtamina, which are ſhorter than the empalement, and are terminated by obtuſe erect ſummits. In the center is ſituated three germina, which are oblong, compreſſed, and ſharp-pointed, having no ſtyles, but crowned by ſimple ſtigmas; theſe become three oblong compreſſed capſules with two valves, incloſing ſeveral ſmall ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's tenth claſs, which includes thoſe plants whoſe flowers have ten ſtamina and three germen.

We know but one SPECIES of this genus, viz.

GARIDELLA (*Nigellaſtrum.*) Hort. Cliff. 170. Garidella foliis tenuiſſime diviſis. Tourn. *Garidella with very narrow divided leaves*; and the Nigella Cretica folio Fœniculi. C. B. P. 146. *Fennel-flower of Crete with a Fennel leaf.*

This plant is very near akin to the Nigella, or Fennel-flower, to which genus it was placed by the writers on botany before Dr. Tournefort, and was by him

him ſeparated from it, as differing in the form of the flower.

It grows wild in Candia, and on mount Baldus, in Italy, as alſo in Provence, where it was diſcovered by Dr. Garidel, who ſent the ſeeds to Dr. Tournefort, for the Royal Garden at Paris.

This is an annual plant, which riſes with an upright ſtalk a foot high, dividing into ſeveral ſlender branches, garniſhed at their joints with very ſlender leaves like thoſe of Fennel. The ſtalks are terminated by one ſmall flower, of a pale herbaceous colour, which is ſucceeded by three capſules, each containing two or three ſmall ſeeds. It flowers in June and July, and the ſeeds ripen in September. It is propagated by ſeeds, which ſhould be ſown in autumn, on a bed or border of light freſh earth, where the plants are deſigned to remain (for they ſeldom thrive if they are tranſplanted;) when the plants are come up, they muſt be carefully cleared from weeds, and where they are too cloſe, they muſt be thinned, leaving them about four or five inches apart; this is all the culture the plants require, and if the ſeeds are permitted to ſcatter, the plants will come up without any farther care.

GAULTHERIA.

The CHARACTERS are,

It hath a double permanent empalement; the outer has two oval, concave, ſhort leaves; the inner has one bell-ſhaped leaf cut into five ſegments; the flower has one oval petal, cut half-way into five ſegments, which are reflexed; it has ten awl-ſhaped nectarii, which are ſhort, ſurrounding the germen and ſtamina, and ten awl-ſhaped incurved ſtamina inſerted to the receptacle, terminated by bifid horned ſummits, and a roundiſh depreſſed germen, ſupporting a cylindrical ſtyle, crowned by an obtuſe ſtigma; the germen afterward becomes an obtuſe five-cornered capſule, having five cells, faſtened to the interior empalement, which turns to a berry open at the top, filled with hard angular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, the flower having ten ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

GAULTHERIA (*Procumbens.*) Amœn. Acad. 3. p. 14. *Trailing Gaultheria.* Vitis Idæa Canadenſis, pyrolæ folio. Tourn. Inſt. 608. *Canada Wortle-berry with a winter-green leaf.*

This plant grows naturally in ſeveral parts of North America upon ſwampy ground, ſo is with difficulty preſerved in the Engliſh gardens. The branches of this trail upon the ground, and become ligneous, but never riſe upward; they are garniſhed with oval entire leaves, placed alternate; the flowers are produced on the ſide of the branches; they are of an herbaceous colour, ſo make little appearance, and very rarely are ſucceeded by fruit in England.

The only method in which I have ſucceeded to keep this plant, was by planting of it in a pot, filled with looſe undunged earth, placing it in the ſhade, and frequently watering it; with this management I have kept the plant alive three years, and have had flowers but no fruit.

GAURA.

The CHARACTERS are,

It hath an empalement of one leaf, which falls off, with a long cylindrical tube, having four oblong glands faſtened to it; the upper part is cut into four oblong ſegments, which are reflexed. The flower hath four oblong riſing petals, which are broad at the top but narrow at their baſe, ſitting upon the tube of the empalement; and eight upright ſlender ſtamina which are ſhorter than the petals, and a nectarious gland between the baſe of each, with oblong moveable ſummits. The oblong germen is ſituated under the flower, ſupporting a ſlender ſtyle the length of the ſtamina, crowned by four oval ſpreading ſtigmas; the flower is ſucceeded by an oval four-cornered compreſſed capſule, containing one oblong angular ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's eighth claſs, intitled Octandria Monogynia, the flower having eight ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

GAURA (*Biennis.*) Amœn. Acad. 3. p. 26. *Gaura.* Lyſimachia chamænerio ſimilis floridana, foliiis nigris punctis capſulis carinatis in ramulorum cymis. Pluk. Amalth. 139. tab. 428. f. 1.

This is a biennial plant, which grows naturally in Virginia and Penſylvania: the ſtalk riſes four or five feet high, ſending out ſeveral branches, which are garniſhed with oblong, ſmooth, pale, green leaves, ſitting pretty cloſe. The flowers are produced in cloſe tufts at the end of the branches; they are compoſed of four oblong petals, of a pale Roſe colour, irregularly placed, having eight ſtamina ſurrounding the ſtyle. The flowers appear in September, and when the autumn proves favourable, the ſeeds will ripen toward the end of October.

If the ſeeds of this plant are ſown on open borders ſoon after they are ripe, they will more certainly ſucceed than when they are ſown in the ſpring. When the plants come up, they muſt be kept clean from weeds; and if they are too cloſe, ſome of them ſhould be drawn out, and planted in a bed to allow room for the other to grow; in the autumn they ſhould be all tranſplanted to the place where they are deſigned to ſtand for flowering and perfecting their ſeeds, and will require no other culture but to ſupport their branches to prevent the autumnal winds from breaking them down.

GENERATION is, by naturaliſts, defined to be the act of procreating and producing a thing which before was not; or, according to the ſchoolmen, it is the total change or converſion of a body into a new one, which retains no ſenſible part or mark of its former ſtate.

Thus we ſay, fire is generated, when we perceive it to be where before there was only wood, and other fuel, or when the wood is ſo changed, as to retain no ſenſible character of wood; in the like manner a chick is ſaid to be generated, when we perceive a chick, where before was only an egg, or the egg is changed into the form of a chick.

In generation there is not properly any production of new parts, but only a new modification or manner of exiſtence of the old ones, and thus generation is diſtinguiſhed from creation.

Generation alſo differs from alteration, in that in alteration the ſubject remains apparently the ſame, and is only changed in its accidents or affections, as iron, which before was ſquare, is now made round; or when the ſame body which is well to-day, is ſick to-morrow.

Again: generation is the oppoſite to corruption, which is the utter extinction of a former thing; as, when that which before was an egg, or wood, is no longer either the one or the other; whence it appears, that the generation of one thing is the corruption of another.

The Peripateticks explain generation by a change or paſſage from a privation, or want of a ſubſtantial form, to the having ſuch a form.

The moderns allow of no other change in generation, than what is local; and, according to their notion, it is only a tranſpoſition, or new arrangement of parts; and, in this ſenſe, the ſame matter is capable of undergoing an infinite number of generations.

As for example: A grain of Wheat, being committed to the ground, imbibes the humidity of the ſoil, becomes turgid, and dilates to ſuch a degree, that it becomes a plant; and, by a continual acceſſion of matter, by degrees, ripens into an ear, and at length into a ſeed; this ſeed, when ground in a mill, appears in the form of a flour, which, being mixed up with water, makes a paſte, of which bread is generated by the addition of yeaſt, and undergoing the operation of fire, i. e. by baking; and this bread being comminuted by the teeth, digeſted in the ſtomach, and conveyed through the canals of the body, becomes fleſh, or, in other words, fleſh is generated.

Now the only thing effected in all this ſeries of generation, is a local motion of the parts of the matter, and their ſettling again in a different order; ſo that

where-

wherever there is a new arrangement, or compoſition of the elements, there is, in reality, a new generation, and thus generation is reduced to motion.

Generation is more immediately underſtood of animal and vegetable bodies from ſeed, or the coition of others of different ſexes, but of the ſame genus or kind.

Monſ. Perrault, and ſome of the modern naturaliſts after him, maintained, That there is not properly any new generation, that God created all things at firſt, and that what is by us called generation, is no more than an augmentation and expanſion of the minute parts of the body of the ſeed; ſo that the whole ſpecies, which are afterwards produced, were, in reality, all formed at the firſt, and incloſed therein, to be brought forth and expoſed to view in time, and according to a certain order and œconomy.

And accordingly Dr. Garden ſays, It is moſt probable, that the ſtamina of all the plants and animals that have been formed, ab origine mundi, by the Almighty Creator, within the firſt of each reſpective kind; and he who conſiders the nature of viſion, that it does not give us the true magnitude, but only the proportion of things; and that which ſeems to our naked eye but a point, may truly be made up by as many parts as ſeem to be in the whole univerſe, will not think this an abſurd or impoſſible thing.

Dr. Blair, treating of the generation of plants, ſays, That when Almighty God created the world, he ſo ordered and diſpoſed of the materies mundi, that every thing produced from it ſhould continue ſo long as the world ſhould ſtand. Not that the ſame individual ſpecies ſhould always remain; for they were, in proceſs of time, to periſh, decay, and return to the earth, from whence they came; but that every like ſhould produce its like, every ſpecies ſhould produce its own kind, to prevent a final deſtruction of the ſpecies, or the neceſſity of a new creation, in order to continue the ſame ſpecies upon earth, or in the world.

For which end he laid down certain regulations, by which each ſpecies was to be propagated, preſerved, and ſupported, till, in order, or courſe of time, they were to be removed hence; for, without that, thoſe very beings, which were created at firſt, muſt have continued till the final diſſolution of all things, which Almighty God of his infinite wiſdom did not think fit.

But, that he might ſtill the more manifeſt his omnipotence, he ſet all the engines of his providence to work, by which one effect was to produce another by the means of certain laws, or rules laid down for the propagation, maintenance, and ſupport of all created beings; this his divine providence is called nature, and theſe regulations are called the laws, or rules of nature, by which it ever operates in its ordinary courſe, and whatever exceeds from that is ſaid to be preternatural, miraculous, or monſtrous.

Moſes, in his account of the creation, tells us, that plants have their ſeeds in themſelves, in theſe words: And God ſaid, 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.

The antients, indeed, diſtinguiſhed the generation of animals into two kinds, i. e. into regular, called univocal; and anamolous, called alſo equivocal, or ſpontaneous.

The firſt was effected by parent animals of the ſame kind, as that of men, birds, beaſts, &c. The ſecond they ſuppoſed to be effected by corruption, the ſun, &c. as that of inſects, frogs, &c. but this latter is now generally exploded.

Many, indeed, have eſſayed to treat of the generation of animals, but few have been able to give that ſatisfactory account of it that were to be wiſhed for, and far fewer yet have been able to treat of the generation of plants as it ought to be; for that which ſtill kept them in the dark, was,

Firſt, That though there were two different ſexes in animals, by whoſe mutual aſſiſtance the ſpecies was propagated, yet there was no ſuch thing then known in plants.

Secondly, That though it can now be made appear, that every animal is produced by univocal generation, i. e. from an egg, and not by corruption, &c. as moſt of the antients imagined the inſects were; yet there are ſtill thoſe who maintain, that thoſe which they call imperfect plants, are the product of a certain rottenneſs in the earth.

The generation of plants bears a cloſe analogy to that of ſome animals, eſpecially ſuch as want local motion, as muſcles, and other immoveable ſhell-fiſh, which are hermaphrodite, and contain both the male and female organs of generation.

The flower of a plant is found to be the pudendum, or principal organ of generation; but the uſe of ſo much mechaniſm, and ſo many parts, has been but little known till of late years.

The flower of a Lily conſiſts of ſix petala, or flower-leaves, from the bottom of which, in the middle, ariſes a kind of tube, called by Tournefort, the piſtillum, and by Dr. Linnæus the ſtyle; this reſts upon the germen, which is the female organ of generation; round this are placed pretty fine threads, called the ſtamina, or filaments; theſe ſtamina ariſe likewiſe from the bottom of the flower, and terminate at the top in little ſummits, called by ſome apices, which are replete with a fine duſt, called farina; theſe are the male organs of plants.

This is the general ſtructure of the flowers of plants, although they are infinite ways diverſified, and to ſuch a degree, that ſome have no ſenſible piſtil, and others want the ſtamina; others again have the ſtamina, but want the apices, and ſome plants exceed all others in this, that they have no viſible flowers; but if it be allowed, that this before-mentioned is the moſt common ſtructure of flowers, it will follow, that theſe parts that ſeem wanting are uſually only leſs apparent, or are ſituated in different plants, or in different parts of the ſame plant.

The fruit is uſually at the baſe of the piſtillum, ſo that when the piſtillum falls with the reſt of the flower, the fruit appears in the ſtead of it; but oftentimes the piſtillum is the fruit itſelf, but ſtill they have both the ſame ſituation in the center of the flower, and the petala, or flower-leaves, which are diſpoſed around the little embryo, ſeem to be deſigned only to prepare a fine juice in the little veſſels, for the ſupport of it during the little time that they laſt, and it requires; but ſome ſuppoſe the chief uſe of them to be to defend the piſtillum, &c.

The apices of the ſtamina are ſmall capſulæ, or bags, full of a farina, or duſt, which falls out when the capſula grows ripe, and burſts.

Monſ. Tournefort ſuppoſed this duſt to be only an excrement of the food of the fruit, and the ſtamina to be nothing but excretory ducts, which filtrated this uſeleſs matter, and thus diſcharged the embryo; but Mr. Morland, Mr. Geoffroy, and others, find nobler uſes for this duſt; on their principle the ſtamina, with the apices and farina, make the male part of the plant, and the piſtil, the female.

Mr. Morland ſays, It hath been long ago obſerved, that there is in every particular ſeed a ſeminal plant conveniently lodged between the two lobes, which conſtitute the bulk of the ſeed, and are deſigned for the firſt nouriſhment of the tender plant.

But the admirable Dr. Grew, to whoſe generous induſtry, and happy ſagacity, we are indebted for the beſt improvements of this part of knowledge, is the only author I can find, who hath obſerved that the farina, or fine powder, which is, at its proper ſeaſon, ſhed out of thoſe thecæ, or apices ſeminiformes [i. e. ſeed-forming caſes] which grow at the top of the ſtamina, doth ſome way perform the office of male ſperm. But herein, I think, he falls ſhort, in that he ſuppoſes them only to drop upon the outſide the uterus, or vaſculum ſeminale, and to impregnate the included ſeed by ſome ſpirituous emanations, or energetical impreſs.

That which is now ſubjected to the diſquiſitions and cenſure of ſuch whoſe exquiſite ſkill conſtitutes them judges of ſuch performances, is, Whether it may not be more proper to ſuppoſe, that the ſeeds which are lodged in the proper involucra, are at the firſt unimpregnated ova (or eggs) as of animals; that this farina is a congeries of ſeminal plants, one of which muſt be conveyed into every ovum before it can become prolific; that the ſtylus, in Mr. Ray's language, or the upper part of the piſtillum, in Mr. Tournefort's, is a tube deſigned to convey theſe ſeminal plants into their neſts in the ova; that there is ſo vaſt a proviſion made, becauſe of the odds there are, whether one, of ſo many, ſhall ever find its way into, and through ſo narrow a conveyance.

To make this ſuppoſition the more credible, I ſhall lay down the obſervations I have made upon the ſituation of theſe ſtamina, and the ſtylus, in ſome few ſpecies of plants.

Firſt, In the Corona Imperialis, where the uterus, or vaſculum ſeminale of the plant ſtands upon the center of the flower; and from the top of this ariſeth the ſtylus, the vaſculum ſeminale and ſtylus together repreſenting a piſtillum.

Round this are placed ſix ſtamina; upon the ends of each of theſe are apices, ſo artfully fixed, that they turn every way with the leaſt wind, being in height almoſt equal to the ſtyles about which they play, and which in this plant is manifeſtly open at the top, as it is hollow all the way; to which we muſt add, that upon the top of the ſtylus there is a ſort of tuft, conſiſting of pinguid villi, which I imagined to be placed there to catch and detain the farina, as it flies out of the thecæ; from hence, I ſuppoſe, the wind ſhakes it down the tube, till it reach the vaſculum ſeminale.

In the Caprifolium, or Honeyſuckle, there riſes a ſtylus from the rudiments of a berry, into which it is inſerted to the top of the monopetalous flower; from the middle of which flower are ſent forth ſeveral ſtamina, that ſhed their farina out of the caſes upon the orifice of the ſtylus, which, in this plant, is villous or tufted, upon the ſame account as in the former.

In Allium, or common Garlic, there ariſes a tricoccous uterus, or ſeed-veſſel; in the center of which is inſerted a ſhort ſtylus, not ſo high as the apices, which thus over-topping it, have the opportunity of ſhedding their globules into an orifice more eaſily; for which reaſon, I can diſcern no tuft upon this (as in the former) to inſure their entrance, that being provided for by its ſituation juſt under them.

The reader, I hope, will excuſe me, if I preſent him now with ſome ſuch reaſonings or reflections as the foregoing account doth ſuggeſt, and will ſupport; and I cannot but hope to perſuade thoſe that are candid, that I have aſſigned to the ſeveral parts of the flowers I have mentioned, their true and real uſe.

For nothing can be more natural than to conclude, that where a fine powder is curiouſly prepared, carefully repoſited, and ſhed abroad at a peculiar ſeaſon, where there is a tube ſo placed as to be fit to receive it, and ſuch care in diſpoſing this tube, where it doth not lie directly under the caſes that ſhed the powder, it hath a particular apparatus at the end, to inſure its entrance.

Nothing can be more genuinely deduced from any premiſes, than it may from this, that this powder, or ſome of it, was deſigned to enter this tube. If theſe ſtamina had been only excretory ducts, as has been hitherto ſuppoſed, to ſeparate the groſſer parts, and leave the juice deſigned for the nouriſhment of the ſeed more reſerved, what need was there to lodge theſe excrements in ſuch curious repoſitories? They would have been conveyed any where, rather than where there was ſo much danger of their dropping into the ſeed-veſſel again, as there is here.

Again: the tube, over the mouth of which they are ſhed, and into which they enter, leads always directly into the ſeed-veſſel.

To which we muſt add, that the tube always begins to die when theſe thecæ are emptied of their contents; if they laſt any longer, it is only whilſt the globules, which enter at their orifice, may be ſuppoſed to have finiſhed their paſſage. Now, can we well expect a more convincing proof of theſe tubes being deſigned to convey theſe globules, than that they wither when there are not more globules to convey.

If I could now ſhew, that the ova, or unimpregnated ſeeds, are ever to be obſerved without this ſeminal plant, the proof would ariſe to a demonſtration; but having not been ſo happy as to obſerve this, I ſhall content myſelf at preſent with ſuggeſting, that hence one would conclude, that the petala of the flower were rather deſigned to ſever ſuperfluous juices from what was left to aſcend in the ſtamina, than the ſtamina to perform this office, either for them, or the unimpregnated ſemina, and obſerve the analogy between animal and vegetable generation, as far as was neceſſary there ſhould be an agreement between them. I ſhall recommend the enquiry to thoſe gentlemen who are maſters of the beſt microſcopes, and addreſs in uſing them; though, in the mean time, I have made ſome ſteps toward a proof of this ſort, and have met with ſome ſuch hints, as make me not deſpair of being able, in a ſhort time, to give the world even this ſatisfaction.

For, not to inſiſt upon this, that the ſeminal plant always lies in that part of the ſeed which is always neareſt to the inſertion of this ſtylus, or ſome propagation of it into the ſeed-veſſels, I have diſcovered in Beans, Peas, and Kidney-beans, juſt under one end of that we call the eye, a manifeſt perforation, (diſcernible by the groſſer ſort of magnifying glaſſes) which leads directly to the ſeminal plant, and at which I ſuppoſe the ſeminal plant did enter; and, I am apt to think, the Beans or Peas that do not thrive well, may be found deſtitute of it.

But I muſt now proceed to deſcribe ſome other plants, whereby it will appear, that there is a particular care always exerciſed to convey this powder, ſo often mentioned, into a tube, which may convey it to the ova.

Now, in leguminous plants, if we carefully take off the petala of the flower, we ſhall diſcover the pod, or ſiliqua, cloſely covered with an involving membrane, which, about the top, ſeparates into nine ſtamina, each fraught with its quantity of farina; and theſe ſtamina cloſely adhere to the ſtyle, which is obſervable at the end of that tube, which here alſo leads directly to the pod; it ſtands not upright, indeed, but ſo bent, as to make near a right angle with it.

In Roſes there ſtands a column, conſiſting of many tubes cloſely clung together, though eaſily ſeparable, each leading to their particular cell, the ſtamina in a great number placed all round about.

In Tithymalus, or Spurge, there riſes a tricoccous veſſel, that, whilſt it is ſmall, and not eaſily diſcernible, lies at the bottom till it is impregnated, but afterwards grows up, and ſtands ſo high upon a tall pedicle of its own, as would tempt one to think, that there were to be no communication betwixt this and the apices.

In the Strawberries and Raſpberries, the hairs which grow upon the ripe fruit (which, I ſuppoſe, may be ſurpriſing to ſome) are ſo many tubes leading each to their particular ſeed; and therefore we may obſerve, that in the firſt opening of the flower there ſtands a ring of ſtamina, within the petala, and the whole inward area appears like a little wood of theſe hairs or pulp, which, when they have received and conveyed their globules, the ſeeds ſwell, and riſe in a carneous pulp. Thus far Mr. Morland.

We may obſerve a veſſel at the bottom of the piſtil of the Lily, which veſſel we may call the uterus, or womb, in which are three ovaries filled with little eggs, or rudiments of ſeed found in the ovaria, which always decay, and come to nothing, unleſs impregnated with the farina of the ſame plant, or ſome other of the ſame kind; the ſtamina alſo ſerve for the conveyance of the male ſeed of the plant to be per-

fected in the apices, which, when ripe, burſt forth in little particles like duſt; ſome of them fall into the orifice of the piſtil, and are either conveyed thence into the utricle, to fecundify the female ova, or lodged in the piſtil, where, by their magnetic virtue, they draw the nouriſhment from the other parts of the plant into the embryos of the fruit, making them ſwell, grow, &c.

In flowers that turn down, as the Cyclamen, and the Imperial Crown, the piſtil is much longer than the ſtamina, that their duſt may fall from their apices in ſufficient quantities on the piſtil, for the buſineſs of impregnation.

Mr. Geoffroy aſſures us, That in all the obſervations he had made, the cutting off the piſtil before it could be impregnated by the farina, actually rendered the plant barren for the ſeaſon, and the fruit abortive.

In many kinds of plants, as the Oak, Pine, Willow, &c. the flowers, Mr. Geoffroy obſerves, have their ſtamina and apices, whoſe farina may eaſily impregnate the rudiments of the fruit, which are not far off.

Indeed there is ſome difficulty in reconciling this ſyſtem with a certain ſpecies of plants, which bear flowers without fruit; and another ſpecies of the ſame kind and denomination, which bear fruit without flowers; ſuch are the Palm, Hemp, Hop, Poplar, &c. which are hence diſtinguiſhed into male and female; for how ſhould the farina of the male here, come to impregnate the ova of the female?

This difficulty Mr. Geoffroy ſolves, by ſuppoſing the wind to be the vehicle that conveys the male duſt to the female uterus, which is confirmed by an inſtance of Jovianus Potanus, of a ſingle female Palm-tree growing in a foreſt, which never bore fruit, till, having riſen above the other trees of the foreſt, and being then in a condition to receive the farina of the male by the wind, it began to bear fruit in abundance.

As to the manner wherein the farina fecundifies, Mr. Geoffroy advances two opinions:

Firſt, That the farina being always found of a ſulphureous compoſition, and full of ſubtil and penetrating parts (as appears from its ſprightly odour) which, falling on the piſtils of the flowers, there reſolves, and the ſubtileſt parts of it, penetrating the ſubſtance of the piſtil, excite a fermentation, which putting the latent juices of the young fruit in motion, occaſions the parts to unfold the young plant that is incloſed in the embryo of the ſeed.

In this hypotheſis, the plant in miniature is ſuppoſed to be contained in the ſeed, and to want only a proper juice to unfold its parts, and to make them grow.

The ſecond opinion is, That the farina of the male plant is the firſt germ or ſemen of the new plant, and ſtands in need of nothing to enable it to grow or unfold, but a ſuitable nidus with the juice it finds prepared in the embryo of the ſeed or ovary.

It may be obſerved, that theſe two theories of vegetable generation bear a ſtrict analogy to thoſe two of animal generation, viz. either that the young animal is in the ſemen maſculinum, and only ſtands in need of the juice of the matrix to cheriſh and bring it forth; or that the female ovum contains the animal, and requires only the male ſeed to excite a fermentation.

Mr. Geoffroy rather makes the proper ſeed to be in the farina, inaſmuch as the beſt microſcopes do not diſcover the leaſt appearance of any bud in the little embryos of the grains, when they are examined, before the apices have ſhed their duſt.

In leguminous plants, if the petala and ſtamina be removed, and the piſtil, or that part which becomes the pod, be viewed with the microſcope before the flower be open, thoſe little green tranſparent veſiculæ, which are to become grains, will appear in their natural order, yet ſtill ſhewing nothing elſe but the mere coat, or ſkin of the grain.

If you continue to obſerve the flowers as they advance for ſeveral days ſucceſſively, you will find them to ſwell, and, by degrees, to become replete with a limpid liquor; in which, when the farina comes to be ſhed, and the leaves of the flower to fall, there may be obſerved a little greeniſh ſpeck, or globule, floating about at large.

There is not at firſt any appearance of an organization in this little body; but in time, as it grows, you may begin to diſtinguiſh two little leaves like two ſmall horns; as the little body grows, the liquor diminiſhes inſenſibly, till at length the grain becomes quite opake; and upon opening it, the cavity will be found filled with a young plant in miniature, conſiſting of a little germ, or plantula, a little root, and the lobes of the Bean, or Pea.

The manner wherein this germ of the apex enters the veſicula of the grain, is not very difficult to determine: for, beſides that the cavity of the piſtil reaches from the top to the embryos of the grains, or thoſe veſiculæ, have a little aperture correſponding to the extremity of the cavity of the piſtil, ſo that the ſmall duſt, or farina, may eaſily fall, or find an eaſy paſſage in the aperture in the mouth of the veſſels, which is the embryo of the grain.

The aperture, or cicatricula, is much the ſame in both grains; and it is eaſily obſerved in Peas, Beans, &c. without a microſcope.

Dr. Patrick Blair, treating of the generation of plants, ſays, That a vegetative life is common to them, as well as animals; and that the propagation or production of the ſpecies is the effect of the vegetative, not the ſenſitive life in animals, as well as in plants; and that if there be a neceſſity of the concurrence of two different ſexes in animals, at the beginning or generating of the ſpecies, the ſame neceſſity muſt be in plants too; for as a cow, a mare, a hen, a ſhe-reptile, an inſect, &c. cannot produce an animal without the male, no more can it be ſuppoſed, that a plant can produce fertile ſeed without the concurrence of the male plant, or the male parts of the plant.

Mr. Ray ſays, That he will not deny, that both trees and herbs may produce fruit, and even come to maturity, without the male ſeed being ſprinkled upon them. For though moſt birds do not lay eggs without congreſs of the male, yet the hen often does it without copulating with the cock, but then theſe eggs are barren and wind eggs; juſt ſo, though a female plant may produce ſeed of itſelf, yet that ſeed is never fertile. For,

Firſt, As the work of generation in animals does not proceed from their animal or ſenſitive life but from their vegitative, which being the ſame as in plants, that operation muſt be performed after the ſame manner in both; therefore, as there is a neceſſity of two different ſexes in animals, it muſt be ſo too in plants.

Secondly, As paſſive ſeminal matter in female animals cannot be productive or fertile of itſelf, without being impregnated, animated, or its particles ſet in motion and dilated by the active principles of the male ſeminal matter; neither can the female ſeed in plants be rendered fertile, until it be impregnated by the farina fœcundans from the male parts of the plants.

As to the flowers of plants, if they were not aſſiſting to, or if there were not ſome extraordinary uſe from them in the perfection of the ſeed, they would not be ſo often obſerved upon plants as they are. But ſince there is no fruit or ſeed without a previous flower; and ſince where the one is obvious the other is conſpicuous, and ſince one is ſcarce to be obſerved with the naked eye, neither is the other; this implies a relation between them, that the one of them is not to be expected without the other.

It is true, there may be flowers upon a plant, where the fruit is ſeldom ſeen, eſpecially in theſe northern climates; ſuch as the Pervinca, the Nymphæa alba minima, and ſeveral others; where the plant exhauſts

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the nutritious juice, in puſhing forth tendrils or creeping roots, which ſo weaken the plants, as not to be able to bring the fruit to perfection; but there is no fruit or ſeed to be ſeen, unleſs a flower has been ſent as a meſſenger before it, to give notice of its approach; though it is not always upon the ſame plant, yet it is ſtill upon ſome other plant of the ſame ſpecies; for the flowers are to be ſeen upon diſtinct plants, different branches, or different parts of the branch from the fruit, in the Abies, Corylus, Nux Juglans, &c. the Mercurialis, Spinachia, &c.

But the fruit never appears, or never begins to increaſe upon theſe plants, till the flower is ſpent and gone; therefore they muſt ſerve for another uſe, than to be merely ornamental; for if that were their principal uſe, they would be always conſpicuous, which they are not for the moſt part in apetalous flowers; and they would always be to be ſeen, and never be hid; which is not ſo in the Aſarum, Hydrocotyle, &c. where, though the flower is large enough in proportion to the fruit, yet it is not to be ſeen, unleſs the leaf be turned up, and both flower and fruit be narrowly ſearched for.

The Frumenta and Gramina have their ſtamineous flowers; yet in ſome of them the flower is ſeldom to be ſeen, unleſs the ſpike be ſhaken; and then the apices will appear.

The Polypodium, and other capillary plants, have regular flowers, which precede the minute capſulæ or ſeed-veſſels, but neither of them are conſpicuous without a microſcope.

From theſe inſtances it appears, that the flowers are not conſtantly a guard to preſerve the tender embryos from the injuries of the air, for then the flowers muſt always have been upon the ſame pedicle with the fruit.

Therefore, ſince the appearance of the flower is the firſt ſtep towards the production of the ſeed, whether both be upon the ſame pedicle or not, it neceſſarily follows, that the one muſt contribute towards the bringing of the other to perfection.

The antients taking notice, that ſeveral plants did produce flowers and had no ſeeds, and that other plants of the ſame ſpecies, and ſown from the ſame ſeed, did produce the ſeed without a previous flower, they were ready to call the one male, and the other female, without any notion that the one was aſſiſting to the other; for they looked upon ſuch flowers to be only barren; and therefore they called thoſe which had flowers female, and thoſe that produced the fruits, male plants. Thus Mercurialis is called Spicata Fœmina, and Teſticulata Mas. That which produces the fruit muſt needs be the female, as the female animal brings forth the fœtus; therefore the teſticulata muſt needs be the female, and the ſpicata the male.

Wherever the plants are annual, theſe with the flowers, and ſuch as have the ſeed, are always near to each other; but where the root is perennial, and where the plant is more frequently propagated by the root than the ſeed, the caſe alters; for there being no need of the ſeed to propagate the plant, there is the leſs need of the flower to be nearer to the plant which produces the ſeed.

So the Spinachia and the Lupulus are frequently ſeen to grow, to produce the ſeed, and the other the ſquamous fruit; when the plants which produce the male flowers of the one or the other, are at ſome diſtance. And this is ſo far from being an objection againſt the neceſſity of two ſexes in plants as well as in animals, that it is an argument to confirm it; for it ſhews the wonderful contrivances in order to preſerve the ſpecies, when the ordinary means of propagating it by the ſeed cannot be ſo conveniently attained.

Theſe, and more that might be produced, being evident proofs of two ſexes in plants, as well as in animals, we ſhall in the next place, give ſome experiments to confirm this in a negative way, as have been already done in a poſitive.

When plants have been deprived of their male flowers, or male parts in the flower, they either produced no ſeed at all, or if they did, they became abortive, dried up, or dwindled away; or though the ſeeds did come to perfection, they were barren, or did not produce.

Experiment 1. Mr. Geoffroy having cut off all the ſtamineous tufts of male flowers from the top of the ſtalk in the Maiz or Turky-wheat, as ſoon as they appeared, and before the ſpike loaded with the embryos of the ſemen had put forth from the alæ of the leaves, ſeveral of theſe embryos decayed and dried up after they were pretty big; but ſome grains upon their pedicles all along the ſpike ſwelled conſiderably, and ſeemed to be full of the bud, and were conſequently fertile, while all the others miſcarried, and there was not one ſpike where the whole ſeeds did not ripen to the full.

This experiment is a ſufficient proof of the uſe of the male flowers of this plant; for whatſoever that is which flows from the racemi of theſe flowers, it ſeems it muſt be conducive not only for the impregnation of the ſeed, but alſo for the growth and impregnation of the fruit.

At preſent we ſhall ſhew, that what nouriſhment is uſually furniſhed by the pedicle to the embryos, does not appear to be capable to dilate or expand itſelf, or contribute to the continual ſupply of nutritious particles, unleſs the embryos were animated or enlivened by the ſpirit which ſhould have flowed from the male flowers; ſo that they were ſo debilitated and weakened, in aſcending from the body of the plant towards the embryos, before they could arrive at them, that they which otherwiſe might have ſerved for the augmentation and increaſe of all the embryos upon the ſpike, could not now do any thing more than contribute to the ripening of a few. And although Mr. Geoffroy might have imagined, that theſe few ſeeds which came to perfection were fertile alſo, becauſe they were full of germs, yet he could not be ſure of that, unleſs he had ſown the ſame ſeeds next ſeaſon, and tried whether they would chit or not.

Gardeners who buy Onion and Leek-ſeed brought from Straſburgh, commonly try the following experiment: they put a few of the ſeeds into a pot of water mixed with earth, and if they find they begin to ſpring, or ſend forth the ſeminal leaf or fibre of the root, after a few days, they judge of the product of it; and notwithſtanding all the ſeeds without this trial may ſeem to be productive, being equally firm, hard, and ſolid, perhaps not more than one third of them will prove fertile.

And this barrenneſs may proceed, either becauſe they had never been impregnated by the male parts of the flower, or that they had been too much expoſed to the air; being ſome time or other too much moiſtened, and not afterwards been carefully dried, or have been kept too long, by which neglect they loſe their ſpirit or life.

Now, if the fulneſs, ſolidity and firmneſs of a ſeed is not a ſure ſign of its fertility, then Mr. Geoffroy might have been miſtaken in his opinion of the fertility of theſe ſeeds in the Maiz, ſince he did not make any trial of it, by committing it to the ground.

In like manner, as to his ſecond experiment of the Mercurialis Dioſcoridis, where he raiſed ſome plants which had the fruit, and others which had the ſtamineous flowers, and removed the floriferous plants before the flowers were blown, every one of the ſeeds upon the fructiferous plants, except five or ſix, miſcarried; which ſeeds were ſo full, that he was perſuaded they were capable of producing new plants, and the like was found by Camerarius in the Cannabis. Yet inaſmuch as neither of them tried the experiment, by ſowing the ſame ſeed the ſecond year, they could not be ſure but that they might have failed in their expectation.

Mr. Bobart, overſeer of the phyſic-garden at Oxford, many years ſince, which was before the doctrine of the different ſexes of plants was well underſtood, being herbarizing, found a plant of the Lychnis ſylveſtris ſimplex,

ſimplex, no apices; and taking notice that this was not only in one, but in all the flowers upon the ſame plant, he imagined it might be a new ſpecies; and therefore marked the plant, and took care to have it preſerved till the ſeeds were ripe; and then, they being full, hard, and firm, and to outward appearance full of germ, he ſowed them in a proper place in the garden the next ſeaſon, but not a plant ſprung up from them. Theſe and other inſtances, ſet the opinion of the different ſexes of plants upon another footing than has been received by moſt of our modern authors; for it imports, that it is not the nouriſhment of the groſs ſubſtance of the ſeed itſelf which is hereby meant, nor the increaſe of the ſeed-veſſel, which is thereby deſigned; for (as is already obſerved) a hen can lay an egg, without having before had congreſs with a cock; and this, when newly laid, ſhall be of the ſame bigneſs, colour, taſte, and ſmell, with another egg which has been cocked (as they call it;) i. e. which has been fecundated by the maſculine ſeminal materies: but the difference will appear, when both are put under the hen, in order to be hatched; for the one ſhall pullulate or chit, and the other ſhall become fetid and rot.

The caſe is juſt the ſame with the ſeed of a plant, it may be augmented and increaſed in its bulk; it may become firm, hard, and ſolid, and have all the tokens of a perfect ripeneſs; the ſeed-veſſels may be enlarged, and the pulp or parenchyma of the fruit may be augmented; and yet the particles of the ſeed may remain crude, indigeſted, and incapable to be explicated and dilated, or ſet in a ſuitable motion, whereby to protrude the fibrilla of the root at one end, and the ſeminal leaves at the other; except it has before received ſome extraneous matter, or ſome active particles from the male parts of the flower, or from the male flower itſelf.

In order to confirm the neceſſity of two ſexes of plants, as well as in animals, this familiar conſideration may be added: that the fertility or barrenneſs of any tree, in the more or leſs fruitful ſeaſons, may be known to ignorant or leſs curious perſons, by the quantity of the flowers which appear in the ſpring time; and that not only in trees alone, where the flower and fruit are upon one and the ſame foot-ſtalk, but alſo in ſuch trees, where the flowers are upon diſtinct trees, or ſeparate places upon the ſame tree; for it is eaſy to determine by the catkins or iuli upon the Walnut, Filbert, or Hazle-trees, whether ſuch or ſuch trees will be fertile or barren for the enſuing ſeaſon, before any of the embryos begin to break, be puſhed forth, or appear.

Having already treated of the male and female parts of flowers, we ſhall next conſider their uſe.

Flowers, in this reſpect, may aptly be divided into that of male flowers, which (as has been before obſerved) were formerly reputed barren; and the plants which produce them were alſo called female plants, becauſe thoſe perſons not having any notion of different ſexes in plants, they were called female, upon account of their weakneſs; or if they had any thought of ſexes in them, it was only illuſive.

The ancients were ignorant of thoſe which are now-a-days called hermaphrodite flowers; and they, not having a true notion of ſexes of plants, could not imagine that the parts of both ſexes ſhould be in one flower, upon one and the ſame foot-ſtalk.

And although hermaphrodite animals bear the leaſt proportion in the animal kingdom, yet hermaphrodites have the greateſt ſhare in the vegetable, though they are not ſo numerous as they have been ſuppoſed to be; for upon a ſtrict examination it will be found, that a great many more plants have diſtinct male and female flowers, than was formerly believed.

The neceſſity of different ſexes in plants having been demonſtrated, and that the female ſeed, though it ſhould ripen to the full, cannot be fertile, except it be impregnated by what it receives from the male parts of flowers, we ſhall next explain the organs of generation in both ſexes.

In the animal œconomy, there are, beſides thoſe veſſels that are deſtinated for nutrition, and the ſecretion of the ſeveral juices in the body, ſpermatic veſſels, which conſiſt of præparantia, deferentia, and continentia ſemen. The præparantia in males, are the blood-veſſels and the teſtes; the one conveys the blood, and the other ſeparates the ſemen from blood, and elaborates it.

So likewiſe in plants there are veſſels that receive the nutritious particles from the earth, and convey it to the extremity of the plant; ſome of which tend directly to the leaf, and others to the flowers.

Thoſe which go to the foot-ſtalk of the flower may not improperly be called ſpermatic-veſſels, for it is from them that the ſeminal particles in male, female, and hermaphrodite flowers are ſeparated; therefore the foot-ſtalks of the hermaphrodite flowers are proportionably larger than thoſe either of the male or female; they have a double office, and contribute ſucceſſively to both.

In thoſe where the calyx becomes the fruit, the greateſt ſupply is furniſhed to it firſt, and diſtributed in its cortical parts, as is viſible in the Roſe; in which the foot-ſtalk is ſo far enlarged at firſt, as to be of an equal bigneſs with the bud.

After the calyx is thus formed, the next diſtribution is to the inner or centrical part of the flower, which Dr. Grew calls attire, and where the piſtillum becomes the fruit; the piſtillum and ſtylus are formed at the ſame time with the ſtamina and apices.

The ſtylus at the very firſt acquires both its due length and bigneſs; for the nutritious particles aſcending in the center never ſtop till the ſtylus is ſtretched out to its full length; and in ſuch as are furniſhed with a peculiar apex, that is formed firſt; the neck of the ſtylus, or that part next to it, is the biggeſt; from thence it gradually decreaſes in its groſſneſs, till it comes to the piſtillum. This is eaſily perceived by thoſe who will take the pains to open the bud of a Lily, Tulip, &c. before they are half blown.

The ſtamen is furniſhed next with an extraordinary ſupply of the nutritious particles before the flower is blown; theſe, whether fewer or more, are at firſt brought to their proportional largeneſs, being round and juicy.

The apex is the third which receives this extraordinary ſupply of the nouriſhment, for after that the ſtylus is formed, that it may lean to it after the veſſels of the ſtamen and ſummit are extended to their full length, and ſo formed, that they can convey ſuch an extraordinary quantity of particles as may fill up the capacity of the apex, it is then more enlarged than ever after; for if the flower of a Lily be opened before it be blown, the apex will be found to be full as long as the ſtamen; for as the one half of the apex covers the ſtamen, fixed to its center, ſo the other half of it is ſo far extended above the ſtamen, as the ſtamen remained uncovered below it, towards the pedicle or foot-ſtalk.

The fourth part of a flower is the petala, which receives this extraordinary ſupply of nouriſhment before the blowing; theſe upon the reverſe, are firſt enlarged towards the pedicle, and are afterwards extended and ſtretched forth in proportion to the enlargement of the attire; at firſt they are all groſſer, and more ſucculent towards the origin, and gradually become thinner and broader. The ſtamina of monopetalous flowers do, for the moſt part, ariſe partly from the petalon itſelf, and partly from the calyx; eſpecially if the ſtamina correſpond in number to the petala, as in the Hexapetalæ, or Polypetalæ Liliaceæ of Tournefort, where every ſtamen ariſes oppoſite to the middle of the petalon.

This obſervation (how and when this more than ordinary ſupply of nouriſhment is carried to the flowers) eaſily demonſtrates wherein the analogy of the organs of generation in plants and animals conſiſts.

In animals, the feminal matter is received by proper veſſels from the ſame blood from whence the other ſecretions, fit for the preſervation of the animal œconomy

nomy proceed; ſo that the blood in animals being the ſame with the ſap in plants, and both being conveyed after the ſame manner throughout the ſeveral bodies, it neceſſarily follows, that the one as well as the other, muſt have proper veſſels for ſecretion of the ſeminal matter.

Let it then be conſidered, that the ſap or nutritious juice aſcends in common to the pedicle of the flower, as the blood flows by the aorta deſcendens; and that at the calyx or bottom of the flower, ſome ſhare goes to one part of it, and ſome to another; as the aorta ſends one branch to the ſpermatic veſſels, and the remainder of it goes to perform the other functions; and as a part of the ſap is ſeparated by the pedicle of the flower, when the remainder is diſtributed throughout the remaining parts of the plant, ſo the arteria præparans goes directly to the teſtes in the males, and ovarium in the female: and in flowers ſome veſſels tend directly to the calyx (if it becomes the fruit) or to the perianthium (if there be any,) ſome to the petala, ſome to the ſtamina, ſome to the piſtillum or uterus, as it is called by Malpighius.

Theſe things being ſeriouſly reflected on, we muſt of neceſſity conclude,

1. That the ſame due care is taken to elaborate and prepare the more ſubtile and impenetrable particles of the nutritious juice in plants, as of the blood in animals.

2. This ſubſtance ſo prepared, as it muſt be deſigned for ſome extraordinary uſe, ſo this uſe can be no other than that of being the means of fecundating the female ſeed in plants, as the other is of the feminine oval in animals.

If any one ſhall take a flower full blown, and pull one of the ſtamina from the pedicle, he will find a rough viſcid liquor, like to the ſperma, which remains here till its moſt ſubtle parts have aſcended the ſtamen, or perhaps the more groſs particles might have remained there, after the moſt ſubtile had aſcended, before the flower was blown; this is as plain and demonſtrable as can be in the Lilies, particularly in the Orange Lily, and moſt of the Martagon Lilies, there is a contrivance more obvious.

This viſcid liquor aſcending by parallel ducts to the apex, there this ſubtile matter is retained till it is farther elaborated by the evaporations of the more humid and aqueous particles, by the heat of the ſun; and then it becomes a moſt ſubtile, fine, impalpable duſt, which is then ſaid to be ripe, and is called the farina.

Dr. Blair, after having given the ſentiments of ſeven different authors upon the ſubject, proceeds to give his own, without ſubſcribing to the ſentiment of either the one or the other; and endeavours by a ſtrict examination of the flowers themſelves, to find out which of theſe two opinions, ſo diametrically oppoſite to each other, are moſt agreeable to fact.

But before he begins, he lays down this general maxim, which he takes for granted, that nature is uniform in all her operations, and never recedes from thoſe rules laid down by the wiſe Diſpoſer of all things at the creation, by performing the ſame thing after two different and contrary methods; and thence concludes, that if the farina be a congeries of ſeminal plants in one ſpecies, it muſt be ſo in all.

If there be an open and direct paſſage, or though it be not ſo direct, yet if by any direct paſſage, by which it can be demonſtrated, that one ſingle grain of the farina can enter every individual ſeed in one plant, it muſt be ſo in all; but if neither of theſe hold good, and if it can be proved by ocular inſpection, without the aſſiſtance of a microſcope, in thoſe very plants exemplified by Mr. Morland, Mr. Geoffroy, and Mr. Bradley, that the farina in ſubſtance cannot enter the ſeminal veſſel; or if it does, that there is no direct paſſage for it to enter each particular ſeed, after it has ſo got into the capſula or ſiliqua; then he hopes, both their queries, ſuppoſitions, and aſſertions, muſt fall.

As for the Corona Imperialis, the firſt example given by Mr. Morland, the flower of which hangs downwards, though he does not deny but its ſtylus may be hollow all the way, and that it may be open at the extremity, yet by its ſituation, and ſeveral other circumſtances, it does not ſeem to him to favour this opinion.

For firſt, as there is a continual conflux of particles through the ſkin in animal bodies, it is alſo ſo in vegetables: this appears by the immediate fading of flowers, or any other part of the plant, after it has been plucked off; which proceeds from the evaporation of the particles in the little tubes, without any more ſucceeding in their place.

He thinks it as reaſonable to ſuppoſe, that theſe particles flow out by the hollow ſtylus, as by any other part, and alſo more ſenſibly there than elſewhere, becauſe of their being concentrated within ſuch narrow bounds; and that if theſe particles deſcend by the ſtylus hanging downwards, the particles, or rather grains of the farina, can never aſcend the ſame way.

2dly, That if it ſhould be granted, that theſe grains did aſcend by the ſtylus, how do they get into the ſeminal veſſel; that being cloſely ſhut up, as will appear to any one who ſhall obſerve it.

3dly, Whereas Mr. Morland ſuppoſes, that the rain either waſhes it, or the wind ſhakes it down the tube, till it reaches the ſeminal veſſel; Dr. Blair obſerves, that the extremity which is the upper part of the ſtylus in an erect flower, muſt be the lower in a dependent one; ſo that if either the rain or wind have acceſs to it, it muſt neceſſarily either waſh or drive it away from the ſeminal veſſel, which is now the ſtylus.

But here the Doctor takes notice of another contrivance, for anſwering that purpoſe, i. e. a ſort of a pelvis or ciſtern, called by Linnæus nectarium, ſituated at the origin or root of each petalon, filled with a viſcous liquor which continues there, and never exceeds its bounds ſo long as the petalon is in health: for ſince the apices are here ſo artfully fixed, that they turn every way with the leaſt wind, as Mr. Morland rightly obſerves, when they burſt, and the farina is driven to and fro, though it cannot ſo eaſily enter the tube, yet it may conveniently be blown up towards the orifice of the petala ſurrounding the ſtylus, where it is ſtopped or ſtaid by this viſcoſity, till it has performed its office.

To confirm this, he inſtances Mr. Fairchild, who, he ſays, being perſuaded that this viſcous liquor did ſome way or other contribute towards the fructifying of this plant, but not underſtanding how it did ſo, he tried the experiment, by wiping this liquor off as ſoon as it was depoſited in the pelvis, and the flower which he ſo ſerved did not bear any fruit.

And the way the doctor accounts for this is, that the humidity being removed, the farina is no ſooner blown upwards, than it immediately falls down, without producing any effect; and that which he takes to be a confirmation of this is, that both Tulips and Fritillarias have this pelvis or baſon, yet it is for the moſt part dry and empty; becauſe the flowers of the former being erect, they have no ſuch need of this liquor to retain the duſt; for that the rain, having immediate acceſs to them, may waſh the duſt towards the origin of the petala, where it can remain till it has performed its office; whereas the rain having no acceſs to the inner ſurface of the flower of the Corona Imperialis, it is naturally endowed with this humidity, depoſited there by ſeveral excretory ducts, in order to render it fit for the purpoſe: and Malpighius himſelf takes notice of this ſingularity in this flower, though he aſcribes no uſe to it.

The next example propoſed by Mr. Morland, is the Yellow Lily, which, according to his figure, is repreſented as having the apices equally high with the top of the ſtylus, and the petala over-topping each other; whereas he ſays, that by the narroweſt inſpection he ever could make, the top of the apices (they being then perpendicularly ſituated) reaches no higher than the neck of the button upon the top of the ſtylus, and that this is before the apices begin to burſt and

ſhed the duſt; but as ſoon as the flower begins to open, they depart from the ſtylus, and force the petala outwards, by a certain elaſticity, and expand themſelves; this being done, they immediately change their poſture from a perpendicular to an oblique or horizontal one; nor do they ever pour out their duſt or farina, till they can conveniently drop it upon the bottom of the flower, and towards the root of the piſtillum.

But taking it for granted that it was ſo, the top of the ſtylus (which the Doctor calls the button, in oppoſition to the apices ſtaminum,) he ſays, is ſo compact, and of ſo firm a ſubſtance, that it is next to impoſſible, that the farina in ſubſtance, or in integral parts, can paſs through it.

If the integral parts, the complete grain, the minute globuli, in which the whole ſeminal plant is contained, cannot then enter, the whole compound muſt be diſſolved, and the minute ſeminal particles in this ſmall grain of duſt muſt be diſunited; and if ſo, how ſhall theſe again come to cement, ſo as to make up one continued body? or how ſhall this little body, ſo united, penetrate a ſecond time the partition-wall betwixt the ſtylus and piſtillum? and again, how ſhall it find out its way to its neſt, in the proper embryo of the ſeed?

The Doctor takes notice of the White Lily, the Orange Lily, the Martagon Lily, &c. as objections to the opinions of Mr. Morland, Bradley, &c. and alſo mentions the Iris, as a moſt pregnant inſtance, that the farina cannot ſo much as come at the piſtillum; for having ſix petals, the three ſtamina with long apices lie hid between the three petala which hang downwards, and three large expanſions of the bifid ſtylus, and the upper part of the down-hanging petalon: the farina can never reach the center of the ſtylus, though it were hollow, which it is not, but muſt deſcend along its outſide, to the top and outſide of the rudiment of the fruit, there to emit its effluvia. Theſe and other inſtances he concludes, are ſufficient proof, that the farina cannot enter the ſtylus, penetrate into the piſtillum, or inner part of the ſeminal veſſel, nor have the leaſt acceſs to the embryo of the ſeed.

As to the objection, that there is not paſſage ſufficient to admit the male ſeed into the uterus, or even into the ovaries, it is thus anſwered:

If it be conſidered how every flower, when it is prepared for the act of receiving the male ſeed, is ſo much under the influence of the ſun, that the petals open at its approach, and ſhut up again at its departure, it very well explains how the piſtillum, or female parts of generation, are relaxed at one time more than another, i. e. that the female parts are more relaxed at the opening of the flower, than when the flower is ſhut up; for the flower-leaves adhering to the bottom of the piſtillum, muſt conſequently, when they bend back, put every part of the piſtillum into a different poſture to that in which it was when the petals were ſhut.

And it is certain, that it is the preſence of the ſun that ripens the male duſt in the apices, and opens the little caſes in which it is contained, giving them a ſpringineſs that flings forth that duſt as ſoon as it is ripe, ſo as to ſcatter it to a conſiderable diſtance. The female parts are at this time dilated by the opening of the flower-leaves, and the apices and chives, concurring at the ſame time in flinging forth their male duſt, anſwer the ſame end in the generation of plants, that the act of copulation does among animals.

Having thus given ſeveral reaſonings and arguments uſed by various authors, who have made it their ſtudy to inveſtigate the mode of generation of vegetables, whether the impregnation of them proceeds from the farina fœcundans, or male duſt, entering the uterus of plants in ſubſtances, or by effluvia, I ſhall not take upon me to determine the diſpute; eſpecially ſince Mr. Boyle has proved, that all effluvia are ſubtile particles of matter; ſo that it matters not how ſmall or minute theſe particles are, ſince a body in its firſt ſtate may be ſo minute as to be ſcarcely perceptible.

I ſhall therefore conclude with mentioning a few experiments of my own, which I communicated to Dr. Patrick Blair, which he improved as a proof of his opinion of effluvia; and Mr. Bradley alſo, as a proof of the farina entering the uterus in ſubſtance, and leave the curious enquirer to determine on that ſide of the queſtion, to which reaſoning and experiment ſhall influence him.

I ſeparated the male plants of a bed of Spinach from the female; and the conſequence was, that the ſeed did ſwell to the uſual bigneſs, but when ſown it did not grow afterwards; and ſearching into the ſeed, I found it wanted the punctum vitæ, or what Geoffroy calls the germen.

I ſet twelve Tulips by themſelves, about ſix or ſeven yards from any other, and as ſoon as they blew, I took out the ſtamina with their ſummits ſo very carefully, that I ſcattered none of the male duſt; and about two days afterwards I ſaw bees working on a bed of Tulips, where I did not take out the ſtamina; and when they came out, they were loaded with the farina or male duſt on their bodies and legs; and I ſaw them fly into the Tulips, where I had taken out the ſtamina, and when they came out, I found they had left behind them ſufficient to impregnate theſe flowers, for they bore good ripe ſeeds which afterward grew.

In a parcel of Savoys, which were planted for ſeed near white and red Cabbages, the ſeeds, when ſown, produced half red, and ſome white Cabbages, and ſome Savoys with red ribs, and ſome neither one ſort nor the other, but a mixture of all ſorts together in one plant, which I ſuppoſe might happen by the effluvia of the different ſorts impregnating the uterus of each other.

In a letter communicated by Paul Dudley, Eſq; to the Royal Society, written from New England, he mentions the interchanging of the colours of the Indian Wheat, if the various colours are planted in rows near each other; but if they are planted ſeparately, they conſtantly keep to their own colour; and this interchanging of colours has been obſerved, when the diſtance between the rows of Corn has been ſeveral yards, though he ſays, if there happens to be a high board fence between the different coloured Corns, the alteration of colours is entirely prevented.

It is from different flowers impregnating each other, that the ſeveral varieties have been produced; and this gives new light to the floriſts, for raiſing a much greater variety of flowers; for by planting the different coloured flowers near each other, ſo that the flowers when fully blown may be intermixed, their farina will impregnate each other, ſo that the ſeeds will produce variegated flowers partaking of both colours. But it muſt be obſerved, that flowers of different genera will not impregnate each other, therefore the plants muſt be of the ſame genus which are placed together.

Cucumbers and Melons always produce male and female flowers upon different parts of the ſame plant; the male flower (which appears upon a ſlender foot-ſtalk, and has a large ſtyle in the middle, covered with an Orange-coloured farina) is by the gardeners commonly called falſe bloſſoms, and are ſometimes by unſkilful perſons pulled off ſoon after they appear, ſuppoſing that they weaken the plants, if ſuffered to remain, which is a very great miſtake; for, in order to try this experiment, I planted four holes of Melons in a place pretty far diſtant from any other; and when the flowers began to appear, I conſtantly pulled off all the male flowers from time to time before they opened; the conſequence was, that all the young fruit dropt off ſoon after they appeared, and not one ſingle fruit remained to grow to any ſize, though the vines were equally ſtrong with thoſe which I had planted in another place, where I ſuffered all the flowers to remain upon them, from which I had a great quantity of fruit. But this doctrine is now ſo well eſtabliſhed among the gardeners, being confirmed by experience, that they now carry the male flowers of the Cucumbers and Melons to the female, if there are none

ſituated very near them, and gently ſtrike the farina o the male, into the boſom of the female flowers, and thereby ſet the young fruit, which would otherwiſe drop off.

There are ſome perſons, who ſtill object to this theory of the generation of plants, from having obſerved ſome plants, which were termed female, growing ſingly, and at a very great diſtance from any male plants of the ſame kind, which had for ſome years produced ſeeds which were perfect, and grew when ſown; and indeed I was myſelf a little ſtaggered in my opinion, on having obſerved a female plant of the white Briony, which grew ſingly in a garden, where there were no other plants of the ſame kind; which for ſeveral years produced berries, which grew and flouriſhed perfectly well. This put me upon examining the plant more carefully than I had before done, when I found there were great numbers of male flowers intermixed with the female, on the ſame plant; and ſince then I have frequently found the ſame in many other plants, which are ſometimes male and female in different plants, yet have ſometimes both ſexes on the ſame plant; ſo that the objections which have been made to this doctrine, may not have proper evidence for their ſupport.

It is certain, that the female plants may produce fruit, without the impregnation of the male; but it is not certain, that this fruit or ſeed will, if ſown, produce another plant. What has been ſo often related by travellers and hiſtorians, of the neceſſity of the male Palm-tree being near the female, in order to render it fruitful, hath been fully confirmed by Father Labat, in his account of Africa, where he has treated of the ſeveral ſorts of Palms: he ſays, that he obſerved in Martinico a large Palm-tree, which grew by the ſide of a convent, which produced plenty of fruit, though there was no other Palm-tree growing within two leagues of this; but he alſo obſerved, that none of theſe fruit would grow, though they had made many trials of them; ſo that they were obliged to procure ſome fruit from Barbary, in order to propagate theſe trees. He likewiſe adds, that the fruit which grew on this female tree, never ripened ſo perfectly, nor was ſo well taſted, as thoſe which came from trees which had ſtood near ſome of the male: therefore we may conclude, that the fruit or ſeed may be produced by the female plants of moſt kinds, without the aſſiſtance of the male ſperm, which may appear to ſight perfect, and fit to produce others; but if we examine the ſeeds, we ſhall find that moſt of them have not the germ or little plant incloſed, nor will grow if they are ſown.

From theſe and many other experiments, it is very plain, that there is a neceſſity that the embryo of the female flower ſhould be impregnated by the farina or male duſt, in order to render the fruit perfect; but how, or in what manner it is performed, is what we can only gueſs at, ſince in the generation of animals, our greateſt naturaliſts differ very much in their opinions; nor can any of them aſcertain any particular method how it is performed. I ſhall therefore conclude with quoting the words of the Rev. Dr. Hales, which are a moſt ingenious ſummary of the whole doctrine of the generation of plants.

"If I (ſays he) may be allowed to indulge conjecture "in a caſe in which the moſt diligent enquirers are, "as yet, after all their laudable reſearches, advanced "but little farther than mere conjecture, I would "propoſe it to their conſideration, whether from the "manifeſt proof we have, that ſulphur ſtrongly at-"tracts air, a hint may not be taken, to conſider "whether this may not be the primary uſe of the fa-"rina fœcundans, to attract or unite with elaſtic or "other refined active particles. That this farina "abounds with ſulphur, and that a very refined ſort, "is probable from the ſubtile oil which chymiſts ob-"tain from the chives of Saffron; and if this be the "uſe of it, was it poſſible that it could be more aptly "placed for the purpoſe on very moveable apices "fixed on the ſlender points of the ſtamina, whereby "it might eaſily, with the leaſt breath of wind, be "diſperſed in the air, thereby ſurrounding the plant, "as it were, with an atmoſphere of ſublimed ſulphu-"reous pounce? for many trees and plants abound "with it, which uniting with the air particles, may, "perhaps, be inſpired at ſeveral parts of the plant, "and eſpecially at the piſtillum, and be thence con-"veyed to the capſula ſeminalis, eſpecially towards "evening, and in the night, when the beautiful pe-"tala of the flowers are cloſed up, and they, with all "the other parts of the vegetable, are in a ſtrongly "imbibing ſtate. And if to theſe united, ſulphureous "and aereal particles, we ſuppoſe ſome particles of "light to be joined (for Sir Iſaac Newton has found, "that ſulphur attracts light ſtrongly;) then the re-"ſult of theſe three by far the moſt active principles "in nature, will be a punctum ſaliens to invigorate "the ſeminal plant; and thus we are at laſt con-"ducted, by the regular analyſis of vegetable nature, "to the firſt enlivening principle of their minuteſt "origin."

GENISTA. Lin. Gen. Plant. 766. Tourn. Inſt. R. H. 643. tab. 412. Broom; in French, *Genêt.*

The CHARACTERS are,

The empalement of the flower is of one leaf, tubulous, and divided into two lips; the upper lip is deeply cut into two, and the under into three equal parts. The flower is of the butterfly kind; the ſtandard is oval, acute, and remote from the keel, being wholly reflexed; the wings are a little ſhorter than the ſtandard, and are looſe: the keel is erect, and longer than the ſtandard, and is indented at the top. It hath ten ſtamina joined in two bodies, which are ſituated in the keel, terminated by ſingle ſummits. In the center is an oblong germen, ſupporting an aſcending ſtyle, crowned by an acute twiſted ſtigma. The germen afterward becomes a roundiſh turgid pod with one cell, opening with two valves, incloſing kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, which includes the plants with flowers having ten ſtamina, joined in two bodies; and to this he adds ſome of Tournefort's ſpecies of Spartium, and the Geniſtella of Tournefort.

The SPECIES are,

1. GENISTA (*Sagittalis*) ramis ancipitibus articulatis, foliis ovato-lanceolatis. Hort. Cliff. 355. *Jointed Broom, with two-edged branches, and jointed, oval, ſpear-ſhaped leaves.* Chamæ Geniſta ſagittalis. C. B. P. 395. *Dwarf arrow-ſhaped Broom.*
2. GENISTA (*Florida*) foliis lanceolatis, ramis ſtriatis teretibus racemis ſecundis. Hort. Cliff. 355. *Broom with ſpear-ſhaped leaves, and erect taper branches abounding with flowers.* Geniſta tinctoria Hiſpanica. C. B. P. 395. *Spaniſh Dyers Broom.*
3. GENISTA (*Tinctoria*) foliis lanceolatis glabris ramis ſtriatis teretibus erectis. Hort. Cliff. 355. *Broom with ſpear-ſhaped leaves which are acute, and taper channelled branches proceeding from the ſide of the ſtalk.* Geniſta tinctoria Germanica. C. B. P. 395. *Common Dyers Broom, or Wood-waxen.*
4. GENISTA (*Purgans*) ſpinis terminalibus, ramis teretibus ſtriatis, foliis lanceolatis ſimplicibus pubeſcentibus. Lin. Sp. 999. *Broom with taper-ſtreaked branches terminated by ſpines, and ſimple, ſpear-ſhaped, hairy leaves.* Geniſta ſive ſpartium purgans. J. B. 1. p. 404.
5. GENISTA (*Candicans*) foliis ternatis ſubtus villoſis, pedunculis lateralibus ſubquinqueflori foliatis, leguminibus hirſutis. Amœn. Acad. 4. p. 284. *Trifoliate Broom with hairy leaves, foot-ſtalks from the ſide of the branches having five flowers, and hairy pods.* Cytiſus Monſpeſſulanus, medicæ folio, ſiliquis denſe congeſtis & villoſis. Tourn Inſt. 648.
6. GENISTA (*Tridentata*) ramis triquetris ſubarticulatis, foliis tricuſpidatis. Lin. Sp. Plant. 710. *Broom with three-cornered jointed branches, and leaves ending in three points.* Geniſtella fruticoſa Luſitanica. Tourn. Inſt. 646. *Shrubby Portugal Dyers Broom.*
7. GENISTA (*Piloſa*) foliis lanceolatis obtuſis, caule tuberculato decumbente. Hort. Cliff. 355. *Broom with obtuſe*

obtuſe ſpear-ſhaped leaves, and a declining ſtalk having tubercles. This is the Geniſta ramoſa, foliis Hyperici. C. B. P. 395. *Branching Broom with leaves like St. Johnſwort.*

8. GENISTA (*Anglica*) ſpinis ſimplicibus, ramis floriferis inermibus, foliis lanceolatis. Hort. Cliff. 355. *Broom with ſingle ſpines, flower-branches without ſpines, and ſpear-ſhaped leaves.* Geniſta ſpartium minus Anglicum. Tourn. Inſt. R. H. 645. *Small Engliſh Broom, called Petty Whin.*

9. GENISTA (*Hiſpanica*) ſpinis decompoſitis, ramis floriferis, inermibus, foliis lanceolatis. Lin. Sp. Plant. 711. *Broom with decompounded ſpines, flower-branches without ſpines, and narrow hairy leaves.* Geniſta ſpinoſa minor Hiſpanica villoſiſſima. C. B. P. 395. *Moſt hairy, ſmall, Spaniſh, prickly Broom.*

The firſt ſort grows naturally in France, Italy, and Germany. This plant ſends out ſeveral ſtalks from the root, which ſpread flat on the ground, and divide into many flat branches which are jointed, and their two ſides are edged like a broad ſword; theſe are green and herbaceous, but are perennial. At each of the joints is placed one ſmall ſpear-ſhaped leaf, without any foot-ſtalk. The flowers are produced in cloſe ſpikes at the end of the branches; they are yellow, and of the Pea-bloom kind, and are ſucceeded by ſhort hairy pods, which contain three or four kidney-ſhaped ſeeds. The plants flower in June, and the ſeeds ripen in September.

This ſort is propagated by ſeeds, which, if ſown in the autumn, the plants will come up the following ſpring; but when they are ſown in the ſpring, the plants rarely come up the ſame year: when the plants come up, they will require no other culture but to keep them clean from weeds, and thin them where they are too cloſe; at Michaelmas they may be tranſplanted where they are deſigned to remain, and after that they will only require to be kept clean, for they are very hardy, and will live ſeveral years.

The ſecond ſort riſes with ligneous ſtalks about two or three feet high, ſending out many taper channelled branches which grow erect, garniſhed with ſmall ſpear-ſhaped leaves placed alternate, and are terminated by ſeveral ſpikes of yellow flowers, which are of the Pea-bloom kind; theſe are ſucceeded by ſhort pods, which turn black when ripe, and contain four or five kidney-ſhaped ſeeds. It flowers in June and July, and the ſeeds ripen in autumn.

The third ſort grows naturally in England. This hath ſhrubby ſtalks, which riſe about three feet high, garniſhed with ſpear-ſhaped leaves, which are broader, and end in ſharper points than thoſe of the former; the branches come out from the ſide of the ſtalks, almoſt their whole length, and do not grow ſo upright as thoſe of the ſecond; theſe are terminated by looſe ſpikes of yellow flowers, which are ſucceeded by pods like thoſe of the ſecond ſort. It flowers, and the ſeeds are ripe about the ſame time as the former. The branches of the plant are uſed by the dyers, to give a yellow colour, from whence it is called Dyers Broom, Green-wood, Wood-waxen, or Dyers-weed.

The fourth ſort grows naturally about Montpelier. This riſes with ſhrubby, ſtriated, taper ſtalks four feet high, ſending out ſeveral branches which are terminated by ſpines; the leaves are ſpear-ſhaped, ſingle, and hairy; the flowers are produced in ſpikes at the end of the branches, they are larger than thoſe of the other ſorts, and are of a paler yellow colour. They appear in June and July, and are ſucceeded by pods like the former ſorts.

This ſort is tender, and in ſevere froſts is often killed in England, where the plants are not protected.

The fifth ſort grows naturally about Montpelier. This riſes with a woody ſtalk to the height of ſeven or eight feet, ſending out many ſlender branches, garniſhed with trifoliate leaves, hairy on their under ſide; the upper part of theſe branches, for more than a foot in length, ſend out ſmall flowering branches on their ſide, ſupporting five yellow flowers. Theſe appear in June and July, and the ſeeds ripen in autumn.

The ſixth ſort hath a low ſhrubby ſtalk, which ſeldom is more than a foot high, ſending out ſeveral weak branches which are jointed, garniſhed with ſmall leaves ending in three acute parts. The flowers are produced in looſe ſpikes at the top of the branches, they are of a pale yellow colour, and appear the latter end of June and in July, and the ſeeds ripen in September. This plant grows naturally in Portugal.

The ſeventh ſort hath a ſhrubby ſtalk which declines toward the ground, and is ſet over with tubercles; it divides into a few ſmall branches, which are garniſhed with ſmall obtuſe leaves. The flowers are diſpoſed in ſmall looſe ſpikes at the end of the branches; they are ſmall, of a pale yellow colour, and are ſucceeded by ſhort pods filled with kidney-ſhaped ſeeds. It flowers in June, and the ſeeds ripen in autumn. This grows naturally in Germany and France.

The eighth ſort grows naturally upon open heaths in many parts of England. It hath a ſhrubby ſtalk which riſes about two feet high, ſending out many ſlender branches, which are armed with long ſingle ſpines, and garniſhed with very ſmall ſpear-ſhaped leaves, placed alternate on every ſide the branches: the flower-branches have no ſpines; theſe are ſhort, and have five or ſix yellow flowers growing in a cluſter at the end. They come out in April and May, and are ſucceeded by ſhort turgid pods, which contain four or five ſmall kidney-ſhaped ſeeds. Theſe ripen in July.

The ninth ſort grows naturally in Spain. This hath a low ſhrubby ſtalk, which ſends out many ligneous branches, armed with branching thorns, compoſed of ſeveral ſharp thorns, which come out from each other, but the ſhort branches which produce the flowers have no ſpines; theſe are garniſhed with ſmall hairy leaves of different forms, ſome of them being as narrow as hairs, and others are of the ſpear-ſhape; the branches are terminated by cluſters of yellow flowers, which are ſucceeded by ſhort, compreſſed, hairy pods, filled with kidney-ſhaped ſeeds. The whole plant has much the appearance of the common Furz or Gorſe, but is very hairy, and the flower-branches being without thorns, are the moſt obvious diſtinctions.

All theſe ſorts of Brooms are propagated by ſeeds, which, if ſown in the autumn, will ſucceed much better than if ſown in the ſpring, and a year will be thereby ſaved; as theſe plants ſend out long, ſtringy, tough roots, which run deep into the ground, they do not bear tranſplanting well, eſpecially if they are not removed young; therefore the beſt way is to ſow a few ſeeds in thoſe places where the plants are deſigned to remain, and to pull up all except the moſt promiſing plants as ſoon as they are paſt danger; after this the plants will require no other culture, but to keep them clean from weeds: but where this cannot be practiſed, the ſeeds may be ſown thin upon a bed of light earth, and when the plants come up, they muſt be kept clean from weeds till the following autumn, when the plants ſhould be carefully taken up and tranſplanted where they are deſigned to remain.

They are all very hardy plants except the fourth, fifth, and ninth ſorts, which muſt have a warm ſheltered ſituation and dry ſoil, otherwiſe they will not live through the winter, but the others will grow in almoſt any ſoil or ſituation.

GENISTA SPINOSA, the Furz, Whins, or Gorſe. See ULEX.

GENTIANA. Lin. Gen. Plant. 285. Tourn. Inſt. R. H. 80. tab. 40. [takes its name from Gentius, a king of Illyrium, who firſt diſcovered the virtues of this plant.] Gentian, or Fellwort; in French, *Gentiane.*

The CHARACTERS are,

It hath a permanent empalement, which is cut into five acute ſegments. The flower hath one petal, which is tubulous, cut into five parts at the top, which are flat. It hath

hath five awl-ſhaped ſtamina, which are ſhorter than the petal, terminated by ſingle ſummits. In the center is ſituated an oblong cylindrical germen, having no ſtyle, but is crowned by two oval ſtigmas. The germen afterward becomes an oblong taper-pointed capſule, with one cell, containing many ſmall ſeeds faſtened to the valves of the capſule.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, intitled Pentandria Digynia, which includes the plants whoſe flowers have five ſtamina and two ſtigmas.

The SPECIES are,

1. GENTIANA (*Lutea*) corollis quinquefidis rotatis verticillatis, calycibus ſpathaceis. Hall. Helv. 479. *Gentian with quinquefid wheel-ſhaped petals growing in whorls, and hood-like empalements.* Gentiana major lutea. C. B. P. 187. *Greater yellow Gentian.*
2. GENTIANA (*Pneumonathe*) corollis quinquefidis campanulatis oppoſitis pedunculatis, foliis linearibus. Lin. Sp. Plant. 228. *Gentian with bell-ſhaped quinquefid petals placed oppoſite upon foot-ſtalks, and very narrow leaves.* Gentiana auguſtifolia autumnalis major. C. B. P. 188. *Greater narrow-leaved autumnal Gentian.*
3. GENTIANA (*Aſclepiades*) corollis quinquefidis campanulatis oppoſitis ſeſſilibus, foliis amplexicaulibus. Lin. Sp. Plant. 227. *Gentian with bell-ſhaped quinquefid petals ſitting cloſe to the ſtalk oppoſite, and leaves embracing the ſtalk.* Gentian Aſclepiades folio. C. B. P. 187. *Gentian with a Swallow-wort leaf.*
4. GENTIANA (*Acaulis*) corollâ quinquefidâ campanulatâ, caulem excedente. Lin. Sp. Plant. 228. *Gentian with a bell-ſhaped quinquefid petal exceeding the ſtalk.* Gentiana Alpina latifolia, magno flore. C. B. P. 187. *Broad-leaved Alpine Gentian with a large flower, commonly called Gentianella.*
5. GENTIANA (*Nivalis*) corollis quinquefidis infundibuliformibus, ramis unifloris alternis. Lin. Sp. Plant. 229. *Gentian with funnel-ſhaped quinquefid petals, and alternate branches having one flower.* Gentiana annua, foliis Centaurii minoris. Tourn. Inſt. 81. *Annual Gentian with leſſer Centaury leaves.*
6. GENTIANA (*Cruciata*) corollis quadrifidis imberbibus verticillatis ſeſſilibus. Lin. Sp. Plant. 231. *Gentian with quadrifid petals without beards, growing in whorls cloſe to the ſtalks.* Gentiana cruciata. C. B. P. 188. *Croſſwort Gentian.*
7. GENTIANA (*Cilliata*) corollis quadrifidis margine ciliatis. Lin. Sp. Plant. 231. *Gentian with a four-pointed petal, whoſe border is hairy.* Gentianella cærulea oris piloſis. C. B. P. 188. *Blue Gentian with hairy brims.*
8. GENTIANA (*Utriculoſa*) corollis quinquefidis hypocrateriformibus, calycibus plicatis alatis. Lin. Sp. Plant. 229. *Gentian with ſalver-ſhaped quinquefid petals, and winged plaited empalements.* Gentiana utriculis ventricoſis. C. B. P. 188. *Gentian with a ventricoſe tube.*
9. GENTIANA (*Centaureum*) corollis quinquefidis infundibuliformibus caule dichotomo. Lin. Sp. Plant. 229. *Gentian with a funnel-ſhaped, five-pointed petal, and a forked ſtalk.* Centaurium minus. C. B. P. 278. *Leſſer Centaury.*
10. GENTIANA (*Perfoliatum*) corollis octifidis, foliis perfoliatis. Lin. Sp. Plant. 232. *Gentian with an eight-pointed petal, and Thorough-wax leaves.* Centaurium luteum perfoliatum. C. B. P. 278. *Yellow perfoliate Centaury.*
11. GENTIANA (*Spicata*) corollis quinquefidis floribus alternis ſeſſilibus. Lin. Sp. Plant. 230. *Gentian with funnel-ſhaped five-pointed petals, flowers growing alternate, and ſitting cloſe to the ſtalks.* Centaurium minus ſpicatum album. C. B. P. 278. *Leſſer Centaury with a white ſpiked flower.*
12. GENTIANA (*Exaltata*) corollis quinquefidis coronatis crenatis, pedunculo terminali longiſſimo dichotomo. Lin. Sp. 331. *Gentian with a five-pointed petal, a very long foot-ſtalk, and forked branches.* Centaurium minus maritimum amplo flore cæruleo. Plum. Cat. 3. *Leſſer maritime Centaury with a large blue flower.*

The firſt ſort is the common Gentian of the ſhops, whoſe root is one of the principal ingredients in bitters.

This plant has a large thick root of a yellowiſh brown colour, and a very bitter taſte; the lower leaves are of an oblong-oval ſhape, a little pointed at the end, ſtiff, of a yellowiſh green, and have five large veins on the back of each, and are plaited. The ſtalk riſes to the height of three or four feet, which is garniſhed with leaves, growing by pairs at each joint, almoſt embracing the ſtalk at their baſe; theſe are of the ſame form with the lower, but diminiſh gradually in their ſize to the top. The flowers come out in whorls at the joints, toward the upper part of the ſtalks, ſtanding on ſhort foot-ſtalks, whoſe origin is from the wings of the leaves; theſe are of a pale yellow, and have one petal, which is divided almoſt to the bottom, having an oblong cylindrical germen, which afterward ſwells to an oblong taper capſule, which is bifid at the point, and opens in two cells, filled with ſmall ſeeds.

It grows naturally in the paſtures in Switzerland, and in the mountainous parts of Germany, from whence the roots are brought to England for medicinal uſe; there is a compound water, and an extract made of them. The root of the Gentian is alſo one of the principal ingredients in bitters, and is frequently uſed in many diſorders.

But a few years ago, there was a mixture of Henbane roots brought over with Gentian, which was unhappily uſed, and occaſioned great diſorders in the perſons to whom it was adminiſtered; upon which great enquiry was then made to find out what that root could be, ſome ſuſpecting it to be the root of Deadly Nightſhade, and others believing it to be ſome of the poiſonous umbelliferous roots, but on comparing it with ſome dried roots of the Henbane, I found they were the ſame. We have likewiſe an account of the noxious quality of theſe roots, printed in the Synopſis Stirpium Hibernicarum, which was communicated to the author by Dr. Thomas Molyneux, phyſician to the ſtate; it was as follows:

The Dean of Clonfert was making ſome alterations in his garden, and, looking over his workmen, he obſerved them to dig up many roots, which he took for Skirrets, and therefore ordered ſome of them to be carried in and dreſſed for dinner, which was accordingly done; but all thoſe who eat of them were in a ſhort time ſeized with dizzineſs in their head, ſickneſs at the ſtomach, attended with an unuſual heat and drineſs in their throats; and two, who had eaten a larger ſhare than the reſt, loſt the uſe of their reaſon, and became delirious, which continued for ſome days; and as it appeared evident theſe diſorders were occaſioned by the roots, the Dean cauſed ſome of them to be planted, that he might be aſſured what the plant was whoſe roots had this bad quality; and in the ſpring, when they put out their leaves, they proved to be the Henbane, which has been noticed by old writers to be poſſeſſed of theſe qualities. And as the diſorders which were occaſioned by theſe ſuppoſed Gentian roots, were nearly the ſame, as is above related, I thought it might be of uſe to inſert it here, to caution others againſt eating of roots which they are unacquainted with.

This plant delights in a light loamy ſoil and a ſhady ſituation, where it will thrive much better than in a light dry ſoil, or in an open expoſure. It is propagated by ſeeds, which ſhould be ſown in pots ſoon after it is ripe, for if it is kept till the ſpring, it will not ſucceed; theſe pots ſhould be placed in a ſhady ſituation, and kept clean from weeds. In the ſpring the plants will appear, when they muſt be duly watered in dry weather, and kept clean from weeds till the following autumn; then they ſhould be carefully ſhaken out of the pots, ſo as not to break or injure their roots; and a ſhady border of loamy earth ſhould be well dug and prepared to receive them, into which the plants ſhould be planted at about ſix inches diſtance each way, obſerving to let the top of the roots be a little below the ſurface of the

ground, then preſs the earth cloſe to the roots; after this they will require no farther care, but to keep them conſtantly clean from weeds; and if the following ſpring ſhould prove dry, they ſhould be duly watered, which will greatly forward their growth. In this border the plants may ſtand two years, by which time they will be fit to tranſplant where they are deſigned to remain; therefore in autumn, ſo ſoon as their leaves decay, they may be removed; but as the roots of theſe plants run deep into the ground, like Carrots, there muſt be great care taken in digging them up, not to cut or break their roots, for that will greatly weaken, if it does not kill them. After the plants are well fixed in their places, they require no other culture, but to dig the ground about them early in the ſpring before they begin to ſhoot, and in the ſummer to keep them clean from weeds. The roots of theſe plants will continue many years, but the ſtalks decay every autumn; the ſame roots do not flower two years together, nor ſeldom oftener than every third year; but when they flower ſtrong, they make a fine appearance; and as theſe delight in ſhady moiſt ground, where but few ornamental plants will thrive, ſo they ſhould not be wanting in good gardens.

The ſecond ſort grows naturally in moiſt paſtures in many parts of England, but particularly in the north; this riſes with an upright ſtalk about a foot high, garniſhed with ſmooth leaves an inch and a half long, and leſs than a quarter of an inch broad; they are placed oppoſite, and have no foot-ſtalks. The flowers are produced on the top of the ſtalk, three or four in number, ſtanding upon foot-ſtalks alternately above each other; they are large, bell-ſhaped, and divided into five points at their brim, and are of a deep blue colour, ſo make a fine appearance; theſe come out the latter end of July in the warm parts of England, but in the north they are full a month later.

It may be propagated by ſeeds in the ſame manner as the firſt ſort, and the plants may be treated in the ſame way; but as this ſort does not ſhoot its roots deep into the ground, it may be tranſplanted with leſs hazard; however, if theſe are removed with a ball of earth to their roots, they will not feel their removal ſo much as when the earth is all taken from them. This ſort ſhould be planted in a ſtrong, moiſt, loamy ſoil, in which the plants will thrive and flower annually, but in a warm dry ſoil they will not thrive or flower.

The third ſort grows naturally upon the Helvetian mountains; this riſes with an upright ſtalk near a foot high, garniſhed with ſmooth leaves about two inches long, and three quarters of an inch broad at their baſe, where they embrace the ſtalk, but they end in acute points; they are placed oppoſite, and are of a fine green, and diminiſh in their ſize as they are neare the top; they have five longitudinal veins, which join at both ends, but diverge from each other in the middle. The flowers come out by pairs oppoſite, from the bottoms of the leaves, ſtanding on ſhort foot-ſtalks; they are pretty large, bell-ſhaped, and of a fine blue colour, ſo make a fine appearance when they are open. This ſort flowers in June and July.

It may be propagated by ſeeds in the ſame manner as the firſt ſort, and the plants may be treated in the ſame way, but they muſt have a moiſt loamy ſoil, otherwiſe they will not thrive. It may alſo be propagated by offsets, which may be divided from the roots; theſe ſhould be taken off in autumn, which is the beſt ſeaſon for removing all theſe ſorts of plants; but theſe ſhould not be removed, or parted oftener than every third year, where they are expected to produce ſtrong flowers.

The fourth ſort grows naturally on the Alps and Helvetian mountains, but has been long cultivated in moſt of the curious gardens in Europe; this is commonly known by the title of Gentianella. It is a low plant, the ſtalks ſeldom growing more than three or four inches high; they are garniſhed with ſmooth leaves placed oppoſite, which are two inches long, and half an inch broad, ſitting cloſe to the ſtalk. The flowers grow erect on the top of the ſtalk, ſo ſtand quite above them; theſe are often ſingle, but ſometimes, when the plants are ſtrong, there will be four or five at the end of each ſtalk; they are large, bell-ſhaped, and of a deep azure blue, ſo is the fineſt of that colour of any flower yet known. It uſually flowers in May, but ſometimes the plants flower again in autumn.

This is commonly propagated by parting of the roots, in the ſame manner as is before directed for the third ſort, but theſe muſt not be often tranſplanted, or parted, if they are wanted to flower ſtrong; this ſort ſhould have a ſoft loamy ſoil and a ſhady ſituation, where the plants will thrive and flower well every year.

It may alſo be propagated by ſeeds, which, in a good ſoil, the plants will produce in plenty; theſe ſhould be ſown in autumn, in the ſame manner as is before directed for the firſt ſort; and if the plants are planted in a good ſoil, they will be ſtrong enough to flower the ſecond year after they come up, and theſe ſeedling plants will flower much ſtronger than thoſe which are propagated by offsets.

The fifth and eighth ſorts are low annual plants, which grow naturally upon the Alps and other mountainous places in Europe, and are very rarely cultivated in gardens. The fifth ſeldom riſes more than two inches high, branching out from the root into ſeveral ſlender ſtalks, garniſhed with very ſmall leaves placed by pairs, and each ſtalk is terminated by one ſmaller blue flower ſtanding erect. The eighth ſort grows about four inches high, with a ſingle upright ſtalk of a purple colour. The leaves at the root are oval, but thoſe upon the ſtalk are narrow, and ſtand oppoſite. The ſtalk is terminated by one blue flower, with a large bellied empalement, which is plaited, and the petal of the flower riſes but a little above the empalement, ſo does not make much appearance. After the top flower decays, there are frequently two ſmaller flowers which come out from the ſide of the ſtalk, at the two upper joints; theſe flower after each other, the upper one coming firſt, ſo that there is a ſucceſſion of flowers till autumn.

As theſe plants uſually grow upon moiſt ſpongy ground, it is very difficult to cultivate them in gardens; for unleſs they have a ſoil approaching near to that in which they naturally grow, they will not thrive; the only method to obtain them is, either to ſow their ſeeds in pots, or upon a moiſt boggy ground in autumn, but it muſt be in the ſhade; and when the plants come up, they may be thinned, and the ſurface of the ground about them covered with moſs, which ſhould be conſtantly kept moiſt; with this management I have ſeen the plants thrive and flower very well.

The ſixth ſort is a perennial plant, which grows naturally upon the Appenines and the Helvetian mountains; this riſes with an upright ſtalk about ſix inches high, garniſhed with ſmooth ſpear-ſhaped leaves about two inches long, and one broad in the middle, ſitting cloſe to the ſtalk; they are placed oppoſite, and each pair of leaves croſs one another, from whence it is called Croſſwort Gentian. The flowers are produced in whorls round the ſtalks at the upper joints, ſitting very cloſe to the ſtalks, and at the top there is a large cluſter growing in the ſame form; theſe are of a light blue colour, and appear in May. This may be propagated by ſeeds, or offsets, in the ſame manner as the third and fourth ſorts, and the plants muſt be treated in the ſame way.

The ſeventh ſort grows naturally upon the Alps, and other mountainous parts of Europe; this is a low perennial plant, whoſe ſtalks are very ſlender, and rarely riſe more than three or four inches high, garniſhed with ſmall, narrow, acute-pointed leaves, placed in pairs; each ſtalk is terminated by one large blue flower, which is hairy on the inſide at the brim. This

flowers

flowers in July and Auguſt, and may be propagated and treated in the ſame manner as the third and fourth ſorts.

The ninth ſort is the Leſſer Centaury of the ſhops; this grows naturally upon dry paſtures in moſt parts of England, where it riſes in height proportionable to the goodneſs of the ſoil; for in good land it is frequently a foot high, but in poor ſoils not more than three or four inches. It is an annual plant, with upright branching ſtalks, garniſhed with ſmall leaves placed by pairs. The flowers grow in form of an umbel at the top, and are of a bright purple colour; they come out in July, and the ſeeds ripen in autumn. This plant cannot be cultivated in the gardens.

The tenth ſort grows naturally upon chalky grounds in many parts of England. It is an annual plant, riſing with an upright ſtalk a foot high, garniſhed with oval-pointed leaves, whoſe baſe ſurrounds the ſtalk; they grow by pairs, and are of a gray colour; the ſtalks and leaves are very ſmooth. The flowers grow in form of an umbel on the top of the ſtalk; they are of a bright yellow colour, and are cut into eight parts at the top. Theſe appear in July, and the ſeeds ripen in autumn.

The eleventh ſort is an annual plant, which grows naturally in the ſouth of France and in Italy; this riſes with an upright ſtalk about a foot high, ſending out ſeveral branches toward the top, which are garniſhed by ſmall leaves placed oppoſite. The flowers are produced from the ſide and at the top of the ſtalk, in form of looſe irregular umbels; they are white, and about the ſize of thoſe of the common Centaury.

The twelfth ſort grows naturally in the Weſt-Indies, where it was diſcovered by Father Plumier, and the late Dr. Houſtoun found it growing in plenty at La Vera Cruz, in low moiſt places where the water ſtagnates, but at a remoter diſtance from the ſea. The ſeeds of this plant he ſent to England, which ſucceeded in the Chelſea garden; this riſes with an upright branching ſtalk near two feet high, garniſhed with oblong, ſmooth, acute-pointed leaves, placed oppoſite; the upper part of the ſtalk divides into ſeveral forks, between which are ſix or ſeven long naked foot-ſtalks, each ſuſtaining one large blue flower, divided into five ſegments at the brim. The flowers are ſucceeded by oblong capſules with one cell, filled with ſmall ſeeds.

This is propagated by ſeeds, which muſt be ſown on a hot-bed ſoon after they are ripe, and the plants afterward treated in the ſame manner as other tender annual plants from warm countries, being too tender to thrive in the open air in England. If the ſeeds of this plant are ſown in autumn, in pots placed in the tan-bed of the ſtove, they will ſucceed better than when they are ſown in the ſpring, and the plants will flower early, ſo good ſeeds may be obtained.

GENTIANELLA. See GENTIANA.

GERANIUM. Lin. Gen. Plant. 346. Tourn. Inſt. R. H. 266. tab. 142. [takes its name from Γέρανος, *Gr.* a crane, or ſtork, becauſe its fruit reſembles the bill of a Crane.] *Crane's-bill*; in French, *Bec de Gruë*.

The CHARACTERS are,

The flower hath a permanent empalement, compoſed of five ſmall oval leaves. The flower hath five petals, which are oval, or heart-ſhaped, ſpreading open; theſe are in ſome ſpecies equal, and in others, the upper two are much larger than the three lower. It hath ten ſtamina, which are alternately longer, but are ſhorter than the petals, and are terminated by oblong ſummits. In the bottom of the flower is ſituated a five-cornered germen, ſupporting an awl-ſhaped ſtyle longer than the ſtamina, which is permanent, crowned by five reflexed ſtigmas. The flower is ſucceeded by five ſeeds, each being wrapped up in the huſk of the beak, which is extended the length of the ſtyle, where they are twiſted together at the point, ſo as to form the reſemblance of a ſtork's beak.

This genus of plants is ranged in the ſecond ſection of Linnæus's ſixteenth claſs, which includes thoſe plants whoſe flowers have ten ſtamina, and the male and female organs are joined in one body. Tournefort places it in the ſixth ſection of his ſixth claſs, in which he ranges the herbs with a Roſe flower, whoſe pointal becomes a fruit with ſeveral capſules.

The SPECIES are,

1. GERANIUM (*Pratenſe*) pedunculis bifloris, foliis ſubpeltatis multipartitis pinnato laciniatis rugoſis acutis, petalis integris. Hort. Cliff. 344. *Crane's-bill with two flowers on each foot-ſtalk, target-ſhaped leaves cut into many acute ſegments, and entire petals.* Geranium batrachiodes, Gratia Dei Germanorum. C. B. P. *Crane's-bill with a Crow-foot leaf, and large blue flowers.*
2. GERANIUM (*Macrorrhizum*) pedunculis bifloris, calycibus inflatis, piſtillo longiſſimo. Hort. Cliff. 343. *Crane's-bill with two flowers on each foot-ſtalk, inflated empalements, and a very long pointal to the flower.* Geranium batrachioides, longius radicatum, odoratum. J. B. *Long-rooted ſweet-ſmelling Crane's-bill, with a Crow-foot leaf.*
3. GERANIUM (*Sanguineum*) pedunculis unifloris, foliis quinquepartitis trifidis orbiculatis. Lin. Sp. Plant. 685. *Crane's-bill with one flower on each foot-ſtalk, and orbicular leaves, which are trifid and divided into five parts.* Geranium ſanguineum, maximo flore. H. Ox. *Bloody Crane's-bill with a larger flower.*
4. GERANIUM (*Lancaſtrenſe*) pedunculis unifloris, foliis quinquepartitis laciniis obtuſis brevibus, caulibus decumbentibus. *Crane's-bill with one flower upon each foot-ſtalk, leaves divided into five parts, whoſe ſegments are ſhort, blunt, and declining ſtalks.* Geranium hæmatodes Lancaſtrenſe, flore eleganter ſtriato. Raii Hiſt. *Bloody Crane's-bill with a variegated flower.*
5. GERANIUM (*Nodoſum*) pedunculis bifloris, foliis caulinis trilobis integris ſerratis, ſummis ſubſeſſilibus. Hort. Cliff. 343. *Crane's-bill with two flowers on each foot-ſtalk, the leaves upon the ſtalks having three entire ſawed lobes, the upper leaves ſitting cloſe to the ſtalk.* Geranium 5. nodoſum. Plateau. Cluſ. Hiſt. *Knotty Crane's-bill.*
6. GERANIUM (*Phæum*) pedunculis bifloris, foliiſque alternis, calycibus ſubariſtatis, caule erecto, petalis undulatis. Lin. Sp. Plant. 681. *Crane's-bill with two flowers on each foot-ſtalk, alternate leaves, bearded empalements, an erect ſtalk, and waved petals to the flower.* Geranium phæum ſive fuſcum, petalis reflexis, folio non maculoſo. H. L. *Brown Crane's-bill with reflexed petals, and leaves not ſpotted.*
7. GERANIUM (*Fuſcum*) pedunculis bifloris, foliis quinquelobatis inciſis, petalis reflexis. *Crane's-bill with two flowers upon eaeh foot-ſtalk, leaves divided into five lobes, which are cut, and the petals of the flowers reflexed.* Geranium phæum ſive fuſcum, petalis rectis ſeu planis, folio maculato. H. L. *Brown Crane's-bill with plain petals, and ſpotted leaves.*
8. GERANIUM (*Striatum*) pedunculis bifloris, altero breviore, foliis quinquelobis medio dilatatis, petalis bilobis venoſo reticulatis. Burm. Ger. *Crane's-bill with two flowers upon each foot-ſtalk, one bigger than the other, leaves having five lobes, and flowers with two lobes.* Geranium Romanum, verſicolor ſive ſtriatum. Park. Par. *Roman Crane's-bill with ſtriped flowers.*
9. GERANIUM (*Sylvaticum*) pedunculis bifloris, foliis ſubpeltatis quinquelobis inciſo-ſerratis, caule erecto, petalis emarginatis. Flor. Lapp. 266. *Crane's-bill with two flowers on each foot-ſtalk, target-ſhaped leaves with five lobes deeply ſawed, an erect ſtalk, and indented petals to the flower.* Geranium batrachioides montanum noſtras. Ger. *Mountain Crane's-bill with a Crow-foot leaf.*
10. GERANIUM (*Orientale*) pedunculis bifloris, foliiſque oppoſitis, petalis integris, calycibus brevioribus. *Eaſtern Dove's-foot Crane's-bill, with oppoſite leaves, two flowers on each foot-ſtalk, and a ſhort empalement.* Geranium Orientale columbinum, flore maximo, aſphodeli radice. T. Cor. *Oriental Dove's-foot Crane's-bill, with an Aſphodel root and large flowers.*
11. GERANIUM (*Perenne*) pedunculis bifloris, foliis inferioribus quinque-partito-multifidis rotundis, ſuperioribus trilobis, caule erecto. Hudſ. Flor. Ang. 265. *Crane's-bill with two flowers on each foot-ſtalk, the lower leaves having five many-pointed lobes, the upper three,*

three, and on erect ſtalk. Geranium Columbinum perenne Pyrenaicum maximum. Tourn. Inſt. R. H. 268. *Greateſt perennial Dove's-foot Crane's-bill of the Pyrennes.*

12. Geranium (*Alpinum*) pedunculis longiſſimis multifloris, calycibus ariſtatis, foliis bipinnatis. *Crane's-bill with very long foot-ſtalks ſuſtaining many flowers, bearded empalements, and double wing-pointed leaves.* Geranium Alpinum Coriandri folio, longius radicatum, flore majore purpureo. Michel. *Alpine Crane's-bill with a Coriander leaf, a long root, and a larger purple flower.*

13. Geranium (*Argenteum*) pedunculis bifloris, foliis ſubpeltatis ſeptempartitis trifidis tomentoſo-fericeis, petalis emarginatis. Amœn. Acad. 4. p. 324. *Crane's-bill with two flowers on each foot-ſtalk, target-ſhaped leaves divided into ſeven parts, which are ſilvery, and the petals of the flower indented.* Geranium argenteum Alpinum. C. B. P. 318. *Silvery Alpine Crane's-bill.*

14. Geranium (*Maculatum*) pedunculis bifloris, caule dichotomo erecto, foliis quinquepartitis inciſis ſummis ſeſſilibus. Flor. Virg. 78. *Crane's-bill with two flowers on each foot-ſtalk, upright ſtalks divided by pairs, and cut leaves divided into five parts, the upper ſitting cloſe to the ſtalk.* Geranium batrachioides Americanum maculatum, floribus obſoletè cæruleis. Hort. Elth. 158. *American ſpotted Crane's-bill with obſolete blue flowers.*

15. Geranium (*Bohemicum*) pedunculis bifloris petalis emarginatis arillis hirtis cotyledonibus trifidis medio truncatis. Burm. Ger. 4. *Crane's-bill with two flowers on each foot-ſtalk, indented petals to the flower, hairy beards, and a trifid leaf.* Geranium annuum minus batrachiodes Bohemicum, purpuro-violaceum. Mor. Hiſt. 2. 511. *Leſſer annual Crane's-bill of Bohemia, with a purple Violet flower.*

16. Geranium (*Sibiricum*) pedunculis ſubunifloris, foliis quinquepartitis acutis foliolis pinnatifidis. Lin. Sp. Plant. 683. *Crane's-bill with one flower on a foot-ſtalk, leaves divided into five acute parts, and the ſmaller leaves wing-pointed.*

17. Geranium (*Moſchatum*) pedunculis multifloris, floribus pentandris foliis pinnatis inciſis cotyledonibus pinnatifidis. Burm. Ger. 22. *Crane's-bill with many flowers on each foot-ſtalk, having five ſtamina to the flowers, and cut winged leaves.* Geranium cicutæ folio, moſchatum. C. B. P. *Muſked Crane's-bill, frequently called Muſcovy.*

18. Geranium (*Gruinum*) pedunculis ſub multifloris, floribus pentandris, foliis ternatis lobatis. Burm. Ger. 32. *Crane's-bill with many flowers on a foot-ſtalk, five ſtamina to the flower, and ternate lobed leaves.* Geranium latifolium annuum, cæruleo flore, acu longiſſimâ. H. Ox. *Broad-leaved annual Crane's-bill with a blue flower, and a very long beak.*

19. Geranium (*Ciconium*) pedunculis multifloris, calycibus pentaphyllis, floribus pentandris, foliis pinnatis acutis ſinuatis. Lin. Sp. Plant. 680. *Crane's-bill with many flowers on each foot-ſtalk, having five-leaved empalements, five ſtamina to the flowers, and acute, ſinuated, winged leaves.* Geranium Cicutæ folio, acu longiſſimâ. C. B. P. 319. *Crane's-bill with a Hemlock leaf, and very long beaks to the ſeed.*

20. Geranium (*Viſcoſum*) pedunculis multifloris, calycibus pentaphyllis, floribus pentandris, foliis bipinnatis multifidis caule erecto. *Crane's-bill with many flowers on each foot-ſtalk, having five-leaved empalements, flowers with five ſtamina, and many-pointed winged leaves.* Geranium cicutæ folio viſcoſum erectum, acu longiſſimâ. Juſſieu. *Erect viſcous Crane's-bill with a Hemlock leaf, and very long beaks to the ſeed.*

21. Geranium (*Cucullatum*) calycibus monophyllis, foliis cuculatis dentatis. Hort. Cliff. 345. *Crane's-bill with an empalement of one leaf, and indented hooded leaves.* Geranium Africanum arboreſcens, ibiſci folio rotundo, carlinæ odore. H. L. *African-tree Crane's-bill with a round Marſhmallow leaf, and ſmell of the Carline Thiſtle.*

22. Geranium (*Anguloſum*) calycibus monophyllis, foliis cuculatis anguloſis, acutè dentatis. *Crane's-bill with a one-leaved empalement, and angular hooded leaves ſharply indented.* Geranium Africanum arboreſcens, ibiſci folio anguloſo, floribus amplis purpureis. Phil. Tranſ. 388. *African-tree Crane's-bill with an angular Marſhmallow leaf, and large purple flowers.*

23. Geranium (*Zonale*) calycibus monophyllis, foliis cordato-orbiculatis inciſis zona notatis. Hort. Upſal. 196. *Crane's-bill with a one-leaved empalement, and round heart-ſhaped leaves, which are cut, and marked with a circle.* Geranium Africanum arboreſcens, alchimillæ hirſuto folio, floribus rubicundis. Com. Præl. *African-tree Crane's-bill with an hairy Ladies Mantle leaf, and red flowers.*

24. Geranium (*Inquinans*) calycibus monophyllis, foliis orbiculato-reniformibus tomentoſis crenatis integriuſculis, caule fruticoſo. Hort. Upſal. 195. *Crane's-bill with a one-leaved empalement, and round kidney-ſhaped leaves which are woolly, crenated, entire, and a ſhrubby ſtalk.* Geranium Africanum arboreſcens, malvæ folio plano lucido, flore elegantiſſimè kermeſino. Di van Leur. Boerh. Ind. *African-tree Crane's-bill, with a plain, ſhining, Mallow leaf, and an elegant ſcarlet flower.*

25. Geranium (*Capitatum*) calycibus monophyllis, foliis lobatis undatis villoſis, caule fruticoſo. Hort. Upſal. 196. *Crane's bill with empalements of one leaf, leaves divided into lobes, which are waved and hairy, and a ſhrubby ſtalk.* Geranium Africanum fruteſcens, malvæ folio odorato laciniato. H. L. *African ſhrubby Crane's-bill with a jagged, ſweet-ſmelling, Mallow leaf.*

26. Geranium (*Vitifolium*) calycibus monophyllis, foliis adſcendentibus lobatis pubeſcentibus, caule fruticoſo. Hort. Upſal. 196. *Crane's-bill with one-leaved empalements, aſcending leaves which have lobes, are covered with ſoft hairs, and a ſhrubby ſtalk.* Geranium Africanum fruteſcens, malvæ folio laciniato, odorato inſtar meliſſæ, flore purpuraſcente. Boerh. Ind. *African ſhrubby Crane's-bill, with a jagged Mallow leaf ſmelling like Balm, and a purpliſh coloured flower.*

27. Geranium (*Papileonaceum*) calycibus monophyllus, corollis papilionaceis, alis carinaque minutis, foliis angulatis, caule fruticoſo. Hort. Cliff. 345. *Crane's-bill with an empalement of one leaf, a butterfly flower, whoſe wings and keel are very ſmall, and a ſhrubby ſtalk.* Geranium Africanum arboreſcens, malvæ folio mucronato, petalis florum inferioribus vix conſpicuis. Phil. Tranſ. *African-tree Crane's-bill with a pointed Mallow leaf, and the under petals of the flower ſcarce diſcernible.*

28. Geranium (*Acetoſum*) calycibus monophyllis, foliis glabris obovatis carnoſis crenatis, caule fruticoſo. Hort. Cliff. 345. *Crane's-bill with empalements of one leaf, ſmooth, oval, fleſhy leaves, which are crenated, and a ſhrubby ſtalk.* Geranium Africanum fruteſcens, folio craſſo & glauco, acetoſæ ſapore. Com. Præl. *African ſhrubby Crane's-bill with a thick glacuous leaf, and an acid taſte like Sorrel.*

29. Geranium (*Carnoſum*) calycibus monophyllis, caule fruticoſo, articulis carnoſo gibboſis, foliis pinnatifidis laciniatis, petalis linearibus. Lin. Sp. Plant. 67. *Crane's-bill with an empalement of one leaf, a ſhrubby ſtalk with fleſhy knees, wing-pointed leaves, and very narrow petals to the flower.* Geranium Africanum fruteſcens, chelidonii folio, petalis florum anguſtis albidis, carnoſo caudice. Phil. Tranſ. Geranium Africanum, folio alceæ, flore albo. Boerh. Ind. alt. *African ſhrubby Crane's-bill with a leaf like the Alcea, the petals of the flower white and narrow, and a fleſhy ſtalk.*

30. Geranium (*Gibboſum*) calycibus monophyllis, caule fruticoſo, geniculis carnoſis gibboſis, foliis ſubpinnatis appoſitis. Lin. Sp. Plant. 677. *Crane's-bill with a one-leaved empalement, ſhrubby ſtalk with fleſhy knees, and winged leaves placed oppoſite.* Geranium Africanum noctu olens, tuberoſum & nodoſum, aquilegiæ foliis. H. L. *African Crane's-bill ſmelling ſweet in the night, with knotty tuberous ſtalks, and leaves like Columbine.*

31. Geranium (*Fulgidum*) calycibus monophyllis, foliis tripartitis inciſis, intermedia majore umbellis, geminis, caule fruticoſo carnoſa. Lin. Vir. 67. *Crane's-*

bill

bill with one-leaved empalements, leaves cut into three ſegments, the middle one being the largeſt, double foot-ſtalks with flowers growing in umbels, and a ſhrubby fleſhy ſtalk. Geranium Africanum, folio alceæ, flore coccineo fulgidiſſimo. Boerh. Ind. alt. 1. p. 264. *African Crane's-bill with a Vervain Mallow leaf, and a deep ſcarlet flower.*

32. GERANIUM (*Peltatum*) calycibus monophyllis, foliis, quinquelobis integerrimis glabris peltatis, caule fruticoſo. Hort. Cliff. 345. *Crane's-bill with empalements of one leaf, and ſmooth target-ſhaped leaves, having five lobes, which are entire.* Geranium Africanum foliis inferioribus aſari, ſuperioribus ſtaphidiſagriæ, maculatis, ſplendentibus, & acetoſæ ſapore. Com. Præl. *African Crane's-bill with the under leaves like Aſarabacca, and the upper leaves like Staveſacre, ſhining, ſpotted, and taſting like Sorrel.*

33. GERANIUM (*Alchimilloides*) calycibus monophyllis, foliis orbiculatis palmatis inciſis piloſis, caule herbaceo. Lin. Vir. 67. *Crane's-bill with empalements of one leaf, roundiſh hand-ſhaped leaves, which are divided, hairy, and an herbaceous ſtalk.* Geranium Africanum, alchimillæ hirſuto folio, floribus albidis. H. L. *African Crane's-bill with a hairy Ladies Mantle leaf, and whitiſh flowers.*

34. GERANIUM (*Odoratiſſimum*) calycibus monophyllis, caule carnoſo breviſſimo, ramis herbaceis longis foliis cordatis. Hort. Cliff. 345. *Crane's-bill with empalements of one leaf, a very ſhort fleſhy ſtalk, long herbaceous branches, and heart-ſhaped leaves.* Geranium Africanum, folio malvæ craſſo molli odoratiſſimo, floſculo pentapetalo albo. Boerh. Ind. alt. *African Crane's-bill with a thick, ſoft, ſweet-ſmelling Mallow leaf, and a ſmall white flower compoſed of five leaves.*

35. GERANIUM (*Triſte*) calycibus monophyllis, ſeſſilibus ſcapis bifidis monophyllis. Lin. Sp. 950. *Crane's-bill with ſeſſile empalements of one leaf, a bifid ſtalk, and a roundiſh root.* Geranium Americanum, noctu olens, radice tuberoſâ, triſte. Corn. H. Ox. *American tuberous-rooted Crane's-bill, ſmelling ſweet in the night.*

36. GERANIUM (*Myrrhifolium*) calycibus monophyllis, foliis bipinnatis, inferioribus cordatis lobatis, caule herbaceo, calycibus ſtrigoſis. Burm. Ger. 59. *Crane's-bill with empalements of one leaf, doubly wing-pointed leaves, the lower heart-ſhaped with lobes, and an herbaceous ſtalk.* Geranium Africanum tuberoſum, anemones folio, incarnato flore. Par. Bat. *Tuberous-rooted African Crane's-bill with an Anemony leaf, and a pale, fleſh-coloured flower.*

37. GERANIUM (*Paſtinacæfolium*) calycibus monophyllis, foliis decompoſitis pinnatifidis, acutis pedunculis longiſſimis. *Crane's-bill with empalements of one leaf, decompounded leaves ending in acute winged points, and very long foot-ſtalks to the flower.* Geranium Africanum noctu olens, radice tuberoſâ, foliis paſtinacæ incanis lanuginoſis latioribus, flore pallide flaveſcente. H. L. B. *Night-ſmelling Crane's-bill with a tuberous root, broad, woolly, hoary, Parſnep leaves, and a pale yellowiſh flower.*

38. GERANIUM (*Villoſum*) calycibus monophyllis, foliis pinnatifidis villoſis, laciniis linearibus. *Crane's-bill with empalements of one leaf, hairy wing-pointed leaves, having very narrow ſegments.* Geranium Æthiopicum, noctu olens, radice tuberoſâ, foliis myrrhidus anguſtioribus. Breyn. Cent. *Night ſweet-ſmelling Ethiopian Crane's-bill with a tuberous root, and narrow Cicely leaves.*

39. GERANIUM (*Lobatum*) calycibus monophyllis, caule truncato, ſcapis ſubradicalibus, umbella compoſita. Lin. Sp. 950. *Crane's-bill with empalements of one leaf, a truncated ſtalk, foot-ſtalks ariſing from the root, and a compound umbel of flowers.* Geranium Africanum noctu olens, folio vitis hirſuto, tuberoſum. H. L. *Night ſweet-ſmelling African Crane's-bill with a hairy Vine leaf, and a tuberous root.*

40. GERANIUM (*Coriandrifolium*) calycibus monophyllis, foliis bipinnatis linearibus ſquarroſis, caule herbaceo læviuſculo. Lin. Sp. 949. *Crane's-bill with a one-leaved empalement, doubly winged rough leaves, and a very ſmooth ſtalk.* Geranium Africanum, folio coriandri, floribus incarnatis, minus. H. L. *Leſſer African Crane's-bill with a Coriander leaf, and a fleſh-coloured flower.*

41. GERANIUM (*Romanum*) pedunculis multifloris, floribus pentandris, foliis pinnatis inciſis, ſcapis radicalibus. Burm. Ger. 30. *Crane's-bill with many flowers on each foot-ſtalk, cut winged leaves, and foot-ſtalks riſing from the root.* Geranium myrrhinum tenuifolium, amplo flore purpureo. Barrel. rar. 563.

42. GERANIUM (*Groſſularoides*) calycibus monophyllis, foliis cordatis ſubrotundis lobatis crenatis, caule herbaceo lævi. Burm. Ger. 53. *Crane's-bill with empalements of one leaf, roundiſh heart-ſhaped leaves which are crenated, and herbaceous ſmooth ſtalks.* Geranium Africanum, uvæ criſpæ folio, floribus exiguis rubellis. H. L. *African Crane's-bill with a Gooſeberry leaf, and ſmall reddiſh flowers.*

43. GERANIUM (*Betulinum*) calycibus monophyllis, foliis ovatis inæqualiter ſerratis planis, caule fruticoſo. Lin. Sp. Plant. 679. *Crane's-bill with one-leaved empalements, and oval plain leaves unequally ſawed, and a ſhrubby ſtalk.* Geranium fruteſcens, folio lato dentato, flore magno rubente. Burm. Afr. 92. tab. 33. *Shrubby Crane's-bill with a broad indented leaf, and large reddiſh flower.*

44. GERANIUM (*Chium*) pedunculis multifloris, floribus pentandris, foliis cordatis inciſis, ſuperioribus lyrato-pinnatifidis. Burm. Ger. 35. *Crane's-bill with many flowers on each foot-ſtalk, heart-ſhaped cut leaves at bottom, the upper lyre-ſhaped and winged.* Geranium chium vernum Caryphyllatæ folio. Tourn. Cor. 20.

45. GERANIUM (*Malacoides*) pedunculis multifloris, floribus pentandris foliis cordatis ſublobatis. Hort. Cliff. 344. *Crane's-bill with many flowers on each ſtalk, and heart-ſhaped lobed leaves.* Geranium folio Althææ. C. B. P. 318.

46. GERANIUM (*Glaucophyllum*) pedunculis multifloris, floribus pentandris, foliis ovatis ſerratis incanis linearis. Lin. Sp. 952. *Crane's-bill with many flowers on each ſtalk, and oval ſawed leaves.* Geranium Ægyptiacum glaucophyllon, roſtris longiſſimis plumoſis.

47. GERANIUM (*Carolinianum*) pedunculis bifloris, calycibus ariſtatis, foliis multifidis, arillis hirſutis. Prod. Leyd. 351. *Crane's-bill with two flowers on each ſtalk, bearded empalements, many pointed leaves, and hairy beaks.* Geranium columbinum Carolinum, capſulis nigris hirſutis. Hort. Elth. 162.

48. GERANIUM (*Althæoides*) calycibus monophyllis, foliis cordato-ovatis plicatis ſinuatis crenatis, caule herbaceo proſtrato. Hort. Cliff. 354. *Crane's-bill with a one-leaved empalement, oval heart-ſhaped plaited leaves, which are indented, and a proſtrate herbaceous ſtalk.* Geranium folio Althææ. Africanum odore meliſſæ. Boerh. Ind. 1. p. 263.

The firſt ſort grows naturally in moiſt meadows in many parts of England, but is frequently planted in gardens for the beauty of its large blue flowers; of this there is a variety with white flowers, and another with variegated flowers; but theſe are apt to degenerate to the common ſort, if they are raiſed from ſeeds, but by parting of their roots they may be continued. It hath a perennial root, which ſends up many ſtalks, which riſe near three feet high, garniſhed with target-ſhaped leaves, divided into ſix or ſeven lobes; theſe are cut into ſeveral acute ſegments, after the manner of winged leaves, ending in many points. The flowers are produced at the top of the ſtalks, each foot-ſtalk ſuſtaining two flowers, whoſe petals are large and equal; they are of a fine blue colour, and appear in May and June.

The varieties of this may be preſerved by parting of their roots in autumn; they may be planted in almoſt any ſoil or ſituation, and require no other culture but to keep them clean from weeds. They may alſo be propagated by ſeeds, but by this method they are very apt to vary in the colour of their flowers. If the ſeeds of theſe plants are permitted to ſcatter, the plants will come up without any farther care.

The ſecond ſort grows naturally in Germany and Switzerland; this hath a thick, fleſhy, perennial root,

from which ariſe ſeveral branching ſtalks, which grow about one foot high, garniſhed with leaves at each joint, which are divided into five lobes; and are divided at the top into many ſhort ſegments, which are crenated on their edges; they are of a light green, and ſmooth. The flowers are produced at the end of the branches, many growing together in a bunch, but each ſhort foot-ſtalk ſuſtains two flowers. The flowers have ſwollen empalements, reſembling inflated bladders. The petals are pretty large, equal, and of a fine bright purple colour, and the ſtamina and ſtyle are much longer than the petals; the whole plant, when rubbed, emits an agreeable odour. This flowers about the ſame time with the firſt ſort, and may be propagated and treated in the ſame manner, the plant being equally hardy.

The third ſort grows naturally in many parts of England, but is often admitted into gardens; this hath pretty thick, fleſhy, fibrous roots, which grow to a large head, from which ariſe many ſtalks, garniſhed with leaves, divided into five lobes, which are again divided almoſt to the midrib. The flowers ſtand upon long hairy foot-ſtalks, which come out from the ſide of the ſtalk, each ſuſtaining one flower, compoſed of five broad regular petals, which are of a deep purple colour. This ſort flowers in June and July; there are two varieties mentioned of this ſort as diſtinct ſpecies, one whoſe ſtalks grow more erect, and the other hath leaves more deeply divided; but the plants which I have raiſed from ſeeds of theſe do not come up the ſame as the parent plants, ſo they are only ſeminal varieties.

This hath a perennial root, which may be parted in autumn, and thereby propagated; or it may be propagated by ſeeds, and the plants treated in the ſame manner as the firſt.

The fourth ſort hath been ſuppoſed by ſome to be only a variety of the third, but it is undoubtedly a diſtinct ſpecies; for I have frequently raiſed the plants from ſeeds, which have always proved to be the ſame. The ſtalks of this plant are ſhorter than thoſe of the third, and ſpread flat on the ground; the leaves are much leſs, and not ſo deeply divided, and the flowers much ſmaller and of a pale colour, marked with purple; it grows naturally in Lancaſhire and Weſtmoreland, where I ſaw it in plenty. This may be propagated and treated in the ſame manner as the others.

The fifth ſort is a perennial plant, of ſmaller growth than either of the former. It riſes with branching ſtalks about ſix inches high, garniſhed with leaves, having three pretty broad lobes, which are undivided, and crenated on their edges: thoſe on the lower part of the ſtalks are placed oppoſite, upon pretty long foot-ſtalks, but the upper leaves ſit cloſe to the ſtalks and are ſingle. The flowers are produced at the end of the ſtalks, ſtanding together upon two ſhort foot-ſtalks; they are of a dirty purple colour, and appear in June. It grows naturally in France. This ſort may be propagated and treated in the ſame manner as the firſt.

The ſixth ſort grows naturally on the Alps and Helvetian mountains, and is found in ſome places in the North of England: this hath a perennial root, from which ariſe ſeveral ſtalks near a foot high, with leaves which are divided into five or ſix lobes, which are laciniated on their edges; thoſe which grow near the root have long foot-ſtalks, but thoſe on the upper part of the ſtalk ſit cloſe; the ſtalk branches out at the top into three or four diviſions, each being terminated by two or three foot-ſtalks, ſuſtaining two flowers of a dark purple colour, with erect petals. This flowers in June, and may be propagated by ſeeds or parting of the roots, in the ſame manner as the firſt ſort.

The ſeventh ſort is very like the ſixth, but the leaves are larger, the lobes ſhorter, broader, and not ſo much cut; they are ſtriped with black; the ſtalks riſe higher, the flowers are larger, and the petals are reflexed. Theſe differences are permanent, ſo are ſufficient to conſtitute a ſpecific difference between them. This may be propagated and treated in the ſame manner as the firſt ſort. It grows naturally on the Alps.

The eighth ſort hath a perennial root, which ſends up many branching ſtalks a foot and a half high, garniſhed with light green leaves; thoſe on the lower part of the ſtalk hath five lobes, and ſtand upon long foot-ſtalks; but thoſe on the upper part have but three lobes, ſit cloſer to the ſtalks, and are ſharply indented on the edges; the flowers ſtand upon long ſlender foot-ſtalks, each ſuſtaining two flowers, compoſed of five obtuſe petals, which are deeply indented at the top; they are of a dull white, with many purple ſtripes running longitudnally thro' them. Theſe appear in June, and in cool ſeaſons there will be a ſucceſſion of flowers a great part of July. This ſort is very hardy, ſo may be propagated by dividing of the roots, or from ſeeds, in the ſame manner as the firſt ſort.

The ninth ſort grows plentifully in the meadows in Lancaſhire and Weſtmoreland; this hath a perennial root, which ſends out three or four upright ſtalks about nine inches high, garniſhed with leaves, having five lobes, which are ſawed on their edges; they are placed oppoſite on the ſtalks; thoſe on the lower part have pretty long foot-ſtalks, but thoſe on the upper part ſit cloſer. The flowers are ſituated on the top of the ſtalks, ſtanding upon ſhort foot-ſtalks, each ſuſtaining two pretty large blue flowers, with entire petals. This flowers in May and June, and may be propagated and treated in the ſame way as the firſt ſort.

The tenth ſort was diſcovered by Dr. Tournefort in the Levant, from whence he ſent the ſeeds to the Royal Garden at Paris; this hath a perennial root, from which ariſe a few weak ſtalks about nine inches long, garniſhed with leaves which are round, and divided into five lobes, which are indented at the top, and placed oppoſite on the ſtalks. The flowers ſtand upon pretty long foot-ſtalks, which come ſingle from the joints of the ſtalks, each ſuſtaining two purpliſh flowers with entire petals, having very ſhort empalements. It flowers in June, and may be propagated either from ſeeds, or by parting of the roots in the ſame manner as the firſt ſort, but the plants require a drier ſoil and a warmer ſituation; for although in common winters it will live in the open air, yet in ſevere froſt theſe plants are ſometimes killed, eſpecially when they are planted in moiſt cold land.

The eleventh ſort grows naturally on the Pyrenean mountains; this hath a perennial root, from which ariſe many branching ſtalks a foot and a half high, garniſhed with round leaves, divided into many obtuſe ſegments at the top, placed oppoſite. The flowers are produced upon ſhort foot-ſtalks, which come out at the diviſions on the ſides, and at the top of the ſtalks; they are in ſome of a pale purple colour, and in others white. The petals of the flowers are bifid, like thoſe of the common Dove's-foot Crane's-bill, to which the whole plant bears ſome reſemblance; but the ſtalks are erect, the leaves and flowers much larger, and the root is perennial; this will propagate itſelf faſt enough by its ſcattered ſeeds where it has once got poſſeſſion, and will thrive in any ſoil or ſituation.

The twelfth ſort grows naturally upon the Alps. The ſeeds of this were ſent me by Sig. Micheli, of Florence; this hath a perennial root, which runs very deep into the ground. The lower leaves of the plant have very long foot-ſtalks, they are doubly winged and ſmooth. The ſtalks riſe a foot and a half high, which are garniſhed with leaves of the ſame form as the lower, but ſmaller, and ſtand oppoſite. The flowers grow many together upon very long foot-ſtalks; they are purple. This flowers in June, but has never ripened any ſeeds in England. The plant is hardy, and lives in the open air, but as the root puts out no offsets, nor perfects ſeeds here, we have not been able to propagate it.

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The thirteenth ſort grows naturally on the Alps; this hath a very thick perennial root, from which come out roundiſh leaves, divided into many parts, ſtanding upon pretty long foot-ſtalks; they are very ſilvery, and ſhining like ſilk. The flower-ſtalks riſe about four or five inches high, garniſhed with one or two ſmall leaves like thoſe below, which ſit cloſe to the ſtalk. The ſtalks are terminated by two pretty large pale flowers, whoſe petals are entire, and ſpread open flat. It flowers in June, but rarely ripens ſeeds here; it may be propagated by parting of the roots in the ſame manner as the firſt, and muſt have a ſhady ſituation.

The fourteenth ſort grows naturally in North America, from whence the ſeeds were ſent to England; this hath a perennial root, from which ariſe ſeveral ſtalks about one foot high, which divide by pairs, and from the middle of the diviſions come out the foot-ſtalks of the flowers, which are pretty long and naked, each ſuſtaining two pale purple flowers with entire petals. The leaves are divided into five parts, which are cut on their edges, and are placed oppoſite, the lower having pretty long foot-ſtalks, but the upper ſit cloſe to the ſtalks. It flowers in June, and frequently ripens ſeeds, from which the plant may be propagated; it thrives very well in the open air, and requires no other culture but to keep it clean from weeds.

The fifteenth ſort grows naturally in Bohemia; this is an annual plant, which ſends out many ſtalks, dividing into ſeveral ſmaller, which are garniſhed with leaves divided into five lobes, crenated on their edges; they ſtand upon long foot-ſtalks, and are for the moſt part oppoſite. The flowers ſtand by pairs upon pretty long ſlender foot-ſtalks, which come out from the ſide of the ſtalk; they are of a fine blue colour, and are ſucceeded by ſeeds, whoſe capſules and beaks are black. It flowers moſt part of ſummer, and the ſeeds ripen ſoon after, which, if permitted to ſcatter, there will be a ſupply of plants, which want no other care but to keep them clean from weeds.

The ſixteenth ſort grows naturally in Siberia. The ſeeds of this plant were ſent me by Sir Charles Linnæus, profeſſor of botany at Upſal; this ſort hath a perennial root. The leaves are divided into five acute lobes, which are cut into many ſharp wing-like ſegments on their edges; they are placed oppoſite, and have long ſlender foot-ſtalks. The foot-ſtalks of the flower come out from the wings of the ſtalk; they are pretty long, ſlender, and each ſuſtain one pale purpliſh flower. This ſort flowers in June, and perfects its ſeeds very well, ſo may be eaſily propagated; it will grow on any ſoil, or in any ſituation.

The ſeventeenth ſort is an annual plant, which is ſometimes found growing naturally in England, but is frequently preſerved in gardens for the muſky odour of the leaves, which in dry weather is very ſtrong. The leaves of this are irregularly winged, the lobes grow alternate, and are cut into many obtuſe ſegments on their edges. The ſtalks branch into many diviſions, and frequently decline to the ground. The flowers are produced in umbels upon long foot-ſtalks, which ariſe from the wings of the ſtalks; they are ſmall, blue, and have but five ſtamina in each, their empalements are compoſed of five leaves. It flowers in May, June, and July, and the ſeeds ripen ſoon after; which, if permitted to ſcatter, there will be a ſupply of plants without care, which will require no other culture but to keep them clean from weeds, and thin them where they are too cloſe; it will thrive on any ſoil, or in any ſituation.

The eighteenth ſort grows naturally in Crete; this is an annual plant with very broad leaves, which are cut on their ſides regularly, in form of winged leaves, and are crenated on their borders. The flowers are produced on pretty long foot-ſtalks, which come out from the wings of the ſtalk; they have five-leaved empalements, and are compoſed of five entire blue petals; theſe are ſucceeded by the largeſt and longeſt beaks of any ſpecies of this genus yet known. It flowers in June and July; this ripens ſeeds very well, and if they are permitted to ſcatter, the plants will come up without care; or they may be ſown in the ſpring where they are deſigned to remain, and will require no other culture but to thin them where they are too cloſe, and keep them clean from weeds.

The nineteenth ſort grows naturally in Germany and Italy; this is an annual plant, which hath ſeveral proſtrate ſtalks near a foot long, garniſhed with winged leaves, cut into ſeveral acute parts, placed oppoſite. The flowers come out from the wings of the ſtalk, upon foot-ſtalks about three inches long; ſome of theſe ſuſtain many flowers, but others have no more than two; they are of a pale blue colour, and are ſucceeded by very long beaks, but not ſo long or large as thoſe of the former ſort; but the ſeeds of this are frequently uſed for hygrometers, to ſhew the moiſture of the air: if the ſeeds of this are permitted to ſcatter, the plants will come up and thrive without any other care than to keep them clear from weeds, and the plants which come up in autumn will flower early in May, but thoſe which are ſown in the ſpring ſeldom flower till July. Dr. Linnæus ſuppoſes this and the former ſort to be the ſame, but whoever has ſeen the two plants, cannot doubt of their being diſtinct ſpecies.

The ſeeds of the twentieth ſort were ſent to the Chelſea garden by Dr. Juſſieu, profeſſor of botany at Paris; this is an annual plant, which hath upright ſtalks near two feet high, which are garniſhed with double winged leaves, ending in many points; theſe are very viſcous, and ſtand oppoſite. The flowers are produced on long naked foot-ſtalks, ſtanding many together upon each; they are of a pale blue colour, and have but five ſtamina; their empalements are compoſed of five leaves, which end with awns. It flowers in May, June, and July, according to the times when the ſeeds are ſown, and the ſeeds ripen a month after; this requires no other culture than the two former ſorts.

There are ſeveral other ſorts of annual Geraniums, ſome of which grow naturally in England, and are troubleſome weeds in a garden, others grow naturally in France, Spain, Italy, and Germany, and are preſerved in botanic gardens for the ſake of variety; but as they are plants of little beauty, they are rarely admitted into other gardens, therefore I ſhall not trouble the reader with an enumeration of the ſpecies, which would ſwell this article too much; ſo I ſhall next treat of the African Crane's-bills, which are preſerved in moſt of the curious gardens, where there is conveniency to ſcreen them from the froſt in winter.

The twenty-firſt ſort grows naturally near the Cape of Good Hope; this riſes with a ſhrubby ſtalk eight or ten feet high, ſending out ſeveral irregular branches, garniſhed with roundiſh leaves, whoſe ſides are erect, ſo form a ſort of hood by the hollow cavity made in the leaf. The baſe of the leaves are cut in form of a heart-ſhaped leaf, and from the foot-ſtalk run many nerves ariſing from a point, but diverge toward the ſides; the borders of the leaves are ſharply indented, thoſe on the lower part of the branches have long foot-ſtalks, and are placed without order on every ſide, but thoſe on the upper part have ſhorter foot-ſtalks, and ſtand oppoſite. The flowers are produced in large panicles on the top of the branches; their empalements are of one leaf, deeply cut into five ſegments, and cloſely covered with ſoft hairs. The petals are large, entire, and of a purple blue colour. It flowers in June, July, Auguſt, and September, and the flowers are ſucceeded by ſeeds, having ſhort hairy beaks.

The twenty-ſecond ſort has ſome appearance of the twenty-firſt, but the leaves are of a thicker ſubſtance, divided into many acute angles, having purple edges, which are acutely indented. The ſtalks and leaves are very hairy. The branches are not ſo irregular as thoſe of the former, nor are the bunches of flowers near ſo large; theſe differences are permanent in the plants which are raiſed from ſeeds, ſo it is undoubtedly a diſtinct

a diſtinct ſpecies, though Dr. Linnæus ſuppoſes them to be the ſame.

The twenty-third ſort comes from the Cape of Good Hope, but is one of the oldeſt, and the moſt common ſort in the Engliſh gardens; this riſes with a ſhrubby ſtalk four or five feet high, and divides into a great number of irregular branches, ſo as to form a large head, which is often eight or ten feet high. The branches are garniſhed with roundiſh heart-ſhaped leaves, indented on their edges in ſeveral obtuſe ſegments, which are cut into ſhort teeth at their brims; theſe have a purpliſh circle, or mark, like a horſe-ſhoe, through the leaf, going from one ſide of the baſe to the other, correſponding with the border of the leaf; theſe leaves when gently rubbed, have a ſcent like ſcalded Apples. The flowers are produced in pretty cloſe bunches, ſtanding upon foot-ſtalks about five or ſix inches in length, which come out from the wings of the ſtalk, toward the end of the branches; they are of a reddiſh purple colour, and continue in ſucceſſion great part of ſummer; there is a variety of this with fine variegated leaves, which is preſerved in moſt of the Engliſh gardens for the beauty of its leaves; but as this accidentally came from the other, it is not a diſtinct ſpecies, therefore I have not enumerated it.

The twenty-fourth ſort grows naturally at the Cape of Good Hope; this riſes with a ſoft ſhrubby ſtem to the height of eight or ten feet, ſending out ſeveral branches, which are generally erect; theſe are garniſhed with roundiſh kidney-ſhaped leaves, which are of a thick ſubſtance, and of a lucid green, ſtanding on pretty long foot-ſtalks; they are covered with ſoft hairs on their under ſide, and are placed without any order. The flowers grow in looſe bunches upon long ſtiff foot-ſtalks, which come out from the wings of the ſtalk; they are of a bright ſcarlet colour, ſo make a fine appearance, and there is a ſucceſſion of theſe flowers during all the ſummer months.

The twenty-fifth ſort grows naturally at the Cape of Good Hope, but has been many years an inhabitant of the Engliſh gardens; this riſes with a ſhrubby ſtalk four or five feet high, dividing into ſeveral weak irregular branches, garniſhed with leaves divided into three unequal lobes, which are hairy and waved on their edges; they are placed alternate on the branches, and ſtand upon hairy foot-ſtalks. The flowers grow in cloſe roundiſh heads on the top of the foot-ſtalks, forming a ſort of corymbus; they are of a purpliſh blue colour, and continue in ſucceſſion great part of the ſummer. The leaves of this ſort, when rubbed, have an odour like dried Roſes, from whence many have given it the title of Roſe Geranium.

The twenty-ſixth ſort is a native of the Cape of Good Hope; this riſes with an upright ſhrubby ſtalk to the height of ſeven or eight feet, ſending out many pretty ſtrong branches, garniſhed with leaves ſhaped ſomewhat like thoſe of the Vine; thoſe on the lower part ſtand upon long foot-ſtalks, but the upper have ſhort ones; when the leaves of this are rubbed, they have a ſcent of Balm. The flowers grow in compact cluſters on the top of long naked foot-ſtalks, which come out from the wings of the ſtalk, but riſe much higher than the branches; they are ſmall, and of a pale blue colour, ſo make no great figure, but there is a ſucceſſion of them moſt part of the ſummer.

The twenty-ſeventh ſort riſes with an upright ſhrubby ſtalk ſeven or eight feet high, ſending out ſeveral ſide branches, garniſhed with large, angular, rough leaves, ſtanding upon long foot-ſtalks. The flowers are produced in large panicles at the end of the branches; theſe are ſhaped ſomewhat like a Butterfly-flower, the two upper petals, which are pretty large, turn upward like a ſtandard in the leguminous flowers; theſe are finely variegated, but the three under petals are ſo ſmall, as not to appear at a ſmall diſtance; theſe are reflexed downward, ſo are ſcreened from ſight, unleſs the flowers are viewed near. This ſort flowers in May, at which time the plants make a fine appearance, but they are not ſucceeded by any

more afterward, as moſt of the other ſorts are; this grows naturally at the Cape of Good Hope.

The twenty-eighth ſort is from the ſame country; this riſes with a ſhrubby ſtalk ſix or ſeven feet high, ſending out ſeveral ſide branches, garniſhed with oblong, oval, fleſhy, ſmooth leaves, of a gray colour, which are crenated on their edges, and have an acid taſte like Sorrel. The flowers ſtand upon pretty long foot-ſtalks, which ariſe from the wings of the ſtalks, each ſuſtaining three or four flowers, whoſe petals are narrow and unequal in ſize; they are of a pale bluſh colour, with ſome ſtripes of a light red; theſe continue in ſucceſſion moſt part of the ſummer. There is a variety of this with ſcarlet flowers, which is ſaid to have been raiſed from the ſeeds of this ſort. The leaves of it are larger, and ſeem to be an intermediate ſpecies between this and the twenty-fourth ſort, for the flowers are larger than thoſe of the twenty-eighth ſort, and are of a pale ſcarlet colour.

The twenty-ninth ſort hath a thick, fleſhy, knotted ſtalk, which riſes about two feet high, ſending out a few ſlender fleſhy branches, garniſhed thinly with double winged leaves, which, on the lower part of the ſtalk, ſtand upon foot-ſtalks, but thoſe above ſit cloſe to the branches. The flowers are produced in ſmall cluſters at the end of the branches; theſe have five narrow white petals, which make no appearance, and continue in ſucceſſion moſt part of the ſummer. It grows naturally at the Cape of Good Hope.

The thirtieth ſort hath a round fleſhy ſtalk with ſwelling knots at the joints, which riſe about three feet high, and ſend out ſeveral irregular branches, which are ſmooth; they are thinly garniſhed with ſmooth, fleſhy, winged leaves, ending in obtuſe points; they are of a gray colour, and ſtand upon ſhort foot-ſtalks. The flowers ſtand four or five upon each foot-ſtalk, which ariſes from the wings of the ſtalk, and are of a dark purple colour. The petals are broader than thoſe of the former ſort, and have a very agreeable ſcent in the evening, after the ſun has left them ſome time; this and the former ſort are ſuppoſed to be one ſpecies by Dr. Linnæus, but they are very different in many particulars, which are permanent in the plants which come up from ſeeds.

The thirty-firſt ſort hath a fleſhy ſtalk which ſeldom riſes a foot high, and puts out very few branches; theſe are garniſhed with ſmooth, light, green leaves, divided into three lobes, the middle ſegment being much larger than the others. The flowers ſtand upon ſhort foot-ſtalks, each ſuſtaining two or three flowers on the top, which are of a very deep ſcarlet colour, and have unequal petals; this ſort is not regular in its ſeaſon of flowering, ſometimes it is in ſpring, at other times in ſummer, and frequently in autumn. The leaves of this ſort fall off, ſo that the ſtalks are frequently deſtitute of them for three or four months in ſummer, and appear as if they were dead, but in autumn they put out freſh leaves again.

The thirty-ſecond ſort hath many weak ſhrubby ſtalks, which require ſupport to prevent their falling on the ground; theſe extend to the length of two or three feet, and are garniſhed with fleſhy leaves, divided into five obtuſe lobes, which are entire; theſe have ſlender foot-ſtalks, which are faſtened to the middle of the leaf like the handle of a target. The leaves are ſmooth, of a lucid green, and have a circular purple mark in their middle; they have an acid flavour, and are placed alternate on their branches. The flowers are produced upon pretty long foot-ſtalks, which come out from the wings of the ſtalk, each foot-ſtalk ſuſtaining four or five purple flowers, compoſed of five unequal petals. This ſort continues a ſucceſſion of flowers moſt of the ſummer months, and frequently ripen ſeeds here.

The thirty-third ſort ſends out ſeveral herbaceous ſtalks about a foot and a half in length, which trail upon the ground if they are not ſupported; theſe are garniſhed with roundiſh hand-ſhaped leaves, which are cut into many parts, and are very hairy. The flowers are of a pale bluſh colour, and ſtand ſeveral

together upon very long foot-ſtalks; there is a ſucceſſion of theſe during all the ſummer months, and the ſeeds ripen accordingly about a month after the flowers are fallen: there is a variety of this ſort which has a dark circle in the middle of the leaves, which is mentioned as a diſtinct ſpecies, but I find it is apt to vary from ſeeds.

The thirty-fourth ſort hath a very ſhort fleſhy ſtalk, which divides near the ground into ſeveral heads, each having many leaves, which ariſe on ſeparate foot-ſtalks from the heads; theſe are heart-ſhaped, ſoft, and downy, and have a ſtrong ſcent like Aniſeed; from theſe heads come out ſeveral ſlender ſtalks near a foot in length, which lie proſtrate on the ground, and are garniſhed with rounder leaves than thoſe near the root, but are of the ſame texture, and have the like odour. The flowers are produced from the ſide of theſe ſtalks, three, four, or five ſtanding together upon ſlender foot-ſtalks; they are very ſmall and white, ſo make little appearance, but the plant is preſerved in gardens for the ſcent of its leaves.

The thirty-fifth ſort hath a thick, roundiſh, tuberous root, from which ariſe ſeveral hairy leaves, which are finely divided, almoſt like thoſe of the Garden Carrot; theſe ſpread near the ground, and between theſe come out the ſtalks, which riſe about a foot high, which are garniſhed with two or three leaves of the ſame ſort with thoſe below, but are ſmaller, and ſit cloſer to the ſtalks; from theſe ariſe two or three naked foot-ſtalks, which are terminated by a bunch of yellowiſh flowers, marked with dark purple ſpots, which ſmell very ſweet after the ſun hath left them; theſe are frequently ſucceeded by ſeeds, which ripen in autumn. This is the ſort which has been long cultivated in the gardens, and is known by the title of Geranium noctu olens, *or Night-ſcented Crane's-bill.*

The thirty-ſixth ſort hath a knobbed tuberous root like the laſt, from which come out ſeveral pretty large leaves, compoſed of many lobes, ſet along the mid-rib in the form of a winged leaf; theſe are narrow at their baſe, but are very much enlarged at their ends, which are rounded, and cut all along their ſide and top into many acute points; the ſtalks which ſuſtain the flowers ariſe immediately from the root, and ſometimes have one or two ſmall leaves toward the bottom, where they often divide into two naked foot-ſtalks, each being terminated by a bunch of pale reddiſh flowers, which ſmell ſweet at night.

The thirty-ſeventh ſort hath oblong tuberous roots, from which come out ſeveral decompounded winged leaves, ending in many acute points; the ſegments of theſe leaves are broader than thoſe of the thirty-fifth ſort, and the leaves are very hairy. The ſtalks riſe a foot and a half high, which are garniſhed with a ſingle leaf at the two lower joints; theſe are ſingly winged, and the lobes are narrow, ſtanding at a wider diſtance, and the ſegments are more acute than thoſe of the lower leaves; at the two lower knots or joints, ariſe two long naked foot-ſtalks, each being terminated by a bunch of yellowiſh flowers, which have long tubes, and ſmell ſweet in the evening when the ſun has left them. This grows naturally at the Cape of Good Hope.

The thirty-eighth ſort hath a tuberous root like the former, from which ſpring out many hairy leaves, which are finely divided like thoſe of the Pulſatilla, which have a hoary appearance, and riſe immediately from the root, ſpreading on every ſide near the ground. The foot-ſtalk of the flower is naked, and riſes from the root; this grows about nine inches high, and is terminated by a looſe bunch of flowers, which are of a very dark purple colour, and ſmell ſweet in the evening.

The thirty-ninth ſort hath fleſhy tuberous roots like thoſe of the former ſorts, from which come out three or four broad leaves, divided on their borders into ſeveral lobes, in form of a Vine leaf; theſe ſpread flat on the ground; they are hairy, and crenated on their edges, ſtanding upon ſhort foot-ſtalks. The foot-ſtalks of the flowers ariſe immediately from the root, and grow about a foot high; they are naked, and are terminated by a bunch of dark purple flowers, with long tubes, ſitting cloſe to the foot-ſtalks, which have a very agreeable odour in the evening.

The four firſt ſorts of tuberous-rooted Crane's-bill, are by Linnæus ſuppoſed to be but one ſpecies; but I have propagated them from ſeeds ſeveral times, and have never found either of them vary from their parent plants, ſo I make no doubt of their being diſtinct ſpecies, for their difference of leaves is as great as in any of the other ſpecies.

The fortieth ſort is an annual plant, which grows naturally at the Cape of Good Hope; this riſes with herbaceous branching ſtalks near a foot high, which are garniſhed with doubly-winged leaves at each joint; the lower leaves ſtand upon long foot-ſtalks, but thoſe on the upper part ſit cloſe to the ſtalks. The flowers ſtand upon naked foot-ſtalks, which proceed from the ſide of the ſtalks, on the oppoſite ſide to the leaves; they grow three or four together upon ſhort ſeparate foot-ſtalks; theſe are ſhaped ſomewhat like a papilionaceous flower; the two upper petals, which are large, form a kind of ſtandard, the other three petals are narrow, and reflexed downward; they are of a pale fleſh colour, appearing in July, and the ſeeds ripen in September, ſoon after which the plants decay.

The forty-firſt ſort hath a pretty thick tuberous root, from which is ſent out ſeveral irregular ſtalks, which divide into branches, and grow diffuſed; theſe have ſwelling joints, and are ſomewhat ligneous; they are garniſhed with one double winged leaf at each of the joints, and oppoſite to the leaves come out the foot-ſtalks of the flowers; thoſe which are ſituated on the lower part of the ſtalk, are very long and naked, but thoſe which terminate the branches are ſhorter, and have one or two ſmall leaves ſet at their baſe; theſe foot-ſtalks are terminated by a ſmall bunch of flowers, ſhaped like thoſe of the former ſort, but larger, and of a paler colour; theſe continue in ſucceſſion moſt part of the ſummer: this and the former ſort are ſuppoſed to be the ſame by Dr. Linnæus, but the former is an annual plant in every country, periſhing ſoon after the ſeeds are perfected, and the latter is an abiding plant with ligneous ſtalks.

The forty-ſecond ſort is a biennial plant, which grows naturally at the Cape of Good Hope; this ſends out a great number of very ſlender trailing ſtalks, which are proſtrate on the ground, and extend a foot and a half in length, garniſhed with ſmall, roundiſh, hand-ſhaped leaves, which are crenated on their edges. The flowers ſit upon ſhort ſlender foot-ſtalks, which come out at every joint from the ſide of the ſtalks; they are very ſmall, and of a reddiſh colour; ſometimes they are ſingle, and at other times there are two or three flowers upon a foot-ſtalk. They continue in ſucceſſion all the ſummer, and the ſeeds ripen in about five weeks after the flowers decay.

The forty-third ſort hath a ſhrubby ſtalk, which riſes to the height of four or five feet, ſending out ſeveral branches, which are garniſhed with oblong leaves, indented, and unequally ſawed on their edges; the flowers ſtand upon long foot-ſtalks, which come out from the ſide of their branches; they are large, of a red colour, and the two upper petals are larger than the other; this ſort flowers in June and July.

The forty-fourth ſort grows naturally in the iſle of Chio in the Levant. This is an annual plant, which ſends out ſeveral branches a foot long; the lower leaves are almoſt heart-ſhaped, but thoſe on the branches are formed in the ſhape of an ancient lyre. Theſe are placed alternate on the branches; the foot-ſtalks of flowers are produced on the ſide of the branches, theſe are ſix inches long, ſuſtaining many bright purple flowers at the top, which are ſucceeded each by five ſeeds, having long ſlender beaks; theſe ripen in five or ſix weeks after the flowers fall away, and if they are permitted to ſcatter, the young plants will come up in the autumn; and if the winter is favourable, they will live in the open air, ſo will flower early the

following ſpring: but if theſe ſhould be killed in the winter, ſome ſeeds ſhould be ſown in the ſpring, on a border of light ground, and when the plants come up they ſhould be thinned, and kept clear from weeds; theſe will flower in July, and their ſeeds will ripen in Auguſt.

The forty-fifth ſort grows naturally in Portugal and Spain; this is an annual plant, whoſe lower leaves are heart-ſhaped, and divided into three lobes; the foot-ſtalks of the flowers are placed on the ſide of the branches, which extend a foot and a half each way; theſe incline to the ground. The foot-ſtalks ſuſtain many bright red flowers, which are ſucceeded each by five ſeeds, having pretty long beaks. This flowers and ſeeds about the ſame time as the former ſort, and requires the ſame culture.

The forty-ſixth ſort grows naturally in Egypt. This is an annual plant, having oval ſawed leaves of a gray colour; the branches extend a foot in length, adorned with ſmall leaves placed alternate, and toward the end have three or four foot-ſtalks produced from their ſides, ſuſtaining ſeveral pale blue flowers, which are each ſucceeded by five ſeeds, having long feathery beaks.

This ſort is much tenderer than the two former, therefore if the ſeeds are ſown on a moderate hot-bed in the ſpring, and when the weather becomes warm, the plants are carefully tranſplanted on a ſheltered border, there will be greater certainty of their perfecting ſeeds.

The forty-ſeventh ſort grows naturally in Carolina, and is an annual plant, greatly reſembling our common Dove's-foot Crane's-bill, but is ſmaller, and the branches are ſhorter; the flowers are very ſmall, of a pale blue colour; theſe are ſucceeded by five ſeeds, having ſhort erect beaks, which are black. If the ſeeds of this ſort are permitted to ſcatter, the plants will ariſe without farther care; and if thinned and kept clean from weeds, will produce flowers and ſeeds.

The forty-eighth ſort has ſome reſemblance of the forty-fifth, but the leaves are more of an oval heart-ſhape; the flowers are alſo of a bright red colour. This grows naturally at the Cape of Good Hope; the plant is tender, therefore will require the ſame treatment as the forty-ſeventh ſort, with which they will produce flowers and ſeeds, after which the plants decay.

All the ſorts of African Crane's-bill may be propagated by ſeeds; theſe may be ſown upon a bed of light earth toward the end of March, where the plants will appear in a month or five weeks after, and by the beginning of June the plants will be fit to remove; when they ſhould be carefully taken up, and each planted into a ſeparate pot, filled with light kitchen-garden earth, and placed in a ſhady ſituation till the plants have taken new root; then they may be removed into a ſheltered ſituation, and placed among other of the hardier green-houſe plants, where they may remain till autumn, when they muſt be removed into the green-houſe, and treated in the ſame manner as other hardy kinds of green-houſe plants.

But thoſe who are deſirous to have their plants large, and flower ſoon, ſow the ſeeds upon a moderate hot-bed in the ſpring, on which the plants will come up much ſooner, and will be fit to remove long before thoſe which are ſown in the open air; but when theſe plants come up, there muſt be great care taken not to draw them up weak; and when theſe are tranſplanted, the pots ſhould be plunged into another moderate hot-bed, obſerving to ſhade them from the ſun till they have taken new root; then they muſt be gradually inured to bear the open air, into which they ſhould be removed the beginning of June, and placed in a ſheltered ſituation with other exotic plants. If theſe plants are brought forward in the ſpring, moſt of the ſorts will flower the ſame ſummer, and the plants will be very ſtrong before the winter, ſo will make a better appearance in the green-houſe.

The ſhrubby African Geraniums, from the twenty-firſt to the thirty-ſecond incluſive, and alſo the forty-firſt and forty-third ſorts, are commonly propagated by cuttings, which, if planted in a ſhady border in June or July, will take good root in five or ſix weeks, and may then be taken up and planted into ſeparate pots, placing them in the ſhade till they have taken new root; after which they may be removed into a ſheltered ſituation, and treated in the ſame manner as the ſeedling plants. The twenty-ninth, thirtieth, thirty-firſt, and thirty-ſecond ſorts, have more ſucculent ſtalks than either of the other, ſo the cuttings of theſe ſorts ſhould be planted into pots filled with light kitchen-garden earth, and plunged into a very moderate hot-bed, where they ſhould be ſhaded from the ſun in the heat of the day, and ſhould have but little water; for theſe are very apt to rot with much moiſture, ſo they muſt only be gently refreſhed now and then with water. When theſe are well rooted, they may be ſeparated and planted in pots filled with the ſame ſort of earth, and placed in the ſhade till they have taken new root; then they may be removed into a ſheltered ſituation, where they may remain till autumn. Theſe four ſorts ſhould be ſparingly watered at all times, but eſpecially in the winter, for they are apt to take a mouldineſs with moiſture, or in a damp air: they will thrive much better in an airy glaſs-caſe than in a green-houſe, becauſe in the former they will have more ſun and air than in the latter, ſo will not be ſo liable to have a mouldineſs or rot. But all the other ſhrubby ſorts are proper furniture for the green-houſe, where they will only require protection from froſt, but ſhould have a large ſhare of free air when the weather is mild; they will require water every week, in mild weather once or twice, but it ſhould not be given them in too great plenty, eſpecially in froſty weather. Theſe plants ſhould be hardened in the ſpring gradually, and toward the middle or latter end of May, they may be taken out of the green-houſe, and at firſt placed under the ſhelter of trees, where they may remain a fortnight or three weeks to harden; then ſhould be removed into a ſituation where they may be defended from ſtrong winds, and enjoy the morning ſun till eleven o'clock, where they will thrive better than in a warmer ſituation.

As theſe ſhrubby ſorts grow pretty faſt, ſo they ſoon fill the pots with their roots; and if they ſtand long unremoved in ſummer, they frequently put out their roots through the holes at the bottom of the pots into the ground, and then the plants will grow vigoroully; but when they are ſuffered to grow long in this manner, it will be difficult to remove them, for if their roots are torn off, all the younger branches will decay, and many times the plants are killed. Therefore the pots ſhould be moved once in a fortnight or three weeks, in the ſummer months, and the roots which may be then puſhing through the holes in the pots cut off, to prevent their ſtriking into the ground. Theſe plants will alſo require to be new potted at leaſt twice in the ſummer; the firſt time ſhould be after they have been three weeks or a month out of the green-houſe; the ſecond ſhould be towards the end of Auguſt, or the beginning of September, that the plants may have time to eſtabliſh their new roots before they are removed into the green-houſe.

When theſe are new potted, all the roots on the outſide of the balls of earth ſhould be carefully pared off, and as much of the old earth drawn away from the roots, as can be done with ſafety to the plants; then if they require it, they ſhould be put into pots a ſize larger than thoſe out of which they were taken, putting a quantity of freſh earth into the bottom of the pot; then place the plants upon that, being careful the ball about the roots of the plant is not ſo high as the rim of the pot, that ſome room may be left to contain the water which may be given to the plants. Then the cavity all round the ball ſhould be filled up with freſh earth, which ſhould be gently preſſed down, and the bottom of the pot beaten upon the ground, to ſettle down the earth; then the plant ſhould be well watered, and the ſtem faſtened to a rail, to prevent

the wind from diſplacing of the root before they are fixed in the new earth.

The compoſt in which I have always found theſe plants thrive beſt (where there has not been a conveniency of getting ſome good kitchen-garden earth) was freſh hazel loam from a paſture, mixed with a fourth or fifth part of rotten dung; if the earth is inclinable to bind, then a mixture of rotten tan is preferable to dung; but if it is light and warm, then a mixture of neat's-dung is beſt: this compoſt ſhould be mixed three or four months before it is uſed, and ſhould be turned over three or four times, that the parts may be well mixed and incorporated; but where a quantity of good kitchen-garden earth can be had, which has been well worked, and is clean from the roots of bad weeds, there will need no compoſition, for in that they will thrive full as well as in any mixture which can be made for them, eſpecially if the earth has lain in a heap for ſome time, and has been two or three times turned over to break the clods, and make it fine: theſe plants ſhould not be planted in very rich earth, for that will cauſe them to grow very luxuriant, but they will not flower ſo well as in a poorer ſoil.

The thirty-third ſort hath herbaceous ſtalks, ſo is beſt propagated by ſeeds, which the plants produce in great plenty; but the cuttings of this will take root as freely as either of the other, but the ſeedling plants are preferable to thoſe propagated by cuttings; and where the ſeeds of this and many other of the African ſorts are permitted to ſcatter, there will be a ſupply of young plants come up the ſpring following, provided the ſeeds are not buried too deep in the ground.

The thirty-fourth ſort may be propagated by ſeeds, or from heads ſlipped off from the ſhort fleſhy ſtalk; theſe heads ſhould have their lower leaves ſtripped off, that the ſtalk which is to be planted may be clear of leaves; then they may be planted ſingle into a ſmall pot, or if the heads are ſmall, there may be two or three put into one ſmall pot; then they may be plunged into a very moderate hot-bed, which will forward their putting out roots, and if they are ſhaded from the ſun and gently refreſhed with water, they will take root in a month or five weeks, when they muſt be hardened gradually, and removed into the open air, where they may remain till autumn, when they muſt be removed into ſhelter for the winter ſeaſon.

The thirty-fifth, thirty-ſixth, thirty-ſeventh, thirty-eighth and thirty-ninth ſorts are generally propagated by parting of their roots; the beſt time for doing this is in Auguſt, that the young roots may be eſtabliſhed before the cold comes on. Every tuber of theſe roots will grow, provided they have a bud or eye to them; they may be planted in the ſame ſort of earth as was before directed, and if the pots are plunged into an old tan-bed, under a good frame in winter, the plants will thrive better than in a greenhouſe; the glaſſes of the frame may be drawn off every day in mild weather, whereby the plants will enjoy the free air; and if in hard froſt the glaſſes are well covered to prevent the cold penetrating to the plants, it is all the ſhelter they will require; but in this ſituation they ſhould have but little wet in winter, therefore the glaſſes ſhould be kept over them in heavy rains to keep them dry; but in mild weather the glaſſes may be raiſed on the upper ſide to admit the freſh air to the plants, which will give them greater ſlope to carry off the wet. With this management the roots will thrive and flower very ſtrong every year. Theſe ſorts may alſo be propagated by ſeeds.

The fortieth ſort is an annual plant, and is only propagated by ſeeds, which ſhould be ſown upon a gentle hot-bed in the ſpring, to bring the plants forward; otherwiſe if the ſeaſon ſhould not prove very warm, the plants will not perfect their ſeeds in this country. When the plants are come up, and grown ſtrong enough to remove, they ſhould be each planted into a ſeparate ſmall pot, and plunged into a moderate hot-bed again, obſerving to ſhade them till they have taken new root; then they muſt be gradually hardened to bear the open air, into which they ſhould be removed in June; and when the plants have filled the ſmall pots with their roots, they ſhould be ſhaken out, and the ball of earth preſerved to their roots, and put into pots a ſize larger, in which they will flower and ripen ſeeds, and ſoon after the plants will decay.

The forty-ſecond ſort is alſo propagated by ſeeds, which may be either ſown upon a moderate hot-bed in the ſpring, or upon a bed of light earth in the open air, where the plants will come up very well, though they will not be ſo forward as thoſe on the hot-bed. Thoſe which are ſown in the open air will require no other care but to keep them clean from weeds, and thin the plants where they are too cloſe. Theſe plants will flower in July and Auguſt, and if the autumn proves favourable, the ſeeds will ripen in September; but if theſe ſhould fail, thoſe which were raiſed on the hot-bed will come earlier to flower, ſo there will be no danger of their perfecting ſeeds; and theſe plants, if they are in pots, may be preſerved through the winter, if they are plunged into an old tan-bed under a frame, and treated in the ſame manner as the tuberous-rooted ſorts before mentioned.

The ſhrubby ſorts muſt be looked over frequently during the winter, while they are in the green-houſe, to pick off all decayed leaves from them, which, if left on, will not only render the plants unſightly, but by their falling off, they will occaſion litter among the other plants; and if they are ſuffered to rot in the houſe, they will occaſion a foul, naſty, damp air, which will be very prejudicial to all the plants; therefore to avoid this, they ſhould be conſtantly picked off every week; and during the ſummer ſeaſon, they will require to be picked every fortnight or three weeks to keep them clean from dead leaves; for as the branches advance, and new leaves are produced on their top, the under ones as conſtantly decay; and if left on till they drop off, will render the plants very unſightly.

GERMANDER. See TEUCRIUM.

GEROPOGON. Goat's-beard.

The CHARACTERS are,

The empalement is ſingle, compoſed of many keel-ſhaped leaves which are longer than the corolla; the flower is compoſed of ſeveral hermaphrodite florets, which are imbricated and ſhorter than the empalement, and are of one petal, divided into five ſegments at the top. Theſe have each five ſhort ſtamina, terminated by cylindrical ſummits, and an oblong germen with a ſlender ſtyle, ſupporting two thread-like ſtigma which are recurved; the ſeeds are included in the empalement, and are crowned by five bearded ſpreading rays.

This genus of plants is ranged in the firſt ſection of Linnæus's nineteenth claſs, intitled Syngeneſia Polygamia Æqualis, the florets having five connected ſtamina, and are fruitful.

The SPECIES are,

1. GEROPOGON (*Glabrum*) foliis glabris. Lin. Sp. 1109. *Goat's-beard with ſmooth leaves.* Tragopogon gramineo folio glabrum, flore dilute incarnato. Raii Sup. 149.
2. GEROPOGON (*Hirſutum*) foliis piloſis. Lin. Sp. 1109. *Goat's-beard with hairy leaves.* Tragopogon gramineo folio, ſuave rubente flore. Col. Ecphr. 1. p. 232.

The firſt ſort grows naturally in Italy; this hath an erect ſtalk more than a foot high, garniſhed with ſmooth, Graſs-like, long leaves; the ſtalk branches upward into two or three diviſions, each being terminated by one fleſh-coloured flower, compoſed of ſeveral florets.

The ſecond ſort grows naturally in Italy and Sicily. This riſes with an erect ſtalk a foot high, garniſhed with hairy narrow leaves, and ſeldom divides into branches, but is terminated by one flower compoſed of four or five hermaphrodite florets, which are ſucceeded by ſo many bearded ſeeds.

Theſe plants require the ſame treatment as the TRAGOPOGON, to which article the reader is deſired to turn for their culture.

GESNERA.

GESNERA. Plumier Nov. Gen. 27. tab. 9. Lin. Gen. Plant. 667. This plant was ſo named by father Plumier, who diſcovered it in America, in honour of Conrad Geſner, a very learned botaniſt, and natural hiſtorian.

The CHARACTERS are,

The empalement of the flower is of one leaf, cut into five acute parts at the top, and is permanent, in which is ſituated the germen; the flower hath one petal which is tubulous, and firſt bent inward, and afterward out again like a bugle-horn; the brim is divided into five obtuſe ſegments which are equal; it hath four ſtamina which are ſhorter than the petal, terminated by ſingle ſummits; the germen which ſits under the petal ſupports a ſingle crooked ſtyle, crowned by a headed ſtigma. The germen afterward becomes a roundiſh capſule with two cells, filled with ſmall ſeeds, which are fixed on each ſide the partition.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, intitled Didynamia Angioſpermia, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and the ſeeds are included in a capſule.

The SPECIES are,

1. GESNERA (*Tomentoſa*) foliis ovato-lanceolatis crenatis hirſutis, pedunculis lateralibus longiſſimis corymbiferis. Hort. Cliff. 318. *Geſnera with oval, hairy, crenated leaves, and long foot-ſtalks proceeding from the ſides of the ſtalks, ſupporting flowers in a corymbus.* Geſnera amplo digitalis folio tomentoſo. Plum. Gen. 27.
2. GESNERA (*Humilis*) foliis lanceolatis ſerratis ſeſſilibus, pedunculis ramoſis multifloris. Lin. Sp. Plant. 612. *Geſnera with ſpear-ſhaped ſawed leaves ſitting cloſe to the ſtalks, and branching foot-ſtalks having many flowers.* Geſnera humilis flore flaveſcente. Plum. Nov. Gen. 27. *Low Geſnera with a yellowiſh flower.*

The firſt ſort grows naturally in the Weſt-Indies; the ſeeds of this were ſent me from Jamaica, which ſucceeded in the Chelſea garden; this riſes with a ſhrubby ſtalk to the height of ſix or ſeven feet, which divides into two or three irregular branches, covered with a ruſſet wool, and garniſhed with hairy leaves which are ſeven or eight inches long, and two and a half broad in the middle, having a ruſſet woolly midrib, and the edges are crenated; theſe are placed on every ſide the branches without order, and have ſhort foot-ſtalks; towards the end of the branches come out the foot-ſtalks of the flowers at every joint, ariſing from the wings of the ſtalk; they are naked, and nine inches in length, branching at the top into many ſmaller foot-ſtalks, each ſuſtaining a ſingle flower, having a ſhort crooked tube, indented at the top in five obtuſe parts, and of an obſolete purple colour. Theſe are ſucceeded by roundiſh capſules ſitting cloſe in the empalement, the diviſions of which ariſe above the capſule; which Dr. Linnæus, from Plumier's figure, has taken for the empalement ſitting upon the capſule, whereas the capſule is diſtinct from the empalement and is incloſed by it. The capſule is divided into two cells which are filled with ſmall ſeeds. It flowers here in July and Auguſt, but hath not ripened ſeeds.

The ſecond ſort is a plant of humbler growth; this ſeldom riſes more than three feet high; the leaves are much ſmaller, are ſawed on their edges, and ſit cloſe to the ſtalk; the flowers ſtand upon branching foot-ſtalks, each ſuſtaining many yellowiſh flowers, which are deeper cut at their brims than thoſe of the firſt ſort. This was found growing naturally by the late Dr. Houſtoun at Carthagena in New Spain.

There is a third ſpecies of this genus mentioned by Plumier, which grows to to a tree, and hath ſpotted and fringed flowers; but this I have not ſeen in any of the Engliſh gardens. Theſe plants are propagated by ſeeds, which muſt be procured from the countries where they grow naturally; theſe ſhould be brought over in their capſules, which is the beſt way to preſerve the ſeeds good; for as they are very ſmall and light, ſo when they are ſeparated from the partition to which they adhere, they ſoon loſe their vegetative quality; for I have received the ſeeds ſeveral times from America, which were taken out of the veſſels, but not one of them grew, till I procured ſome to be ſent in their veſſels, which ſucceeded very well.

The ſeeds ſhould be ſown in pots filled with light earth, and plunged into a hot-bed of tanners bark as ſoon as they arrive, for they ſometimes lie long in the ground; thoſe which I have ſown in autumn, came up the following ſpring; therefore when they happen to arrive here at that ſeaſon, the pots in which the ſeeds are ſown ſhould be plunged into the tan-bed in the ſtove, and during the winter the earth ſhould be now and then gently watered to prevent its drying too much, but it muſt not be too moiſt. In the ſpring the pots ſhould be removed out of the ſtove, and plunged into a freſh hot-bed, which will bring up the plants ſoon after. When theſe are fit to remove, they ſhould be each planted into a ſeparate pot, and plunged into a good hot-bed of tan, obſerving to ſhade them till they have taken new root; then they muſt be treated in the ſame way as other tender plants from the ſame countries.

In autumn they muſt be plunged into the tan-bed in the ſtove, where, during the winter, they ſhould have but little water given to them; for if they receive much wet, it will deſtroy them. In this ſtove the plants muſt conſtantly remain, for they will not thrive if they are kept out of the tan. In the ſummer, they ſhould have free air admitted to them at all times when the weather is warm; and they muſt be frequently refreſhed with water during that ſeaſon, but it muſt not be given to them in too great plenty. As the plants advance in growth they will require larger pots, but there muſt be care taken not to over-pot them, for they will not thrive in large pots. With this management the plants will flower the ſecond year, and may be continued three or four years, but they are not of long duration in their native country.

GEUM. Lin. Gen. Plant. 561. Caryophyllata. Tourn. Inſt. R. H. 294. tab. 151. Avens, or Herb Bennet; in French, *Benoite.*

The CHARACTERS are,

The flower hath a one-leaved empalement, cut at the top into ten ſegments, which are alternately ſmaller than the other. The flower has five roundiſh petals, which are narrow at their baſe, where they are inſerted in the empalement; it hath a great number of awl-ſhaped ſtamina, which are the length of the empalement, into which they are inſerted, and are terminated by broad obtuſe ſummits. In the center of the flower is ſituated a great number of germen collected into a head; theſe have ſtyles inſerted in their ſides, which are long, hairy, and crowned by ſingle ſtigmas. The germen afterward become ſo many flat rough ſeeds, which are hairy, and have the ſtyle which is bent like a knee adhering to them; theſe ſit in the common empalement.

This genus of plants is ranged in the fifth ſection of Linnæus's twelfth claſs, intitled Icoſandria Polygynia, in which he places thoſe plants whoſe flowers have more than twenty ſtamina, and have many ſtyles inſerted into the empalement.

The SPECIES are,

1. GEUM (*Urbanum*) floribus erectis, fructu globoſo, ariſtis uncinatis nudis, foliis lyratis. Hort. Cliff. 195. *Geum with erect flowers, a globular fruit, naked hooked beards, and harp-ſhaped leaves.* Caryophyllata vulgaris. C. B. P. 321. *Common Avens, or Herb Bennet.*
2. GEUM (*Rivale*) floribus nutantibus, fructu oblongo, ariſtis plumoſis. Hort. Cliff. 195. *Geum with nodding flowers, and an oblong fruit with feathery beards.* Caryophyllata aquatica, nutante flore. C. B. P. 321. *Aquatic Herb Bennet with a nodding flower.*
3. GEUM (*Pyrenaicum*) floribus nutantibus, fructu globoſo, ariſtis nudis, foliis lyratis, foliolis rotundioribus. *Geum with nodding flowers, a globular fruit with naked beards, and harp-ſhaped leaves with rounder lobes.* Caryophyllata Pyrenaica, ampliſſimo & rotundiori folio, nutante flore. Tourn. Inſt. R. H. 295. *Pyrenean*

Avens with a very large and rounder leaf, and a nodding flower.

4. GEUM (*Montanum*) flore erecto ſolitario fructu oblongo, ariſtis plumoſis. Lin. Sp. Plant. 501. *Geum with a ſingle upright flower, and an oblong fruit with feathery beards.* Caryophyllata montana flore luteo magno. J. B. 2. p. 398. *Mountain Avens with a large yellow flower.*
5. GEUM (*Alpinum*) flore ſolitario erecto, fructu globoſo, ariſtis tenuioribus nudis. *Geum with a ſingle erect flower, and a globular fruit with narrower naked beards.* Caryophyllata alpina minor. C. B. P. 322. *Smaller Alpine Avens.*
6. GEUM (*Virginianum*) floribus erectis, fructu globoſo, ariſtis uncinatis nudis, foliis ternatis. Hort. Cliff. 195. *Geum with upright flowers, a globular fruit with naked beards and trifoliate leaves.* Caryophyllata Virginiana, albo flore minore, radice inodorâ, H. L. 111. *Virginia Avens with a ſmaller white flower, and a root without ſcent.*

The firſt ſort grows plentifully by the ſide of hedges, and in woods, in moſt parts of England, ſo is rarely admitted into gardens. This ſtands in the liſt of medicinal plants; the root is the only part uſed, which is eſteemed cephalic and alexipharmic, and is manifeſtly of a binding nature, ſo is uſeful in all fluxes, &c.

The ſecond ſort grows naturally in moiſt meadows in the northern parts of England. This is of an humbler growth than the firſt, the lower leaves have two pair of ſmall lobes at bottom, and three large ones at the top, that which terminates being the largeſt. The leaves upon the ſtalks are compoſed of three acute lobes which ſit cloſe to the ſtalk; the flowers are of a purpliſh colour, and nod on one ſide; they appear in May, and the ſeeds ripen in July.

The third ſort grows upon the Alps, and alſo on the mountains in the north; this hath ſome reſemblance to the ſecond, but the leaves are much larger and rounder, and are indented on their edges; the flowers are larger and of a gold colour. This flowers about the ſame time as the ſecond.

The fourth ſort grows naturally upon the Alps; this hath leaves much larger than either of the other ſpecies; the lower leaves are compoſed of three or four pair of ſmall irregular pinnæ ſet along the midrib, which is terminated by one very broad roundiſh lobe, which is crenated on the edge. The flowers are large, of a bright yellow colour, ſtanding ſingle on the top of the ſtalk, which ſeldom riſes more than five or ſix inches high. It flowers in May and June.

The fifth ſort grows naturally on the Alps; it is a very low plant, the flower-ſtalks are about three inches long, and bend on one ſide; they are each terminated by one bright yellow flower, about the ſize of thoſe of the common ſort. This flowers about the ſame time as the former.

The ſixth ſort grows naturally in North America; the ſtalks of this ſort riſe a foot and a half or two feet high, and branch out at the top into ſmall foot-ſtalks, each being terminated by a ſmall white flower; the leaves of this ſort are trifoliate, and the root has no ſcent. Theſe are all very hardy plants which require a ſhady ſituation, but will thrive in any ſoil; they may be eaſily propagated by ſeeds, which ſhould be ſown in autumn; for when they are ſown in the ſpring, they do not grow the ſame year.

GILLIFLOWER, or JULY-FLOWER. See DIANTHUS.

GILLIFLOWER, or STOCK-GILLIFLOWER. See CHEIRANTHUS.

GILLIFLOWER, the Queen's or Dame's Violet. See HESPERIS.

GINGER. See AMOMUM.

GINGIDIUM. See ARTEDIA.

GLADE is an open and light paſſage made through a wood, by lopping off the branches of trees along that way.

GLADIOLUS. Lin. Gen. Plant. 55. Tourn. Inſt. R. H. 365. tab. 190. [takes its name of Gladius, *Lat.* ſword; q. d. little ſword; becauſe the leaves of this plant reſemble a ſword.] Cornflag; in French, *Glaieul.*

The CHARACTERS are,

The flowers are included in ſheaths, which ſtand at a diſtance from each other; the petal of the flower is cut into ſix parts, three of the upper are near together, the three under ſpread open, but they all form a ſhort incurved tube with their baſe; they have three awl-ſhaped ſtamina, which are inſerted into every other petal, and all of them aſcend to the upper petals, and are terminated by oblong ſummits. The germen is ſituated below the flower, ſupporting a ſingle ſtyle the length of the ſtamina, crowned by a concave trifid ſtigma. The germen afterward becomes an oblong, ſwelling, three-cornered capſule, with three cells, opening with three valves, filled with roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's third claſs, intitled Triandria Monogynia, which includes thoſe plants whoſe flowers have three ſtamina and one ſtyle.

The SPECIES are,

1. GLADIOLUS (*Communis*) foliis enſiformibus, floribus diſtantibus, Lin. Sp. Plant. 36. *Cornflag with Sword-ſhaped leaves and flowers ſtanding at a diſtance.* Gladiolus floribus uno verſu diſpoſitis. C. B. P. 41. *Cornflag with flowers diſpoſed on one ſide the ſtalk.*
2. GLADIOLUS (*Italicus*) foliis enſiformibus, floribus ancipitibus. *Cornflag with ſword-ſhaped leaves, and flowers ſtanding on both ſides the ſtalk.* Gladiolus utrinque floribus. C. B. P. 41. *Cornflag with flowers on each ſide the ſtalk.*
3. GLADIOLUS (*Byzantinus*) foliis enſiformibus, ſpathis longioribus. *Cornflag with ſword-ſhaped leaves and longer ſheaths to the flowers.* Gladiolus major Byzantinus. C. B. P. 41. *Greater Cornflag of Byzantium.*
4. GLADIOLUS (*Indicus*) foliis enſiformibus, floribus maximis incarnatis. *Cornflag with ſword-ſhaped leaves, and very large incarnate flowers.* Gladiolus maximus Indicus. C. B. P. 41. *Greateſt Indian Cornflag.*
5. GLADIOLUS (*Anguſtis*) foliis linearibus floribus diſtantibus, corollarum tubo limbis longiore. Lin. Sp. Plant. 37. *Cornflag with very narrow leaves, flowers ſtanding at a diſtance from each other, and the tube longer than the margins of the petal.* Gladiolus Africanus, folio gramineo, floribus carneis, maculam rhomboideam inſcriptis uno verſu poſitis. Boerh. Ind. alt. 2. 127. *African Cornflag, with a graſſy leaf, and fleſh-coloured flowers, marked with a purple rhomboid ſpot ranged all on one ſide the ſtalk.*
6. GLADIOLUS (*Triſtis*) foliis lineari cancellatis corollis campanulatis. *Cornflag with very narrow channelled leaves, and a ſtalk bearing bell-ſhaped flowers.* Lilio-Gladiolus bifolius & biflorus, foliis quadrangulis. Trew. tab. 39. *Lily Cornflag with two leaves and flowers, and four-cornered leaves.*

The firſt ſort grows naturally in arable land in moſt of the warm countries in Europe, and was formerly cultivated in the Engliſh gardens, where the roots have multiplied ſo greatly as to become a moſt troubleſome weed, and are very difficult to eradicate; this hath a round, compreſſed, tuberous root, which is of a yellowiſh colour, covered with a brown furrowed ſkin, like thoſe of the large yellow vernal Crocus; from the root ariſe two flat ſword-ſhaped leaves, which embrace each other at their baſe, and between theſe ariſe the flower-ſtalk, which grows near two feet high, having one or two narrow leaves embracing it like a ſheath; the ſtalks are terminated by five or ſix purple flowers, ſtanding above each other at ſome diſtance, and ranged on one ſide of the ſtalk; each of theſe has a ſpatha (or ſheath) which covers the flower-bud before it expands, but ſplits open lengthways when the flowers blow, and ſhrivel up to a dry ſkin, remaining about the ſeed-veſſel till the ſeeds are ripe. The flower hath one petal, which is cut almoſt to the bottom in ſix parts, ſo as to appear like a flower of ſix petals; the three upper ſegments ſtand near together, and riſe like a labiated flower; the under one turns downward, and the two ſide ſegments form the chaps of the flower, and ſpread open at the top,

but are curved downward at the bottom. They are ranged along one ſide of the ſtalk, and are of a purpliſh red colour. This flowers the latter end of May, and in June, and the ſeeds ripen the beginning of Auguſt; it requires no care, for when it is once planted in a garden, it will multiply too faſt, ſo as to become a troubleſome weed.

There is a variety of this with white flowers, and another with fleſh-coloured flowers, which have accidentally riſen from ſeeds, ſo are not different ſpecies.

The ſecond ſort differs from the firſt, in having the flowers ranged on both ſides the ſtalk, but in other reſpects it is very like to that; and of this there is a variety with white flowers, but theſe are not ſo common in the Engliſh gardens as the former.

The third ſort hath larger roots than either of the former, but are of the ſame form; the leaves are alſo much broader and longer, the veins or channels of the leaves are deeper, the flower-ſtalks riſe higher; the flowers are much larger, and of a deeper red colour than thoſe of the former ſorts, and the ſheaths are longer. This plant makes a fine appearance in flower, ſo is worthy of a place in every good garden; and the rather, becauſe the roots do not increaſe ſo faſt as to become troubleſome in the borders. This is propagated by offsets, which are ſent off from the roots in the ſame manner as Tulips. The roots may be taken out of the ground the end of July, when their ſtalks decay, and may be kept out of the ground till the latter end of September, or the beginning of October; at which time they ſhould be planted in the borders of the flower-garden, where they will thrive in any ſituation, and being intermixed with other flowers of the ſame growth, they will add to the variety.

The fourth ſort grows naturally at the Cape of Good Hope, from whence I have ſeveral times received the ſeeds. This has been many years cultivated in the Engliſh gardens, but very rarely flowers here; for in near thirty years that I have cultivated this ſort, I have never ſeen it but once in flower, though I have kept it in all ſituations, and planted it in various ſoils. The roots increaſe very faſt, but will not live in the open air through the winter in this country. The roots of this ſort are broader and flatter than thoſe of any of the other ſorts, and are covered with a netted ſkin; the leaves come out in the ſame manner, embracing each other like the former ſorts; they are longer, ſmoother, and of a brighter green, than any of the others; theſe begin to appear in September, and continue growing in ſize till after Chriſtmas; they begin to decay in March, and the latter end of June are quite withered, when the roots may be taken up, and kept out of the ground till Auguſt; the time of its flowering is in January. The flowers of this ſort are placed on each ſide the ſtalk, and ſit cloſe to it, like the grains of the flat Barley; the ſheaths between the flowers are not ſo long as thoſe of the other ſorts, and form a kind of ſcaly covering to them. The flowers are of a pale red colour without, but the three lower ſegments are yellow within toward their baſe, with a few red ſtripes. The flowers do not all open at the ſame time, but the lower ones decay before thoſe on the upper part of the ſpike are in beauty; however, they make a good appearance at a ſeaſon when all flowers are valuable.

This ſort propagates by offsets very faſt; theſe ſhould be planted in a warm border of kitchen-garden earth, and in winter they ſhould be covered with glaſſes or mats to guard them from froſt; for I have with a ſlight ſhelter preſerved thoſe which were in pots under a common frame, and ſome which were planted in the full ground, when the froſt has not been ſevere; and I have always found that thoſe plants which were hardily treated, grew much ſtronger than thoſe which were placed in a moderate degree of warmth; ſo that where there is a conveniency of covering a warm border with glaſſes in the winter, if theſe roots are planted in the full ground, where they may be protected from the froſt, there will be a greater probability of their flowering, than in any other method of culture.

The fifth ſort grows naturally at the Cape of Good Hope, from whence I received the ſeeds, which ſucceeded in the Chelſea garden, where the plants annually produce their beautiful flowers.

This hath a round, ſmooth, bulbous root, which is covered with a thin dark-coloured ſkin, from which come out in autumn two or three very narrow graſſy leaves, folded over each other at their baſe, but open flat above, and riſe near two feet high. In the ſpring of the year ariſes a ſingle ſtalk from between the leaves about two feet long, which always bend on one ſide; toward the upper part of this come out two or three flowers, ranged on one ſide of the ſtalk, ſtanding upright, each having a narrow ſpatha, or hood, and long ſlender tubes, which ſwell large upward, and are divided into ſix parts, which are nearly equal. The flower is of a duſky fleſh colour, and each ſegment of the petal has a rhomboidal mark of a dark red, or purple colour; afterward the tube of the flower opens, and the deep diviſion of the petals is ſeen, and the three ſtamina with their ſummits appear, attended by the ſtyle with its trifid ſtigma, ariſing from the germen. This plant flowers in May and the beginning of June; as this plant is a native of a warm country, it requires protection from the froſt in winter; therefore the bulbs ſhould be planted in pots filled with light earth, and placed in the green-houſe in winter; or, where there is not ſuch conveniency, they may be put under a hot-bed frame during that ſeaſon, where they may have air in mild weather, and be ſcreened from the froſt; in ſuch ſituations I have had them thrive and flower very well.

This is propagated by offsets from the root in the ſame manner as the laſt, and alſo by ſeeds, which are frequently perfected in England; theſe ſhould be ſown the latter end of Auguſt, in pots filled with light earth, and placed in a ſhady ſituation till the middle of September; then the pots ſhould be removed where they may have the ſun great part of the day, and in October they muſt be placed under a hot-bed frame, where they may be protected from froſt and great rains, but enjoy the free air in mild weather. In the ſpring the young plants will appear, when they will require a little water once in eight or ten days, but it ſhould be given them ſparingly, for too much wet will rot theſe tender bulbs. In May, when the danger of froſt is over, the pots ſhould be removed to a ſheltered ſituation, where they may have the morning ſun till noon; and, if the ſeaſon proves dry, they muſt be now and then refreſhed with water. Toward the latter end of June, the leaves of theſe plants will decay; then the roots ſhould be taken up, and may be mixed with ſand, and kept in a dry room till the end of Auguſt, when they ſhould be planted again; and as the roots are ſmall, four or five may be planted in each half-penny pot, filled with light earth; theſe ſhould be placed where they may have only the forenoon ſun, till the middle of September, when they ſhould have a warmer ſituation; and in October they muſt be placed under a hot-bed frame as before, and treated in the ſame way during the winter ſeaſon; and in the ſpring they muſt be placed in the open air till their leaves decay, when they may be again taken out of the ground, and treated in the ſame manner as before; but as the roots will have grown to a larger ſize, ſo when they are planted again, they ſhould each have a ſeparate half-penny pot, becauſe now they will be large enough to flower, ſo may be treated as the old roots.

The ſixth ſort is alſo a native of the Cape of Good Hope, from whence I have ſeveral times received the ſeeds; the root of this ſort is oval, not compreſſed as thoſe of the common ſorts. The leaves are very long and narrow, having two deep furrows running the whole length, the midrib riſing very prominent, ſo as

to

to have the appearance of a four-cornered leaf. The leaves are ſingle, and wrapped cloſe about the flower-ſtalk at their baſe to a conſiderable length; there are ſeldom more than two of theſe leaves from one root; the ſtalk is ſlender and round, and riſes about two feet high; and the top is garniſhed with two flowers, which are placed two inches and a half aſunder on the ſame ſide of the ſtalk, each having a ſhort ſpatha, or ſheath, embracing the germen and the baſe of the tube, which is long, narrow, and recurved, but enlarges greatly before it is divided. The upper part of the flower is cut into ſix equal ſegments, which end in acute points of a purpliſh colour, which form a ſtripe through the middle of each ſegment. The petal is of a cream colour, and fades to a ſulphur colour before it decays. This flowers in June, and ſometimes the ſeeds ripen well in England. This may be propagated by offſets from the root, or by ſeeds in the ſame manner as the fifth ſort, and the plants require the ſame treatment.

GLANDIFEROUS trees, are ſuch trees as bear maſt, as Acorns, &c.

GLANDULOUS roots, are ſuch roots as grow kernel-wiſe.

GLANS is that ſort of fruit which is contained within a ſmooth, but hard bark, having but one ſeed; its hinder parts covered with a kind of cup, the fore-part being bare, as Acorns; but it is properly the fruit without the cup.

GLASTENBURY THORN. See MESPILUS.

GLAUCIUM. See CHELIDONIUM.

GLAUX, Sea Chickweed, or Milkwort, and black Saltwort, is a low trailing perennial plant, with leaves ſomewhat like Chickweed, but of a thicker conſiſtence, which ſit cloſe to the ſtalks. The flowers come out from the boſom of the leaves; they are white, and like thoſe of Chickweed. This is ſeldom cultivated in gardens, ſo I ſhall not trouble the reader with a further account of it. This grows upon the ſea-ſhores in moſt parts of England.

GLECHOMA. Ground Ivy, Gill go by the Ground, Ale-hoof, or Turn-hoof.

This plant grows naturally under hedges, and upon the ſides of banks in moſt parts of England, ſo is rarely cultivated in gardens, for which reaſon I ſhall paſs over it, with barely mentioning it here.

GLEDITSIA. Lin. Gen. Plant. 1025. Acacia. Raii Meth. 161. Honey Locuſt, or three-thorned Acacia.

The CHARACTERS are,

It hath male and hermaphrodite flowers in the ſame katkin, and female flowers in different plants. The male katkins are long, compact, and cylindrical, and have each a three-leaved ſmall empalement; they have three roundiſh petals, which ſpread open in form of a cup; theſe have a turbinated nectarium, whoſe mouth afterward grows to the parts of fructification; they have ſix ſlender ſtamina, which are longer than the petals, terminated by oblong compreſſed ſummits. The hermaphrodite flowers in the ſame katkin, are ſituated at the end; theſe have empalements, petals, and ſtamina like the male, and have a germen, ſtyle, and ſeeds like the female, which are ſituated on different trees, and are diſpoſed in a looſe katkin; theſe have a five-leaved empalement, and have five oblong petals, with two ſhort thread-like nectariums, and a broad germen longer than the petals, ſupporting a ſhort reflexed ſtyle, crowned by a thick ſtigma. The germen afterward becomes a large flat pod, with ſeveral tranſverſe partitions, having a pulp in each diviſion, ſurrounding one hard roundiſh ſeed.

This genus of plants is ranged in the ſecond ſection of Linnæus's twenty-third claſs, intitled Polygamia Dioeceia, which includes thoſe plants which have male and hermaphrodite flowers in the ſame plant, and female flowers in different plants.

The SPECIES are,

1. GLEDITSIA (*Triacanthus*) ſpinis triplicibus axillaribus. Lin. Sp. 1509. *Gleditſia with three thorns on the ſide of the branches.* Acacia Americana Abruæ folio triacanthos, ſive ad axillas foliorum, ſpinâ triplici donatâ. Pluk. Mant. 1. *Three-thorned American Acacia.*

2. GLEDITSIA (*Inermis*) ſpinis paucioribus, foliis bipinnatis, ſiliquis ovalibus. *Gleditſia with fewer ſpines, winged leaves, and oval pods.* Acacia Abruæ folio triacanthos, capſulâ ovali unicum ſemen claudente. Cateſb. Car. 1. p. 43. *Three-thorned Acacia with an Abrus leaf, and an oval pod containing one ſeed.*

Theſe trees grow naturally in America; the firſt ſort is very common in moſt parts of North America, where it is known by the title of Honey Locuſt; this has been many years cultivated in the Engliſh gardens, and is known among the gardeners by the title of three-thorned Acacia. It riſes with an erect trunk to the height of thirty or forty feet, and is armed with long ſpines, which have two or three ſmaller coming out from the ſide, and are frequently produced in cluſters at the knots on the ſtems of the trees; they are ſometimes three or four inches long. The branches of this tree are alſo armed with the ſame ſort of ſpines, and are garniſhed with winged leaves, compoſed of ten pair of ſmall leaves which ſit cloſe to the midrib, and are of a lucid green. The flowers come out from the ſide of the young branches in katkins; they are of an herbaceous colour, ſo make no figure. The hermaphrodite flowers are ſucceeded by pods near a foot and a half long, and two inches broad, divided into many cells by tranſverſe partitions, each containing one ſmooth, hard, oblong ſeed, ſurrounded by a ſweet pulp.

The leaves of this tree ſeldom come out till June in this country, and the flowers appear the latter end of July, but they do not flower till they are of a large ſize: there was one tree in the Chelſea garden which produced flowers ſeveral years, and there is one now growing in the Biſhop of London's garden at Fulham, which produced pods in the year 1728, and came to their full ſize, but the ſeeds did not ripen.

The ſecond ſort hath much the appearance of the firſt, but it hath fewer ſpines. The leaves are ſmaller, and the pods are oval, containing but one ſeed; this was diſcovered by the late Mr. Cateſby, in Carolina, from whence he ſent the ſeeds to England, by the title of Water Acacia, by which it is known in the gardens.

Theſe trees are propagated by ſeeds, which muſt be procured from America, where the trees grow naturally; thoſe of the firſt ſort are annually ſent to England in plenty, by the title of Locuſt, or Honey Locuſt, to diſtinguiſh it from the falſe Acacia, which is frequently called Locuſt-tree in America; theſe ſeeds may be ſown upon a bed of light earth in the ſpring, burying them half an inch deep; and if the ſpring ſhould prove dry, they muſt be frequently watered, otherwiſe the plants will not come up the firſt year, for I have ſometimes had the ſeeds remain two years in the ground before they have come up; therefore thoſe who are deſirous to ſave time, ſhould ſow the ſeeds as ſoon as they arrive, and plunge the pots into a moderate hot-bed, obſerving to water them frequently; by this method moſt of the plants will come up the ſame ſeaſon, but theſe ſhould be gradually inured to bear the open air, for if they are continued in the hot-bed, they will draw up weak; during the ſummer ſeaſon, thoſe plants in pots will require frequent waterings, but thoſe in the full ground will not dry ſo faſt, therefore need no water, unleſs the ſeaſon ſhould prove very dry. In autumn, thoſe in the pots ſhould be placed under a hot-bed frame to protect them from froſt, for theſe young plants generally keep growing late in the ſummer, ſo the upper part of their ſhoots is tender, and the early froſts of the autumn often kill the ends of them, if they are not protected, and this frequently occaſions great part of the ſhoots decaying in winter; for which reaſon thoſe plants in the full ground ſhould be covered with mats in autumn, on the firſt appearance of froſt; for a ſmall froſt in autumn will do more miſchief to theſe young ſhoots which are full of ſap, than ſevere froſt when the ſhoots are hardened.

The following ſpring the plants may be tranſplanted into nurſery-beds, at a foot diſtance row from row, and

and ſix inches aſunder in the rows; but this ſhould not be performed till April, after the danger of hard froſt is over; for as the plants do not put out their leaves till very late, ſo there will be no hazard in removing them any time before May. If the ſeaſon ſhould prove dry, they muſt be watered; and if the ſurface of the beds is covered with moſs, or mulch, to prevent the earth from drying, it will be of great ſervice to the plants. In theſe beds the plants may remain two years, during which time they muſt be conſtantly kept clean from weeds; and in the winter there ſhould be ſome rotten tan, or other mulch, ſpread over the ſurface of the ground to keep out the froſt. If the plants thrive well, they will be fit to tranſplant to the places where they are to remain after two years growth, for they do not bear removing when large; the beſt ſeaſon for tranſplantlng of theſe trees, is late in the ſpring; they thrive beſt in a light deep ſoil, for in ſtrong ſhallow ground they become moſſy, and never grow large; they ſhould alſo have a ſheltered ſituation, for when they are much expoſed to winds, their branches are frequently broken in the ſummer ſeaſon, when they are fully clothed with leaves.

GLOBULARIA. Lin. Gen. Plant. 106. Tourn. Inſt. R. H. 466. tab. 265. *Blue Daiſy.*

The CHARACTERS are,

It hath a flower compoſed of many florets, which are included in one common ſcaly empalement; each floret has an empalement of one leaf, which is tubulous, and cut into five ſegments at the top. The florets have one petal, whoſe baſe is tubulous, but the brim is cut into four parts; the upper ſegment, which is the leaſt, is reflexed; they have four ſtamina the length of the petal, terminated by diſtinct ſummits; in the bottom of the tube is ſituated an oval germen ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes an oval ſeed, ſitting in the common empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, intitled Tetandria Monogynia, which includes thoſe plants whoſe flowers have four ſtamina and one ſtyle.

The SPECIES are,

1. GLOBULARIA (*Vulgaris*) caule herbaceo, foliis radicalibus tridentatis, caulinis lanceolatis. Flor. Suec. 109. *Globularia with an herbaceous ſtalk, the lower leaves divided into three points, and thoſe on the ſtalks ſpear-ſhaped.* Globularia vulgaris. Tourn. 467. *Common Globularia.*
2. GLOBULARIA (*Nudicaulis*) caule nudo, foliis integerrimis lanceolatis. Lin. Sp. Plant. 97. *Globularia with a naked ſtalk, and ſpear-ſhaped entire leaves.* Globularia Pyrenaica, folio oblongo, caule nudo. Tourn. 467. *Pyrenean Globularia, with an oblong leaf and naked ſtalk.*
3. GLOBULARIA (*Alypum*) caule fruticoſo, foliis lanceolatis tridentatis integriſque. Prod. Leyd. 190. *Globularia with a ſhrubby ſtalk, ſpear-ſhaped leaves, ſome ending in three points, and others are entire.* Globularia fruticoſa, myrti folio tridentato. Tourn. 467. *Shrubby Globularia with a trifid Myrtle leaf.*
4. GLOBULARIA (*Spinoſa*) foliis radicalibus crenato-aculeatis, caulinis integerrimis mucronatis. Lin. Sp. Plant. 96. *Globularia with lower leaves crenated and prickly, thoſe on the ſtalks entire, ending in a point.* Globularia ſpinoſa. Tourn. 467. *Prickly Globularia.*
5. GLOBULARIA (*Cordifolia*) caule ſubnudo, folis cuneiformibus tricuſpidatis, intermedio minimo. Lin. Sp. Plant. 96. *Globularia with a naked ſtalk, and wedge-ſhaped leaves ending in three points, whoſe middle ſegment is the leaſt.* Globularia Alpina minima, origani folio. Tourn. 467. *Smalleſt Alpine Globularia with a wild Marjoram leaf.*
6. GLOBULARIA (*Orientalis*) caule ſubnudo, capitulis alternis ſeſſilibus, foliis lanceolato-ovatis integris. Lin. Sp. Plant. 97. *Globularia with a naked ſtalk, alternate heads ſitting cloſe to the ſtalks, and oval, ſpear-ſhaped, entire leaves.* Globularia Orientalis, floribus per caulem ſparſis. Tourn. Cor. 35. *Eaſtern Globularia with flowers ſcattered along the ſtalks.*

The firſt of theſe plants grows plentifully about Montpelier, as alſo at the foot of the mountains Jura and Saleva, and in many other parts of Italy, and in Germany; this plant hath leaves very like thoſe of the Daiſy, but are thicker and ſmoother. The flower-ſtalks riſe about ſix inches high, ſupporting a globular head of flowers, compoſed of ſeveral florets, which are included in one common ſcaly empalement; they are of a fine blue colour, and appear in June; theſe are ſucceeded by ſeeds, which ſit in the empalement, and ripen in autumn.

The ſecond ſort grows plentifully in the woods, near the convent of the Carthuſians, and on the Pyrenean mountains; this is much larger than the former, and hath a ſhrubby ſtalk a foot and a half high; the foot-ſtalk is quite naked. The leaves are narrower, and much longer.

The firſt ſort may be propagated by parting of the roots after the manner of Daiſies. The beſt ſeaſon for parting and tranſplanting of the plants is in September, that they may take new root before the froſty weather comes on. They ſhould be planted in a ſhady ſituation, and require a moiſt loamy ſoil, in which they will thrive much better than in a light ground and an open ſituation; but the plants ſhould not be removed oftener than every other year, if they are required to flower ſtrong.

The third ſort grows about Montpelier in France, and in Valentia, and ſeveral other parts of Spain. This has a hard woody ſtem, which riſes about two feet high, having many woody branches, beſet with leaves like thoſe of the Myrtle-tree. On the top of the branches the flowers are produced, which are of a blue colour, and globe-ſhaped; this plant may be propagated by cuttings, which ſhould be cut off in April, juſt before they begin to make new ſhoots; the cuttings ſhould be planted into pots filled with light freſh earth, and then placed into a very moderate hot-bed, obſerving to water and ſhade them until they have taken root, when they may be taken out of the bed, and inured to bear the open air by degrees. In ſummer theſe plants may be expoſed with other hardy exotic plants, and in winter they ſhould be placed under a hot-bed frame, where they may enjoy the free air in mild weather, but ſhould be ſcreened from hard froſt, which will deſtroy them, if they are expoſed thereto, but in mild winters they will live in the open air. This plant never produces good ſeeds in this country.

The fourth ſort was found in the mountains of Granada, by Dr. Albinus; this plant is of low growth, and may be propagated as the firſt; as may alſo the fifth ſort, which is the leaſt of all the ſorts, and the moſt hardy; therefore ſhould have a ſhady ſituation, and a cool moiſt ſoil.

The ſixth ſort was found by Dr. Tournefort in the Levant; this is ſomewhat tender, and ſhould be ſheltered from the froſt in winter, under a frame, but in ſummer it ſhould be expoſed with other hardy exotic plants, and will require to be frequently watered in dry weather. This may be propagated by ſeeds, or by parting of their roots, as was directed for the firſt ſort.

GLORIOSA. Lin. Gen. Plant. 374. Methonica. Tourn. Acad. R. Scien. 1706. *The Superb Lily.*

The CHARACTERS are,

The flower hath no empalement; it hath ſix long ſpear-ſhaped petals, which are waved, and reflexed to the foot-ſtalk. It hath ſix ſtamina, which ſpread open each way, and are terminated by proſtrate ſummits. In the center is ſituated a globular germen, ſupporting a ſlender inclining ſtyle, crowned by an obtuſe triple ſtigma. The germen afterward becomes an oval thin capſule having three cells, filled with globular ſeeds, diſpoſed in a double range.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, intitled Hexandria Monogynia, which includes the plants whoſe flowers have ſix ſtamina and one ſtyle.

1. GLORIOSA (*Superba*) foliis longioribus capreolis terminalibus. *Superb Lily with longer leaves ending with claſpers.*

claſpers. Methonica Malabarorum. Hort. Lugd. 688. *Methonica of Malabar*, and the Lilium Zeylanicum ſuperbum. Hort. Amſt. 1. p. 69. *Superb Lily of Ceylon.*

2. GLORIOSA (*Cærulea*) foliis ovato-lanceolatis acutis. *Superb Lily with oval, ſpear-ſhaped, acute leaves.*

The firſt ſort grows naturally on the coaſt of Malabar, and alſo in Ceylon, from whence it was firſt brought to the gardens in Holland, where it has been many years cultivated; this hath a long fleſhy root of a whitiſh colour, and a nauſeous bitter taſte, from the middle of which ariſes a round weak ſtalk, which requires ſupport to prevent its trailing on the ground. The ſtalks grow to the height of eight or ten feet, garniſhed with leaves placed alternate on every ſide, which are ſmooth, about eight inches long, and one inch and a half broad at the baſe, growing narrower till within two inches of the end, which runs out in a narrow point, ending with a tendril, or claſper, by which it faſtens to the neighbouring plants for ſupport. At the upper part of the ſtalk the flower is produced from the ſide, ſtanding upon a ſlender foot-ſtalk; it is compoſed of ſix oblong petals, ending with acute points, which, on their firſt opening, are of an herbaceous colour, and ſpread wide open; the flower hanging downward as the Crown Imperial and Fritillary, but afterward the petals turn quite back, and change to a beautiful red flame colour, their acute points meeting at the top; theſe petals are finely waved on their edges. The ſix ſtamina ſpread out every way almoſt horizontal, and are terminated by proſtrate ſummits. In the center of the flower is ſituated a roundiſh germen, ſupporting an inclining ſtyle, crowned by a triple ſtigma. This plant flowers in June and July, but ſeldom perfects ſeeds in this country. The ſtalks decay in autumn, and the roots remain inactive all the winter, and the new ſtalks come out in March. The roots and every part of this plant is very poiſonous, ſo ſhould not be put in the way of children.

The ſeeds of the ſecond ſort were ſent me by Monſ. Richard, gardener to the French king at Trianon; theſe were brought from Senegal by Monſ. Adanſon, who diſcovered this plant growing there naturally; this is ſaid to have a blue flower, but the plants which are in the Chelſea garden have not yet flowered. This hath a climbing ſtalk, which is garniſhed with ſmooth leaves about three inches long, and two broad, ending in acute points, but have no tendril or claſper. The ſtalks as yet have not grown more than two feet high here, but have the appearance of climbing like the other ſort. The leaves have a ſtrong diſagreeable ſcent on being handled, ſo as to be troubleſome to the head if too near, or long ſmelt to.

As theſe plants rarely produce ſeeds in this country, they are generally propagated by their roots; thoſe of the firſt ſort creep and multiply pretty faſt, but the ſecond hath not as yet put out any offſets; but as the plants are young, we cannot as yet ſay how they may increaſe when they are of a proper age. Theſe roots may be taken out of the ground when their ſtalks are decayed, and preſerved in ſand during the winter ſeaſon, but they muſt be kept in the ſtove, or a warm room, where they can receive no injury from the cold; and in the ſpring they muſt be planted in pots filled with light earth, and plunged into the tan-bed in the ſtove; but others chuſe to let the roots continue in the ground all the winter, keeping the pots always in the tan-bed: where this is practiſed, the roots ſhould have very little water in the winter; for as they are then in an inactive ſtate, ſo moiſture at that time frequently rots the roots.

Toward the latter end of March, or the beginning of April, their ſtalks will appear, when there ſhould be ſome tall ſticks put down by them to ſupport them, otherwiſe they will trail over the neighbouring plants, and the firſt ſort will faſten to the plants by the tendrils, which are at the end of the leaves. The ſtalks of this ſort will riſe ten or twelve feet high, if the

roots are ſtrong, and ſome of the ſtalks will produce two or three flowers, which come out from the wings of the ſtalk near the top; theſe flowers make a fine appearance in the ſtove, during their continuance, which is ſeldom more than ten days or a fortnight. In ſummer, when the plants are growing, they will require frequently to be watered, but they muſt not have it in too large quantities, for they are very ſubject to rot with much wet at any ſeaſon. Thoſe roots which are not taken out of the pots in winter, ſhould be tranſplanted and parted the beginning of March, before they put out new fibres, or ſtalks, for they muſt not be removed when they are in a growing ſtate; the pots in which theſe roots are planted ſhould not be too large; for unleſs they are confined, they will not put out ſtrong ſtalks; the largeſt roots may be planted in twopenny pots, but the ſmall ones will require only pots of about five or ſix inches over at the top.

GLYCINE. Lin. Gen. Plant. 797. Apios. Boer. Ind. alt. *Knobbed-rooted Liquorice Vetch.*

The CHARACTERS are,

The empalement of the flower is of one leaf, divided into two lips at the top, the upper lip being obtuſe and indented; the lower lip is longer, trifid, and acute, the middle indenture being extended beyond the other. The flower is of the butterfly kind. The ſtandard is heart-ſhaped, deflexed on the ſides, gibbous on the back, and indented at the point. The wings are ſmall, oblong, and oval toward their end, and bend backward. The keel is narrow, ſickle-ſhaped, turning upward with its point to the ſtandard, where it is broadeſt. It hath ten ſtamina, nine of which are joined in one body, and the other ſtands ſingle, terminated by ſingle ſummits. In the center is ſituated an oblong germen ſupporting a ſpiral cylindrical ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes an oblong pod with two cells, incloſing kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, which includes the plants whoſe flowers have ten ſtamina joined in two bodies. Tournefort places the firſt ſort under this genus of Aſtragalus, which is ranged in the fifth ſection of his tenth claſs, which includes the herbs with a butterfly flower, whoſe pointal turns to a pod with two cells.

The SPECIES are,

1. GLYCINE (*Apios*) foliis impari-pinnatis ovato-lanceolatis. Hort. Upſal. 227. *Glycine with oval, ſpear-ſhaped, winged leaves.* Aſtragalus tuberoſus ſcandens, Fraxini folio. Tourn. Inſt. 415. *Climbing tuberous Milk Vetch with an Aſh leaf*; and the Apios Americana. Cornut. 200.

2. GLYCINE (*Fruteſcens*) foliis impari-pinnatis caule perenni. Hort. Cliff. 361. *Glycine with winged leaves and a perennial ſtalk.* Phaſeoloides fruteſcens, Caroliniana, foliis pinnatis, floribus cæruleis conglomeratis. Hort. Angl. tab. 15. *Carolina Kidney-bean-tree, with winged leaves, and blue flowers growing in whorls.*

3. GLYCINE (*Abrus*) foliis abrupto-pinnatis pinnis numeroſis obtuſis. Lin. Sp. 1025. *Glycine with abrupt. winged leaves, whoſe lobes are obtuſe.* Orobus Americanus, fructu coccineo nigrâ maculâ notato. Tourn. Inſt. 393. *American Bitter Vetch with a ſcarlet fruit, marked with a black ſpot, commonly called wild Liquorice in the Weſt-Indies.*

4. GLYCINE (*Comoſa*) foliis ternatis hirſutis, racemis lateralibus. Lin. Sp. Plant. 754. *Glycine with hairy trifoliate leaves, and flowers growing in long bunches from the ſides of the ſtalks.* Phaſeolus Marianus ſcandens, floribus commoſis. Pet. Muſ. 453. *Climbing Kidney-bean of Maryland with ſpiked flowers.*

5. GLYCINE (*Tomentoſa*) foliis ternatis tomentoſis, racemis axillaribus breviſſimis, leguminibus diſpermis. Lin. Sp. Plant. 754. *Glycine with woolly trifoliate leaves, and very ſhort ſpikes of flowers proceeding from the ſides of the ſtalks, with pods containing two ſeeds.* Anonis phaſeoloides ſcandens, floribus flavis ſeſſilibus. Hort. Elth. 30. tab. 26. *Climbing Reſt-Harrow like Kidney-bean, with yellow flowers ſitting cloſe to the ſtalks.*

The firſt ſort grows naturally in Virginia; this hath roots compoſed of ſeveral knobs, or tubers, which hang to each other by ſmall ſtrings; from theſe come out in the ſpring ſlender twining ſtalks, which riſe to the height of eight or ten feet, garniſhed with winged leaves, compoſed of three pair of oval ſpear-ſhaped lobes, terminated by an odd one. The flowers come out in ſhort ſpikes from the ſide of the ſtalks; they are of a Pea-bloſſom kind, of a dirty fleſh-colour, having little ſcent. Theſe appear in Auguſt, but do not produce ſeeds in England. The ſtalks decay in autumn, but the roots continue; this is propagated by parting of the roots, each of the tubers being ſeparated from the principal root, will grow; the beſt time for this is about the end of March, or the beginning of April, before they put out ſhoots. The roots ſhould be planted in a warm ſituation, and in hard froſt covered with tan or mulch to protect them, otherwiſe they will not live abroad in this country: where they have been planted againſt a ſouth wall, they have thriven and flowered extremely well, which they ſeldom do in any other ſituation; and thoſe roots which are planted in pots rarely flower, nor do their ſtalks riſe near ſo high as thoſe which are planted in the full ground; ſome ignorant perſons call this the Twickenham Climber.

The ſecond ſort was brought from Carolina, but has been ſince obſerved in Virginia, and ſome other places in North America; this ſort has woody ſtalks, which twiſt themſelves together, and alſo twine round any trees that grow near, and will riſe to the height of fifteen feet, or more. The leaves are winged, and in ſhape ſomewhat like the Aſh-tree, but have a greater number of pinnæ. The flowers are produced in cluſters from the wings of the leaves, which are of a purple colour; theſe are ſucceeded by long cylindrical pods, ſhaped like thoſe of the ſcarlet Kidney-bean, containing ſeveral kidney-ſhaped ſeeds, but theſe are never perfected in England.

This climbing ſhrub is propagated in ſeveral nurſeries near London, where it is known by the name of Carolina Kidney-bean-tree. It is increaſed by laying down the young branches in October, which will be rooted well by that time twelvemonth (eſpecially if they are duly watered in dry weather) and may then be tranſplanted, either in a nurſery for a year to get ſtrength, or to the place where they are to remain for good, which ſhould be in a warm light ſoil and a ſheltered ſituation, where they will endure the cold of our ordinary winters very well; and if their roots are covered with ſtraw, Fern, Peas-haulm, or any other light covering, there will be no danger of their being deſtroyed by the froſt.

The third ſort grows naturally in both Indies, and alſo in Egypt. This is a perennial plant, with ſlender twining ſtalks, which twiſt about any neighbouring ſupport, and riſe to the height of eight or ten feet, garniſhed with winged leaves, compoſed of ſixteen pair of ſmall, oblong, blunt lobes, ſet cloſe together; theſe have the taſte of Liquorice, from whence the inhabitants of the Weſt-Indies have given it the name of Wild Liquorice, and uſe the herb for the ſame purpoſe as the Liquorice in Europe. The flowers are produced from the ſide of the ſtalks in ſhort ſpikes or bunches; they are of a pale purple colour, and ſhaped like thoſe of the Kidney-bean; theſe are ſucceeded by ſhort pods, each containing three or four hard round ſeeds of a ſcarlet colour, with a black ſpot or eye on that ſide which is faſtened to the pod. The ſeeds of this plant are frequently ſtrung, and are worn as ornaments by the natives of thoſe countries, where the plants grow naturally: they are frequently brought to England from the Weſt-Indies, and are wrought into various forms, with ſhells and other hard ſeeds.

This plant is propagated by ſeeds, which muſt be ſown upon a good hot-bed in the ſpring; but as the ſeeds are very hard, ſo unleſs they are ſoaked in water twelve or fourteen hours before they are ſown, they frequently lie in the ground a whole year before they vegetate; but when ſoaked, the plants will appear in a fortnight after the ſeeds are ſown, if they are good, and the bed in a proper temperature of heat. When the plants are two inches high, they ſhould be each tranſplanted into a ſeparate pot, filled with light earth, and plunged into a hot-bed of tanners bark, where they ſhould be ſhaded from the ſun till they have taken new root; after which they muſt be treated in the ſame manner as other tender plants from the ſame countries, always keeping them in the bark-ſtove, for they are too tender to thrive in any other ſituation in England. This ſort will flower the ſecond year from ſeeds, and ſometimes ripens ſeeds here.

There are two other varieties of this plant, one with a white, and the other a yellow ſeed, but the plants do not differ from the other in leaf or ſtalk; but as theſe have not as yet flowered in England, I do not know how their flowers may differ.

The fourth ſort hath a perennial root and an annual ſtalk, which decays in the autumn. This riſes from two to three feet high, with ſlender herbaceous ſtalks, which are garniſhed with trifoliate hairy leaves, ſitting cloſe to the ſtalks; the ſmall leaves or lobes, are of the oval ſpear-ſhape, ending in acute points. The flowers come out from the ſide of the ſtalks, at the foot-ſtalk of the leaves; the naked part of the foot-ſtalk is about two inches long, and the ſpike of flowers is about the ſame length, and is recurved; the flowers are of a Pea-bloſſom kind, ſitting cloſe together. They are ſmall, and of a fine blue colour, coming out the beginning of June, and are ſometimes ſucceeded by ſeeds in England, which ripen in Auguſt.

This ſort grows naturally in North America, and is hardy enough to live in the open air in England. It may be propagared by ſeeds, or parting of the roots; the former is the beſt method, where good ſeeds can be obtained: theſe may be ſown on a bed of light earth in the ſpring, and if the ſeaſon ſhould prove dry, they muſt be frequently refreſhed with water, otherwiſe they will remain a long time in the ground before they vegetate: when the plants come up, they muſt be kept clean from weeds in the ſummer, and in the autumn when their ſtalks are decayed, if ſome rotten tanners bark is ſpread over the ſurface of the ground, it will protect the roots from being injured by the froſt. In the ſpring, the roots ſhould be tranſplanted to the places where they are deſiged to remain, which muſt be in a warm ſheltered ſituation, but not too much expoſed to the ſun, and in a light ſoil, where they will thrive and produce flowers annually. If this is propagated by parting of the roots, it ſhould be done in the ſpring, before the roots begin to ſhoot, which is the beſt ſeaſon for tranſplanting the plants: but theſe roots ſhould not be parted oftener than every third year, for if they are often removed they will not flower ſo ſtrong.

The fifth ſort hath a perennial root and a climbing ſtalk, which riſes near four feet high, garniſhed with woolly trifoliate leaves: the flowers come out in ſhort bunches from the ſide of the ſtalks; they are ſmall, of a yellow colour, and are ſucceeded by ſhort pods, which contain two roundiſh ſeeds in each. This flowers in June, and the ſeeds ripen in autumn. It grows naturally in America, but is too tender to live in the open air in England. This is propagated in the ſame manner, and requires the ſame treatment as the third ſort.

GLYCYRRHIZA. Lin. Gen. Plant. 788. Tourn. Inſt. R. H. 389. tab. 210. [ſo called of γλυκὺς, ſweet, and ῥίζα, *Gr.* a root, q. d. ſweet root: the ancients called it Scythian Root, becauſe the Scythians firſt brought it into uſe.] Liquorice; in French, *Regliſſe*.

The CHARACTERS are,

The flower hath a permanent tubulous empalement of one leaf, divided into two lips; the upper lip is cut into three parts, the middle one being broad and bifid, the under lip is ſingle. The flower hath four petals, is of the butterfly kind, having a long erect ſtandard, with oblong

oblong wings, and a two-leaved keel which is acute. It hath ten ſtamina, nine joined and one ſtanding ſingle; they are longer than the keel, and terminated by roundiſh ſummits. In the bottom is ſituated a ſhort germen, ſupporting an awl-ſhaped ſtyle the length of the ſtamina, crowned by a riſing obtuſe ſtigma. The germen afterward becomes an oblong, or oval compreſſed pod with one cell, including two or three kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria, which includes thoſe plants which have ten ſtamina joined in two bodies.

The SPECIES are,

1. GLYCYRRHIZA (*Glabra*) leguminibus glabris. Hort. Cliff. 490. *Liquorice with ſmooth pods.* Glycyrrhiza ſiliquoſa, vel Germanica. C. B. P. *Common Liquorice.*
2. GLYCYRRHIZA (*Echinata*) leguminibus echinatis. Prod. Leyd. 386. *Liquorice with prickly pods.* Glycyrrhiza capite echinato. C. B. P. *Rough-podded Liquorice.*
3. GLYCYRRHIZA (*Hirſuta*) leguminibus hirſutis. Prod. Leyd. 386. *Liquorice with hairy pods.* Glycyrrhiza Orientalis, ſiliquis hirſutiſſimis. Tourn. Cor. *Eaſtern Liquorice with hairy pods.*

The firſt ſort is that which is commonly cultivated in England for medicine; the other two kinds are preſerved in curious botanic gardens for variety, but their roots are not ſo full of juice as the firſt, nor is the juice ſo ſweet; though the ſecond ſort ſeems to be that which Dioſcorides has deſcribed and recommended; but I ſuppoſe the goodneſs of the firſt has occaſioned its being ſo generally cultivated in Europe.

The roots of this run very deep into the ground, and creep to a conſiderable diſtance, eſpecially where they are permitted to ſtand long unremoved; from theſe ariſe ſtrong herbaceous ſtalks, four or five feet high, garniſhed with winged leaves, compoſed of four or five pair of oval lobes, terminated by an odd one; the leaves and ſtalks are clammy, and of a dark green; the flowers come out in ſpikes from the wings of the ſtalks, ſtanding erect; they are of a pale blue colour, and are ſucceeded by ſhort compreſſed pods, each containing two or three kidney-ſhaped ſeeds. It flowers the latter end of July, but the ſeeds do not ripen in England.

This plant delights in a light ſandy ſoil, which ſhould be three feet deep at leaſt, for the goodneſs of Liquorice conſiſts in the length of the roots: the greateſt quantity of Liquorice which is propagated in England, is about Pontefract in Yorkſhire, and Godalmin in Surry; though of late years there hath been a great deal cultivated in the gardens near London: the ground in which you intend to plant Liquorice, ſhould be well dug and dunged the year before you plant it, that the dung may be perfectly rotted, and mixed with the earth, otherwiſe it will be apt to ſtop the roots from running down; and before you plant it, the ground ſhould be dug three ſpades deep, and laid very light; when your ground is thus well prepared, you ſhould furniſh yourſelf with freſh plants taken from the ſides or heads of the old roots, obſerving that they have a good bud or eye, otherwiſe they are ſubject to miſcarry; theſe plants ſhould be about ten inches long, and perfectly ſound.

The beſt ſeaſon for planting them is in the beginning or middle of March, which muſt be done in the following manner, viz. Firſt ſtrain a line croſs the ground in which you would plant them, then with a long dibble made on purpoſe, put in the ſhoot, ſo that the whole plant may be ſet ſtrait into the ground, with the head about an inch under the ſurface in a ſtrait line, about a foot aſunder, or more, in the rows, and two feet diſtance row from row; and after having finiſhed the whole ſpot of ground, you may ſow a thin crop of Onions, which being plants that do not root deep into the ground, nor ſpread much above, will do the Liquorice no damage the firſt year; for the Liquorice will not ſhoot very high the firſt ſeaſon, and the hoeing of the Onions will alſo keep the ground clear from weeds; but in doing of this you muſt be careful not to cut off the top ſhoots the Liquorice plants when they appear above ground, which would greatly injure them; and alſo obſerve to cut up all the Onions which grow near the heads of the Liquorice; and after your Onions are pulled up, you ſhould carefully hoe and clean the ground from weeds; and in October, when the ſhoots of the Liquorice are decayed, you ſhould ſpread a little very rotten dung upon the ſurface of the ground, which will prevent the weeds from growing during the winter, and the rain will waſh the virtue of the dung into the ground, which will greatly improve the plants.

In the beginning of March following you ſhould ſlightly dig the ground between the rows of Liquorice, burying the remaining part of the dung; but in doing of this, you ſhould be very careful not to cut the roots. This ſtirring of the ground will not only preſerve it clean from weeds a long time, but alſo greatly ſtrengthen the plants.

The diſtance which I have allowed for planting theſe plants, will, I doubt not, by ſome, be thought too great; but in anſwer to that, I would only obſerve, that as the largeneſs of the roots is the chief advantage to the planter, ſo the only method to obtain this, is by giving them room; and beſides, this will give a greater liberty to ſtir and dreſs the ground, which is of great ſervice to Liquorice; and if the plantation deſigned were to be of an extraordinary bigneſs, I would adviſe the rows to be made at leaſt three feet diſtant, whereby it will be eaſy to ſtir the ground with a breaſt plough, which will greatly leſſen the expence of labour.

Theſe plants ſhould remain three years from the time of planting, when they will be fit to take up for uſe; which ſhould not be done until the ſtalks are perfectly decayed; for when it is taken up too ſoon, it is ſubject to ſhrink greatly, and loſe of its weight.

The ground near London being rich, increaſes the bulk of the root very faſt; but when it is taken up, it appears of a very dark colour, and not near ſo ſightly as that which grows upon a ſandy ſoil in an open country.

The ſecond ſort grows naturally in ſome parts of Italy, and in the Levant; the ſtalks and leaves of this are very like thoſe of the firſt, but the flowers are produced in ſhorter ſpikes, and the pods which ſucceed them are very ſhort, broad at their baſe, ending in acute points, and are armed with ſharp prickles. This flowers about the ſame time as the firſt, and in warm ſeaſons will perfect ſeeds in England.

The third ſort grows naturally in the Levant, from whence the ſeeds were ſent to the royal garden at Paris, by Dr. Tournefort. This hath much the appearance of the other two ſpecies, but the pods of it are hairy, and longer than thoſe of the other. Both theſe ſorts may be propagated in the ſame manner as the firſt, or from ſeeds, which may be ſown in the ſpring on a bed of light earth; but as neither of theſe are uſed, ſo they are ſeldom propagated unleſs for the ſake of variety.

GNAPHALIUM. Lin. Gen. Plant. 850. Elichryſum. Tourn. Inſt. R. H. 452. tab. 259. Goldylocks, or Eternal Flower; in French, *Immortelle.*

The CHARACTERS are,

It hath a compound flower, made up of hermaphrodite florets and female half florets, included in one ſcaly empalement; the hermaphrodite florets are tubulous, funnel-ſhaped, and cut into five parts at the brim, which are reflexed; theſe have five ſhort hairy ſtamina, terminated by cylindrical ſummits. In the center is ſituated a germen, ſupporting a ſlender ſtyle the length of the ſtamina, crowned by a bifid ſtigma; the germen afterward becomes a ſingle ſeed, which in ſome ſpecies is crowned with a hairy down, and in others a feathery down. The female flowers which are intermixed with theſe have no ſtamina, but a germen ſupporting a ſlender ſtyle, crowned by a bifid reflexed ſtigma. Theſe are in ſome ſpecies fruitful, and in others they are barren. The empalement of the flower is permanent and ſhining.

This

This genus of plants is ranged in the firſt ſection of Linnæus's nineteenth claſs, which includes thoſe plants which have hermaphrodite and female flowers incloſed in one common empalement, and are fruitful.

The SPECIES are,

1. GNAPHALIUM (*Stœchas*) fruticoſum foliis linearibus, ramis virgatis, corymbo compoſito. Hort. Cliff. 401. *Goldylocks with a ſhrubby ſtalk garniſhed with very narrow leaves, and a compound corymbus of flowers.* Elichryſum ſeu ſtœchas citrina anguſtifolia. C. B. P. 264. *Caſſidony, or narrow-leaved Goldylocks.*
2. GNAPHALIUM (*Anguſtiſſimum*) foliis linearibus, caule fruticoſo ramoſo, corymbo compoſito. Hort. Cliff. 401. *Goldylocks with a branching ſhrubby ſtalk, and very narrow leaves, with a compound corymbus of flowers.* Elichryſum anguſtiſſimo folio. Tourn. Inſt. R. H. 452. *Goldylocks with very narrow leaves.*
3. GNAPHALIUM (*Uniflorum*) foliis alternis, acutè dentatis, ſubtus villoſis, pedunculis longiſſimis unifloris. *Goldylocks with alternate leaves ſharply indented, woolly on their under ſide, with very long foot-ſtalks ſuſtaining one flower.* Elichryſum ſylveſtre latifolium, flore parvo ſingulari. Tourn. Inſt. R. H. 452. *Broad-leaved wild Goldylocks, with a ſingle ſmall flower.*
4. GNAPHALIUM (*Luteo-album*) foliis ſemiamplexicaulibus enſiformibus, repandis obtuſis, utrinque pubeſcentibus, floribus conglomeratis. Prod. Leyd. 149. *Goldylocks with ſword-ſhaped leaves half embracing the ſtalks, which are obtuſe, reflexed, woolly on both ſides, and flowers growing in cluſters.* Elichryſum ſylveſtre latifolium capitulis conglobatis. C. B. P. 264. *Broad-leaved wild Goldylocks, with heads growing in cluſters.*
5. GNAPHALIUM (*Aquaticum*) caule ramoſo diffuſo, floribus confertis. Flor. Lapp. 300. *Goldylocks with a diffuſed branching ſtalk, and flowers in cluſters at the top.* Elichryſum aquaticum, ramoſum, minus, capitulis, foliaceis. Tourn. Inſt. 452. *Leſſer branching aquatic Goldylocks, with leafy heads.*
6. GNAPHALIUM (*Sylvaticum*) caule ſimpliciſſimo, floribus ſparſis. Flor. Lapp. 298. *Goldylocks with a ſingle ſtalk, and flowers growing ſcatteringly.* Elichryſum ſpicatum. Tourn. Inſt. R. H. 453. *Spiked Goldylocks.*
7. GNAPHALIUM (*Dioicum*) caule ſimpliciſſimo corymbo ſimplici terminali, ſarmentis procumbentibus. Hort. Cliff. 400. *Goldylocks with a ſingle ſtalk terminated by a ſingle corymbus, and trailing branches.* Elichryſum montanum flore rotundiori candido. Tourn. Inſt. R. H. 453. *Mountain Goldylocks with a rounder white flower.*
8. GNAPHALIUM (*Montanum*) foliis radicalibus cuneiformibus, caulinis acutis ſeſſilibus, caule ſimpliciſſimo, capitulo terminali aphyllo, floribus oblongis. *Goldylocks with the lower leaves wedge-ſhaped, thoſe on the ſtalks acute, and ſitting cloſe, a ſingle ſtalk without leaves, terminated by oblong flowers.* Elichryſum montanum longiore folio & flore albo. Tourn. Inſt. 453. *Mountain Goldylocks, with a longer leaf and white flower.*
9. GNAPHALIUM (*Chryſocomum*) humile, caule ſuffruticoſo, foliis linearibus ſubtus argenteis, ſquamis calycinis longioribus acuminatis. *Low Goldylocks with a ſhrubby ſtalk, very narrow leaves, ſilvery on their under ſide, and longer acute-pointed ſcales to the empalement.* Chamæchryſocoma prælongis purpuraſcentibuſque Jacææ capitulis. Barrel. Icon. 406. *Dwarf Goldylocks with longer and purpliſh heads like Knapweed.*
10. GNAPHALIUM (*Orientale*) ſubherbaceum, foliis lineari-lanceolatis ſeſſilibus, corymbo compoſito, pedunculis elongatis. Lin. Sp. 195. *Herbaceous Goldylocks with narrow ſpear-ſhaped leaves, and a compound cluſter of flowers.* Elichryſum Orientale. C. B. P. 264. *Eaſtern Goldylocks, called Immortal Flower.*
11. GNAPHALIUM (*Igneſcens*) fruticoſum, foliis ſublanceolatis tomentoſis ſeſſilibus, corymbis alternis conglobatis, floribus globoſis. Prod. Leyd. 149. *Shrubby Goldylocks, with ſpear-ſhaped woolly leaves ſitting cloſe to the ſtalks, and alternate cluſters of globular flowers.* Elichryſum Germanicum, calyce ex aureo rutilante. Tourn. Inſt. R. H. 452. *German Goldylocks having a reddiſh gold-coloured empalement.*
12. GNAPHALIUM (*Margaritaceum*) herbaceum foliis lineari-lanceolatis acuminatis, alternis, caule ſupernè ramoſo corymbis faſtigiatis. Hort. Cliff. 401. *Herbaceous Goldylocks with narrow, ſpear-ſhaped, pointed leaves placed alternate, and the upper part of the ſtalk branching, with a compact corymbus of flowers.* Elichryſum Americanum latifolium. Tourn. Inſt. R. H. 453. *Broad-leaved American Goldylocks.*
13. GNAPHALIUM (*Fœtidum*) herbaceum foliis amplexicaulibus, integerrimis acutis ſubtus tomentoſis, caule ramoſo. Hort. Cliff. 402. Lin. Sp. Plant. 850. *Herbaceous Goldylocks with entire leaves embracing the ſtalks, woolly on their under ſide, and a branching ſtalk.* Elichryſum Africanum fœtidiſſimum, ampliſſimo folio. Tourn. Inſt. R. H. 454. *Moſt ſtinking African Goldylocks with a large leaf.*
14. GNAPHALIUM (*Argenteum*) foliis amplexicaulibus integerrimis ovatis nervoſis utrinque tomentoſis, caule ramoſo. Hort. Cliff. 402. *Goldylocks with entire acute leaves embracing the ſtalks, woolly on both ſides, and a branching ſtalk.* Elichryſum Africanum fœtidiſſimum ampliſſimo folio calyce argenteo. Tourn. Inſt. 454. *Moſt ſtinking African Goldylocks, with a very large leaf, and a ſilvery empalement to the flower.*
15. GNAPHALIUM (*Undulatum*) herbaceum foliis decurrentibus lanceolatis acutis, undatis, ſubtus tomentoſis, caule ramoſo. Hort. Cliff. 402. *Goldylocks with acute running leaves which are waved, and woolly on their under ſide, and a branching ſtalk.* Elichryſum graveolens acutifolium, caule alato. Hort. Elth. 130. *Stinking Goldylocks, with an acute leaf and winged ſtalk.*
16. GNAPHALIUM (*Cymoſum*) herbaceum foliis lanceolatis trinerviis ſupra glabris caule infernè ramoſo terminali. Hort. Cliff. 401. *Goldylocks with ſpear-ſhaped leaves, having three veins, ſmooth on their upper ſide, and the under branches terminated with flowers.* Elichryſum Africanum folio oblongo, ſubtus incano, ſuprà viridi, flore luteo. Boerh. Ind. alt. 1. 121. *African Goldylocks with an oblong leaf, hoary on the under ſide, and green above, with a yellow flower.*
17. GNAPHALIUM (*Americanum*) caule herbaceo ſimpliciſſimo, foliis lanceolatis obtuſis tomentoſis, floribus ſpicatis lateralibuſque. *Goldylocks with a ſingle herbaceous ſtalk, obtuſe, ſpear-ſhaped, woolly leaves, and flowers growing in ſpikes from the ſides of the ſtalks.* Gnaphalium ad ſtœchadem citrinam accedens. Sloan. Cat. Jam. 125. *Cudweed like golden Caſſidony.*
18. GNAPHALIUM (*Rutilans*) herbaceum foliis linearilanceolatis, caule infernè ramoſo, corymbo compoſito terminali. Hort. Cliff. 401. *Herbaceous Goldylocks with narrow ſpear-ſhaped leaves, the under part of the ſtalk branching, and a compound corymbus terminating the branches.* Elichryſum Africanum, folio oblongo anguſto, flore rubello poſtea aureo. Boerh. Ind. alt. 121. *African Goldylocks with an oblong narrow leaf and a reddiſh flower, which is afterwards yellow.*
19. GNAPHALIUM (*Sanguineum*) herbaceum, foliis decurrentibus lanceolatis tomentoſis planis apiculo nudo terminali. Amœn. Acad. 4. p. 78. *Herbaceous Goldylocks, with ſpear-ſhaped, woolly, running leaves, terminated by a naked point.* Chryſocoma Syriaca, flore atro rubente. Breyn. Cent. 146.
20. GNAPHALIUM (*Fruticoſum*) fruteſcens foliis infernè lanceolatis caulinis lineari-lanceolatis, utrinque tomentoſis, corymbo compoſito terminali. *Shrubby Goldylocks with the under leaves ſpear-ſhaped, thoſe on the ſtalks narrow, ſpear-ſhaped, woolly on both ſides, and the ſtalks terminated by a corymbus of flowers.* Elichryſum Africanum fruteſcens, anguſtis & longioribus foliis incanis. Hort. Amſt. 2. p. 109. *Shrubby African Goldylocks, with longer and narrower leaves which are hoary.*
21. GNAPHALIUM (*Odoratiſſimum*) foliis decurrentibus obtuſis infernè villoſis, corymbis conglobatis terminalibus. *Goldylocks with obtuſe running leaves, hoary on their under ſide, and a cluſtered corymbus of flowers terminating the ſtalk.* Elichryſum foliis linearibus decurrentibus, ſubtus incanis, floribus corymboſis. Fig. Plant. tab. 131. fol. 2. *Goldylocks with narrow running leaves, hoary on their under ſide, and flowers growing in a corymbus.*
22. GNAPHALIUM (*Plantaginifolium*) ſarmentis procumbentibus caule ſimpliciſſimo, foliis radicalibus ovatis maximis,

maximis, ſarmentis procumbentibus. Lin. Sp. Plant. 850. *Goldylocks with a ſimple ſtalk, large oval leaves at bottom, and trailing runners.* Gnaphalium plantaginis folio, Virginianum. Pluk. Alm. 171. *Virginia Goldylocks with a Plantain leaf.*

23. Gnaphalium (*Obtuſifolium*) herbaceum foliis lanceolatis, caule tomentoſo paniculato terminalibus glomeratis conicis. Lin. Sp. Plant. 851. *Goldylocks with ſpear-ſhaped leaves, a woolly ſtalk, terminated by a conical cluſter of flowers.* Elichryſum obtuſifolium, capitulis argenteis conglobatis. Hort. Elth. 130. *Blunt-leaved Goldylocks, with ſilvery heads growing in cluſters.*

24. Gnaphalium (*Spicatum*) foliis lanceolatis decurrentibus tomentoſis, floribus ſpicatis terminalibus lateralibuſque. *Goldylocks with ſpear-ſhaped, woolly, running leaves, and flowers growing in ſpikes at the ends and ſides of the ſtalks.* Elichryſum caule alato, floribus ſpicatis. Sloan. Cat. Jam. 125. *Goldylocks with a winged ſtalk and ſpiked flowers.*

The firſt ſort hath a ſhrubby ſtalk, which riſes about three feet high, branching out into long ſlender ſtalks irregularly; the lower branches are garniſhed with obtuſe leaves, two inches and a half long, and an eighth of an inch broad at the point, but thoſe upon the flower-ſtalks are very narrow, ending in acute points; the whole plant is very woolly: the flowers terminate the ſtalks in a compound corymbus; their empalements are of a ſilvery colour at firſt, and very neat, but afterward turn of a yellowiſh ſulphur colour. If theſe are gathered before the flowers are much opened, the heads will continue in beauty many years, eſpecially if they are kept from the air and duſt. The plants begin to flower in June, and there is a ſucceſſion of flowers all the ſummer, ſome of which will continue in beauty moſt part of the winter. This is generally ſuppoſed to be the true golden Caſſidony of the ſhops, but the ſecond ſort is uſually ſubſtituted for it in England.

It is propagated by ſlips or cuttings, which may be planted in June or July, in a bed of light earth, and covered with glaſſes, or ſhaded with mats, obſerving to refreſh them frequently with water, but it muſt not be given in large quantities; theſe cuttings will put out roots in ſix or eight weeks, then they ſhould be taken up and planted in pots filled with light earth, and placed in a ſhady ſituation till they have taken new root, when they may be removed to an open ſituation, and placed among other hardy exotics, till about the middle or end of October; at which time they ſhould be placed under a common frame, where they may be protected from froſt, but in mild weather they ſhould be expoſed to the open air. With this management in winter, the plants will be much ſtronger than thoſe which are kept in the green-houſe, where they generally draw too weak; for this ſort only wants to be ſheltered from hard froſt, being ſo hardy as in very mild winters to live abroad in warm borders near walls, with little ſhelter.

The ſecond ſort hath a ſhrubby ſtalk, which divides into many ſlender branches, covered with a white bark; theſe form a thick buſhy under ſhrub, and riſe near three feet, garniſhed with very narrow leaves, hoary on their under ſide, but green on their upper, placed without order on every ſide the ſtalks; the flowers are produced in a compound corymbus at the end of the branches; their heads are ſmall, and are of a yellow colour when fully blown; theſe are continued in ſucceſſion moſt part of ſummer. This grows naturally in France and Germany, and is hardy enough to live in the open air in England. It is propagated by ſlips or cuttings, which may be planted in a ſhady border during any of the ſummer months, and in the autumn they may be tranſplanted into the places where they are deſigned to remain. This ſhould have a dry undunged ſoil, in which it is rarely injured unleſs in the moſt ſevere froſt.

The third ſort is an annual plant, which grows naturally in Italy and Sicily; this hath an herbaceous ſtalk, which riſes little more than a foot high, garniſhed with acute indented leaves, which are hoary on their under ſide; the flowers ſtand upon long foot-ſtalks, which riſe far above the branches, each ſuſtaining one ſmall whitiſh flower. Theſe appear in July, and the ſeeds ripen in September. It is propagated by ſeeds, which ſhould be ſown in autumn upon a bed of light earth, where the plants are deſigned to remain; and when the plants come up in the ſpring, they ſhould be thinned where they are too cloſe, and kept clean from weeds, which is all the culture they require.

The fourth ſort is an annual plant with woolly leaves, which riſe with woolly ſtalks about eight inches high, garniſhed with oblong leaves which embrace the ſtalks with their baſe; the flowers grow in cloſe cluſters at the top, and from the ſide of their ſtalks, which are included in dry ſilvery empalements.

There is another ſpecies of this with narrower leaves, not quite ſo woolly; the ſtalks riſe higher, and are more branched; the flowers grow in cloſe bunches on the top of the ſtalks, and are of a pale yellow colour. Both theſe ſorts will come up better from the ſcattered ſeeds, than when they are ſown by art; but if the ſeeds are ſown, it muſt be ſoon after they are ripe, otherwiſe they will not ſucceed. The plants require no other care but to keep them clean from weeds, and thinned where they are too cloſe. They flower in July, and the ſeeds ripen in autumn.

The fifth ſort is an annual plant, which grows naturally in many parts of England, on places which are covered with water in the winter; this is a low branching plant, with ſilvery leaves and dark heads of flowers, but being of no uſe is not cultivated in gardens.

The ſixth ſort is alſo an annual plant with narrow leaves, which are hoary on their under ſide; the ſtalks grow erect about a foot high, and at every joint is produced a ſhort ſpike of white flowers, with dark-coloured empalements. This is found growing naturally in ſome parts of England, ſo is not often admitted into gardens. If the ſeeds of this ſort are permitted to ſcatter, the plants will come up in the ſpring with greater certainty than if ſown, and they will require little culture. Theſe flower in July, and the plants decay ſoon after they have ripened their ſeeds.

The ſeventh ſort grows naturally in the northern parts of England, upon the tops of hills and mountains, where the ſhoots which are ſent out from every ſide of the plant put out roots, whereby it is propagated in great plenty: the leaves of this grow cloſe to the ground, they are narrow at their baſe, but rounded at the end where they are broad; they are near an inch long, and hoary on their under ſide; the ſtalks are ſingle, and riſe about four inches high, terminated by a corymbus of flowers which is ſingle. This flowers in May and June.

There are two varieties of this, one with a purple and the other a variegated flower, which have riſen accidentally from ſeeds, but continue their difference in the gardens. They are eaſily propagated by offsets, which ſhould be planted in the autumn, in a ſhady ſituation, where they will require no other care but to keep them clean from weeds. This plant is called Pes Cati, or *Catsfoot*.

The eighth ſort grows naturally on the Alps. This is a low plant, with under leaves like the laſt mentioned; the ſtalks are ſingle, and riſe about ſix inches high, garniſhed with very ſmall acute leaves, and terminated by four or five oblong flowers, which in ſome plants are white, and in others of a purpliſh colour. They appear about the ſame time as the former ſort, and the plants may be propagated and treated in the ſame manner.

The ninth ſort grows naturally in Spain and Italy. This is a low plant with a ligneous ſtalk, which ſeldom riſes more than ſix inches high, garniſhed with very narrow leaves, white on their under ſide; the flowers are produced from the ſide of the ſtalks, each ſtanding upon a ſeparate foot-ſtalk; their empalements are ſcaly and long, ending in acute ſtiff points, and are of a purpliſh colour. This ſort flowers in July, but ſeldom perfects ſeeds in this country.

The tenth ſort is ſuppoſed to have been brought firſt from India to Portugal, where it has been long propagated for the beauty of its golden heads of flowers, which, if gathered before they are too open, will continue in beauty ſeveral years; ſo that in the winter ſeaſon they ornament their churches with theſe flowers, and many of them are annually brought to England, and ſold for ornaments to the ladies. Theſe plants have a ſhort ſhrubby ſtalk, ſeldom riſing more than three or four inches high, putting out many heads; the leaves are narrow and woolly on both ſides, and come out without order; the flower-ſtalks ariſe from theſe heads; they grow eight or ten inches high, are garniſhed all the way with narrow hoary leaves, and terminated by a compound corymbus of bright yellow flowers with large heads. Theſe begin to flower in May, and there is a ſucceſſion of them moſt part of ſummer. This is propagated by ſlipping off the heads during any of the ſummer months, and after ſtripping off the lower leaves, they ſhould be planted in a bed of light earth, covering them with hand-glaſſes, which muſt be ſhaded every day when the ſun is warm; and the cuttings muſt be ſupplied with water, which ſhould be often repeated, but not in too great quantities; when theſe are rooted they ſhould be planted in pots, and treated in the ſame manner as hath been directed for the firſt ſort. Theſe plants in mild winters will live abroad in a very warm border with little ſhelter, and the hardier they are treated, the greater number of flowers they will produce; for when they are drawn weak in a green-houſe, they never flower ſo ſtrong.

The eleventh ſort hath very woolly ſtalks and leaves, which are much longer than thoſe of the tenth; the ſtalks riſe a foot high, ſending out a few ſide branches; theſe are terminated by a compound corymbus of flowers, whoſe heads are ſmall, and of a gold colour, changing a little red as they fade. This is propagated by ſlips in the ſame manner as the laſt mentioned, but the plants will live in the open air, if they are planted on a dry ſoil.

The twelfth ſort grows naturally in North America, but has been long in the Engliſh gardens. This hath a creeping root, which ſpreads far in the ground, ſo as to become a troubleſome weed very often, unleſs it is kept within bounds; the ſtalks of this are woolly, riſing a foot and a half high, garniſhed with long leaves ending in acute points, which are placed alternate, and are woolly on their under ſide; the upper part of the ſtalk branches into two or three diviſions, each being terminated by a cloſe corymbus of flowers, with pretty large ſilvery empalements, which, if gathered and properly dried, will retain their beauty ſeveral years. This ſort will thrive in almoſt any ſoil or ſituation, and is eaſily propagated by its creeping roots. It flowers in June and July, and the ſtalks decay in autumn.

The thirteenth ſort grows naturally at the Cape of Good Hope. This is an annual plant, which ſends out many oblong blunt leaves near the root; the ſtalks riſe a foot and a half high, garniſhed with leaves placed alternate, which are broad at their baſe where they embrace the ſtalks, but end in acute points; they are woolly, and when handled, emit a very rank odour; the ſtalks are terminated by a corymbus of flowers, in large ſilvery empalements, which will retain their beauty ſeveral years.

The fourteenth ſort grows naturally at the Cape of Good Hope, and is an annual plant, very like the former ſort, but the leaves are of a yellowiſh green on their upper ſide, and woolly on their under; the ſtalks branch, and the heads of flowers are of a bright yellow colour, and theſe differences are permanent. Both theſe plants are propagated by ſeeds, which, if ſown in the autumn on a warm border, will more certainly ſucceed, than when they are ſown in the ſpring; or if the ſeeds are permitted to ſcatter, the plants will come up without care, and may be tranſplanted while they are young, to the places where they are deſigned to remain: when the plants have taken root, they will require no other care but to keep them clean from weeds. They flower in July, and the ſeeds ripen in autumn.

The fifteenth ſort grows in Africa, and alſo in North America, from both theſe countries I have received the ſeeds. It is an annual plant, with oblong leaves at the bottom, which are a little waved, and hoary on their under ſide. The ſtalks riſe about a foot high, and are garniſhed with acute-pointed leaves; from their baſe runs a border or wing along the ſtalk; the whole plant has a diſagreeable odour. The flowers grow in a corymbus on the top of the ſtalks, they are white, and appear in July. The ſeeds ripen in the autumn, which, if permitted to ſcatter, the plants will come up without care, as the two former ſorts.

The ſixteenth ſort riſes with a ſhrubby ſtalk three or four feet high, ſending out many branches from the lower part, garniſhed with narrow ſpear-ſhaped leaves, which half embrace the ſtalks with their baſe; they are of a dark green on their upper ſide, but are hoary on their under; the ſtalks are terminated by a compound corymbus of yellow flowers, whoſe heads are ſmall: theſe continue in ſucceſſion great part of the ſummer, but are rarely ſucceeded by ſeeds in England. It is eaſily propagated by cuttings in any of the ſummer months, which may be planted in a ſhady border, and duly watered. Theſe will take root in a month or five weeks, and may then be taken up and planted in pots, placing them in a ſhady ſituation till they have taken freſh root; then they may be removed to a ſheltered ſituation, and placed with other hardy green-houſe plants till autumn, when they muſt be carried into the green-houſe, where, during the winter ſeaſon, they ſhould have as much free air as poſſible in mild weather, for they only require protection from froſt, ſo they ſhould be treated in the ſame manner as other hardy green-houſe plants.

The ſeventeenth ſort is an annual plant, which grows naturally in France, Italy, and Spain. This hath a woolly herbaceous ſtalk, which riſes ſix or eight inches high, garniſhed with obtuſe, ſpear-ſhaped, woolly leaves. The flowers are produced in ſhort ſpikes from the ſide, and at the top of the ſtalks; they are of a ſilvery colour, and appear in June and July. The ſeeds ripen in autumn, which, if permitted to ſcatter, the plants will come up without care, and require no other culture, but to keep them clean from weeds.

The eighteenth ſort grows naturally at the Cape of Good Hope; this riſes with a ſlender ſhrubby ſtalk, which ſends out many lateral branches below; theſe are garniſhed with very narrow leaves, which are hoary on their under ſide. The flowers are produced in a compound corymbus at the end of the branches; they are at their firſt appearance of a pale red colour, but afterward change to a gold colour; the empalements of this ſort are ſmall, and dry like the other ſpecies of this genus. This ſort is propagated by cuttings, in the ſame manner as the ſixteenth, and the plants require the ſame treatment.

The nineteenth ſort grows naturally in Egypt and Paleſtine. This is a perennial plant, whoſe under leaves ſpread near the ground; they are woolly on their under ſide; the ſtalks riſe about ſix inches high; the leaves upon theſe are ſpear-ſhaped, ending in acute points; the ſtalks and leaves are woolly, and the ſtalk is terminated by a large corymbus of flowers ſitting very cloſe; theſe are of a fine ſoft red colour, ſo make a pretty appearance in the month of June, when they are in beauty.

This ſort is propagated by offſets in the ſame manner as the ſeventh and eighth ſorts, but this doth not produce them in plenty, ſo is very uncommon in the Engliſh gardens at preſent: it requires a drier ſoil than the ſeventh, and a warmer ſituation, but not too much expoſed to the mid-day ſun, ſo ſhould be planted to a ſouth-eaſt aſpect.

The twentieth ſort grows naturally at the Cape of Good Hope, but has been long preſerved in many curious gardens in Europe; the ſtalk riſes three or four feet high, ſending out ſeveral long irregular branches, which are terminated by a compound co-

rymbus

rymbus of flowers. The heads of this ſort are compoſed of leaves, which are much longer than thoſe of any other ſort; the heads of the flowers are of a bright ſilver colour. This is propagated by cuttings, which ſhould be planted in the ſame manner as hath been directed for the tenth ſort, and the plants ſhould alſo be treated in the ſame way.

The twenty-firſt ſort was raiſed from ſeeds in the Chelſea garden, which came from the Cape of Good Hope; the lower leaves of this are oblong and blunt. The ſtalks are ſhrubby, and divide into many irregular branches, which riſe about three feet high; theſe are garniſhed with oblong blunt-pointed leaves, hoary on their under ſide, but of a dark green above; from the baſe of the leaves runs a border along the ſtalk, like a wing, of the ſame conſiſtence with the leaves, ſo is what the former botaniſts termed a winged ſtalk, but Dr. Linnæus calls it a running leaf. The ſtalks are terminated by a compound corymbus of flowers, which are very cloſely joined together, and are of a bright gold colour, but the flowers are ſmall, and change to a darker colour as they fade; there is a ſucceſſion of theſe flowers moſt part of the ſummer, and the early flowers are frequently ſucceeded by ſeeds in England. Thi ſſort may be propagated by ſlips, or cuttings, in the ſame manner as the tenth, and the plants may be treated in the ſame manner as is directed for that. It is engraven in the 131ſt plate of the figures of plants.

The twenty-ſecond ſort grows naturally in North America, from whence the ſeeds have been brought to England; this is a perennial plant, whoſe lower leaves are large and oval; from the main ſtalk there come out runners, which take root in the ground, and have young plants at their extremity. The ſtalks are ſingle, and garniſhed with narrower woolly leaves, placed alternate. The flowers are produced at the top of the ſtalks in a corymbus, they are of a white colour and ſmall. They appear in June and July, and ſometimes are ſucceeded by ſeeds, but the plants propagate ſo faſt by offſets, that the ſeeds are little regarded; this will thrive in the open air, if planted in a dry ſoil and a warm ſituation.

The twenty-third ſort grows naturally in North America; it is an annual plant, with woolly obtuſe leaves. The ſtalks are ſingle, and riſe about nine inches high. The flowers grow in ſpikes from the ſide of the ſtalks; they are of a dirty white colour, ſo make no great appearance. If the ſeeds of this are permitted to ſcatter, the plants will riſe without trouble, and only require to be kept clean from weeds.

The twenty-fourth ſort grows naturally in Jamaica, and other of the hot parts of America; this riſes with a ſhrubby ſtalk about two feet high, garniſhed with leaves about the ſize and ſhape of thoſe of Sage, but woolly on their under ſide, and much veined; from the baſe of each leaf runs a border along the ſtalk. The flowers are produced in ſpikes from the ſide, and at the end of the ſtalk; theſe are long, and cloſely joined in the ſpike. It flowers in July and Auguſt, but never perfects ſeeds in England.

It is propagated by ſeeds, which ſhould be ſown on a hot-bed in pots, becauſe the plants do not often riſe the ſame year; therefore when it ſo happens, the pots ſhould be placed in the ſtove in winter, and the following ſpring put upon a freſh hot-bed to bring up the plants; when theſe appear they muſt be planted into pots, and kept conſtantly in the hot-bed, otherwiſe they will not thrive in England.

GNAPHALODES. See Micropus.

GNIDIA.

The Characters are,

It hath a funnel-ſhaped empalement of one coloured leaf, with a long tube divided into four ſegments; the flower hath four plain petals ſhorter than the empalement inſerted to it, and eight briſtly erect ſtamina, terminated by ſimple ſummits, and an oval germen ſupporting a ſlender ſtyle on the ſide inſerted with the ſtamina, crowned by a ſtinging ſtigma; the germen afterward becomes one oval oblique-pointed ſeed, incloſed in the empalement.

This genus of plants is ranged in the firſt order of

Linnæus's eighth claſs, intitled Octandria Monogynia, the flower having eight ſtamina and one ſtyle.

We have but one Species of this genus, viz.

1. Gnidia (*Pinifolia*) foliis ſparſis lineari-ſubulatis, floribus verticillatis, aggregatis terminalibus. Lin. Sp. 512. *Gnidia with linear awl-ſhaped leaves, and flowers placed cloſely in whorls terminating the branches.* Rapunculus foliis nervoſis linearibus, floribus argenteis non galeatis. Burm. Afr. 112.

This plant grows naturally in Æthiopia. It hath a low ſhrubby ſtalk, which riſes three or four feet high, ſending out a few ſide branches, garniſhed with narrow, oblong, acute-pointed leaves, which are green on their upper ſide, but pale on their under, with a ſtrong longitudinal nerve, reſembling the leaves of Roſemary: the flowers come out almoſt in whorls from between the leaves on the extremity of the branches, ſtanding on ſhort foot-ſtalks; they have long ſlender tubes, and are divided at the top into four ſegments which ſpread horizontally, having eight very ſhort ſtamina in the bottom of the tube, and an oval germen with a ſlender ſtyle faſtened to the ſide of the ſtamina; the germen is afterward ſucceeded by one oval-pointed ſeed. There are two varieties of this, one with a white, and the other hath a blue flower.

This is uſually propagated here by cuttings, which if carefully planted during the ſummer months, in pots filled with light earth, plunged into a very moderate hot-bed, covering the pots cloſely with either bell or hand-glaſſes to exclude the air, being careful to ſhade the glaſſes daily, the cuttings will put out roots in ſix weeks, when they ſhould be gradually inured to the open air. In winter the plants ſhould be placed in a dry airy glaſs-caſe, where they may enjoy free air in mild weather, but protected from froſt and damp air.

GOMPHRENA. Lin. Gen. Plant. 279. Amaranthoides. Tourn. Inſt. R. H. 654. tab. 420.

The Characters are,

The flower hath a large three-leaved empalement, which is coloured and permanent. The petal is erect, and cut into five parts at the top; it hath a cylindrical tubulous empalement the length of the petal, cut into five ſmall parts at the brim, which ſpread open; it hath five ſtamina ſcarcely diſcernible, ſituated in the brim of the nectarium, terminated by ſummits, ſhut up in the mouth of the nectarium. In the center is ſituated an oval-pointed germen, with two ſmall ſtyles, crowned with ſingle ſtigma the length of the ſtamina. The germen afterward becomes one large roundiſh ſeed, incloſed in a thin cruſted capſule with one cell.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, intitled Pentandria Digynia, which includes the plants whoſe flowers have five ſtamina and two ſtyles.

The Species are,

1. Gomphrena (*Globoſa*) caule erecto, foliis ovato-lanceolatis, capitulis ſolitaris, pedunculis diphyllis. Hort. Cliff. 86. *Gomphrena with an erect ſtalk, oval ſpear-ſhaped leaves, ſingle heads, and foot-ſtalks having two leaves.* Amaranthoides Lychnidis folio, capitulis purpureis. Tourn. Inſt. R. H. 654. *Globe Amaranthus with purple heads.*
2. Gomphrena (*Serrata*) caule erecto, ſpicâ interruptâ. Prod. Leyd. 419. *Gomphrena with an erect ſtalk, and an interrupted ſpike of flowers.*
3. Gomphrena (*Perennis*) foliis lanceolatis, capitulis diphyllis, floſculis perianthio proprio diſtinctis. Lin. Sp. Plant. 224. *Gomphrena with ſpear-ſhaped leaves, two leaves to the heads, and each floret having its proper empalement.* Amaranthoides perenne, floribus ſtramineis radiatis. Hort. Elth. 24. tab. 20. *Perennial Globe Amaranthus with radiated ſtraw-coloured flowers.*

The firſt ſort grows naturally in India, from whence the ſeeds were brought to Europe, and the plants have been many years cultivated in all the curious gardens: it is an annual plant, which riſes with an upright branching ſtalk about two feet high, garniſhed with ſpear-ſhaped leaves placed oppoſite. The branches alſo come out oppoſite, and the foot-ſtalks of the flowers, which are long and naked, having two ſhort leaves,

leaves, close under each head of flowers arises from the forks of the branches. The heads at their first appearance are globular, but as they increase in size become oval; these are composed of dry scaly leaves or petals, placed imbricatim like the scales of fish; under each of these is situated a tubulous flower, which just peeps out of the covering, but these are not much regarded by the generality of people; for the scaly empalement which covers them is so beautiful, and these if gathered before they are too much faded, will retain their beauty several years. After the flowers are past, the germen, which is situated in the bottom of each, becomes a large oval seed, inclosed in a chaffy covering, which ripens late in autumn, and the plants decay soon after.

There are two varieties of this sort, one with fine bright purple heads, the other hath white or silvery heads, and these never alter from seeds, so that they are permanent varieties, though in other respects they do not differ: there is also one with mixed colours, but whether this arose accidentally from the seeds of either of the former, I cannot determine, for this variety continues from seeds, and the other two I have cultivated more than thirty years, and have never found either of them vary.

There are also two varieties of these which grow naturally in the West-Indies, one with purple, and the other with white heads, which are much smaller and rounder than those before-mentioned. The plants grow much larger, and spread more into branches, and they are later before they flower, so that in cold seasons the seeds rarely ripen in England; these are called Bachelors Buttons by the inhabitants of America, but whether they are specifically different from the others, I cannot with certainty determine.

The second sort hath much slenderer stalks than the first, which grow taller, and are irregular. The leaves are smaller, but of the same shape. The flowers grow in spikes at the end of the branches, which are broken, or divided into three or four parts with spaces between them. The spikes are small, and of a pale purple colour. The seeds of this sort were sent me by the late Dr. Houstoun from Campeachy.

The third sort hath slender upright stalks, which are garnished with spear-shaped leaves placed opposite; they are hairy, and sit close to the stalks, which also are hairy, and terminated by small heads of flowers, which spread open from each other, so as that the empalement appear distinct; these are of a pale straw colour, and appear in July. The seeds sometimes will ripen in England, but the plants will live two or three years, if they are preserved in a stove.

The two sorts with large heads of flowers which are first mentioned, one with purple, and the other which is silver-coloured, are very ornamental plants in gardens, and are now very commonly cultivated in the English gardens. In Portugal, and other warm countries, they are cultivated to adorn their churches in the winter; for if these are gathered when they are fully grown, and dried in the shade, they will retain their beauty a long time, especially if they are not exposed to the air; these plants are annual, so are only propagated by seeds, which should be sown on a good hot-bed the beginning of March; but if the seeds are not taken out of their chaffy covering, it will be proper to soak them in water for twelve hours before they are sown, which will greatly facilitate their growing. When the plants are come up half an inch high, they should be transplanted on a fresh hot-bed, at about four inches distance, observing to shade them till they have taken root; then they should have fresh air admitted to them every day, in proportion to the warmth of the season; they will also require to be frequently refreshed with water. In about a month's time, if the hot-bed is of a proper warmth, the plants will have grown so large, as to nearly meet, therefore they will require more room, otherwise they will draw up weak; then a fresh hot-bed should be prepared, into which there should be a sufficient number of three farthing pots plunged, filled with light rich earth, and when the bed is in a proper temperature of warmth, the plants should be carefully taken up with balls of earth to their roots, and each planted into a separate pot, observing to shade them till they have taken new root, afterward they must be treated in the same manner as other tender exotic plants. When the plants have filled these pots with their roots, they should be shaken out of the pots, and their roots on the outside of the ball of earth must be carefully pared off; then they should be put into pots a size larger, and when there is conveniency of a deep frame, to plunge the pots into another gentle hot-bed, it will bring the plants early to flower, and cause them to grow much larger than those which are placed abroad. In July the plants should be inured gradually to bear the open air, into which they may be removed about the middle of that month, and intermixed with other annual plants to adorn the pleasure-garden; but it will be proper to keep a plant or two of each sort in shelter for seeds, because when the autumn proves cold or wet, those plants which are exposed abroad, seldom produce good seeds.

GOOSEBERRY. See GROSSULARIA.

GORTERIA.

The CHARACTERS are,

The empalement of the flower is stiff, scaly, ending in bristly spines; the flower is composed of hermaphrodite florets in the disk, and female in the rays or border; the hermaphrodite florets are funnel-shaped, five-pointed, having five short stamina terminated by cylindrical summits, with a hairy germen supporting a slender style, crowned by a bifid stigma; the germen afterward becomes one roundish seed, surrounded by fine hairs. The female florets are tongue-shaped, have no style or stigma, and are barren.

This genus of plants is ranged in the third section of Linnæus's nineteenth class, intitled Syngenesia Polygamia frustranea, the flowers being composed of hermaphrodite florets in the disk which are fruitful, and female florets in the border, having neither style or stigma, so are barren.

The SPECIES are,

1. GORTERIA (*Ringens*) scapis unifloris, foliis lanceolatis pinnatifidis, caule depresso. Amœn. Acad. 6. p. 86. *Gorteria with one flower on each foot-stalk, spear-shaped, wing-pointed leaves, and a depressed stalk.* Arctotis ramis decumbentibus, foliis lineari-lanceolatis rigidis subtus argenteis. Ed. prior.
2. GORTERIA (*Fruticosa*) foliis lanceolatis integris dentato-spinosis subtus tomentosis, caule fruticoso. Lin. Sp. 1284. *Gorteria with entire spear-shaped leaves, whose indentures end in spines, woolly on their under side, and a shrubby stalk.* Carthamus Africanus frutescens, folio ilicis, flore aureo. Walth. Hort. 13. tab. 7.

The first sort grows naturally at the Cape of Good Hope; it is a low spreading plant, with ligneous stalks six or eight inches long trailing on the ground, having two or three side branches, each terminating in a close head of leaves, which are narrow, green on their upper side, but silvery on their under, cut into three or five segments at their ends. The foot-stalks of the flowers arise from the heads, and are six inches long, naked, supporting one large Orange-coloured flower at the top, composed of several hermaphrodite florets in the disk, which are fruitful; but the female half florets on the border are tongue-shaped, spreading open, each having a dark mark toward their base, with a white spot intermixed. The flowers appear in May and June, but are seldom succeeded by seeds in England.

This plant is easily propagated by cuttings planted in a shady border during any of the summer months, and the plants must be afterward treated as is directed for ARCTOTIS.

The second sort grows naturally at the Cape of Good Hope. This rises with a shrubby slender stalk three feet high, sending out a few weak branches, garnished with oblong leaves sitting close to the branches; they are smooth on their upper side, woolly underneath, and indented on their edges, each indenture ending with a weak spine. The flowers terminate the stalks, having

having leafy empalements ending with ſpines; the flowers are yellow, and appear in the ſummer months, but are not ſucceeded by ſeeds in England.

It is propagated by planting of the ſmall heads at the end of the branches, in June or July, which muſt be cloſely covered with either bell or hand-glaſſes, or they will not ſucceed, and ſhould be carefully ſcreened from the ſun. When theſe are well rooted, they ſhould be put each into a ſmall pot, and in winter ſhould be placed in an airy glaſs-caſe ſecure from damps.

GORZ. See ULEX.

GOSSYPIUM. Lin. Gen. Plant. 755. Xylon. Tourn. Inſt. R. H. 101. tab. 27. Cotton.

The CHARACTERS are,

The flower has a double empalement; the outer is large, of one leaf, and cut half way into three ſegments; the inner is cup-ſhaped, of one leaf, cut into five obtuſe ſegments at the top. It hath five plain heart-ſhaped petals, which join at their baſe, and ſpread open. It hath a great number of ſtamina, which are joined at bottom in a column, but are looſe above, and inſerted into the petals; theſe are terminated by kidney-ſhaped ſummits. It hath a round germen, ſupporting four ſtyles, joined in the column, and are the ſame length of the ſtamina, crowned by four thick ſtigmas. The germen afterward becomes a roundiſh capſule, ending in a point, having four cells, which are filled with oval ſeeds, wrapped up in down.

This genus of plants is ranged in the third ſection of Linnæus's ſixteenth claſs, intitled Monodelphia Polyandria, which includes the plants whoſe flowers have many ſtamina, which are joined together with the ſtyles in one column or body.

The SPECIES are,

1. GOSSYPIUM (*Herbaceum*) foliis quinquelobis, caule herbaceo lævi. Hort. Upſal. 203. *Cotton with leaves having five lobes, and a ſmooth herbaceous ſtalk.* Goſſypium. Camer. Epit. 203. *The common herbaceous Cotton.*
2. GOSSYPIUM (*Barbadenſe*) foliis trilobis integerrimis ſubtus biglanduloſis. Hort. Upſal. 205. *Cotton-tree with entire leaves, having three lobes with three glands under their ſide.* Goſſypium fruteſcens annuum, folio trilobo Barbadenſe. Pluk. Alm. 172. tab. 188. *Shrubby annual Barbadoes Cotton, with leaves having three lobes.*
3. GOSSYPIUM (*Arboreum*) foliis palmatis, lobis lanceolatis, caule fruticoſo. Lin. Sp. Plant. 693. *Cotton with hand-ſhaped leaves, having five ſpear-ſhaped lobes, and a ſhrubby ſtalk.* Xylon arboreum, flore flavo. Tourn. Inſt. R. H. 101. *Tree Cotton with a yellow flower.*
4. GOSSYPIUM (*Hirſutum*) foliis trilobis & quinquelobiſque acutis, caule ramoſo hirſuto. *Cotton with leaves having three and five lobes, ending in acute points, and a hairy branching ſtalk.* Xylon Americanum præſtantiſſimum, ſemine vireſcente. Lign. Tourn. Inſt. R. H. 101. *Fineſt American Cotton with a green ſeed.*

The firſt ſort is the common Levant Cotton, which is cultivated in ſeveral Iſlands of the Archipelago, as alſo in Malta, Sicily, and the kingdom of Naples; it is ſown in tilled ground in the ſpring of the year, and is ripe in about four months after, when it is cut down in harveſt as Corn is in England; the plants always periſh ſoon after the ſeeds are ripe: this plant grows about two feet high, with an herbaceous ſtalk, garniſhed with ſmooth leaves divided into five lobes. The ſtalks ſend out a few weak branches upward, which are garniſhed with leaves of the ſame form but ſmaller. The flowers are produced near the extremity of the branches, at the foot-ſtalks of the leaves; theſe have two large empalements, the outer is cut into three parts, and the inner into five. The petals of the flower are of a pale yellow colour, inclining to white; theſe are ſucceeded by oval capſules, which open in four parts, having four cells, which are filled with ſeeds wrapped up in down, which is the Cotton.

The ſecond ſort grows naturally in ſeveral iſlands of the Weſt-Indies; this riſes with a ſhrubby ſmooth ſtalk four or five feet high, ſending out a few ſide branches, which are garniſhed with ſmooth leaves, divided into three lobes. The flowers are produced toward the end of the branches, which are ſhaped like thoſe of the former ſort, but are larger, and of a deeper yellow colour. The pods are larger, and the ſeeds are black.

The third ſort hath a perennial ſhrubby ſtalk, which riſes ſix or eight feet high, and divides into many ſmooth branches, garniſhed with hand-ſhaped leaves, having four or five lobes. The flowers are produced toward the end of the branches; theſe are larger than thoſe of the two former ſorts, and are of a deep yellow colour. The pods of this ſort are larger than thoſe of the former.

The fourth ſort is a native of the Eaſt and Weſt-Indies, from whence the ſeeds have been brought to Europe; this is alſo an annual plant, which periſhes ſoon after the ſeeds are ripe. It riſes to the height of three feet or more, and ſends out many lateral branches, which extend to a great diſtance, where they are allowed room to grow; theſe are hairy, and garniſhed with leaves, having in ſome three, and others five acute-pointed lobes, with ſhort hairy down on their ſurface. The flowers are produced from the ſide, and at the end of the branches; theſe are large, of a dirty ſulphur colour, each petal having a large purple ſpot at the baſe, and are ſucceeded by oval pods, which open into four cells, which are filled with oblong green ſeeds wrapped up in a ſoft down. Where the plants have room to ſpread, their branches will produce four or five pods of Cotton upon each, ſo that from a ſingle plant, thirty or more pods may be produced; and each of theſe are as large as middling Apples, ſo there will be a much greater produce from this than from any other ſort, and the ſtaple is much finer; therefore it is well worth the attention of the inhabitants of the Britiſh colonies in America to cultivate and improve this ſort, ſince it will ſucceed in Carolina, where it it has been cultivated for ſome years; and might be a commodity worthy of encouragement by the public, could they contrive a proper gin to ſeparate the Cotton from the ſeeds, to which this ſort adheres much cloſer than any of the other ſorts, the Cotton from this ſhrub being preferable to any other yet known. All theſe ſorts are very tender plants, therefore will not thrive in the open air in England, but they are frequently ſown in curious gardens for variety: the firſt and fourth ſorts will produce ripe ſeeds in England, if their ſeeds are ſown early in the ſpring, upon a good hot-bed; and when the plants are come up, planted each into ſeparate pots, and plunged into a hot-bed of tanners bark to bring them forward; and when they are grown too tall to remain under the frames, removed into the tan-bed in the ſtove, and ſhifted into larger pots, when their roots have filled the other; with this management I have had their flowers appear in July, and toward the end of September the ſeeds have been perfectly ripe, and the pods as large as thoſe produced in the Eaſt and Weſt-Indies; but if the plants are not brought forward early in the ſpring, it will be late in the ſummer before the flowers will appear, and there will be no hopes of the pods coming to perfection.

The Shrub-cotton will riſe from the ſeeds very eaſily, if they are ſown upon a good hot-bed; and when they are ſown early in the ſpring, and brought forward in the ſame manner as hath been directed for the former ſorts, the plants will grow to be five or ſix feet high the ſame ſummer; but it is difficult to preſerve the plants through the winter, unleſs they are hardened gradually in Auguſt during the continuance of the warm weather; for when they are forced on at that time, they will be ſo tender, as to render them incapable of reſiſting the leaſt injury. The plants of this ſort muſt be placed in the bark-ſtove in autumn, and kept in the firſt claſs of heat, otherwiſe they will not live through the winter in England.

GRAFTING is the taking a ſhoot from one tree, and inſerting it into another, in ſuch a manner, as that both may unite cloſely, and become one tree; this is called by the ancient writers in huſbandry and gardening, inciſion, to diſtinguiſh it from inoculating, or budding, which they call inſerere oculos.

The uſe of grafting is to propagate any curious ſorts of fruits, ſo as to be certain of the kinds, which cannot be done by any other method; for as all the good fruits have been accidentally obtained from ſeeds, ſo the ſeeds of theſe, when ſown, will many of them degenerate, and produce ſuch fruit as are not worth cultivating; but when ſhoots are taken from ſuch trees as produce good fruit, theſe will never alter from their kind, whatever be the ſtock, or tree, on which they are grafted; for though the grafts receive their nouriſhment from the ſtocks, yet their varieties are never altered by them, but continue to produce the ſame kind of fruit as the tree from which they were taken; the only alteration is, that when the ſtocks on which they are grafted do not grow ſo faſt, and afford a ſufficient ſupply of nouriſhment to the grafts, they will not make near ſo great progreſs as they otherwiſe would do, nor will the fruit they produce be ſo fair, and ſometimes not ſo well flavoured.

Theſe ſhoots are termed cions, or graffs; in the choice of theſe the following directions ſhould be carefully obſerved. 1ſt, That they are ſhoots of the former year, for when they are older, they never ſucceed well. 2dly, Always to take them from healthy fruitful trees, for if the trees are ſickly from whence they are taken, the grafts very often partake ſo much of the diſtemper as rarely to get the better of it, at leaſt for ſome years; and when they are taken from young luxuriant trees, whoſe veſſels are generally large, they will continue to produce luxuriant ſhoots, and are ſeldom ſo fruitful as thoſe which are taken from fruitful trees, whoſe ſhoots are more compact, and the joints cloſer together; at leaſt it will be a great number of years before the luxuriant grafts begin to produce fruit, if they are managed with the greateſt ſkill. 3dly, You ſhould prefer thoſe grafts which are taken from the lateral, or horizontal branches, to thoſe from the ſtrong perpendicular ſhoots, for the reaſons before given.

Theſe grafts, or cions, ſhould be cut off from the trees before their buds begin to ſwell, which is generally three weeks or a month before the ſeaſon for grafting; therefore, when they are cut off, they ſhould be laid in the ground with the cut downwards, burying them half their length, and covering their tops with dry litter, to prevent their drying; if a ſmall joint of the former year's wood is cut off with the cion, it will preſerve it the better, and when they are grafted, this may be cut off; for at the ſame time the cions muſt be cut to a proper length before they are inſerted in the ſtocks; but, till then, the ſhoots ſhould remain their full length, as they were taken from the tree, which will preſerve them better from ſhrinking; if theſe cions are to be carried to a conſiderable diſtance, it will be proper to put their ends into a lump of clay, and to wrap them up in moſs, which will preſerve them freſh for a month, or longer; but theſe ſhould be cut off earlier from the trees than thoſe which are to be grafted near the place where the trees are growing.

Having given directions for the cions and grafts, we next come to that of the ſtock, which is a term applied to the trees intended for grafting; theſe are either ſuch old trees as are already growing in the places where they are to remain, whoſe fruit is intended to be changed, or young trees, which have been raiſed in a nurſery for a ſupply to the garden; in the former caſe there is no other choice, but that of the branches, which ſhould be ſuch as are young, healthy, well ſituated, and have a ſmooth bark; if theſe trees are growing againſt walls, or eſpaliers, it will be proper to graft ſix, eight, or ten branches, according to the ſize of the trees, by which they will be much ſooner furniſhed with branches again, than when a leſs number of cions are put in; but in ſtandard-trees, four, or at moſt ſix cions will be ſufficient.

In the choice of young ſtocks for grafting, you ſhould always prefer ſuch as have been raiſed from the ſeed, and that have been once or twice tranſplanted. Next to theſe, are thoſe ſtocks which have been raiſed from cuttings, or layers, but thoſe which are ſuckers from the roots of other trees ſhould always be rejected, for theſe are never ſo well rooted as the others, and conſtantly put out a great number of ſuckers from their roots, whereby the borders and walks of the garden will be always peſtered with them during the ſummer ſeaſon, which is not only unſightly, but they alſo take off part of the nouriſhment from the trees.

If theſe ſtocks have been allowed a proper diſtance in the nurſery where they have grown, the wood will be better ripened, and more compact than thoſe which have grown cloſe and have been there drawn up to a greater height; the wood of theſe will be ſoft, and their veſſels large, ſo that the cions grafted into them will ſhoot very ſtrong, but they will be leſs diſpoſed to produce fruit than the other; and when trees acquire an ill habit at firſt, it will be very difficult to reclaim them afterward.

Having directed the choice of cions and ſtocks, we come next to the operation, in order to which you muſt be provided with the following tools.

1. A neat ſmall hand-ſaw to cut off the heads of large ſtocks.
2. A good ſtrong knife with a thick back, to make clefts in the ſtocks.
3. A ſharp penknife to cut the grafts.
4. A grafting chiſſel and a ſmall mallet.
5. Baſs ſtrings, or woollen yarn, to tie the grafts with, and ſuch other inſtruments and materials as you ſhould find neceſſary, according to the manner of grafting you are to perform.
6. A quantity of clay, which ſhould be prepared a month before it is uſed, and kept turned and mixed, like mortar every other day, which is to be made after the following manner:

Get a quantity of ſtrong fat loam (in proportion to the quantity of trees intended to be grafted, then take ſome new ſtone-horſe dung, and break it in amongſt the loam, and if you cut a little ſtraw, or hay, very ſmall, and mix amongſt it, the loam will hold together the better; and if there be a quantity of ſalt added, it will prevent the clay from dividing in dry weather; theſe muſt be well ſtirred together, putting water to them after the manner of making mortar; it ſhould be hollowed like a diſh, and filled with water, and kept every other day ſtirred; but it ought to be remembered, that it ſhould not be expoſed to the froſt, or drying winds, and the oftener it is ſtirred and wrought the better.

Of late years ſome perſons have made uſe of another compoſition for grafting, which they have found to anſwer the intention of keeping out the air, better than the clay before deſcribed. This is compoſed of turpentine, bees-wax, and roſin, melted together, which, when of a proper conſiſtence, may be put on the ſtock round the graft, in the ſame manner as the clay is uſually applied; and though it be not above a quarter of an inch thick, yet it will keep out the air more effectually than the clay; and as cold will harden this, there is no danger of its being hurt by froſt, which is very apt to cauſe the clay to cleave, and ſometimes fall off; and when the heat of ſummer comes on, this mixture will melt, and fall off without any trouble. In uſing of this, there ſhould be a tin, or copper-pot, with conveniency under it to keep a very gentle fire with ſmall-coal, otherwiſe the cold will ſoon condenſe the mixture; but you muſt be careful not to apply it too hot, leſt you injure the graft. A perſon who is a little accuſtomed to this compoſition, will apply it very faſt, and it is much eaſier for him than clay, eſpecially if the ſeaſon ſhould prove cold.

There are ſeveral ways of grafting, the principal of which are four:

1. Grafting in the rind, called alſo ſhoulder-grafting, which is only proper for large trees; this is called crown-grafting, becauſe the grafts are ſet in form of a circle, or crown, and is generally performed

formed about the latter end of March, or the beginning of April.

2. Cleft-grafting, which is alſo called ſtock, or ſlit-grafting; this is proper for trees or ſtocks of a leſſer ſize, from an inch, to two inches or more diameter; this grafting is to be performed in the months of February and March, and ſupplies the failure of the eſcutcheon way, which is practiſed in June, July, and Auguſt.

3. Whip-grafting, which is alſo called tongue-grafting; this is proper for ſmall ſtocks of an inch, half an inch, or leſs, diameter; this is the moſt effectual way of any, and which is moſt in uſe.

4. Grafting by approach, or ablactation; this is to be performed when the ſtock you would graft on, and the tree from which you take your graft, ſtand ſo near together, that they may be joined; this is to be performed in the month of April, and is alſo called inarching, and is chiefly uſed for Jaſmines, Oranges, and other tender exotic trees.

We come next to the manner of performing the ſeveral ways of grafting.

The firſt method, which is termed rind, or ſhoulder-grafting, is ſeldom practiſed but on large trees, where either the head, or the large branches, are cut off horizontally, and two or four cions put in, according to the ſize of the branch, or ſtem; in doing of this, the cions are cut flat on one ſide, with a ſhoulder to reſt upon the crown of the ſtock; then the rind of the ſtock muſt be raiſed up, to admit the cion between the wood and the bark of the ſtock, which muſt be inſerted about two inches, ſo as the ſhoulder of the cion may meet, and cloſely join the crown of the ſtock; and after the number of cions are inſerted, the whole crown of the ſtock ſhould be well clayed over, leaving two eyes of the cions uncovered therewith, which will be ſufficient for ſhooting; this method of grafting, was much more in practice formerly than at preſent; the diſcontinuance of it was occaſioned by the ill ſucceſs it was attended with; for as theſe cions were placed between the rind of the ſtock and the wood, ſo they are frequently blown out by ſtrong winds, after they had made large ſhoots, which has ſometimes happened after five or ſix years growth; ſo that whenever this method is practiſed, there ſhould be ſome ſtakes faſtened to ſupport the cions, until they have almoſt covered the ſtock.

The next method is termed cleft, or ſtock-grafting; this is practiſed upon ſtocks, or trees, of a ſmaller ſize, and may be uſed with ſucceſs, where the rind of the ſtock is not too thick, whereby the inner bark of the cion will be prevented joining to that of the ſtock; this may be performed on ſtocks, or branches, which are more than one inch diameter; in the doing of this, the head of the ſtock, or branch, muſt be cut off with a ſlope, and a ſlit made the contrary way, in the top of the ſlope, deep enough to receive the cion, which ſhould be cut ſloping like a wedge, ſo as to fit the ſlit made in the ſtock, being careful to leave that ſide of the wedge, which is to be placed outward, much thicker than the other; and in putting the cion into the ſlit of the ſtock, there muſt be great care taken to join the rind of the cion to that of the ſtock; for if theſe do not unite, the grafts will not ſucceed: when this method of grafting is uſed to ſtocks which are not ſtrong, it will be proper to make a ligature of baſs, to prevent the ſlit of the ſtock from opening; then the whole ſhould be clayed over, to prevent the air from penetrating the ſlit, ſo as to deſtroy the grafts, only leaving two eyes of the cions above the clay for ſhooting.

The third method is termed whip, or tongue-grafting, which is the moſt commonly practiſed of any by the nurſerymen near London, eſpecially for ſmall ſtocks, becauſe the cions much ſooner cover the ſtocks in this method than in any other.

This is performed by cutting off the head of the ſtocks ſloping; then there muſt be a notch made in the ſlope toward the upper part downward, a little more than half an inch deep, to receive the cion, which muſt be cut with a ſlope upward, and a ſlit made in this ſlope like a tongue, which tongue muſt be inſerted into the ſlit made in the ſlope of the ſtock, and the cion muſt be placed on one ſide of the ſtock, ſo as that the two rinds of both cion and ſtock may be equal, and join together exactly; then there ſhould be a ligature of baſs to faſten the cion, ſo as that it may not be eaſily diſplaced, and afterward clay it over, as in the former methods.

The fourth ſort of grafting is termed inarching-grafting by approach, or ablactation. This is only to be performed when the ſtocks, which are deſigned to be grafted, and the tree from which the graft is to be taken, ſtand ſo near together, or may be brought ſo near together, as that their branches may be united; this method of grafting is commonly practiſed on tender exotic plants, and ſome other ſorts which do not ſucceed in any of the other methods.

In performing this operation, a part of the ſtock, or branch, muſt be ſlit off about two inches in length, obſerving always to make choice of a ſmooth part of the ſtock; then a ſmall notch ſhould be made in this ſlit of the ſtock downward, in the ſame manner as hath been directed for whip-grafting; then the branch of the tree deſigned to be inarched, ſhould have a part ſlit off in like manner as the ſtock, and a ſlit made upward in this, ſo as to leave a tongue; which tongue ſhould be inſerted into the ſlit of the ſtock, obſerving to join their rinds equally, that they may unite well together; then make a ligature of baſs, to keep them exactly in their ſituation, and afterward clay this part of the ſtock over well, to keep out the air; in this method of grafting, the cion is not ſeparated from the tree, until it is firmly united with the ſtock, nor is the head of the ſtock, or branch, which is grafted, cut off till this time, and only half the wood pared off with a ſlope, about three inches in length, and the ſame of the cion, or graft.

This method of grafting is not performed ſo early in the ſeaſon as thoſe of the other, it being done in the month of April, when the ſap is flowing, at which time the cion and ſtock will join together, and unite much ſooner than at any other ſeaſon.

The Walnut, Fig, and Mulberry, will take by this method of grafting, but neither of theſe will ſucceed in any of the other methods; there are alſo ſeveral ſorts of Evergreens, which may be propagated by this method of grafting; but all the trees which are grafted in this way are weaker, and never grow to the ſize of thoſe which are grafted in the other methods; therefore this is rarely practiſed, but on ſuch ſorts of trees as will not take by the other methods.

The next thing which is neceſſary to be known, by thoſe who would practiſe this art, is, what trees will take and thrive by being grafted upon each other; and here there have been no ſure directions given by any of the writers on this ſubject, for there will be found great miſtakes in all their books, in relation to this matter; but as it would ſwell this article too great, if all the ſorts of trees were to be here enumerated, which will take upon each other by grafting, I ſhall only mention ſuch general directions, as, if attended to, will be ſufficient to inſtruct perſons, ſo as they may ſucceed.

All ſuch trees as are of the ſame genus, i. e. which will agree in their flower and fruit, will take upon each other: for inſtance, all the Nut-bearing trees may be ſafely grafted on each other, as may all the Plumb-bearing trees, under which head I reckon not only the ſeveral ſorts of Plumbs, but alſo the Almond, Peach, Nectarine, Apricot, &c. which agree exactly in their general characters, by which they are diſtinguiſhed from all other trees; but as many of theſe are very ſubject to emit large quantities of gum from the parts of the trees as are deeply cut and wounded, ſo the tender trees of this kind, viz. Peaches and Nectarines, which are moſt ſubject to this, it is found to be the ſureſt method to bud or inoculate theſe ſorts of fruits, for which ſee INOCULATION.

Then all ſuch trees as bear cones will do well upon each other, though they may differ in one being evergreen, and the other ſhedding its leaves in winter; as is obſervable in the Cedar of Libanus, and the Larch-tree, which are found to ſucceed upon each other very well;

well; but theſe muſt be grafted by approach, for they abound with a great quantity of reſin which is apt to evaporate from the graft, if ſeparated from the tree before it is joined with the ſtock, whereby they are often deſtroyed; as alſo the Laurel on the Cherry, or the Cherry on the Laurel. All the maſt-bearing trees will alſo take upon each other, and thoſe which have a tender ſoft wood will do well if grafted in the common way; but thoſe that are of a more firm contexture, and are ſlow growers, ſhould be grafted by approach.

By ſtrictly obſerving this rule, we ſhall ſeldom miſcarry, provided the operation be rightly performed, and at a proper ſeaſon, unleſs the weather ſhould prove very bad, as it ſometimes happens, whereby whole quarters of fruit-trees miſcarry; and it is by this method that many kinds of exotic trees are not only propagated, but alſo rendered hardy enough to endure the cold of our climate in the open air; for, being grafted upon ſtocks of the ſame ſort which are hardy, the grafts are rendered more capable to endure the cold, as hath been experienced by moſt of our valuable fruits now in England, which were formerly tranſplanted here from more ſoutherly climates, and were at firſt too impatient of our cold to ſucceed well abroad; but have been, by budding or grafting upon more hardy trees, rendered capable of reſiſting our ſevereſt cold.

And theſe different graftings ſeem to have been greatly in uſe among the ancients, though they were certainly miſtaken in the ſeveral ſorts of fruits which they mention to have ſucceeded upon each other; as the Fig upon the Mulberry, the Plumb upon the Cheſtnut, with many others of the like kind; moſt of which I have already tried, and find they will not ſucceed; therefore what has been advanced on this head by the ancients, is not founded on experience; or at leaſt they did not mean the ſame plants, which at preſent are called by thoſe names; though I cannot help thinking we are apt to pay too much deference to the writings of the ancients, in ſuppoſing them ſeldom to be miſtaken, or to aſſert a falſhood; whereas, if their works are carefully examined, it will be found, that they have often copied from each other's writings, without making experiments to prove the truth of their aſſertions: and it is well known, that the ranging of plants before Cæſalpinus's time (which is about 170 years ſince) was, by their outward appearance, or from the ſuppoſed virtues of them, which method is now juſtly exploded; and it hath been obſerved, from many repeated trials, that however plants may reſemble each other in the ſhape and make of their leaves, manner of ſhooting, &c. unleſs they agree in their fruit, and their other diſtinctive characters, they will not grow upon each other, though performed with ever ſo much art.

GRAMEN. Tourn. Inſt. R. H. 516. tab. 297. Raii Meth. Plant. 171. Graſs; in French, *Chien-dent*.

To enumerate all the ſpecies of Graſs which are found growing naturally in England, would ſwell this article greatly beyond the deſign of the work; therefore I ſhall only take notice of a few ſpecies, which are either uſed in medicine, or cultivated for fodder; for there is ſcarce a paſture in this country, where at leaſt twenty different ſpecies are not to be found intermixed, and in moſt of them more than twice that number. Theſe were, by the former writers on botany, all included under the common denomination of Gramen, but were divided into different ſections. Mr. Ray has ranged them in the following order, Gramen Triticum, i. e. Wheat-graſs. Gramen Secalinum, i. e. Rye-graſs. Gramen Loliaceum, i. e. Darnel-graſs. Gramen Paniceum, i. e. Panic-graſs. Gramen Phalaroides, i. e. Canary-graſs. Gramen Alopecuroides, i. e. Fox-tail-graſs. Gramen Typhinum, i. e. Cat's-tail-graſs. Gramen Echinatum, i. e. Hedgehog-graſs. Gramen Criſtatum, i. e. Creſted-graſs. Gramen Avenacium, i. e. Oat-graſs. Gramen Dactylon, i. e. Cock's-foot-graſs. Gramen Arundinaceum, i. e. Reed-graſs. Gramen Milleacem, i. e. Millet-graſs. And under each of theſe ſections there are many ſpecies. And there are many others, which, by older writers, were included under this general title, ſome of which have no relation to this claſs; but there are others which are near nearly allied to it, as the Cyperus and Cypreſs Graſſes, &c. Theſe Dr. Linnæus has divided into genera; but by this method of claſſing them, he has ſeparated them to a great diſtance from each other; for all thoſe whoſe flowers have three ſtamina, are ranged in his third claſs; and others which have male and female flowers, are removed to his twenty-firſt claſs. However, it would have been much better to have kept them together, as Dr. Van Royen has done in the Prodromus of the Leyden garden, under one general title to the claſs of Graminea.

As the ſeveral genera under which the different ſpecies of Graſs are ranged, have different characters by which they are diſtinguiſhed, ſo it would be to little purpoſe to give them all in this work; and as there are no general characteriſtics by which the whole claſs can be known, ſo I ſhall not trouble the reader with any of them here, but proceed to enumerate a few of the ſpecies.

1. GRAMEN ſpicâ triticeâ repens vulgare, caninum dictum. Raii Syn. 2. p. 247. *Common creeping Graſs with a ſpike like Wheat, called Dog-graſs.* Triticum calycibus ſublatis trifloris acuminatis. Lin. Sp. Plant. *Wheat with an awl-ſhaped pointed empalement including three flowers, commonly called Couch, Couch-graſs, or Quick-graſs.*
2. GRAMEN loliaceum, anguſtiore folio & ſpicâ. C. B. P. *Darnel-graſs, with a narrower leaf and ſpike.* Lolium ſpicâ muticâ. Lin. Sp. Plant. 83. *Darnel with a chaffy ſpike, commonly called Rey, or Rye-graſs.*
3. GRAMEN pratenſe, paniculatum majus anguſtiore folio. C. B. P. 2. *Meadow-graſs with larger panicles and a narrower leaf.* Poa paniculâ diffuſâ, ſpiculis quadrifloris pubeſcentibus, culmo erecto tereti. Flor. Suec. 77. *Poa with a diffuſed panicle, the ſmaller ſpikes having four hairy flowers, and a taper erect ſtraw.*
4. GRAMEN pratenſe, paniculatum majus, latiore folio. C. B. P. 2. *Meadow-graſs with a larger panicle and broader leaf.* Poa paniculâ diffuſâ ſpiculis trifloris glabris, culmo erecto tereti. Flor. Suec. 76. *Poa with a diffuſed panicle, ſmall ſpikes with three flowers, and an upright ſtraw.*
5. GRAMEN avenacium pratenſe elatius paniculâ flavescente, locuſtis parvis. Raii Syn. 407. *Taller Meadow Oat-graſs, with a yellowiſh panicle and ſmall huſks.* Avena paniculâ laxâ, calycibus trifloris brevibus, floſculis omnibus ariſtatis. Prod. Leyd. 66. *Oat-graſs with a looſe panicle, three flowers in each empalement, which is ſhort, and all the flowers having awns.*
6. GRAMEN ſecalinum. Ger. Emac. lib. 1. cap. 22. n. 4. *Tall Meadow Rye-graſs.*
7. GRAMEN tremulum maximum. C. B. P. 2. *Greateſt Quaking-graſs, or Cowquakes.* Briza ſpiculis cordatis, floſculis ſeptendecim. Hort. Cliff. 23. *Briza with heart-ſhaped little ſpikes, and ſeventeen flowers in each.*

The firſt ſort of Graſs is that which is directed to be uſed in medicine; the roots of this are chiefly uſed, and are accounted aperitive and diuretic, opening obſtructions of the reins and bladder, provoking urine, and are of ſervice againſt the gravel and ſtone. The juice of the leaves and ſtalks was greatly eſteemed by Dr. Boerhaave, who generally preſcribed this in all caſes where he ſuppoſed there were any obſtructions in the bile conduit.

This hath a creeping root, which ſpreads far in the ground, and is a very troubleſome weed in gardens and arable land; for every ſmall piece of the root will grow and multiply exceedingly, ſo it is very difficult to extirpate where it once gets poſſeſſion: in gardens, the common method of deſtroying it is, to fork out the roots as often as the blades appear above ground; where this is two or three times carefully repeated, it may be totally rooted out; but when the ſurface of the ground is very full of the roots of this Graſs, the ſhorteſt way of deſtroying it, is to trench

the ground two ſpits and a ſhovelling deep, turning all the couch into the bottom, where it will rot, and never ſhoot up; but this can only be practiſed, where there is a ſufficient depth of ſoil; for in ſhallow ground the roots cannot be buried ſo deep, as to lie below the depth to which they naturally ſhoot.

Where the roots of this Graſs get poſſeſſion in arable fields, it is very difficult to root out again; the uſual method is by laying the land fallow in ſummer, and frequently harrowing it well over to draw out the roots: where this is carefully practiſed, the ground may be ſo well cleaned in one ſummer, as that the roots cannot much injure the crop which may be ſown upon it; but ſuch land ſhould be cropped with Beans, Peas, or ſuch things as require the horſe-hoeing culture; for where the land can be frequently ſtirred and harrowed afterward, it will be of great ſervice in cleaning it from the roots of this Graſs and other bad weeds. The blade of this Graſs is ſo rough, that cattle will not feed upon it.

The ſecond ſort is frequently cultivated, eſpecially in ſtrong cold land, upon which this Graſs will ſucceed better than any other ſpecies, and is an earlier feed in the ſpring; but this is a very coarſe Graſs, and unleſs it is cut very early for hay, it becomes hard and wiery in the ſtalks, ſo that few cattle care to eat it; for this ſpecies has but few leaves, running all to ſtalk, ſo is uſually called Bents, and in ſome counties Bennet; when this graſs is fed, it will be proper to mow off the Bents in the beginning of June, otherwiſe they will dry upon the ground, and have the appearance of a ſtubble field all the latter part of ſummer; ſo that it will not only be very diſagreeable to the ſight, but alſo be troubleſome to the cattle that feed on it, by tickling their noſtrils; ſo that the want of better paſture only, will force them to eat of the young Graſs which ſprings up between theſe Bents, for thoſe they will not touch; therefore thoſe who ſuppoſe that theſe are eaten in ſcarcity of feed by the cattle, are greatly miſtaken; for I have many years cloſely attended to this, and have always found theſe Bents remaining on the ground untouched, till the froſt, rain, and winds, deſtroy it in winter; and, by permitting theſe to ſtand, the after-growth of the Graſs is greatly retarded, and the beautiful verdure is loſt for three or four months; ſo that it is good huſbandry to mow them before they grow too dry, and rake them off the ground: if theſe are then made into the hay, it will ſerve for cart-horſes or cows feed in winter, and will pay the expence of mowing it.

There is another ſpecies of this Graſs called Red Darnel, which is of a worſe nature than the firſt, the ſtalks growing hard much ſooner, and having narrower leaves. This is very common in moſt paſture grounds, for as it comes early to flower, ſo the ſeeds are generally ripe before the hay is cut, and from the falling ſeeds the ground is ſupplied with plenty of this ſort; therefore thoſe who are deſirous to keep their paſtures as clear from this Graſs as poſſible, ſhould always mow it before the ſeeds are ripe.

This Graſs is uſually ſown with Clover, upon ſuch lands as are deſigned to be ploughed again in a few years, and the common method is to ſow it with Spring Corn; but from many repeated trials, I have always found, that by ſowing theſe ſeeds in Auguſt, when there has happened a few ſhowers to bring up the Graſs, that the crop has anſwered much better than any which has been ſown in the common way; for the Graſs has often been ſo rank, as to afford a good feed the ſame autumn; and the following ſpring there has been a ton and a half of hay per acre mowed very early in the ſeaſon, and this has been upon cold four land; ſo that I am convinced of that being the beſt ſeaſon for ſowing theſe Graſſes, though it will be very difficult to perſuade thoſe perſons to alter their practice, who have been long wedded to old cuſtoms. The quantity of ſeeds which I allow to an acre is about two buſhels, and eight pounds of the common Clover, which, together, will make as good plants upon the ground as can be deſired; but this is not to be practiſed upon ſuch lands where the beauty of the verdure is principally regarded, therefore is fit for thoſe who have only profit in view.

The third and fourth ſorts are the two beſt ſpecies of Graſs for paſtures, ſo that if the ſeeds of theſe were carefully collected and ſown ſeparately without any other mixture of Graſs-ſeeds, they would not only afford a greater quantity of feed on the ſame ſpace of land, but the Graſs would alſo be better, the hay ſweeter, and the verdure more laſting than of any other ſorts; but there requires ſome attention to the ſaving of theſe ſeeds pure without mixture. I have tried to ſave the ſeeds of ſeveral ſpecies of Graſs ſeparately, in order to determine their qualities, but have found it very difficult to keep them diſtinct in gardens where the ſeeds of other ſorts of Graſs have been ſcattered: the only method in which I could ſucceed, was by ſowing each ſpecies in a diſtinct pot, and when the plants came up, to weed out all the other kinds of Graſs which came up in the pots; by this means I preſerved a great variety of the graſſy tribe ſeveral years, but not having ground enough to propagate the moſt uſeful ſpecies in any quantity, I was obliged to abandon the purſuit: but I muſt recommend this to perſons of leiſure and ſkill who have a ſufficient quantity of land for the purpoſe, to carry this project into execution, which may be of ſingular benefit to the public; for we have an inſtance of the advantage which the inhabitants of the Netherlands have made, by ſaving the ſeeds of the White Clover, or Honeyſuckle Trefoil, which is a plant common to moſt of the Engliſh paſtures; yet few perſons in this country ever gave themſelves the trouble to collect the ſeeds from the fields for ſowing, but have purchaſed vaſt quantities of this ſeed annually, at a conſiderable price from Flanders, where the peaſants have been ſo induſtrious, as to collect the ſeeds and ſow great quantities of land with it, with a view of ſale to this country only. This is not an inconſiderable article in huſbandry, but deſerves the attention of all thoſe, who, by choice or otherwiſe, are engaged in the buſineſs of agriculture; for one acre of land will produce as much ſeeds of this ſpecies of Trefoil, as will ſell for 12 l. where it is well planted and ſaved from the ſpring crop; and if the Graſs-ſeeds beforementioned were ſeparately ſown, and carefully weeded from all other ſpecies, and permitted to ſtand till their ſeeds were ripe, it might be of equal advantage with the other, eſpecially now, when every gentleman is endeavouring to improve the verdure near their habitations.

The fifth and ſixth ſorts are alſo very good Graſſes for paſtures, and have perennial roots, ſo are the next beſt ſorts for ſowing to thoſe before-mentioned, which, in my opinion, deſerve the preference to all the other; but as it will be difficult to ſave a ſufficient quantity of ſeeds of thoſe alone, to ſupply the demand which may be for their ſeeds; ſo theſe two ſpecies may be admitted in aid of the other, as they are very leafy kinds of Graſs, and their ſtalks do not become ſtiff and harſh like many other ſpecies, but with proper care may be made very fine; and, if duly rolled, their roots will mat and form a very cloſe ſward, therefore theſe ſhould be included in the number of ſown Graſſes.

The ſeventh ſort is mentioned for the ſake of variety, and not for uſe; this hath an annual root, which ſends up many broad hairy leaves, between which ariſe ſlender ſtiff ſtalks from a foot to near two two feet high, dividing upward into a large looſe panicle, garniſhed with heart-ſhaped ſmall ſpikes, each having about ſeventeen ſmall floſcules or florets; theſe, after the flowers are paſt, have a ſingle ſeed ſucceeding them; the heads hang by ſlender long foot-ſtalks, which are moved by every wind, ſo that they generally appear ſhaking, from whence it had the title of Quaking Graſs. There are four ſpecies of this Graſs, two of them grow naturally in England; and theſe Graſſes coming to head in May, occaſioned the following

Engliſh proverb, *May come ſhe early come ſhe late, makes the cow quake.* The large ſort here mentioned, grows naturally in the ſouth of France and Italy, and is only preſerved in ſome Engliſh gardens for the ſake of variety.

If the ſeeds of this ſort are ſown in the autumn, or permitted to ſcatter when ripe, the plants will come up ſtronger, and flower much earlier, than when they are ſown in the ſpring, ſo good ſeeds may always be expected from them, which can ſeldom be attained from the ſpring plants in England; and as two or three plants of this ſort will be full enough in a garden for variety, ſo theſe ſhould be allowed to ſpread; for where they grow at a diſtance from each other, the roots will ſend out a great number of ſtalks, which will be ſtronger, and produce much larger panicles than thoſe which are too near together.

The Cock's-foot Graſs, Capon's-tail Graſs, and Millet Graſſes are too coarſe to deſerve attention in England, though ſome of their ſpecies are very uſeful in the warm parts of America, where there is a great ſcarcity of finer Graſs; and ſome of theſe are much better adapted to thoſe warm countries, than any of our European Graſſes, for many of them lie flat on the ground, and emit roots from their joints, ſo are well prepared for heat; their ſtalks are large and juicy, ſo will live in heat where few of the European Graſſes can be made to thrive.

The land on which Graſs-ſeed is intended to be ſown, ſhould be well ploughed, and cleared from the roots of noxious weeds, ſuch as Couch-graſs, Fern, Ruſhes, Heath, Gorſe, Broom, Reſt-harrow, &c. which, if left in the ground, will ſoon get the better of the Graſs, and over-run the land. Therefore in ſuch places where either of theſe weeds abound, it will be a good method to plough up the ſurface in April, and let it lie ſome time to dry; then harrow the roots into ſmall heaps, and burn them. The aſhes ſo produced, when ſpread on the land, will be a good manure for it. The method of burning the roots is particularly directed under the article LAND, which ſee: but where Couch-graſs, Fern, or Reſt-harrow is in plenty, whoſe roots run far under ground, the land muſt be ploughed two or three times pretty deep in dry weather, and the roots carefully harrowed off after each ploughing, which is the moſt-ſure method to deſtroy them. Where the land is very low, and of a ſtiff clayey nature, which holds water in winter, it will be of ſingular ſervice to make ſome under-ground drains to carry off the wet; which, if detained too long on the ground, will render the Graſs ſour. The method of making theſe drains is preſcribed under the article LAND, which ſee.

Before the ſeed is ſown, the ſurface of the ground ſhould be made level and fine, otherwiſe the ſeed will be buried unequal. When the ſeed is ſown, it muſt be gently harrowed in, and the ground rolled with a wooden roller, which will make the ſurface even, and prevent the ſeeds being blown in patches. When the Graſs comes up, if there ſhould be any bare ſpots, where the ſeed has not grown, they may be ſown again, and the ground rolled, which will fix the ſeeds; and the firſt kindly ſhowers will bring up the Graſs, and make it very thick.

Where the land is deſigned to continue in paſture, it ſhould be ſown with the beſt ſorts of Graſs-ſeeds, and white Dutch Clover, or what is commonly called Honeyſuckle Graſs in many parts of England, but there is a great difficulty of procuring hay-ſeeds which are good; for in all the good paſtures near London, which abound with the beſt ſorts of Graſs, the hay is commonly cut before the ſeeds of the Graſs are ripe; ſo that thoſe ſeeds which are procured from the ſtables where the horſes are fed with the beſt ſort of hay, are little more than chaff, or at beſt are only ſuch as are of the early kinds of Graſs, with a great quantity of Plantain and other weeds: which has diſcouraged many gentlemen from ſowing them, nor has any one attempted to ſave theſe ſeeds properly; and as it requires longer time, and more attention, to ſave a quantity of ſeeds of the purer ſort of Graſs than the generality of people care to beſtow, ſo I would recommend the ſetting ſome of thoſe upland paſtures, which are cleaneſt from weeds, and have the ſweeteſt herbage aſide, to ſtand for ſeeds; and although by ſo doing the hay will be leſs valuable, yet from the ſale of the ſeeds, it may anſwer better to the poſſeſſor, than to mow it merely for the hay; for any gentleman who has regard to the beauty of his land, had better give ſix times the price for ſuch ſeeds, as is uſually paid for the ordinary ſeeds, ſince the firſt expence of ſeeds is not to be put in competion with the beauty and advantage of having ſuch as are good; for when the land is brought to a good ſward (which may be done in one year, where it is properly prepared and ſown with good ſeeds) it may be kept in good order, and by good management improved annually, and will continue ſo, as long as proper care is taken of it. I know ſome land which was ſown in the method hereafter directed above forty years ago, which are now as good paſtures as any I have ſeen, and may be always continued ſo.

Theſe grounds abounded with many bad weeds, ſo they had a winter and ſummer's fallow, in which time they were five times ploughed and ten times harrowed in order to deſtroy the weeds, and make the ſurface of the ground fine; in Auguſt they were ſown with the beſt Graſs-ſeeds as could be procured, three buſhels of this, and nine pounds of the white Dutch Clover-ſeeds were allowed to each acre; as there happened rains ſoon after the ſeeds were ſown, ſo the Graſs came up well; but among it were a great number of weeds, which were drawn up and carried off the ground, and in the beginning of October the fields were rolled with a Barley roller; in the ſpring the fields were again weeded, and afterward rolled, and that ſummer there was more than two tons of hay per acre mowed off the land; and by conſtant weeding twice a year, ſweeping it with a buſh-harrow, rolling and dreſſing of the land, the Graſs has been greatly improved ſince, and is now as good paſture as any in England: and ſince I have laid down great quantities of land in the ſame manner, and with equal ſucceſs; therefore from many years experience can recommend it, as the ſureſt method of having good paſtures.

But I know the generality of farmers will object to the firſt loſs of their crop, and alſo to the after expence of weeding, rolling, &c. as too great for common practice: however, I am well ſatisfied from experience, that whoever will be at the expence, will find their account in it; for the crops of hay will be ſo much better, and the after paſture alſo, that it will more than pay the expence, as from many exact accounts, which have been kept of the whole, is ſufficiently demonſtrated, and the verdure of theſe paſtures is charming to all thoſe who have any taſte of natural beauties.

The proper management of paſture land is the leaſt underſtood of any part of agriculture; the farmers never have attended to this, being more inclined to the plough, though the profits attending that have not of late years been ſo great as to encourage them in that part of huſbandry; but theſe people never think of laying down land for paſture, to continue longer than three years, at the end of which time they plough it up again, to ſow it with grain.

There is a ſort of ſtriped Graſs which is preſerved in many gardens for the beauty of its variegated leaves, which continue freſh the greateſt part of the ſummer. This ſort is eaſily propagated by parting the roots, either in ſpring or autumn, for every offset will increaſe to be a large root in one year's time. It will grow on any ſoil or in any ſituation, therefore may be planted in any abject part of the garden, where it will thrive, and afford an agreeable variety. This ſort is by many perſons called Ribband-graſs, from the ſtripes of white and green, which run the whole length of the blade, like the ſtripes in ſome ribbands.

For the further management of Graſs in fields, ſee PASTURE and MEADOW; and for that in gardens, ſee GRASS.

Clover-graſs. See TRIFOLIUM.

Saint-foin. See ONOBRYCHIS, or HEDYSARUM.

La Lucerne. See MEDICA.

Noneſuch, See MELILOTUS, or TRIFOLIUM.

Trefoil. See TRIFOLIUM.

Spurry. See SPERGULA.

GRANADILLA. See PASSIFLORA.

GRAPES. See VITIS.

GRASS. The Engliſh Graſs is of ſo good a quality for walks or Graſs-plats, that if they be kept in good order, they have that exquiſite beauty that they cannot come up to in France, and ſeveral other countries. But green walks and green plats are, for the moſt part, not made by ſowing the Graſs-ſeed, but by laying turfs; and, indeed, the turfs from a fine common or down, are much preferable to ſown Graſs.

In ſowing a fine green plat, there is a difficulty in getting good ſeed; it ought not to be ſuch as is taken out of the hay-loft without diſtinction; for that ſeed ſhooting too high and making large ſtalks, the lower part will be naked and bare; and although it be mowed ever ſo often, it will never make handſome Graſs; but, on the contrary, will come to nothing but tufts of weeds and Quick-graſs, very little better than that of the common fields.

If walks or plats be made by ſowing, the beſt way is to procure the ſeed from thoſe paſtures where the Graſs is naturally fine and clear, or elſe the trouble of keeping it from ſpiry and benty Graſs will be very great, and it will ſcarce ever look handſome.

In order to ſow Graſs-ſeed, the ground muſt be firſt dug or broken up with a ſpade; and when it has been dreſſed and laid even, it muſt be very finely raked over, and all the clods and ſtones taken off, and covered over an inch thick with good mould, to facilitate the growth of the ſeed; this being done, the ſeed is to be ſown pretty thick, that it may come up cloſe and ſhort; and it muſt be raked over again to bury and cover the ſeed, that if the weather ſhould happen to be windy, it may not be blown away.

As to the ſeaſon of ſowing Graſs, the middle or latter end of Auguſt is a good time, becauſe the ſeed naturally requires nothing but moiſture to make it grow: if be not ſown till the latter end of February, or the beginning of March, if the weather proves dry, it will not ſo ſoon make the walks or quarters green. It is alſo beſt to ſow it in a mild day, and inclining to rain; for that, by ſinking down the ſeed in the earth, will cauſe it to ſhoot the ſooner. But where Graſs is ſown in gardens, either for lawns or walks, there ſhould always be a good quantity of the White Trefoil or Dutch Clover ſown with it, for this will make a fine turf much ſooner than any other ſown Graſs, and will continue a better verdure than any of the Graſs tribe.

After the ſeed is well come up, and the Graſs is very thick and of a beautiful green, it will require a conſtant care to keep it in order: this conſiſts in mowing the Graſs often, for the oftener it is mowed, the thicker and handſomer it grows; it muſt alſo be rolled with a cylinder or roller of wood, to level it as much as poſſible.

If Graſs be neglected, it will run into Quick-graſs and weeds; and if it does ſo, there is no way to recover it, but either by ſowing it, or laying it over again, and that once in every two years; but if the ground be well cleared from the roots of ſtrong weeds, and the turf be taken from a fine level common, it will continue handſome for ſeveral years, provided it be well kept.

In order to keep Graſs-plats or walks handſome and in good order, in autumn you may ſow ſome freſh ſeed over any places that are not well filled, or where the Graſs is dead, to renew and furniſh them again; but there is nothing which improves Graſs ſo much as conſtant rolling and polling it, to deſtroy wormcaſts, and thereby the turf is rendered fine.

It is a general practice when turf is laid in gardens, to cover the ſurface of the ground under the turf, either with ſand or very poor earth; the deſign of this is to keep the Graſs fine, by preventing its growing too rank. This is proper enough for very rich ground, but is not ſo for ſuch land as is but middling or poor; for when this is practiſed in ſuch places, the Graſs will ſoon wear out, and decay in patches.

When turf is taken from a common or down, there ſhould be regard had to the cleanneſs of it, and not to take ſuch as is full of weeds: for it will be a very tedious piece of work, to weed them out after the turf is laid; and unleſs this is done, the Graſs will never appear handſome.

Where turf is deſigned to remain for years without renewing, there ſhould be dreſſing laid upon it every other year, either of very rotten dung, aſhes, or, where it can be eaſily procured, very rotten tan, is a good dreſſing for Graſs; but theſe dreſſings ſhould be laid on early in winter, that the rain may waſh them into the ground, before the drought of the ſpring comes on, otherwiſe they will occaſion the Graſs to burn when the warmth of ſummer begins. Where Graſs is ſo dreſſed, and kept well rolled and mowed, it may be kept very beautiful for many years; but where it is not dreſſed or fed with ſheep, it will rarely continue handſome more than eight or ten years.

GRATIOLA. Lin. Gen. Plant. 27. Raii Meth. Plant. 90. Digitalis. Tourn. Inſt. R. H. 165. Hedge Hyſſop.

The CHARACTERS are,

The flower hath a permanent empalement, which is cut into five parts; it hath one petal of the grinning kind, with a tube longer than the empalement, cut at the top into four ſmall ſegments, the upper being broader and indented at the end where it is reflexed; the other three are erect and equal. It hath five awl-ſhaped ſtamina, three of which are ſhorter than the petal, and ſteril; the other two are longer, and adhere to the tube of the petal; theſe are fruitful in male duſt; they are terminated by roundiſh ſummits. In the center is ſituated a conical germen, ſupporting an erect ſtyle, crowned by a ſtigma with two lips, which cloſe after being fœcundated. The germen afterward becomes an oval capſule ending in a point, having two cells which are filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, intitled Diandria Monogynia, which includes thoſe plants whoſe flowers have but two ſtamina and one ſtyle, for he does not eſteem the three barren ſtamina as worthy notice.

The SPECIES are,

1. GRATIOLA (*Officinalis*) floribus pedunculatis, foliis lanceolatis ſerratis. Lin. Mat. Med. 18. *Hedge Hyſſop with flowers ſtanding on foot-ſtalks, and ſpear-ſhaped leaves.* Digitalis minima Gratiolata dicta. Mor. Hiſt. 2. 479. *Leaſt Foxglove, called Graticla.*
2. GRATIOLA (*Virginiana*) foliis lanceolatis obtuſis ſub dentatis. Flor. Virg. 6. *Hedge Hyſſop with obtuſe indented leaves.*
3. GRATIOLA (*Peruviana*) floribus ſubſeſſilibus. Lin. Sp. Plant. 17. *Hedge Hyſſop with flowers ſitting cloſe to the branches.* Gratiola latiore folio flore albo. Feuill. Peruv.

The firſt ſort grows naturally on the Alps, and other mountainous parts of Europe. This hath a thick, fleſhy, fibrous, creeping root, which propagates very much when planted in a proper ſoil and ſituation, from which ariſe ſeveral upright ſquare ſtalks, near a foot high, garniſhed with narrow ſpear-ſhaped leaves placed oppoſite; the flowers are produced on the ſide of the ſtalks at each joint, they are ſhaped like thoſe of the Foxglove, but are ſmall, and of a pale yellowiſh colour. Theſe appear in July, but are ſeldom ſucceeded by ſeeds in England.

It is eaſily propagated by parting of the roots; the beſt time to do this is in the autumn, when the ſtalks decay; the plants ſhould have a moiſt ſoil and a ſhady ſituation, in which they will thrive exceedingly; but in dry ground they often decay in ſummer, unleſs they are plentifully watered.

This

This ſtands in the liſt of medicinal plants, but is very rarely uſed in England, though it is recommended by ſome good writers as a purger of ſerous and choleric humours.

The ſecond ſort grows naturally in North America, from whence I received the ſeeds. This grows naturally in moiſt places, where it riſes more than a foot high, but in England I have not ſeen it more than eight inches; the leaves are blunt, and indented at their extremities; the flowers are white, and come out from the ſide of the ſtalks, like thoſe of the other, but are not ſucceeded by ſeeds here. It may be propagated in the ſame manner as the firſt ſort, and requires the ſame treatment.

The ſeeds of the third ſort were ſent me from Carthagena, where it was found growing naturally in places where there had been ſtanding waters, which were then dried up; this plant grew about nine inches high, with a weak ſtalk, and the leaves placed oppoſite; they were about three quarters of an inch long, and half an inch broad, ſawed on their edges; the flowers came out ſingle on each ſide the ſtalk; they were white, and much ſmaller than thoſe of the firſt ſort, but were not ſucceeded by ſeeds, ſo the plant was loſt here.

GRAVEL and Graſs are naturally ornaments to a country-ſeat, and the glory of the Engliſh gardens, and things in which we excel all other nations, as France, Holland, Flanders, &c.

There are different ſorts of Gravel, but for thoſe who can conveniently have it, I approve of that Gravel on Blackheath, as preferable to moſt that we have in England; it conſiſting of ſmooth even pebbles, which, when mixed with a due quantity of loam, will bind exceeding cloſe, and look very beautiful, and continue handſome longer than any other ſort of Gravel which I have yet ſeen.

Some recommend a ſort of iron-mould Gravel, or Gravel with a little binding loam amongſt it, than which nothing, they ſay, binds better when it is dry; but in wet weather it is apt to ſtick to the heels of one's ſhoes, and will never appear handſome.

Sometimes loam is mixed with Gravel that is over ſandy or ſharp, which muſt be very well blended together, and let lie in heaps, after which it will bind like a rock.

There are many kinds of Gravel which do not bind, and thereby cauſe a continual trouble of rolling, to little or no purpoſe; as for ſuch,

If the Gravel be looſe or ſandy, you ſhould take one load of ſtrong loam, to two or three of Gravel, and ſo caſt them well together, and turn this mixture over three or four times, that they may be well blended together; if this is done in proper porportion, it will bind well, and not ſtick to the feet in wet weather.

There are many different opinions about the choice of Gravel; ſome are for having the Gravel as white as poſſible, and in order to make the walks more ſo, they roll them well with ſtone rollers, which are often hewn by the maſons, that they may add a whiteneſs to the walks; but this renders it very troubleſome to the eyes, by reflecting the rays of light ſo ſtrongly, therefore this ſhould ever be avoided; and ſuch Gravel as will lie ſmooth, and reflect the leaſt, ſhould be preferred.

Some ſcreen the Gravel too fine, which is an error; for if it be caſt into a round heap, and the great ſtones only raked off, it will be the better.

Some are apt to lay Gravel-walks too round, but this is likewiſe an error, becauſe they are not ſo good to walk upon, and beſides, it makes them look narrow; one inch riſe is enough in a crown for a walk of five feet; and it will be ſufficient, if a walk be ten feet wide, that it lies two inches higher in the middle than it does on each ſide; if fifteen feet, three inches; twenty feet, four; and ſo in proportion.

For the depth of Gravel-walks, ſix or eight inches may do well enough, but a foot thickneſs will be ſufficient for any; but then there ſhould always be a depth of rubbiſh laid under the Gravel, eſpecially if the ground is wet; in which caſe there cannot be too much care to fill the bottom of the walks with large ſtones, flints, brick rubbiſh, chalk, or any other materials which can be beſt procured, which will drain off the moiſture from the Gravel, and prevent its being poachy in wet weather; but as it may be difficult in ſome places to procure a ſufficient quantity of theſe materials to lay in the bottom of the walks, ſo there may be a bed of Heath, or Furze, which ever can be procured at the leaſt expence, laid under the Gravel to keep it dry: and if either of theſe are uſed green, they will lie a long time, as they will be covered from air, and theſe will prevent the Gravel from getting down into the clay, and will always keep the Gravel dry; and where there is not this precaution in the firſt laying of the Gravel upon clay, the water being detained by the clay, will cauſe the Gravel to be poachy whenever there is much rain.

In making of Gravel-walks, there muſt be great regard had to the level of the ground, ſo as to lay the walks with eaſy deſcents toward the low parts of the ground, that the wet may be drained off eaſily; for when this is omitted, the water will lie upon the walks a conſiderable time after hard rains, which will render them unfit for uſe, eſpecially when the ground is naturally wet or ſtrong; but where the ground is level, and there are no declivities to carry off the wet, it will be proper to have ſink-ſtones laid by the ſides of the walks, at convenient diſtances, to let off the wet; and where the ground is naturally dry, that the water will ſoon ſoak away, the drains of the ſink-ſtones may be contrived ſo as to convey the water in ſeſſpools, from which the water will ſoak away in a ſhort time; but in wet land there ſhould be under-ground drains, to convey the wet off, either into ponds, ditches, or the neareſt place to receive it; for where this is not well provided for, the walks will never be ſo handſome or ſo uſeful.

The month of March is the propereſt time for laying Gravel; it is not prudent to do it ſooner, or to lay walks in any of the winter months before that time.

Some indeed turn up Gravel-walks in ridges in December, in order to kill the weeds; but this is very wrong, for beſides that it deprives them of the benefit of them all the winter, it does not anſwer the end for which it is done, but rather the contrary; for though it does kill the weeds for the preſent, yet it adds a fertility to them, as to the great future increaſe of both them and Graſs.

If conſtant rolling them after the rains and froſt will not effectually kill the weeds and moſs, you ſhould turn the walks in March, and lay them down at the ſame time.

In order to deſtroy worms that ſpoil the beauty of Gravel, or Graſs-walks, ſome recommended the watering them well with water, in which Walnut-tree leaves have been ſteeped, and made very bitter, eſpecially thoſe places moſt annoyed with them; and this they ſay, as ſoon as it reaches them, will make them come out haſtily, ſo that they may be gathered; but if, in the firſt laying of the walks, there is a good bed of lime rubbiſh laid in the bottom, it is the moſt effectual method to keep out the worms, for they do not care to harbour near lime.

GREEN-HOUSE, or Conſervatory.

As of late years there have been great quantities of curious exotic plants introduced into the Engliſh gardens, ſo the number of Green-houſes, or Conſervatories, have increaſed; and not only a greater ſkill in the management and ordering of theſe plants has increaſed therewith, but alſo a greater knowledge of the ſtructure and contrivance of theſe places, ſo as to render them both uſeful and ornamental, hath been acquired; and ſince there are many particulars to be obſerved in the conſtruction of theſe houſes, whereby they will be greatly improved, I thought it neceſſary not only to give the beſt inſtructions for this I was capable of, but alſo to give a deſign of one in the manner I would chuſe to erect it, upon the annexed copper-plate.

4H.

Plan of the Green House.

A. The Ground Plan of the Green-house.

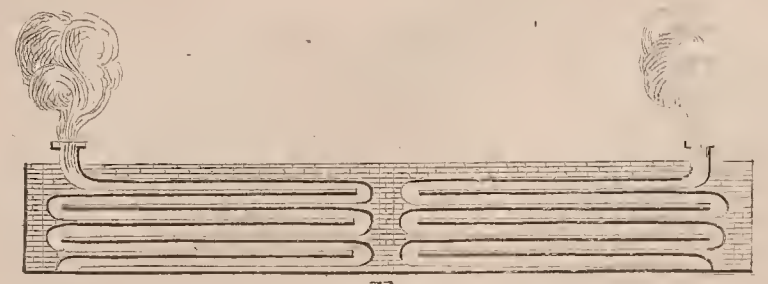
B.B. The Ground Plan of the two Stoves.

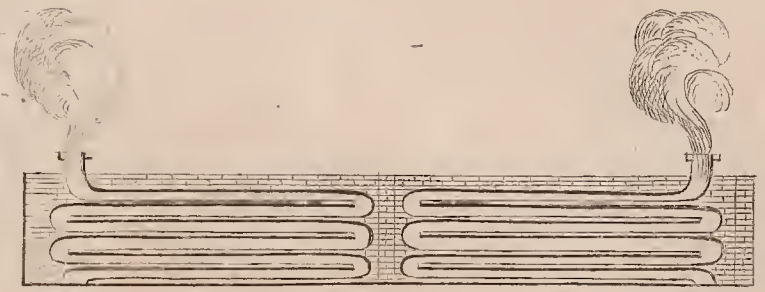
C.C.C. The Sheds behind the Green-house and Stoves.

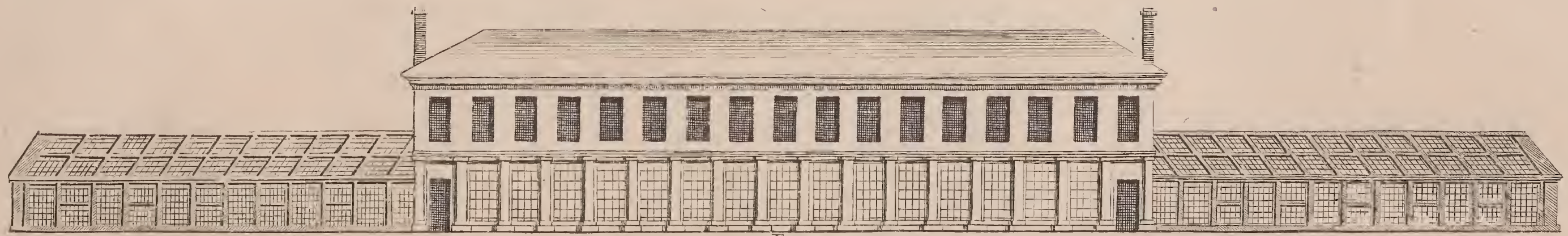
D.D. The passage of communication between the Green-house and Stoves, where the Stairs are placed which lead to the Rooms over the Green-house.

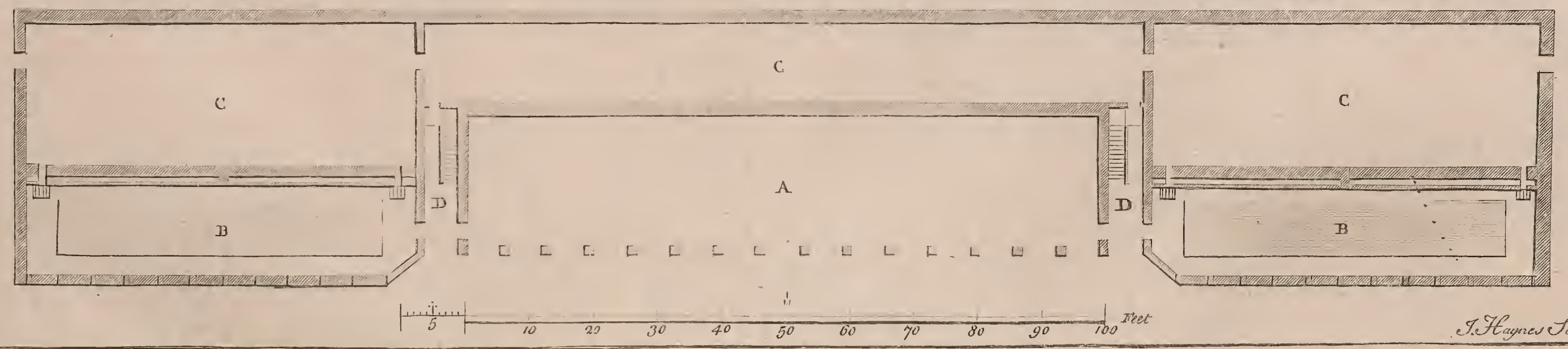
E.E. The Section of the Flues in the back of the Stoves.

F. The upright of the Green-house and Stoves.









J. Haynes Sculp.

As to the length of theſe houſes, that muſt be proportioned to the number of plants they are to contain, or the fancy of the owner; but their depth ſhould never be greater than their height in the clear, which in ſmall, or middling houſes, may be ſixteen or eighteen feet, but for large ones, from twenty to twenty-four feet, is a good proportion; for if the Green-houſe is long, and too narrow, it will have a bad appearance both within and without, nor will it contain ſo many plants, if proper room be allowed for paſſing in front, and on the backſide of the ſtands on which the plants are placed; and on the other hand, if the depth of the Green-houſe is more than twenty-four feet, there muſt be more rows of plants placed to fill the houſe, than can with conveniency be reached in watering and cleaning; nor are houſes of too great depth ſo proper for keeping of plants, as thoſe of moderate ſize.

The windows in front ſhould extend from about one foot and a half above the pavement, to within the ſame diſtance of the cieling, which will admit of a cornice round the building, over the heads of the windows. As it is neceſſary to have theſe windows ſo long, it will be impoſſible to make them in proportion as to their breadth; for if in the largeſt buildings the ſaſhes are more than ſeven, or ſeven feet and a half broad, they will be ſo heavy and troubleſome to move up and down, as to render it very difficult for one perſon to perform; beſides, their weight will occaſion their ſoon decaying. There is alſo another inconvenience in having the windows too broad, which is that of fixing proper ſhutters to them, in ſuch a manner as that they may fall back cloſe to the piers, ſo as not to be incommodious, or when open to obſtruct any part of the rays of light from reaching the plants. The piers between theſe windows ſhould be as narrow as poſſible to ſupport the building, for which reaſon I ſhould chuſe to have them of ſtone, or of hard well-burnt bricks; for if they are built with fine rubbed bricks, thoſe are generally ſo ſoft, that the piers will require to be made thicker, and the building will be leſs ſtrong, eſpecially if there are any rooms over the Green-houſe; which is what I would always adviſe, as being of great uſe to keep the froſt out in very hard winters. If theſe piers are made of ſtone, I would adviſe them to be two feet and a half in diameter, worked as columns cylindrical, whereby the rays of the ſun will not be taken off, or obſtructed by the corners of the piers, which it would be if they were ſquare; but if they are built with bricks, it will be proper to make them three feet in front, otherwiſe they will be too weak to ſupport the building; theſe I would alſo adviſe to be ſloped off toward the inſide to admit the ſun.

At the back of the Green-houſe there may be erected a houſe for tools, and for many other purpoſes, which will be extremely uſeful, and will alſo prevent the froſt from entering the houſe on the backſide, ſo that the wall between theſe need not be more than two bricks and a half in thickneſs; whereas were it quite expoſed behind, it ſhould be at leaſt three bricks, or three and a half in thickneſs; and by this contrivance, if you are willing to make a handſome building, and to have a noble room over the Green-houſe, you may make the room over the tool-houſe, and carry up the ſtair-caſe in the back, ſo as not to be ſeen in the Green-houſe, and hereby you may have a room twenty-five or thirty feet in width, and of a proportionable length; and under this ſtair-caſe there ſhould be a private door into the green-houſe, at which the gardener may enter in hard froſty weather, when it will not be ſafe to open any of the glaſſes in the front. The floor of the Green-houſe, which ſhould be laid either with Bremen ſquares, Purbeck ſtone, or broad tiles, according to the fancy of the owner, muſt be raiſed two feet above the ſurface of the ground whereon the houſe is placed, which in dry ground will be ſufficient; but if the ſituation is moiſt and ſpringy, and thereby ſubject to damps, it ſhould be raiſed at leaſt three feet above the ſurface; and if the whole is arched with low brick arches under the floor, it will be of great ſervice in preventing the damps riſing in winter, which are often very hurtful to the plants, eſpecially in great thaws, when the air is often too cold to be admitted into the houſe, to take off the damps. Under the floor, about one foot from the front, I would adviſe a flue of one foot in width, and two feet deep, to be carried the whole length of the houſe, which may be returned againſt the back wall, and carried up in proper funnels adjoining to the tool-houſe, three times over each other, by which the ſmoke may paſs off. The fire-place may be contrived at one end of the houſe, and the door at which the fuel is put in, as alſo the aſh-grate, may be contrived to open into the tool-houſe, ſo that it may be quite hid from the ſight, and be in the dry, and the fuel may be laid in the ſame ſhed, whereby it will always be ready for uſe.

I ſuppoſe many people will be ſurpriſed to ſee me direct the making of flues under a Green-houſe, which has been diſuſed ſo long, and by moſt people thought of ill conſequence, as indeed they have often proved, when under the direction of unſkilful managers, who have thought it neceſſary, whenever the weather was cold to make fires therein; but however injurious flues may have been under ſuch management, yet when ſkilfully looked after they will be found of very great ſervice; for though perhaps it may happen, that there will be no neceſſity to make any fires in them for two or three years together, as when the winters prove mild there will not, yet in very hard winters they will be extremely uſeful to keep out the froſt, which cannot be effected any other way, but with great trouble and difficulty.

Withinſide of the windows, in front of the Green-houſe, you ſhould have good ſtrong ſhutters, which ſhould be made with hinges to fold back, that they may fall back quite cloſe to the piers, that the rays of the ſun may not be obſtructed thereby. Theſe ſhutters need not be above an inch and a half thick, or little more when wrought, which if made to join cloſe, will be ſufficient to keep out our common froſt; and when the weather is ſo cold as to endanger the freezing in the houſe, it is but making a fire in the oven, which will effectually prevent it; and without this conveniency it will be very troubleſome, as I have often ſeen, where perſons have been obliged to nail mats before their windows, or to ſtuff the hollow ſpace between the ſhutters, and the glaſs with Straw, which when done, is commonly ſuffered to remain till the froſt goes away; which if it ſhould continue very long, the keeping the Green-houſe cloſely ſhut up, will prove very injurious to the plants; and as it frequently happens, that we have an hour or two of the ſun-ſhine in the middle of the day, in continued froſts, which is of great ſervice to plants, when they can enjoy the rays thereof through the glaſſes, ſo when there is nothing more to do than to open the ſhutters, which may be performed in a very ſhort time, and as ſoon ſhut again when the ſun is clouded, the plants may have the benefit thereof whenever it appears; whereas, where there is ſo much trouble to uncover, and as much to cover again, it would take up the whole time in uncovering and ſhutting them up, and thereby the advantage of the ſun's influence would be loſt. Beſides, where there is ſo much trouble required to keep out the froſt, it will be a great chance if it be not neglected by the gardener; for if he be not as fond of preſerving his plants, and as much in love with them as his maſter, this labour will be thought too great by him; and if he takes the pains to cover the glaſſes up with mats, &c. he will not care to take them away again until the weather alters, ſo that the plants will be ſhut up cloſe during the whole continuance of the froſt.

There are ſome people who commonly make uſe of pots filled with charcoal to ſet in their Green-houſe in very ſevere froſts, but this is very dangerous to the perſons who attend theſe fires, and I have ſometimes known they have been almoſt ſuffocated therewith, and at the ſame time they are very injurious to the

plants; nor is the trouble of tending upon theſe ſmall, and the many hazards to which the uſe of theſe fires is liable, have juſtly brought them into diſuſe with all ſkilful perſons; and as the contrivances of flues, and of the fires, are but ſmall charges in their firſt erecting, they are much to be preferred to any other method for warming the air of the houſe.

The wall on the back part of the houſe ſhould be either laid over with ſtucco, or plaſtered with mortar, and white-waſhed, for otherwiſe the air in ſevere froſt will penetrate through the walls, eſpecially when the froſt is attended with a ſtrong wind, which is often the caſe in moſt ſevere winters. There are ſome perſons who are at the expence of wainſcotting their Green-houſes, but when this is done, it is proper to plaſter the walls with lime and hair behind the wainſcot, to keep out the cold; and when they are lined with wainſcot, they ſhould be painted white, as ſhould the cieling, and every part withinſide of the houſe; for this reflects the rays of light in a much greater quantity than any other colour, and is of ſignal ſervice to plants, eſpecially in the winter, when the houſe is pretty much cloſed, and but a ſmall ſhare of light is admitted through the windows; for at ſuch times I have obſerved, that in ſome Green-houſes which have been painted black, or of a dark colour, the plants have caſt moſt of their leaves.

Where green-houſes are built in ſuch places as will not admit of rooms over them, or the perſon is unwilling to be at the expence of ſuch buildings, there muſt be care taken to keep out the froſt from entering through the roof. To prevent which it will be very proper to have a thickneſs of Reeds, Heath, or Furz, laid between the cieling and the tiles; in the doing of which there muſt be care taken in framing the joiſts, ſo as to ſupport theſe, that their weight may not lie upon the ceiling, which might endanger it; for theſe ſhould be laid a foot thick at leaſt, and as ſmooth as poſſible, and faſtened down well with laths to prevent their riſing, and then covered over with a coat of lime and hair, which will keep out the air, and alſo prevent mice and other vermin from harbouring in them, which, if left uncovered, they would certainly do. For want of this precaution there are many Green-houſes built, which will not keep out the froſt in hard winters, and this is many times attributed to the glaſſes in front admitting the cold, when the fault is in the roof; for where there is only the covering, either of tiles or ſlates, over the cieling, every ſevere froſt will penetrate through them.

In this Green-houſe you ſhould have truſſels, which may be moved out and into the houſe, upon which you ſhould fix rows of planks, ſo as to place the pots or tubs of plants in regular rows one above another, whereby the heads of the plants may be ſo ſituated, as not to interfere with each other. The loweſt row of plants, which ſhould be the forwardeſt towards the windows, ſhould be placed about four feet therefrom, that there may be a convenient breadth left next the glaſſes to walk in front; and the rows of plants ſhould riſe gradually from the firſt, in ſuch a manner that the heads of the ſecond row ſhould be entirely advanced above the firſt, the ſtems only being hid thereby; and at the back ſide of the houſe there ſhould be allowed a ſpace of at leaſt five feet, for the conveniency of watering the plants, as alſo to admit of a current of air round them, that the damps occaſioned by the perſpiration of the plants, may be the better diſſipated, which, by being pent in too cloſely, often occaſions a mouldineſs upon the tender ſhoots and leaves, and when the houſe is cloſe ſhut up, this ſtagnating rancid vapour is often very deſtructive to the plants; for which reaſon alſo you ſhould never croud them too cloſe to each other, nor ſhould you ever place Sedums, Euphorbiums, Torch Thiſtles, and other tender ſucculent plants, amongſt Oranges, Myrtles, and other Evergreen trees; for, by an experiment which I made, anno 1729, I found that a Sedum placed in a Green-houſe among ſuch trees, almoſt daily increaſed its weight, although there was no water given to it the whole time; which increaſe of weight was owing to the moiſture imbibed from the air, which, being replete with the rancid vapours perſpired from the other plants, occaſioned the leaves to grow pale, and in a ſhort time they decayed and dropped off; which I have often obſerved has been the caſe with many other ſucculent plants, when placed in thoſe houſes which were filled with many ſorts of Evergreen trees, that required to be frequently watered.

Therefore, to avoid the inconvenience which attends the placing of plants of very different natures in the ſame houſe, it will be very proper to have two wings added to the main Green-houſe, which, if placed in the manner expreſſed in the annexed plan, will greatly add to the beauty of the building, and alſo collect a greater ſhare of heat. In this plan the Green-houſe is placed exactly fronting the ſouth, and one of the wings faces the ſouth-eaſt, and the other the ſouth-weſt; ſo that from the time of the ſun's firſt appearance upon any part of the building, until it goes off at night, it is conſtantly reflected from one part to the other, and the cold winds are alſo kept off from the front of the main Green-houſe hereby; and in the area of this place you may contrive to place many of the moſt tender exotic plants, which will bear to be expoſed in the ſummer ſeaſon; and in the ſpring, before the weather will permit you to ſet out the plants, the beds and borders of this area may be full of Anemonies, Ranunculuſes, early Tulips, &c. which will be paſt flowering, and the roots fit to take out of the ground by the time you carry out the plants, which will render this place very agreeable during the ſpring ſeaſon, when the flowers are blown: and here you may walk and divert yourſelf in a fine day, when perhaps the air in moſt other parts of the garden will be too cold for perſons not much uſed thereto, to take pleaſure in being out of the houſe.

In the center of this area may be contrived a ſmall baſon for water, which will be very convenient for watering of plants, and add much to the beauty of the place; beſides the water being thus ſituated, will be ſoftened by the heat which will be reflected from the glaſſes upon it, whereby it will be rendered much better than raw cold water for theſe tender plants.

The two wings of the building ſhould be contrived ſo as to maintain plants of differing degrees of hardineſs, which muſt be effected by the ſituation and extent of the fire-place, and the manner of conducting the flues, a particular account of which will be exhibited under the article of STOVES. But I would here obſerve, that the wing facing the ſouth-eaſt ſhould always be preferred for the warmeſt ſtove, its ſituation being ſuch, as that the ſun, upon its firſt appearance in the morning, ſhines directly upon the glaſſes, which is of great ſervice in warming the air of the houſe, and adding life to the plants, after having been ſhut up during the long nights in the winter ſeaſon. Theſe wings being in the draught annexed, allowed ſixty feet in length, may be divided in the middle by partitions of glaſs, with glaſs-doors to paſs from one to the other. To each of theſe there ſhould be a fire-place, with flues carried up againſt the back wall, through which the ſmoke ſhould be made to paſs, as many times the length of the houſe, as the height will admit of the number of flues; for the longer the ſmoke is in paſſing, the more heat will be given to the houſe, with a leſs quantity of fuel, which is an article worth conſideration, eſpecially where fuel is dear. By this contrivance you may keep ſuch plants as require the ſame degree of heat in one part of the houſe, and thoſe which will thrive in a much leſs warmth in the other part, but this will be more fully explained under the article of STOVES.

The other wing of the houſe, facing the ſouth-weſt, may alſo be divided in the ſame manner, and flues carried through both parts, which may be uſed according to the ſeaſons, or the particular ſorts of plants which are placed therein; ſo that here will be four diviſions in the wings, each of which may be kept up

to a different degree of warmth, which, together with the Green-houſe, will be ſufficient to maintain plants from all the ſeveral countries of the world; and without having theſe ſeveral degrees of warmth, it will be impoſſible to preſerve the various kinds of plants from the ſeveral parts of Africa and America, which are annually introduced into the Engliſh gardens; for when plants from different countries are placed in the ſame houſe, ſome are deſtroyed for want of heat, while others are forced and ſpoiled by too much of it; and this is often the caſe in many places, where there are large collections of plants.

In the building theſe wings, if there are not ſheds running behind them their whole length, the walls ſhould not be leſs than three bricks thick; and if they are more, it will be better, becauſe where the walls are thin, and expoſed to the open air, the cold will penetrate them, and when the fires are made, the heat will come out through the walls, ſo that it will require a larger quantity of fuel, to maintain a proper temperature of warmth in the houſe. The back part of theſe houſes having ſloping roofs, which are covered either with tiles or ſlates, ſhould alſo be lined with Reeds, &c. under the covering, as is before directed for the Green-houſe, which will keep out the cold air, and ſave a great expence of fuel; for the cloſer and better theſe houſes are built, and the glaſſes of the ſlope, as alſo in front, well guarded by ſhutters, or Reeds in hard froſt, the leſs fuel will be required to warm the houſes; ſo that the firſt expence in building theſe houſes properly, will be the cheapeſt, when the after-expence of fires is taken into conſideration.

The ſloping glaſſes of theſe houſes ſhould be made to ſlide and take off, ſo that they may be drawn down more or leſs in warm weather, to admit air to the plants; and the upright glaſſes in front may be ſo contrived, as that every other may open as doors upon hinges, and the alternate glaſſes may be divided into two; the upper part of each ſhould be contrived ſo as to be drawn down like ſaſhes, ſo that either of theſe may be uſed to admit air, in a greater or leſs proportion, according as there may be occaſion.

But beſides the Conſervatories here mentioned, it will be proper to have a deep hot-bed frame, ſuch as is commonly uſed to raiſe large annuals in the ſpring, into which may be ſet pots of ſuch plants as come from Carolina, Virginia, &c. while the plants are too ſmall to plant in the open air, as alſo many other ſorts from Spain, &c. which require only to be ſcreened from the violence of froſts, and ſhould have as much free air as poſſible in mild weather; which can be no better effected than in one of theſe frames, where the glaſſes may be taken off every day when the weather will permit, and put on every night; and in hard froſts the glaſſes may be covered with mats, Straw, Peas-haulm, or the like, ſo as to prevent the froſt from entering to the pots to freeze the roots of the plants, which is what will many times utterly deſtroy them, though a ſlight froſt pinching the leaves or ſhoots, very ſeldom does them much harm; if theſe pits are ſunk a foot or more, below the ſurface of the ground, they will be the better, provided the ground is dry, otherwiſe they muſt be wholly above ground; the ſides of this frame ſhould be built with brick, with a curb of wood laid round on the top of the wall, into which the gutters, on which the glaſſes ſlide may be laid; the back wall of this frame may be four feet high, and two bricks and a half thick, the front one foot and a half; the width of the inſide of the frame about ſix feet, and the length in proportion to the number of plants to be containd therein.

GREWIA. Lin. Gen. Plant. 914. This genus of plants was conſtituted by Dr. Linnæus, who gave it this name in honour of Dr. Grew, F. R. S. who publiſhed a curious book of the anatomy of plants.

The CHARACTERS are,

The flower hath a thick leathery empalement, compoſed of five ſpear-ſhaped leaves, which are coloured, and ſpread open. The flower hath five petals of the ſame form, but ſmaller, and are indented at their baſe, where is ſituated a ſcaly nectarium to each petal, which is thick and incurved, inclining to the border, to which the ſtyle is fixed; it hath many ſtamina, which are briſtly, the length of the petals, terminated by roundiſh ſummits. In the center is ſituated the roundiſh germen, which is lengthened to a column, ſupporting a ſlender ſtyle, crowned by a four-cornered obtuſe ſtigma. The germen afterward becomes a four-cornered berry with four cells, each incloſing one globular ſeed.

This genus of plants is ranged in the ſeventh ſection of Linnæus's twentieth claſs, which includes thoſe plants whoſe flowers have many ſtamina joined to the ſtyle, forming a column of one body.

The SPECIES are,

1. GREWIA (*Occidentalis*) foliis ſubovatis crenatis. *Grewia with oval crenated leaves.* Ulmi facie arbuſcula Æthiopica, ramulis alatis, floribus purpuraſcentibus. Hort. Amſt. 1. p. 165. tab. 85. *Ethiopian Shrub with the appearance of Elm, winged branches, and purpliſh flowers.*
2. GREWIA (*Africanus*) foliis ovato-lanceolatis ſerratis. *Grewia with oval ſpear-ſhaped leaves which are ſawed.*

The firſt ſort has been long preſerved in many curious gardens, both in England and Holland, and is figured by Dr. Plukenet, by the title of Ulmifolia arbor Africana baccifera, floribus purpureis; but by Dr. Boerhaave it was ſuppoſed to be one of Father Plumier's American plants, intitled Guidonia Ulmi foliis, flore roſeo; but the characters of this do not at all agree with thoſe of the Guidonia, that particular ſpecies of this genus being in the royal garden at Paris, which is extremely different from this. It grows naturally at the Cape of Good Hope, from whence I have received the ſeeds, which have ſucceeded in the Chelſea garden.

This will grow to the height of ten or twelve feet, and has a ſtem and branches very like thoſe of the ſmall-leaved Elm, the bark being ſmooth, and of the ſame colour as that of Elm when young; the leaves are alſo very like thoſe of the Elm, and fall off in winter; the flowers are produced ſingly along the young branches from the wings of the leaves, which are of a bright purple colour; theſe appear toward the end of July, and continue in Auguſt, and the beginning of September, but are never ſucceeded by fruit in this country.

This may be propagated from cuttings or layers; the cuttings ſhould be taken off, and planted in April, before the buds ſwell, for they do not ſucceed well after; theſe cuttings ſhould be planted in ſmall pots filled with loamy earth, and the pots ſhould be plunged into a moderate hot-bed of tanners bark, where, if they are duly watered, and in the heat of the day ſhaded from the ſun, they will take good root in about two months, and may then be gradually inured to bear the open air, into which they ſhould be removed in June, and placed in a ſheltered ſituation, where they may remain till autumn, when they muſt be removed into the green-houſe; the beſt time to lay down the layers of this plant is in the ſpring, before the buds come out, and theſe will be rooted by the ſame time the following year, when they may be cut off from the old plants, and planted each into a ſeparate pot filled with a ſoft loamy ſoil.

The beſt time to remove or tranſplant this plant is, either in the ſpring, juſt before the buds begin to ſwell, or in autumn, when the leaves begin to drop; for in ſummer, when the plants are in full leaf, it will be very improper to diſturb them.

In winter theſe plants ſhould be placed in the green-houſe, for they are too tender to live abroad in England; but they ſhould have as much free air as poſſible in mild weather, for they only require to be protected from froſt, and after their leaves are fallen, they will require very moderate watering; but in ſummer they ſhould be conſtantly watered three or four times a week in dry weather, and placed in a ſheltered ſituation, with other hardy green-houſe plants, where they will add to the variety.

The ſeeds of the ſecond ſort were ſent me by Monſ. Richard, gardener to the King of France at Marſeilles,

ſeilles, which were brought from Senegal in Africa, by Monſ. Adanſon; this riſes in this country with a ſhrubby ſtalk five or ſix feet high, ſending out many lateral branches, which are covered with a brown hairy bark, and garniſhed with oval ſpear-ſhaped leaves, about two inches long, and one inch and a quarter broad in the middle, having ſeveral tranſverſe veins from the midrib to the ſides, where they are ſawed; theſe are placed alternately on the branches, having very ſhort foot-ſtalks, and continue in verdure through the year; the plants are young, ſo have not as yet flowered in England, therefore I can give no further account of them.

This ſort is tender, ſo will not live through the winter in England, unleſs it is placed in a warm ſtove; nor do thoſe plants thrive well, which are placed on ſhelves in the dry ſtove; therefore the only method to have them ſucceed, is to place them in the bark-bed in the tan-ſtove, where the plants have grown very well for ſome years. In ſummer theſe plants require a good ſhare of free air to be admitted to them, and ſhould have water three or four times a week in warm weather; but in winter they muſt be ſparingly watered, and require to be kept warm.

GRIAS. Lin. Gen. 659. Anchovy Pear.

The CHARACTERS are,

The empalement is cup-ſhaped, of one leaf, cut into four equal ſegments; the flower has four leathery concave petals, and many briſtly ſtamina which are inſerted to the receptacle, terminated by roundiſh ſummits, and a depreſſed germen immerſed in the empalement, having no ſtyle, crowned by a four-cornered croſs-ſhaped ſtigma, which afterward becomes a fleſhy berry, with a large nut having eight furrows, and one cell containing a large pointed ſeed.

This genus of plants is ranged in the firſt order of Linnæus's thirteenth claſs, intitled Polyandria Monogynia, the flower having many ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

1. GRIAS (*Cauliflora*). Lin. Sp. 732. *Anchovy Pear.* Palmis affinis malus Perſica maxima, caudice non ramoſa, foliis longiſſimis, flore tetrapetalo pallide luteo, fructu ex arboris trunco prodeunte. Sloan. Hiſt. Jam. 2. p. 122.

This plant grows naturally in Jamaica, and in many other warm parts of America, where it riſes with a ſtrait undivided ſtem about twenty feet high, having a gray bark, marked with the veſtigia of the fallen leaves; the top of the ſtem is garniſhed with leaves near two feet long and ſix inches broad, ſitting cloſe without foot-ſtalks; theſe have one longitudinal midrib with ſeveral tranſverſe veins, and are of a lucid green; the flowers come out from the ſtem below the leaves, having no foot-ſtalk, in ſome places one, and in others they are in cluſters, each having four thick yellow petals, and a great number of ſtamina which are fixed to the empalement of the flower; the germen is included in the empalement, which afterward becomes a large oval Plumb, including a large pointed nut.

The fruit of this tree is by the Spaniards in the Weſt-Indies pickled and ſent to old Spain as preſents, who eat them as Mango's, and ſome ſay the ripe fruit is eaten as a deſart.

The plant is propagated by planting of the ſtones, which ſhould be put into the ground ſoon after the fruit is gathered, and the plants muſt be conſtantly kept in the bark-bed in the ſtove, otherwiſe it will not thrive in this country.

GRONOVIA. Martyn. Cent. 4. Lin. Gen. Plant. 284. The name of this genus was given by the late Dr. Houſton, in honour of Dr. Gronovius, a learned botaniſt at Leyden.

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, which is coloured, and cut to the middle into five ſegments. It hath five ſmall petals which are fixed to the cuts of the empalement, and five hairy ſtamina the length of the petals, which are inſerted into the empalement, and are placed alternate with the petals, terminated by twin ſummits which are erect. The germen is ſituated under the flower, ſupporting a ſlender ſtyle which is longer than the ſtamina, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh-coloured fruit with one cell, incloſing one large roundiſh ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

GRONOVIA (*Scandens*). Hort. Cliff. 74. Gronovia ſcandens lappacea, pampinea fronde. Houſt. *Climbing burry Gronovia.*

This plant was diſcovered by the late Dr. Houſtoun at La Vera Cruz, from whence he ſent the ſeeds to Europe, which have ſucceeded in many gardens. It is an annual plant, which ſends forth many trailing branches like thoſe of the Cucumber, which are cloſely ſet with broad green leaves, in ſhape like thoſe of the Vine; but they are covered with ſmall ſpines on both ſides, which ſting like the Nettle: the branches have many tendrils or claſpers, by which they faſten themſelves to whatever plants they grow near, and will riſe to the height of ſix or eight feet; the flowers are ſmall, and of a greeniſh yellow colour, ſo make no great appearance.

This being a very tender plant, muſt be raiſed on a hot-bed early in the ſpring, and afterward placed in the bark-ſtove, and treated in the ſame way as the Momordica, with which management it will produce ripe ſeeds; but this having neither uſe or beauty, is rarely cultivated but in botanic gardens for the ſake of variety.

GROSSULARIA. Raii Meth. Plant. 145. Tourn. Inſt. R. H. 639. tab. 409. Ribes. Lin. Gen. Plant. 247. Gooſeberry; in French, *Groſelier.*

This and the Currant are by Tournefort placed in the ſame genus, under the title of Groſſularia; they are alſo joined together by Dr. Linnæus, under the title of Ribes, for in their principal characters they agree; ſo according to the ſyſtems of botany, they ſhould be included in the ſame genus; but this may not be quite ſo proper in a body of gardening, for as theſe fruits have always paſſed under different denominations, ſo if they are here joined together, it may occaſion ſome confuſion among thoſe who do not enter into the ſtudy of botany. Mr. Ray has ſeparated theſe into different genera, and makes the difference of Gooſeberry from the Currant, to conſiſt in the firſt having thorns on the branches, and the fruit growing ſingle; whereas the latter hath ſmooth branches, and the fruit growing in long bunches; and although theſe differences may not be ſtrictly ſcientific, yet it may be allowed ſufficient to diſtinguiſh them among gardeners.

The CHARACTERS are,

The flower has a permanent empalement of one leaf, cut into five ſegments at the top, which is ſwollen, concave, and coloured. It hath five ſmall, obtuſe, erect petals, which riſe from the border of the empalement; and five awl-ſhaped ſtamina, which are inſerted into the empalement, terminated by compreſſed proſtrate ſummits. The germen is ſituated below the flower, having a bifid ſtyle crowned by an obtuſe ſtigma, and afterward becomes a globular berry having a navel, with one cell, which is filled with roundiſh compreſſed ſeeds included in a pulp.

This genus of plants is ranged by Dr. Linnæus in the firſt ſection of his fifth claſs, intitled Pentandria Monogynia, which contains thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. GROSSULARIA (*Reclinatum*) ramis reclinatis aculeatis, pedunculis triphyllis. *Gooſeberry with reclining branches armed with ſpines, and a three-leaved foot-ſtalk.* Groſſularia ſpinoſa, fructu obſcure purpuraſcente. J. B. 1. 48. *Prickly Gooſeberry with a dark purpliſh fruit.*
2. GROSSULARIA (*Hirſuta*) ramis aculeatis, baccis hirſutis. *Gooſeberry with prickly branches and hairy berries.* Groſſularia fructu maximo hiſpido margaritarum ferè colore. Raii Hiſt. 1484. *Gooſeberry with a very large rough fruit, almoſt of a pearl colour.*

3. GROSSULARIA (*Uva Criſpa*) ramis aculeatis, erectis, baccis glabris. *Gooſeberry with erect prickly branches, and ſmooth berries.* Groſſularia ſimplici acino, vel ſpinoſa ſylveſtris. C. B. P. 455. *Gooſeberry with a ſingle fruit, or wild prickly Gooſeberry.*
4. GROSSULARIA (*Oxyacanthoides*) ramis undique aculeatis. *Gooſeberry whoſe branches are armed on all ſides with ſpines.* Groſſularia oxyacanthæ foliis amplioribus è ſinu Hudſonis. Pluk. Amalth. 212. *Gooſeberry with larger Hawthorn leaves from Hudſon's Bay.*
5. GROSSULARIA (*Cynoſbati*) aculeis ſubaxillaribus, baccis aculeatis racemoſis. *Gooſeberry with ſpines on the lower part of the branches, and prickly berries growing in cluſters.* Ribes aculeis ſubaxillaribus, baccis aculeatis racemoſis. Lin. Sp. Plant. 202. *Currant with ſpines on the lower part of the branches, and prickly berries growing in bunches.*

The ſorts which are here enumerated, are ſuppoſed to be diſtinct ſpecies; but there are ſeveral other varieties which have been obtained from ſeeds, and are propagated for ſale in the nurſeries; moſt of theſe are titled from the perſons who raiſed them, as Lamb's Gooſeberry, Hunt's Gooſeberry, Edwards's Gooſeberry, &c. and as there are frequently new varieties obtained, it is needleſs to enumerate them here, therefore I ſhall proceed to their culture.

Theſe are propagated either by ſuckers taken from the old plants, or by cuttings; the latter of which I prefer to the former, becauſe thoſe plants which are produced from ſuckers are always more diſpoſed to ſhoot out a greater number of ſuckers from their roots, than ſuch as are raiſed from cuttings, which generally form much better roots.

The beſt ſeaſon for planting theſe cuttings is in autumn, juſt before their leaves begin to fall; obſerving always to take the handſomeſt ſhoots, and from ſuch branches as generally produce the greateſt quantity of fruit; for if you take thoſe which are produced from the ſtem of the old plants (which are commonly very luxuriant) they will not be near ſo fruitful as thoſe taken from bearing branches: theſe cuttings ſhould be about ſix or eight inches long, and muſt be planted in a border of light earth, expoſed to the morning ſun, about three inches deep, obſerving to water them gently when the weather proves dry, to facilitate their taking root; and in the ſummer, when they have put out branches, you ſhould rub off all the under ſhoots, leaving only the uppermoſt or ſtrongeſt, which ſhould be trained upright, to form a regular ſtem. In October following theſe plants may be removed; at which time you ſhould prepare an open ſpot of freſh earth, which ſhould be well dug, and cleanſed from all noxious weeds, roots, &c. and being levelled, you ſhould proceed to take up your plants, trimming their roots, and cutting off all lateral ſide branches; then plant them at three feet diſtance row from row, and one foot aſunder in the rows, obſerving to place ſome ſhort ſticks to the plants, in order to train their ſtems upright and regular. In this place they may remain one or two years, being careful to keep them clear from weeds, as alſo to trim off all lateral ſhoots which are produced below the head of the plant, ſo that the ſtem may be clear about a foot in height above the ſurface of the earth, which will be full enough; and as the branches are produced commonly very irregular in the head, you muſt cut out ſuch of them as croſs each other, or thin them where they are too cloſe, whereby the head of the plant will be open, and capable of admitting the air freely into the middle, which is of great uſe to all kinds of fruits.

After theſe plants have remained in this nurſery one or two years at moſt, they will be fit to tranſplant to the places where they are deſigned to remain; for it is not ſo well to let them grow in the nurſeries too large which will occaſion their roots to be woody, whereby the removing of them will not only hazard the growth of the plants, but ſuch of them as may take very well will remain ſtinted for two or three years, before they will be able to recover their check. The ſoil in which theſe plants thrive to the greateſt advantage, is a rich light earth; though they will do very well upon middling ſoils, which are not too ſtrong or moiſt, and in all ſituations; but where the fruit is cultivated, in order to procure it in the greateſt perfection, they ſhould never be planted in the ſhade of other trees, but muſt have a free open expoſure. The diſtance they ought to be planted is eight feet row from row, and ſix feet aſunder in the rows. The beſt ſeaſon for tranſplanting them is in October, when their leaves begin to decay; obſerving, as was before directed, to prune their roots, and trim off all lateral ſhoots, or ſuch as croſs each other, ſhortening all long branches, ſo as to make the head regular.

In the pruning of theſe ſhrubs moſt people make uſe of garden-ſhears, obſerving only to cut the head round, as is practiſed for Evergreens, &c. whereby the branches become ſo much crowded, that what fruit is produced, never grows to half the ſize as it would do were the branches thinned, and pruned according to art; which ſhould always be done with a pruning-knife, ſhortening the ſtrong ſhoots to about ten inches, and cutting out all thoſe which grow irregular, thinning the fruit-bearing branches where they are too thick, obſerving always to cut behind a leaf bud. With this management your fruit will be near twice as large as thoſe which are produced upon ſuch buſhes as are not thus pruned, and the ſhrubs will continue in vigour much longer; but you muſt obſerve to keep the ground clear from weeds, and dig it at leaſt once a year; and every other year you ſhould beſtow a little rotten dung upon it, which will greatly improve the fruit.

It is a common practice with the gardeners near London, who have great quantities of theſe buſhes in order to ſupply the markets, to prune them ſoon after Michaelmas, and then to dig up the ground between the rows, and plant it with Coleworts for ſpring uſe, whereby their ground is employed all the winter, without prejudicing the Gooſeberries; and in hard winters theſe Coleworts often eſcape, when thoſe which are planted in an open expoſure are all deſtroyed; and theſe are generally pulled up for uſe in February or March, ſo that the ground is clear before the Gooſeberries come out in the ſpring; which is a piece of huſbandry well worth practiſing where ground is dear, or where perſons are confined for room.

GROVES are the greateſt ornaments to a garden, nor can a garden be complete which has not one or more of theſe. In ſmall gardens there is ſcarce room to admit of Groves of any extent, yet in theſe there ſhould be at leaſt one contrived, which ſhould be as large as the ground will allow it; and where theſe are ſmall, there is more ſkill required in the diſpoſition, to give them the appearance of being larger than they really are.

Groves have been in all ages held in great veneration: the ancient Romans had a ſort of Groves near ſeveral of their temples, which were conſecrated to ſome God, and were called luci by antiphraſis, à non lucendo, as being ſhady and dark; and theſe were dedicated to holy uſes, being places of ſolitude and retirement, and were never to be violated with the ax.

Theſe Groves are not only great ornaments to gardens, but are alſo the greateſt relief againſt the violent heats of the ſun, affording ſhade to walk under in the hotteſt part of the day, when the other parts of the garden are uſeleſs; ſo that every garden is defective which has not ſhade.

Groves are of two ſorts, viz. open and cloſe Groves: open Groves are ſuch as have large ſhady trees, which ſtand at ſuch diſtances, as that their branches may approach ſo near each other, as to prevent the rays of the ſun from penetrating through them; but as ſuch trees are a long time in growing to a proper ſize for affording a ſhade, ſo where new Groves are planted, the trees muſt be placed cloſer together, in order to have ſhade as ſoon as poſſible; but in planting of theſe Groves, it is much the beſt way to diſpoſe all the trees irregularly, which will give them a greater magnificence, and alſo form a ſhade ſooner, than when the

trees are planted in lines; for when the ſun ſhines between the rows of trees, as it muſt do ſome part of the day in ſummer, the walks between them will be expoſed to the heat at ſuch times, until the branches of theſe trees meet; whereas in the irregular plantations, the trees intervene, and obſtruct the direct rays of the ſun.

When a perſon who is to lay out a garden, is ſo happy as to meet with large full grown trees upon the ſpot, they ſhould remain inviolate, if poſſible; for it will be better to put up with many inconveniencies, than to deſtroy theſe, which will require an age to retrieve; ſo that nothing but that of offending the habitation, by being ſo near as to occaſion great damps or obſtructing fine views, ſhould tempt the cutting of them down.

Moſt of the Groves which have been planted either in England, or in thoſe celebrated gardens of France, are only a few regular lines of trees; many of which are avenues to the habitation, or lead to ſome building, or object; but theſe do not appear ſo grand, as thoſe which have been made in woods where the trees have grown accidentally, and at irregular diſtances; and where the trees have large ſpreading heads, and are left at ſuch a diſtance, as to permit the Graſs to grow under them, then they afford the greateſt pleaſure: for nothing is more noble than fine ſpreading trees with large ſtems, growing through Graſs, eſpecially if the Graſs is well kept, and has a good verdure; beſides, moſt of theſe planted Groves have generally a gravel-walk, made in a ſtrait line between them, which greatly offends the ſight of perſons who have true taſte; therefore whenever a gravel-walk is abſolutely neceſſary to be carried through theſe Groves, it will be much better to twiſt it about, according as the trees naturally ſtand, than to attempt regularity; but dry walks under large trees are not ſo uſeful as in open places, becauſe the dropping of the trees will render theſe walks uſeleſs after rain, for a conſiderable time.

Cloſe Groves have frequently large trees ſtanding in them, but the ground is filled under theſe with ſhrubs, or under-wood; ſo that the walks which are made in them are private, and ſcreened from winds, whereby they are rendered agreeable for walking, at ſuch times when the air is too violent or cold for walking in the more expoſed parts of the garden.

Theſe are often contrived ſo as to bound the open Groves, and frequently to hide the walls, or other incloſures of the garden; and when they are properly laid out, with dry walks winding through them, and on the ſides of theſe ſweet-ſmelling ſhrubs and flowers irregularly planted, they have a charming effect; for here a perſon may walk in private, ſheltered from the inclemency of cold or violent winds, and enjoy the greater ſweets of the vegetable kingdom: therefore where it can be admitted, if they are continued round the whole incloſure of the garden, there will be a much greater extent of walk; and theſe ſhrubs will appear the beſt boundary, when there are not fine proſpects to be gained.

Theſe cloſe Groves are by the French termed boſquets, from the Italian word boſquetto, which ſignifies a little wood, and in moſt of the French gardens there are many of them planted; but theſe are reduced to regular figures, as ovals, triangles, ſquares, and ſtars; which have neither the beauty or uſe which thoſe have that are made irregularly, and whoſe walks are not ſhut up on each ſide by hedges, which prevents the eye from ſeeing the quarters; and theſe want the fragancy of the ſhrubs and flowers, which are the great delight of theſe private walks: add to this, the keeping of the hedges in good order is attended with a great expence, which is a capital thing to be conſidered in the making of gardens.

GUAIABARA., See Coccolobos.

GUAJACANA. See Diospyros.

GUAJACUM. Plum. Nov. Gen. 39. tab. 17. Lin. Gen. Plant. 465. Lignum Vitæ, or Pockwood.

The Characters are,

The flower hath a concave empalement of one leaf, which is quinquefid. It hath five oblong, oval, concave petals, which are inſerted in the empalement and ſpread open, and ten erect ſtamina inſerted in the empalement, terminated by ſmall ſummits. The ſtyle is long and ſlender, the germen is oval and pointed, and the ſtigma is ſingle and ſlender. The germen afterward becomes a berry which is roundiſh, with an oblique point, and deeply furrowed, incloſing an oval hard ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

The Species are,

1. Guajacum (*Officinale*) foliolis bijugatis obtuſis. Lin. Sp. Plant. 381. *Guajacum with obtuſe lobes placed by pairs.* Guajacum flore cæruleo, fructu ſubrotundo. Plum. Nov. Gen. 391. *Guajacum with a blue flower and a roundiſh fruit.*
2. Guajacum (*Sanctum*) foliolis multijugatis obtuſis. Lin. Sp. Plant. 382. *Guajacum with many pair of obtuſe lobes.* Guajacum flore cæruleo fimbriato, fructu tetragono. Plum. Nov. Gen. 391. *Guajacum with a blue fringed flower, and a four-cornered fruit.*
3. Guajacum (*Afrum*) foliolis multijugatis obtuſis. Lin. Sp. Plant. 382. *Guajacum with many pair of acute-pointed lobes.* Guilandinoides. Hort. Cliff. 489. and the Afra arbor acaciæ ſimilis, foliis myrti aculeatis ſplendentibus. Boerh. Ind. alt. 2. p. 57. *African-tree like the Acacia, with ſhining, acute-pointed, Myrtle leaves.*

The firſt ſort is the common Lignum Vitæ, or Guajacum, which is uſed in medicine, and grows naturally in moſt of the iſlands in the Weſt-Indies, where it riſes to be a very large tree, having a hard, brittle, brownish bark, not very thick; the wood is firm, ſolid, and ponderous, appearing very reſinous, of a blackiſh yellow colour within, and of a hot aromatic taſte; the ſmaller branches have an Aſh-coloured bark, garniſhed with leaves, which are divided by pairs, each pair having two pair of ſmall, oval, blunt leaves (or pinnæ) of a ſtiff conſiſtence, and a lucid green; the flowers are produced in cluſters at the end of the branches, compoſed of five oval concave petals, of a fine blue colour; in the center of theſe is fixed a ſtyle with an oval germen, crowned by a ſlender ſtigma; and round this is ſituated from ten to twenty ſtamina, which are as long as the ſtyle, terminated by ſickle-ſhaped ſummits. Dr. Linnæus ſuppoſes the flowers to have but ten ſtamina, whereas they certainly have near twenty.

The bark and wood of this tree are much of the ſame nature, only the wood is accounted hotter; they are uſed in diet-drinks to purify and cleanſe the blood, and to cauſe ſweating; they are eſteemed good for the gout and dropſy, the king's-evil, and particularly for the French pox. The gum or reſin, which is black, ſhining, and brittle, and when powdered, of a greenish white colour, of an aromatic ſmell, and poignant taſte, is ſomewhat cathartic, and a good purge in rheumatic caſes, to the quantity of two ſcruples mixed with the yolk of an egg, and given in a convenient vehicle.

The wood of this tree is ſo hard as to break the tools in felling them, ſo they are ſeldom cut down for fire-wood, being difficult to burn; but the wood is of great uſe to the ſugar-planters, for making of wheels and cogs for the ſugar-mills, &c. It is alſo frequently brought to Europe, and wrought into bowls, and other utenſils are made of the wood.

This tree can only be propagated by ſeeds, which muſt be procured from the countries where it naturally grows; theſe muſt be freſh, otherwiſe they will not grow; when they arrive, they ſhould be ſown in pots filled with light earth, and plunged into a good hot-bed: if the ſeeds are good, and the bed in which they are plunged is of a proper temperature of heat, the plants will appear inſix weeks or two months after; and in ſix weeks will grow to be of ſtrength enough more

for

for tranſplanting; then they ſhould be carefully taken out of the ſeed-pots, ſo as to preſerve their roots as entire as poſſible, and each planted in ſeparate ſmall pots filled with light earth, and plunged into a new hot-bed of tanners bark, where they muſt be ſhaded from the ſun till they have taken freſh root; then they muſt be treated in the ſame manner as other tender exotic plants from warm countries, admitting a large ſhare of free air to them when the weather is warm: they will require to be frequently refreſhed with water in warm weather, but it muſt be given them with caution, for too much wet will infallibly deſtroy them. While the plants are young, they may be kept during the ſummer ſeaſon in a hot-bed of tanners bark under a frame; but in the autumn they muſt be removed into the bark-ſtove, and plunged into the hot-bed of tan, where they ſhould conſtantly remain, and muſt be treated in the ſame manner as other tender plants, being careful not to give them too much water in the winter, when it is very prejudicial to them, and in ſummer they ſhould have a large ſhare of free air admitted to them every day. With this treatment the plants will thrive very well, but they are plants of ſlow growth in their own country, ſo cannot be expected to make great progreſs in Europe.

The ſecond ſort has many ſmall leaves placed along the midrib by pairs, which are rounded and obtuſe at their ends, but narrow at their baſe: they are of the ſame conſiſtence with thoſe of the former ſort, but of a darker green colour; the flowers are produced in looſe bunches toward the end of the branches, which are of a fine blue colour, and their petals are fringed on their edges. This is called in ſome of the iſlands Baſtard Lignum Vitæ; I received it from Antigua by that title. It requires the ſame treatment as the firſt ſort, and is propagated by ſeeds in the ſame way.

I have alſo received ſpecimens from the iſland of Barbuda of one, which ſeems different from either of thoſe before-mentioned: the branches have the ſame appearance with thoſe of the firſt ſort, but the leaves are larger and indented at their extremities, and are placed all round the branches, on very ſhort foot-ſtalks; the flowers were broken off, ſo I cannot determine the difference between them, but by all appearance they ſeem to be of the ſame genus.

The third ſort has been long an inhabitant in ſome of the curious gardens in England and Holland, but ſeldom produces flowers in Europe. This grows naturally at the Cape of Good Hope, from whence the ſeeds were brought firſt to Holland, where it paſſed for a ſpecies of Acacia, until it produced its flowers; which, by the account given of them by the late Dr. Boerhaave, were of the butterfly kind; but whether Dr. Linnæus has ſeen the flowers or not, I cannot ſay; however, he has removed it from that claſs of plants, and has added it to this genus; and as I have not yet ſeen the flowers, ſo I do not know if it is rightly placed. The plants retain their leaves all the year, and will live in a good green-houſe in winter, but in ſummer muſt be placed abroad with other green-houſe plants. It is of ſlow growth, and is with difficulty propagated by layers.

GUAJAVA. See PSIDIUM.

GUANABANUS. See ANNONA.

GUAZUMA. See THEOBROMA.

GUIDONIA. See SAMYDA.

GUILANDINA. Lin. Gen. Plant. 464. Bonduc. Plum. Nov. Gen. 25. tab. 39. The Nickar-tree.

The CHARACTERS are,

The empalement of the flower is of one leaf, is bell-ſhaped, and cut at the top into five equal ſegments: the flower has five concave ſpear-ſhaped petals which are equal, and ſit cloſe to the empalement, into which they are inſerted. It hath ten awl-ſhaped ſtamina which are erect, and inſerted in the empalement, being alternately ſhorter than each other, and terminated by obtuſe ſummits. In the center is ſituated an oblong germen, ſupporting a ſlender ſtyle the length of the ſtamina, crowned by a ſingle ſtigma. The germen afterward becomes a rhomboid pod, with a convex ſuture on the upper ſide; it is ſwelling and compreſſed, having one cell, including oval hard ſeeds, which are ſeparated by partitions.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, in which he includes the plants whoſe flowers have ten ſtamina and one ſtyle.

The SPECIES are,

1. GUILANDINA (*Bonduc*) aculeata pinnis ovatis foliolis aculeis ſolitariis. Lin. Sp. 545. *Prickly Guilandina with oval-winged leaves, whoſe ſmall leaves are armed with ſingle ſpines.* Bonduc vulgare majus polyphyllum. Plum. Nov. Gen. 25. *Common greater Bonduc, having many leaves, called yellow Nickar.*
2. GUILANDINA (*Bonducella*) aculeata, pinnis oblongo-ovatis foliolis aculeis geminis. Lin. Sp. 545. *Prickly Guilandina with oblong oval leaves, having ſpines by pairs.* Bonduc vulgare minus polyphyllum. Plum. Nov. Gen. 25. *Smaller common Bonduc, or Nickar-tree having many leaves, called gray Nickar.*
3. GUILANDINA (*Glabra*) inermis foliis bipinnatis, foliolis ovatis acutis alternis. *Smooth Guilandina with double winged leaves, whoſe ſmall leaves are oval-pointed and alternate.*
4. GUILANDINA (*Moringa*) inermis, foliis ſubpinnatis, foliolis inferioribus ternatis. Flor. Zeyl. 155. *Smooth Guilandina with winged leaves, whoſe under ſmall leaves are trifoliate.* Moringa Zeylanica, foliorum pinnis pinnatis, flore majore, fructu anguloſo. Burm. Zeyl. 162. tab. 75. *Morunga of Ceylon, with double-winged leaves, a larger flower, and an angular fruit.*
5. GUILANDINA (*Dioica*) inermis foliis bipinnatis baſi apiceque ſimpliciter pinnatis. Lin. Sp. 546. *Guilandina with ſmooth branches, doubly winged leaves, whoſe baſe and tops are ſingle winged.* Bonduc Canadenſe polyphyllum, non ſpinoſum, mas & fœmina. Du Hamel. *Canada Nickar-tree having many leaves, which have no ſpines, and are male and female in different plants.*

The firſt and ſecond ſorts grow naturally in moſt of the iſlands in the Weſt-Indies, where they twine their ſtalks about any neighbouring ſupport, and riſe to the height of twelve or fourteen feet. The leaves of the firſt ſort are near a foot and a half long, and are compoſed of ſix or ſeven pair of pinnæ, or wings, each of which has as many pair of lobes, or ſmall leaves ſet along the midrib; theſe are oval and entire; the foot-ſtalk or principal midrib of the leaf, is armed with ſhort, crooked, ſingle thorns, which are placed irregularly; the ſtalks are cloſely armed with the like thorns, which are larger. The ſtalks at firſt grow erect, but afterward they twine about the neighbouring trees or ſhrubs, being too weak to ſtand without ſupport: the flowers come out in long ſpikes from the wings of the ſtalk; they are compoſed of five concave yellow petals, which are equal; in the center is ſituated the oblong germen, ſurrounded by ten ſtamina. After the flower is paſt, the germen becomes a broad thick pod, about three inches long and two broad, cloſely armed with ſlender ſpines, opening with two valves, each incloſing two hard ſeeds about the ſize of children's marbles, of a yellowiſh colour,

The ſecond ſort differs from the firſt, in having much ſmaller leaves, which are ſet cloſe together; and below each pair of lobes are ſituated two ſhort ſtiff crooked ſpines, which are placed oppoſite; the flowers are of a deeper yellow colour than thoſe of the firſt ſort, and the ſeeds are of an Aſh-colour.

The third ſort was diſcovered by the late Dr. Houſtoun at Campeachy, from whence he ſent the dried ſamples to England, but there was no fruit on the trees at the time when he was there; but he mentions that this ſort had an upright ſtem, which was of a large ſize, dividing into many branches; theſe are garniſhed with double winged leaves, which are ſmooth; the wings come out altenrnate, each leaf being compoſed of four pair, but the lobes are placed oppoſite upon the middle rib; they are oval, but end in a point, and are of a light green colour.

The fourth ſort grows naturally in the iſland of Ceylon, and in ſeveral places on the Malabar coaſt, from

from whence the ſeeds were brought to England. This in its native country riſes to the height of twenty-five or thirty feet, with a ſtrong ſtem, covered with a ſmooth bark, which in the young branches is green, but on the older it is of an Aſh-colour; the root grows knobbed, and very thick. This, when young, is ſcraped and uſed by the inhabitants as Horſe-radiſh is in Europe, having much the ſame ſharp taſte; the branches are garniſhed with decompounded winged leaves; thoſe which are ſituated at the baſe have but three leaves, but above, the leaves are branched out into ſeveral diviſions, which are again divided into ſmaller, having each five or ſix pair of oval lobes, terminated by an odd one; they are of a light green, and a little hoary on their under ſide. The flowers are produced in looſe bunches from the ſide of the branches; they are compoſed of an unequal number of petals, from five to ten; they have ten ſhort ſtamina ſurrounding the germen, which afterward turns to a long taper pod, including ſeveral angular ſeeds, covered with a thin membrane. Theſe have a flavour like the root.

Theſe four ſorts are natives of warm countries, ſo will not live through the winter in England, unleſs they are placed in a warm ſtove, and the pots plunged into the tan-bed. They are propagated by ſeeds, but thoſe of the two firſt ſorts are ſo hard, that unleſs they are ſoaked two or three days in water before they are put into the ground, or placed under the pots in the tan-bed to ſoften their covers, they will remain years in the ground without vegetating: when the plants come up, they will be fit to tranſplant in a ſhort time; then they ſhould be each tranſplanted into a ſmall pot filled with light freſh earth, and plunged into a moderate hot-bed of tanners bark, ſhading them till they have taken freſh root; then they muſt be treated in the ſame manner as other tender exotic plants, giving them a large ſhare of air in warm weather, and but little water; and when the plants have advanced to be too tall to remain in the frames, they muſt be removed into the bark-ſtove and plunged into the hot-bed, where they will make great progreſs, provided they have not too much water, eſpecially during the winter ſeaſon, for theſe plants are very impatient of moiſture in cold weather.

The fourth ſort requires the ſame treatment as thoſe before-mentioned, but the ſeeds will grow without being ſteeped in water; and the plants are with difficulty ſhifted from one pot to another, for their roots are large, fleſhy, and have but few fibres; ſo that unleſs great care is taken, all the earth will fall away from them, which often cauſes their ſtalks to decay almoſt to the root, and ſometimes occaſions the loſs of the plants. This plant muſt be ſparingly watered at all times, but particularly in cold weather, when moiſture will cauſe them to rot in a ſhort time.

The fifth ſort grows naturally in Canada, from whence the plants were brought to Paris, where it has been ſome years cultivated; but about fourteen years paſt, it was firſt brought to England. This, in the country where it naturally grows, riſes with an erect ſtem to the height of thirty feet or more, dividing into many branches, which are covered with a bluiſh Aſh-coloured bark very ſmooth, and garniſhed with large decompounded winged leaves which are of the oval ſhape, very ſmooth and entire, but are ranged alternate on the midrib; theſe fall off in the autumn, and new ones come out late in the ſpring.

There are male and female of this ſort in different plants; as theſe have not as yet flowered in any of the Engliſh gardens, ſo I can give no farther account of them nor of the fruit, having never ſeen any of them. This ſort lives abroad in the open air, and is never hurt by froſt. It is propagated by cutting off ſome of the horizontal roots, which will cauſe them to ſhoot upward, ſo it may be taken from the old root, and planted in pots, whereby the plant may be multiplied, or by ſuckers from the root. It requires a light ſoil, not too moiſt.

GUNDELIA. Tourn. Cor. 51. tab. 586. Lin. Gen. Plant. 828. Hacub. Vaill. Ac. Reg. Scien. 1718.

This plant was ſo named by Dr. Tournefort, in honour of Dr. Gundelſcheimer, who found it in his travels in company with Dr. Tournefort in the Levant.

The CHARACTERS are,

It hath an uniform tubulous flower, compoſed of many hermaphrodite florets, which are incircled by leaves. They have but one petal which is cloſed at the bottom, but ſwells at the top, where it is ſlightly cut into five ſegments: they have five ſhort hairy ſtamina, terminated by long cylindrical ſummits. The oval germen is ſituated at the bottom of the flower, crowned by ſmall ſcales, ſupporting a ſlender ſtyle which is longer than the petal, terminated by two revolving ſtigmas. The germen afterward becomes a roundiſh ſingle ſeed incloſed in the common receptacle, which is conical, and the ſeeds are ſeparated by a chaffy down.

This genus of plants is by Tournefort referred to his twelfth claſs, which contains the herbs with floſculous flowers. Dr. Linnæus ranges it in the fifth ſection of his nineteenth claſs, intitled Syngeneſia Polygamia ſegregata, which includes thoſe plants whoſe flowers have a common empalement, and each of the florets are included in another.

We have but one diſtinct SPECIES of this genus at preſent in England, viz.

GUNDELIA. Lin. Sp. Plant. 814. There is no Engliſh title to this plant, but there are two varieties of it mentioned by Tournefort, which are ſuppoſed to ariſe from the ſame ſeeds, as they were found growing promiſcuouſly together. Theſe are,

1. GUNDELIA (*Tournefortii*) Orientalis acanthi aculeati foliis, floribus intensè purpureis, capite araneosâ lanugine obſito. Tourn. Cor. 51. *Eaſtern Gundelia with prickly Bear's-breech leaves, deep purple flowers, and a head covered with a down like a cobweb.*

2. GUNDELIA (*Glabro*) Orientalis, acanthi aculeati folio, capite glabrò. Tourn. Cor. 51. *Eaſtern Gundelia with a prickly Bear's-breech leaf, and a ſmooth head.*

This plant was diſcovered by Dr. Gundelſcheimer, in company with Tournefort, near Baibout in Armenia, but has ſince been foundgrowing naturally in ſeveral places in the Levant, where it is generally found in dry ſtrong land. The ſtalks of this plant ſeldom riſe more than a foot and a half high; the under leaves are long, narrow, and ſawed on their edges, their teeth ending in a ſpine; the other leaves are broader, which are irregularly ſlaſhed to the midrib, and armed at the points with ſharp prickles; the ſtalks divide upward into ſeveral branches, which are armed with leaves of the ſame form, but are narrower; and each is terminated by a conical head of flowers, reſembling thoſe of Fuller's Thiſtle, being ſurrounded at the baſe by a circle of long, narrow, prickly leaves: theſe heads are compoſed of many hermaphrodite florets, which are ſhut up in the ſcales, each having an empalement, and a germen with five ſtamina ſurrounding it; but there are few of the ſeeds which ripen perfectly in each head, in the natural places of its growth. If rain happens at the time when the plants are in flower, the germen periſhes, which is the caſe with ſeveral other of thoſe plants whoſe flowers are collected into heads.

Theſe plants are propagated by ſeed, which ſhould be ſown the beginning of March, in a warm dry border of freſh, but lean earth, in the place where the plants are deſigned to remain. When the plants come up, they muſt be carefully cleared from weeds; as they grow large, they ſhould be thinned, leaving the plants which are deſigned to remain, about two feet aſunder, that they may have room to ſpread. After this there is no other culture required, but to keep them clear from weeds; and if the froſt ſhould prove ſevere in winter, the plants ſhould be covered with ſtraw or Peas-haulm to protect them, but this covering muſt be taken off in mild weather; in two years they will produce their flowers, when they will make a fine appearance amongſt other hardy plants in the pleaſure-garden. They flower in May, and the plants loſe their ſtalks and leaves in autumn, but their roots will abide many years.

GYPSOPHYLA. Lin. Gen. Plant. 498. We have no Engliſh title for this genus.

The CHARACTERS are,

The flower hath a permanent, angular, bell-ſhaped empalement, cut into five parts at the top. It hath five oval blunt petals, which ſpread open, and ten awl-ſhaped ſtamina, terminated by roundiſh ſummits. In the center is ſituated a globular germen, ſupporting two ſlender ſtyles, crowned by ſingle ſtigmas. The germen afterward becomes a globular capſule with one cell, opening with five valves, filled with ſmall roundiſh ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's tenth claſs, which includes thoſe plants whoſe flowers have ten ſtamina and two ſtyles.

The SPECIES are,

1. GYPSOPHYLA (*Aggregata*) foliis mucronatis recurvatis, floribus aggregatis. Lin. Sp. Plant. 406. *Gypſophyla with pointed recurved leaves, and flowers gathered in a head.* Lychnis Hiſpanica kali folio multiflora. Tourn. Inſt. R. H. 338. *Spaniſh Lychnis with a Glaſſwort leaf and many flowers.*
2. GYPSOPHYLA (*Faſtigiata*) foliis lanceolato-linearibus, obſoletè triquetris lævibus obtuſis ſecundis. Lin. Sp. Plant. 407. *Gypſophyla with narrow ſpear-ſhaped leaves, having three blunt angles, and ſmooth obtuſe leaves in cluſters.* Saponaria caule ſimplici, foliis linearibus ex alis foliorum confertis teretibus. Hort. Cliff. 166. *Sopewort with a ſingle ſtalk, very narrow leaves, coming out in cluſters from the wings of the ſtalks.*
3. GYPSOPHYLA (*Proſtrata*) foliis lanceolatis lævibus, caulibus diffuſis, piſtillis corollâ campanulatâ longioribus. Lin. Sp. Plant. App. 1195. *Gypſophyla with ſmooth ſpear-ſhaped leaves, diffuſed ſtalks, and the pointal longer than the petal, which is bell-ſhaped.*
4. GYPSOPHYLA (*Perfoliata*) foliis ovato-lanceolatis, ſemiamplexicaulibus. Lin. Sp. Plant. 408. *Gypſophyla with oval ſpear-ſhaped leaves, half embracing the ſtalks.* Lychnis Orientalis, ſaponariæ folio & facie, flore parvo & multiplici. Tourn. Cor. 24. *Eaſtern Lychnis with the leaf and appearance of Sopewort, having many ſmall flowers.*
5. GYPSOPHYLA (*Paniculata*) foliis lanceolatis ſcabris, floribus dioicis corollis revolutis. Lin. Sp. Plant. 407. *Gypſophyla with rough, ſpear-ſhaped leaves, male and female in different plants, and the petals of the flowers recurved.* Alſine fruteſcens caryophylli folio, flore parvo albo. Gerb. *Shrubby Chickweed with a Clove Gilliflower leaf, and a ſmall white flower.*

The firſt ſort grows naturally in the ſouth of France, Spain, and Italy, upon the mountains. This hath a perennial root, from which ariſe many narrow leaves ending in acute points, which are recurved; the ſtalks riſe about a foot high, garniſhed with narrower leaves placed oppoſite, and at ſome of the joints there are ſmaller leaves growing from the ſtalks in cluſters; the upper part of the ſtalk divides into ſmaller branches, each being terminated by a cloſe bunch of ſmall white flowers. Theſe appear in July, and are ſucceeded by ſmall oval capſules, filled with ſmall ſeeds.

The ſecond ſort is ſomewhat like the firſt, but the leaves are much narrower, and almoſt three-cornered; they are placed in cluſters, which come out from the ſide of the ſtalk; the bunches of the flowers are ſmaller, and not ſo cloſely joined. This hath a perennial root, and grows naturally upon the Helvetian mountains.

The third ſort hath a perennial root, from which ariſe ſmooth ſpear-ſhaped leaves in cluſters; the ſtalks are near a foot long, but are proſtrate on the ground; the flowers have a purpliſh caſt, and the ſtamina are much longer than the petals of the flowers. This flowers in June and July, and the ſeeds ripen in autumn.

The fourth ſort grows naturally in the Levant, and alſo in Spain. It hath a ſtrong, fleſhy, fibrous root, which ſtrikes deep in the ground, ſending up ſeveral thick, fleſhy ſtalks, which riſe near two feet high, garniſhed with oval ſpear-ſhaped leaves, which half embrace the ſtalks with their baſe; the upper part of the ſtalk divides into many ſmaller branches, which are terminated with looſe bunches of ſmall white flowers. Theſe open in July, and the ſeeds ripen in autumn.

The fifth ſort grows naturally in Siberia and Tartary, the ſeeds of it were ſent me from Peterſburgh. This hath a perennial root, from which ariſe many branching ſtalks a foot and a half high, garniſhed with narrow ſmooth-pointed leaves, ſhaped like thoſe of Gilliflowers; at the top of the ſtalks are produced looſe cluſters of very ſmall white flowers, which appear at the ſame time with the former ſorts, and the ſeeds ripen in the autumn.

Theſe plants have no great beauty, ſo are rarely cultivated but in botanic gardens for the ſake of variety.

They are propagated by ſeeds, which ſhould be ſown in a bed of light earth, and when the plants are fit to remove, they may be tranſplanted into the places where they are deſigned to remain, and will require no other culture but to keep them clean from weeds; for the roots will continue ſeveral years, and annually produce flowers and ſeeds.

H.

HÆMANTHUS. Tourn. Inſt. R. H. 657. tab. 433. Lin. Gen. Plant. 394. Dracunculoides. Boerh. Ind. alt. 2. 226. [Αἷμανθος, of Αἷμα, blood, and Ἄνθος, flos, a flower, i. e. Blood-flower.]

The CHARACTERS are,

The flower has a permanent empalement of ſix leaves, which is large, and ſhaped like an umbel. It hath one erect petal, which is cut into ſix parts, having a ſhort angular tube, and ſix awl-ſhaped ſtamina, which are inſerted in the petal, but are longer, terminated by oblong proſtrate ſummits. The germen is ſituated under the flower, ſupporting a ſingle ſtyle the length of the ſtamina, crowned by a ſingle ſtigma. The germen afterward becomes a roundiſh berry with three cells, each containing one triangular ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, intitled Hexandria Monogynia, which includes the plants whoſe flowers have ſix ſtamina and one ſtyle.

The Species are,

1. Hæmanthus (*Coccineus*) foliis linguiformibus planis lævibus. Prod. Leyd. 42. *Blood-flower with plain, tongue-ſhaped, ſmooth leaves.* Hæmanthus Africanus. H. L. Bat. *African Blood-flower, or Cape Tulip.*
2. Hæmanthus (*Carinatus*) foliis longioribus carinatis. *Blood-flower with longer keel-ſhaped leaves.*
3. Hæmanthus (*Puniceus*) foliis lanceolato ovatis undulatis erectis. Hort. Cliff. 127. *Blood-flower with ſpear-ſhaped, waved, erect leaves.* Hæmanthus colchici foliis perianthio herbaceo. Hort. Elth. 167. *Blood-flower with Meadow Saffron leaves, and an herbaceous involucrum.* Dracunculoides. Boerh. Ind. alt. 2. 226. *Baſtard Dragon.*

The firſt ſort has been many years in ſeveral curious gardens in Europe, where it hath ſeldom flowered. This hath a large bulbous root, from which in the autumn comes out two broad flat leaves, of a fleſhy conſiſtence, ſhaped like a tongue, which turn backward on each ſide, and ſpread flat on the ground, ſo have a ſingular appearance all the winter; and in the ſpring theſe leaves decay, ſo that from the end of May to the beginning of Auguſt, they are deſtitute of leaves: when theſe produce their flowers, it is always in the autumn, juſt before the new leaves come out. In the books where this plant is figured, the flowers are repreſented growing upon a ſtrong upright foot-ſtalk; but all thoſe which I have ſeen in flower, never have riſen more than two or three inches from the bulb, with a large cluſter of bright red flowers, incloſed in a common leafy-coloured empalement; theſe were tubulous, with one petal cut into ſix parts, each having ſix long ſtamina, ſtanding out beyond the petal, and in the center appears the germen ſitting under the flower, ſupporting a ſingle ſtyle, crowned with a ſtigma. The germen never ripens to a ſeed in England, but decays with the flower, and then the green leaves grow and ſpread on the ground.

The ſecond ſort hath a large bulbous root like the firſt, which ſends out three or four leaves, that grow a foot long or more; theſe are not flat like thoſe of the other, but are hollowed like the keel of a boat, and ſtand more erect than thoſe of the former ſort, but are not quite ſo broad; the flowers of this are like thoſe of the firſt, but are of a paler red; this is certainly different from the other. I received the roots of this from Dr. Van Royen, profeſſor of botany at Leyden.

The third ſort hath roots compoſed of many thick fleſhy tubers, which join at the top, where they form a head, out of which ariſes a fleſhy ſpotted ſtalk, like that of the dragon, which ſpreads out at the top into ſeveral ſpear-ſhaped leaves, which are waved on their edges. The ſtalks grow about a foot high, and the leaves are ſix or eight inches long, and two broad in the middle; from the ſide of this ſtalk near the ground, breaks out a ſtrong fleſhy foot-ſtalk, about ſix or eight inches long, ſuſtaining at the top a large cluſter of flowers, included in one common empalement or covering, which is permanent; the flowers are ſhaped like thoſe of the other ſorts, but are of a yellowiſh red colour. Theſe appear in May, June, or July, and are ſucceeded by berries which are of a beautiful red colour when ripe.

The two firſt ſorts are with difficulty propagated in Europe, for their roots put out offsets but ſparingly, ſo the gardens in Holland are ſupplied with them from the Cape of Good Hope, where they naturally grow, and produce ſeeds; the plants are too tender to thrive in this country in winter in the open air, therefore the roots muſt be planted in pots filled with light loamy earth, and, in the winter, placed in a dry glaſs-caſe, where, during that ſeaſon, the leaves will be in full vigour, ſo will make a pretty appearance, when intermixed with other plants in the ſtove; and though they ſeldom flower here, yet are they worthy of a place in every garden where there is convenience of keeping them. The roots may be taken up when their leaves are decayed, and kept out of the ground till Auguſt, when they ſhould be new potted, and may remain abroad till the end of September, at which time they may be removed into the glaſs-caſe; and during the time they are growing, will require to have frequent waterings, but it muſt not be given to them in large quantities.

If a border is made either againſt the front of the green-houſe or ſtoves, which may be contrived ſo as to be covered with glaſſes in winter, in which theſe roots, with the African Gladiolus's, Ixia's, Perſian Cyclamens, &c. are planted in the full ground, they will flower more conſtantly, and the foot-ſtalks will riſe much higher than thoſe kept in pots.

The third ſort is alſo a native of the Cape of Good Hope, from whence it was firſt brought to Holland, where it has been propagated and diſperſed over Europe; this may be propagated by parting of the roots; the beſt time for this is in the ſpring, before the plants put out new ſtalks, which is alſo a right time to ſhift and new-pot them; but as the roots do not multiply very faſt in offsets, the beſt way is to propagate them from ſeeds, which they ripen plentifully in England; theſe ſhould be ſown ſoon after they are ripe, in pots filled with light earth, and kept in the ſtove all the winter; if theſe pots are plunged into the tan-bed in the bark-ſtove, in the vacancies between the plants, the earth will be kept warm, and will not dry ſo faſt, as when they are placed in a dry ſtove, ſo the ſeeds will be ſooner prepared to vegetate; in the ſpring the pots may be taken out of the ſtove, and plunged into a hot-bed, which will bring up the plants; theſe muſt have air admitted to them every day in mild weather, to prevent their drawing up weak; and when they are fit to remove, they may be each planted in a ſeparate ſmall pot filled with light earth, and plunged into the hot-bed again, to promote their taking new root; then they muſt be gradually hardened, and afterward may be removed into the dry ſtove, where they ſhould conſtantly remain, otherwiſe the plants will not thrive and flower in this country. In the winter ſeaſon they muſt not have too much wet, for as their roots are fleſhy and ſucculent, ſo they are apt to rot with moiſture. In the ſummer they muſt have a large ſhare of air in warm weather, and require to be frequently watered, eſpecially during the time of their flowering.

HÆMATOXYLUM. Lin. Gen. Plant. 417. Bloodwood, Logwood, or Campeachy Wood.

The Characters are,

The flower hath a permanent empalement, which is cut into five oval ſegments. It hath five oval petals which are equal, and larger than the empalement, and ten awl-ſhaped ſtamina, which are longer than the petals, terminated by ſmall ſummits. In the center is ſituated an oblong oval germen, ſupporting a ſingle ſtyle, crowned by a thick indented ſtigma. The germen afterward becomes a compreſſed obtuſe capſule, with one cell, opening with two valves, containing two or three oblong kidney-ſhaped ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

We have but one Species of this genus, viz.

Hæmatoxylum (*Campechianum*). Hort. Cliff. 161. *Logwood*, Lignum Campechianum, ſpecies quædam. Sloan. Cat. Jam 213. *Campeachy Wood.*

This tree grows naturally in the Bay of Campeachy, at Honduras, and other parts of the Spaniſh Weſt-Indies, where it riſes from ſixteen to twenty-four feet high. The ſtems are generally crooked, and very deformed, and are ſeldom thicker than a man's thigh. The branches come out on every ſide; they are crooked, irregular, and armed with ſtrong thorns, garniſhed with winged leaves, compoſed of three or four pair of lobes, which are obtuſe, and indented at the top. The flowers come out in a racemus from the wings of the leaves, ſtanding erect; they are of a pale yellowiſh colour, with a purple empalement, and are ſucceeded by flat oblong pods, each containing two or three kidney-ſhaped ſeeds.

The

The wood of this tree is brought to Europe, where it is uſed for dyeing purples, and for the fineſt blacks, ſo is a valuable commodity; but the Spaniards, who claim a right to the poſſeſſion of thoſe places where it naturally grows, are for excluding all other countries from cuting of the wood, which has occaſioned many diſputes with their neighbours, but particularly with the Engliſh; this it is to be hoped will ſoon be over, as there are ſome of the planters in Jamaica, and the other iſlands in America, belonging to the crown of Great-Britain, who have propagated this tree in ſo great plenty, as to have hopes of ſupplying the demand for this wood in Britain in a very few years; for the trees grow ſo faſt there, as to be fit for uſe in ten or twelve years years from ſeed; and as they produce great plenty of ſeeds in the Britiſh colonies, ſo thoſe ſeeds ſcattering about, the plants come up in all the neighbouring lands, therefore will ſoon be like an indigenous plant of the country.

Some of the planters in Jamaica have incloſed their eſtates with hedges formed of theſe trees, which are very ſtrong and durable; but where the hedges are cut, it will greatly retard the growth of the trees, ſo that thoſe who propoſe to make an advantage by the propagation of the wood, ſhould ſow the ſeeds upon ſwampy lands, which may be unfit for growing of ſugar, and permit all their branches to remain, which will be of great uſe in augmenting the bulk of their ſtems; and if, while the plants are young, they are kept clean from weeds, &c. it will be of great advantage in promoting of their growth. I have been credibly informed by ſome of the planters in Jamaica, that they have had ſome plants of this ſort upward of ten feet high in three years, ſo that it requires but few years to raiſe a ſupply of this wood, ſufficient to anſwer all the demands for it.

This plant is preſerved in ſome curious gardens in England, for the ſake of variety. The ſeeds are frequently brought from America, which, if freſh, readily grow when ſown upon a good hot-bed; and if the plants are kept in a moderate hot-bed, they will grow to be upward of a foot high the ſame year, and, while the plants are young, they are generally well furniſhed with leaves; but afterward they make but little progreſs, and are frequently but thinly clothed with leaves. Theſe plants are very tender, ſo ſhould be conſtantly kept in the bark-ſtove, where, if they are duly watered, and the ſtove kept in a good degree of heat, the plants may be preſerved very well. There are ſome of theſe plants now in England, which are upward of ſix feet high, and as thriving as thoſe in their native ſoil.

HALESIA. Lin. Gen. Plant. 596.

The CHARACTERS are,

The flower hath a ſmall permanent empalement of one leaf, indented in four parts; it hath a bell-ſhaped ſwelling flower of one petal, divided at the brim into four lobes, and from twelve to ſixteen ſtamina, ſhorter than the petal, terminated by oblong erect ſummits; the germen is ſituated below, is oblong, ſupporting a ſlender ſtyle longer than the petal, crowned by a ſimple ſtigma; the germen afterward becomes an oblong nut, narrowed at both ends, having four angles, with two cells, incloſing a ſingle ſeed in each.

This genus of plants is ranged in the firſt ſection of Linnæus's eleventh claſs, intitled Dodecandria Monogynia, the flower having twelve ſtamina and one ſtyle.

The SPECIES are,

1. HALESIA (*Tetraptera*) foliis lanceolato-ovatis, petiolis glanduloſis. Lin. Sp. 636. *Haleſia with oval ſpear-ſhaped leaves, whoſe foot-ſtalks are glandulous.* Frutex padi foliis ſerratis, floribus monopetalus albis campaniformibus, fructu craſſo tetragono. Cateſb. Hiſt. Carol. 1. p. 64.
2. HALESIA (*Diptera*) foliis ovatis, petiolis lævibus. Lin. Sp. 636. *Haleſia with oval leaves having ſmooth foot-ſtalks.*

This genus of plants received its title from the late learned and reverend Doctor Hales, miniſter of Teddington, near Hampton-Court.

Both the ſorts grow naturally in South-Carolina; the firſt on the banks of Santee river, where it frequently comes up with two or three ſtems from the ſame root, which riſe from fifteen to twenty feet high, ſending out branches toward their tops, garniſhed with oval ſpear-ſhaped leaves, ſawed on their edges: the flowers are produced on the ſide of the branches in cluſters, from two or three to ſix or ſeven in each; they are bell-ſhaped, hanging downward, of one petal, white, which is indented in four parts at the brim; theſe are ſucceeded by oblong nuts, having four wings and four cells, each containing one oblong ſeed.

The ſecond ſort hath much reſemblance to the firſt, the leaves are oval, and the foot-ſtalks are ſmooth; the fruit has but two angles.

Theſe plants are propagated by ſeeds, when they can be procured freſh from the places of their natural growth. Theſe ſhould be ſown in pots as ſoon as the ſeeds arrive, plunging the pots into the ground, in a ſituation where they may have only the morning ſun. The ſeeds often remain a year in the ground, therefore the earth in the pots ſhould not be diſturbed, until there is no probability of the ſeed growing. When the plants appear, they ſhould be ſcreened from the ſun, and frequently, but not too plentifully watered; for while the plants are young, much moiſture will rot their ſhanks. The following autumn, the pots ſhould be placed in a common frame, where the plants may enjoy the free air in mild weather, and be ſcreened from froſt. The ſpring following, before the plants begin to ſhoot, they ſhould be each put into a ſeparate ſmall pot, plunging them in a frame, where they ſhould be ſhaded from ſun; and in the ſummer placed in a ſhady ſituation, ſcreening them in winter; and the ſpring following they may be turned out of the pots, and planted in the full ground where they are deſigned to remain.

HALICACABUM. See PHYSALIS.

HALICACABUS PEREGRINA. See CARDIOSPERMUM.

HALIMUS. See ATRIPLEX.

HALLERIA. Lin. Gent. Plant. 679. Caprifolium. Boerh. Ind. alt. 2. p. 226. *African Fly Honeyſuckle.*

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, which is cut into three parts at the top, the upper ſegment being much broader than the other. It hath one petal of the grining kind. The bottom of the tube is roundiſh. The chaps are ſwollen and inflexed, the brim is erect and oblique, cut into four ſegments, the upper being longer than the others, and is blunt, with an indenture at the top; the two ſide ones are ſhorter, and pointed, the lower is very ſhort and acute. It hath four ſtamina, which are briſtly, two being longer than the other, terminated by twin ſummits. In the bottom of the tube is ſituated an oval germen, with a ſtyle longer than the ſtamina, crowned by a ſingle ſtigma. The germen afterward becomes a roundiſh berry with two cells, each containing one hard ſeed.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, intitled Didynamia Angioſpermia, which includes the plants with a ringent flower, which have two long and two ſhorter ſtamina, and the ſeeds are included in a capſule.

We have but one SPECIES of this genus, viz.

HALLERIA (*Lucida*). Hort. Cliff. 323. This plant has its title from Dr. Haller, who was profeſſor of botany at Gottingen, in Germany. Caprifolium Africanum folio pruni leviter ſerrato, flore ruberrimo, baccâ nigrâ. Boerh. Ind. alt. 2. 226. *African Fly Honeyſuckle, with a Plumb leaf lightly ſawed, a very red flower, and a black berry.*

The Engliſh name which I have here added, has been given to this plant by ſome gardeners, who obſerved that the ſhape of the flower had ſome reſemblance to that of the Upright, or Fly Honeyſuckle, and for want of an Engliſh name gave this to it; or they might take it from the Latin name, by which it was called by Dr. Boerhaave, who made it a ſpecies of Honeyſuckle.

This

This plant grows to the height of ſix or eight feet, having a woody ſtem, which is well furniſhed with branches; theſe have oval ſawed leaves, which are placed oppoſite, and continue green through the year; the flowers come out ſingly, and are of a red colour, but, being intermixed with the leaves, are not ſeen unleſs they are looked after, for they grow ſcatteringly on the branches; theſe come out in June, and the ſeeds ripen in September; the leaves are green in winter, ſo the plants make a variety in the green-houſe during that ſeaſon.

It may be propagated by cuttings, which, if planted in pots filled with light earth in June, and plunged into a gentle hot-bed, will ſoon take root; theſe plants may be expoſed in ſummer, and will require plenty of water in that ſeaſon; in winter they muſt be houſed with Myrtles, and other hardy exotic plants, which require a large ſhare of air in mild weather.

HAMAMELIS. Lin. Gen. Plant. 155. Trilopus. Mitch. Gen. 22. *The Witch Hazel.*

The CHARACTERS are,

It is male and female in different plants; the male flowers have a four-leaved empalement, and four narrow petals, which are reflexed; they have four narrow ſtamina, which are ſhorter than the petals, terminated by horned reflexed ſummits. The female flowers have a four-leaved involucrum, in which are four flowers; theſe have a four-leaved empalement, which is coloured; they have four narrow petals, which are reflexed, and four nectariums adhering to the petals. In the center is ſituated an oval hairy germen, ſupporting two ſtyles, crowned by headed ſtigmas. The germen afterward becomes an oval capſule ſitting in the involucrum, having two cells, each containing one hard, oblong, ſmooth ſeed.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourth claſs, but properly belongs to the ſecond ſection of his twenty-ſecond claſs, which includes thoſe plants which have male and female flowers in different plants, whoſe female flowers have two ſtyles.

We have but one SPECIES of this genus in the Engliſh gardens at preſent, viz.

HAMAMELIS (*Virginiana*). Flor. Virg. 139. *The Witch Hazel.* Piſtachia Virginiana nigra, coryli foliis. Pluk. Alm. 296. *Black Virginia Piſtachia with Hazel leaves.*

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 Nut, placed alternately on the branches; theſe 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, more for the ſake of variety than its beauty.

This is propagated by laying down the young branches in autumn, which will take root in one year, provided they are duly watered in dry weather; but many of the plants which are in the gardens, have been produced from ſeeds which came from America; theſe ſeeds always remain a whole year in the ground, ſo they ſhould be ſown in pots, which may be plunged into the ground in a ſhady part of the garden, where they may remain all the ſummer, and require no other care but to keep the pots clean from weeds, and in very dry weather to water them now and then; in autumn the pots may be removed to a warmer ſituation, and plunged into the ground under a warm hedge; and if the winter ſhould prove very ſevere, they ſhould have ſome light covering thrown over the pots, which will ſecure the ſeeds from being deſtroyed. In the ſpring the plants will come up, therefore as the ſeaſon grows warm, the pots may be removed where they may have the morning ſun till eleven o'clock; and if they are duly watered in dry weather, the plants will have made good progreſs by autumn, when they ſhould be tranſplanted, either into ſmall pots, or in a nurſery-bed, where in one, or at moſt two years time, they will be ſtrong enough to plant where they are deſigned to remain; they love a moiſt ſoil, and a ſhady ſituation.

HAMELLIA. Lin. Gen. 232.

The CHARACTERS are,

The empalement of the flower is ſmall, permanent, and cut into five acute ſegments; the flower is of one petal, having a long tube, whoſe brim is cut into five acute points; it hath five awl-ſhaped ſtamina inſerted to the middle of the petal, terminated by linear ſummits the length of the petal; and an oval germen, whoſe lower point is conical, ſupporting a ſlender ſtyle the length of the corolla, crowned by an obtuſe linear ſtigma: the germen afterward becomes an oval furrowed berry, with five cells, filled with ſmall compreſſed ſeeds.

This genus of plants is ranged in the firſt order of Linnæus's fifth claſs, intitled Pentandria Monogynia, the flower having five ſtamina and one ſtyle: it is named in honour of Monſieur du Hamel des Monceaux, member of the Academy of Sciences at Paris, and fellow of the Royal Society of London; a gentleman well known to the learned, by the many uſeful books he has publiſhed.

We know but one SPECIES of this genus, viz.

1. HAMELLIA (*Patens*) racemis erectos. Jacq. Amer. 71. *Hamellia with erect ſpikes of flowers.*

This plant grows naturally in Africa, and alſo in the warm parts of America: I received the ſeeds from Paris, which were brought from Senegal by Mr. Adanſon, with the title of Mortura on the paper; and before that, received a drawing of the plant in flower, from the late Dr. Houſtoun, who found it growing naturally in America, where it has ſince been found growing by Mr. Jacquin, who has figured it.

It riſes with a ligneous ſtalk five or ſix feet high, ſending out ſeveral erect branches toward the top, garniſhed with oval woolly leaves, placed by threes round the branches, having red foot-ſtalks; the flowers terminate the branches in ſlender ſpikes; they are tubulous, and cut at their brims into five ſharp ſegments, ſtanding erect, of a bright red colour: theſe are not ſucceeded by ſeeds in England.

This plant is propagated by ſeeds, when they can be procured freſh from the countries where it grows naturally: theſe ſhould be ſown in ſmall pots, and plunged into a moderate hot-bed: the plants generally appear in about five or ſix weeks after, and ſhould then be treated in the ſame way as other plants from the ſame countries; giving them proper air in warm weather, and gently refreſhing them with water; and when they are fit to tranſplant, they ſhould be each planted in a ſmall pot, plunging them into the hot-bed again, where they ſhould be ſhaded from the ſun until they have taken new root, when they ſhould have air and moiſture according to the warmth of the ſeaſon. In the autumn the plants muſt be removed into the tan-ſtove, plunging the pots into the bed, where they ſhould be always continued: this flowers in July and Auguſt, when it makes a pretty appearance.

As the ſeeds of this plant are ſeldom brought to England, ſo the plant may be propagated by cuttings, which if planted in ſmall pots, plunged into a moderate hot-bed, and cloſely covered with either bell or hand-glaſſes, will put out roots in about ſix weeks, and may then be treated in the ſame way as the ſeedling plants.

HARMALA. See PEGANUM.

HASSELQUISTIA. Lin. Gen. 341.

The CHARACTERS are,

It is an umbelliferous plant, whoſe univerſal umbel is compoſed of ſix ſpreading rays; theſe are for the moſt part double; the greater involucrum has many ſhort briſtly leaves;

leaves; the proper empalement is very ſmall, and hath five indentures; the general umbel is half radiated; the outer flowers are fruitful, but thoſe in the diſk are barren; they have five petals, and five ſlender ſtamina longer than the petals, terminated by roundiſh ſummits: the turbinated germen is ſituated under the flower, ſupporting two ſlender recurved ſtyles, crowned by obtuſe ſtigmas; the germen afterward becomes an orbicular fruit, compoſed of two ſeeds having borders.

This genus of plants is ranged in the ſecond order of Linnæus's fifth claſs, intitled Pentandria Digynia, the flowers having five ſtamina and two ſtyles.

It it named after Mr. Haſſelquiſt, who was a pupil of Dr. Linnæus.

1. HASSELQUISTIA (*Ægyptiaca*). Amœn. Acad. 4. p. 370. *Egyptian Haſſelquiſtia.* Paſtinaca Orientalis, foliis eleganter inciſis. Buxb. Cent. 3. p. 16.

This plant is bennial, and being a native of warm countries, is with difficulty preſerved in England; for when the plants come up early in the ſpring, they do not perfect their ſeeds the ſame year: and thoſe plants which ariſe in the autumn, ſeldom live through the winter; therefore the ſureſt method to procure good ſeeds in this country, is to ſow the ſeeds in pots about the middle of Auguſt, placing the pots where they may have the morning ſun only, being careful to water them duly; and as weeds will come up in the pots to take them out, and where the plants are too cloſe, thin them; in October remove the pots into a common frame, where they may enjoy the free air in mild weather, but be ſcreened from froſt: in the ſpring following, if the plants are carefully turned out of the pots, and planted in the full ground, they will flower in June, and the ſeeds will ripen in Auguſt.

HAWTHORN. See MESPILUS.

HAZEL. See CORYLUS.

HEDERA. Lin. Gen. Plant. 249. Tourn. Inſt. R. H. 612. tab. 384. *The Ivy-tree.*

The CHARACTERS are,

The flowers are diſpoſed in form of an umbel, having a ſmall involucrum indented in many parts. The empalement is cut into five parts, and ſits upon a germen. The flower hath five oblong petals, which ſpread open, whoſe points are incurved; they have five awl-ſhaped ſtamina, terminated by proſtrate ſummits, which are cut into two at their baſe. The germen, which is ſituated below the flower, ſupports a ſhort ſtyle, crowned by a ſingle ſtigma. The germen afterward becomes a globular berry with one cell, incloſing four or five large ſeeds, convex on one ſide, and angular on the other.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and but one ſtyle.

The SPECIES are,

1. HEDERA (*Helix*) foliis ovatis lobatiſque. Flor. Lapp. 91. *Ivy with oval lobed leaves.* Hedera arborea. C. B. P. 305. *Tree Ivy*; and the Hedera communis major. J. B. 2. 111. *Great common Ivy.*
2. HEDERA (*Quinquefolia*) foliis quinatis, ovatis, ſerratis. Hort. Cliff. 74. *Ivy with leaves compoſed of five lobes, which are ſawed.* Vitis quinquefolia Canadenſis ſcandens. Tourn. Inſt. 613. *Climbing Canada Vine with five leaves, commonly called Virginia Creeper.*

The firſt ſort grows naturally in moſt parts of England, where it meets with any neighbouring ſupport. The ſtalks will faſten to it, and riſe to a very great height, ſending out roots on every ſide, which get into the joints of walls, or the bark of trees, and thereby are ſupported; or if there is no ſupport near, the ſtalks trail upon the ground, and take root all their length, ſo that they cloſely cover the ſurface, and are difficult to eradicate; for where any ſmall parts of the ſtalks are left, they will ſoon ſpread and multiply. While theſe are fixed to any ſupport, or trail upon the ground, their ſtalks are ſlender and flexible; but when they have reached to the top of their ſupport, they ſhorten and become woody, forming themſelves into large buſhy heads, and their leaves are larger, more of an oval ſhape, and not divided into lobes like the lower leaves, that it hath a different appearance, which has occaſioned ſome to take them for diſtinct ſpecies.

In the latter part of the laſt century, when it was the faſhion to fill gardens with all ſorts of ſheered Evergreens, there were many of theſe plants trained into round heads, which were clipped into balls, or in form of a cone; and as theſe were ſo hardy as not to be injured by weather, and would grow in any ſoil, ſo they were then much eſteemed; but ſince that unnatural taſte has been exploded, theſe plants are ſeldom admitted into gardens, unleſs to cover walls, or run over grottos, &c. for which purpoſe there is no plant ſo well adapted.

There are two varieties of this, one with ſilver-ſtriped leaves, and the other with yellowiſh leaves on the top of the branches; theſe are preſerved in ſome gardens for the ſake of variety.

Theſe plants are eaſily propagated by their trailing branches, which ſend forth roots their whole length; which branches being cut off, and planted, will grow in almoſt any ſoil or ſituation, and may be trained up to ſtems, or ſuffered to remain as climbers, to cover walls, pales, &c.

They may alſo be propagated by ſeeds, which ſhould be ſown ſoon after they are ripe, which is in the beginning of April: if theſe are kept moiſt and ſhaded, they will grow the ſame ſpring, otherwiſe they will remain a year in the ground; therefore few perſons trouble themſelves to propagate the plants in this way, the other being much more expeditious.

While the ſtalks of this plant trail, either on the ground or upon walls, or other ſupport, they do not produce any flowers, which has occaſioned its being called ſterile, or barren Ivy; but when the branches get above their ſupport, they produce flowers at the end of every ſhoot; theſe appear in September, and are ſucceeded by berries, which turn black before they are ripe, and are formed into round bunches, which are called corymbi, and from theſe the epithet of corymbus, ſo frequently uſed by botaniſts, is taken.

The leaves of this plant are frequently applied to iſſues to keep them cool, and free from inflammations; they are alſo uſed for curing of ſcabs, ſores, and ſcald heads. Mr. Boyle, in his Uſefulneſs of Experimental Philoſophy, commends a large doſe of the full ripe berries, as a remedy againſt the plague; but Schroder ſays, they purge upward and downward. The gum of Ivy is cauſtic, but is recommended by ſome to take ſpots and freckles out of the face.

There is mention made of another ſpecies of Ivy, which is titled Hedera Poetica, by Caſpar Bauhin; this grows in many of the iſlands of the Archipelago, and produces yellow berries; but as I have not ſeen this plant, I cannot determine if it is a diſtinct ſpecies. Dr. Linnæus ſuppoſes it to be only a variety, though he has not ſeen the plant; but Tournefort, who gathered it in the Levant, puts it down as a different ſort.

The ſecond ſort grows naturally in all the northern parts of America; it was firſt brought to Europe from Canada, and has been long cultivated in the Engliſh gardens, chiefly to plant againſt walls, or high buildings to cover them, which theſe plants will do in a ſhort time, for they will ſhoot almoſt twenty feet high in one year, and will mount up to the top of the higheſt building; but as the leaves fall off in autumn, the plants make but an indifferent appearance in winter; and as it is late before they come out in the ſpring, they are not much eſteemed, unleſs it is for ſuch ſituations, where better things will not thrive; for this plant will thrive in the midſt of London, and is not injured by ſmoke, or the cloſeneſs of the air, ſo are very proper for ſuch ſituations. The ſtalks of theſe plants put out roots, which faſten themſelves

into the joints of the walls, whereby they are ſupported.

This may be propagated by cuttings, which if planted in autumn on a ſhady border, will take root, and by the following autumn will be fit to plant where they are deſigned to remain.

HEDERA TERRESTRIS. See GLECHOMA.

HEDGES. Hedges are either planted to make fences round incloſures, or to part off and divide the ſeveral parts of a garden: when they are deſigned as outward fences, they are planted either with Hawthorn, Crabs, or Black Thorn, which is the Sloe; but thoſe Hedges which are planted in gardens, either to ſurround wilderneſs quarters, or to ſcreen the other parts of a garden from ſight, are planted with various ſorts of plants, according to the fancy of the owner; ſome preferring ever-green Hedges, in which caſe the Holly is beſt, next the Yew, then Laurel, Lauruſtinus, Phillyrea, &c. others, who make choice of the deciduous plants, prefer the Beach and Hornbeam, Engliſh Elm, or the Alder, to any other; I ſhall firſt treat of thoſe Hedges which are planted for outſide fences, and afterward briefly touch on the other.

Theſe Hedges are moſt commonly made of Quick, yet it will be proper, before planting, to conſider the nature of the land, and what ſorts of plants will thrive beſt in that ſoil, whether it be clay, gravel, ſand, &c. likewiſe what the ſoil is from whence the plants are to be taken; for if the land they are taken from is much better than that in which they are to be planted, it will be more difficult to get them to grow. As for the ſize, the ſets ought to be about the bigneſs of a gooſe quill, and cut within about four or five inches of the ground; they ſhould be freſh taken up, ſtrait, ſmooth, and well rooted. Thoſe plants which are raiſed in the nurſery, are to be preferred to all others, and if raiſed on a ſpot near the place, it will be beſt.

Secondly, If the Hedge has a ditch, it ſhould be made ſix feet wide at top, and one foot and a half at bottom, and three feet deep, that each ſide may have a proper ſlope; for when the banks are made too upright, they are very ſubject to fall down after every froſt or hard rain; beſides, if the ditches are made narrower, they are ſoon choked up in autumn by the falling leaves, and the growth of weeds, nor are they a ſufficient fence to the Hedge againſt cattle, where they are narrower.

Thirdly, If the bank be without a ditch, the ſets ſhould be ſet in two rows, almoſt perpendicular, at the diſtance of a foot from each other, in the quincunx order, ſo that in effect they will be but ſix inches aſunder.

Fourthly, The turf is to be laid with the Graſs ſide downwards, on that ſide of the ditch the bank is deſigned to be made, and ſome of the beſt mould ſhould be laid upon it, to bed the Quick; then the Quick is to be planted upon it a foot aſunder, ſo that the ends of the Quick may ſtand upright.

Fifthly, When the firſt row of Quick is planted, it muſt be covered with mould, and the turf laid upon it as before; ſo that when the bank is a foot high, you may plant another row of ſets againſt the ſpaces of the lower Quick, and cover them as the former was done; and the bank is to be topped with the bottom of the ditch, and a dry, or dead Hedge laid on the other ſide, to defend the under plantation from the cattle.

In making of theſe dead Hedges, there ſhould be ſtakes driven into the looſe earth, at about two feet and a half diſtance, ſo low as to reach the firm ground.

Oak ſtakes are accounted the beſt, and Black Thorn and Sallow the next; then let the ſmall buſhes be laid at bottom, but not too thick, for that will cauſe the buſhes to rot; but the upper part of the Hedge ſhould be laid with long buſhes to bind the ſtakes in with, by interweaving them.

And, in order to render the Hedge yet ſtronger, you may edder it (as it is called,) i. e. bind the top of the ſtakes in with ſome ſmall long poles, or ſticks on each ſide; and when the eddering is finiſhed, drive the ſtakes anew, becauſe the waving of the Hedge and eddering is apt to looſen the ſtakes.

The Quick muſt be conſtantly kept weeded, and ſecured from being cropped by the cattle, and in February it will be proper to cut it within an inch of the ground, if it was not done before; which will cauſe it to ſhoot ſtrong, and help it much in the growth.

When a Hedge is of about eight or nine years growth, it will be proper to plaſh it; the beſt time for this work is either in October or February.

When a Hedge is grown old, i. e. of about twenty or thirty years growth, and there are in it old ſtubs as well as new ſhoots, the old ſtubs ſhould be cut ſloping off within two or three inches of the ground, and the beſt and longeſt of the middle ſize ſhould be left to lay down; and ſome of the ſtrongeſt, at the height of five or ſix feet, according as you deſign the height of the Hedge to be, may be left to ſerve inſtead of ſtakes, and freſh ſtakes ſhould be put in thoſe places where they are wanting; the Hedge ſhould be then thinned, ſo as to leave on the ſtubs only ſuch ſhoots as are deſigned to be of uſe, that there may be room left to put a ſpade in between them; the ditch alſo ſhould be cleanſed, and each ſide of the ſlopes kept as in a new ditch; and where the earth is waſhed from the roots of the Quick, or is hollow, face it anew with ſo much of the firſt ſpit of earth that is dug out of the ditch, as there is occaſion for, and lay what is dug out at the ſecond ſpit, on the top of the bank; for if it be laid on the ſide, or face of the bank, it will ſlip into the ditch again when wet comes, and alſo take a great deal of the bank along with it.

In plaſhing Quicks, there are two extremes to be avoided; the firſt is, laying it too low and too thick; becauſe it makes the ſap run all into the ſhoots, and leaves the plaſhes without nouriſhment, which, with the thickneſs of the Hedge, kills them.

Secondly, It muſt not be laid too high, becauſe this draws all the ſap into the plaſhes, and ſo cauſes but ſmall ſhoots at the bottom, and makes the Hedge ſo thin, that it will neither hinder the cattle from going through, nor from cropping of it.

When the ſhoot that is deſigned to be plaſhed is bent, give it a ſmall cut with a bill, half through, ſloping a little downwards, and then weave it about the ſtakes; and when the whole is finiſhed, trim off the ſmall ſuperfluous branches that ſtraggle too far out on both ſides of the Hedge.

If the ſtubs are very old, cut them quite down, and ſecure them with good dead Hedges on both ſides, till the young ſhoots are got up tall enough to plaſh, and plant new ſets in the void ſpaces.

In making a Hedge, if it be ſet with Crab Stocks, it will be proper to leave one ſtanding uncut up at every thirty or forty feet, if the ground on both ſides of the Hedge be your own; which being done, they may be ſo ordered, by pruning or ſtaking, that one may lean into one ground, and the other into another, &c.

Theſe ſtocks ſhould be pruned up every year, till they are brought out of the reach of the cattle, and then they may be grafted with the Red Streak, Gennet-moil, or what other kind of cyder Apple you pleaſe.

If the ſtocks be of Apple kernels, they may ſtand ungrafted, for many of them will yield very good cyder fruit; but then ſuch ſtocks as are not grafted, will be longer before they bear; and alſo when you do graft, you may be certain of your kind; but if you find a very natural ſtock, which by leaf, ſhoot, and bud, appears likely, you may try it, and ſo you may have a new fine fruit; and if you do not like it, you may graft it when you pleaſe.

As for the reſt of the Hedge, when it has ſhot four or five years, you may lay it to make a fence for the doing of which, take the following directions:

First, At every laying to lay down ſome old plaſhes; or, if the Hedge be thin, young ones; but they muſt be ſo laid, as to point with their ends to the ditch ſide of the bank, the ends being kept low on the bank; by being ſo ordered, they will the better thicken the bottom of the Hedge, and keep up the earth of the bank.

Secondly, To heighten the bank every time you lay earth on it, ſo as to cover the layers, all but the ends, this earth will very much help the Quick; and by heightening the banks, and deepening the ditch, you will render the fence the better.

Thirdly, Not to cut the plaſhes too much, but juſt ſo as they may bend down well; nor to lay them too upright, as ſome do, but to lay them near to a level; for by ſo doing, the ſap will the better break out at ſeveral places, and not run ſo much to the ends, as it will when they lie too much upon the ſlope.

If you have much wood to ſpare, you may cut up great part of thoſe that grow near the ditch, but then you ought to hang the bank with buſhes, to prevent cattle from cropping them the firſt year; theſe will ſhoot ſtrong, ſecure the Hedge, keep up the bank, and thicken the bottom of the Hedge.

Fourthly, Take care to lay the Hedge pretty thick, and turn the beard on the ditch ſide; but you muſt not let the beard hang uncut (though it makes a good ſhew at the firſt making), but you muſt cut off all the ſtraggling boughs within half a foot of the Hedge on both ſides, which will cauſe it to ſhoot ſtrong at theſe places, and make the Hedge much the thicker.

Fifthly, If the bank be high, make the Hedge ſo low, that it may juſt ſerve for a fence the firſt year, for it will ſoon grow higher; and the lower the Hedge is made, the faſter the Quick will grow, and alſo will be the thicker at the bottom; but care muſt be taken to preſerve it from cattle on the field ſide for the two firſt years that it is made.

Sixthly, If you would have a good Hedge, or fence, you ſhould new lay it once in fourteen or fifteen years, and conſtantly root out Elder, Travellers Joy (which ſome call Bull-bine), Briony, &c. and do not leave too many high ſtandards, or pollards in it, though the Elm is one of the beſt; alſo no dead wood is to be left in the bottom of the Hedges, for that will choke the Quick; but if there be a gap, the dead Hedge ſhould be made at a diſtance.

The Crab is alſo frequently planted for Hedges, and if the plants are raiſed from the kernels of the ſmall wild Crab, they are much to be preferred to thoſe which are raiſed from kernels of all ſorts of Apples without diſtinction; becauſe the plants of the true ſmall Crab never ſhoot ſo ſtrong as thoſe of the Apples, ſo may be better kept within the proper compaſs of a Hedge; and as they have generally more thorns upon them, they are better guarded againſt cattle, &c. than the other; beſides, the plants of the Crab will grow more equal than thoſe which are raiſed from the kernels of various kinds of Apples, for theſe always produce a variety of plants, which differ from each other in their manner of growth, as much as in the ſize and flavour of their fruits; ſo that Hedges made of theſe will not appear ſo well, nor can be ſo well managed as the other.

Some perſons intermix Crab with the White Thorn in their Hedges, but this is not a good method; for the plants of the Crab will grow much ſtronger than thoſe of the White Thorn, ſo that the Hedge will not be of equal growth; which is not near ſo beautiful or uſeful, as when the plants of a Hedge keep pace in their growth.

The Black Thorn, or Sloe, is alſo frequently planted for Hedges, and is a ſtrong durable plant for that purpoſe, eſpecially as it is ſo ſtrongly armed with thorns, that cattle ſeldom care to brouze upon it; but where this is planted, the beſt way is to raiſe the plants from the ſtones of the fruit; for all thoſe which are taken from the roots of old trees, ſpawn, and put out ſuckers in ſuch plenty from their roots, as to ſpread over, and fill the neighbouring ground to a conſiderable diſtance on each ſide of the Hedge; and this plenty of ſuckers drawing away the nouriſhment from the old plants of the Hedge, they never grow ſo well as where there are few or no ſuckers produced, which thoſe plants which are propagated from the ſtones ſend not forth, or at leaſt but ſparingly, therefore may with little trouble be kept clear of them. The beſt method of raiſing theſe Hedges is, to ſow the ſtones in the place where the Hedge is intended (where it can be conveniently done), for then the plants will make a much greater progreſs than thoſe which are tranſplanted; but the objection to this method will ariſe from the difficulty of ſecuring the young plants from the cattle; but this can have little force, when it muſt be conſidered, that if the Hedge is planted, it muſt be fenced for ſome years, to prevent the cattle from deſtroying it; therefore the ſame fence will do for it when ſown, nor will this require a fence much longer than the other. For the plants which ſtand unremoved, will make a better fence in ſeven years, than that which is planted, though the plants ſhould be of three or four years growth when planted; which is what I have ſeen two or three times, where the experiment has been tried. The ſtones of this fruit ſhould be ſown early in January, if the weather will permit; but when they are kept out of the ground longer, it will be proper to mix them with ſand, and keep them in a cool place. The buſhes of the Black Thorn are by much the beſt of any for making of dead Hedges, being of longer duration, and having many thorns, neither the cattle nor the Hedge-breakers, will care to meddle with them; theſe buſhes are alſo the beſt to be uſed for under ground drains, for the draining of land, for they will remain ſound a long time when the air is excluded from them.

The Holly is ſometimes planted for Hedges, and is a very durable ſtrong fence; but where it is expoſed, there will be great difficulty to prevent its being deſtroyed, otherwiſe it is by far the moſt beautiful plant, and being an Evergreen, will afford much better ſhelter to cattle in winter, than any other ſort of Hedge; and the leaves being armed with thorns, the cattle will not care to brouze upon it. Another objection to this plant is the ſlow growth, ſo that Hedges planted with this plant, require to be fenced a much longer time than moſt others. This is a reaſon which muſt be admitted, to prevent this being generally practiſed; but in ſuch grounds as lie contiguous to, or in ſight of gentlemen's houſes, theſe ſort of Hedges will have an exceeding good effect, eſpecially when they are well kept, as they will appear beautiful at all ſeaſons of the year; and in the ſpring of the year, when the ſharp winds render it unpleaſant to walk abroad in expoſed places, theſe Hedges will afford good ſhelter, as they will effectually keep off the cold winds, if they are kept cloſe and thick. The ſureſt method of raiſing theſe Hedges is, by ſowing the berries in the place where they are to ſtand; but theſe berries ſhould be buried in the ground one year before they are ſown, by which method they will be prepared to grow the following ſpring. The way of doing this is, to gather the berries about Chriſtmas (which is the time they are uſually ripe,) and put them into large flower-pots, mixing ſome ſand with them; then dig holes in the ground, into which the pots muſt be ſunk, covering them over with earth about ten inches thick; in this place they may remain till the following October, when they ſhould be taken up, and ſown in the place where the Hedge is intended. The ground for this Hedge ſhould be well trenched, and cleared from the roots of all bad weeds, buſhes, trees, &c. Then two drills ſhould be made at about a foot diſtance from each other, and about two inches deep, into which the ſeeds ſhould be ſcattered pretty cloſe, leſt ſome ſhould fail; for it is better to have too many plants come up, than to want. The reaſon of my adviſing two drills is, that the Hedge may be thick to the bottom, which in a ſingle row rarely happens, eſpecially if there is not great care taken of them in the beginning. When the plants come up, they muſt be carefully weeded; for if the weeds

weeds are permitted to grow among them, they will ſoon deſtroy them, or weaken them ſo much, that they will not recover their ſtrength in a long time. This ſhould be conſtantly obſerved, by every perſon who is deſirous to have good Hedges of either ſort; for when the weeds are ſuffered to grow near the plants, they will not only rob them of a great part of their nouriſhment, but alſo prevent their putting out ſhoots near the ground, which will occaſion the bottom of the Hedge to be thin and naked.

When theſe Holly Hedges are deſigned to be kept very neat, they ſhould be ſheered twice a year, in May and Auguſt; but if they are only deſigned as fences, they need not be ſheered oftener than once a year, which ſhould be about the latter end of June, or the beginning of July; and if this is well performed, the Hedges may be kept very beautiful.

The fences which are made to ſecure theſe Hedges from cattle while they are young, ſhould be contrived ſo as to admit as much free air as poſſible, which is abſolutely neceſſary for the growth of the plants; for when they are crowded on each ſide with dead Hedges, the plants ſeldom thrive well. The beſt ſort of fences for this purpoſe, are thoſe which are made with poſts and rails; or inſtead of rails, three ropes drawn from poſt to poſt, and holes made in the poſts to draw the ropes through; this is the cheapeſt fence of this kind, and will appear very handſome; but if ſheep are not admitted into the fields, there will be occaſion for two ropes only, which will be enough to keep off larger cattle; and if the ropes are painted over with a compoſition of melted pitch, brown Spaniſh colour, and oil, mixed well together, they will laſt ſound ſeveral years; and theſe ſort of fences never obſtruct the air, and the place, at the ſame time being open to view, the weeds will be better diſcovered than when the fences are cloſe. In the latter caſe, the Hedges are ſometimes ſuffered to be over-run with weeds, by their being excluded from the ſight, ſo are frequently forgotten, eſpecially in moiſt weather, when the weeds grow more luxuriant.

There are ſome perſons who intermix Holly with the White Thorn in making their Hedges, which if rightly managed, will have a good effect, eſpecially when young; but when this is practiſed, the Holly ſhould be planted ſo near, as that the Hedge may be entirely formed of it as it grows up, when the White Thorn ſhould be quite rooted out; for as theſe advance, they will not keep pace in their growth, ſo will not appear beautiful when intermixed.

When a Hedge of Holly is intended to be made by plants, the ground ſhould be well trenched, as was before adviſed for the ſeeds; and (unleſs the ground be very wet) the plants ſhould be ſet in October, but, in wet ground, March is preferable. The plants ſhould not be taken from a better ſoil than that in which they are to be planted; for when it ſo happens, the plants are much longer before they recover this change, than thoſe are which are taken from a leaner ſoil. If the plants have been before removed two or three times, they will have better roots, and will be in leſs danger of miſcarrying; beſides, they may be removed with balls of earth to their roots. When the froſt comes on, if mulch be laid upon the ground near the roots of the plants, it will prevent the tender fibres, which may then have been put out, from being deſtroyed by the cold. I would never adviſe the planting of Hedges with Holly plants, of above five or ſix years growth from the berries; for when the plants are older, if they take to grow, they are longer before they form a good Hedge, than plants which are much younger; and if the plants have been twice before tranſplanted, they will more certainly grow.

I ſhall next treat of Hedges for ornaments in gardens: theſe are ſometimes planted with Evergreens, eſpecially if they are not intended to grow very high; in which caſe, they are planted with deciduous trees. Evergreen Hedges are planted with Holly, Yew, Laurel, Lauruſtinus, Phillyrea, Alaternus, evergreen Oak, and ſome others of leſs note. The Holly is preferable to any other, for the reaſons before given. Next to this, moſt people prefer the Yew, on account of its growing very cloſe; for when theſe Hedges are well kept, they will be ſo thick as that a bird cannot get through them; but the dead colour of the Yew, renders theſe Hedges leſs agreeable. The Laurel is one of the moſt beautiful greens of any of the evergreen trees, but then it ſhoots ſo luxuriant, as to render it difficult to keep the Hedges which are planted with it, in tolerable ſhape; beſides, the leaves being very large, if the Hedge is clipped with ſheers, the leaves will be cut through, which gives them a bad appearance; therefore where there are Hedges of this kind, it will be the beſt way to prune them with a knife, cutting the ſhoots juſt down to a leaf. And although by this method the Hedge cannot be rendered ſo even as when cut with ſheers, yet it will have a much better appearance than that of moſt of the leaves being cut through and ſtubbed, in the manner they muſt be when ſheered.

The Lauruſtinus is alſo a very fine plant for this purpoſe, but the ſame objection is to be made to this as hath been to the Laurel; and as one of the great beauties of this plant is in its flowers, which are produced in the winter and ſpring, ſo when theſe are ſheered, the flowers are generally cut off, by which their beauty is loſt. Nor can this be avoided, where the Hedge is to be kept in cloſe order, therefore this plant is not ſo proper for the purpoſe; but in ſuch places where walls or other fences are deſigned to be hid, there is not any plant better adapted than this, provided it is rightly managed; for the branches of this plant are ſlender and pliable, ſo may be trained up cloſe to the fence, whereby it may be entirely covered; and if, inſtead of clipping theſe with ſheers, they are pruned with a knife, they may be ſo managed, as to have them full of flowers from the ground upward. This may be effected by pruning them in April, when the flowers are going off, cutting out thoſe ſhoots that have flowered, or project too far from the fence; always cutting cloſe to the leaf, that no ſtubs may be left: but thoſe new ſhoots of the ſame ſpring muſt by no means be ſhortened, becauſe the flowers are always produced at the extremity of the ſhoots of the ſame year; therefore when theſe are topped, as they muſt be by ſheering, there can be few or no flowers upon theſe plants, except toward the top, where the ſheers have not paſſed. By this method of knife pruning, the leaves will alſo be preſerved entire, and the Hedge may always be kept enough within compaſs; and ſo thick, as fully to anſwer the purpoſe of covering the fence; and by the ſhoots growing a little irregular, it will make a much better appearance than any ſhorn Hedge whatever.

The ſmall leaved and the rough leaved Lauruſtinus are the beſt ſorts for this purpoſe, becauſe their branches grow cloſer together than thoſe of the ſhining leaved; they are alſo more hardy, and flower much better than the other, when growing in the open air.

The True Phillyrea is the next beſt plant for Hedges; it is by the gardeners called the True Phillyrea, to diſtinguiſh it from the Alaternus, which they ſimply call the Phillyrea. The branches of this are ſtrong, the leaves pretty large, and of a ſtrong green colour. And as this is a plant of middling growth, the Hedges planted with this may be led up to the height of ten or twelve feet; and if theſe Hedges are kept narrow at the top, that there may not be too much width for the ſnow to lodge upon them, they may be rendered very cloſe and thick, and being a very good green, will make a fine appearance.

The Alaternus was formerly much more cultivated in the Engliſh gardens than at preſent. This was often planted to form Hedges, but the branches of this plant are too pliant for this purpoſe, being frequently diſplaced by ſtrong winds, which render theſe Hedges unſightly; they alſo ſhoot very irregular and thin, ſo

that

that the middle of the Hedge is frequently open and wide, and only the ſides of them can be kept tolerably cloſe, and that muſt be by often clipping them. If we add to this, their being frequently laid or broken down by ſnow in the winter, it muſt be deemed an improper plant for this purpoſe.

The Ilex, or evergreen Oak, is alſo planted for Hedges, and where theſe are deſigned to grow pretty tall, it is a fit plant for the purpoſe; becauſe it is a plant of large growth, eſpecially the ſort which is moſt common in England; for there are two ſorts of them which grow in the ſouth of France and Italy, that are of much humbler growth, ſo are better adopted to this purpoſe, eſpecially where the Hedge is not intended to be high, but theſe are not at preſent common here. When theſe Hedges are planted very young, and kept cloſe trained from the beginning, they may be very cloſe from the ground to the height of twenty feet or more; but theſe muſt always be kept narrower at the top than below, that there may not too much ſnow lodge upon them in the winter, which is apt to break and diſplace the branches, whereby the Hedges will be rendered unſightly.

There are alſo ſome perſons who have planted the Pyracantha, or evergreen Thorn, Juniper, Box, Cedar of Virginia, Bay, &c. as alſo the Halimus, or Sea Purſlane, and the Furz, Roſemary, and ſeveral other plants for Hedges; but the five ſorts firſt mentioned having very pliant branches, which will require to be ſupported, and the three laſt being often deſtroyed by ſevere froſt, renders them unfit for this purpoſe; nor are there other ſorts of evergreen plants in the Engliſh gardens, which are ſo well adapted for Hedges, as thoſe before-mentioned,

The deciduous trees, which are uſually planted to form Hedges in gardens, are the following ſorts.

The Hornbeam is much eſteemed for this purpoſe, eſpecially in ſuch places where they are not required to be very high, or not wanted to grow very faſt; for this plant, while young, doth not make ſo great progreſs as many others; but as it is of ſlower growth, the Hedges may be kept neat with leſs trouble than moſt other plants will require; and the branches naturally growing very cloſe, they will make one of the cloſeſt Hedges of all the deciduous trees; but as the leaves of this tree continue upon the branches all the winter, and until the buds in the ſpring force them off, they have a bad appearance during the winter ſeaſon.

The Beech is alſo a very proper tree for this purpoſe, having the ſame good qualities as the Hornbeam; but the leaves of this continue late in winter upon the branches, when they will have a bad appearance; beſides, the litter which is occaſioned by their leaves gradually falling moſt part of the winter, prevents the garden from being made clean a great while longer than if there are none of theſe trees planted.

The ſmall-leaved Engliſh Elm, is alſo a proper tree for tall Hedges; if theſe are planted young, and kept cloſely clipped from their firſt ſetting out, the Hedges may be trained up to the height of thirty or forty feet, and be very cloſe and thick the whole height. But when theſe trees are planted for this purpoſe, they ſhould not be crowded ſo cloſe together as they uſually are by moſt people; by which method, when the trees have ſtood ſome years, if they have thriven well, their ſtems will approach ſo near each other, as that few branches can be maintained below, whereby the bottom of the Hedge will be naked; therefore they ſhould not be planted cloſer together than ſeven or eight feet, or if they are ten feet it will be ſtill better. And although at this diſtance they will not form a cloſe Hedge ſo ſoon as when the trees are planted cloſer together, yet they will in a few years recompenſe for that, by their growing much cloſer and better from the ground upward.

The Dutch Elm was formerly in great eſteem for Hedges, being quick of growth, and thriving in ſuch ſoils as the Engliſh Elm would not grow; but the wretched appearance which theſe Hedges made, after they had been growing a few years, very juſtly occaſioned their being almoſt univerſally rooted out of gardens, for a more abominable plant was never introduced into gardens than this.

The Lime-tree hath alſo been recommended for Hedges, and in ſome of the old gardens there were many planted with this tree, which, for a few years after planting, made a tolerable appearance, eſpecially when they grow upon a moiſt ſoil; but after they had ſtood ſome years, they grew very thin at bottom, and by being ſheered at the top, they were rendered very ſtubby and unſightly, their leaves growing very thinly upon the branches, and theſe frequently turning of a black diſagreeable colour, and falling off very ſoon in the autumn, and ſometimes in the ſummer in dry ſeaſons, has brought theſe trees ſo much into diſrepute, as that few perſons make uſe of them at preſent for this purpoſe: nor ſhould any of the very ſtrong ſhooting trees be applied to this uſe; for the more they are cut, the ſtronger they will ſhoot, and of courſe will appear very unſightly; beſides, the often cutting of theſe Hedges occaſions great trouble and expence, and frequent litters in gardens.

The Alder is frequently planted for Hedges, and where the ſoil is moiſt, there is not any of the deciduous trees equal to it for this purpoſe; for the leaves are of a lively green, continuing freſh till late in the autumn; and when they decay, their litter is ſoon over, for they all drop in a ſhort time.

There are, beſides the trees before-mentioned, many of the flowering ſhrubs which have been planted to form Hedges; ſuch as Roſes, Honeyſuckles, Sweet-briar, &c. but theſe make a bad appearance, being more difficult to train; and if they are cut to keep them within compaſs, their flowers, which are their greateſt beauty, will be entirely deſtroyed. But as theſe are but of low growth, they are not proper to plant where the Hedges are to be of any height.

Although I have given theſe full directions for planting and ordering of theſe Hedges for the pleaſure-garden, yet I am far from recommending them as ornamental or uſeful. But as there are numbers of perſons who may differ from me in their opinion, and therefore might think it a deficiency in my book, had I not given theſe inſtructions; to avoid their reproach, I have inſerted as much as I think will be neceſſary for the obtaining theſe Hedges wherever they are deſired, and at a leſs expence than the late method of planting them hath been generally attended with; where it is not uncommon to ſee four times the number of trees planted in theſe Hedges as would have been neceſſary, or that can remain long cloſe together with any beauty. But moſt people who plant, are in too great a hurry to have their garden filled; and therefore frequently plant ſo cloſe, as that in three or four years (if their trees thrive) three-fourths of them will require to be taken away again, to make room for thoſe which are left to grow; and there are not wanting perſons, who are ready enough to encourage this practice, ſince their own intereſt is thereby promoted.

The taſte in gardening having been greatly altered of late years for the better, theſe clipped Hedges have been almoſt excluded; and it is to be hoped, that a little time will entirely baniſh them out of the Engliſh gardens, as it has already been done by the ſhorn Evergreens, which, a few years ſince, were eſteemed the greateſt beauties of gardens. The latter was introduced by the Dutch gardeners, and that of tall Hedges with treillage-work, was in imitation of the French gardens; in ſome of which, the expence of the iron treillage, to ſupport the trees which compoſe their cabinets, pavillions, bowers, porticoes, and other pieces of rural architecture, amounted to a very great ſum. I have been informed this work, in one garden, has coſt above twenty thouſand crowns; and this only to train up trees in the diſtorted ſhape of pilaſters, niches, cornices, pediments, &c. when at the ſame time, theſe can no longer retain the forms intended,

tended, than they are kept closely shorn into them; for no sooner do the trees begin to make fresh shoots, but the whole frame is altered; and instead of carrying the fine finished appearance of a regular piece of architecture, it is grown into a rude unpolished form. This expensive sort of work never has made much progress in England, but that part of the French taste, in surrounding all the several divisions of gardens with tall clipped Hedges, making great alleys, forming the walks into stars, and the like stiff performances, have too much obtained for some years past in England: and the taller these clipped Hedges were, the more they were admired; though many times they shut out from the view the sight of some of the noblest Oaks, and other timber trees, growing in the quarters, which are infinitely more pleasing to a person of true taste, than all the ridiculous forms it is possible for trees to be framed in by art. Besides, when the expence of keeping these Hedges, together with the great litter they occasion when clipped, is considered, these, added to many other reasons which might be given, are sufficient to exclude them out of gardens; where they can never be esteemed necessary, but to shut out from the view the sight of worse objects.

HEDYPNOIS. See HYOSERIS.

HEDYSARUM. Lin. Gen. Plant. 793. Tourn. Inst. R. H. 401. tab. 225. French *Honeysuckle.*

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, cut into five segments at the top. It is of the butterfly kind, having an oblong compressed standard, which is indented at the point and reflexed; the wings are oblong and narrow; the keel is compressed, broader at the end, but convex at the base. It hath nine stamina joined, and one standing separate, which are terminated by roundish compressed summits; the stamina are reflexed, having an angle or knee. In the center is situated a long narrow germen, supporting an awl-shaped inflexed style, crowned by a single stigma. The germen afterward becomes a jointed pod which is compressed, each joint being roundish, and incloses a single kidney-shaped seed.

This genus of plants is ranged in the third section of Linnæus's seventeenth class, intitled Diadelphia Decandria, which includes those plants whose flowers have ten stamina joined in two bodies.

The SPECIES are,

1. HEDYSARUM (*Coronarium*) foliis pinnatis, leguminibus articulatis aculeatis, nudis, rectis, caule diffuso. Hort. Cliff. 365. *French Honeysuckle with winged leaves, naked, prickly, jointed pods, and a diffused stalk.* Hedysarum clypeatum, flore suaviter rubente. H. Eyst. *French Honeysuckle, with a delicate red flower.*
2. HEDYSARUM (*Spinosissimum*) foliis pinnatis, leguminibus articulatis, aculeatis tomentosis, caule diffuso. Hort. Upsal. 231. *French Honeysuckle with winged leaves, jointed, prickly, woolly pods, and a diffused stalk.* Hedysarum clypeatum minus, flore purpureo. Raii Hist. *Smaller French Honeysuckle with a purple flower.*
3. HEDYSARUM (*Canadense*) foliis simplicibus ternatisque, floribus racemosis. Hort. Cliff. 232. *French Honeysuckle with single and trifoliate leaves, and flowers in bunches.* Hedysarum triphyllum Canadense. Cornut. *Three-leaved French Honeysuckle of Canada.*
4. HEDYSARUM (*flexuosum*) foliis pinnatis, leguminibus articulatis, aculeatis, flexuosis, caule diffuso. Lin. Sp. Plant. 750. *French Honeysuckle with winged leaves, jointed prickly pods which are waved, and a diffused stalk.* Hedysarum annuum, filiquâ asperâ undulatâ intortâ. Tourn. *Annual French Honeysuckle, with a rough, waved, writhed pod.*
5. HEDYSARUM (*Diphyllum*) foliis binatis petiolatis, floralibus sessilibus. Flor. Zeyl. 291. *French Honeysuckle with two leaves upon a foot-stalk, sitting close to the stalks.* Hedysarum minus diphyllum, flore luteo. Sloan. Cat. 73. *Smaller two-leaved French Honeysuckle, with a yellow flower.*
6. HEDYSARUM (*Purpureum*) foliis ternatis, foliolis obovatis floribus paniculatis terminalibus, leguminibus intortis. *French Honeysuckle with trifoliate oval leaves, flowers growing in panicles at the ends of the stalks, and intorted pods.* Hedysarum triphyllum fruticosum, flore purpureo, siliquâ varie distortâ. Sloan. Cat. 73. *Three-leaved shrubby French Honeysuckle, with a purple flower and a variously distorted pod.*
7. HEDYSARUM (*Canescens*) foliis ternatis subtus nervosis, caule glabro fruticoso floribus spicatis terminalibus. *Three-leaved shrubby dwarf Honeysuckle, with veins on the under side, a smooth shrubby stalk, with flowers growing in spikes at the ends.* Hedysarum triphyllum fruticosum supinum, flore purpureo. Sloan. Cat. *Three-leaved shrubby dwarf French Honeysuckle, with a purple flower.*
8. HEDYSARUM (*Sericeum*) foliis ternatis, foliolis ovatis subtus sericeis, floribus spicatis alaribus terminalibusque. *Three-leaved French Honeysuckle, with oval leaves sitting on their under side, and flowers in spikes from the side and the end of the stalks.* Hedysarum triphyllum frutescens, foliis subrotundis & subtus sericeis, flore purpureo. Houst. *Three-leaved shrubby French Honeysuckle with roundish leaves, which are silky underneath, and a purple flower.*
9. HEDYSARUM. (*Villosum*) foliis ternatis, caulibus diffusis villosis, floribus spicatis terminalibus, calycibus, villosissimis. *Three-leaved French Honeysuckle, with diffused stalks which are hairy, flowers growing in spikes at the ends of the branches, and very hairy empalements.* Hedysarum triphyllum humile, flore conglomerato calyce villoso. Houst. *Dwarf three-leaved French Honeysuckle, with flowers growing in clusters, and a hairy cup.*
10. HEDYSARUM (*Procumbens*) foliis ternatis caulibus procumbentibus racemosis, floribus laxè spicatis terminalibus, leguminibus contortis articulis quadrangularibus. *Three-leaved French Honeysuckle, with branching trailing stalks, flowers growing in loose spikes at the ends of the branches, and twisted pods with square joints.* Hedysarum triphyllum procumbens, foliis rotundioribus & minoribus, siliquis tenuibus & intortis. Houst. *Trailing three-leaved French Honeysuckle, with smaller and rounder leaves, and narrow contorted pods.*
11. HEDYSARUM (*Intortum*) foliis ternatis, foliolis obcordatis, caule erecto triangulo villoso, racemis terminalibus, leguminibus articulatis incurvis. *French Honeysuckle, with trifoliate leaves whose lobes are heart-shaped, a triangular upright hairy stalk, flowers growing in long bunches at the ends of the branches, and and jointed incurved pods.* Hedysarum triphyllum, caule triangulari, foliis mucronatis, siliquis tenuibus intortis. Houst. *Three-leaved French Honeysuckle, with a triangular stalk, pointed leaves, and a narrow contorted pod.*
12. HEDYSARUM (*Glabrum*) foliis ternatis obcordatis, caule paniculato, leguminibus monospermis glabris. *French Honeysuckle with trifoliate heart-shaped leaves, a paniculated stalk, and smooth pods containing one seed.* Hedysarum triphyllum, annuum, erectum, siliquis intortis, & ad extremitatem amplioribus. Houst. *Three-leaved, annual, upright French Honeysuckle, with contorted pods, which are broad at their extremity.*
13. HEDYSARUM (*Scandens*) foliis ternatis, foliolis obversè-ovatis, caule volubili, spicâ longissimâ reflexâ. *Three-leaved French Honeysuckle, with obverse oval lobes, a twining stalk, and a very long reflexed spike of flowers.* Hedysarum triphyllum Americanum scandens, flore purpureo. *Three-leaved, climbing, American French Honeysuckle, with a purple flower.*
14. HEDYSARUM (*Repens*) foliis ternatis obcordatis, caulibus procumbentibus racemis lateralibus. Lin. Sp. 1056. *Three-leaved French Honeysuckle, with oval heart-shaped leaves, trailing hairy stalks, and flowers on the side of the stalks.* Hedysarum procumbens, trifolii fragiferi folio. Hort. Elth. 172. *Trailing French Honeysuckle, with leaves like the Strawberry Trefoil.*
15. HEDYSARUM (*Maculatum*) foliis simplicibus ovatis obtusis. Hort. Cliff. 449. *French Honeysuckle, with oval, obtuse, single leaves.* Hedysarum humile, capparidis folio maculato. Hort. Elth. 170. *Low French Honeysuckle, with a spotted Caper leaf.*
16. HEDYSARUM (*Frutescens*) foliis ternatis ovato-lanceolatis, subtus villosis, caule frutescente villoso.

Trifoliate French Honeyſuckle, with oval ſpear-ſhaped leaves, hairy on their under ſide, and a ſhrubby hairy ſtalk. Quere, Whether this be not the Hedyſarum foliis ternatis ſub-ovatis ſubtus villoſis caule fruteſcente. Flor. Virg. 174. *Three-leaved French Honeyſuckle, with oval leaves and a ſhrubby ſtalk.*

17. HEDYSARUM (*Pedunculatum*) foliis ternatis, foliolo intermedio pediculo longiore, racemis alaribus erectis longiſſimis. *French Honeyſuckle with trifoliate leaves, the middle lobe ſtanding on a longer foot-ſtalk, and very long bunches of flowers coming from the ſides of the ſtalks.*

18. HEDYSARUM (*Alhagi*) foliis ſimplicibus lanceolatis obtuſis, caule fruticoſo ſpinoſo. Lin. Sp. Plant. 745. *French Honeyſuckle with ſingle, ſpear-ſhaped, obtuſe leaves, and a prickly ſhrubby ſtalk.* Alhagi Maurorum. Rauwolf. 94. *The Alhagi of the Moors.*

19. HEDYSARUM (*Triquetrum*) foliis ſimplicibus cordato-oblongis integerrimis glabris. *French Honeyſuckle with ſingle, oblong, heart-ſhaped leaves, which are ſmooth and entire.* Onobrychis Zeylanica aurantii folio. Pet. Hort. Scic. 247. *Cockſhead of Ceylon with an Orange-leaf.*

20. HEDYSARUM (*Echaſtaphyllum*) foliis ſimplicibus ovatis ſubtus ſericeis, petiolis muticis. Amœn. Acad. 5. p. 403. *French Honeyſuckle with oval ſingle leaves, ſilky on their under ſide, and a ſpiked foot-ſtalk.* Spartium ſcandens, citri foliis, floribus albis ad nodos confertim naſcentibus. Plum. Sp. 19.

21. HEDYSARUM (*Gangeticum*) foliis ſimplicibus ovatis acuminatis, ſpicis longiſſimis nudis terminalibus. *French Honeyſuckle with oval-pointed ſingle leaves, and very long naked ſpikes of flowers terminating the ſtalks.* An Hedyſarum foliis ſimplicibus ovatis acutis baſi ſtipulatis. Lin. Sp. 1052.

The firſt ſort has been long cultivated in the Engliſh gardens for ornament. This grows naturally in Italy; there are two varieties of this, one with a bright red, and the other a white flower, which very rarely vary from one to the other; but as there is no other difference but in the colour of their flowers, ſo they are ſuppoſed to be the ſame ſpecies.

It is a biennial plant, which flowers the ſecond year, and ſoon after the ſeeds are ripe, the roots generally periſh: this ſends up ſeveral hollow ſmooth ſtalks two or three foot long, which branch out on each ſide, garniſhed with winged leaves, compoſed of five or ſix pair of oval lobes, terminated by an odd one; the leaves are placed alternate, and from their baſe comes out foot-ſtalks which are five or ſix inches long, ſuſtaining ſpikes of beautiful red flowers; theſe are ſucceeded by compreſſed jointed pods, which are very rough, ſtanding erect; in each of the joints is lodged one kidney-ſhaped ſeed. This ſort flowers in June and July, and the ſeeds ripen in September. The white is only a variety of this, and as ſuch, is ſometimes preſerved in gardens.

They are propagated by ſowing their ſeeds in April, in a bed of light freſh earth; and when the plants come up, they ſhould be tranſplanted into other beds of the like earth, and in an open ſituation, at about ſix or eight inches diſtance from each other, leaving a path between every four rows, to go between them to hoe, and clear them from weeds. In theſe beds they may remain until Michaelmas, then may be tranſplanted into the large borders of a parterre or pleaſure-garden, allowing them at leaſt three feet diſtance from other plants, amongſt which they ſhould be interſperſed, to continue the ſucceſſion of flowers; where they will make a fine appearance when blown, eſpecially the red ſort, which produces very beautiful flowers.

As theſe plants decay after they have perfected their ſeeds, ſo there ſhould annually be a freſh ſupply of plants raiſed, where they are deſired, for the old roots ſeldom continue longer. They are very proper ornaments for large borders, or to fill up vacancies among ſhrubs, but they grow too large for ſmall borders, unleſs their ſtalks are pruned off, leaving only two or three on each plant; which, if kept upright with ſticks, will prevent their hainging over other flowers. They are propagated for ſupplying the markets with plants to adorn the London gardens and balconies, by the gardeners in the neighbourhood of London.

The ſecond ſort is an annual plant, which grows naturally in Spain and Portugal; the leaves of this are narrow and oblong, four or five pair being placed along the midrib, with an odd one at the end; the ſtalks are terminated by ſmall ſpikes of purple flowers, which are ſucceeded by ſmall rough pods, ſhaped like thoſe of the former ſort. This plant is preſerved in botanic gardens for the ſake of variety; it is propagated by ſeeds, which ſhould be ſown the beginning of April, in the place where the plants are to remain, and will require no other culture but to thin them where they are too near, and keep them clean from weeds. This flowers in July, and the ſeeds ripen in autumn.

The third ſort hath a perennial root, which will abide many years if planted in a dry ſoil. This is propagated by ſowing the ſeeds in the manner directed for the former; but when the plants are come up two inches high, they ſhould be tranſplanted where they are to remain for good; but if they are not too thick in the ſeed-bed, they may be ſuffered to remain there until the following autumn; at which time they ſhould be carefully taken up, and tranſplanted into the borders where they are deſigned to ſtand; for their roots generally run down very deep, ſo that it is not ſafe to remove them often. This plant produces its flowers about the ſame time of the year as the former, and if the ſeaſon proves favourable, perfects its ſeeds in autumn; and the roots will abide in the open air very well, reſiſting the ſevereſt cold, provided they are planted in a dry ſoil.

The fourth ſort is an annual plant, which grows naturally in the Levant. This hath ſome reſemblance of the firſt, but is much ſmaller; the ſtalks ariſe near a foot high, and are garniſhed with winged leaves, compoſed of two or three pair of oval lobes, terminated by an odd one; the flowers come out in ſpikes at the top of the ſtalks, which are of a pale red intermixed, with a little blue. Theſe appear in July, and are ſucceeded by jointed pods which are waved on both ſides, forming an obtuſe angle at each joint; the ſeeds ripen in the autumn. This is propagated in the ſame way as the ſecond ſort, and is equally hardy.

The fifth ſort grows naturally in both Indies; the ſeeds of this were ſent me from La Vera Cruz, by the late Dr. Houſtoun. This is an annual plant, with a long tap root which runs deep in the ground, ſending out one or two ſtalks, which riſe about nine inches high, the lower part being garniſhed with oval leaves by pairs on each foot-ſtalk; but the upper part of the ſtalk where the flowers come out, is garniſhed with ſmall leaves, ending in acute points, ſitting cloſe to the ſtalks, and at each of theſe is ſituated a ſingle, ſmall, yellow flower, incloſed by the two leaves. Theſe make but little appearance, and are ſucceeded by oblong pods, containing one kidney-ſhaped ſeed.

The ſixth ſort was ſent me by the the late Dr. Houſtoun from La Vera Cruz, where he found it growing naturally, as it alſo does in Jamaica. This is an annual plant, which riſes with a ſhrubby ſtalk upward of four feet high, dividing into ſeveral branches, which are garniſhed with oblong oval leaves that are trifoliate, ſtanding upon pretty long foot-ſtalks, the middle lobe ſtanding an inch beyond the other two; the branches are terminated by long looſe panicles of purple flowers, which are ſucceeded by narrow jointed pods which are twiſted. Theſe plants flower in July, and their ſeeds ripen in autumn.

The two laſt mentioned are tender plants, ſo their ſeeds muſt be ſown in the ſpring upon a hot-bed; and when the plants are fit to remove, they ſhould be each planted in a ſeparate ſmall pot, filled with light earth, and plunged into a hot-bed, keeping them ſhaded from the ſun till they have taken new root; then

then they muſt be treated in the ſame way as other tender plants from hot countries, always keeping them in the ſtove or glaſs-caſe, otherwiſe they will not flower or produce ſeeds in England.

The ſeventh ſort grows naturally in Jamaica, from whence the ſeeds were ſent me by the late Dr. Houſtoun. This is a ſhrubby plant, which riſes about five feet high, and divides into ſeveral branches, which are garniſhed with trifoliate leaves which are oval, the middle lobe being much larger than the other two; the ſtalks are terminated by long ſpikes of ſmall purple flowers, which are ſucceeded by narrow pods, ſtrait on one ſide, but jointed on the other.

The eighth ſort was ſent me from La Vera Cruz by the late Dr. Houſtoun, who found it growing there naturally. This riſes with a ſhrubby ſtalk ſix or ſeven feet high, dividing into ſeveral branches, which are garniſhed with trifoliate oval leaves, ſilky and white on their under ſide, but of a pale green on their upper ſide; the flowers come out in long narrow ſpikes from the wings, and at the end of the branches, ſitting cloſe to the ſtalks; they are ſmall, of a bright purple colour, and are ſucceeded by flat, ſmooth, jointed pods, about one inch long, each joint having one kidney-ſhaped ſeed.

The two laſt ſorts will continue two or three years, if the plants are placed in the bark-ſtove. They are propagated by ſeeds, which muſt be ſown upon a hot-bed, and the plants treated in the ſame manner as thoſe juſt before-mentioned; and when they have obtained height, they ſhould be removed into the bark-ſtove, where they ſhould conſtantly remain, allowing them a large ſhare of air in warm weather. Theſe plants ſeldom flower till the ſecond year, when they will produce ſeeds which ripen in the autumn.

The ninth ſort is an annual plant, which grows naturally at La Vera Cruz, from whence it was ſent me by the late Dr. Houſtoun. This ſeldom riſes more than eight or nine inches high, ſending out ſeveral branches from the root, which are diffuſed and hairy; they are cloſely garniſhed with ſmall, oval, trifoliate leaves, a little hoary. The flowers grow in cloſe ſhort ſpikes; they are purple, and have very hairy empalements.

The tenth ſort grows naturally in Jamaica. This hath ligneous trailing ſtalks a foot and a half long, ſending out ſeveral branches on each ſide, which are garniſhed with ſmall, round, trifoliate leaves, of a pale green colour; the flowers are produced in very looſe ſpikes at the ends of the branches; they are ſmall, and of a pale purpliſh colour, ſucceeded by narrow twiſted pods which are jointed, each joint being four cornered, containing a ſingle, ſmall, compreſſed ſeed.

The two laſt ſorts being annual, require the ſame treatment as the fifth and ſixth ſorts before-mentioned, with which management they will flower and ripen their ſeeds in this country.

The eleventh ſort is a ſhrubby plant, which riſes with triangular ſtalks five or ſix feet high, dividing into ſeveral branches, garniſhed with heart-ſhaped trifoliate leaves, ending in acute points; the flowers are produced in very long ſpikes at the end of the branches, which are of a pale purple colour, and are ſucceeded by narrow jointed pods which are variouſly twiſted; the ſeeds are ſmall and compreſſed.

This plant grows naturally in Jamaica, from whence the ſeeds were ſent me by the late Dr. Houſtoun. It will continue three or four years, if the plants are treated in the ſame manner directed for the ſeventh and eighth ſorts, and will perfect ſeeds in this country.

The twelfth ſort is annual, the ſeeds of it were ſent me by the late Dr. Houſtoun from Campeachy. This hath a paniculated ſtalk, which riſes about two feet high, garniſhed with heart-ſhaped trifoliate leaves; the upper part of the ſtalk branches out into panicles of flowers, which are of a pale purple colour; theſe are ſucceeded by lunulated compreſſed pods, which ſtand oblique to the ſtalk, each containing one compreſſed kidney-ſhaped ſeed. This ſort is propagated by ſeeds, and requires the ſame treatment as the fifth and ſixth ſorts.

The thirteenth ſort was ſent me from La Vera Cruz, by the late Dr. Houſtoun. This hath a twining ſtalk, which gets round the trees and ſhrubs which grow near it, and climbs to the height of ten or twelve feet, garniſhed with obverſe, oval, trifoliate leaves, ſtanding upon pretty long foot-ſtalks; the flowers are produced in very long ſpikes, which are reflexed; they are of a dark purple colour, and ſit cloſe to the ſtalk. This is an abiding plant, which requires a ſtove to preſerve it in this country, ſo the plants ſhould be treated in the ſame manner as the ſeventh and eighth ſorts.

The fourteenth ſort is an annual plant, which grows naturally in both Indies. The ſeeds of this were ſent me from the Havannah by the late Dr. Houſtoun; it hath trailing branches near a foot long, which are garniſhed with round trifoliate leaves, a little indented at the top, very like in ſhape to thoſe of the Strawberry Trefoil; the ſtalks and under ſide of the leaves are hairy; the flowers are produced toward the end of the branches, ſometimes ſingle, and at other times two at a joint; they are of a purple colour and ſmall; theſe are ſucceeded by pods about an inch long, which are ſtrait on one ſide, and jointed on the other. This flowers the end of July, and ſometimes perfects ſeeds here.

The fifteenth ſort is a low annual plant, having ſlender ſtalks near a foot long, their lower part being garniſhed with ſingle oval leaves, ſtanding upon ſlender foot-ſtalks; their upper part is adorned with flowers, which come out by pairs above each other, to the end of the ſtalk; they are but ſmall, and of a reddiſh yellow colour; theſe are ſucceeded by jointed narrow pods, which ſit cloſe to the ſtalk, and are ſickle-ſhaped. The two laſt mentioned are annual plants, which require the ſame culture as the fifth and ſixth ſorts.

The ſixteenth ſort was ſent me by the late Dr. Dale, from South Carolina. This hath a perennial root, from which ariſe two or three ſhrubby hairy ſtalks near two feet high, branching out on every ſide near the top, garniſhed with oval, ſpear-ſhaped, trifoliate leaves, which are hairy on their under ſide, and ſtand upon ſhort foot-ſtalks; the flowers are produced at the end of the branches in ſhort ſpikes; they are of a purpliſh yellow colour, and ſmall; the ſtalks of this ſort decay every autumn, and new ones ariſe in the ſpring. It is propagated by ſeeds, which ſhould be ſown upon a hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be planted in ſeparate ſmall pots filled with light earth, and plunged into a moderate hot-bed, obſerving to ſhade them until they have taken new root; then they ſhould have a large ſhare of air admitted to them in warm weather, and in ſummer they may be expoſed to the open air, but in the autumn they muſt be placed under a frame to ſcreen them from froſt; the following ſpring ſome of theſe plants muſt be ſhaken out of the pots and planted in a warm border, where, if the ſummer proves warm, they will flower, but theſe ſeldom perfect their ſeeds; therefore two or three plants ſhould be put into larger pots, and plunged into a moderate hot-bed, which will bring them early into flower; ſo that if the glaſſes are kept over them in bad weather, theſe will ripen their ſeeds in autumn, and the roots will continue ſome years, if they are ſcreened from froſt in winter.

The ſeventeenth ſort was ſent me with the laſt, by the ſame gentleman, from South Carolina. This hath a perennial root and an annual ſtalk, which grows erect about two feet high, garniſhed with long trifoliate leaves, which are rounded at their baſe where they are broadeſt, and narrowed all the way to a point; they are near three inches and a half long, and half an inch broad at their baſe, of a light green colour, and ſmooth; the two ſide lobes ſit pretty cloſe to the ſtalk, but the

middle

middle one ſits upon a foot-ſtalk an inch long; the flowers are produced in long ſpikes from the wings of the ſtalk, growing erect; the lower part of the ſpike is but thinly ſet with flowers, but on the upper part they are diſpoſed very cloſe; theſe are ſmall, and of a bright yellow colour, ſitting very cloſe to the ſtalks, and are ſucceeded by jointed pods ſtrait on one ſide.

This plant is propagated by ſeeds, and requires the ſame treatment as the laſt mentioned, with which it will flower and produce ripe ſeeds.

The eighteenth ſort grows naturally in Syria, where it is one of the beauties of the country. It riſes with ſhrubby ſtalks about three feet high, which branch out on every ſide, and are garniſhed with ſingle leaves, ſhaped like thoſe of the broad-leaved Knot-graſs; they are very ſmooth, of a pale green colour, and ſtand on ſhort foot-ſtalks; under theſe leaves come out thorns, which are near an inch long, of a reddiſh brown colour; the flowers come out from the ſide of the branches in ſmall cluſters; they are of a purple colour in the middle, and reddiſh about the rims; theſe are ſucceeded by pods, which are ſtrait on one ſide, and jointed on the other, bending a little in ſhape of a ſickle. This plant is at preſent pretty rare in the Engliſh gardens; it is propagated by ſeeds, which will frequently lie a year in the ground before they vegetate, therefore ſhould be ſown in pots filled with light earth, and plunged into a moderate hot-bed; and if the plants do not appear by the beginning of June, the pots ſhould be taken out of the bed, and placed where they may have only the morning ſun, keeping them clean from weeds; and in the autumn, they ſhould be plunged into an old bed of tanners bark under a frame, where they may be ſcreened from the froſt and hard rains in the winter, and in ſpring plunged into a freſh hot-bed, which will bring up the plants: when theſe are fit to remove, they ſhould be each planted into a ſeparate ſmall pot, filled with light earth, and plunged into a very moderate hot-bed, ſhading them from the ſun till they have taken new root; then they ſhould be gradually hardened to bear the open air, into which they ſhould be removed in June, placing them in a ſheltered ſituation, where they may remain till the autumn; when, if they are plunged into an old tan-bed under a frame, where, in mild weather they may enjoy the free air, and be protected from froſt, they will ſucceed better than if placed in a greenhouſe, or more tenderly treated. I have ſeen this plant growing in the full ground, in a very warm border, where, by covering it in froſty weather, it had endured two winters, but a ſevere froſt happening the third winter entirely killed it.

From this ſhrub the Perſian Manna is collected, which is an exſudation of the nutritious juice of the plant. This drug is chiefly gathered about Tauris, a town in Perſia, where the ſhrub grows plentifully. Sir George Wheeler found it growing in Tinos, and ſuppoſed it was an undeſcribed plant. Tournefort found it in plenty in many of the plains in Armenia and Georgia, and made a particular genus of it under the title of Alhagi.

The nineteenth ſort grows naturally in India, from whence the ſeeds have been lately brought to Europe, and ſeveral plants have been raiſed in the Engliſh gardens; theſe have leaves ſo like thoſe of the Orange-tree, as ſcarcely to be diſtinguiſhed while young; but as there are not any plants here of a large ſize, ſo I can give no further account of this ſort at preſent.

The twentieth ſort was ſent me from Carthagena in New Spain, by the late Dr. Houſtoun: this is a perennial plant with a twining ſtalk, which twiſts round any neighbouring ſupport, riſing to the height of ten or twelve feet, ſending out a few ſmall branches from the ſide, garniſhed with oval leaves four or five inches long, and an inch and a half broad in the middle; the under ſide of the leaves are like ſattin; the flowers are white, coming out from the ſide of the ſtalk in cloſe bunches; they are of the ſame form with the other ſpecies of this genus, and are ſucceeded by ſhort pods, containing one or two kidney-ſhaped ſeeds.

The ſeeds of the twenty-firſt ſort I received from the Eaſt-Indies; this is an annual plant, which riſes about three feet high, having a ſlender ſtalk inclining to be ſhrubby, garniſhed with oval leaves placed ſingle on very ſhort foot-ſtalks; ſome of the plants ſend out one or two ſlender branches from the main ſtalk, the lower part of which are garniſhed with leaves of the ſame form with thoſe on the principal ſtalk, but are ſmaller: the upper part of the principal ſtalk and the branches are garniſhed with flowers near a foot in length, which are of a worn-out purple colour, ſtanding ſingle at each joint: theſe are ſucceeded by jointed pods an inch and a half long, containing three or four kidney-ſhaped ſeeds in each.

Theſe two ſorts are too tender to thrive in the open air in England; they are both propagated by ſeeds, which muſt be ſown on a hot-bed early in the ſpring; and when the plants are come up, and fit to remove, they ſhould be parted, and each planted in a ſeparate ſmall pot, plunging them into a freſh hot-bed, where they ſhould be ſcreened from the ſun till they have taken new root; after which, they ſhould be treated in the ſame manner as other tender plants. The twenty-firſt ſort muſt be placed in the bark-ſtove in autumn, but the other will ripen ſeeds the ſame year the beginning of October.

HEDYSARUM Zeylanicum majus & minus. See ÆSCHYNOMENE.

HEDYSARUM mimoſæ foliis. See ÆSCHYNOMENE.

HELENIUM. Lin. Gen. Plant. 863. Heleniaſtrum. Vaill. Act. R. Par. 1720. Baſtard Sun-flower.

The CHARACTERS are,

It hath a flower compoſed of ſeveral hermaphrodite florets, which form the diſk, and female half florets which compoſe the rays. The hermaphrodite florets are tubulous, and cut into five parts at the brim; theſe have each five ſhort hairy ſtamina, terminated by cylindrical ſummits, with an oblong germen ſupporting a ſlender ſtyle, crowned by a bifid ſtigma. The germen afterward becomes an angular ſingle ſeed, crowned by a ſmall five-pointed empalement. The female florets in the border have ſhort tubes, and are ſtretched out on one ſide like a tongue to form the ray; theſe are cut into five ſegments at their points, where they are broad. The female flowers have no ſtamina, but have an oblong germen, which turns to a ſingle ſeed like thoſe of the hermaphrodite flowers; theſe are all included in one common ſingle empalement, which ſpreads open, and is cut into ſeveral ſegments.

This genus of plants is ranged in the ſecond ſection of Linnæus's nineteenth claſs, which includes thoſe plants which have compound flowers, the hermaphrodite florets in the center, and the female half florets on the border, being both fruitful.

The SPECIES are,

1. HELENIUM (*Autumnale*) foliis lanceolatis-linearibus integerrimis glabris; pedunculis nudis unifloris. *Helenium with ſpear-ſhaped narrow leaves, which are ſmooth, entire, and naked foot-ſtalks with ſingle flowers.* Heleniaſtrum folio longiore & anguſtiore. Vaill. Act. R. Par. 1720. *Baſtard Sun-flower with a longer and narrower leaf.*

2. HELENIUM (*Latifolium*) foliis lanceolatis acutis ſerratis; pedunculis brevioribus, calycibus multifidis. *Helenium with pointed, ſpear-ſhaped, ſawed leaves, ſhorter foot-ſtalks, and a many-pointed empalement.* Heleniaſtrum folio breviore & latiore. Vaill. Act. R. S. 1720. *Baſtard Sun-flower with a broader and ſhorter leaf.*

Theſe plants riſe to the height of ſix or ſeven feet in good ground; the roots, when large, ſend up a great number of ſtalks, which branch toward the top; thoſe of the firſt ſort are garniſhed with ſmooth leaves, which are three inches and a half long, and half an inch broad in the middle, with entire edges ſitting cloſe to the ſtalks, and from their baſe is extended a leafy border along the ſtalk, ſo as to form what was generally termed a winged ſtalk, but Linnæus calls it a running leaf; the upper part of the ſtalk divides, and from each diviſion ariſes a naked foot-ſtalk about three inches long, ſuſtaining one yellow flower at the top, ſhaped like a Sun-flower, but much ſmaller, having long rays, which are jagged pretty

deep into four or five ſegments; theſe appear in Auguſt, and there is a ſucceſſion of flowers on the plants till the froſt puts a ſtop to them.

The ſecond ſort hath the appearance of the firſt, but the leaves are not three inches long, and are more than an inch broad in the middle, ending in acute points, and are ſharply ſawed on their edges. The flowers ſtand upon ſhorter foot-ſtalks, growing cloſer together, for the ſtalks of this do not branch near ſo much as thoſe of the other; they both flower at the ſame ſeaſon.

There is alſo another ſort with leaves as narrow as the firſt, which are acutely indented on the edges. The ſtalks branch at the top ſomewhat like thoſe of the firſt, but the middle flowers have much ſhorter foot-ſtalks than thoſe which branch on the ſide, and are garniſhed with ſmall leaves, almoſt to the top; but I am not certain if this is a diſtinct ſpecies, or only a variety which has accidentally riſen from the ſeeds of the other.

Theſe plants are both of them natives of America; the ſeeds of both ſorts I have received from Virginia and New England, where they grow wild in great plenty in the woods, and other ſhady places where the ground is moiſt. They may be propagated by ſeeds, or by parting their roots; but the latter is generally practiſed in this country, becauſe they ſeldom perfect their ſeeds here; but if the ſeeds are procured from abroad, they ſhould be ſown the beginning of March on a border of light earth; and if the ſeeds ſhould not come up the firſt year, the ground ſhould not be diſturbed, becauſe they often remain a whole year in the ground before the plants come up; in which caſe there is nothing more to be done, but to keep the ground clear from weeds, and wait until the plants riſe. When they appear, if the ſeaſon proves dry, they muſt be often watered, which will greatly forward their growth; and where the plants come up too cloſe to each other, they ſhould be thinned, and tranſplanted out into beds a foot aſunder every way, being careful to ſhade them until they have taken root, as alſo to water them in dry weather. In autumn they may be tranſplanted where they are to remain, and the following ſummer they will produce their flowers, which will continue till the froſt prevents them; and their roots will abide many years, and afford many offsets, by which they may be increaſed.

The beſt ſeaſon to tranſplant the old roots, and to part them for increaſe, is in the end of October, when their flowers are paſt, or the beginning of March, juſt before they begin to ſhoot; but if the ſpring ſhould prove dry, they muſt be duly watered, otherwiſe they will not produce many flowers the ſame year; theſe plants ſhould not be removed oftener than every other year, if they are expected to flower ſtrong; they delight in a ſoil rather moiſt than dry, provided it be not too ſtrong, or holds the wet in winter; but if they are planted in a dry ſoil, they muſt be often and plentifully watered in dry weather, to make them produce plenty of flowers.

HELENIUM, Elecampane. See INULA.

HELIANTHEMUM. Tourn. Inſt. R. H. 248. tab. 128. Ciſtus. Lin. Gen. Plant. 598. *Dwarf Ciſtus, or Sun-flower.*

The CHARACTERS are,

The flower has a three-leaved empalement, which is permanent, which afterward covers the ſeed-veſſel. It hath five roundiſh petals which ſpread open, with a great number of erect ſtamina, which are terminated by ſmall roundiſh ſummits. In the center is ſituated an oval germen, ſupporting a ſingle ſtyle the length of the ſtamina, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh, or oval capſule, with three cells, opening in three parts, filled with ſmall roundiſh ſeeds.

This genus of plants is joined by Dr. Linnæus to that of Ciſtus, and is ranged in the firſt ſection of his thirteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina and one ſtyle. As the empalement of the flower has but three leaves, and thoſe of Ciſtus five, and the capſule of the Helianthemum has but three cells, and that of Ciſtus five, ſo theſe characters are ſufficient to admit of their being ſeparated into different genera; and as there are a great number of ſpecies of both ſorts, ſo by this ſeparation they may be better aſcertained.

The SPECIES are,

1. HELIANTHEMUM (*Chamæciſtus*) caulibus procumbentibus ſuffruticoſis, foliis oblongis ſubpiloſis, ſtipulis lanceolatis. *Dwarf Ciſtus with trailing ſhrubby ſtalks, oblong hairy leaves, and ſpear-ſhaped ſtipulæ.* Helianthemum vulgare flore luteo. J. B. 2. 15. *Common Dwarf Ciſtus with a yellow flower.*
2. HELIANTHEMUM (*Germanicum*) caulibus procumbentibus ſuffruticoſis, ramoſiſſimis, ſpicis florum longioribus. *Dwarf Ciſtus with trailing ſhrubby ſtalks full of branches, and longer ſpikes to the flowers.* Helianthemum album Germanicum. Tab. Icon. 1062. *White German Dwarf Ciſtus.*
3. HELIANTHEMUM (*Piloſus*) caulibus ſuffruticoſis piloſis foliis lanceolatis obtuſis, ſpicis reflexis. *Dwarf Ciſtus with hairy ſhrubby ſtalks, blunt ſpear-ſhaped leaves, and reflexed ſpikes of flowers.* Helianthemum foliis majoribus, flore albo. J. B. 2. 16. *Dwarf Ciſtus with larger leaves and a white flower.*
4. HELIANTHEMUM (*Apenninum*) incanum, caulibus ſuffruticoſis erectis, foliis lanceolatis hirſutis. *Hoary Dwarf Ciſtus with erect ſhrubby ſtalks, and hairy ſpear-ſhaped leaves.* Helianthemum ſaxatile, foliis & caulibus incanis, floribus albis, Appenini montis. Mentz. Pug. tab. 8. *Rock Dwarf Ciſtus of the Apennines, with hoary ſtalks and leaves, and white flowers.*
5. HELIANTHEMUM (*Umbellatum*) caule procumbente non ramoſo, foliis linearibus incanis oppoſitis. *Dwarf Ciſtus with an unbranched trailing ſtalk, and narrow hoary leaves placed oppoſite.* Helianthemum folio thymi incano. J. B. 2. 19. *Dwarf Ciſtus with a hairy Thyme leaf.*
6. HELIANTHEMUM (*Fumana*) caule ſuffruticoſo procumbente, foliis linearibus alternis, floribus auriculatis. *Dwarf Ciſtus with a ſhrubby trailing ſtalk, very narrow leaves placed alternate, and auriculated flowers.* Helianthemum tenuifolium glabrum luteo flore, per humum ſparſum. J. B. 2. 18. *Smooth narrow-leaved Dwarf Ciſtus, with a yellow flower and trailing ſtalks.*
7. HELIANTHEMUM (*Sampſuchifolium*) caule ſuffruticoſo procumbente, foliis lanceolatis oppoſitis, pedunculis longioribus, calycibus hirſutis. *Dwarf Ciſtus with a ſhrubby trailing ſtalk, ſpear-ſhaped leaves placed oppoſite, longer foot-ſtalks to the flowers, and hairy empalements.* Helianthemum ſive Ciſtus humilis, folio ſampſuchi, capitulis valde hirſutis. J. B. 2. 20. *Dwarf Ciſtus with a Marjoram leaf, and very hairy heads.*
8. HELIANTHEMUM (*Serpillifolium*) caule ſuffruticoſo procumbente, foliis linearibus oppoſitis, floribus umbellatis. *Dwarf Ciſtus with a ſhrubby trailing ſtalk, very narrow leaves placed oppoſite, and flowers growing in an umbel.* Helianthemum folio thymi floribus umbellatis. Tourn. Inſt. 250. *Dwarf Ciſtus with a Thyme leaf and umbellated flowers.*
9. HELIANTHEMUM (*Ciſtifolium*) caulibus procumbentibus ſuffruticoſis glabris, foliis ovato lanceolatis oppoſitis, pedunculis longioribus. *Dwarf Ciſtus with ſhrubby trailing ſtalks which are ſmooth, oval ſpear-ſhaped leaves placed oppoſite, and longer foot-ſtalks to the flowers.* Helianthemum Germanicum luteum Ciſti folio. Boerh. *Yellow German Dwarf Ciſtus with a Rock Roſe leaf.*
10. HELIANTHEMUM (*Tuberaria*) caule lignoſo perenne, foliis radicalibus ovatis trinerviis tomentoſis caulinis glabris lanceolatis alternis. *Perennial Dwarf Ciſtus with a woody ſtalk, whoſe lower leaves are oval, woolly, with three veins, thoſe on the ſtalks ſmooth, ſpear-ſhaped, and placed alternate.* Helianthemum plantaginis folio perenne. Tourn. Inſt. 250. *Perennial Dwarf Ciſtus with a Plantain leaf.*
11. HELIANTHEMUM (*Polifolium*) caulibus ſeſſilibus ſuffruticoſis, foliis lanceolatis oppoſitis tomentoſis caule florali racemoſo. *Dwarf Ciſtus with very ſhort ſhrubby ſtalks, woolly ſpear-ſhaped leaves placed oppoſite, and a branching*

branching flower-ſtalk. Helianthemum foliis polii montani. Tourn. Inſt. 249. *Dwarf Ciſtus with leaves like Poley Mountain.*

12. Helianthemum (*Nummularium*) caule ſuffruticoſo procumbente, foliis ovatis nervoſis, ſubtus incanis. *Dwarf Ciſtus with a ſhrubby trailing ſtalk, and oval veined leaves, white on their under ſide.* Helianthemum ad nummulariam accedens. J. B. 2. 20. *Dwarf Ciſtus reſembling Moneywort.*

13. Helianthemum (*Lavendulæfoliam*) caule ſuffruticoſo, foliis lineari-lanceolatis oppoſitis ſubtus tomentoſis. *Dwarf Ciſtus with a ſhrubby ſtalk, and narrow ſpear-ſhaped leaves placed oppoſite, which are woolly on their under ſide.* Helianthemum lavendulæ folio. Tourn. Inſt. 249. *Dwarf Ciſtus with a Lavender leaf.*

14. Helianthemum (*Hirtum*) caule ſuffruticoſo erecto, foliis linearibus margines revolutis ſubtus incanis. *Dwarf Ciſtus with a ſhrubby erect ſtalk, and narrow leaves reflexed on their edges, with their under ſide hoary.* Helianthemum foliis Roriſmarini ſplendentibus, ſubtus incanis. Tourn. Inſt. 250. *Dwarf Ciſtus with ſhining Roſemary leaves, which are hoary on their under ſide.*

15. Helianthemum (*Surrejanum*) caulibus ſuffruticoſis procumbentibus, foliis oblongo-ovatis ſubhirſutis, petalis acuminatis reflexis. *Dwarf Ciſtus with trailing ſhrubby ſtalks, oblong oval hairy leaves, and acute-pointed reflexed petals to the flowers.* Helianthemum vulgare petalis florum peranguſtis. Hort. Elth. 177. tab. 145. *Common Dwarf Ciſtus with narrow petals to the flowers.*

16. Helianthemum (*Luſitanicum*) caule ſuffruticoſo erecto, foliis lanceolatis incanis glabris caule florali ramoſo. *Dwarf Ciſtus with a ſhrubby upright ſtalk, hoary ſpear-ſhaped leaves, which are ſmooth, and branching flower-ſtalks.* Helianthemum Luſitanicum, mari folio incano, flore luteo. Tourn. Inſt. 250. *Portugal Dwarf Ciſtus with a hoary Marum leaf, and a yellow flower.*

17. Helianthemum (*Roſeum*) caule ſuffruticoſo, foliis oblongo-ovatis oppoſitis, ſummis linearibus alternis. *Dwarf Ciſtus with a ſhrubby ſtalk, oblong oval leaves placed oppoſite, thoſe toward the top being narrow and alternate.* Helianthemum ampliore folio, flore roſeo. Sherard. Act. Phil. N°. 383. *Dwarf Ciſtus with a larger leaf, and Roſe-coloured flower.*

18. Helianthemum (*Guttatum*) caule herbaceo hirſuto, foliis lanceolato-linearibus piloſis, pedunculis longioribus. *Dwarf Ciſtus with an herbaceous ſtalk which is hairy, narrow ſpear-ſhaped hairy leaves, and longer foot-ſtalks to the flowers.* Helianthemum flore maculoſo. Col. Cephr. 2. p. 78. *Dwarf Ciſtus with a ſpotted flower.*

19. Helianthemum (*Fugacium*) caule herbaceo, foliis ſubovatis piloſis, flore fugaci. *Dwarf Ciſtus with an herbaceous ſtalk, hairy oval leaves, and a fugacious flower.* Helianthemum annuum humile, foliis ſubovatis, flore fugaci. Allion. *Annual Dwarf Ciſtus with oval leaves, and a fugacious flower.*

20. Helianthemum (*Ledifolium*) caule herbaceo erecto, foliis lanceolatis oppoſitis, floribus ſolitariis, capſulis maximis. *Dwarf Ciſtus with an erect herbaceous ſtalk, ſpear-ſhaped leaves placed oppoſite, flowers growing ſingly, and very large capſules.* Helianthemum Ledi folio. Tourn. Inſt. 249. *Dwarf Ciſtus with a Ledon leaf.*

21. Helianthemum (*Salicifolium*) caule herbaceo ramoſo, foliis oblongo-ovatis oppoſitis, ſummis alternis, floribus ſolitariis. *Dwarf Ciſtus with a branching herbaceous ſtalk, oblong oval leaves placed oppoſite, thoſe toward the top growing alternate, and ſolitary flowers.* Helianthemum ſalicis folio. Tourn. Inſt. 249. *Dwarf Ciſtus with a Willow leaf.*

22. Helianthemum (*Faſciculatum*) foliis faſciculatis. Royen. *Dwarf Ciſtus with leaves growing in bunches.*

23. Helianthemum (*Ægyptiacum*) herbaceum erectum, foliis lineari-lanceolatis petiolatis, calycibus inflatis corolla majoribus. *Dwarf Ciſtus with erect herbaceous ſtalks, linear ſpear-ſhaped leaves, and ſwelling empalements larger than the petals.*

24. Helianthemum (*Marifolium*) caule herbaceo procumbente, foliis ovatis tomentoſis ſeſſilibus. *Dwarf Ciſtus with an herbaceous trailing ſtalk, and oval woolly leaves ſitting cloſe to the branches.* Helianthemum Alpinum, folio piloſellæ minoris Fuchſii. J. B. 2. 18. *Hoary Dwarf Ciſtus of the Alps, with leſſer Cat's-foot leaves.*

The firſt ſort grows naturally on the chalky hills and banks in many parts of England; the ſtalks of this plant are ligneous and ſlender, trailing upon the ground, extending themſelves near a foot each way; theſe are garniſhed with ſmall oblong leaves, of a dark green on their upper ſide, but of a grayiſh colour on their under. The flowers are produced at the end of the ſtalks in looſe ſpikes; they are compoſed of five deep yellow petals, which ſpread open in the day, but ſhut cloſe in the evening; theſe appear in June and July, and are ſucceeded by roundiſh capſules, incloſing many angular ſeeds, which ripen in Auguſt and September, and the roots laſt ſeveral years.

The ſecond ſort grows naturally in Germany; the ſtalks of this are much larger, and extend farther than thoſe of the firſt; the leaves are longer, and are hoary; there are three accuminated ſtipula at each of the lower joints, which are erect. The ſpikes of flowers are much longer than thoſe of the former, and the flowers are white and larger. The empalement of the flowers are hairy and whitiſh; theſe differences are laſting from ſeeds.

The third ſort grows naturally in the ſouth of France, in Italy, and Germany. The ſtalks of this grow more erect than either of the former, and are more ligneous. The joints are farther aſunder; the leaves are longer and hairy; the ſpikes of flowers are generally reflexed; they are white, and the ſize of thoſe of the ſecond; the ſtipula of this are very narrow.

The fourth ſort grows naturally on the Apennine mountains; the ſtalks of this are more erect than thoſe of the third. The leaves are not ſo long, the ſtipula are very ſmall, and the whole plant is very hoary. The flowers are white, and the ſpikes are ſhorter and more compact than either of the former.

The fifth ſort grows naturally in the ſouth of France, in Spain, and Iſtria, from the laſt country I have received the ſeeds; this hath low trailing ſtalks, which are ligneous, but ſeldom branch, and are not more than four or five inches long. The leaves are narrow and hoary, and have no ſtipula at their baſe. The flowers are white, and are in ſmall cluſters at the end of the ſtalks; this ſort ſeldom continues longer than two years.

The ſixth ſort hath trailing ſhrubby ſtalks, which extend a foot in length, and are garniſhed with very narrow ſmooth leaves placed alternate; but thoſe ſhort ſtalks near the root, which do not flower, have ſhorter and finer leaves growing in cluſters; theſe have no ſtipula at their baſe. The flowers are placed thinly toward the end of the branches, they are yellow and auriculated; this ſort grows in the ſouth of France and Italy.

The ſeventh ſort hath very long, trailing, ligneous ſtalks, which are garniſhed with ſpear-ſhaped leaves placed oppoſite, which are very hairy, and gray on their under ſide, having at their baſe three long narrow ſtipula. The ſpikes of flowers are near a foot in length, but grow thinly; they are large, and of a deep yellow colour, with very hairy empalements; this grows naturally in the ſouth of France and Spain.

The eighth ſort hath very ſhrubby crooked ſtalks, covered with a purpliſh brown bark like the common heath. The branches are ſlender, and garniſhed with narrow ſtiff leaves like thoſe of Thyme, which ſtand oppoſite, having no ſtipula at their baſe. The flowers are produced on naked foot-ſtalks, which terminate the branches in a ſort of umbel; they are of a pale yellow colour, and a little ſmaller than thoſe of the common ſort; this grows naturally on the ſands near Fontainbleau, in France.

The

The ninth ſort grows naturally in Germany, from whence the ſeeds were ſent to the late Dr. Boerhaave, in whoſe curious garden near Leyden I gathered the ſeeds; this ſends out from a ligneous root a great number of trailing ſtalks, which are ſmooth, and extend more than a foot each way, garniſhed with oval, ſpear-ſhaped, ſmooth leaves, placed oppoſite, having at their baſe three ſpear-ſhaped ſtipula. The flowers are large, yellow, and grow in ſhort cluſters at the end of the branches; this always continues the ſame from ſeeds.

The tenth ſort grows naturally in Spain, from whence I received it; this hath a ſhort, thick, woody ſtalk, from which come out ſeveral ſhort ſide-branches, which are garniſhed with oval woolly leaves, having three longitudinal veins. The flower-ſtalk which ariſes from the main ſtem grows about nine inches high, having two or three narrow leaves placed alternate. The flowers are produced in pretty long pedicles toward the top of the ſtalk, and have very ſmooth empalements.

The eleventh ſort was ſent me from Verona, where it grows naturally; this hath a low ſhrubby ſtalk, from which come out a few ſhort branches, garniſhed with ſmall woolly ſpear-ſhaped leaves, placed oppoſite. The flower-ſtalk riſes about ſix inches high, and branches toward the top, where the flowers are produced on pretty long foot-ſtalks; they are white, and ſmaller than thoſe of the common ſort.

The twelfth ſort hath long ſhrubby ſtalks which trail on the ground, and divide into many branches, which are garniſhed with oval veined leaves of a light green on their upper ſide, but of a grayiſh colour below, with three narrow erect ſtipula at their baſe. The flowers are pretty large, white, and grow in cluſters at the end of the branches.

The thirteenth ſort hath ſhrubby ſtalks which grow pretty upright, garniſhed with narrow ſpear-ſhaped leaves, placed oppoſite, woolly on their under ſide, with three very narrow ſtipula growing at their baſe. The flowers are white, growing in long ſpikes at the end of the branches; this grows naturally in the ſouth of France.

The fourteenth ſort hath an erect ſhrubby ſtalk, which ſends out many ſide branches, whoſe joints are pretty cloſe, and are garniſhed with very narrow leaves, placed oppoſite, whoſe borders are reflexed; their upper ſide is of a lucid green, and their under ſide hoary. The flowers are pretty large, white, and grow in ſmall cluſters at the end of the branches; this grows naturally in Spain, from whence the roots were ſent me.

The fifteenth ſort was found by Mr. Edmund Du Bois, near Croydon, in Surry, and was at firſt ſuppoſed to be only an accidental variety of the common ſort, but the ſeeds of this always produce the ſame. I have cultivated this above thirty years, and never have found it vary from ſeeds; this is very like the common ſort, but the leaves are hairy. The petals of the flowers are ſtar-pointed, and ſmaller than thoſe of the common ſort.

The ſixteenth ſort hath upright ſhrubby ſtalks, which riſe a foot and a half high, ſending out branches the whole length; theſe are garniſhed with ſmall ſpear-ſhaped ſilvery leaves, placed oppoſite, which are ſmooth. The flower-ſtalks branch, and the flowers, which are white, are produced in ſhort ſpikes at the end of the branches.

The ſeventeenth ſort was found growing naturally by the late Dr. William Sherrard, near Smyrna, who ſent the ſeeds to England; this hath ſhrubby ſtalks which do not trail on the ground, garniſhed with oblong oval leaves placed oppoſite, but thoſe toward the top are narrow and placed alternate. The flowers are produced at the end of the branches in long looſe ſpikes; they are of a Roſe colour, and the ſize of thoſe of the common ſort.

The eighteenth ſort is annual; this grows naturally in France, Spain, Italy, and in Jerſey, where the late Dr. William Sherrard found it, and ſent the ſeeds to England; this hath a branching herbaceous ſtalk, which riſes four or five inches high, garniſhed with narrow ſpear-ſhaped leaves, placed oppoſite, which are covered with hairs; thoſe on the upper part of the ſtalks are placed alternate, and are narrower. The flowers are produced in looſe ſpikes at the end of the branches, ſtanding upon long foot-ſtalks; they are ſmall, and compoſed of five yellow petals, with a dark purple ſpot at the baſe of each; theſe flowers are very fugacious, for they open early in the morning, and their petals drop off in a few hours after, ſo that by ten of the clock the flowers are all fallen.

The nineteenth ſort grows naturally upon Mount Baldus, from whence the ſeeds were ſent me; this is an annual plant, which ſends out many herbaceous ſtalks from the root, garniſhed with oval leaves, which are hairy. The flowers are produced in looſe ſpikes at the end of the branches; they are of a pale yellow colour, and very fugacious, ſeldom laſting two hours before the petals fall off: there is another variety of this which grows about Verona, with upright ſtalks.

The twentieth ſort grows naturally in the ſouth of France and Italy, and was found by the late Dr. William Sherrard, growing near Smyrna, who ſent the ſeeds to England and Holland by a new title, ſuppoſing it to be a different plant; but when it was cultivated here, it proved to be the ſame with that growing in the ſouth of France; for this plant puts on different appearances, according to the ſoil and ſituation where it grows; for, in a good ſoil, where the plants ſtand ſingle, and are not injured by weeds, they will riſe near a foot and a half high, the leaves will be two inches and a half long, and near half an inch broad in the middle; but in a poor ſoil, or where the plants ſtand too cloſe, or are injured by weeds or neighbouring plants, they do not riſe more than half that height. The leaves are much narrower, and the ſeed-veſſels not half ſo large; ſo that any perſon finding theſe plants in two different ſituations may be deceived, and take them for different ſpecies; but when they are cultivated in a garden in the ſame ſoil and ſituation, they do not differ in any particular. This is an annual plant, which periſhes ſoon after the ſeeds are ripe.

The twenty-firſt ſort is an annual plant, which grows naturally in Spain and Portugal; this hath branching ſtalks, which riſe a foot high, garniſhed with oval oblong leaves placed oppoſite on the lower part of the ſtalk; but on the upper part they are alternate and narrow, a ſingle leaf being placed between each flower, which occaſions the title of Solitary Flowers, for they grow in looſe ſpikes at the end of the branches, in the ſame manner as the other ſpecies.

The twenty-ſecond ſort was ſent me by Dr. Adrian Van Royen, who received the ſeeds from the Cape of Good Hope. This riſes with a ſhrubby ſtalk about nine inches high, garniſhed with very narrow fine leaves, growing in cluſters; the flowers come out from the ſide and at the end of the branches, ſtanding upon ſlender foot-ſtalks; they are of a pale Straw colour, and very fugacious, ſeldom continuing longer than two hours before the petals fall off. This ſeldom continues longer than two years.

The twenty-third ſort grows naturally in Egypt; this is an annual plant having ſhrubby erect ſtalks, garniſhed with narrow ſpear-ſhaped leaves, ſtanding on foot-ſtalks; the upper part of the ſtalks are adorned with white flowers, whoſe petals are not ſo large as the empalement, and being very fugacious they make but little appearance: it flowers in July, and the ſeeds ripen in September, ſoon after which the plants decay.

The twenty-fourth ſort grows naturally about Kendal in Weſtmoreland, and in ſome parts of Lancaſhire, upon rocky ſituations. This hath trailing herbaceous ſtalks, which ſeldom extend more than three or four inches, garniſhed with oval leaves, which are very woolly, and ſit cloſe to the branches; the flowers are produced at the upper part of the branches; they are white and ſmall, ſo make no great appearance.

All

Moſt of the perennial ſorts of Dwarf Ciſtus are hardy, ſo will thrive in the open air in England; they are propagated by ſeeds, which may be ſown in places where the plants are to remain, and will require no other care but to keep them clean from weeds, and thin them where they are too cloſe, always obſerving to leave thoſe ſorts at a farther diſtance, whoſe ſtalks trail on the ground, and grow to the greateſt length. Theſe plants will continue ſeveral years, eſpecially in a poor dry ſoil; but in rich ground or moiſt ſituations, they ſeldom laſt long: but as they ripen ſeeds in plenty, ſo they may be eaſily repaired. They all flower about the ſame time as the common ſort, and their ſeeds ripen in the autumn.

The annual ſorts may be propagated with as great facility; for if their ſeeds are ſown upon a bed of common earth in April, the plants will come up in May, and require no other culture, but to thin them where they are too cloſe, and keep them clear from weeds. Theſe will flower in July, and the ſeeds ripen in the autumn. The twenty-ſecond ſort will thrive in the full ground in the ſame manner as the other; but unleſs the ſummer proves favourable, the ſeeds will not ripen: the roots have ſtood through the winter when the ſeaſon has proved mild, without any ſhelter, and have flowered the following ſummer.

The twenty-fourth ſort requires a ſhady ſituation, otherwiſe it will not thrive here.

HELIANTHUS. Lin. Gen. Plant. 877. Corona ſolis. Tourn. Inſt. R. H. 489. tab. 279. [of Ἥλιος, the ſun, and Ἄνθος, a flower,] i. e. Sun-flower; in French, *Soliel*.

This genus of plants was titled Corona ſolis, by moſt of the botanic writers; but this being a compound name, Dr. Linnæus has altered it to this of Helianthus: it has alſo by ſome been titled Heliotropium, which name is now applied to another genus of plants, very different from this.

The CHARACTERS are,

It hath a compound radiated flower, the border or rays being compoſed of female half-florets, which are barren, and the diſk of hermaphrodite florets, which are fruitful: theſe are contained in one common ſcaly empalement, whoſe ſcales are broad at their baſe, pointed at their ends, and expand. The hermaphrodite florets are cylindrical, ſwelling at their baſe, cut at the brim into five acute ſegments, which ſpread open; theſe have five ſtamina which are curved at bottom, as long as the tube, and terminated by tubulous ſummits. The germen, which is ſituated at the bottom of the tube, ſupports a ſlender ſtyle the length of the tube, crowned by a reflexed ſtigma, divided in two parts; the germen afterward becomes an oblong, blunt, four-cornered ſeed. The female half florets, which compoſe the border, are ſtretched out on one ſide like a tongue, which is long and entire; theſe have a germen in the bottom, but no ſtyle or ſtamina, and are not fruitful.

This genus of plants is ranged in the third ſection of Linnæus's nineteenth claſs, in which he includes thoſe plants whoſe flowers are compoſed of hermaphrodite fruitful flowers in the center, and female barren flowers in the circumference.

The SPECIES are,

1. HELIANTHUS (*Annuus*) foliis omnibus cordatis trinervatis, floribus cernuis. Lin. Sp. 1276. *Sun-flower, whoſe leaves are all heart-ſhaped, with three veins and a nodding flower.* Corona ſolis. Tabern. Icon. 763. and the Helenium Indicum maximum. C. B. P. 276. *Greateſt Indian Sun-flower, commonly called annual Sun-flower.*
2. HELIANTHUS (*Multiflorus*) foliis inferioribus cordatis trinervatis, ſuperioribus ovatis. Lin. Sp. Plant. 1277. *Sun-flower whoſe under leaves are heart-ſhaped, with three veins, and the upper leaves oval.* Corona ſolis minor fœmina. Tabern. Icon. 764. *Leſſer female Sun-flower, commonly called perennial Sun-flower.*
3. HELIANTHUS (*Tuberoſus*) foliis ovato-cordatis triplinerviis. Lin. Sp. Plant. 1277. *Sun-flower with oval heart-ſhaped leaves with three nerves.* Corona ſolis parvo flore tuberoſâ radice. Tourn. Inſt. 489. *Sun-flower with a ſmall flower and a tuberous root, commonly called Jeruſalem Artichoke*; in French, *Taupinambours.*
4. HELIANTHUS. (*Strumoſus*) radice fuſſi formi. Hort. Cliff. 420. *Sun-flower with a ſpindle-ſhaped root.* Corona ſolis latifolia altiſſima. Tourn. Inſt. 489. *Talleſt broad-leaved Sun-flower.*
5. HELIANTHUS (*Giganteus*) foliis alternis lanceolatis ſcabris, baſi ciliatis, caule ſtricto ſcabro. Lin. Sp. Plant. 1278. *Sun-flower with ſpear-ſhaped leaves, and a ſlender rough ſtalk.* Chryſanthemum Virginianum altiſſimum anguſtifolium puniceis caulibus. Mor. Hiſt. 3. p. 24. *Talleſt Virginia Chryſanthemum, with a narrow leaf and purple ſtalks.*
6. HELIANTHUS (*Divaricatus*) foliis oppoſitis ſeſſilibus ovato oblongis trinerviis, paniculâ dichotomâ. Lin. Sp. Plant. 1279. *Sun-flower with oblong, oppoſite, oval leaves, having three veins ſitting cloſe to the ſtalk, and a forked panicle.* Chryſanthemum, Virginianum repens, foliis aſperis binatim ſeſſilibus acuminatis. Mor. Hiſt. 3. p. 22. *Creeping Virginia Chryſanthemum, with rough-pointed leaves, ſitting cloſe by pairs.*
7. HELIANTHUS (*Trachelifolius*) foliis lanceolatis oppoſitis, ſupernè ſcabris, infernè trinerviis, caule dichotomo ramoſo. *Sun-flower with ſpear-ſhaped leaves placed oppoſite, whoſe upper ſurface is rough, the under having three veins and a divided ſtalk.* Corona ſolis trachelii folio, radice repente. Tourn. Inſt. 490. *Sun-flower with a Throatwort leaf, and a creeping root.*
8. HELIANTHUS (*Ramoſiſſimus*) caule ramoſiſſimo, foliis lanceolatis ſcabris, inferioribus oppoſitis, ſummis alternis petiolatis, calycibus folioſis. *Sun-flower with a very branching ſtalk, rough ſpear-ſhaped leaves placed oppoſite at bottom, but alternate toward the top, having foot-ſtalks, and leafy empalements.* Corona ſolis trachelii folio tenuiore, calyce floris foliato. Act. Phil. N° 412. *Sun-flower with a narrow Throatwort leaf, and a leafy flower-cup.*
9. HELIANTHUS (*Atrorubens*) foliis ovatis crenatis trinerviis ſcabris, ſquamis calycinis erectis longitudine diſci Flor. Virg. 103. *Sun-flower with oval, rough, crenated leaves, having three nerves, the ſcales of the empalement being erect, and as long as the diſk of the flower.* Corona ſolis Caroliniana, parvis floribus, folio trinervi amplo aſpero, pediculo alato. Martyn. Cent. 1. 20. *Carolina Sun-flower with ſmall flowers, large rough leaves having three veins, and a winged foot-ſtalk.*
10. HELIANTHUS (*Decapetalus*) caule infernè lævi, foliis lanceolato-cordatis, radiis decapetalis. Lin. Sp. Plant. 905. *Sun-flower with a ſmooth ſtalk, heart ſpear-ſhaped leaves, ſmooth on their upper ſide, and ten petals in the rays.*

All theſe ſpecies of Sun-flowers are natives of America, from whence we are often ſupplied with new kinds; and it is very remarkable, that there is not a ſingle ſpecies of this genus that is European; ſo that before America was diſcovered, we were wholly unacquainted with theſe plants. But although they are not originally of our own growth, yet they are become ſo familiar to our climate, as to thrive and increaſe full as well as if they were in their native country, (ſome of the very late flowering kinds excepted, which require a longer ſummer than we generally enjoy, to bring them to perfection;) and many of them are now ſo plentiful in England, that perſons unacquainted with the hiſtory of theſe plants, would imagine them at leaſt to have been inhabitants of this iſland many hundred years; particularly the Jeruſalem Artichoke, which, though it doth not produce ſeeds in our climate, yet doth ſo multiply by its knobbed roots, that, when once well fixed in a garden, it is not eaſily to be rooted out.

The firſt ſort is annual, and ſo well known as to require no deſcription. There are ſingle and double flowers of two different colours, one of a deep yellow, and the other of a ſulphur colour; but theſe vary, ſo are not worthy to be mentioned as different. They are eaſily propagated by ſeeds, which ſhould be ſown in March, upon a bed of common earth; and when the plants come up, they muſt be thinned where they are too cloſe, and kept clean from weeds; when

the plants are grown ſix inches high, they may be taken up with balls of earth to their roots, and planted into the large borders of the pleaſure-garden, obſerving to water them till they have taken new root; after which they will require no other care, but to keep them clear from weeds.

In July the great flowers upon the tops of the ſtems will appear, amongſt which, the beſt and moſt double flowers of each kind ſhould be preſerved for ſeeds; for thoſe which flower later upon the ſide branches are neither ſo fair, nor do they perfect their ſeeds ſo well, as thoſe which are firſt in flower: when the flowers are quite faded and the ſeeds are formed, you ſhould carefully guard the heads from the ſparrows, which will otherwiſe devour moſt of the good ſeeds; and about the beginning of October, when the ſeeds are ripe, you ſhould cut off the heads with a ſmall part of the ſtem, and hang them up in a dry airy place for about a month, by which time the ſeeds will be perfectly dry and hard; when you may eaſily rub them out, and put them into bags or papers, preſerving them from vermin until the ſeaſon for ſowing them.

The ſeeds of this ſort of Sun-flower are excellent food for domeſtic poultry; therefore where a quantity of it can be ſaved, it will be of great uſe, where there are quantities of theſe fowls.

The other perennial ſorts rarely produce ſeeds in England, but moſt of them increaſe very faſt at their roots, eſpecially the creeping rooted kinds, which ſpread too far for ſmall gardens. The ſecond ſort, which is the moſt common in the Engliſh gardens, is the largeſt and moſt valuable flower, and is a very proper furniture for large borders in great gardens, as alſo for boſquets of large growing plants, or to intermix in ſmall quarters with ſhrubs, or in walks under trees, where few other plants will thrive; it is alſo a great ornament to gardens within the city, where it grows in defiance of the ſmoke, better than moſt other plants; and for its long continuance in flower, deſerves a place in moſt gardens, for the ſake of its flowers for baſons, &c. to adorn halls and chimneys, in a ſeaſon when we are at a loſs for other flowers. It begins flowering in July, and continues until October; there is a variety of this with very double flowers, which is now become ſo common in the Engliſh gardens, as to have almoſt baniſhed the ſingle ſort from hence.

The third, fourth, fifth, ſixth, and ſeventh ſorts may alſo have a place in ſome large borders of the garden, for the variety of their flowers; which, though not ſo fair as thoſe of the common ſort, yet will add to the diverſity; and as many of them are late flowerers, ſo we may continue the ſucceſſion of flowers longer in the ſeaſon.

Theſe ſorts are all of them very hardy, and will grow in almoſt any ſoil or ſituation; they are propagated by parting their roots into ſmall heads, which in one year's time will ſpread and increaſe greatly. The beſt ſeaſon for this work is in the middle of October, ſoon after the flowers are paſt, or very early in the ſpring, that they may be well rooted before the droughts come on; otherwiſe their flowers will be few in number, and not near ſo fair, and by this means their roots will be weak; but if they are planted in October, you will ſave the trouble of watering them; their roots being ſurely fixed before the dry weather, they will need no other trouble than to clear them from weeds.

The Jeruſalem Artichoke is propagated in many gardens for the roots, which are by ſome people as much eſteemed as Potatoes; but they are more watery and flaſhy, and are very ſubject to trouble the belly by their windy quality, which hath brought them almoſt into diſuſe.

Theſe are propagated by planting the ſmaller roots, or the larger ones cut in pieces, obſerving to preſerve a bud to each ſeparate piece, either in the ſpring or autumn, allowing them a good diſtance, for their roots will greatly multiply; the autumn following, when their ſtems decay, the roots may be taken up for uſe. Theſe ſhould be planted in ſome remote corner of the garden, for they are very unſightly while growing, and their roots are apt to over-run whatever grows near them, nor can they be eaſily deſtroyed when they are once well fixed in a garden.

The other ſpecies which have been ranged under this genus by Tournefort and others, are now removed to the following genera, under which titles they may be found.

Corona Solis. See { Coreopsis. / Helenium. / Rudbeckia. / Silphium.

HELICTERES. Lin. Gen. Plant. 913. Iſora. Plum. Nov. Gen. 34. tab. 27. Screw-tree.

The Characters are,

The flower has a coriaceous empalement of one leaf, which is narrow at bottom, but ſpreads open at the top, where it is indented in five parts. The flower hath five oblong equal petals, which are longer than the empalement to which they are fixed. It hath ten ſhort ſtamina at the baſe of the germen, terminated by oblong ſummits, and five nectariums ſurrounding the germen, which have the appearance of petals. The ſtyle is very long, ſlender, and ſupports the germen at the top, which is roundiſh, and crowned by an acute ſtigma. The germen afterward turns to a twiſted ſpiral fruit with one cell, incloſing many kidney-ſhaped ſeeds.

This genus of plants is ranged in the ſixth ſection of Linnæus's twentieth claſs, which includes thoſe plants whoſe flowers have ten ſtamina which are connected to the ſtyle.

The Species are,

1. Helicteres (*Iſora*) foliis cordato-ovatis ſerratis, ſubtus tomentoſis, fructu tereti contorto. *Helicteres with oval heart-ſhaped leaves which are ſawed, and woolly on their under ſide, and a taper twiſted fruit.* Iſora althææ foliis, fructu longiore & anguſtiore. Plum. Nov. Gen. 24. *Screw-tree with Marſhmallow leaves, and a longer narrower fruit.*
2. Helicteres (*Breviore*) foliis cordatis acuminatis ſerratis, ſubtus tomentoſis, fructu brevi contorto. *Helicteres with heart-ſhaped, pointed, ſawed leaves, woolly on their under ſide, and a ſhort twiſted fruit.* Iſora althææ foliis, fructu breviore & craſſiore. Plum. Nov. 34. *Screw-tree with a Marſhmallow leaf, and a ſhorter thicker fruit.*
3. Helicteres (*Arboreſcens*) caule arboreo villoſo, foliis cordatis crenatis nervoſis ſubtus tomentoſis fructu ovato contorto villoſiſſimo. *Helicteres with a tree-like hairy ſtalk, heart-ſhaped, nervous, crenated leaves, woolly on their under ſide, and an oval, twiſted, very hairy fruit.* Iſora althææ folio ampliſſimo, fructu craſſiſſimo & villoſo. Edit. prior. *Screw-tree with a very large Marſhmallow leaf, and a very thick hairy fruit.*

The firſt ſort grows naturally in the Bahama Iſlands, from whence I received the ſeeds. This riſes with a ſhrubby ſtalk five or ſix feet high, ſending out ſeveral lateral branches, which are covered with a ſoft yellowiſh down, garniſhed with heart-ſhaped leaves four inches long, and two and a half broad, ſawed on their edges, woolly on their under ſide, ſtanding on long foot-ſtalks; at the upper part of the branches the flowers come out oppoſite to the leaves, upon ſlender foot-ſtalks which are jointed; theſe are compoſed of five oblong white petals, and in the center ariſes the ſtyle, which is curved, three inches long, upon the top of which is ſituated the germen, crowned by an acute ſtigma. The germen afterward turns to a taper fruit two inches and a half long, compoſed of five capſules, which are cloſely twiſted over each other like a ſcrew; theſe are hairy, and have each one cell, containing ſeveral kidney-ſhaped ſeeds.

The ſecond ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent me the ſeeds. This riſes with a ſhrubby ſtalk nine or ten feet high, ſending out many lateral branches, covered with a ſmooth brown bark, garniſhed with heart-ſhaped leaves,

leaves, which end in acute points, ſawed on their edges, a little woolly on their under ſide; the flowers are produced on the ſide of the branches, on ſhorter foot-ſtalks than the former; they are compoſed of five petals, and the ſtyle in the center, which is ſtrait, upright, and not half ſo long as the other; the fruit is thicker, not an inch long, but twiſted in the ſame manner,

The third ſort riſes with a ſtrong woody ſtalk twelve or fourteen feet high, ſending out many ligneous branches, which are cloſely covered with hairy down, garniſhed with large heart-ſhaped leaves, which are crenated on their edges, having large veins running from the midrib to the ſides; they are of a light yellowiſh green, and woolly on their under ſide: the flowers are produced from the ſide of the branches, they are of a yellowiſh white colour, and larger than thoſe of the other ſorts. The ſtyle is near four inches long, curved like that of the firſt ſort; the fruit is oval, about one inch long, very thick at the bottom, and cloſely covered with hairy down. This ſort was ſent me by Mr. Robert Millar, from Carthagena.

Theſe plants are propagated by ſeeds, which muſt be ſown upon a hot-bed in the ſpring, and when the plants are come up ſtrong enough to remove, they ſhould be each planted in a ſeparate ſmall pot, filled with light earth, and plunged into a moderate hot-bed of tan, obſerving to ſhade them from the ſun till they have taken new root; then they ſhould be treated in the ſame way as other tender plants from hot countries, raiſing the glaſſes every day in proportion to the weather, that the plants may enjoy freſh air, which will ſtrengthen them, and prevent their drawing up weak. In the ſummer the plants may remain under the frames, if there is ſufficient height for them to grow; but in autumn they muſt be plunged into the tan-bed in the ſtove, where they ſhould always remain, being careful to ſhift them into larger pots when they require it, and not give them too much wet in the winter; but in ſummer they ſhould have a large ſhare of air in warm weather, and require to be often refreſhed with water: the ſecond year from the ſeeds theſe plants have often flowered in the Chelſea garden, and the ſeeds have ſome years ripened there, but the plants will live ſeveral years with proper management.

HELIOCARPOS. Lin. Gen. Plant. 533. Montia. Houſt. Gen. We have no title in Engliſh for this plant.

The CHARACTERS are,

The flower hath one petal which is tubulous at the bottom, and cut into five ſegments which expand. It hath an empalement of one leaf, which is cut into five parts ſpreading open. In the center is ſituated a roundiſh germen, ſupporting two erect ſtyles, crowned by acute ſtigmas which ſtand apart; theſe are attended by twelve ſtamina, which are of the ſame length with the ſtyles, terminated by narrow twin ſummits which are proſtrate. The germen afterward becomes an oval compreſſed capſule, about three lines long and two broad, with a tranſverſe partition dividing it in two cells, each containing a ſingle roundiſh ſeed ending in a point; the borders of the capſule are ſet with hairs, reſembling rays.

This genus of plants is ranged in the ſecond ſection of Linnæus's eleventh claſs, intitled Dodecandria Digynia, which includes the plants whoſe flowers have twelve ſtamina and two ſtyles.

We have but one SPECIES of this plant, viz.

HELIOCARPOS (*Americana.*) Hort. Cliff. 211. tab. 16. Montia arboreſcens mori folio fructu racemoſo. Houſt. MSS. *Tree Montia with a Mulberry leaf and branching fruit.*

This plant was diſcovered by the late Dr. Houſtoun, growing naturally about Old La Vera Cruz in New Spain, from whence he ſent the ſeeds to England, which ſucceeded in the Chelſea garden, where the plants have produced flowers, and ripened ſeeds ſeveral years. It riſes with a thick, ſoft, woody ſtalk, from fifteen to eighteen feet high, ſending out ſeveral lateral branches toward the top, garniſhed with heart-ſhaped leaves full of veins, ſawed on their edges, and ending in acute points; they have foot-ſtalks three inches long, which ſtand oblique to the leaves, and are placed alternate; the flowers are produced at the end of the ſhoots, in branching cluſters; they are of a yellowiſh green, and are ſucceeded by flat compreſſed ſeed-veſſels of an oval ſhape, whoſe borders are cloſely ſet with threads repreſenting rays, of a browniſh colour when ripe; theſe capſules are divided into two cells by an intermediate partition, in each of theſe is lodged a ſingle roundiſh ſeed ending in a point.

This plant 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 in a ſeparate ſmall pot filled with light kitchen-garden earth, andd plunged into a hot-bed, treating them in the ſame way as other tender plants, which will not bear the open air in this country at any ſeaſon of the year; and while the plants are young, they require to be plunged in the tan-bed, but after they have acquired ſtrength, they will thrive in the dry ſtove. In winter they ſhould have but little water, and muſt be kept warm; but in ſummer they ſhould have plenty of freſh air in mild weather, and muſt be frequently refreſhed with water. With this management the plants will flower the third year, and produce good ſeeds, but may be preſerved ſeveral years with proper care.

I have ſowed the ſeeds of this plant which had been kept ten years, and came up as well as if it had been ſaved the former year; though from the appearance of the ſeeds, it ſeems as unlike to grow after the firſt year as any which I know.

HELIOPHILA. Lin. Gen. 816.

The CHARACTERS are,

It hath a four-leaved empalement, whoſe boraers have membranes; the two outer have ſmall bladders at their baſe. The flower has four roundiſh plain petals, placed in form of a croſs, and two nectariums, which are recurved toward the bladders of the empalement. It hath ſix ſtamina, four of which are longer than the other, terminated by oblong erect ſummits; and a cylindrical germen ſupporting a ſhort ſtyle, crowned by an obtuſe ſtigma; the germen afterward becomes a taper pod, with two cells filled with ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifteenth claſs, intitled Tetradynamia Siliquoſa, the flower having four long and two ſhort ſtamina, and the ſeeds being included in long pods.

The SPECIES are,

1. HELIOPHILA (*Integrifolia*) foliis lanceolatis indiviſis. N. Burman. *Heliophila with ſpear-ſhaped undivided leaves.* Leucoium Africanum, cœruleo flore, latifolium. H. L. 364. *African Gilliflower with a broad leaf and a blue flower.*

2. HELIOPHILA (*Coronopi folia*) foliis linearibus pinnatifidis. Lin. Sp. Plant. 927. *Heliophila with linear wing-pointed leaves.* Leucoium Africanum, cœruleo flore, anguſto coronopi folio majus. H. L. 364. *African Gilliflower, with narrow Hartſhorn leaves and blue flowers.*

Theſe are both annual plants, which grow naturally at the Cape of Good Hope; the firſt riſes with an erect ſtalk about four or five inches high, ſending out two or three ſide branches, garniſhed with long, narrow, entire green leaves, and terminated by a looſe bunch of blue flowers without ſcent, which are ſucceeded by taper pods near three inches long, having a double row of flat ſeeds.

The ſecond ſort grows about the ſame height, but branches more; the leaves are cut into many wing-pointed diviſions, and the flowers are like thoſe of the other ſort.

The ſeeds of both ſorts may be ſown in the ſpring on a ſouth border, and when the plants come up, if they are thinned and kept clean from weeds, it is all the culture they require.

HELIO-

HELIOTROPIUM. Lin. Gen. Plant. 164. Tourn. Inſt. R. H. 138. tab. 57. [Ἡλιοτρόπιον, of Ἥλιος, the ſun, and τρέπω, to turn.] Turnſole.

The CHARACTERS are,

The empalement of the flower is of one leaf, tubulous at bottom, but cut into five ſegments at the brim. The flower hath one petal, with a tube the length of the empalement, ſpreading flat above, where it is cut into five ſegments, which are alternately larger than the other; the chaps of the tube is cloſed, and hath five prominent ſcales, joined in form of a ſtar. It hath five ſhort ſtamina within the tube, terminated by ſmall ſummits, and four germen at the bottom of the tube, with one ſlender ſtyle the length of the ſtamina, crowned by an indented ſtigma. The germen. afterward becomes ſo many ſeeds, ſitting in the empalement. This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. HELIOTROPIUM (*Europæum*) foliis ovatis integerrimis tomentoſis rugoſis ſpicis conjugatis. Hort. Upſal. 33. *Heliotrope with oval, entire, woolly, rough leaves, and conjugated ſpikes.* Heliotropium majus Dioſcoridis. C. B. P. 253. The greater Turnſole of Dioſcorides.
2. HELIOTRIPIUM (*Indicum*) foliis cordato-ovatis acutis ſcabriuſculis, ſpicis ſolitariis, fructibus bifidis. Flor. Zeyl. 70. *Heliotrope with heart-ſhaped oval leaves, which are pointed and rough, ſingle ſpikes of flowers and bifid ſeeds.* Heliotropium Americanum cœruleum, foliis hormini. Acad. Reg. Sc. *Blue American Turnſole with Clary leaves.*
3. HELIOTROPIUM (*Horminifolium*) foliis lanceolato-ovatis acuminatis rugoſis, ſpicis ſolitariis gracilioribus alaribus & terminalibus. *Heliotrope with ſpear-ſhaped oval leaves, which are rough, and end in acute points, having ſlender ſingle ſpikes of flowers proceeding from the ſides and tops of the ſtalks.* Heliotropium Americanum cœruleum, foliis hormini anguſtioribus. H. L. *Blue American Turnſole with narrower Clary leaves.*
4. HELITROPIUM (*Capitatum*) foliis oblongo-ovatis integerrimis glabris ſubtus incanis, floribus capitatis alaribus, caule arboreſcente. *Heliotrope with oblong, oval, entire, ſmooth leaves, which are hoary on their under ſide, flowers growing in heads from the wings of the ſtalks, and a tree-like ſtalk.* Heliotropium arboreſcens, folio teucrii, flore albo in capitula denſa congeſto. Boerh. Ind. *Tree-like Turnſole, with a Germander leaf, and white flowers growing in thick ſhort heads.*
5. HELIOTROPIUM (*Canarienſe*) foliis ovatis crenatis oppoſitis, floribus capitatis alaribus dichotomis, caule arboreſcente. *Heliotrope with oval crenated leaves placed oppoſite, flowers growing in heads from the wings of the ſtalks, which diverge, and a tree-like ſtalk.* Heliotropium Canarienſe arboreſcens, folio ſcorodonæ. Hort. Amſt. *Canary tree-like Turnſole, with a Wood Sage leaf.*
6. HELIOTROPIUM (*Peruvianum*) foliis lanceolato-ovatis, caule fruticoſo, ſpicis numeroſis aggregato-corymboſis. Lin. Sp. 187. *Peruvian Helitrope with oval ſpear-ſhaped leaves, a ſhrubby ſtalk, and many ſpikes of flowers joined in a corymbus.*
7. HELIOTROPIUM (*Curaſſavicum*) foliis lanceolato-linearibus glabris aveniis, ſpicis conjugatis. Hort. Cliff. 45. *Heliotrope with narrow, ſpear-ſhaped, ſmooth leaves without veins, and conjugated ſpikes of flowers.* Heliotropium Curaſſavicum, foliis lini umbilicati. Par. Bat. Prod. *Heliotrope of Curaſſao, with a Venus Navelwort leaf.*
8. HELIOTROPIUM (*Gnaphalodes*) foliis linearibus obtuſis tomentoſis, pedunculis dichotomis, ſpicarum floribus quaternis, caule fruteſcente. Lin. Sp. 188. *Heliotrope with linear, obtuſe, woolly leaves, forked foot-ſtalks, with four ſpikes of flowers and a ſhrubby ſtalk.* Heliotropium arboreum maritimum, tomentoſum, gnaphalii Americani foliis. Sloan. Cat. 93. *Tree maritime woolly Heliotrope, with a Sea Cudweed leaf.*
9. HELIOTROPIUM (*Fruticoſum*) foliis lineari-lanceolatis piloſis, ſpicis ſolitariis ſeſſilibus. Lin. Sp. 187. *Heliotrope with linear, ſpear-ſhaped, hairy leaves, and ſingle ſpikes of flowers ſitting cloſe to the ſtalk.* Heliotropium minus lithoſpermi foliis. *Smaller Heliotrope with leaves like Gromwell.*
10. HELIOTROPIUM (*Procumbens*) caule procumbente, foliis ovatiis tomentoſis integerrimis, ſpicis ſolitariis terminalibus. *Heliotrope with a trailing ſtalk, oval, woolly, entire leaves, and ſingle ſpikes of flowers terminating the branches.* Heliotropium Americanum ſupinum & tomentoſum, foliis ſubrotundis. Houſt. MSS. *Low American woolly Heliotrope with roundiſh leaves.*
11. HELIOTROPIUM (*Americanum*) foliis oblongo-ovatis tomentoſis, ſpicis conjugatis terminalibus, caule fruticoſo. *Heliotrope with oblong, oval, woolly leaves, and double ſpikes of flowers terminating the ſtalk, which is ſhrubby.* Heliotropium Americanum fruteſcens & tomentoſum, foliis oblongis, floribus albis. Houſt. MSS. *Shrubby and woolly American Heliotrope, with oblong leaves and white flowers.*

The firſt ſort grows naturally in the ſouth of France, in Spain, Italy, and moſt of the warmer countries in Europe. It is an annual plant, which ſucceds better from ſeeds which ſcatter in the autumn, or ſown at that ſeaſon, than in the ſpring; for when they are ſown in the ſpring, they ſeldom come up the ſame year; but if the plant is once obtained, and the ſeeds ſuffered to ſhed, it will maintain itſelf without any trouble, requiring no other culture but to keep it clean from weeds, and thin the plants where they are too cloſe.

This riſes about ſeven or eight inches high, dividing into two or three branches, garniſhed with oval rough leaves, two inches long and one broad in the middle, of a light green, ſtanding upon pretty long foot-ſtalks alternately; the flowers are produced at the end of the branches in double ſpikes, joined at the bottom, which are about an inch and a half long, turning backward like a ſcorpion's tail. The flowers are white, and appear in June and July; the ſeeds ripen in autumn, ſoon after which the plant decays.

The ſecond ſort grows naturally in the Weſt-Indies. This is annual; the ſtalk riſes a foot and a half, or two feet high, branching out toward the top: the leaves are rough and hairy, ſtanding upon pretty long foot-ſtalks; they are two inches and a half long, and one and a half broad in the middle, ending in acute points; the flowers are produced toward the end of the branches in ſingle ſpikes, which are ſix inches long, turning backward at the top like the other ſpecies. The flowers are blue, and appear in July and Auguſt, the ſeeds ripen in September and October.

The third ſort grows naturally in the Weſt-Indies. This is a ſmaller plant than the former, ſeldom growing above two feet high; the leaves are one inch and a half long, and about half an inch broad; the ſpikes of flowers are very ſlender, and not more than two inches long; the flowers are ſmall, and of a light blue colour. They appear at the ſame time with the former, and the ſeeds ripen in autumn.

The ſeeds of theſe two ſorts muſt be ſown on a hot-bed in the ſpring, and when the plants are fit to remove, they muſt be tranſplanted on another hot-bed to bring them forward, treating them in the ſame way as the Balſamine, and other tender annual plants; and in June they may be taken up with balls of earth, and planted in the borders of the flower-garden, where they will flower, and in warm ſeaſons produce ripe ſeeds.

The fourth ſort riſes with a ſhrubby ſtalk ſix or ſeven feet high; the young branches are cloſely covered with a white down, and the leaves on thoſe are very hoary and entire, but thoſe on the older branches are greener, and ſome of them are notched on their edges; at each joint of the ſtalks come out two ſhort branches oppoſite, which are garniſhed with ſmall hoary leaves placed oppoſite: theſe, when bruiſed, emit a ſtrong odour, which to ſome perſons is very diſagreeable, but others are pleaſed with it. The plants rarely flower in England, for in near forty years which I have cultivated them, I have but once ſeen them in flower. The flowers are white, collected in roundiſh heads, which turn backward, and ſit cloſe to the branches;

the leaves continue all the year, for which the plants are preſerved in green-houſes, to add to the variety in winter.

The fifth ſort grows naturally in the Canary Iſlands. This riſes with a woody ſtalk three or four feet high, dividing into many branches, which are garniſhed with oval leaves notched on their edges, growing oppoſite upon long foot-ſtalks; they are hairy, and of an Aſh colour on their under ſide; the flowers are produced from the ſide of the branches on pretty long foot-ſtalks, each ſuſtaining four ſhort roundiſh ſpikes or heads, which divide by pairs, and ſpread from each other. The flowers are white, and appear in June and July, but are not ſucceeded by ſeeds in England. The leaves of this plant, when bruiſed, emit an agreeable odour, for which it is by ſome perſons much eſteemed; the gardeners have given it the title of Madam Maintenon, but for what reaſon I know not.

The two laſt ſorts are too tender to live through the winter in the open air in this country, ſo muſt be kept in a green-houſe during that ſeaſon; but they only require to be ſcreened from froſt, ſo may be placed with Myrtles and the other hardy green-houſe plants, where they may have a large ſhare of air in mild weather, and be treated in the ſame way; they are eaſily propagated by cuttings during any of the ſummer months, which, if planted in a ſhady border and duly ſupplied with water, will take root in five or ſix weeks; then they may be potted, and placed in a ſhady ſituation till they have taken new root, after which they may be treated as the old plants.

The ſixth ſort grows naturally in Peru, from whence the ſeeds were ſent by the younger Juſſieu to the Royal Garden at Paris, where the plants produced flowers and ſeeds; and from the curious garden of the Duke D'Ayen, at St. Germains, I was ſupplied with ſome of the ſeeds, which have ſucceeded in the Chelſea garden, where the plants have flowered and perfected their ſeeds for ſome years.

This riſes with a ſhrubby ſtalk two or three feet high, dividing into many ſmall branches, garniſhed with oval, ſpear-ſhaped, rough leaves, ſet on without order; they are three inches long, and one inch and a half broad in the middle, ſtanding on ſhort foot-ſtalks; they are hairy, and greatly veined on their under ſide, which is of an Aſh colour. The flowers are produced at the end of the branches in ſhort reflexed ſpikes, growing in cluſters. The foot-ſtalks divide into two or three, and theſe divide again into leſs, each ſuſtaining a ſpike of pale blue flowers, which have a ſtrong ſweet odour. The plants continue in flower great part of the year, and thoſe flowers which come out in ſummer, are ſucceeded by ripe ſeeds in autumn.

It may be propagated either by ſeeds or cuttings. The ſeeds ſhould be ſown upon a moderate hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be tranſplanted into ſmall pots filled with light earth, and plunged into a hot-bed, where they ſhould be ſhaded till they have taken new root; then they ſhould be inured to the open air by degrees, into which they ſhould be removed in ſummer, placing them in a ſheltered ſituation; and in autumn they muſt be houſed with other exotic plants in a good green-houſe, where they will flower great part of winter, ſo will make a good appearance among the Orange-trees, and other green-houſe plants, with whoſe culture this plant will thrive. If the cuttings of this plant are put into pots filled with light earth, during any of the ſummer months, and plunged into a moderate hot-bed, they will take root very freely, but theſe do not make ſo good plants as thoſe raiſed from ſeeds.

The ſeventh ſort grows naturally on the ſea-ſhore in the Weſt-Indies; this is an annual plant, whoſe branches trail upon the ground, and grow a foot long; they are garniſhed with narrow grayiſh leaves, which are ſmooth. The flowers are produced in double ſpikes from the ſide of their branches; they are white and ſmall, ſo make no great appearance. It is propagated by ſeeds, and requires the ſame treatment as the ſecond and third ſorts.

The eighth ſort riſes with an upright woody ſtalk ſix or ſeven feet high, with a hoary bark, full of marks where the leaves have grown; the upper part of the ſtalk divides into two or three ſtrong woody branches, which grow erect, and are very cloſely garniſhed with long, narrow, woolly leaves, which ſtand on every ſide the branches without order. The flowers come out from the ſide of the ſtalks, to which they ſit cloſe; they are ſhort and reflexed, like thoſe of the other ſpecies. The flowers are purple, ſitting in very woolly empalements, which are divided into five ſegments, which ſpread open; the whole plant is very white and woolly, like the Sea Cudweed, ſo makes an odd appearance when intermixed with other exotic plants: this is propagated by ſeeds, which muſt be procured from the places where it naturally grows, for it never produces any in Europe; theſe ſeeds ſhould be ſown in a tub of earth in the country, for when the dried ſeeds come over they ſeldom grow; and if they do, it is not before the ſecond year: and from ſeveral parcels of the ſeeds which I have received from the Weſt-Indies, I have not raiſed more than two plants, and theſe came up from the ſeeds which had been ſown more than a year; ſo that if the ſeeds are ſown as ſoon as they are ripe in a tub of earth, when they arrive in England, the tub ſhould be plunged into a hot-bed of tanners bark, which will bring up the plants; and when theſe are fit to remove, they ſhould be each planted in a ſeparate ſmall pot filled with earth, compoſed of ſand and light undunged earth, with a little lime rubbiſh well mixed together, then plunged into a hot-bed of tanners bark, and ſhaded until they have taken new root; after which, they muſt be treated as other tender exotic plants, always keeping them in the tan-bed in the ſtove, giving them but little water, eſpecially during the winter ſeaſon.

The ninth ſort is a native of the Weſt-Indies, where it grows plentifully on the ſea-ſhore; it riſes with an upright ſhrubby ſtalk a foot and a half high, garniſhed with ſmall ſpear-ſhaped leaves, ſcarce one inch long, and one-third of an inch broad in the middle, ending in acute points, ſitting cloſe to the ſtalk; they are hoary on their under ſide, but ſmooth above. The flowers are produced in ſingle ſlender ſpikes, which come out from the ſide, and at the top of the ſtalks; they are but little recurved, eſpecially thoſe on the ſide, but thoſe at the top are more bent; they are white, ſo make but little appearance.

The tenth ſort was ſent me from Carthagena in New Spain, where it grows naturally on the ſandy ſhores. This is an annual plant, with trailing ſtalks which grow ſix or ſeven inches long, garniſhed with ſmall oval leaves, which are woolly and entire. The flowers are produced at the end of the branches, in ſingle ſhort ſpikes, which are reflexed; they are ſmall and white, ſo make little appearance.

The eleventh ſort was ſent me by the late Dr. Houſtoun from La Vera Cruz, where he found it growing in plenty; this riſes with a ſhrubby ſtalk three feet high, dividing into ſlender branches, which are cloſely garniſhed with oblong, oval, woolly leaves, placed without order. The flowers are produced at the end of the branches in double ſpikes, which are ſlender, ſhort, and ſtrait, not recurved as the other ſpecies. The flowers are ſmall and white, and the plant is perennial.

Theſe three laſt mentioned are propagated by ſeeds, but the difficulty of getting them freſh from America, and the uncertainty of their growing, unleſs they are ſown abroad, and brought over in earth, has rendered them rare in Europe; and as they are plants of little beauty, ſo few perſons have taken the trouble to procure them: beſides, as they require a ſtove to preſerve them in this country, and muſt have a peculiar ſoil

and management like the eighth ſort, ſo, unleſs for the ſake of variety in botanic gardens, they are not worth cultivating here.

HELLEBORE. See HELLEBORUS.

HELLEBORINE. See SERAPIAS and LIMADORUM.

HELLEBOROIDES HYEMALIS. See HELLEBORUS.

HELLEBORO RANUNCULUS. See TROLLIUS.

HELLEBORUS. Lin. Gen. Plant. 622. Tourn. Inſt. R. H. 271. tab. 144. [Ἑλλέβορος.] Black Hellebore, or Chriſtmas flower; in French, *Ellebore-Noire.*

The CHARACTERS are,

The flowers hath no empalement; it hath five large roundiſh petals, which are permanent, and many ſmall nectarii placed circularly, each being of one piece, with a narrow tube at the bottom, divided at the brim into two lips, the under being ſhort and indented; it hath a great number of ſtamina, terminated by compreſſed erect ſummits, and ſeveral germen, which are compreſſed, ſupporting awl-ſhaped ſtyles, crowned by thick ſtigmas. The germen afterward turn to compreſſed capſules with two keels, the lower being ſhort, and the upper convex, which are filled with round ſeeds adhering to the ſeam.

This genus of plants is ranged in the ſeventh ſection of Linnæus's thirteenth claſs, intitled Polyandria Polygynia, which includes thoſe plants whoſe flowers have many ſtamina and ſtyles.

The SPECIES are,

1. HELLEBORUS (*Fœtidus*) caule multifloro folioſo, foliis pedatis. Lin. Sp. Plant. 784. *Hellebore with many flowers on a ſtalk, which are intermixed with leaves, and ramoſe leaves ſitting on the foot-ſtalk.* Helleborus niger fœtidus. C. B. P. *Stinking Black Hellebore, Bears-foot, or Setterwort.*
2. HELLEBORUS (*Viridis*) caule multifloro folioſo, foliis digitatis. Lin. Sp. Plant. 558. *Hellebore with many flowers on a ſtalk, which are intermixed with leaves, and hand-ſhaped leaves.* Helleborus niger hortenſis, flore viridi. C. B. P. *Green flowered Black Hellebore, or Bears-foot.*
3. HELLEBORUS (*Niger*) ſcapo ſub-unifloro ſub-nudo, foliis pedatis. Hort. Upſal. 157. *Hellebore with one flower on a ſtalk, which is naked, and hand-ſhaped leaves ſitting on the foot-ſtalk.* Helleborus niger, flore albo, etiam interdum valde rubente. J. B. *True Black Hellebore, or Chriſtmas Roſe.*
4. HELLEBORUS (*Trifolius*) caule multifloro, foliis ternatis integerrimis. *Hellebore with many flowers on a ſtalk, and leaves compoſed of three entire lobes.* Helleborus niger trifoliatus. Hort. Farn. *Trifoliate Black Hellebore.*
5. HELLEBORUS (*Hyemalis*) flore folio inſidente. Hort. Cliff. 227. *Hellebore with the flower ſitting on the leaf.* Aconitum Hyemale, *or Winter Aconite.*
6. HELLEBORUS (*Latifolius*) caule multifloro folioſo, foliis digitatis ſerratis amplioribus. *Hellebore with many flowers upon a ſtalk, intermixed with leaves, and large fingered leaves which are ſawed.* Helleborus niger amplioribus foliis. Tourn. Inſt. R. H. 272. *Black Hellebore with larger leaves.*

The firſt ſort grows naturally in woods in ſeveral parts of England, but particularly in Suſſex, where I have ſeen it in great plenty; this hath a jointed herbaceous ſtalk, which riſes two feet high, dividing into two or three heads, garniſhed with leaves compoſed of eight or nine long narrow lobes, which join at their baſe; four of theſe on each ſide are joined together at their tails, and the middle one ſtands on the center of the foot-ſtalk; theſe are ſawed on their edges, and end in acute points; thoſe on the lower part of the ſtalk are much larger than the upper, which are ſmall and narrow. The flower-ſtalk ariſes from the center of the plant, dividing into many branches, each ſuſtaining ſeveral ſmaller foot-ſtalks, with one entire ſpear-ſhaped leaf upon each, and one large greeniſh flower at the top with purpliſh rims; theſe appear in winter, and the ſeeds ripen in the ſpring; which, if permitted to ſcatter, the plants will riſe without care, and may be tranſplanted into woods, or in wilderneſs quarters, where they will grow in great ſhade, and make a good appearance at a ſeaſon when there are but few plants in beauty.

The ſecond ſort grows naturally at Ditton, near Cambridge, and in the woods near Stoken Church, in Oxfordſhire. The ſtalks of this ſort grow more upright than thoſe of the firſt, and do not branch ſo much. The leaves are compoſed of nine long lobes, which unite to the foot-ſtalk at their baſe, and are ſharply ſawed on their edges; they are of a lighter green than thoſe of the firſt ſort. The flowers are produced at the top of the ſtalk, having one or two leaves ſet on the foot-ſtalk; they are compoſed of five oval green petals, with a great number of ſtamina ſurrounding the germen in the middle; theſe appear the beginning of February, and the ſeeds ripen the end of May, which if ſown ſoon after they are ripe, the plants will come up early the following ſpring; and, when they have obtained ſtrength, may be planted in ſhady places under trees, where they will thrive and flower very well. The leaves of this ſort decay in autumn, and new ones ariſe from the roots in the ſpring, but the firſt ſort is always green.

The third ſort is ſuppoſed to be the Hellebore of the antients; this grows naturally on the Alps and Apennine mountains. The root of this ſort is compoſed of many thick fleſhy fibres, which ſpread far into the ground, from which ariſe the flowers upon naked foot-ſtalks, immediately from the root, each ſupporting one large white flower, compoſed of five roundiſh petals, with a great number of ſtamina in the middle. The leaves of this are compoſed of ſeven or eight thick, fleſhy, obtuſe lobes, which are ſlightly ſawed on their edges, and unite with the foot-ſtalk at their baſe; this plant flowers in winter, from whence the title of Chriſtmas Roſe was applied to it: it is propagated by parting of the roots in autumn, for the ſeeds ſeldom ripen well in England; it ſhould have a more ſheltered ſituation than either of the former, otherwiſe it will not flower well.

The fourth ſort is like the ſecond, but differs from it in having trifoliate leaves, which are broader and entire, their ſurface is ſmoother; this flowers early in winter, and the ſtalks riſe higher than either of the former ſorts, but is at at preſent rare in England.

The fifth ſort is the common Winter Aconite, which is ſo well known as to need no deſcription. It flowers very early in the ſpring, which renders it worthy of a place in all curious gardens, eſpecially as it requires but little room; this is propagated by offsets, which the roots ſend out in plenty; theſe roots may be taken up and tranſplanted, any time after their leaves decay, which is generally by the beginning of June till October, when they will begin to put out new fibres; but as the roots are ſmall, and nearly of the colour of the ground, ſo, if care is not taken to ſearch them, many of the roots will be left in the ground; theſe roots ſhould be planted in ſmall cluſters, otherwiſe they will not make a good appearance; for ſingle flowers ſcattered about the borders of theſe ſmall kinds, are ſcarce ſeen at a diſtance; but when theſe and the Snowdrops are alternately planted in bunches, they will have a good effect, as they flower at the ſame time, and are much of a ſize.

The ſixth ſort is like the firſt, but the lobes of the leaves are broader, and the ſtalks grow taller; this grows naturally in Iſtria and Dalmatia, from whence I received ſome of the ſeeds; it has been ſuppoſed to be only a ſeminal variety of the firſt, and as ſuch I ſowed the ſeeds; but the plants had a very great difference, and the firſt winter proving ſevere, they were all deſtroyed; ſo that it is not ſo hardy as our common ſort, and depending on their being ſo, occaſioned the loſs of the plants.

HELLEBORUS flore globoſo. See TROLLIUS.
HELLEBORUS ALBUS. See VERATRUM.
HELMET FLOWER, or MONK's HOOD. See ACONITUM.
HEMEROCALLIS. Lin. Gen. Plant. 391. Lilio-Aſphodelus. Tourn. Inſt. R. H. 344. tab. 179. Liliaſtrum. Tourn. Inſt. R. H. 369. tab. 194. *Lily Aſphodel, or Day Lily*; in French, *Lis de Saint Bruno.*

The CHARACTERS are,

The flower has no empalement; in ſome ſpecies the flower is of one petal, cut into ſix parts; in others it hath ſix petals, with a ſhort tube, ſpreading open at the top, which is reflexed. There are ſix awl-ſhaped declining ſtamina ſurrounding the ſtyle, terminated by oblong proſtrate ſummits. The roundiſh furrowed germen is ſituated in the middle, ſupporting a ſlender ſtyle, crowned by an obtuſe three-cornered ſtigma. The germen afterward becomes an oval three-cornered capſule with three lobes, opening with two valves, filled with roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which includes the plants whoſe flowers have ſix ſtamina and one ſtyle. Tournefort places the firſt in the firſt ſection of his ninth claſs, which includes the plants with a Lily-flower of one leaf, cut into ſix parts, whoſe pointal becomes the fruit; the ſecond he places in his fourth ſection of the ſame claſs, with the flowers of the ſame form which have ſix petals.

The SPECIES are,

1. HEMEROCALLIS (*Flava*) corollis flavis. Lin. Sp. 462. Hort. Upſal. 88. *Day Lily with a yellow flower.* Lilio-Aſphodelus luteus. Park. Par. 148. *Yellow Aſphodel Lily.*
2. HEMEROCALLIS (*Minor*) ſcapo compreſſo corollis monopetalis campanulatis. *Day Lily with a compreſſed ſtalk, and a bell-ſhaped flower of one petal.* Lilio-Aſphodelus luteus, minor. Tourn. Inſt. R. H. 344. *Smaller yellow Aſphodel Lily.*
3. HEMEROCALLIS (*Fulva*) corollis fulvis. *Day Lily with a copper-coloured flower.* Lilio-Aſphodelus phœnicius. Park. Par. 148. *Aſphodel Lily with a reddiſh flower.*
4. HEMEROCALLIS. (*Liliaſtrum*) ſcapo ſimplici, corollis hexapetalis campanulatis. Hort. Cliff. 128. *Day Lily with an unbranched ſingle ſtalk, and bell-ſhaped flowers with ſix petals.* Liliaſtrum Alpinum majus. Tourn. Inſt. R. H. 369. *Greater Alpine Baſtard Lily, called Savoy Spiderwort*; and in French, *Lis de Saint Bruno, i. e. St. Bruno's Lily.*

The firſt ſort grows naturally in Hungary, Dalmatia, and Iſtria, but has long been an inhabitant in the Engliſh gardens; this hath ſtrong fibrous roots, to which hang knobs, or tubers, like thoſe of the Aſphodel, from which come out keel-ſhaped leaves, which are two feet long, with a rigid midrib, the two ſides drawing inward, ſo as to form a ſort of gutter on the upper ſide. The flower-ſtalks riſe two feet and a half high, having two or three longitudinal furrows; theſe are naked, and at the top divide into three or four ſhort foot-ſtalks, each ſuſtaining one pretty large yellow flower ſhaped like a Lily, having but one petal, with a ſhort tube, ſpreading open at the brim, where it is divided into ſix parts; theſe have an agreeable ſcent, from which ſome have given it the title of yellow Tuberoſe. It flowers in June, and the ſeeds ripen in Auguſt; this plant is eaſily propagated by offsets, which the roots ſend out in plenty; theſe may be taken off in autumn, that being the beſt ſeaſon for tranſplanting the roots, and planted in any ſituation, for they are extremely hardy, and will require no other culture but to keep them clean from weeds, and to allow them room that their roots may ſpread; they may alſo be propagated by ſeeds, which, if ſown in autumn, the plants will come up the following ſpring, and theſe will flower in two years; but if the ſeeds are not ſown till ſpring, the plants will not come up till the year after.

The ſecond ſort grows naturally in Siberia; this hath roots like thoſe of the former ſort, but are ſmaller. The leaves are not near ſo long, nor more than half the breadth of the former, and of a dark green colour. The flower-ſtalk riſes a foot and a half high, is naked and compreſſed, but has no furrows; at the top is produced two or three yellow flowers, which are nearer the bell-ſhape than thoſe of the other ſpecies, and ſtand on ſhorter foot-ſtalks; theſe flower the beginning of June, and the ſeeds ripen early in Auguſt. It is propagated by offsets from the root, or by ſeeds, in the ſame manner as the former, but the roots do not increaſe ſo faſt; it ſhould have a moiſt ſoil and a ſhady ſituation, where it will thrive much better than in dry ground.

The third ſort is a much larger plant than either of the former, and the roots ſpread and increaſe much more, therefore is not proper furniture for ſmall gardens; the roots of this hath very ſtrong fleſhy fibres, to which hang large oblong tubers. The leaves are near three feet long, hollowed like thoſe of the former, turning back toward the top. The flower-ſtalks are as thick a man's finger, and riſe near four feet high; they are naked, without joints, and branching at the top, where are ſeveral large copper-coloured flowers, ſhaped like thoſe of the Red Lily, and as large. The ſtamina of this ſort are longer than thoſe of the other, and their ſummits are charged with a copper-coloured farina, which ſheds on being touched; or if a perſon ſmells to the flowers, it will fly off and ſpread over the face, dyeing it all over of a copper colour, which is a trick often played by ſome unlucky people to the ignorant: theſe flowers never continue longer than one day, but there is a ſucceſſion of flowers on the ſame plants for a fortnight or three weeks; this ſort flowers about the ſame time as the former, and the roots propagate too faſt for thoſe gardens where there is but little room. It will grow on any ſoil or in any ſituation; the beſt time to tranſplant the roots is in autumn.

The Savoy Spiderwort, or, as the French call it, St. Bruno's Lily, is a plant of humbler growth than either of the former: there are two varieties of this, one is titled Liliaſtrum Alpinum majus, and the other Liliaſtrum Alpinum minus by Tournefort; the firſt of theſe riſes with a flower-ſtalk more than a foot and a half high; the flowers are much larger, and there is a greater number upon each ſtalk than the ſecond; but as there is no other eſſential difference between them, I have not put them down as different ſpecies; but the firſt is by much the finer plant, though not common in England, for the ſecond ſort is what I have always obſerved in the gardens here. I received ſome roots of the ſecond ſort from Monſ. Richard, gardener to the King of France, which continue their difference in the ſame ſoil and ſituation with the firſt, which flowers earlier in the year; the leaves of this ſort are ſomewhat like thoſe of the Spiderwort, are pretty firm, and grow upright; the flower-ſtalks grow about a foot and a half high, and have ſeveral white flowers at the top, ſhaped like thoſe of the Lily, which hang on one ſide, and have an agreeable ſcent; theſe are but of ſhort duration, ſeldom continuing in beauty above three or four days; but when the plants are ſtrong, they will produce eight or ten flowers upon each ſtalk, ſo they make a good appearance while they laſt.

This ſort is uſually propagated by parting the roots; autumn is the beſt ſeaſon for doing this work, as it alſo is for tranſplanting the roots; for when they are removed in the ſpring, they ſeldom flower the ſame year, or if they do, it is but weakly: theſe plants ſhould not be tranſplanted oftener than every third year, when the roots may be parted to make an increaſe of the plants, but they ſhould not be divided too ſmall; for if they are, it will be two years before they flower: theſe plants delight in a light loamy ſoil and in an open expoſure, ſo muſt not be planted under the drip of trees; but if they are planted to an eaſt aſpect, where they may be protected from the ſun in the heat of the day, they will continue in beauty longer than when they are more expoſed.

HEMIONITIS [Ἡμιονῖτις, of Ἡμίονος, a Mule, q. d. Mulewort, becauſe this plant was believed to be as barren as a mule.] Moonfern.

This

This is a plant which is ſeldom propagated in gardens, therefore I ſhall not trouble the reader with any account of it more than this. That whoever hath a mind to cultivate any of the ſorts, muſt procure the plants from the countries where they naturally grow; there are two ſorts which are natives of the warmer parts of Europe, but in America there is a great number of very different kinds; theſe muſt be planted in pots filled with loamy undunged earth, and ſuch of them as are natives of hot countries, muſt be placed in the ſtove; the others may be ſheltered under a common frame in winter, and during the ſummer they muſt be frequently watered, but in winter they will require but little. In ſummer they ſhould alſo have plenty of free air admitted to them; with this management the plants will thrive.

HEPATICA. Boerh. Ind. Plant. Ranunculus. Tourn. Inſt. R. H. 286. Anemone. Lin. Gen. Plant. 614. [Ἡπατῖτις, of Ἧπαρ, the liver, ſo called, becauſe the leaves of this plant are divided into lobes, like the liver (but it does not at all take its name from its uſe, for it is of no virtue againſt the diſeaſes of the liver, as many have erroneouſly imagined;) and trifolia, from its ſimilitude thereto.] Hepatica, or Noble Liverwort.

The CHARACTERS are,

The flower hath a three-leaved empalement. It hath ſix petals, which are oval, and expand to the bottom, with a great number of ſlender ſtamina ſhorter than the petals, terminated by obtuſe ſummits; and ſeveral germen collected into a head, ſupporting acuminated ſtyles, crowned by obtuſe ſtigmas. The germen afterward turns to acuminated ſeeds ſitting round the ſtyles.

This genus of plants is by Tournefort ranged among the Crowfoots, and by Linnæus it is placed under Anemone; but as the flowers of Anemone have no empalement, and the Hepatica hath a three-leaved one, it may be ſeparated from that genus; and as it is well known in the gardens by this title, ſo ſhould we range it with the Anemone, it might occaſion confuſion. This is ranged in the ſeventh ſection of Linnæus's thirteenth claſs, which includes the herbs with flowers having many ſtamina and ſtyles.

The VARIETIES of this plant are,

1. HEPATICA (*Nobilis*) trifolio, cœruleo flore. Cluſ. *The ſingle blue Hepatica, or Noble Liverwort.*
2. HEPATICA (*Plena*) trifolia cœruleo pleno. Cluſ. *The double blue Hepatica, or Noble Liverwort.*
3. HEPATICA (*Alba*) trifolia, flore alba ſimplici. Boerh. Ind. *The ſingle white Hepatica, or Noble Liverwort.*
4. HEPATICA (*Vulgaris*) trifolia, rubro flore. Cluſ. *Single red Hepatica, or Noble Liverwort.*
5. HEPATICA (*Rubra*) trifolia, flore rubro pleno. Boerh. Ind. *Double red, or Peach-coloured Hepatica.*

Theſe plants are ſome of the greateſt beauties of the ſpring; the flowers are produced in February and March in great plenty, before the green leaves appear, and make a very beautiful figure in the borders of the pleaſure-garden, eſpecially the double ſorts, which commonly continue a fortnight long in flower than the ſingle kinds, and the flowers are much fairer. I have ſeen the double white kind often mentioned in books, but could never ſee it growing, though I do not know but ſuch a flower might be obtained from ſeeds of the ſingle white, or blue kinds. I have ſometimes known the double blue ſort produce ſome flowers in autumn, which were inclining to white, and thereby ſome people have been deceived, who have procured the roots at that ſeaſon, and planted them in their gardens; but the ſpring following their flowers were blue, as before; and this is what frequently happens, when the autumn is ſo mild as to cauſe them to flower; but whether the double white ſort, mentioned in the books, was only this accidental alteration in the colour of the flower, I cannot ſay, though it ſeems very probable it was, ſince I never could hear of any perſon who ever ſaw the double white ſort flower in the ſpring.

The ſingle ſorts produce ſeeds every year, whereby they are eaſily propagated, and alſo new flowers may be that way obtained. The beſt ſeaſon for ſowing of the ſeeds is in the beginning of Auguſt, either in pots or boxes of light earth, which ſhould be placed ſo as to have only the morning ſun until October, when they ſhould be removed into the full ſun, to remain during the winter ſeaſon; but in March, when the young plants will begin to appear, they muſt be removed again to a ſhady ſituation, and in dry weather ſhould be frequently watered, and about the beginning of Auguſt they will be fit to be tranſplanted; at which time you ſhould prepare a border facing the eaſt, of good, freſh, loamy earth, into which you ſhould remove the plants, placing them about ſix inches diſtance each way, cloſing the earth pretty faſt to their roots, to prevent the worms from drawing them out of the ground, which they are very apt to do at that ſeaſon; and, in the ſpring following, they will begin to ſhew their flowers; but it will be three years before they flower ſtrong, and till then you cannot judge of their goodneſs; when, if you find any double flowers, or any of a different colour from the common ſorts, they ſhould be taken up, and tranſplanted into the borders of the flower-garden, where they ſhould continue at leaſt two years before they are taken up or parted; for it is remarkable in this plant, that where they are often removed and parted, they are very ſubject to die; whereas, when they are permitted to remain undiſturbed for many years, they will thrive exceedingly, and become very large roots.

The double flowers, which never produce ſeeds, are propagated by parting their roots, which ſhould be done in March, at the time when they are in flower; but you ſhould be careful not to ſeparate them into very ſmall heads, nor ſhould they be parted oftener than every third or fourth year, if you intend to have them thrive, for the reaſon before given. They delight in a ſtrong loamy ſoil, and in an eaſtern poſition, where they may have only the morning ſun, though they will grow in almoſt any aſpect, not too warm, and are never injured by cold.

HEPATORIUM. See EUPATORIUM.

HEPTAPHYLLUM. See POTENTILLA.

HERACLEUM. Lin. Gen. 345. Sphondylium. Tourn. Inſt. 1. Cow Parſnep.

The CHARACTERS are,

The calyx of the greater umbel is large, compoſed of many ſmaller, which are plain; the general involucrum is compoſed of many leaves which fall off; the partial umbels have involucrums of three to ſeven leaves, the outer being the longeſt. The general umbel is deformed, the florets are moſtly fruitful; thoſe of the diſk have five equal petals, which are inflexed; thoſe of the rays have the ſame number of unequal petals, the outer being the largeſt; they have each five ſtamina longer than the petals, terminated by ſmall ſummits. The germen is ſituated under the flower, and is almoſt oval, ſupporting two ſtyles, crowned by ſimple ſtigmas. The germen afterward becomes an elliptical fruit, compoſed of two oval compreſſed ſeeds.

This genus of plants is ranged in the ſecond order of Linnæus's fifth claſs, intitled Pentandria Digynia, the flowers having five ſtamina and two ſtyles.

The SPECIES are,

1. HERACLEUM (*Sphondylium*) foliolis pinnatifidis. Hort. Cliff. 103. *Cow Parſnep with wing-pointed leaves.* Sphondylium vulgare hirſutum. C. B. P. 157. *Common Cow Parſnep.*
2. HERACLEUM (*Panaces*) foliis pinnatis, foliolis quinis, intermediis ſeſſilibus, floribus radiatis. Hort. Upſal. 65. *Cow Parſnep with winged leaves having five lobes, and radiated flowers.* Panax Sphondylii folio, ſc. Heracleum, C. B. P. 157.
3. HERACLEUM (*Alpinum*) foliis ſimplicibus, floribus radiatis. Lin. Sp. 359. *Cow Parſnep with ſimple leaves and radiated flowers.* Sphondylium Alpinum glabrum, C. B. P. 157. *Smooth Alpine Cow Parſnep.*
4. HERACLEUM (*Sibricum*) foliis pinnatis, folioliis quinis, intermediis ſeſſilibus, corollulis uniformibus. Hort. Upſal. 65. *Cow Parſnep with winged leaves, having five lobes;*

lobes, and a uniform corolla. Paſtinaca foliis ſimpliciter pinnatis, foliolis pinnafidis. Flor. Siber. 1. p. 218.

The firſt ſort grows naturally in moſt parts of England, ſo is rarely admitted into gardens; there is a variety (if not a diſtinct ſpecies of this) with narrower leaves, which are more divided than thoſe of the firſt; however, as they are ſeldom cultivated, I ſhall not trouble the reader with their deſcription.

The ſecond ſort is placed in moſt of the Pharmacopœias as a medicinal plant, but is rarely uſed as ſuch, eſpecially in England. This riſes with a tall ſtalk near ſix feet high, which is embraced by the baſe of the leaves; theſe are winged, having generally five roundiſh lobes, whoſe ſurface is rough, of a dark green colour: the flowers are produced at the top of the ſtalks, being cloſely incloſed by the empalement when they firſt appear; but this afterward burſting, the umbel expands, having large petals on their exterior row, which are almoſt heart-ſhaped, and are ſucceeded by flat compreſſed ſeeds like thoſe of Parſnep, but larger, having black ſtreaks on their outſide. This grows naturally on the Appenines.

The third ſort grows naturally on the Alps, as alſo in Siberia: the ſtalks of this riſe as high as thoſe of the former, but the leaves are ſmooth. This is ſeldom cultivated.

The fourth ſort grows naturally in Siberia and Tranſylvania; in the former country, the inhabitants eat the ſtalks and leaves of the plant for want of better food.

As theſe plants are rarely cultivated, unleſs in botanic gardens, ſo I ſhall recommend to thoſe who are deſirous to propagate either of the ſpecies, to ſow their weeds in the autumn; and in the ſpring, when the plants are up, to hough the ground, cutting up the ſeeds, and thinning of the plants, in the ſame manner as is directed for Parſneps, with which culture the plants will thrive.

HERBA GERARDI. See ANGELICA SYLVESTRIS MINOR.

HERBALIST, HERBARIST, a perſon who is ſkilled in diſtinguiſhing the kinds, natures, or virtues of herbs or plants.

HERBA PARIS. See PARIS.

To HERBARIZE, to go abroad in the fields in queſt of different or new herbs or plants.

HERBIFEROUS ſignifies bearing or bringing forth herbs.

HERBIVOROUS, i. e. devouring or feeding on herbs or Graſs.

HERBOSE, graſſy, or full of Graſs or herbs.

HERBOSITY, graſſineſs, or abundance of Graſs or herbs.

HERBULENT, graſſy, full of Graſs or herbs.

HERMANNIA. Tourn. Inſt. R. H. 656. tab. 432. Lin. Gen. Plant. 742. The title of this genus was given by Dr. Tournefort in honour of that great botaniſt, Paul Herman, M. D. Profeſſor of Botany at Leyden.

The CHARACTERS are,

The flower hath a pitcher-ſhaped permanent empalement, divided into five parts at the brim. It hath five petals, which are narrow at their baſe, and twiſt againſt the ſun within the tubulous empalement, but ſpread open above, where they are broad and obtuſe. It hath five broad ſtamina, which are joined in one body, terminated by pointed ſummits, which are joined. In the center is ſituated a roundiſh five-cornered germen, ſupporting an awl-ſhaped ſtyle which is longer than the ſtamina, crowned by a ſingle ſtigma. The germen afterward becomes a five-cornered roundiſh capſule, with five cells opening at the top, incloſing many ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixteenth claſs, which includes the plants whoſe flowers have five ſtamina joined in one body to the ſtyle.

The SPECIES are,

1. HERMANNIA (*Alnifolia*) foliis cuneiformibus plicatis, crenato-emarginatis. Hort. Cliff. 342. *Hermannia with wedge-ſhaped folded leaves, which are crenated and indented.* Hermannia fruteſcens, folio oblongo ſerrato latiori. Boerh. Ind. *Shrubby Hermannia with a broader, oblong, ſerrated leaf.*
2. HERMANNIA (*Groſſulariæfolia*) foliis obovatis acutè inciſis, pedunculis biſloris. Prod. Leyd. 347. *Hermannia with oval leaves acutely cut, and foot-ſtalks having two flowers.* Hermannia fruteſcens folio groſſulariæ parvo hirſuto. Boerh. Ind. *Shrubby Hermannia with a ſmall, hairy, Gooſeberry leaf.*
3. HERMANNIA (*Althææfolia*) foliis obovatis plicatis crenatis tomentoſis. Hort. Cliff. 343. *Hermannia with oval, folded, woolly leaves, which are crenated* Hermannia fruteſcens, folio ibiſci hirſuto molli, caule piloſo. Boerh. Ind. *Shrubby Hermannia with a ſoft, hairy, Marſhmallow leaf, and woolly ſtalk.*
4. HERMANNIA (*Hyſſopifolia*) foliis lanceolatis obtuſis ſerratis. Hort. Cliff. 342. *Hermannia with obtuſe ſpear-ſhaped leaves, which are ſawed.* Hermannia fruteſcens, folio oblongo ſerrato. Tourn. *Shrubby Hermannia with an oblong ſerrated leaf.*
5. HERMANNIA (*Trifoliato*) foliis oblongo-ovatis crenatis tomentoſis flore mutabili. *Hermannia with oblong, oval, crenated woolly leaves, and a changeable flower.* Hermannia fruteſcens, folio oblongo molli cordato hirſuto. Boerh. Ind. *Shrubby Hermannia with a ſoft, oblong, hairy, heart-ſhaped leaf.*
6. HERMANNIA (*Pinnata*) foliis tripartitis, media pinnatifida. Hort. Cliff. *Hermannia with tripartite leaves ending in many points.* Hermannia fruteſcens, folio multifido tenui, caule rubro. Boerh. Ind. alt. *Shrubby Hermannia with a narrow multifid leaf, and a red ſtalk.*
7. HERMANNIA (*Lavendulifolia*) foliis lanceolatis obtuſis integerrimis. Hort. Cliff. 342. *Hermannia with obtuſe ſpear-ſhaped leaves, which are entire.* Hermannia fruteſcens, folio lavendulæ latiori & obtuſo, flore parvo aureo. Boerh. Ind. alt. *Shrubby Hermannia with a broad, blunt, Lavender leaf, and a ſmall golden flower.*
8. HERMANNIA (*Hirſuta*) foliis ſimplicibus ternatiſque hirſutis ſeſſilibus. *Hermannia with ſingle and trifoliate leaves which are hairy, and ſit cloſe to the ſtalk.*

The firſt ſort riſes with a ſhrubby ſtalk ſix or eight feet high, dividing into many erect irregular branches, covered with a brown bark, garniſhed with wedge-ſhaped leaves, which are narrow at their baſe, but broad and round at the top; they are about an inch long, and three quarters broad at the point, where they are indented and crenated. The flowers are produced in ſhort ſpikes on the upper part of the branches; they are of a pale yellow colour, but ſmall; theſe appear in April and May, and are often ſucceeded by ſeeds, which ripen in Auguſt.

The ſecond ſort is a ſhrub of lower ſtature than the firſt, but ſends out a great number of branches, which ſpread wide on every ſide, garniſhed with ſmaller leaves than thoſe of the former, which are rough, and ſit cloſe to the branches. The flowers are produced in ſhort cloſe ſpikes at the end of every ſhoot, ſo that the whole ſhrub ſeems covered with flowers; they are of a bright yellow, and appear toward the end of April, but are not ſucceeded by ſeeds in England.

The third ſort is a plant of humbler growth than either of the former, ſeldom riſing more than two feet and a half high; the ſtem is not ſo woody, and the branches are ſoft and ſlender, garniſhed with oval woolly leaves, which are plaited and crenated on the edges; the flowers are produced in looſe panicles at the end of the branches; they are larger than thoſe of the other ſpecies, and have very hairy empalements. This ſort flowers in June and July, and frequently puts out more in the autumn.

The fourth ſort has been longer in the European gardens than either of the other. This riſes with a ſhrubby upright ſtalk to the height of ſeven or eight feet, ſending out many ligneous branches from the ſide, which alſo grow more erect than any of the other; theſe are cloathed with obtuſe ſpear-ſhaped leaves,

about an inch and a half long, and half an inch broad, ſawed on the edges toward the end: the flowers come out in ſmall bunches from the ſide of the ſtalk; they are of a pale Straw colour, and appear in May and June; theſe are frequently ſucceeded by ſeeds, which ripen the latter part of Auguſt.

The fifth ſort ſeldom riſes more than two feet high, with a ſoft ligneous ſtalk, ſending out ſlender irregular branches, garniſhed with oblong, oval, woolly leaves, ſtanding upon pretty long footſtalks; the flowers are produced in looſe ſpikes at the end of the branches; theſe are, at their firſt appearance, of a gold colour, but after they have been ſome days open, they change to yellow. This flowers in June and July.

The ſixth ſort riſes with a ſhrubby ſtalk near three feet high, ſending out many ſlender branches, covered with a reddiſh bark, garniſhed with narrow wing-pointed leaves; the flowers come out from the ſide of the branches in ſmall cluſters; they are ſmall, and of a deep yellow colour. This flowers in June and July.

The ſeventh ſort hath ſhrubby branching ſtalks, which are very buſhy, but ſeldom riſe more than a foot and a half high; the branches are very ſlender, and garniſhed with hairy, pale, green leaves of different ſizes; ſome of them are two inches long, and one broad at their ends; but their common ſize is ſeldom more than one inch long, and half an inch broad at their points; they are entire, and ſit pretty cloſe to the branches; the flowers come out from the ſide of the ſtalk ſingly, they are ſmall, and of a yellow colour. This ſort flowers moſt part of ſummer.

The eighth ſort I raiſed from ſeeds which came from the Cape of Good Hope. This riſes with a ſhrubby hairy ſtalk about two feet high, ſending out many ſide branches, which grow more erect than thoſe of the former, garniſhed with oblong, veined, hairy leaves, which are ſometimes ſingle, and at other times come out by threes, the middle one being the largeſt; the flowers are produced toward the end of the branches; they are large, and of a deep yellow colour, with large, ſwollen, hairy empalements. This ſort continues flowering moſt part of ſummer.

All the ſpecies of this genus yet known, are natives of the country about the Cape of Good Hope, from whence moſt of them were brought to the gardens in Holland, where they have been propagated and ſpread through moſt parts of Europe.

The plants are all propagated by planting cuttings of them during any of the ſummer months, in a bed of freſh earth, obſerving to water and ſhade them until they are well rooted, which will be in about ſix weeks after planting; then you ſhould take them up, preſerving a ball of earth to their roots, and plant them into pots filled with light freſh earth, placing them in a ſhady ſituation until they have taken freſh root; after which they may be expoſed to the open air, with Myrtles, Geraniums, &c. until the middle or latter end of October, when they muſt be removed into the green-houſe, obſerving to place them in the cooleſt part of the houſe, where they may have as much free air as poſſible; for if they are too much drawn in the houſe, they will appear very faint and ſickly, and ſeldom produce many flowers; whereas, when they are only preſerved from the froſt, and have a great ſhare of free air, they will appear ſtrong and healthy, and produce large quantities of flowers in April and May, during which ſeaſon they make a very handſome appearance in the green-houſe: they muſt alſo be frequently watered, and will require to be new potted at leaſt twice every year, i. e. in May and September; otherwiſe their roots will be ſo matted, as to prevent their growth.

Theſe plants rarely produce good ſeeds with us, except the fourth and eighth ſorts, which ripen their ſeeds every year in England; the other rarely producing any, I ſuppoſe this may be accounted for by their having been long propagated from cuttings; for thoſe plants which I have raiſed from ſeeds, have been fruitful two or three years after, but I have always found thoſe plants which have been propagated by cuttings taken from theſe, have ſoon become barren: the ſame thing I have obſerved in many other plants, therefore thoſe who are deſirous to continue their plants fruitful, ſhould conſtantly raiſe them from ſeeds. Theſe, as alſo thoſe which are obtained from abroad, muſt be ſown upon a moderate hot-bed; and when the plants come up, they muſt be tranſplanted into ſmall pots, and plunged into another very moderate hot-bed, in order to promote their rooting; after which they muſt be hardened by degrees, to endure the open air in ſummer, and may then be treated as the old plants.

HERMODACTYLUS, the Hermodactyl, commonly called Snake's-head Iris.

This genus is by Dr. Linnæus joined to Iris, the characters of the flower agreeing pretty well with thoſe of that genus; from which Tournefort has ſeparated it from the difference of the root, which is not according to his own ſyſtem, where he makes the ſhape of the petals with their number and poſition, the principal characteriſtics in diſtinguiſhing the claſſes and genera; but as this plant requires a particular treatment, ſo I have continued it under Tournefort's title.

The CHARACTERS are,

It hath a Lily-ſhaped flower, conſiſting of one leaf, and ſhaped exactly like an Iris, but has a tuberous root, divided into two or three dugs, like oblong bulbs.

We have but one SPECIES of this plant, viz.

HERMODACTYLUS (*Tuberoſa*) folio quadrangulo. C. B. P. *Snake's-head Iris*, vulgò. This is alſo called Iris tuberoſa Belgarum, i. e. *Tuberous Iris of the Dutch.*

This plant is eaſily propagated by its tubers, which ſhould be taken off ſoon after the green leaves decay, which is the proper ſeaſon for tranſplanting the root; but they ſhould not be kept long out of the ground, leſt they ſhrink, which will cauſe them to rot when they are planted. They ſhould have a loamy ſoil, not too ſtrong nor deep, and muſt be planted to an eaſt aſpect, where they will flower very well. The roots ſhould not be removed oftener than once in three years, if you deſign to increaſe them; but then they ſhould be planted at a farther diſtance from each other, than if they were to remain but one year; and the beds ſhould be kept clear from weeds, and at Michaelmas there ſhould be ſome fine earth laid over the beds, which will greatly ſtrengthen their roots. The diſtance which theſe plants ſhould be allowed is ſix inches ſquare, and they ſhould be placed three inches deep in the ground. Theſe produce their flowers in May, and their ſeeds are ripe in Auguſt; but as they multiply pretty faſt by their roots, few people are at the trouble of raiſing them from ſeeds; but thoſe who have an inclination ſo to do, muſt treat them in the manner directed for the bulbous Iriſes.

The roots of this plant are very apt to run deep into the ground, and then they ſeldom produce flowers; and many times they ſhoot ſo deep as to be loſt, eſpecially where the ſoil is very light; therefore to prevent this, it will be proper to lay a thickneſs of rubbiſh under the border where theſe are planted, to hinder them from getting down. This ſhould always be practiſed in light ground, but in ſtrong land there will be no occaſion to make uſe of this precaution, becauſe they do not ſhoot downward ſo freely in that.

This plant has by ſome botanic writers been ſuppoſed the true Hermodactyl, but what has been long uſed in Europe for that is the root of a Colchicum.

HERNANDIA. Plum. Nov. Gen. 8. tab. 40. Lin. Gen. Plant. 931. Jack-in-a-Box, vulgò.

The CHARACTERS are,

It hath male and female flowers on the ſame plant; the male flowers have a partial involucrum, compoſed of four oval ſmall leaves, which incloſe three flowers; each of theſe has a proper bell-ſhaped empalement of one leaf; the petal is funnel-ſhaped, cut into ſix ſegments at the brim; it hath three ſhort ſtamina inſerted in the empalement, terminated by erect ſummits. The female flowers

are

are ſhaped like the male, but want ſtamina; they have a roundiſh germen, ſupporting three ſlender ſtyles, crowned by acute ſtigmas. The empalement afterward becomes a large, ſwollen, oblong fruit, perforated at each end, incloſing one hard globular nut.

This genus of plants is ranged in the third ſection of Linnæus's twenty-fi ſt claſs, intitled Monœcia Triandria, which includes thoſe plants which have male and female flowers in the ſame plant, whoſe male flowers have three ſtamina.

We have but one SPECIES of this genus in England, viz.

HERNANDIA (*Sonora*) foliis peltatis. Hort. Cliff. 485. tab. 13. Hernandia amplo hederæ folio umbilicato. Plum. *Hernandia with a large umbilicated Ivy leaf, commonly called in the Weſt-Indies, Jack-in-a-box.*

This plant is very common in Jamaica, Barbadoes, St. Chriſtopher's, and many other iſlands in the Weſt-Indies, where it is known by the name of Jack-in-a-box. The fruit of this plant when ripe, is perforated, and the nut in the inſide becomes hard; ſo that when the wind blows through the fruit, it makes a whiſtling noiſe, which may be heard at a diſtance; fom whence, I ſuppoſe, the inhabitants gave this name to the plant. It grows in the gullies, where there are rills of water.

In Europe this plant is preſerved in curious gardens, with other tender exotic plants. It is propagated by ſowing the ſeeds in a hot-bed in the ſpring; and when the plants have ariſen two inches high, they ſhould be tranſplanted each into a ſeparate pot, filled with freſh rich earth, and plunged into the hot-bed again, obſerving to water and ſhade them until they have taken root; after which time they muſt have air admitted to them, (by raiſing the glaſſes) in proportion to the warmth of the air, or the heat of the bed in which they are placed; and ſhould be frequently watered, otherwiſe they will not thrive. As the plants advance, they ſhould be removed into larger pots, which ſhould be filled with rich earth; but in doing this, you ſhould be very careful not to break the roots, as alſo to preſerve a good ball of earth to them; and if their leaves ſhould hang after being removed, the plants muſt be ſcreened from the ſun until they have taken new root. The beſt time to ſhift theſe plants is in July, that they may be well rooted before the cold approaches; the plants muſt be conſtantly kept in the bark-ſtove: in winter they ſhould have a moderate ſhare of heat, and in the ſummer they muſt have plenty of air in hot weather. With this management, the plants will grow to the height of ſixteen feet or more, and the leaves being very large, will make a beautiful appearance in the ſtove. It hath not as yet flowered in England, though we may expect ſome of the large plants to flower in a ſhort time.

HERNIARIA. Tourn. Inſt. R. H. 507. tab. 228. Lin. Gen. Plant. 272. [of *Hernia*, Lat. a rupture.] Rupturewort.

The CHARACTERS are,

The flower hath no petals, but a coloured empalement of one leaf, cut into five parts which ſpread open. It hath five ſmall awl-ſhaped ſtamina, ſituated in the diviſions of the empalement, terminated by ſingle ſummits, and five others which are barren, placed alternately between them. In the center is an oval germen with two ſtigmas, which have acute points; the germen afterward turns to a ſmall capſule incloſed in the empalement, having one oval-pointed ſeed.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, intitled Pentandria Digynia, which includes the plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. HERNIARIA (*Glabra*) glabra herbacea. J. B. 3. 378. *Smooth Rupturewort.*
2. HERNIARIA (*Hirſuta*) hirſuta herbacea. J. B. 3. 379. *Rough or hairy Rupturewort.*
3. HERNIARIA (*Alſines folia*) alſines folio. Tourn. Inſt. 507. *Rupturewort with a Chickweed leaf.*
4. HERNIARIA (*Fruticoſa*) caulibus fruticoſis, floribus quadrifidis. Amœn. Acad. 4. p. 369. *Rupturewort with ligneous ſtalks and quadrifid flowers.* Herniaria fruticoſa, viticulis lignoſis. C. B. P. 382.

The two firſt ſorts grow naturally in England, but not very common; they are low trailing plants, their branches lying on the ground, and extend ſeven or eight inches each way; they have leaves like the ſmaller Chickweed, the firſt is ſmooth, and thoſe of the ſecond are hairy; the flowers come out in cluſters from the ſide of the ſtalks at the joints; they are ſmall, and of a yellowiſh green, ſo make no appearance.

The fourth ſort hath ſhrubby ſtalks which trail upon the ground, garniſhed with ſmall hairy leaves like the ſecond ſort; the flowers are alſo very like that.

The third ſort is an annual plant, which grows naturally in France and Italy. This doth not ſpread ſo much as either of the other ſorts, but the flowers and leaves are ſomewhat like the firſt, but larger.

Theſe plants are ſeldom cultivated, but in botanic gardens for the ſake of variety. The three firſt are annual plants, ſeldom continuing longer than one year; and muſt be permitted to ſhed their ſeeds, whereby they are better preſerved than if ſown with art. The fourth ſort is an abiding plant, which may be propagated by cuttings; but as they are plants of no beauty, they are rarely preſerved in gardens.

The firſt ſort is what ſhould be uſed in the ſhops, but is rarely ſeen in London, the herb-women commonly bringing the Parſley Breakſtone to the markets, which is ſold inſtead of this plant.

HESPERIS. Tourn. Inſt. R. H. 222. tab. 108. Lin. Gen. Plant. 731. [ſome derive the name of this plant from Heſperia, Italy, from whence the people were anciently called Heſperides; but it is pretty plain, that the name was taken from Ἑσπερ©, becauſe the flower commonly ſmells moſt in an evening; either of theſe may be admitted. It is called Viola Matronalis, becauſe it reſembles the Violet, and was at firſt cultivated by women.] Dame's Violet, Rocket, or Queen's Gilliflower; in French, *Juliane*, or *Juliene*.

The CHARACTERS are,

The flower is compoſed of four oblong petals in form of a croſs, whoſe baſe or tails are narrow, and are ſituated in a four-leaved empalement, which falls away. It hath ſix awl-ſhaped ſtamina, four of them as long as the tube of the flower, and two much ſhorter, terminated by narrow erect ſummits, reflexed at their points. It hath a honey-gland ſituated between the two ſhort ſtamina, and a four-cornered germen the length of the ſtamina, but no ſtyle, the oblong erect ſtigma ſitting on the germen; the ſtigma is divided into two parts, which join at their points. The germen afterward becomes a plain, long, compreſſed pod with two cells, divided by an intermediate partition, incloſing many oval compreſſed ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifteenth claſs, intitled Tetradynamia Siliquoſa, the flowers having four long and two ſhort ſtamina, and are ſucceeded by long pods.

The SPECIES are,

1. HESPERIS (*Matronalis*) caule ſimplici erecto, foliis ovato-lanceolatis denticulatis, petalis mucrone emarginatis. Lin. Sp. 927. *Dame's Violet with a ſingle erect ſtalk, oval, ſpear-ſhaped, indented leaves, and the petals of the flowers indented at the top.* Heſperis hortenſis, flore purpureo. C. B. P. 202. *Garden Rocket with a purple flower.*
2. HESPERIS (*Alba*) caule ſimplici erecto, foliis lanceolatis ſerratis, petalis integris. *Dame's Violet with a ſingle upright ſtalk, ſpear-ſhaped ſawed leaves, and the petals of the flower entire.* Heſperis hortenſis flore candido. C. B. P. 202. *Garden Rocket with a white flower.*
3. HESPERIS (*Inodora*) caule ſimplici erecto, foliis ſubhaſtatis dentatis petalis obtuſis. Lin. Sp. 727. *Dame's Violet with a ſingle upright ſtalk, halbert-ſhaped, indented, obtuſe leaves and petals.* Heſperis ſylveſtris inodora. C. B. P. 202. *Unſavoury wild Rocket.*

4. HES-

4. Hesperis (*Triſtis*) caule hiſpido ramoſo patente. Hort. Upſal. 187. *Dame's Violet with a prickly, branching, ſpreading ſtalk.* Heſperis montana, pallidia, odoratiſſima. C. B. P. 202. *Sweeteſt pale Mountain Rocket.*
5. Hesperis (*Siberica*) caule ſimplici, folis lanceolatis dentato-ſerratis, petalis obtuſiſſimis integris. Lin. Sp. 927. *Dame's Violet with a ſingle ſtalk, ſpear-ſhaped ſawed leaves, and blunt entire petals to the flower.*
6. Hesperis (*Exigua*) caule ramoſiſſimo diffuſo, foliis lineari-lanceolatis dentatis, ſiliquis apice truncatis. *Dame's Violet with a very branching diffuſed ſtalk, narrow, ſpear-ſhaped, indented leaves, and the points of the pods ſhaped like a truncheon.* Heſperis exigua lutea, folio dentato anguſto. Boerh. Ind. 146. *Rocket with a very ſmall yellow flower, and a narrow indented leaf.*
7. Hesperis (*Dentata*) foliis dentato-pinnatifidis, caule lævi. Lin. Sp. Plant. 664. *Dame's Violet with wing-pointed indented leaves, and a ſmooth ſtalk.* Heſperis flore albo minimo, ſiliquâ longâ, folio profundè dentato. Boerh. Ind. alt. 2. 20. *Rocket with a ſmall white flower, a long pod, and leaves deeply indented.*
8. Hesperis (*Africana*) caule ramoſiſſimo diffuſo, foliis petiolatis lanceolatis acute dentatis ſcabris ſiliquis ſeſſilibus. Lin. Sp. Plant. 928. *Dame's Violet with very branching diffuſed ſtalks, ſpear-ſhaped, rough, ſawed leaves, and pods ſitting cloſe to the ſtalks.* Heſperis Africana, hieracii folio hirſuto, flore minimo purpuraſcente. Niſſol. Act. *African Rocket with a hairy Hawkweed leaf, and a very ſmall purpliſh flower.*
9. Hesperis (*Verna*) caule erecto ramoſo, foliis cordatis amplexicaulibus ſerratis villoſis. Lin. Sp. Plant. 664. *Dame's Violet with an erect branching ſtalk, and hairy, ſawed, heart-ſhaped leaves embracing the ſtalk.* Turritis annua verna, purpuraſcente flore. Tourn. Inſt. 224. *Annual vernal Tower Muſtard, with a purpliſh flower.*

The firſt ſort grows naturally in Italy; this was formerly in greater plenty in the Engliſh gardens than at preſent, having been long neglected becauſe the flowers were ſingle, and made but little appearance; however, as the flowers have a very grateful ſcent, ſo the plant is worthy of a place in every good garden. This riſes with an upright ſtalk a foot and a half high, garniſhed with ſpear-ſhaped leaves which ſit cloſe to the ſtalk, and are ſlightly indented on their edges, ending in acute points: the flowers are produced in a looſe thyrſe on the top of the ſtalks; they are compoſed of four petals, which are roundiſh and indented at their points, of a deep purple colour, and ſmell very ſweet, eſpecially in the evening or in cloudy weather. It flowers in June, and the ſeeds ripen the latter end of Auguſt. It is a biennial plant, ſo that young plants ſhould be raiſed every year, to ſupply the place of thoſe which decay: if the ſeeds are permitted to ſcatter, the plants will come up without trouble in the ſpring; and if the ſeeds are ſown, the beſt ſeaſon for it is in the autumn; becauſe thoſe which are ſown in the ſpring often fail if the ſeaſon proves dry, or will remain a long time in the ground before they vegetate. This plant ſhould have a loamy undunged ſoil, in which it will thrive better than in rich land.

There is a variety of this with double flowers, in ſome of the gardens in France; but that which we have in England, is a variety of the third ſort with unſavoury flowers.

The ſecond ſort has been generally ſuppoſed only a variety of the firſt, differing in the colour of the flower, but is certainly a diſtinct ſpecies; the leaves of this are not ſo long, but much broader than thoſe of the firſt, and their borders are entire; the flowers are not quite ſo large, nor do they form ſo good ſpikes; they are white, and have not ſo fine a ſcent as the firſt. This is alſo a biennial plant, requiring the ſame treatment as the firſt.

The third ſort grows naturally in Hungary and Auſtria. This riſes with an upright ſtalk near two feet high, garniſhed with ſpear-ſhaped leaves, ending in acute points, and ſharply indented on their edges; they are of a dark green, and ſit cloſe to the ſtalks; the flowers grow in looſe ſpikes on the top of the ſtalks; in ſome they are white, in others purple, and ſometimes both colours ſtriped in the ſame flower; theſe have no odour, ſo are not deſerving of a place in gardens, but may be propagated in the ſame manner as the two former.

From this ſort, the double white and purple Rockets have been accidentally obtained, which are much eſteemed for the beauty of their flowers; and if they had the agreeable odour of the Garden Rocket, they would be ſome of the beſt furniture for the borders of the flower-garden, but they are without ſcent; however, for the beauty of their flowers, they are by ſome greatly eſteemed, therefore I ſhall here inſert the beſt method of propagating them yet known.

Theſe plants are naturally biennial, ſo the plants with ſingle flowers rarely ſurvive the ſecond year; nor will thoſe with double flowers continue much longer; ſo that unleſs young plants are annually raiſed to ſupply the place of the old ones, there will ſoon be a want of them, which is what few perſons are careful enough to obſerve; but thinking the roots to be perennial, truſt to their putting out offsets, or the plants remaining after they have flowered; and finding them decay, are apt to think their ſoil very improper for them, and are at a loſs to account for their decaying; whereas, when the plants have flowered, they have finiſhed their period, and ſeldom continue to flower a ſecond time from the ſame root; though in poor land, they will often put out a few weak offsets, which may flower again, but ſeldom ſo ſtrong as the principal roots; therefore thoſe who are deſirous to propagate theſe plants, ſhould do it in the following manner:

There ſhould be ſome ſtrong roots of each ſort kept apart for this purpoſe, which are not intended to flower; when theſe have ſhot up their flower-ſtalks about ſix inches high, they ſhould be cut cloſe to the bottom; each of theſe may be divided in the middle to make two cuttings, which ſhould be planted in a ſoft, gentle, loamy ſoil, to an eaſt expoſure, where they may have only the morning ſun; and theſe may be planted pretty near together, ſo as to be covered with hand or bell-glaſſes, which ſhould be put over them after the cuttings have been well watered, and cloſely ſhut down, drawing the earth round the rim of the glaſſes to exclude the air; then the glaſſes ſhould be ſhaded with mats every day when the ſun is hot; and if the cuttings are gently refreſhed with water once in ſeven or eight days, it will be ſufficient, for too much moiſture will cauſe them to rot: when theſe are watered, the glaſſes ſhould be cloſely ſhut down again as before; with this management the cuttings will put out roots in five or ſix weeks, and will begin to ſhoot above; then the glaſſes ſhould be gently raiſed on one ſide to admit the air to them, and ſo gradually harden them to the open air, to prevent their drawing up weak. When theſe have made good roots, they ſhould be carefully removed, and planted in an eaſt border at about eight or nine inches aſunder, obſerving to ſhade and water them till they have taken new root; after which they will require no other care, but to keep them clean from weeds till the autumn, when they may be tranſplanted into the borders of the pleaſure-garden, where they are deſigned to flower.

The roots which are thus cut down, will ſend up more ſtalks than before; and when theſe are of a proper height, they may be cut off and treated in the ſame way; ſo that if the roots are ſound, there may be two or three crops of theſe cuttings taken from them, and by ſo doing, the old roots may be continued much longer than if they are permitted to flower; and by this management, there may be always a ſupply of good plants for the flower-garden.

Theſe plants are very ſubject to canker and rot when they are planted in a light rich ſoil, but in poor ſtrong ground, I have ſeen them thrive and flower in the utmoſt perfection, where the ſtems of flowers have been as large, and the flowers as fair as the fineſt double

Stock-gilliflowers. Their ſeaſon of flowering is in the beginning of June, and I have frequently raiſed young plants from the ſtalks after the flowers have decayed, by cutting them in lengths, and planting them in the manner before directed; but theſe ſeldom make ſo good plants as the young cuttings, nor are they ſo certain to grow, therefore the other are to be preferred.

The fourth ſort grows naturally in Hungary. This is much cultivated in the gardens abroad, for the great fragrancy of its flowers, which in the evening is ſo ſtrong, as to perfume the air at a great diſtance, eſpecially where there are any number of the plants. The ladies in Germany are very fond of this plant, and during the ſeaſon of their flowering, have the pots placed in their apartments every evening, that they may enjoy the fragrancy of their flowers; for they have but little beauty, being ſmaller than thoſe of the Garden Rocket, and of a pale colour, but the ſcent of their flowers is much preferable to them; though in the day-time, if the weather is clear, they have very little odour; but when the ſun leaves them, their fragrancy is expanded to a great diſtance. To this ſpecies it is ſuppoſed, that the title of Dame's Violet was firſt applied.

This ſort is very rarely ſeen in the Engliſh gardens: I ſuppoſe it has been neglected, becauſe the flowers make no appearance. It is a biennial plant like the Garden Rocket, which is propagated by ſeeds in the ſame manner; but the plants are not quite ſo hardy, and are very ſubject to rot in winter, eſpecially on a moiſt ſoil, or in rich land, where they are apt to grow very rank, ſo are ſoon injured by wet and cold in the winter; therefore the plants of this ſort ſhould be planted in a dry poor ſoil, and a warm ſituation; and if ſome of them are planted in pots to be placed under a common frame in winter, where they may be ſheltered from hard rains and froſt, but enjoy the free air at all times when the weather is mild, it will be a ſure way to preſerve them.

The leaves of this ſort are much larger than thoſe of the Garden Rocket, and of a paler green; the ſtalks are cloſely ſet with briſtly hairs; the flowers grow in looſe panicles at the top of the ſtalk, and appear about the ſame time with the Garden Rocket.

The ſeeds of the fifth ſort were ſent me from Germany without any title, nor any account of the country from whence it came; but as it was ſent with the ſeeds of ſome Siberian plants, I ſuppoſe this came from the ſame country. This is a biennial plant, which riſes with a ſtrong branching ſtalk between two and three feet high, which is very hairy, garniſhed with oblong heart-ſhaped leaves, ending in acute points, ſitting cloſe to the ſtalk; they are four inches long, and one and a half broad at their baſe, gradually diminiſhing to the point, and are ſlightly ſawed on their edges; the upper part of the ſtalk divides into two or three branches, which are garniſhed with ſmall leaves of the ſame ſhape with thoſe below, and are terminated with looſe panicles of ſingle, large, purple flowers of great fragrancy. This ſort flowered the end of June 1757, but the great rains which fell in Auguſt, rotted the plants before the ſeeds were ripe.

The ſixth ſort grows naturally in the warm parts of Europe; this is annual; the ſtalks riſe about eight or nine inches high, branching out greatly on every ſide in a confuſed order; they are garniſhed with ſmall, narrow, indented leaves, and are terminated by cluſters of ſmall yellow flowers, which make no appearance.

The ſeventh ſort grows naturally in Sicily. This is an annual plant, which ſeldom riſes more than ſix inches high; the ſtalk branches toward the top into three or four ſmaller, which are terminated by ſmall white flowers; the leaves are two inches long and one broad, cut almoſt to the midrib on each ſide, ſo as to reſemble a winged leaf.

The eighth ſort grows naturally in Africa. This is an annual plant with a very branching ſtalk, which riſes about nine inches high, garniſhed with rough

ſpear-ſhaped leaves ſawed on their edges, and terminated by looſe panicles of ſmall purple flowers, which appear in June and July; theſe are ſucceeded by long pods ſitting cloſe to the ſtalks, and are filled with ſmall ſeeds which ripen in September.

Theſe three ſorts are rarely cultivated, except in botanic gardens for the ſake of variety. If the ſeeds of theſe are permitted to ſcatter, the plants will come up without care, and only require to be kept clean from weeds; or they may be ſown either in the ſpring or the autumn where they are to ſtand, for they do not bear tranſplanting well.

The ninth ſort is an annual plant, which grows naturally in the ſouth of France. This ſends out ſeveral heart-ſhaped leaves from the root, which ſpread on the ground; they are ſawed and hairy: the ſtalk riſes nine inches high, branching toward the top, garniſhed with leaves of the ſame ſhape, which embrace the ſtalks with their baſe; the flowers are produced in looſe panicles at the end of the branches; they are of a lively purple colour, and thoſe plants which riſe in the autumn, flower early in the ſpring. If theſe ſeeds are ſown in the autumn, they ſucceed much better than in the ſpring.

HEUCHERA. Lin. Gen. Plant. 283. Sanicle.

The CHARACTERS are,

The flower is compoſed of five narrow petals, which are inſerted in the border of the one-leaved empalement. It hath five erect awl-ſhaped ſtamina, which are much longer than the empalement, terminated by roundiſh ſummits. It hath a roundiſh biſid germen, with two erect ſtyles the length of the ſtamina, crowned by obtuſe ſtigmas. The germen afterward turns to an oval-pointed capſule with two horns, which are reflexed, having two cells filled with very ſmall ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and two ſtyles.

We have but one SPECIES of this genus, viz.

HEUCHERA (*Americana.*) Hort. Cliff. 82. Mitella Americana, flore ſquallidè purpureo villoſo. Boerh. Ind. alt. *Mitella of America, with hairy flowers of a dirty purple colour.*

This plant grows naturally in Virginia, but is hardy enough to thrive in the open air in England. It hath a perennial root, which ſends out many heart-ſhaped oval leaves, which are indented into four or five lobes, and are crenated on their edges, of a lucid green, and ſmooth; from between theſe come out the foot-ſtalks of the flower, which are naked, and riſe a foot high, dividing at the top into a looſe panicle, ſuſtaining many ſmall hairy flowers, of an obſolete purple colour. This flowers in May, and the ſeeds ripen in Auguſt.

It is propagated by parting the roots in autumn, and ſhould be planted in a ſhady ſituation; there is little beauty in this plant, but it is preſerved in ſome gardens for the ſake of variety.

HIBISCUS. Lin. Gen. Plant. 756. Ketmia. Tourn. Inſt. R. H. 99. tab. 26. *Syrian Mallow.*

The CHARACTERS are,

The flower has a double empalement, which is permanent; the outer is compoſed of eight or ten narrow leaves, the inner is ſhaped like a cup, and is of one leaf, cut at the brim into five acute points. It hath five heart-ſhaped petals, which join at their baſe into one. It hath many ſtamina, which are joined to the ſtyle, in form of a column, within the tube of the flower, but expand toward the top, and are terminated by kidney-ſhaped ſummits. It has a round germen, with ſlender ſtyles longer than the ſtamina, crowned by roundiſh ſtigmas. The germen afterward turns to a capſule with five cells, opening in five parts, incloſing kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſixteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina joined to the ſtyles in one body, forming a column.

The SPECIES are,

1. HIBISCUS (*Syriacus*) foliis cuneiformi-ovatis, ſuperne inciſo-dentatis, caule arboreo. Hort. Cliff. 350. *Hibiſ-*

cus with wedge-ſhaped oval leaves, whoſe upper parts are cut, indented, and a tree-like ſtalk. Ketmia Syrorum quibuſdam. C. B. P. 316. *The Syrian Ketmia, commonly called Althæa frutex.*

2. Hibiscus (*Sinenſis*) foliis cordato-quinquangularis obſoletè ſerratis, caule arboreo. Hort. Upſal. 205. *Hibiſcus with heart-ſhaped leaves, having five angles which are ſlightly ſawed, and a tree-like ſtalk.* Ketmia ſinenſis, fructu ſubrotundo. Tourn. Inſt. R. H. 100. *China Ketmia with a roundiſh fruit, commonly called China Roſe.*

3. Hibiscus (*Abelmoſchus*) foliis ſubpeltato-cordatis ſeptemangularibus, ſerratis hiſpidis. Hort. Cliff. 349. *Hibiſcus with heart-ſhaped target leaves, having ſeven angles which are ſawed, and ſet with prickly hairs.* Ketmia Americana hirſuta, flore flavo, & ſemine moſchato. Tourn. Inſt. R. H. 100. *Hairy American Ketmia with a yellow flower and muſky ſeed, commonly called Muſk.*

4. Hibiscus (*Manihot*) foliis palmato-digitatis ſeptempartitis. Hort. Cliff. 350. *Hibiſcus with fingered leaves, which are divided into ſeven parts.* Ketmia Americana, folio Papayæ, flore magno flaveſcente, fundo purpureo, fructu erecto pyramidali hexagono, ſemine rotundulo ſapore fatuo. Boerh. Ind. alt. 1. 272. *American Ketmia with a Papaw leaf, and a large yellow flower, having a purple bottom, a pyramidal, ſix-cornered, erect fruit, and round ſeeds of a flat taſte.*

5. Hibiscus (*Tomentoſus*) foliis cordatis angulatis ſerratis tomentoſis, caule arboreo. *Hibiſcus with angular, heart-ſhaped, ſawed, woolly leaves, and a tree-like ſtalk.* Malva arboreo, folio oblongo acuminato veluto dentato & leviter ſinuato, flore ex rubro flaveſcente. Sloan. Cat. 95. *Tree Mallow with oblong, acute-pointed, indented leaves, ſlightly ſinuated, and a reddiſh yellow flower.*

6. Hibiscus (*Tiliaceus*) foliis cordatis ſubrotundis indiviſis acuminatis crenatis, caule arboreo. Prod. Leyd. 532. *Hibiſcus with entire heart-ſhaped leaves, and a tree-like ſtalk.* Ketmia Indica tiliæ folio. Tourn. Inſt. R. H. 100. *Indian Ketmia with a Lime-tree leaf.*

7. Hibiscus (*Javanica*) foliis ovatis acuminatis ſerratis glabris, caule arboreo. Flor. Zeyl. 260. *Hibiſcus with oval-pointed, ſawed, ſmooth leaves, and a tree-like ſtalk.* Alcea Javanica arboreſcens, flore pleno rubicundo. Bryen. Cent. 121. tab. 56. *Tree Vervain Mallow of Java, with a double red flower, called in India Shoe-flower.*

8. Hibiscus (*Vitifolis*) foliis ſerratis inferioribus ovatis indiviſis, ſuperioribus quinquepartitis, caule aculeato. Prod. Leyd. 358. *Hibiſcus with ſawed leaves, the lower oval and undivided, the upper divided into five parts, and a prickly ſtalk.* Ketmia Indica vitis folio, magno flore. Tourn. Inſt. R. H. 100. *Indian Ketmia with a Vine leaf and large flower.*

9. Hibiscus (*Sabdariffa*) foliis ſerratis, inferioribus cordatis, mediis tripartitis, ſummis quinquepartitis, caule aculeato. *Hibiſcus with ſawed leaves, the lower ones being heart-ſhaped, the middle divided into three parts, the upper into five, and a prickly ſtalk.* Ketmia Ægyptiaca vitis folio, parvo flore. Tourn. Inſt. R. H. 100. *Egyptian Ketmia with a Vine leaf and a ſmall flower.*

10. Hibiscus (*Goſſypifolius*) foliis quinquelobatis ſerratis, caule glabro. *Hibiſcus with ſawed leaves divided into five lobes, and a ſmooth ſtalk.* Ketmia Indica, Goſſyppii folio, acetoſæ ſapore. Tourn. Inſt. R. H. 100. *Indian Ketmia with a Cotton leaf, and the taſte of Sorrel.*

11. Hibiscus (*Ficulneus*) foliis quinquefido-palmatis, caule aculeato. Hort. Cliff. 498. *Hibiſcus with hand-ſhaped five-pointed leaves, and a prickly ſtalk.* Ketmia Zeylanica, fici folio, perianthio oblongo integro. Hort. Elth. 190. tab. 157. *Ketmia of Ceylon with a Fig leaf, and an oblong entire perianthium.*

12. Hibiscus (*Surattenſis*) foliis quinquepartitis, lobis ovato-lanceolatis hirſutis crenatis, caule ſpinoſſimo. *Hibiſcus with leaves divided into five lobes, which are oval, ſpear-ſhaped, hairy, and crenated, and a very prickly ſtalk.* Ketmia Indica aculeata, foliis digitatis. Tourn. Inſt. 101. *Prickly Indian Ketmia with hand-ſhaped leaves.*

13. Hibiscus (*Cordifolius*) foliis cordatis hirſutis crenatis, floribus lateralibus, caule arboreo ramoſo. *Hibiſcus with heart-ſhaped, hairy, crenated leaves, flowers growing from the ſides of the branches, and a tree-like branching ſtalk.* Ketmia Americana fruteſcens foliis ſubrotundis crenatis hirſutis, flore luteo. Houſt. *Shrubby American Ketmia with roundiſh, hairy, crenated leaves, and a yellow flower.*

14. Hibiscus (*Bahamenſis*) foliis oblongo-cordatis glabris, denticulatis, ſubtus incanis, floribus ampliſſimis. *Hibiſcus with oblong, heart-ſhaped, ſmooth, indented leaves, hoary on their under ſide, and very large flowers.*

15. Hibiscus (*Ficifolius*) foliis quinquepartito pedatis, calycibus inferioribus latere rumpentibus. Lin. Sp. Plant. 696. *Hibiſcus with leaves like a hand, divided into five parts, and the lower empalement torn ſideways.* Ketmia Braſilienſis, folio ficûs, fructu pyramidato ſulcato. Tourn. Inſt. R. H. 100. *Ketmia of the Braſils with a Fig leaf, and a pyramidal furrowed fruit.*

16. Hibiscus (*Pentacarpos*) foliis inferioribus cordatis angulatis, ſuperioribus ſubhaſtatis, floribus ſubnutantibus, piſtillo cernuo. Lin. Sp. Plant. 697. *Hibiſcus with lower leaves heart-ſhaped and angular, the upper ones ſomewhat ſpear-ſhaped, nodding flowers, and a recurved piſtil.* Ketmia paluſtris minor, folio anguſto, flore parvo purpuraſcente, fructu depreſſo pentagona. Zannich. Venet. 155. tab. 91. *Smaller Marſh Ketmia with a narrow leaf, a ſmall purpliſh flower, and a five-cornered depreſſed fruit.*

17. Hibiscus (*Populneus*) foliis ovatis acuminatis ſerratis, caule ſimpliciſſimo, petiolis floriferis. Hort. Upſal. 205. *Hibiſcus with oval-pointed ſawed leaves, a ſingle ſtalk, and foot-ſtalks having flowers.* Ketmia Africana Populi folio. Tourn. Inſt. 100. *African Ketmia with a Poplar leaf.*

18. Hibiscus (*Paluſtris*) caule herbaceo ſimpliciſſimo, foliis ovatis ſubtrilobis, ſubtus tomentoſis, floribus axillaribus. Lin. Sp. Plant. 693. *Hibiſcus with a ſingle herbaceous ſtalk, oval leaves having three lobes, woolly on their under ſide.* Ketmia paluſtris flore purpureo. Tourn. Inſt. 100. *Marſh Ketmia with a purple flower.*

19. Hibiscus (*Trionum*) foliis tripartitis inciſis, calycibus inflatis. Hort. Upſal. 206. *Hibiſcus with tripartite cut leaves, and a ſwollen empalement.* Ketmia veſicaria vulgaris. Tourn. Inſt. *Common Bladder Ketmia, called Venice Mallow, or Flower of an hour.*

20. Hibiscus (*Africana*) foliis tripartitis dentatis, lobis anguſtioribus caule hirſuto calycibus inflatis. *Hibiſcus with tripartite indented leaves having narrower lobes, a hairy ſtalk, and ſwollen empalements.* Ketmia veſicaria Africana. Tourn. Inſt. 101. *African Bladder Ketmia.*

21. Hibiscus (*Hiſpidus*) foliis inferioribus trilobis, ſummis quinque partitis obtuſis crenatis calycibus inflatis, caule hiſpido. *Hibiſcus with under leaves having three lobes, the upper being cut into five obtuſe ſegments, which are crenated, ſwollen empalements, and a prickly ſtalk.*

22. Hibiscus (*Malvaviſcus*) foliis cordatis-crenatis, angulis lateralibus extimis parvis, caule arboreo. Hort. Cliff. 349. *Hibiſcus with heart-ſhaped crenated leaves, whoſe outward lateral angles are ſmall, and a tree-like ſtalk.* Malvaviſcus arboreſcens, flore miniato clauſo. Hort. Elth. 210. tab. 170. *Tree-like, viſcous, ſeeded Mallow, with a cloſed ſcarlet flower.*

The firſt ſort is commonly called Althæa frutex by the nurſery gardeners, who propagate the ſhrubs for ſale; of this there are four or five varieties, which differ in the colour of their flowers; the moſt common hath pale purple flowers with dark bottoms; another hath bright purple flowers with black bottoms, a third hath white flowers with purple bottoms; a fourth variegated flowers with dark bottoms; and a fifth pale yellow flowers with dark bottoms; but the laſt is very rare at preſent in the Engliſh gardens; there are alſo two with variegated leaves, which are by ſome much eſteemed.

This grows naturally in Syria, from whence it has been introduced to the gardens, and is one of the great ornaments of the autumn ſeaſon: it riſes with a ſhrubby

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ſtalk to the height of ſix or ſeven feet, ſending out many ligneous branches, covered with a ſmooth gray bark, garniſhed with oval ſpear-ſhaped leaves, whoſe upper parts are frequently divided into three lobes, which are ſawed; theſe are placed alternately on the branches, ſtanding on ſhort foot-ſtalks. The flowers come out from the wings of the ſtalks at every joint of the ſame year's ſhoot; they are large, and ſhaped like thoſe of the Mallow, having five large roundiſh petals, which join at their baſe, ſpreading open at the top in ſhape of an open bell: theſe appear in Auguſt, and if the ſeaſon is not too warm, there will be a ſucceſſion of flowers part of September; the early flowers are ſucceeded by ſhort capſules with five cells, filled with kidney-ſhaped ſeeds; but unleſs the ſeaſon proves warm, they will not ripen in this country.

It is propagated by ſeeds, which ſhould be ſown in pots filled with light earth the latter end of March; and if they are plunged into a gentle heat, it will greatly forward the growth of the ſeeds. When the plants are come up, they muſt be inured to the open air, and in May the pots may be plunged into the ground, in a border expoſed to the eaſt, where they may have the morning ſun: the reaſon of my adviſing the pots to be plunged into the ground, is to prevent the earth from drying ſo faſt as it would do when the pots ſtand on the ſurface, ſo that the plants will not require ſo much water in ſummer; theſe plants will require no other culture, but to keep them clean from weeds, and in very dry weather to refreſh them with water during the firſt ſummer, but in autumn it will be proper to remove the pots under a common frame to ſcreen them from the froſt; or where there is not ſuch conveniency, they may be plunged cloſe to a hedge, pale, or wall, to a good aſpect; and in ſevere froſt, they ſhould be covered with mats, Straw, or other light covering; for although theſe plants, when they have obtained ſtrength, will reſiſt the cold of our winters, yet the young plants, whoſe ſhoots are tender, are very often injured by the firſt froſt of autumn: ſo that if they are not ſcreened the firſt year, they are often killed to the ground. Toward the latter end of March will be a good time to tranſplant theſe plants, at which time a ſpot of light ground muſt be prepared to receive them, which ſhould be divided into beds four feet broad, with paths of two feet broad between; then the plants ſhould be ſhaken out of the pots with the earth about them, and ſeparated with care, for their roots are very tender, and apt to break with little force; theſe ſhould be planted at about nine inches aſunder in the beds; ſo that if four rows are planted in each bed, there will be ſix inches allowed between the outſide rows and the paths. The ground ſhould be gently cloſed about the roots to prevent the air penetrating to them; and if a little old tanners bark, or mulch, is laid over the ſurface of the beds, it will prevent the earth from drying, and be of great uſe to the plants; during the following ſummer they muſt be kept clean from weeds, and if the following winter prove ſevere, it will be prudent to cover the plants again in autumn, eſpecially if they ſhoot late in the ſeaſon, or the autumn proves cold and moiſt, for then the plants will be in great danger of having their tops killed: in theſe beds the plants may remain two years, by which time they will be fit to tranſplant where they are deſigned to remain; for if they are kept longer in the nurſery, they will not remove ſo well. The beſt time for tranſplanting theſe plants is the end of March, or the beginning of April, for they ſeldom begin to ſhoot till the end of April, or the beginning of May; they ſhould have a light ſoil, not too wet, for in ſtrong land their ſtems grow moſſy, and they never thrive after.

Theſe plants may alſo be propagated by cuttings, which, if planted the latter end of March, in pots filled with light earth, and plunged into a gentle heat, will take root; but the plants ſo raiſed, are not ſo good as the ſeedlings. The ſeveral varieties may be propagated by grafting upon each other, which is the common method of propagating the ſorts with ſtriped leaves.

The ſecond ſort grows naturally in India, from whence the French firſt carried the ſeeds to their ſettlements in the Weſt-Indies; and the inhabitants of the Britiſh colonies there have been ſupplied with the ſeeds from them, ſo have given it the title of Martinico Roſe: of this there are the double and ſingle flowering, which from the ſeeds of the double the ſingle is frequently produced, but the ſeeds of the ſingle ſeldom vary to the double. The flowers of theſe plants alter in their colour, for at their firſt opening they are white, then they change to a bluſh Roſe colour, and as they decay they turn to a purple. In the Weſt-Indies, all theſe alterations happen the ſame day, as I ſuppoſe the flowers in thoſe hot countries are not of longer duration: but in England, where the flowers laſt near a week in beauty, the changes are not ſo ſudden.

This plant has a ſoft ſpongy ſtem, which, by age, becomes ligneous and pithy. It riſes to the height of twelve or fourteen feet, ſending out branches on every ſide toward the top, which are hairy, garniſhed with heart-ſhaped leaves, cut into five acute angles on their borders, and are ſlightly ſawed on their edges, of a lucid green on their upper ſide, but pale below, ſtanding alternately upon pretty long foot-ſtalks. The flowers are produced from the wings of the ſtalk, like thoſe of the firſt ſort; the ſingle one is compoſed of five large petals, which ſpread open, and are firſt white, but afterward change in the manner before-mentioned; theſe are ſucceeded by ſhort, thick, blunt capſules, which are very hairy, having five cells, which contain many ſmall kidney-ſhaped ſeeds, having a fine plume of fibrous down adhering to them.

This ſort 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 in a ſeparate ſmall pot filled with kitchen-garden earth, and plunged into a moderate hot-bed, where they muſt be ſhaded till they have taken new root; then they muſt be treated as other plants from warm countries, but not too tenderly, for theſe require a large ſhare of air in warm weather, otherwiſe they will draw up very weak: theſe plants ſhould not be quite expoſed to the open air the firſt ſeaſon, and the firſt winter will require the warmth of a moderate ſtove; but as they get more ſtrength, they may be treated with leſs care, for they will bear the open air in ſummer, in a warm ſheltered ſituation, and will live through the winter in a very good green-houſe, provided they have not too much wet; but the plants thus hardily treated, will not make ſo great progreſs, nor flower ſo well as with a little additional warmth; and if they are too tenderly managed, they will draw up weak, ſo will be leſs likely to flower. This ſort uſually flowers in England in November, ſo that it keeps to the uſual time of flowering in its native country.

The third ſort grows naturally in the Weſt-Indies, where it is commonly known by the title of Muſk; the French cultivate great quantities of theſe plants in their American Iſlands, the ſeeds of which are annually ſent to France in great quantities, ſo that they certainly have ſome way of rendering it uſeful, as it ſeems to be a conſiderable branch of trade. This riſes with an herbaceous ſtalk about three or four feet high, ſending out two or three ſide branches, garniſhed with large leaves cut into ſix or ſeven angles, which are acute, and ſawed on their edges; theſe ſtand on long foot-ſtalks, and are placed alternately. The ſtalks and leaves of this are very hairy. The flowers come out from the wings of the ſtalk upon pretty long foot-ſtalks, which ſtand erect; they are large, of a ſulphur colour, with dark purple bottoms, and are ſucceeded by pyramidal five-cornered capſules, which open in five cells, filled with large kidney-ſhaped ſeeds of a very muſky odour.

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This ſort ſeldom lives more than one year in England, but in its native country will laſt two years. It is propagated by ſeeds, which, if ſown on a good hot-bed in the ſpring, and the plants afterward planted in pots filled with light earth, and plunged into a freſh hot-bed, treating them afterward in the ſame way as the Amaranthus, they will flower in July, and their ſeeds will ripen in autumn.

The fourth ſort grows naturally in both the Indies; this riſes with an herbaceous ſmooth ſtalk three or four feet high, garniſhed with leaves which are divided into ſeven ſegments almoſt to the bottom; the middle ſegment being four inches long and half an inch broad, the upper lateral ſegments about three inches long and the ſame breadth; theſe are indented at their extremities, but the lower ſegments are not much more than an inch long, and have foot-ſtalks four inches long. The flowers are produced from the wings of the ſtalks toward the top, ſtanding on ſhort foot-ſtalks; they are compoſed of five large ſulphur-coloured petals, which, when open, ſpread five inches wide; they have a dark purple bottom, with a column of ſtamina and ſtyles riſing in the center, and are ſucceeded by large, pyramidal, five-cornered, erect ſeed-veſſels, opening in five cells, which are filled with pretty large kidney-ſhaped ſeeds, which have little ſmell or taſte.

It is propagated by ſeeds in the ſame manner as the former ſort, and if ſo managed, will produce flowers and perfect ſeeds the ſame ſeaſon; but the plants may be continued through the winter in a moderate warmth, though few perſons are at the trouble of preſerving the plants after they have ripened their ſeeds, becauſe the young plants make a better appearance.

The fifth ſort grows naturally in the Weſt-Indies, where it riſes with a woody ſtalk ſeven or eight feet high, ſending out many ſide branches toward the top, which are covered with a whitiſh bark, and garniſhed with angular heart-ſhaped leaves, which are woolly; they are about four inches long, and three broad toward their baſe, ending in acute points, and have ſeveral longitudinal veins. The flowers are produced from the wings of the ſtalk upon long foot-ſtalks; they are compoſed of five roundiſh petals, which are joined at their baſe, but ſpread open above, and are of a yellow colour, turning to a red as they decay; theſe are ſucceeded by large, obtuſe, five-cornered, hairy ſeed-veſſels, which open in five cells, filled with large kidney-ſhaped ſeeds.

This is propagated by ſeeds, which muſt be ſown upon a hot-bed in the ſpring, and the plants afterward treated in the ſame way as the two laſt mentioned, during the firſt ſummer, but in the autumn they muſt be plunged into the tan-bed in the ſtove, where they ſhould conſtantly remain, and be treated in the ſame way as other tender plants from the ſame country, giving them but little water in winter; the ſecond year the plants will flower, but they have not as yet perfected ſeeds in England.

The ſixth ſort grows naturally in both Indies; this riſes with a woody pithy ſtem eight or ten feet high, dividing into ſeveral branches toward the top, which are covered with a woolly down, and garniſhed with round heart-ſhaped leaves, ending in acute points; they are of a lucid green on their upper ſide, and hoary on their under, full of large veins, and are placed alternately on the ſtalks. The flowers are produced at the end of the branches in looſe ſpikes; they are of a whitiſh yellow colour, and are ſucceeded by ſhort acuminated capſules, opening in five cells, filled with large kidney-ſhaped ſeeds.

This ſort is propagated in the ſame way, and the plants require the ſame treatment as the fifth, and flower the ſecond year, provided they are brought forward, otherwiſe they will not flower before the third or fourth ſeaſon; but they will bear the open air in ſummer, in a warm ſituation, though they will not make great progreſs there.

The ſeventh ſort grows naturally on the coaſt of Malabar, from whence I received the plants; this riſes with a woody ſtalk twelve or fourteen feet high, dividing into many ſmall branches toward the top, which are garniſhed with oval ſawed leaves, ending in acute points; they are of a lucid green above, but are pale on their under ſide, and are placed without order. The flowers come out from the ſide of the branches, at the wings of the leaves, on pretty long foot-ſtalks; they are compoſed of many oblong roundiſh petals of a red colour, which expand like the Roſe, the flowers being as large when fully blown, as the common red Roſe, and as double. This is a perennial plant, which is propagated by cuttings; and the plants muſt conſtantly be kept in the ſtove, giving them a large ſhare of air in warm weather, and but little water in winter. There is a variety of this with white flowers, but I have not ſeen any of the plants in the Engliſh gardens; nor have I ſeen the ſingle flowering kind, for the inhabitants of India propagate that with double flowers by cuttings, which put out roots freely; this they do for the ſake of flowers, which the women of that country make uſe of to colour their hair and eye-brows black, which will not waſh off: the Engliſh there uſe it for blacking of their ſhoes, and from thence have titled it Shoe-flower.

The eighth ſort is an annual plant, which riſes with an upright ſtalk ſeven or eight feet high; the lower leaves are oval, ſerrated, and entire, but the upper leaves are divided almoſt to the foot-ſtalk, into five ſpear-ſhaped ſegments, like the fingers of a hand, ſtanding on very long foot-ſtalks, which have thorns at their baſe, and are ſharply ſawed on their edges. The flowers come out from the wings of the ſtalks; they are large, of a pale ſulphur colour, with a dark purple bottom, and are ſucceeded by oval acuminated, prickly capſules, which open in five cells, filled with large kidney-ſhaped ſeeds.

This ſort is propagated by ſeeds, which muſt be ſown upon a hot-bed, and the plants treated in the ſame way as the third ſort; and when they are grown too tall to ſtand under the frames, they muſt be placed in the ſtove, where they will flower in Auguſt, and the ſeeds will ripen in autumn.

The ninth ſort is near of kin to the eighth, but the ſtalks do not grow ſo tall; the lower leaves are heart-ſhaped and entire, the middle leaves are divided into three, and the upper into five ſegments, almoſt to the foot-ſtalks; they are ſawed on their edges, and the ſtalk is prickly. The flowers come out from the wings of the ſtalks; they are of a very pale ſulphur colour, with dark bottoms, but not ſo large as thoſe of the laſt.

This is propagated by ſeeds in the ſame way as the eighth, and the plants require the ſame treatment. It flowers in July and Auguſt, and the ſeeds ripen in autumn.

The bark of both theſe plants is full of ſtrong fibres, which I have been informed the inhabitants of the Malabar coaſt prepare and make into a ſtrong cordage; and by what I have obſerved, it may be wrought into fine ſtrong thread of any ſize, if properly manufactured.

The tenth ſort grows naturally in the Weſt-Indies, where the inhabitants uſe the green pods to add an acid taſte to their viands: there are two varieties of this, one with a light green, and the other a deep red pod, which always maintain their difference; but as there is no other difference but that of the colour of their pods, they do not deſerve ſeparate titles. This riſes with an herbaceous ſtem about three feet high, ſending out ſeveral lateral branches, which are garniſhed with ſmooth leaves divided into five lobes. The flowers come out from the ſide of the branches; they are of a dirty white, with dark purple bottoms, and are ſucceeded by obtuſe ſeed-veſſels, divided into five cells, which are filled with kidney-ſhaped ſeeds.

This ſort is propagated in the ſame way as the third, and will flower and perfect ſeeds the ſame year, ſo is ſeldom preſerved longer in England.

The eleventh ſort is a native of Ceylon; this riſes with an herbaceous ſtalk, which is prickly, from two to three feet high, dividing upward into ſmall branches, which are garniſhed with hand-ſhaped leaves, divided into five ſegments. The flowers come out from the wings of the leaves; they are ſmall and white, with purple bottoms, and are ſucceeded by ſhort obtuſe capſules with five cells, filled with kidney-ſhaped ſeeds. The ſeeds of this ſort were ſent me by Dr. Breynius of Dantzick.

This plant is annual, ſo muſt be treated in the ſame way as the third.

The twelfth ſort is alſo annual with us; this riſes with an herbaceous ſtalk three feet high, cloſely ſet with prickly hairs, and divides into branches upward, garniſhed with hand-ſhaped leaves, divided into five lobes, which are ſpear-ſhaped, ending in acute points; they are hairy, and crenated on their edges, ſtanding upon very long foot-ſtalks; the flowers come out from the wings of the ſtalk, and are very like thoſe of the third; this plant requires the ſame culture as the third ſort. The ſeeds of this were ſent me by Dr. Juſſieu, from Paris.

The thirteenth ſort was diſcovered by the late Dr. Houſtoun in the iſland of Cuba, from whence he ſent me the ſeeds. This riſes with a woody ſtalk twelve or fourteen feet high, ſending out many lateral branches, garniſhed with hairy heart-ſhaped leaves, crenated on their edges; the flowers come out ſingle from the wings of the leaves; they are of a very bright yellow colour, but not ſo large as either of the former ſorts, and are ſucceeded by ſhort capſules ending in acute points, divided into five cells, which are filled with kidney-ſhaped ſeeds. This plant is tender, ſo requires the ſame treatment as the fifth, and other tender kinds, with which management it flowers and produces good ſeeds here.

The fourteenth ſort has a perennial root but an annual ſtalk. The ſeeds of this were ſent me from the Bahama Iſlands, which ſucceeded in the Chelſea garden, where the plants produced plenty of flowers, but did not ripen their ſeeds. This riſes with ſeveral ſtalks from the root, which grow four feet high, garniſhed with oblong, heart-ſhaped, ſmooth leaves, ending in acute points, of a light green on their upper ſide, but hoary on their under, and are ſlightly indented on their edges, ſtanding upon long foot-ſtalks; the flowers are produced at the top of the ſtalks; they are very large, and of a light purple colour with dark bottoms, and are ſucceeded by ſhort capſules divided into five cells, filled with kidney-ſhaped ſeeds.

This is propagated by ſeeds, which muſt be ſown on a moderate hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be each planted in a ſeparate ſmall pot, and plunged into a hot-bed, treating them in the ſame way as the other tender ſorts, but allowing them a greater ſhare of air in warm weather; for theſe may be brought to ſtand in the open air in ſummer, but unleſs the ſeaſon is very warm they will not flower there; for thoſe which flowered in the Chelſea garden, were plunged into atan-bed whoſe heat was declining, under a deep frame, where they produced plenty of flowers, but they came too late to ripen ſeeds. The ſtalks decay in the autumn, but if the pots are ſheltered under a hot-bed frame and ſecured from froſt, they will continue ſeveral years, and put out new ſtalks in the ſpring.

The fifteenth ſort is very common in the Weſt-Indies, where the inhabitants cultivate it for the pods or ſeed-veſſels, which they gather green to put into their ſoups; theſe, having a ſoft viſcous juice, add a thickneſs to their ſoups, and renders them very palatable. It riſes with a ſoft herbaceous ſtalk, from three to five feet high, dividing upward into many branches, garniſhed with hand-ſhaped leaves, divided into five lobes; the flowers are produced from the wings of the ſtalk; they are of a pale ſulphur colour with dark purple bottoms, but are ſmaller than either of the other ſorts, and of very ſhort duration, opening in the morning with the riſing ſun, but are faded long before noon in warm weather. Theſe are ſucceeded by capſules of very different forms, in the different varieties; in ſome the capſules are not thicker than a man's finger, and five or ſix inches long; in others they are very thick, and not more than two or three inches long; in ſome plants they grow erect, in others they are rather inclined; and theſe varieties are conſtant, for I have many years cultivated theſe plants, and have not found them vary.

This ſort is propagated by ſeeds in the ſame way as the third, and the plants require the ſame treatment, for they are too tender to thrive in the open air in this country; I have often tranſplanted the plants into warm borders, after they have acquired proper ſtrength, and have ſometimes in very warm ſeaſons had them thrive for a ſhort time, but the firſt cold or bad weather their leaves have all dropped off; and then they have decayed gradually, ſo that they have but rarely flowered, and have never in the beſt ſeaſons perfected their ſeeds; therefore thoſe who are inclinable to cultivate theſe plants, muſt conſtantly ſhelter them in bad weather.

The ſixteenth ſort grows naturally near Venice, in moiſt land; this hath a perennial root, and an annual ſtalk, which riſes from three to four feet high; the lower leaves are angular and heart-ſhaped, but the upper are ſpear-ſhaped, and ſlightly indented on their edges; the flowers are produced from the wings of the leaves, upon long foot-ſtalks; they are ſmall, and of a purple colour with a dark bottom, and are ſucceeded by five-cornered compreſſed capſules, filled with kidney-ſhaped ſeeds.

This ſort is propagated by ſeeds, which muſt be ſown on a hot-bed, and the plants ſhould be treated in the ſame way as the fourteenth ſort, otherwiſe they will not flower; for although the roots will live in the full ground here, yet the ſummers are not warm enough to bring them to flower. I have ſome of the roots which have remained ſeven years, putting up many ſtalks, which riſe upward of three feet, and have the flower-buds formed on their tops; but theſe appear ſo late in the ſeaſon, that they ſeldom have opened.

The ſeventeenth ſort grows naturally in North America; this hath a perennial root and an annual ſtalk; the roots of this ſort will live in the full ground, but unleſs the ſummer is warm, the flowers ſeldom open. It riſes with ſingle ſtalks from the root, two feet high or more; the leaves are oval and ſawed, the flowers are large and purple.

The eighteenth ſort grows naturally in North America, in moiſt ground. This hath a perennial root, and an annual ſtalk like the former, which is herbaceous and never branches; the leaves are oval, with three lobes which are not deeply divided; they are of a bright green on their upper ſide, but woolly on their under; the flowers are produced from the wings of the ſtalk; they are large, and of a bright purple colour. This ſort, like the former, ſeldom flowers in the open air here, unleſs the ſummer proves very warm, but the roots will live in the full ground, if they are planted in a ſheltered ſituation. The only way to have theſe plants flower in this country, is to keep the roots in pots, and ſhelter them under a frame in winter, and in the ſpring plunge them into a gentle hot-bed, which will cauſe them to put out their ſtalks early; and when the ſtalks are ſo high as to reach the glaſſes, the pots may be removed into a glaſs-caſe; where, if they are duly ſupplied with water, and have plenty of air in hot weather, they will flower very well in July, and in warm ſeaſons will ripen their ſeeds.

The nineteenth ſort is an annual plant, which grows naturally in ſome parts of Italy, and has been long cultivated in the Engliſh gardens, by the title of Venice Malva. Gerard and Parkinſon title it Alcea Veneta, and Flos Hora, or Flower of an hour, from the ſhort duration of its flowers, which in hot weather continue but few hours open: however, there

is a ſucceſſion of flowers which open daily for a conſiderable time, ſo that a few of theſe plants may be allowed a place in every curious garden.

It riſes with a branching ſtalk a foot and a half high, having many ſhort ſpines which are ſoft, and do not appear unleſs cloſely viewed: the leaves are divided into three lobes, which are deeply jagged almoſt to the midrib; theſe jags are oppoſite, and the ſegments are obtuſe; the flowers come out at the joints of the ſtalks upon pretty long foot-ſtalks, having a double empalement, the outer being compoſed of ten long narrow leaves, which join at their baſe; the inner is of one thin leaf, ſwollen like a bladder, cut into five acute ſegments at the top, having many longitudinal purple ribs, and is hairy; both theſe are permanent, and incloſe the capſule after the flower is paſt. The flower is compoſed of five obtuſe petals, which ſpread open at the top, the lower part forming an open bell-ſhaped flower; theſe have dark purple bottoms, but are of a pale ſulphur colour above, having the ſtamina and apices joined in a column in the center; after the flower is paſt, the germen turns to a blunt capſule opening in five cells, which are filled with ſmall kidney-ſhaped ſeeds. It flowers in June, July, and Auguſt, and the ſeeds ripen about a month after. This ſort is propagated by ſeeds, which ſhould be ſown where the plants are deſigned to remain, for they do not bear tranſplanting well; if the ſeeds are ſown in autumn, the plants will come up early in the ſpring, ſo will flower in the ſummer, and thoſe which are ſown early in the ſpring will ſucceed them; ſo that by ſowing them at three different ſeaſons, they may be continued in ſucceſſion till the froſt ſtops them. Theſe require no other culture but to keep them clean from weeds, and thin them where they are too cloſe; and if the ſeeds are permitted to ſcatter, the plants will come up full as well as when ſown, ſo that it will maintain its ſituation unleſs it is weeded out.

The twentieth ſort grows naturally at the Cape of Good Hope; this is alſo an annual plant which reſembles the former, but the ſtalks grow more erect, are of a purpliſh colour, and very hairy; the leaves are compoſed of three lobes, which are divided almoſt to the foot-ſtalk; theſe are narrow, the middle lobe ſtretching out more than twice the length of the two ſide lobes, and they are but ſlightly indented on their edges, whereas thoſe of the former are cut almoſt to the midrib; the flowers are larger, and their colour deeper, than thoſe of the other.

The ſeeds of the twenty-ſecond ſort were ſent me from the Cape of Good Hope, a few years paſt. This is alſo an annual plant, having at firſt ſight ſome reſemblance of the other ſorts before-mentioned; but it riſes with ſtrong hairy branching ſtalks, garniſhed with much broader leaves than either of the former, the lower being divided into three, and the upper into five obtuſe lobes, which are crenated on their edges; the flowers are large, but of a paler colour than thoſe of the other. This has maintained the difference ten years, ſo that there is no doubt of its being a diſtinct ſpecies.

All theſe are as hardy as the nineteenth ſort, ſo may be treated in the ſame way.

The twenty-third ſort grows naturally at Campeachy, from whence the late Dr. Houſtoun ſent me the ſeeds. This differs ſo eſſentially from the other ſpecies in its fructification, as to deſerve another title; for all the other have dry capſules with five cells, including many kidney-ſhaped ſeeds, but this hath a ſoft viſcous berry, with a hard ſhell incloſed, containing five roundiſh ſeeds: it riſes with a ſhrubby ſtalk ten or twelve feet high, dividing into many branches, which are garniſhed with ſmooth, heart-ſhaped, angular leaves, which are crenated on their edges; the flowers come out from the wings of the ſtalks ſingly, ſtanding on ſhort foot-ſtalks; they are compoſed of five oblong petals, which are twiſted together and never expand; they are of a fine ſcarlet, and are ſucceeded by roundiſh berries of a ſcarlet colour when ripe, incloſing a hard ſhell which opens in five cells, each containing a ſingle roundiſh ſeed.

This ſort is generally propagated here by cuttings, becauſe the ſeeds do not often ripen here; if the cuttings are planted in pots filled with light earth, and plunged into a gentle hot-bed, keeping the air from them, they will ſoon take root, and ſhould be gradually inured to bear the open air. Theſe plants require a moderate ſtove to preſerve them through the winter; and if they are kept in warmth in ſummer, they will flower, and ſometimes ripen fruit, though they may be placed abroad in a ſheltered ſituation for two or three months in ſummer, but the plants ſo treated ſeldom flower ſo well.

HIERACIUM. Lin. Gen. Plant. 818. Tourn. Inſt. R. H. 469. tab. 267. [of Ἱέραξ, *Gr.* a hawk; ſo called, becauſe hawks as well as eagles, have a ſtrong and quick ſight; and it is reported, that if by reaſon of the heat of the air, a film grows over the eyes of this bird, then the parent let falls a drop of the juice of it in its eye, which takes it off; and that, in like manner, it is good to clear the human ſight.] Hawkweed.

The CHARACTERS are,

It hath a flower compoſed of many hermaphrodite florets, which are included in one common ſcaly empalement, whoſe ſcales are narrow, and very unequal in their length and poſition; the florets are equal and uniform; they have one petal which is ſhaped like a tongue, indented in five ſegments at the point, placed imbricatim over each other; theſe have each five ſhort hairy ſtamina, terminated by cylindrical ſummits. At the bottom of the petal is ſituated the germen, ſupporting a ſlender ſtyle, crowned by two recurved ſtigmas; the germen afterward becomes a ſhort four-cornered ſeed crowned with down, ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's nineteenth claſs, which includes the plants with a compound flower, compoſed only of fruitful florets.

There are a great number of ſpecies of this genus, many of which grow naturally as weeds in England, and the others are ſo in different countries, therefore I ſhall only ſelect thoſe wihch are the moſt beautiful, and beſt worth cultivating from the number, which to enumerate, would ſwell this work greatly beyond its bounds.

1. HIERACIUM (*Aurantiacum*) foliis integris caule ſubnudo ſimpliciſſimo piloſo corymbifero. Hort. Cliff. 388. *Hawkweed with entire leaves, and a ſingle, hairy, naked ſtalk, terminated by a corymbus of flowers.* Hieracium hortenſe, floribus atro purpuraſcentibus. C. B. P. 128. *Garden Hawkweed with dark purple flowers.*

2. HIERACIUM (*Cerinthoides*) foliis radicalibus obovatis denticulatis, caulinis oblongis ſemiamplexicaulibus. Prod. Leyd. 124. *Hawkweed with oval indented leaves at the root, thoſe on the ſtalks oblong, and half embracing them.* Hieracium Pyrenaicum folio cerinthes. Schol. Bot. *Pyrenian Hawkweed with a Honeywort leaf.*

3. HIERACIUM (*Blattaroides*) foliis lanceolatis amplexicaulibus dentatis, floribus ſolitariis, calycibus laxis. Hort. Cliff. 387. *Hawkweed with ſpear-ſhaped indented leaves embracing the ſtalks, flowers growing ſingly, and looſe empalements.* Hieracium Pyrenaicum, blattariæ folio minus hirſutum. Tourn. Inſt. 472. *Pyrenean Hawkweed with a Moth Mullein leaf, leſs hairy.*

4. HIERACIUM (*Amplexicaule*) foliis amplexicaulibus cordatis ſubdentatis, pedunculis unifloris hirſutis, caule ramoſo. Hort. Cliff. 387. *Hawkweed with heart-ſhaped, indented, hairy foot-ſtalks, leaves embracing the ſtalks bearing one flower, and a branching ſtalk.* Hieracium Pyrenaicum rotundifolium amplexicaule. Schol. Bot. *Pyrenean Hawkweed, with round leaves embracing the ſtalks.*

5. HIERACIUM (*Sabaudum*) caule erecto multifloro, foliis ovato-lanceolatis dentatis ſemiamplexicaulibus. Prod. Leyd. 124. *Hawkweed with an erect ſtalk bearing many flowers, and oval ſpear-ſhaped leaves half embracing the ſtalk.* Hieracium ſabaudum altiſſimum, foliis latis brevibus, crebrius naſcentibus. Mor. Hiſt. 3. p. 71.

6. HIE-

6. HIERACIUM (*Umbellatum*) foliis linearibus ſubdentatis ſparſis, floribus ſubumbellatis. Flor. Lapp. 287. *Hawkweed with linear indented leaves placed thinly, and flowers almoſt in an umbel.* Hieracium fruticoſum, anguſtiſſimo incano folio. H. L. 316.

The firſt ſort grows naturally in Syria; this ſends out from the root many oblong oval leaves, which are entire and hairy; from between the leaves ariſe a ſingle ſtalk, little more than a foot high, covered with hairs; the flowers are produced in a corymbus at the top; they are of a dark red colour, compoſed of many florets, which are ſucceeded by oblong black ſeeds, crowned with a white down, which, when ripe, by the elaſticity of the down, is drawn out of the empalement, and by the firſt ſtrong gale of wind, are waſted to a conſiderable diſtance. The flowers appear the beginning of June, and the ſeeds ripen in about five or ſix weeks after, but there is frequently a ſucceſſion of flowers till the autumn.

It is propagated by ſeeds, which ſhould be ſown on an eaſt aſpected border in March; and when the plants come up, they muſt be kept clean from weeds, till they are ſtrong enough to remove, which will be by the beginning of June; then they ſhould be tranſplanted to a ſhady border of undunged ground, at ſix inches diſtance, obſerving to water them if the weather ſhould prove dry, till they have taken new root; after which, if they are kept clean from weeds, they will require no other culture: in the autumn they ſhould be tranſplanted where they are deſigned to remain; the following ſummer they will flower and produce ripe ſeeds, and the roots will continue ſome years, if they are not planted in a rich moiſt ſoil, which frequently occaſions their rotting in winter.

The ſecond ſort grows naturally on the Pyrenean mountains. It is a perennial plant, whoſe lower leaves are oval, indented, and of a grayiſh colour; thoſe on the ſtalks are ſmaller, but of the ſame ſhape and colour, and half embrace the ſtalks with their baſe; the ſtalks riſe a foot high, branching out in ſeveral diviſions, each being terminated by one yellow flower. This is propagated by ſeeds as the firſt ſort.

The third ſort grows on the Pyrenees; this hath a perennial root, which ſends up ſeveral erect ſtalks, garniſhed with ſpear-ſhaped leaves which are indented; the flowers are produced from the wings of the ſtalks, upon ſhort foot-ſtalks, each ſuſtaining one large yellow flower, having a looſe empalement; this flowers in June; it is propagated by parting of the roots in autumn, and will thrive in any ſituation.

The fourth ſort riſes with a branching ſtalk a foot and a half high, garniſhed with heart-ſhaped leaves which are indented at their baſe, where they embrace the ſtalks; each diviſion of the branches terminate in a hairy foot-ſtalk, ſuſtaining one large yellow flower, which appears in June, and the ſeeds ripen in the end of July. This is a perennial plant, which is propagated by ſeeds as the firſt ſort, and requires the ſame treatment.

The fifth ſort grows naturally in Savoy; the root of this is perennial, ſending up ſeveral erect ſtalks near two feet high, garniſhed with ſhort, ſpear-ſhaped, indented leaves, half embracing the ſtalk with their baſe; the flowers are pretty large, of a deep yellow colour, terminating the ſtalks; it flowers in July.

The ſixth ſort grows naturally in Holland; it is a perennial plant, riſing with three or four ſlender ſtalks, garniſhed with hoary linear leaves, and terminated by yellow flowers. This rarely produces ſeeds in England, ſo is propagated by parting of the roots in autumn: but the fifth may be propagated either in the ſame manner, or from ſeeds as the firſt ſort, as it produces plenty of ſeeds here.

HILLS have many uſes, of which I ſhall only mention three or four.

1ſt, They ſerve as ſcreens, to keep off the cold and nipping blaſts of the northern and eaſtern winds.

2dly, The long ridges and chains of lofty mountains, being generally found to run from eaſt to weſt, ſerve to ſtop the evagation of thoſe vapours toward the poles, without which they would all run from the hot countries, and leave them deſtitute of rain.

3dly, They condenſe thoſe vapours, like alembic heads into clouds; and ſo by a kind of external diſtillation, give origin to ſprings and rivers; and by amaſſing, cooling, and conſtipating them, turn them into rain, and by that means render the fervid regions of the torrid zone habitable.

4thly, They ſerve for the production of a great number of vegetables and minerals, which are not found in other places.

It hath been found by experience and calculation, that Hills, though they meaſure twice as much as the plain ground they ſtand upon, yet the produce of the one can be no more than the other; and therefore, in purchaſing land, the Hills ought not to be bought for more than their ſuperficial meaſure, i. e. to pay no more for two acres upon the ſide of a Hill, than for one upon the plain, if the ſoil be equally rich.

It is true, that thoſe lands that are hilly and mountainous, are very different as to their valuable contents, from what are found in flat and plain ground, whether they be planted, ſown, or built upon, as for example:

Suppoſe a Hill contains four equal ſides, which meet in a point at top; yet the contents of theſe four ſides can produce no more grain, or bear no more trees, than the plain ground on which the Hill ſtands, or than the baſe of it; and yet by the meaſure of the ſides, there may be double the number of acres, rods, and poles, which they meaſure on the baſe or ground-plot.

For as long as all plants preſerve their upright method of growing, hilly ground can bear no more plants in number than the plain at the baſe.

Again, as to buildings on a Hill, the two ſides of a Hill will bear no more than the ſame number of houſes that can ſtand in the line at the baſe.

And as to rails, or park pailing over a Hill, though the meaſure be near double over the Hill to the line at the bottom, yet both may be incloſed by the ſame number of pales of the ſame breadth.

HIPPOCASTANUM. See ESCULUS.

HIPPOCRATEA. Lin. Gen. Plant. 54. Coa. Plum. Nov. Gen. 8. tab. 35.

The CHARACTERS are,

It hath a large ſpreading empalement of one leaf, cut at the top into five ſegments; the flower hath five oval petals, which are indented at the points. It hath three awl-ſhaped ſtamina, terminated by broad ſummits, and an oval germen ſituated below the petal, with a ſtyle the length of the ſtamina, crowned by an obtuſe ſtigma. The germen afterward becomes a heart-ſhaped capſule winged at the top, incloſing five ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's third claſs, intitled Triandria Monogynia, the flowers having three ſtamina and one ſtyle.

We have but one SPECIES of this genus, viz.

HIPPOCRATEA (*Volubilis.*) Lin. Sp. 50. Plum. Gen. 8. *Hippocratea with a triple roundiſh fruit and a twining ſtalk.* Coa ſcandens, fructu trigemino ſubrotundo. Plum. Nov. Gen. 8. *Climbing Coa with a triple roundiſh fruit.*

The ſeeds of this plant were ſent me from Campeachy by Mr. Robert Millar, and ſeveral of the plants were raiſed in England, which continued two years in ſeveral gardens, but not one of them lived to flower; they grew to the height of eight or ten feet, twining round ſtakes, but their ſtalks were very ſlender, and decayed at the bottom, probably from their having too much wet.

It is a very tender plant, ſo muſt be conſtantly kept in the bark-bed in the ſtove, and ſhould have but little wet in winter.

HIPPOCREPIS. Lin. Gen. Plant. 791. Ferrum equinum. Tourn. Inſt. 400. tab. 225. Horſe-ſhoe Vetch; in French, *Fer de Cheval.*

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The CHARACTERS are,

The empalement of the flower is permanent, of one leaf, divided into five parts, the two upper being joined. The flower is of the butterfly kind; the ſtandard hath a narrow baſe the length of the empalement, but is heart-ſhaped above; the wings are oval, oblong, and blunt; the keel is moon-ſhaped and compreſſed. It hath ten ſtamina, nine joined and one ſeparate, which ſtand erect, terminated by ſingle ſummits. It hath an oblong narrow germen, ſitting on an awl-ſhaped ſtyle, crowned by a ſingle ſtigma. The germen afterward becomes a long, plain, compreſſed pod, which is cut into many parts from the under ſeam to the upper, each part forming a roundiſh ſinus, with obtuſe three-cornered joints connected to the upper ſeam, each joint being ſhaped like a horſe-ſhoe, incloſing a ſingle ſeed.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria, which includes the plants with a leguminous flower, having ten ſtamina joined in two bodies.

The SPECIES are,

1. HIPPOCREPIS (*Uniſiliquoſa*) leguminibus ſeſſilibus ſolitariis. Hort. Cliff. 364. *Horſe-ſhoe Vetch with ſingle pods ſitting cloſe to the ſtalk.* Ferrum equinum, ſiliquâ ſingulari. C. B. P. 349. *Horſe-ſhoe Vetch with a ſingle pod.*
2. HIPPOCREPIS (*Comoſa*) leguminibus pedunculatis confertis, margine exteriore repandis. Prod. Leyd. 384. *Horſe-ſhoe Vetch, with pods growing in cluſters upon foot-ſtalks, whoſe outer border is turned inward.* Ferrum equinum Germanicum, ſiliquis in ſummitate. C. B. P. 346. *German Horſe-ſhoe Vetch having pods on the tops of the ſtalks.*
3. HIPPOCREPIS (*Multiſiliquoſa*) leguminibus pedunculatis confertis, margine altero lobatis. Hort. Cliff. 364. *Horſe-ſhoe Vetch with pods growing in cluſters upon foot-ſtalks, one border of which has lobes.* Ferrum equinum ſiliquâ multiplici. C. B. P. 346. *Horſe-ſhoe Vetch with many pods.*

The firſt ſort grows naturally in Italy and Spain. This is an annual plant, which ſends from the root ſeveral trailing ſtalks a foot long, that divide upward into ſmaller branches, garniſhed with winged leaves, compoſed of four or five pair of narrow ſmall lobes, terminated by an odd one, which are obtuſe, and indented at their ends; from the wings of the ſtalk come out ſingle flowers of the butterfly kind, which are yellow, and ſucceeded by ſingle pods ſitting cloſe to the ſtalks, which are about two inches long, and a third of an inch broad, bending inward like a ſickle, and divided into many joints ſhaped like a horſe ſhoe. This flowers in June and July, and the ſeeds ripen in the autumn, ſoon after which the plants decay.

The ſecond ſort is found growing naturally in ſome parts of England, upon chalky hills, particularly at Hogmagog hills near Cambridge; this is a ſmaller plant than the former, and hath a perennial root, ſending out ſlender trailing ſtalks about ſix inches long, which are garniſhed with narrow winged leaves; the flowers grow in cluſters on the top of long foot-ſtalks; theſe are ſucceeded by pods which are ſhorter, and twiſted inward in roundiſh curves, but have joints ſhaped like thoſe of the former ſort.

The third ſort grows naturally in the ſouth of France, Germany, and Italy. This is an annual plant, with trailing ſtalks greatly reſembling the firſt, but the flowers are produced in cluſters on the top of pretty long foot-ſtalks; they are ſhaped like thoſe of the other ſorts, and the pods are jointed in like manner, but the joints are fixed to the oppoſite border. Theſe plants flower in June and July, and the ſeeds ripen in Auguſt and September.

Theſe plants are propagated by ſeeds, which ſhould be ſown in the autumn, where the plants are deſigned to remain; and when the plants come up, they muſt be kept clean from weeds, and thinned where they are too cloſe, which is all the culture they require. The two annual ſorts will decay in the autumn after they have perfected their ſeeds, but the roots of the other will continue two or three years, provided they are not in too good ground.

HIPPOLAPATHUM. See RUMEX.

HIPPOMANE. Lin. Gen. Plant. 1099. Mançanilla. Plum. Nov. Gen. 50. tab. 30. The Manchineel.

The CHARACTERS are,

It hath male and female flowers in the ſame ſpike; the male flowers come out in ſmall cluſters, from a ſmall cup-ſhaped empalement; theſe have no petals; from the center of each empalement ariſes a ſingle ſtyle, terminated by two bifid ſummits. The female flowers have no petal, but an oval germen wrapped up in a three-leaved empalement; they have no ſtyle, but are crowned by a tripartite bifid ſtigma. The germen afterward becomes a roundiſh fruit with a fleſhy cover, incloſing a rough hard ſhell with ſeveral cells, each incloſing one oblong ſeed.

This genus of plants is ranged in the ninth ſection of Linnæus's twenty-firſt claſs, which includes the plants with male and female flowers, which have but one ſtamina.

The SPECIES are,

1. HIPPOMANE (*Mançinella*) foliis ovatis ſerratis. Hort. Cliff. 484. *Hippomane with oval ſawed leaves.* Mançanella pyrie facie. Plum. Nov. Gen. 50. *Manchineel with the appearance of the Pear-tree.*
2. HIPPOMANE (*Biglanduloſa*) foliis ovato-oblongis, baſi glanduloſis. Lin. Sp. Plant. 1431. *Hippomane with oval oblong leaves, which have glands at their baſe.* Mançanilla lauri foliis oblongis. Plum. Nov. Gen. 50. *Manchineel with oblong Bay leaves.*
3. HIPPOMANE (*Spinoſa*) foliis ſubovatis dentato ſpinoſis. Lin. Gen. Plant. 1191. *Hippomane with oval leaves which have prickly indentures.* Mançanilla aqui-folii foliis. Plum. Nov. Gen. 50. *Manchineel with Holly leaves.*

The firſt ſort grows naturally in all the iſlands of the Weſt-Indies. 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: but as the trees abound with a milky cauſtic juice, ſo before they are felled, they make fires round their trunks to burn out their juice, otherwiſe they who fell them, would be in danger of loſing their ſight, by the juice flying in their eyes; and wherever this falls on the ſkin, it will raiſe bliſters; and if it comes upon linen, it will immediately turn it black, and on being waſhed will come into holes: it is alſo dangerous working of the wood after it is ſawn out, for if any of the ſaw-duſt happens to get into the workmens 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 upward into many branches, which are garniſhed with oblong leaves about three inches long, and one inch and a half broad, ending in acute points; they are ſlightly ſawed on their edges, and are of a lucid green, ſtanding on ſhort foot-ſtalks. 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.

The ſecond ſort grows naturally at Carthagena in New Spain, and the third at Campeachy, from which places

places the late Dr. Houſtoun ſent me their ſeeds. The ſecond ſort grows to as large a ſize as the firſt. The leaves of this are much longer than thoſe of the firſt, and have two ſmall glandules growing at their baſe; they are ſawed on their edges, and are of a lucid green.

The third ſort is of humbler growth, ſeldom riſing more than twenty feet high; the leaves of this greatly reſemble thoſe of the common Holly, and are ſet with ſharp prickles at the end of each indenture; they are of a lucid green, and continue all the year.

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. The ſeeds muſt be ſown upon a good hot-bed, and when the plants come up, they ſhould be each planted in a ſmall ſeparate pot filled with light ſandy earth, and plunged into a good bed of tanners bark, treating them in the ſame way as other tender plants; but they muſt not have much wet, for theſe plants abound with an acrid milky juice, and it is certain that moſt plants which do, are ſoon killed by much moiſture: theſe plants muſt be removed into the ſtove, and plunged into the tan-bed in autumn, where they ſhould conſtantly remain, giving them very little water in winter; and in ſummer when the weather is warm, they ſhould have a good ſhare of air admitted to them, and once or twice a week refreſhed with water; by this management I have raiſed many of theſe plants to the height of five or ſix feet, which have, by their ſhining green leaves, made a pretty variety during the winter ſeaſon in the ſtove.

HIPPOPHAE. Lin. Gen. Plant. 980. Rhamnoides. Tourn. Cor. 52. tab. 481. Baſtard Rhamnus, or Sea Buckthorn.

The CHARACTERS are,

It is male and female in different plants; the male flowers have an empalement of one leaf, cut into two ſegments, which cloſe at their points; they have no petals, but have four ſhort ſtamina, terminated by oblong angular ſummits, which are equal to the empalement. The female flowers have no petals, but have a one-leaved empalement, which is oval, oblong, tubulous, and bifid at the brim; theſe have no ſtamina, but in the center is ſituated a ſmall roundiſh germen, with a ſhort ſtyle, crowned by an oblong thick ſtigma, twice the length of the empalement. The germen afterward turns to a globular berry with one cell, incloſing one roundiſh ſeed.

This genus of plants is ranged in the fourth ſection of Linnæus's twenty-firſt claſs, intitled Dicœcia Tetrandria, in which are included thoſe plants which are male and female in diſtinct plants, and the male flowers have four ſtamina.

The SPECIES are,

1. HIPPOPHAE (*Rhamnoides*) foliis lanceolatis. Lin. Sp. Plant. 1023. *Hippophae with ſpear-ſhaped leaves.* Rhamnoides ſalicis folio. Tourn. Cor. 53. *Sea Buckthorn with a Willow leaf.*
2. HIPPOPHAE (*Canadenſis*) foliis ovatis. Lin. Sp. Plant. 1024. *Hippophae with oval leaves, called Canada Sea Buckthorn.*

The firſt ſort grows naturally on the ſea banks in Lincolnſhire, and alſo on the ſand-banks between Sandwich and Deal, in Kent; there are two varieties of this, one with yellow, and the other with red fruit, but it is the firſt only which I have obſerved growing naturally in England; the other I ſaw growing on the ſand-banks in Holland.

Theſe riſe with ſhrubby ſtalks eight or ten feet high, ſending out many irregular branches, which have a brown bark ſilvered over, garniſhed with very narrow ſpear-ſhaped leaves, about two inches long, and a quarter of an inch broad in the middle, leſſening gradually to both ends, of a dark green on their upper ſide, but hoary on their under, having a prominent midrib; the two borders of the leaves are reflexed like the Roſemary; theſe are placed alternate on every ſide the branches, ſitting very cloſe. The flowers come out from the ſide of the younger branches, to which they ſit very cloſe; the male flowers growing in ſmall cluſters, but the female come out ſingly; theſe make but little appearance. They appear in July, and the berries on the female plants are ripe in autumn.

This ſort is eaſily propagated by ſuckers from the root, for the roots ſpread wide, and ſend up a great number of ſhoots, ſo as to form a thicket: if theſe are taken off in autumn, and tranſplanted into a nurſery, they will be fit to tranſplant after one year's growth, to the places where they are to remain: as there is little beauty in this plant, ſo one or two of them may be allowed a place in a plantation of ſhrubs for the ſake of variety.

The ſecond ſort grows naturally in North America; this hath much the appearance of the former ſort, but the leaves differ in their ſhape, theſe being much ſhorter and broader, and are not ſo white on their under ſide. This hath not as yet flowered in this country, but the plants ſeem equally hardy with the former, and may be eaſily propagated by ſuckers or layers.

HIPPOSELINUM. See SMYRNIUM.

HIRUNDINARIA. See ASCLEPIAS.

HOEING is neceſſary and beneficial to plants, for two things: 1ſt, For deſtroying of weeds; 2dly, Becauſe it diſpoſes the ground better to imbibe the night dews, keeps it in a conſtant freſhneſs, and adds a vigour to the plants and trees, whoſe fruit by that means, becomes better conditioned than otherwiſe it would be.

This operation is performed by the hand, with an inſtrument called a Hoe, which is well known to every gardener. There are ſeveral ſizes of theſe; the ſmalleſt, which is called an Onion Hoe, is not more than three inches broad, and is uſed for Hoeing of Onions; not only to cut up the young weeds, but alſo to thin the Onions, by cutting up all thoſe which are too cloſe. The next ſize is near four inches and a half broad, and is called a Carrot Hoe; this is uſed for Hoeing of Carrots, or any other crop which requires the ſame room as thoſe. The largeſt ſize is about ſeven inches broad, and is frequently called a Turnep Hoe, being uſed for Hoeing of Turneps; but this is generally uſed by the kitchen-gardeners, for Hoeing between all their crops which are planted out, or ſtand ſo far aſunder as to admit an inſtrument of this breadth to paſs between the plants. Beſide, theſe ſort of Hoes, which are contrived to draw toward the perſon who uſes them, there is another ſort of a different form, which is called a Dutch Hoe; this is made for the perſon who uſes it to puſh from him, ſo that he does not tread over the ground which is hoed. This is a very proper inſtrument for ſcuffling over the ground to deſtroy weeds, in ſuch places where the plants will admit of its being uſed, and a perſon will go over a much greater ſpace of ground in the ſame time with one of theſe inſtruments, than with the common Hoe; but this inſtrument is not ſo proper for Hoeing out crops, ſo as to leave the plants at a proper diſtance, nor will it penetrate the ground ſo far; therefore the other ſort of hoe is to be preferred to this, becauſe it ſtirs the ground and looſens the ſurface, whereby the dews penetrate the ground, and thereby promote the growth of the plants.

Of late years there has alſo been another inſtrument introduced in the field culture, called the Horſe Hoe, which is a ſort of plough with the ſhear ſet more inclining to a horizontal poſition than the common plough; but as moſt of the farmers are at a loſs how to uſe this inſtrument, ſo it has been but little practiſed in this country as yet; nor is it likely to be brought into uſe, unleſs the garden farmers near London, who are undoubtedly the beſt huſbandmen in Europe, introduce it; for the common farmers can never be ſuppoſed to alter their old eſtabliſhed methods, till by neceſſity they are drove to it: a ſtrong inſtance we have of this kind, in the culture of Turneps, which for many years were ſown in moſt of the counties in England, but till within about ſixty years paſt, they were never

hoed, except within twenty or thirty miles of London, where the gardeners who had been bred in the kitchen-gardens near London, every ſeaſon went out in particular gangs to the different parts of the neighbouring country, and each party engaged to hoe the Turneps in ſuch a particular diſtrict, at a certain price per acre; and from the ſucceſs of the farmers who firſt employed them, their neighbours were at length tempted to follow their example, ſo that it became neceſſary for ſome of their labourers to underſtand this work; and from that time it has prevailed ſo much, as that many of the diſtant counties have now engaged in this practice: and if the Horſe-hoeing huſbandry was but well eſtabliſhed among the farmers near London, there would be little doubt of its ſpreading into the diſtant counties; but there are great prejudices againſt it at preſent, moſt of them ariſing from the ignorance of the farmers in general, and others from the over-fondneſs of the author to his own ſchemes, which has in many particulars carried him into many known abſurdities; and theſe being well known to every practical farmer and gardener, are ſufficient arguments with them againſt making trial of the uſeful part of his ſcheme.

The utility of this method of huſbandry, is firſt, in proportioning the number of plants to the paſture, which the ground is ſuppoſed capable of nouriſhing properly. The ſecond is, by frequent ſtirring of the ſurface of the land, all weeds which rob the crop of its nouriſhment is deſtroyed, and the clods of earth are hereby divided and pulverized, ſo that the roots of the plants can more eaſily penetrate them, and ſearch their proper food; beſides, the dews and moiſture are eaſily imbibed in the looſe ground, whereby the plants receive a greater ſhare of nouriſhment.

There are few perſons who properly conſider of what conſequence the ſtirring and breaking of the ſurface of the ground is to all crops growing therein. I have frequently made trial of this, when the crop has been ſo bad as to be thought not worth ſtanding, which has been occaſioned by the great quantity of rain which has fallen, whereby the ſurface of the ground has been ſo cloſely bound, as that the plants could find no nouriſhment, but have changed their uſual verdure to a purple colour, and have made no progreſs; but upon Hoeing the ground and breaking the clods, the plants have put out new roots, and have flouriſhed exceedingly. From many repeated trials of this kind I can affirm, that if the Wheat in general was ſowed in rows, ſo as that the plough may be brought between them in the ſpring, to looſen the ground, which by the winter's rains may have been too cloſely bound, the crop would more than double what is the common produce.

But the author of this ſcheme was too ſanguine in his propoſals, firſt, by aſſerting, that in this method of huſbandry, the land would conſtantly produce the ſame ſort of crops without diminution; and ſecondly, it might be done without dreſſing or manuring the ground; and his fondneſs for his own ſcheme carried him ſo far in the proſecution of it, as at laſt to have much worſe crops than any of his neighbours; however, this ſhould not diſcourage others from the practice of it, though upon different principles: for although the land thus cultivated, will not nouriſh the ſame plant without manuring ſeveral years, yet by this method of huſbandry I can affirm, that all crops will be ſo much improved, as to doubly anſwer the difference of expence, and leſs than a ſixth part of the ſeed will be enough for the ſame ſpace of ground. The common ſwing plough will anſwer all intents of Horſe-hoeing.

HOLCUS. Lin. Gen. Plant. 1015. Milium. Tourn. Inſt. R. H. 514. tab. 298. Sorgum. Mich. Indian Millet, or Corn.

The CHARACTERS are,

It hath male and hermaphrodite flowers ſometimes on the ſame plant, at others on different plants. The male flowers are ſmall, and have a bivalve chaff; theſe valves are oval, ſpear-ſhaped, and twiſted, ending with an acute beard; they have a ſmall hairy corolla with three hairy ſtamina, terminated by oblong ſummits. The hermaphrodite flowers are ſingle, in a ſtiff bivalve chaff; the inner of theſe is ſlender, hairy, and leſs than the empalement; the outer valve terminates in a rigid beard, and is larger than the empalement; they have three hairy ſtamina, terminated by oblong ſummits, with a roundiſh germen, ſupporting two hairy ſtyles, crowned with plumoſe ſummits. The germen afterward becomes an oval ſingle ſeed wrapped up in the chaff.

This genus of plants is ranged in the firſt ſection of Linnæus's twenty-third claſs, intitled Polygamia Monœcia which includes thoſe plants which have male and hermaphrodite flowers in different parts of the ſame plant, whoſe flowers have ſeveral ſtamina.

The SPECIES are,

1. HOLCUS (*Sorgum*) glumis villoſis, ſeminibus ariſtatis. Hort. Upſal. 301. *Holcus with hairy chaff and bearded ſeeds.* Milium arundinaceum, ſubrotundo ſemine, Sorgo nominatum. C. B. P. 26. *Reed-like Millet, with a roundiſh ſeed, called Sorgum.*
2. HOLCUS (*Saccharatus*) glumis glabris, ſeminibus muticis. Lin. Sp. Plant. 1047. *Holcus with ſmooth huſks, and ſeeds without awns.* Milium Indicum, arundinaceo caule, granis flaveſcentibus. H. L. 425. *Indian Millet with a reedy ſtalk, and yellowiſh grains.*

There are ſeveral other of the graſſy tribe which belong to this genus, but as they are not cultivated for uſe, ſo I ſhall not enumerate them here.

The two ſorts here mentioned, grow naturally in India, where their grain is often uſed to feed poultry, and the ſeeds of theſe are frequently ſent to Europe for the ſame purpoſe; but the ſummers are ſeldom warm enough to ripen the ſeeds in the open air in England, but in Italy they are both cultivated. The ſtalks of theſe plants riſe five or ſix feet high, which are ſtrong reedy, and like thoſe of the Maiz, or Turkey Wheat, but ſmaller. The leaves are long and broad, having a deep furrow through the center, where the midrib is depreſſed on the upper ſurface, and is very prominent below. The leaves are two feet and a half long, and two inches broad in the middle, embracing the ſtalks with their baſe. The flowers come out in large panicles at the top of the ſtalks, reſembling, at firſt appearance, the male ſpikes of the Turkey Wheat; theſe are ſucceeded by large roundiſh ſeeds, which are wrapped round with the chaff. Theſe plants are propagated in a few gardens for the ſake of variety, but as they are late in ripening their grain here, ſo they are not worth cultivating for uſe. The ſeeds ſhould be ſown on a warm border, or upon a gentle hot-bed in March; and when the plants come up, they ſhould be thinned and planted at the diſtance of a foot aſunder in the rows, and the rows ſhould be three feet diſtance; the culture after this, is to keep the ground clean from weeds, and draw the earth up with a hoe to the ſtems of the plants; if the ſeaſon proves warm, their panicles will appear in July, and the grain will ripen in September, but in bad ſeaſons their grain will not ripen here.

HOLLOW ROOT. See FUMARIA.

HOLLY. See ILEX.

HOLLYHOCKS. See ALCEA.

HOMOGENEAL or HOMOGENEOUS plants, are ſuch plants as are of the ſame kind, or nature, with others.

HONEYSUCKLE. See PERICLYMENUM.

HOPS. See LUPULUS.

HORDEUM. Lin. Gen. Plant. 94. Tourn. Inſt. R. H. 513. tab. 293. Barley; in French, *Orge.*

The CHARACTERS are,

It hath a partial involucrum of ſix narrow-pointed leaves, which contain three flowers. The petal of the flower opens with two valves; the under valve is angular, ſwelling, oval, and pointed, being longer than the empalement, ending in a long beard; the inner is ſmall and ſpear-ſhaped. The flower hath three hairy ſtamina ſhorter than the petal, terminated by oblong ſummits. It hath an oval turned germen, ſupporting two hairy reflexed ſtyles, crowned by the like ſtigmas. The germen afterward becomes an oblong bellied ſeed,

ſeed, pointed at both ends, having a longitudinal furrow, ſurrounded by the petal of the flower, which does not fall off. This genus of plants is ranged in the ſecond ſection of Linnæus's third claſs, which includes the plants whoſe flowers have three ſtamina and two ſtyles.

The SPECIES are,

1. HORDEUM (*Vulgare*) floſculis omnibus hermaphroditis ariſtatis ordinibus duobus erectioribus. Lin. Sp. Plant. 84. *Barley with all the flowers hermaphrodite, and two orders of beards, which are erect.* Hordeum polyſticum vernum. C. B. P. 22. *Spring Barley with many rows of grain.*
2. HORDEUM (*Zeocriton*) floſculis lateralibus maſculis muticis, ſeminibus angularibus imbricatis. Hort. Upſal. 23. *Barley with male flowers on the ſide, without awns, and angular ſeeds placed over each other.* Hordeum diſtichon. C. B. P. 22. *Common long-eared Barley.*
3. HORDEUM (*Diſtichon*) floſculis lateralibus maſculis muticis, ſeminibus angularibus imbricatis. Hort. Upſal. 23. *Barley with male flowers on the ſide, without awns, and angular imbricated ſeeds.* Hordeum diſtichum, ſpicâ breviore & latiore, granis confertis. Raii Syn. 246. *Barley with ſhorter and broader ſpikes, commonly called Sprat, or Battledore Barley.*
4. HORDEUM (*Hexaſtichon*) floſculis omnibus hermaphroditis ariſtatis, ſeminibus ſexfariàm æqualiter poſitis. Hort. Upſal. 23. *Barley with all the flowers hermaphrodite, bearded, and ſix rows of ſeeds equally ranged.* Hordeum hexaſticum pulchrum. J. B. 2. 429. *Winter, or Square Barley, Bear Barley, or Big.*

The firſt ſort is the common Spring Barley, which is principally cultivated in England; of this the farmers make two ſorts, viz. the common and rath-ripe Barley, which are the ſame: for the rath-ripe has only been an alteration, occaſioned by being long cultivated upon warm gravelly lands. The ſeeds of this, when ſown in cold or ſtrong land, will the firſt year ripen near a fortnight earlier than the ſeeds taken from ſtrong land; therefore the farmers in the vales, generally purchaſe their ſeed Barley from the warm land; for if ſaved in the vales two or three years, it will become full as late in ripening as the common Barley of their own product; and the farmers on the warm land are alſo obliged to procure their ſeed Barley from the ſtrong land, otherwiſe their grain would degenerate in bulk and fulneſs, which by thus changing is prevented. This ſort of Barley is eaſily diſtinguiſhed by the two orders of beards, or awns, which ſtand erect; the chaff is alſo thinner than that of the two laſt ſpecies, ſo is eſteemed better for malting.

The ſecond ſort is the long-eared Barley, which is cultivated in many parts of England, and is an exceeding good ſort; but ſome farmers object to this ſort, becauſe they ſay the ears being long and heavy, it is more apt to lodge; this hath the grains regularly ranged in a double row, lying over each other like tiles on a houſe, or the ſcales of fiſhes. The huſk, or chaff of this Barley is alſo very thin, ſo is much eſteemed for malting.

The third ſort is uſually called Sprat Barley; this hath ſhorter and broader ears than either of the other ſorts; the awns, or beards, are longer, and the grains are placed cloſer together, and the awns being long, the birds cannot ſo eaſily get out the grains; this ſeldom grows ſo tall as the other ſpecies, the ſtraw is ſhorter and coarſer, ſo not very good fodder for cattle.

The fourth ſort is rarely cultivated in the ſouthern parts of England, but in the northern counties, and in Scotland, is generally ſown, being much hardier than the other ſpecies, ſo will bear the cold; this hath its grains diſpoſed in ſix rows: the grain is large and plump, but it is not ſo good for malting, which is the reaſon for its not being cultivated in the ſouthern parts of England, where the other ſorts, which are much better for that purpoſe, do thrive well.

All theſe ſorts of Barley are ſown in the ſpring of the year, in a dry time; in ſome very dry light land, the Barley is ſown early in March; but, in ſtrong clayey ſoils, it is not ſown till April, and ſometimes not until the beginning of May; but when it is ſown late, if the ſeaſon doth not prove very favourable, it is very late in autumn before it is fit to mow, unleſs it be the rath-ripe ſort, which is often ripe in nine weeks from the time of ſowing.

Some people ſow Barley upon land where Wheat grew the former year; but when this is practiſed, the ground ſhould be ploughed the beginning of October in a dry time, laying it in ſmall ridges, that the froſt may mellow it the better, and this will improve the land greatly; and if this can be ploughed again in January, or the beginning of February, it will break and prepare the ground better; then in March the ground is ploughed again, and laid even where it is not very wet; but in ſtrong wet lands the ground ſhould be laid round, and the furrows made deep to receive the wet. When this is finiſhed, the common method is to ſow the Barley-ſeed with a broad caſt at two ſowings; the firſt being harrowed in once, the ſecond is harrowed until the ſeed is buried; the common allowance of ſeed is four buſhels to an acre. This is the quantity of grain uſually ſown by the farmers; but if they could be prevailed on to alter this practice, they would ſoon find their account in it; for if leſs than half that quantity is ſown, there will be a much greater produce, and the corn will be leſs liable to lodge, as I have many years experienced; for when corn or any other vegetable ſtands very cloſe, the ſtalks are drawn up weak, ſo are incapable to reſiſt the force of winds, or bear up under heavy rains; but when they are at a proper diſtance, their ſtalks will be more than twice the ſize of the other, ſo are ſeldom laid. I have frequently obſerved in fields where there has been a foot-path through the middle, that the corn which has ſtood thin on each ſide the path hath ſtood upright, when all the reſt on both ſides has been laid flat on the ground: and whoever will obſerve theſe roots of corn near the paths, will find them tiller out (i. e. have a greater number of ſtalks) to more than four times the quantity of the other parts of the field. I have ſeen experiments made by ſowing Barley in rows acroſs divers parts of the ſame field, and the grains ſowed thin in the rows, ſo that the roots were three or four inches aſunder in the rows, and the rows at a foot diſtance; the intermediate ſpaces of the ſame field were at the ſame time ſown broad caſt in the uſual way; the ſucceſs was this, the roots which ſtood thin in the rows tillered out from ten or twelve, to upward of thirty ſtalks on each root, the ſtalks were ſtronger, the ears longer, and the grains larger than any of thoſe ſown in the common way; and when thoſe parts of the field where the corn was ſown in the uſual way has been lodged, theſe parts ſown thin have ſupported their upright poſition againſt wind and rain, though the rows have been made not only lengthways, but croſs the lands, in ſeveral poſitions, ſo that there could be no alteration in regard to the goodneſs of the land, or the ſituation of the corn; therefore where ſuch experiments have been frequently made, and always attended with equal ſucceſs, there can be no room to doubt which of the two methods is more eligible; ſince if the crops were only ſuppoſed to be equal in both, the ſaving more than half the corn ſown is a very great advantage, and deſerves a national conſideration, as ſuch a ſaving, in ſcarce times, might be a very great benefit to the public. I know the farmers in general are very apt to complain if their corn does not come up ſo thick as to cover the ground green in a ſhort time, like Graſs fields; but I have often obſerved, that from the badneſs of the ſeaſon it has come up thin, or by accident has been in part killed, their corn has been ſtronger, the ears longer, and the grain plumper, ſo that the produce has been much greater than in thoſe years when it has come up thick; for the natural growth of corn is to ſend out many ſtalks from a root, and not riſe ſo much in height; therefore it is entirely owing to the roots ſtanding too near each other, when the ſtalks are drawn up tall and weak. I have had eighty-ſix ſtalks upon one root of Barley, which were ſtrong, produced longer ears, and the grain was better filled than any which I ever ſaw grow in the common method of huſbandry, and the land upon which this grew

grew was not very rich: but I have frequently obſerved on the ſides of hot-beds in the kitchen-gardens, where Barley-ſtraw has been uſed for covering the beds, that ſome of the grains left in the ears has dropped out and grown, the roots have produced from thirty to ſixty ſtalks each, and thoſe been three or four times larger than the ſtalks ever arrive at in the common way: but to this I know it will be objected, that although upon rich land in a garden, theſe roots of corn may probably have ſo many ſtalks, yet in poor land they will not have ſuch produce; therefore unleſs there is a greater quantity of ſeeds ſown, their crop will not be worth ſtanding, which is one of the greateſt fallacies that can be imagined; for to ſuppoſe that poor land can nouriſh more than twice the number of roots in the ſame ſpace as rich land, is ſuch an abſurdity, as one could hardly ſuppoſe any perſon of common underſtanding guilty of; and yet ſo it is, for the general practice is to allow a greater quantity of ſeed to poor land, than for richer ground; not conſidering that where the roots ſtand ſo cloſe, they will deprive each other of the nouriſhment, ſo ſtarve themſelves, which is always the caſe where the roots ſtand cloſe; which any perſon may at-firſt ſight obſerve, in any part of the fields where the corn happens to ſcatter when they are ſowing it; or in places where, by harrowing, the ſeed is drawn in heaps, thoſe patches will ſtarve, and never grow to a third part of the ſize as the other parts of the ſame field; and yet common as this is, it is little noticed by farmers, otherwiſe they ſurely would not continue their old cuſtom of ſowing. I have made many experiments for ſeveral years in the pooreſt land, and have always found that all crops which are ſown or planted at a greater diſtance than uſual, have ſucceeded beſt; and I am convinced, if the farmers could be prevailed on to quit their prejudices, and make trial of this method of ſowing their corn thin, they would ſoon ſee the advantage of this huſbandry.

The noblemen and gentlemen in France are very buſy in ſetting examples of this huſbandry in moſt of their provinces, being convinced by many trials of its great utility; and it were to be wiſhed, the ſame was done in England,

When the Barley is ſown, the ground ſhould be rolled after the firſt ſhower of rain, to break the clods and lay the earth ſmooth, which will render it better to mow, and alſo cauſe the earth to lie cloſer to the roots of the corn, which will be of great ſervice to it in dry weather.

Where Barley is ſown upon new broken up land, the uſual method is, to plough up the land in March, and let it lie fallow until June, at which time it is ploughed again, and ſown with Turneps, which are eaten by ſheep in winter, by whoſe dung the land is greatly improved; and then in March following the ground is ploughed up again, and ſown with Barley as before.

There are many people who ſow Clover with their Barley, and ſome have ſown the Lucern with Barley; but neither of theſe methods is to be commended, for where there is a good crop of Barley, the Clover or Lucern muſt be ſo weak as not to pay for ſtanding; ſo that the better way is to ſow the Barley alone without any other crop among it, and then the land will be at liberty for any other crop, when the Barley is taken off the ground; but this practice of ſowing Clover, Rye-graſs, and other Graſs-ſeeds, with corn, has been ſo long and univerſally eſtabliſhed among farmers, that there is little hope of prevailing with thoſe people to alter a cuſtom which has been handed down to them from their predeceſſors, although there ſhould be many examples produced, to ſhew the abſurdity of this practice.

When the Barley has been up three weeks or a month, it will be a very good method to roll it over with a weighty roller, which will preſs the earth cloſe to the roots of the corn, and thereby prevent the ſun and air from penetrating the ground, which will be of ſingular ſervice in dry ſeaſons; and this rolling of it before it ſtalks, will cauſe it to till out into a greater number of ſtalks; ſo that if the plants ſhould be thin, this will cauſe them to ſpread ſo as to fill the ground, and likewiſe to ſtrengthen the ſtalks.

The time for cutting of Barley is, when the red colour of the ears is off, and the ſtraw turns yellow, and the ears begin to hang down: in the north of England they always reap their Barley, and make it up in ſheaves, as practiſed here for Wheat, by which method they do not loſe near ſo much corn, and it is alſo more handy to ſtack; but this method cannot ſo well be practiſed where there are many weeds amongſt the corn, which is too frequently the caſe in the rich lands near London, eſpecially in moiſt ſeaſons; therefore when this is the caſe, the Barley muſt lie on the ſwarth till all the weeds are dead; but as it is apt to ſprout in wet weather, it muſt be ſhook up, and turned every fair day after rain to prevent it. When it is carried in, it ſhould be thoroughly dry, otherwiſe if it be ſtacked wet, it will turn muſty; or if too green, it is ſubject to burn in the mow. The common produce of Barley, is two and a half, or three quarters on an acre, but I have ſometimes known ſix or ſeven quarters on an acre.

HORIZONTAL SHELTERS have, by ſome perſons, been greatly recommended to preſerve fruit-trees from blights; but with how little reaſon, or upon what ſlight experiments, every one who has ever made uſe of them will eaſily judge; eſpecially thoſe which are contrived by placing tiles in the wall at certain diſtances, nothing being more obvious, than that vegetables, when prevented from receiving the advantage of dews, rains, &c. thoſe kindly benefits of heaven, grow weak, languid, and at laſt entirely decay: and ſince, from vaſt numbers of experiments which have been lately made, we find that trees imbibe great quantities of nouriſhment through the pores of their leaves and branches, whereby they are rendered vigorous and healthy, even in ſuch ſeaſons, and upon ſuch ſoils, where one would think it impoſſible they ſhould receive much nouriſhment from the earth; to deprive them of this advantage, is no leſs than deſtroying them; though perhaps, if the trees are vigorous, it may not be effected ſuddenly; but there will be very viſible ſigns of decay on them daily, and a few years will put a period to their lives, as I have more than once obſerved, where ſuch walls were built.

The only ſort of theſe ſhelters which I have ever obſerved uſeful for fruit-trees, was made with two leaves of ſlit deal, joined over each other, and painted; this being fixed upon the top of the wall with pullies, to draw up and down at pleaſure, formed a ſort of penthouſe; which being let down in great rains, or cold nights, during the time that the trees were in flower, or the fruit was ſetting, proved ſerviceable; but then theſe ſhelters were removed away ſoon after the fruit was ſet, ſo that the trees might enjoy all the advantages of rain, dew, &c. in the ſummer, which is abſolutely neceſſary, if we would have healthy trees or good fruit.

HORMINUM. Tourn. Inſt. 178. tab. 82. Salvia. Lin. Gen. Plant. 36. Clary; in French, *Ormin.*

The CHARACTERS are,

The empalement of the flower is permanent, of one leaf, tubulous, and channelled, having two lips; the upper is broad, ending in three acute points; the under is ſhorter, ending in two points. The flower has one petal, divided into two lips; the upper is concave, compreſſed on the two ſides, and incurved with a ſlight indenture at the point, the lower is broader and more indented. It hath two ſhort ſtamina, ſituated in the tube of the flower, terminated by ſhort proſtrate ſummits, and two other which decay ſoon after the flowers open. In the bottom of the tube are four roundiſh germen, ſupporting a ſingle ſtyle crowned by a bifid ſtigma, ſituated in the upper lip of the petal. The germen afterward becomes four ſeeds, lodged in the empalement.

This genus of plants is ranged in the firſt ſection of Tournefort's fourth claſs, which includes the herbs with a lip flower of one leaf, whoſe upper lip is forked, or ſhaped like a helmet. Dr. Linnæus has joined this genus, and alſo the Sclarea of Tournefort to the Salvia, including them all in that genus; but

but as there are many ſpecies of each genus, ſo it is better to keep them aſunder, whereby their old titles, by which they have always been known in the ſhops and market will be retained, though there is no very eſſential difference in their characters.

The SPECIES are,

1. HORMINUM (*Verbenacea*) foliis ſinuatis ſerratis, corollis calyce anguſtioribus acutis. *Clary with ſinuated ſawed leaves, and the petal of the flower narrower than the cup.* Horminum ſylveſtre lavendulæ flore. C. B. P. 239. *Wild Clary with a Lavender flower.*
2. HORMINUM (*Lyrata*) foliis pinnato-ſinuatis rugoſis, calycibus corollâ longioribus. *Clary with wing-ſhaped ſinuated leaves, which are rough, and the empalements longer than the petal of the flower.* Horminum folio querno. Volk. *Oak-leaved Clary.*
3. HORMINUM (*Verticillatum*) verticillis ſubnudis, ſtylo corollarum labio inferiore incumbente. *Clary with heart-ſhaped, crenated, indented leaves, naked whorls, and the ſtyle lying under the lip of the petal.* Horminum ſylveſtre latifolium verticillatum. C. B. P. 283. *Broad-leaved wild Clary, with flowers growing in whorls.*
4. HORMINUM (*Napifolium*) foliis radicalibus pinnato-inciſis, caulinis cordatis crenatis, ſummis ſemiamplexicaulibus. *Clary, whoſe lower leaves are cut and winged, thoſe on the ſtalks heart-ſhaped and crenated, and thoſe on the top half embracing the ſtalks.* Horminum napi folio. Mor. Hort. R. Blæſſ. *Clary with a Navew leaf.*
5. HORMINUM (*Sativum*) foliis obtuſis crenatis, bracteis ſummis ſterilibus majoribus coloratis. *Clary with obtuſe crenated leaves, the bractæ on the top of the ſtalks large, coloured, and barren.* Horminum comâ purpuro-violaceâ. J. B. 3. 309. *Clary with a purple Violet top.*

The firſt ſort grows naturally on ſandy and gravelly grounds, in many parts of England. This a perennial plant; the lower leaves grow upon pretty long foot-ſtalks, and are near four inches long and two broad; they are ſinuated on their borders, and bluntly crenated; their ſurface is rugged and wrinkled; the ſtalks are a foot long, ſquare, and inclining toward the ground; the leaves upon theſe are ſmaller, and crenated on their edges; the flowers grow in a whorled ſpike at the top of the ſtalk, generally with two ſhorter ſpikes, one on each ſide; the flowers are ſmall and blue; theſe are ſcarce ſo long as their empalements; they have but one petal, which is divided into two lips, the upper being a little longer than the under, and almoſt ſhuts over it; there are but two perfect ſtamina in each flower, and four germen at the bottom, ſupporting a ſingle ſtyle; the germen afterward become ſo many naked ſeeds, ſitting in the empalement. It flowers in June and July, and the ſeeds ripen in Auguſt and September. This ſort propagates itſelf in plenty, if the ſeeds are permitted to ſcatter, and requires no other culture but to keep the plants clean from weeds.

This is ſometimes called Oculus Chriſti, from the ſuppoſed virtues of its ſeeds in clearing of the ſight, which it does by its viſcous covering; for when any thing happens to fall into the eye, if one of the ſeeds is put in at one corner, and the eye-lid kept cloſe over it, moving the ſeed gently along the eye, whatever happens to be there will ſtick to the ſeed, and ſo be brought out. The virtues of this are ſuppoſed to be the ſame as the Garden Clary, but not quite ſo powerful.

The ſecond ſort grows naturally in the ſouth of France and Italy; the lower leaves are upward of four inches long, and not more than one broad, regularly ſinuated on both ſides, in form of a winged leaf; the ſtalks riſe about the ſame height with the former, but all the leaves upon the ſtalks are ſinuated in the ſame manner as the lower; the flowers are ſmaller than thoſe of the firſt, but grow in whorled ſpikes like them. This is a perennial plant, which is very hardy, and will propagate itſelf in plenty by the ſcattered ſeeds. It is ſeldom kept in gardens but for the ſake of variety.

The third ſort is a perennial plant, which grows naturally in Auſtria and Bohemia. This ſends out from the root a great number of heart-ſhaped leaves, which are ſawed on their edges and deeply veined, ſtanding upon pretty long foot-ſtalks which are hairy; the ſtalks ariſe from between theſe, which are ſquare, and grow two feet and a half high, which are garniſhed with two heart-ſhaped leaves at each joint, whoſe baſe ſits cloſe to the ſtalks, half embracing them; the ſtalks at the two or three upper joints, put out on each ſide a long foot-ſtalk; theſe, and alſo the principal ſtalk, are garniſhed with whorls of ſmall blue flowers, not much unlike thoſe of the common ſort, but larger; the ſpikes are more than a foot long, and toward the top the whorls are nearer together. It flowers in June, and the ſeeds ripen in Auguſt.

The fourth ſort grows naturally in the ſouth of France, and in Italy. This is alſo a perennial plant, which has ſome reſemblance of the third, but the lower leaves of this are cut at their baſe to the mid-rib, into one or two pair of ears or lobes, which are but ſmall, and are often at a diſtance from each other; the leaves are not ſawed, but are bluntly indented; the ſtalks of this are ſlenderer, and do not grow ſo tall as thoſe of the third, nor are the ſpikes of flowers ſo long. This flowers and ſeeds at the ſame time with the third.

Both ſorts may be eaſily propagated by ſeeds, which, if ſown in the ſpring on an open ſpot of ground, the plants will come up, and require no other care but to keep them clean from weeds, and allow them room to grow; for the plants ſhould not be nearer than two feet apart, for they grow very large, and will laſt ſeveral years.

The fifth ſort is an annual plant, which grows naturally in Spain; of this there are three varieties which are conſtant, one with purple tops, another with red tops, and a third with green tops. As they differ in nothing but the colour of their bractæ on the top of the ſtalks, ſo I have not put them down as different ſpecies, though from more than thirty years cultivating them, I have not known them alter.

Theſe plants have obtuſe crenated leaves, ſhaped like thoſe of the common red Sage; the ſtalks are ſquare and grow erect, about a foot and a half high; their lower parts are garniſhed at each joint with two oppoſite leaves of the ſame ſhape, but gradually diminiſhing in ſize toward the top: the ſtalks are garniſhed upward with whorls of ſmall flowers, and are terminated by cluſters of ſmall leaves, which in one are red, in another blue, and a third green, which make a pretty appearance, and are preſerved in gardens for ornament. They flower in June and July, and their ſeeds ripen in the autumn.

The ſeeds of theſe are ſown in the ſpring, in the places where they are deſigned to remain, and require no other care but to keep them clean from weeds, and thin them where they come up too cloſe.

Garden Clary. See SCLAREA.

HORNBEAM. See CARPINUS.

HORSE CHESTNUT. See ESCULUS.

HORSE DUNG is of great uſe to make hot-beds for the raiſing all ſorts of early garden crops, as Cucumbers, Melons, Aſparagus, Sallading, &c. for which purpoſe no other ſort of Dung will do ſo well, this fermenting the ſtrongeſt; and, if mixed with long litter, and ſea-coal aſhes in a due proportion, will continue its heat much longer than any other ſort of Dung whatſoever; and afterwards when rotted, becomes an excellent manure for moſt ſorts of lands, more eſpecially for ſuch as are of a cold nature; and for ſtiff clayey lands, when mixed with ſea-coal aſhes, and the cleanſing of London ſtreets, it will cauſe the parts to ſeparate much ſooner than any other compoſt will do; ſo that where it can be obtained in plenty, I would always recommend the uſe of it for ſuch lands.

HOSE IN, HOSE, a term uſed in gardening, to ſignify one tube or petal within another, as in the

Polyanthus, where there are in ſome varieties two petals.

HOT-BEDS are of general uſe in theſe northern parts of Europe, without which we could not enjoy ſo many of the products of warmer climes as we do now; nor could we have the tables furniſhed with the ſeveral products of the garden, during the winter and ſpring months, as they are at preſent in moſt parts of England, better than perhaps in any other country in Europe: for although we cannot boaſt of the clemency of our climate, yet England is better furniſhed with all ſorts of eſculent plants for the table, much earlier in the ſeaſon, and in greater quantities, than in the gardens of our neighbours, which is owing to our ſkill in Hot-beds.

The ordinary Hot-beds which are commonly uſed in the kitchen-gardens, are made with new horſe dung, in the following manner:

1ſt, There is a quantity of new horſe dung from the ſtable (in which there ſhould be part of the litter or ſtraw which is commonly uſed in the ſtable, but not in too great proportion to the dung,) the quantity of this mixture muſt be according to the length of the bed intended; which, if early in the year, ſhould not be leſs than one good load for each light; this dung ſhould be thrown up in a heap, mixing therewith a few ſea-coal aſhes, ſome leaves of trees, and tan, which will be of ſervice to continue the heat of the dung; it ſhould remain ſix or ſeven days in this heap; then it ſhould be turned over, and the parts well mixed together, and caſt into a heap again, where it may continue five or ſix days longer, by which time it will have acquired a due heat; then in ſome well ſheltered part of the garden, you muſt dig a trench in length and width, proportionable to the frames you intend it for; and if the ground be dry, about a foot deep; but if wet, not above ſix inches; then wheel the dung into the opening, obſerving to ſtir every part of it with a fork, and lay it exactly even and ſmooth thro' every part of the bed; as alſo to lay the bottom part of the heap (which is commonly free from litter) upon the ſurface of the bed; this will prevent the ſteam from riſing ſo plentifully as it would otherwiſe do. To prevent this, and the heat from riſing ſo violently as to burn the roots of whatever plants are put into the ground, it will be a very good way to ſpread a layer of neats dung all over the ſurface of the horſe dung, which will prevent the mould from burning: if the bed is intended for Cucumbers or Melons, the earth ſhould not be laid all over the bed at firſt, only a hill of earth ſhould be firſt laid in the middle of each light on which the plants ſhould be planted, and the remaining ſpace ſhould be filled up from time to time as the roots of the plants ſpread; but this is fully explained under thoſe two articles. But if the hot-bed is intended for other plants, then after the bed is well prepared, it ſhould be left two or three days for the ſteam to paſs off, before the earth is laid upon the dung.

In the making of theſe hot-beds, it muſt be carefully obſerved to ſettle the dung cloſe with a fork; and if it be full of long litter, it ſhould be equally trod down cloſe in every part, otherwiſe it will be ſubject to heat too violently, and conſequently the heat will be much ſooner ſpent, which is one of the greateſt dangers theſe ſort of beds may be liable to. During the firſt week or ten days after the bed is made, you ſhould cover the glaſſes but ſlightly in the night, and in the day time carefully raiſe them to let out the ſteam, which is ſubject to riſe very copiouſly while the dung is freſh; but as the heat abates, ſo the covering ſhould be increaſed; otherwiſe the plants in the beds will be ſtinted in their growth, if not entirely deſtroyed. In order to remedy this evil, if the bed be very cold, you muſt put a pretty good quantity of new hot dung round the ſides of it, which will add a freſh heat thereto, and cauſe it to continue a conſiderable time after; and as the ſpring advances, the ſun will ſupply the loſs of the dung's heat; but then it will be adviſeable to lay ſome mowings of Graſs round the ſides of the bed, eſpecially if the nights ſhould prove cold, as it often happens in May, which is many times, even at that ſeaſon, very hurtful to tender plants on Hot-beds.

But although the Hot-bed I have deſcribed is what the kitchen-gardeners commonly uſe, yet thoſe made with tanners bark are much preferable, eſpecially for all tender exotic plants or fruits, which require an even degree of warmth to be continued for ſeveral months, which is what cannot be effected by horſe dung only. The manner of making theſe beds is as follows:

There muſt be a trench dug in the earth about three feet deep, if the ground be dry; but if wet, it muſt not be above a foot or ſix inches deep at moſt, and muſt be raiſed in proportion above ground, ſo as to admit of the tan being laid three feet thick. The length muſt be proportioned to the frames intended to cover it, but ſhould never be leſs than eleven or twelve feet; but if it is twice that length it will be better, and the width not leſs than ſix, which is the leaſt ſize of theſe beds for to continue the heat. This trench ſhould be bricked up round the ſides to the above-mentioned height of three feet, paving the bottom with bricks to prevent the earth mixing with the tan, and ſhould be filled in the ſpring with freſh tanners bark (i. e. ſuch as the tanners have lately drawn out of their vats, after they have uſed it for tanning leather) which ſhould be laid in a round heap for a week or ten days before it is put into the trench, that the moiſture may the better drain out of it, which, if detained in too great a quantity, will prevent its fermentation; then put it into the trench, and gently beat it down equally with a dung-fork; but it muſt not be trodden, which would alſo prevent its heating, by ſettling it too cloſe; then you muſt put on the frame over the bed, covering it with the glaſſes, and in about ten days or a fortnight it will begin to heat; at which time you may plunge your pots of plants or ſeeds into it, obſerving not to tread down the bark in doing it.

A Bed thus prepared (if the bark be new and not ground too ſmall) will continue in a good temper of warmth for two or three months; and when you find the heat decline, if you ſtir up the bark again pretty deep, and mix a load or two of freſh bark amongſt the old, it will cauſe it to heat again, and preſerve its warmth two or three months longer. There are many people who lay ſome hot horſe dung in the bottom of the trench, under the bark, to cauſe it to heat; but this is what I would never practiſe, unleſs I wanted the bed ſooner than the bark would heat of itſelf, and then I would put but a ſmall quantity of dung at bottom, for that is ſubject to make it heat too violently, and will occaſion its loſing the heat ſooner than ordinary; and there will never be any danger of the bark's heating if it be new, and not put into the trench too wet, though it may ſometimes be a fortnight or more before it acquires a ſufficient warmth, but then the heat will be more equal and laſting.

The frames which cover theſe Beds ſhould be proportioned to the ſeveral plants they are deſigned to contain: for example, if they are to cover the Ananas or Pine-apple, the back part of the frame ſhould be three feet and a half high, and the lower part fifteen inches, which will be a ſufficient declivity to carry off the wet; and the back ſide will be high enough to contain the large fruiting plants, and the lower ſide will be ſufficient for the ſhorteſt plants; ſo that by placing them regularly according to their height, they will not only have an equal diſtance from the glaſſes, but alſo appear much handſomer to the ſight. And although many people make their frames deeper than what I have allotted, yet I am fully perſuaded, that where there is but height enough to contain the plants, without bruiſing their leaves, it is much better than to allow a larger ſpace; for the deeper the frame is made, the leſs will be the heat of the air incloſed therein, there being no artificial warmth but what the bark affords, which will not heat a large ſpace of air; and

as the Pine-apple requires to be conſtantly kept very warm, in order to ripen the fruit well, ſo it will be found upon trial, that the depth I have allowed will anſwer that purpoſe better than a greater.

But if the Bed be intended for taller plants, then the frame muſt be made in depth proportionable thereto; but if it be for ſowing of ſeeds, the frame need not be above fourteen or ſixteen inches high at the back, and ſeven inches deep in the front, by which means the heat will be much greater; and this is commonly the proportion allowed to the frames uſually made uſe of in the kitchen-gardens. As to their length, that is generally according to the fancy of the owner; but they commonly contain three lights each, which is in the whole about eleven feet in length, though ſometimes they are made to contain four lights; but this is too great a length for the boxes, for the frames thus made are not ſo handy to remove, as when they are ſhorter, and are more ſubject to decay at their corners. Some indeed have them to contain but two lights, which is very handy for raiſing Cucumber and Melon plants while young; but this is too ſhort for a Bark-bed, as not allowing room for a proper quantity of bark to continue a warmth for any conſiderable time, as was before-mentioned; but for the other purpoſes, one or two ſuch frames are very convenient for common Dung-beds.

As to thoſe frames which are made very deep, it is much the better way to have them made to take aſunder at the four corners, ſo that they may be removed with eaſe; otherwiſe it will be very difficult to take the frame off, when there is occaſion to put in new bark, or take out the old. The manner of making theſe frames is generally known, or may be much better conceived by ſeeing them than can be expreſſed in writing, therefore I ſhall forbear ſaying any thing more on this head.

HOTTONIA. Boerh. Ind. alt. 1. p. 207. Lin. Gen. Plant. 203. Stratoites. Vaill. Act. Par. 1719. Water Violet.

The CHARACTERS are,

The flower is funnel-ſhaped; it has one petal, with a tube the length of the one-leaved empalement, but is cut above into five oblong oval ſegments, which ſpread open, and are indented at their extremity. It hath five ſhort awl-ſhaped ſtamina ſtanding on the tube of the petal, oppoſite to the cuts, terminated by oblong ſummits. In the center is ſituated a globular germen ending in a point, ſupporting a ſhort ſlender ſtyle crowned by a globular ſtigma, which afterward becomes a capſule of the ſame form, with one cell, filled with globular ſeeds, ſitting upon the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes the plants whoſe flowers have five ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

HOTTONIA (*Paluſtris.*) Boerh. Ind. alt. 1. p. 207. Water Violet. Millifolium aquaticum ſive viola aquatica caule nudo. C. B. P. 141. *Water Milfoil, or Water Violet, with a naked ſtalk.*

This plant grows naturally in ſtanding waters in many parts of England; the leaves which are for the moſt part immerſed in the winter, are finely winged and flat, like moſt of the ſea plants; theſe extend pretty wide, 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. The flowers appear in June.

It may be propagated in deep ſtanding waters, by procuring its ſeeds, when they are ripe, from the places of their natural growth, which ſhould be immediately dropped into the water where they are deſigned to grow, and the ſpring following they will appear; and if they are not diſturbed, they will ſoon propagate themſelves in great plenty.

HUMIDITY is the quality commonly called moiſture, or the power of wetting others, which quality ſome liquors and fluids are endowed with; and it differs very much from fluidity, in that it depends altogether on the congruity of the component particles of any liquor to the pores or ſurfaces of ſuch particular bodies, as it is capable of adhering to.

Thus, quickſilver is not a moiſt liquor, in reſpect to our hands or clothes, and many other things it will not ſtick to; but it may be called a moiſt liquor, in reſpect to gold, lead, or tin, to the ſurfaces of which it will preſently adhere.

Nay, water itſelf, that wets almoſt every thing, and is the great ſtandard of Humidity, or moiſture, is not capable of wetting every thing; for it ſtands, and runs eaſily off in globular drops, on the leaves of Cabbages, and many other plants; and will not wet the feathers of ducks, ſwans, and other water fowl.

And it is very plain, that it is only the texture that may cauſe the fluid to be humid; becauſe neither quickſilver alone, nor biſmuth, will ſtick upon glaſs; yet being mixed together, they will form a maſs that will ſtick on it; as it is very well known in the foliating of looking-glaſſes, in which ſuch a compoſition is uſed.

HUMULUS. See LUPULUS.

HURA. Lin. Gen. Plant. 965. Hura, or Sand-box-tree.

The CHARACTERS are,

It hath male and female flowers on the ſame plant. The male flowers have no petal, or ſcarce any empalement, but a column of ſtamina, which are joined at bottom to the ſtyle, forming a cylinder; theſe ſpread out at the top, and are terminated by ſingle ſummits lying over each other. The female flowers have a ſwelling empalement of one leaf, with one tubulous petal; the roundiſh germen is ſituated in the bottom of the empalement, ſupporting a long cylindrical ſtyle, crowned by a large funnel-ſhaped ſtigma, which is a plain convex, divided into twelve equal obtuſe parts. The germen afterward becomes an orbicular ligneous fruit, depreſſed at top and bottom, having twelve deep furrows, with ſo many cells, which open at the top with an elaſticity, each containing one round flat ſeed.

This genus of plants is ranged in the ninth ſection of Linnæus's twenty-firſt claſs, intitled Moncœcia Monodelphia, which includes thoſe plants which have male and female flowers at ſeparate diſtances in the ſame plant, whoſe ſtamina are joined to the ſtyle, forming one body.

We know but one SPECIES of this genus, viz.

HURA (*Crepitans.*) Hort. Cliff. 486. *Sand-box-tree.* Hura Americana, Abutili Indici folio. Hort. Amſt. 2. 131. tab. 66. *American Hura with the leaf of the Indian Abutilon, commonly called in the Weſt-Indies Sand-box-tree.*

This grows naturally in the Spaniſh Weſt-Indies, from whence it has been introduced into the Britiſh colonies of America, where ſome of the plants are preſerved by way of curioſity. It riſes with a ſoft ligneous ſtem to the height of twenty-four feet, dividing into many branches, which abound with a milky juice, and have ſcars on their bark, where the leaves have fallen off. The branches are garniſhed with heart-ſhaped leaves; thoſe which are the biggeſt are eleven inches long, and nine inches broad in the middle, indented on their edges, having a prominent midrib, with ſeveral tranſverſe veins from that to the ſides, which are alternate; theſe ſtand upon long ſlender foot-ſtalks. The male flowers come out from between the leaves, upon foot-ſtalks which are three inches long; they are formed into a cloſe ſpike, or katkin, forming a column, lying over each other like the ſcales of fiſh. The female flowers are ſituated at a diſtance from the male; theſe have a ſwelling cylindrical empalement, out of which riſes the petal of the flower, which hath a long funnel-ſhaped tube, ſpreading at the top,

top, where it is divided into twelve parts, which are reflexed. After the flower is paſt, the germen ſwells and becomes a round, compreſſed, ligneous capſule, having twelve deep furrows, each being a diſtinct cell, containing one large round compreſſed ſeed; when the pods are ripe, they burſt with an elaſticity, and throw out their ſeeds to a conſiderable diſtance.

It is propagated by ſeeds, which ſhould be ſown early in the ſpring, in pots filled with light rich earth, and plunged into a hot-bed of tanners bark. If the ſeeds are freſh, the plants will appear in about five or ſix weeks after the ſeeds are ſown. As the plants will advance very faſt, where due care is taken of them, ſo they ſhould have a large ſhare of freſh air admitted to them in warm weather, otherwiſe they will draw up too weak. When the plants are about two inches high, they ſhould be tranſplanted each into a ſeparate ſmall pot filled with light rich earth, and plunged again into the hot-bed of tanners bark, being careful to ſhade them from the heat of the ſun, until they have taken new root; after which time they muſt have free air admitted to them, by raiſing of the glaſſes in proportion to the warmth of the ſeaſon, and ſhould be frequently, but gently, watered. When the plants have filled theſe ſmall pots with their roots, they muſt be ſhaken out of them, and their roots trimmed, and then placed in larger pots, which ſhould be filled with the like rich earth, and plunged again into the hot-bed, where they ſhould remain till Michaelmas, provided the plants have room, without touching of the glaſſes, at which time they muſt be removed into the bark-ſtove, and plunged in the warmeſt part thereof: during the winter ſeaſon they muſt be ſparingly watered, for as the plants have ſucculent ſtalks, much moiſture will rot them; they muſt alſo be kept very warm, otherwiſe they will not live in this country. In ſummer they muſt have a large ſhare of freſh air in warm weather, but they muſt not be removed into the open air, for they are too tender to live abroad in the warmeſt part of the year in this country.

This plant is now pretty common in the Engliſh gardens, where there are collections of tender plants preſerved, ſome of which are grown to the height of twelve or fourteen feet, and many of them have produced flowers, but there has not been any of their fruit produced as yet in England.

As theſe plants have ample leaves, which are of a beautiful green colour, they afford an agreeable variety among other tender exotic plants in the ſtove; for where they are kept warm, and duly refreſhed with water, they retain their leaves all the year in verdure.

The fruit of this plant is, by the inhabitants of the Weſt-Indies, cut open on the ſide where the foot-ſtalk grew, and the ſeeds carefully taken out, after which the ſhells are uſed to contain ſand for writing, which gave riſe to the name of Sand-box. When theſe fruit are brought entire into England, it is very difficult to preſerve them; for when the heat of the ſummer comes on, they uſually burſt with an exploſion, and ſcatter their ſeeds about; and from the noiſe made by the ripe fruit, it was by Hernandez titled, Arbor crepitans.

HYACINTHUS. Tourn. Inſt. R. H. 344. tab. 180. Lin. Gen. Plant. 427. Hyacinth; in French, *Jacinte*.

The CHARACTERS are,

The flower has no empalement. It has one bell-ſhaped petal, whoſe rim is cut into ſix parts, which are reflexed; and three nectariums on the point of the germen, with ſix ſhort awl-ſhaped ſtamina, terminated by ſummits, which cloſe together. In the center is ſituated a roundiſh three-cornered germen, having three furrows ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh three-cornered capſule, having three cells, which contain roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, intitled Hexandria Monogynia, which includes thoſe plants whoſe flowers have ſix ſtamina and but one ſtyle.

The SPECIES are,

1. HYACINTHUS (*Nonſcriptas*) corollis campanulatis ſexpartitis apice revolutis. Hort. Cliff. 125. *Hyacinth with a bell-ſhaped petal divided into ſix parts, which are reflexed at their tops.* Hyacinthus oblongo flore cæruleus major. C. B. P. 43. *Greater Hyacinth with an oblong blue flower*; and the Hyacinthus Anglicus. Ger. 99. *Engliſh Hyacinth, or Hare Bells.*
2. HYACINTHUS (*Serotinus*) corollarum exterioribus petalis ſubdiſtinctis, interioribus coadunatis. Lin. Sp. Plant. 453. *Hyacinth whoſe exterior part of the flower has diſtinct petals, but the interior joined.* Hyacinthus obſoleto flore. C. B. P. 44. *Hyacinth with a worn-out flower.*
3. HYACINTHUS (*Utrinque Floribus*) corollis campanulatis ſexpartitis, floribus utrinque diſpoſitis. *Hyacinth with a bell-ſhaped petal which is divided into ſix parts, and flowers ranged on each ſide of the ſtalk.* Hyacinthus floribus campanulæ utrinque diſpoſitis. C. B. P. 44. *Hyacinth with bell-ſhaped flowers diſpoſed on every ſide the ſtalk.*
4. HYACINTHUS (*Cernuus*) corollis campanulatis ſexpartitis racemo cornuo. Lin. Sp. Plant. 217. *Hyacinth with bell-ſhaped petals divided into ſix parts, and a nodding branch of flowers.* Hyacinthus floribus campanulæ, uno verſu diſpoſitis. C. B. P. 44. *Hyacinth with bell-ſhaped flowers ranged on one ſide the ſtalk.*
5. HYACINTHUS (*Amethyſtinum*) corollis campanulatis ſemiſexfidis baſi cylindricis. Hort. Upſal. 58. *Hyacinth with bell-ſhaped petals cut half way into ſix parts, and a cylindrical baſe.* Hyacinthus oblongo cæruleo flore minor. C. B. P. 44. *Leſſer Hyacinth with an oblong blue flower.*
6. HYACINTHUS (*Orientalis*) corollis infundibuliformibus ſemiſexfidis baſi ventricoſis. Hort. Upſal. 85. *Hyacinth with a funnel-ſhaped petal cut half into ſix parts, and ſwelling at their baſe.* Hyacinthus Orientalis albus primus. C. B. P. 44. *Early White Eaſtern Hyacinth.*

The ſorts here mentioned are all of them diſtinct ſpecies, of which there are ſeveral varieties, eſpecially of the ſixth, which have been cultivated with ſo much art, as to render ſome of them the moſt valuable flowers of the ſpring; in Holland the gardens abound with them, where the floriſts have raiſed ſo many varieties as to amount to ſome hundreds; and ſome of their flowers are ſo large, double, and finely coloured, as that their roots are valued at twenty or thirty pounds ſterling each root; to enumerate theſe varieties here, would ſwell this work to very little purpoſe, as every year produces new kinds.

The firſt ſort grows naturally in woods and near hedges, in lands which have lately been woods, in many parts of England, ſo is ſeldom admitted into gardens; but the poor people, who make it their buſineſs to gather the wild flowers of the fields and woods for noſegays, &c. bring great quantities of theſe in the ſpring to London, and ſell them about the ſtreets.

There is a variety of this with white flowers, which is kept in ſome gardens, which only differs in the colour of their flowers from the other.

The ſecond ſort is preſerved in ſome few gardens for the ſake of variety, but as it hath as little beauty as the firſt, ſo is ſeldom allowed a place in the flower-garden. The flowers of this are narrower than thoſe of the firſt ſort, and ſeem as if their petals were divided to the bottom, three of the outer ſegments being ſeparated from the other, ſtanding at a ſmall diſtance from the three interior, but they are all joined at their baſe; when the flowers firſt appear, they are of a light blue colour, but before they decay, they fade to a worn-out purple colour. This flowers early in the ſpring, and grows naturally in Spain and Mauritania.

The third ſort grows naturally in Spain and Italy; this hath blue flowers of the open ſpread bell-ſhape, which are divided into ſix ſegments almoſt to the bottom,

tom, and are diſpoſed on every ſide the ſtalk. The ſtalks riſe about nine inches high, and when the roots are ſtrong, the thyrſe of flowers is large. This flowers about the ſame time with the firſt ſort, and was formerly preſerved in gardens, but ſince there have been ſo many finer flowers raiſed from the ſeeds of the Eaſtern Hyacinths, theſe have been almoſt totally neglected, ſo that they are ſeldom ſeen but in old gardens
The fourth ſort ſeems to be a variety of the firſt, the flowers being ranged for the moſt part upon one ſide of the ſtalk, and the top of the ſpike is always bent on one ſide. The flowers are of a bluſh Peach colour, and appear about the ſame time as the firſt ſort.
The fifth ſort grows naturally in Spain; this hath a ſmaller flower than either of the former ſorts, and comes earlier in the ſeaſon. The petal is cut into ſix parts half the length, and is reflexed at the brim; the lower part is cylindrical, a little ſwelling at the baſe, and is of a deeper blue than either of the former. This was formerly called by the gardeners the Coventry blue Hyacinth.
The ſixth ſort is the Eaſtern Hyacinth, of which we formerly had no other varieties in the Engliſh gardens, but the ſingle and double white and blue flowering; but from the ſeeds of theſe there were a few others raiſed in England; and alſo by the Flemiſh gardeners, who came over annually with their flower-roots to vend in England; but the gardeners in Holland have within the laſt fifty years raiſed ſo many fine varieties, as to render the former ſorts of little or no value.
But thoſe who are deſirous to preſerve any of the old ſorts, need not be at much trouble about it, for their roots propagate in great plenty in any ſoil or ſituation, and will require no other care but to take up their roots every other or third year, ſoon after their leaves decay, and plant them again in autumn; for if they are permitted to remain longer in the ground, their roots will have multiplied to ſo great a degree, as to render their flowers very ſmall and weak, ſo of little worth.
All the different ſorts of Hyacinths are propagated by ſeeds or offſets from the old bulbs; the former method has been but little practiſed in England till very lately, but in Holland and Flanders it hath been followed for many years, whereby they have obtained a very great variety of the moſt beautiful flowers of this kind: and it is owing to the induſtry of the floriſts in thoſe countries, that the lovers and delighters in gardening are ſo agreeably entertained, not only with the curious variety of this, but of moſt other bulbous rooted flowers, few other floriſts thinking it worth their trouble to wait four or five years for the flowers of a plant, which when produced, perhaps there might not be one in forty that may deſerve to be preſerved; but they did not conſider that it was only the loſs of the four or five firſt years after ſowing, for if they continued ſowing every year after they began, there would be a ſucceſſion of flowers annually, which would conſtantly produce at leaſt ſome ſorts that might be different from what they had before ſeen; and new flowers being always the moſt valuable to ſkilful floriſts (provided they have good properties to recommend them) it would always be a ſufficient recompence for their trouble and loſs of time.
The method of raiſing theſe flowers from ſeed is as follows: having provided yourſelf with ſome good ſeed (which ſhould be ſaved from either ſemi-double, or ſuch ſingle flowers as are large, and have good properties) you muſt have a parcel of ſquare ſhallow boxes or pots, with holes in their bottoms to let off moiſture, which muſt be filled with freſh light ſandy ſoil, laying the ſurface very level; then ſow your ſeeds thereon as equally as poſſible, covering it about half an inch thick with the ſame light earth; the time for this work is about the middle or latter end of Auguſt. Theſe boxes, or pots, ſhould be placed where they may enjoy the morning ſun only until the latter end of September, at which time they ſhould be removed into a warmer ſituation, and towards the end of October they ſhould be placed under a common hot-bed frame, where they may remain during the winter and ſpring months, that they may be protected from hard froſts; though they ſhould be expoſed to the open air when the weather is mild, by taking off the glaſſes. In the latter end of February or the beginning of March, the young plants will begin to appear above ground, at which time they muſt be carefully ſcreened from froſts, otherwiſe they will be ſoon deſtroyed when they are ſo young; but you muſt never cover them at that ſeaſon but in the night, or in very bad weather; for when the plants are come up, if they are cloſe covered, they will draw up very tall and ſlender, and thereby prevent the growth of their roots. About the middle of April, if the weather proves good, you may remove the boxes out of the frame, placing them in a warm ſituation, obſerving, if the ſeaſon be dry, to refreſh them now and then gently with a little water, as alſo to keep them very clear from weeds, which would ſoon overſpread the tender plants, and deſtroy them, if permitted to remain.
Towards the beginning of May theſe boxes ſhould be removed into a cooler ſituation; for the heat of the ſun at that ſeaſon would be too great for theſe tender plants, cauſing their blades to decay much ſooner than they would naturally do, if they were ſcreened from its violence. In this ſhady ſituation they ſhould remain during the heat of ſummer, obſerving to keep them conſtantly clear from weeds; but you muſt not place them under the dripping of trees, &c. nor ſhould you give them any water after their blades are decayed, for that would infallibly rot the roots. About the latter end of Auguſt you ſhould ſift a little light rich earth over the ſurface of the boxes, and then remove them again into a warmer ſituation, and treat them, during the winter, ſpring, and ſummer months, as was before directed: and about the middle of Auguſt following you ſhould prepare a bed of light rich ſandy ſoil, in proportion to the quantity of your ſeedling plants; and having levelled the ſurface very even, you ſhould take the earth from the boxes in which your plants were raiſed, into a ſieve, in order to get out all the roots, which by this time, (if they have grown well) will be about the thickneſs of a ſmall quill; theſe roots ſhould be placed upon the bed at about two or three inches aſunder, obſerving to ſet the bottom part of their roots downwards; then cover them over two inches thick with the ſame light earth; but as it will be impoſſible to get all the ſmall roots out of the earth in the boxes, you ſhould ſpread the earth upon another bed equally, and cover it over with light earth; by which method you will not loſe any of the roots, be they ever ſo ſmall.
Theſe beds muſt be arched over with hoops, and in very hard froſty weather they muſt be covered with mats, &c. to protect them from froſt; and in the ſpring, when the green leaves are above ground, if the weather ſhould be very dry, you muſt refreſh them with water; but do this ſparingly, for nothing is more injurious to theſe bulbs than too great quantities of moiſture. During the ſummer ſeaſon you muſt conſtantly keep the beds clear from weeds; but after the blades are decayed, you muſt never give them any water; and in autumn you ſhould ſtir the ſurface of the bed with a very ſhort hand-fork, being exceeding careful not to thruſt it ſo deep as to touch the roots, which, if hurt, are very ſubject to periſh ſoon after. Then ſift a little freſh, light, rich earth over the bed about an inch thick, or ſomewhat more, and in winter cover them again (as was before directed.) In this bed the roots may continue two years, obſerving to treat them, both in ſummer and winter, as before; then the third year the roots ſhould be carefully taken up a little before their leaves decay, laying the roots horizontally in the ground to ripen for three weeks, after which they may be kept out of the ground till the end of Auguſt, when they ſhould be planted into new beds prepared as before, placing them at the diſtance of ſix inches aſunder; in theſe beds the roots may remain till they flower, during which time they ſhould be treated as before, with this difference only, that inſtead of covering them with mats in the winter, the ſurface of the ground ſhould be covered with tanners bark.

When their flowers begin to ſhew themſelves, you ſhould mark all ſuch as appear to have good properties, by thruſting a ſmall ſtick down by each root; which roots, at the time for taking them up, ſhould be ſelected from the reſt, and planted by themſelves; though I would by no means adviſe the rejecting any of the other roots, until they have blown two years, before which you cannot be aſcertained of their value. When the green leaves of theſe plants begin to decay, their roots muſt be taken up, and a bed of light earth, in a ſhady ſituation, ſhould be raiſed into a ridge; the better to ſhoot off the moiſture, the roots ſhould be laid into the earth again in an horizontal poſition, leaving the green leaves hanging out of the ground from the roots, whereby the great moiſture contained in their very ſucculent leaves and flower-ſtalks may be exhaled, and prevented from returning to the roots, which, when ſuffered ſo to do, is very often the cauſe of their rotting after they are out of the ground. In this ridge the roots ſhould remain until the leaves are quite dried off, when they muſt be taken up, and after being cleared of all manner of filth, which would be hurtful to them, they muſt be laid up in boxes, where they may be preſerved dry until September, which is the proper ſeaſon for planting them again; the method of doing this ſhall be hereafter mentioned, when we treat of the management of old roots.

I ſhall now proceed to the culture of ſuch Hyacinths as have either been obtained from Holland, or are of our own product from the ſeeds of ſuch flowers as were very beautiful, and worthy to be preſeved in collections of good flowers: and it hath been the want of ſkill in the management of theſe noble flowers, which has ocaſioned the ill ſucceſs moſt people have had with them in England, whereby they have been neglected, ſuppoſing their roots to degenerate after they have flowered in England, which is a great miſtake; for were the roots managed with the ſame art as hath been practiſed in Holland, I am fully convinced they would thrive near as well in England as there, or elſewhere, as I have experienced; for, from ſome hundreds of roots which I have received from Holland at two or three different times, I have had a very great increaſe of their roots, which were as large, and produced as many flowers upon their ſtems, as the ſame ſorts generally do in Holland.

The ſoil in which theſe flowers ſucceed beſt, is a light, ſandy, freſh, rich earth, which may be compoſed after the following manner: take half freſh earth from a common, or paſture land, which is chiefly of a ſandy loam; this ſhould be off the ſurface, and not taken above eight or nine inches deep at moſt; and if you take the turf, or green ſward with it, it will ſtill be better, provided you have time to let it rot before it is uſed; to this you ſhould add a fourth part of ſea-ſand, and the other fourth part of rotten cow dung; mix theſe well together, and caſt it into a heap, where it may remain until you uſe it, obſerving to turn it over once in three weeks or a month, that it may be well mixed. If this compoſt is made two years before it is uſed, it will be much the better; but if you are obliged to uſe it ſooner, then it ſhould be oftener turned, that the parts may the better unite.

This ſoil ſhould be laid two feet deep on the beds which are deſigned for Hyacinths, and if you lay a little rotten cow dung, or tanners bark, at the bottom, which may be within reach of the fibres, but ſhould by no means touch the bulb, it will be better. If the ſoil is very wet where theſe beds are made, you ſhould raiſe them ten or twelve inches above the ſurface of the ground; but if it be dry, they need not be raiſed above three or four inches.

The manner of preparing the beds is as follows: Firſt, take all the former old earth out of the bed to the depth you intend, which ſhould be near three feet; then ſpread ſome rotten neats dung, or tan, in the bottom, about ſix inches thick, laying it very level; upon this you ſhould lay the above-mentioned earth two feet thick, levelling it very even; then

ſcore out the diſtances for the roots, which ſhould be eight inches ſquare, in ſtrait rows each way; after which, place your roots exactly in the ſquares, obſerving to ſet the bottom part downward; then cover the roots ſix inches deep with the ſame prepared earth, being very careful in doing this not to diſplace any of the roots; and if the tops of theſe beds are made a little rounding, to ſhoot off the wet, it will be of ſervice in moiſt ground, provided the middle of the beds are not made too high, which is a fault the other way.

The beſt ſeaſon for planting theſe roots is the middle or latter end of September, according to the earlineſs or lateneſs of the ſeaſon, or the weather when it happens; but I would adviſe you never to plant them when the ground is extreme dry, unleſs there be a proſpect of ſome rain ſoon after; for if the weather ſhould continue dry for a conſiderable time after, the roots will receive a mouldineſs, which will certainly deſtroy them. The beds will require no farther care until the froſt comes on very ſevere, at which time they ſhould have ſome rotten tan ſpread over them, about four inches thick; and if the alleys on each ſide of the bed are filled up, either with rotten tan, dung, or ſand, it will prevent the froſt from penetrating the ground on each ſide to the roots, and ſecure them from being deſtroyed; but when the winters prove very ſevere, it will alſo be proper to have ſome Peas-haulm, Straw, or ſuch like covering laid over them, which will keep out the froſt better than mats; and lying hollow, will admit the air to the ſurface of the ground, and alſo permit the exhalations to paſs off, whereby the earth will remain dry, and prevent the roots from rotting, which has often happened when the beds have been too cloſe covered. But you muſt obſerve to take off this light covering whenever the weather is mild, and only let it continue on in very hard froſts; for where the beds are covered with tan or ſea-coal aſhes, no common froſt can penetrate through, ſo the coverings are uſeleſs, except in very ſevere froſt; for a ſmall froſt cannot injure the roots before the green leaves appear above ground, which is ſeldom before the beginning of February, at which time the beds muſt be arched over with hoops, that they may be covered either with mats, canvas, or ſome other light covering, to prevent the froſt from injuring the buds as they ariſe above ground; but theſe coverings muſt be conſtantly taken off every day when the weather is mild, otherwiſe the flower-ſtems will be drawn up to a great height, and become very weak, and the foot-ſtalks of the flowers will be long and ſlender, and ſo rendered incapable of ſupporting the bells; which is a great diſadvantage to the flowers, for one of their greateſt beauties conſiſts in the regular diſpoſition of their bells. When theſe hoops are fixed over the beds, the rotten tan ſhould be moſt of it taken off them; in doing of which, great care ſhould be taken not to bruiſe or injure the leaves of the Hyacinths, which by that time will be breaking out of the ground with the flower-ſtem, therefore the tan ſhould be removed by the hands; or if any inſtrument is made uſe of in the doing of it, there muſt be great caution how it is performed.

When the ſtems of the flowers are advanced to their height before the flowers are expanded, you ſhould place a ſhort ſtick down by each root, to which, with a wire formed into a hoop, the ſtem of the flowers ſhould be faſtened, to ſupport them from falling; otherwiſe, when the bells are fully expanded, their weight will incline them to the ground, eſpecially if they are not ſcreened from the wind and rain.

During their ſeaſon of flowering they ſhould be covered in the heat of the day from the ſun, as alſo from all heavy rains; but they ſhould be permitted to receive all gentle ſhowers, as alſo the morning and evening ſun; but if the nights are froſty, they muſt be conſtantly defended therefrom. With this management you may continue your Hyacinths in beauty at leaſt one whole month, and ſometimes more, according to their ſtrength, or the favourableneſs of the ſeaſon.

When

When their flowers are quite decayed, and the tops of their leaves begin to change their colour, you muſt carefully raiſe the roots out of the ground with a narrow ſpade, or ſome other handy inſtrument; this is what the Dutch gardeners term lifting of them: in the doing of this, the inſtrument muſt be carefully thruſt down by the ſide of the root, being careful not to bruiſe or injure it, as alſo to put it below the bottom of the root; then by the forcing of this inſtrument on one ſide, the fibres of the root are raiſed and ſeparated from the ground. The deſign of this is, to prevent their receiving any more nouriſhment from the ground; for by imbibing too much moiſture at this ſeaſon, the roots frequently rot after they are taken up: about a fortnight after this operation the roots ſhould be entirely taken out of the ground, and then carried to beds ſituated where the morning ſun only ſhines upon them; the earth of the beds ſhould be looſe and raiſed into a ſharp ridge, laying the roots into it in a horizontal poſition, with their leaves hanging out, by which means a great part of the moiſture contained in their thick ſucculent ſtalks and leaves will evaporate; which, if it were permitted to return back to the roots, would cauſe them to rot and decay after they are taken up, which has been the general defect of moſt of the Hyacinths in England.

In this poſition the roots ſhould remain until the green leaves are entirely decayed, which perhaps may be in three weeks time. This is what the Dutch gardeners term the ripening of their roots, becauſe by this method the roots become firm, and the outer cover is ſmooth, and of a bright purple colour; whereas thoſe roots which are permitted to remain undiſturbed, till the leaves and ſtalks are quite decayed, will be large, ſpongy, and their outer coats will be of a pale colour; for the ſtems of many of theſe flowers are very large, and contain a great quantity of moiſture, which, if ſuffered to return into the roots, will infallibly cauſe many of them to periſh. After they are ſo ripened, you muſt take them out of the ground, and wipe them clean with a ſoft woollen cloth, taking off all the decayed parts of the leaves and fibres, putting them into open boxes where they may lie ſingly, and be expoſed to the air, but they muſt be preſerved carefully from moiſture; nor ſhould they be ſuffered to remain where the ſun may ſhine upon them; in this manner they may be preſerved out of the ground until September, which is the ſeaſon for planting them again, at which time you muſt ſeparate all the ſtrong flowering roots, planting them in beds by themſelves, that they may make an equal appearance in their flowers; but the offsets and ſmaller roots ſhould be planted in another ſeparate bed for one year, in which time they will acquire ſtrength, and by the ſucceeding year will be as ſtrong as the older roots.

The ſingle and ſemi-double flowers ſhould be planted alſo in a bed by themſelves, where they ſhould be carefully ſheltered (as was directed before) from the froſt, until the flowers are blown; at which time their covering ſhould be entirely removed, and they ſuffered to receive the open air, but the flower-ſtalks ſhould be ſupported with ſticks; which, though the weather may ſoon deface the beauty of the flowers, yet is abſolutely neceſſary to promote their ſeeding; and when the ſeeds are quite ripe, you muſt cut off the veſſels and preſerve them, with the ſeeds therein, until the ſeaſon for ſowing it. But you muſt obſerve, that after theſe flowers have produced ſeeds, they ſeldom flower ſo well again, at leaſt not in two years after; ſo that the beſt method to obtain good ſeeds is, to plant new roots every year for that purpoſe. Although theſe roots are, by moſt perſons, taken up every year, yet if the beds are well prepared for them, they may remain two years in the ground unremoved, and the roots will increaſe more the ſecond year than the firſt, though the flowers are more liable to degenerate; therefore thoſe who cultivate theſe for ſale, take up their roots annually when they are large and ſaleable; but the offsets and ſmall roots, they uſually leave two years in the ground.

There are ſome perſons who let their Hyacinth roots remain three or four years unremoved, by which they have a much greater increaſe of roots, than when they are annually taken up; but the roots by this great increaſe are frequently degenerated, ſo as to produce ſingle flowers; therefore I ſhould adviſe the taking up of the roots every year, eſpecially thoſe of the moſt valuable kinds, which is the moſt certain method to preſerve them in their greateſt perfection, though the increaſe may not be ſo great; and if theſe roots are planted a fortnight or three weeks earlier in the autumn than is before directed, it will cauſe them to produce ſtronger flowers; and thoſe roots which are annually removed, will be rounder and firmer than ſuch as ſtand two years unremoved.

For the other ſorts of Hyacinth, ſee MUSCARI and ORNITHOGALUM.

HYACINTHUS TUBEROSUS. See CRINUM and POLYANTHES.

HYDRANGEA. Gron. Flor. Virg. 50. Lin. Gen. Plant. 492. We have no Engliſh title for this genus.

The CHARACTERS are,

The flower hath a ſmall permanent empalement of one leaf, indented in five parts, and five roundiſh petals which are equal, and larger than the empalement. It hath ten ſtamina which are alternately longer than the petal, terminated by roundiſh ſummits. Under the flower is ſituated a roundiſh germen, ſupporting two ſhort ſtyles ſtanding apart, crowned by permanent obtuſe ſtigmas. The germen afterward turns to a roundiſh capſule, crowned by the two horned ſtigmas, divided tranſverſly into two cells, filled with ſmall angular ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's tenth claſs, intitled Decandria Dygynia, which includes the plants whoſe flowers have ten ſtamina and two ſtyles.

We have but one SPECIES of this genus, viz.

HYDRANGEA (*Arboreſcens.*) Gron. Flor. Virg. 50.

This plant grows naturally in North America, from whence it has been brought within a few years paſt to Europe, and is now preſerved in gardens for the ſake of variety more than its beauty. It hath a ſpreading fibrous root, from which is ſent up many ſoft, pithy, ligneous ſtalks, which riſe about three feet high, garniſhed at each joint with two oblong heart-ſhaped leaves placed oppoſite, ſtanding upon foot-ſtalks about one inch long; the leaves are three inches long, and two broad near their baſe, ſawed on their edges, and have many veins running from the mid-rib upward to their borders; they are of a light green, and fall away in the autumn; the flowers are produced at the top of the ſtalks, in form of a corymbus; they are white, compoſed of five petals, with ten ſtamina ſurrounding the ſtyle. Theſe appear toward the end of July and in Auguſt, but ſeldom perfect their ſeeds in England.

This is eaſily propagated by parting of the roots; the beſt time for this is the latter end of October, which is alſo the beſt time to tranſplant them: the plants ſhould have a moiſt ſoil, for they grow naturally in marſhy places; they require no other culture but to keep them clear from weeds, and dig the ground between them every winter. The roots are perennial, and if in very ſevere froſt the ſtalks are killed, they will put out new ones the following ſpring.

HYDRASTIS. See WARNERIA.

HYDROCOTYLE, [of ὕδωρ, water, and κοτύλη, a cavity; becauſe this plant has a cavity in the leaves which contains water, and the plant grows in marſhes.] Water Navelwort.

This plant grows in great plenty in moiſt places in moſt parts of England, and is never cultivated for uſe, ſo I ſhall paſs it over with only naming it.

HYDROLAPATHUM. See RUMEX.

HYDROPHYLLON. Lin. Gen. Plant. 187. Hydrophyllon. Tourn. Inſt. R. H. 81. tab. 16. Water Leaf.

The

The CHARACTERS are,

The flower has a permanent empalement of one leaf, cut into five ſegments which ſpread open. It hath one bell-ſhaped petal, which is divided into five parts, indented at their points; under each of theſe ſegments is fixed a nectarium, which is ſituated about the middle, and ſhut up lengthways by two lamellæ. It hath five ſtamina which are longer than the petal, terminated by oblong proſtrate ſummits, and an oval-pointed germen, ſupporting an awl-ſhaped ſtyle the length of the ſtamina, crowned by a bifid ſpreading ſtigma. The germen afterward becomes a globular capſule with one cell, incloſing one large round ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes the plants whoſe flowers have five ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

HYDROPHYLLON (*Virginianum*) foliis pinnatifidis. Lin. Sp. 208. Morini. Joncq. Hort. *Water Leaf with wing-pointed leaves.*

This plant grows naturally in many parts of North America, on moiſt ſpongy ground. The root of it is compoſed of many ſtrong fleſhy fibres, which ſpread wide on every ſide, from which ariſe many leaves with foot-ſtalks five or ſix inches long, which are jagged into three, five, or ſeven lobes, almoſt to the midrib; theſe are indented on their edges, and have ſeveral veins running from the midrib to the ſides; they are of a lucid green, and in the ſpring have water ſtanding on the cavities, from whence I ſuppoſe Morinus gave it the title of Water Leaf, and not from the plant growing in water, as Tournefort conjectures. The flowers riſe with foot-ſtalks from the root, having one or two ſmall leaves of the ſame ſhape with the lower; the flowers are produced in looſe cluſters hanging downward; they are of a dirty white and bell-ſhaped, ſo make no great figure. They appear in June, and the ſeeds ſometimes ripen here in Auguſt.

This plant is very hardy in reſpect to cold, but it ſhould be planted in a moiſt rich ſoil; for if it is planted in a dry warm ſoil, it will not live, unleſs it is conſtantly watered in dry weather. It may be propagated by parting of the roots, which ſhould be done in autumn, that the plants may be well rooted before ſpring, for otherwiſe they will require a great deal of water. It requires a moiſt ſoil and ſhady ſituation.

HYDROPIPER, the common biting Arſe-ſmart, which grows in great plenty in moiſt places near ditches ſides almoſt every where.

HYDROSTATICS [ὑδροσαλικὴ, of ὕδωρ, water, and σαλικὴ, of σατὸς, ſtanding, of ἵστημι, I ſtand or ſtop; Hydroſtatics being conceived as the doctrine of the æquillibrum of liquors,] or the doctrine of the gravitation of fluid; or it is that part of the mechanics which conſiders the weight or gravity of fluid bodies; particularly of water, and of ſolid bodies immerged therein.

To Hydroſtatics belongs whatever relates to the gravities and æquilibria of liquors, with the art of weighing bodies in water, in order to eſtimate their ſpecific gravities.

Of the uſe of this ſcience in horticulture, the Rev. Dr. Hales, in his excellent Treatiſe of Vegetable Staticks, has given many examples, by experiments, ſhewing the quantities of moiſture imbibed and perſpired by plants and trees, neceſſary to be known, in order to promote the buſineſs of vegetation.

Some of the moſt uſeful heads of this ſcience are;

1. That the upper parts of all fluids preſs upon the lower.
2. That a lighter fluid may gravitate or preſs upon a heavier.
3. That if a body that is contiguous to the water, be altogether, or in part, lower than the upper ſurface of the water, the lower part of the body will be preſſed upwards by the water which touches it beneath.
4. There needs only a competent weight of an external fluid, to account for the riſing of water in pumps, &c.
5. If a body be placed under water, ſo that its uppermoſt ſurface lie parallel to the horizon, the direct preſſure that it ſuſtains is no more than that of a column of water, whoſe baſe is the horizontal ſuperficies of the body, and its heighth the perpendicular depth of the water. And if the water which leans on the body be contained in pipes which are open at both ends, the preſſure of the water is to be eſtimated by the weight of a pillar of water, the baſe of which is equal to the lower orifice of the pipe, and whoſe height is equal to a perpendicular, which reaches from thence to the top of the water, although the pipe ſhould be much inclined any way, or though it ſhould be ever ſo regularly ſhaped, and much broader in ſome other place than the bottom.
6. A body which is immerſed in a fluid, ſuſtains a natural preſſure from the fluid, which alſo increaſes as the body is placed deeper beneath the ſurface of the fluid.
7. The reaſon why water aſcends in ſiphons, and by which it flows through them, may be explained from the external preſſure of ſome other fluid, without having recourſe to the abhorrence of a vacuum.
8. The moſt ſolid body, which will ſink by its own weight at the ſurface, yet if it be placed at a depth twenty times greater than that of its own thickneſs it will not ſink, if its deſcent be not aſſiſted by the incumbent water.
9. If a body which is ſpecifically lighter than a fluid, be immerſed in that fluid, it will riſe with a force proportionable to the exceſs of gravity in that fluid.
10. If a body which is heavier than a fluid be immerſed, it will ſink with a force that is proportionable to the exceſs of its gravity.
11. If any veſſel be filled with water, or any other liquor, the ſurface of which is capable of being even, it will continue ſo till diſturbed by ſome other external cauſe.
12. When the fluids are preſſed, they are preſſed undiquaque, i. e. on all ſides.

How far the knowledge of any of theſe properties of fluids may conduce to the philoſophical improvement of gardening, and the buſineſs of vegetation, will be more clearly perceived when well conſidered by the ingenious artiſt, than being ſet forth by words.

HYGROMETER [ὑγρόμετρον, of ὑγρὸς, moiſt, and μέτρον, meaſure, of μετρέω, to meaſure,] is a machine or inſtrument contrived to ſhew or meaſure, the moiſtneſs and drineſs of the air, according as it abounds with moiſt or dry vapours, and to meaſure and eſtimate the quantity of ſuch moiſtneſs and drineſs.

There are divers kinds of Hygrometers; for whatever body either ſwells or ſhrinks by drineſs or moiſture, is capable of being formed into an Hygrometer; ſuch are the woods of moſt kinds, particularly Aſh, Deal, Poplar, &c. ſuch alſo is a cord, catgut, &c.

Stretch a hempen cord or fiddle-ſtring along a wall, bringing it over a truckle or pully; and to the other end tie a weight, unto which fit a ſtyle or index; on the ſame wall fit a plate of metal, divided into any number of equal parts, and the Hygrometer is complete.

For it is a matter of undoubted obſervation, that moiſture ſenſibly ſhortens the length of cords and ſtrings; and that as the moiſture evaporates, they return to their former length, and the like may be ſaid of a fiddle-ſtring.

The weight therefore, in the preſent caſe, upon an increaſe of the moiſture of the air, will aſcend, and upon a diminution of the ſame will deſcend.

Hence, as the index will ſhew the ſpaces of aſcent and deſcent, and thoſe ſpaces are equal to the increments and decrements of the length of the cord or gut, the inſtrument will diſcover whether the air be more or leſs humid now, than it was at another given time.

The

The ordinary contrivance with whip-cord is one of the eaſieſt, for that will infallibly ſhorten and lengthen as the air grows moiſter and drier.

Some recommend a cat-gut as the beſt, which may be a yard in length ſuſpended, having a plumbet or piece of lead, with an index or pointer hanging at the lower end, by means of which the cat-gut will twiſt or untwiſt as the air dries or moiſtens, and ſhorten and lengthen ſo as to raiſe and ſink the plumbet with the index, and this index will point out the degree ſought for.

The weight of this lead or plumbet, ſhould be about two ounces.

Some perſons who approve a fine whip-cord inſtead of cat-gut, uſe a greater weight of lead; the twiſting and untwiſting of the cat-gut or whip-cord, will make the lead with the index turn round, as well as riſe and fall. The degrees may be made upon an open ſcrew of braſs within, with which the plumbet and index has its motion.

When you are provided with a barometer and Hygrometer, compare the motions of the one with the other, in order to judge what proportion the riſe or fall of the quickſilver in the barometer bears to the twiſting of the cat-gut or whip-cord; the degrees of which motion may be obſerved by the index or pointer of the Hygrometer; and at the ſame time both theſe muſt be compared with the riſing and falling of the ſpirit in a thermometer, to know what degree of heat or cold attends every different change of weather.

HYGROSCOPE [of ὑγρὸς, moiſt, and σκοπέω, to view or conſider,] a machine the ſame as the hygrometer, and for the ſame uſes.

Theſe inſtruments are of good uſe in conſervatories, for meaſuring or ſhewing the dampneſs or drineſs of them in the winter ſeaſon.

HYMENÆA. Lin. Gen. Plant. 512. Courbaril. Plum. Nov. Gen. 49. tab. 14. Locuſt-tree.

The CHARACTERS are,

The outward involucrum of the flower is divided into two parts, the inward is of one leaf, indented in five parts; the flower hath five petals, which are equal in ſize, and ſpread open. It hath ten declining ſtamina, which are ſhort, terminated by oblong ſummits. In the center is ſituated an oblong germen, ſupporting a declining ſtyle, crowned by an acute ſtigma; the germen afterward becomes a large oblong pod, with a thick ligneous ſhell, divided into ſeveral partitions tranſverſly, in each of which is lodged one compreſſed large ſeed, ſurrounded with a farinaceous pulp.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes the plants whoſe flowers have ten ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

HYMENÆA (*Courbaril.*) Hort. Cliff. 484. *Locuſt-tree.* Courbaril bifolia, flore pyramidato. Plum. Nov. Gen. 49. *Two-leaved Courbaril with a pyramidal flower, commonly called Locuſt-tree in America.*

This is a very large ſpreading tree in the Weſt-Indies, where it grows in great plenty: it hath a large ſtem, covered with a ruſſet bark, which divides into many ſpreading branches, garniſhed with ſmooth ſtiff leaves, which ſtand by pairs, their baſe joining at the foot-ſtalk, to which they ſtand oblique, one ſide being much broader than the other, the two outer ſides being rounded, and their inſide ſtrait, ſo that they reſemble a pair of ſheep-ſhears; they are pointed at the top, and ſtand alternately on the ſtalk. The flowers are produced in looſe ſpikes at the end of the branches, ſome of the ſhort ligneous foot-ſtalks ſupporting two, and others three flowers, which are compoſed of five yellow petals ſtriped with purple; the petals are ſhort and ſpread open; the ſtamina are much longer, and of a purpliſh colour; theſe flowers are ſucceeded by thick, fleſhy, brown pods, ſhaped like thoſe of the Garden Bean; they are ſix inches long, and two inches and a half broad, of a purpliſh brown colour, and a ligneous conſiſtence, with a large ſuture on both edges; theſe contain three or four roundiſh compreſſed ſeeds, divided by tranſverſe partitions.

The wood of this tree is eſteemed as good timber in the Weſt-Indies, and it yields a fine clear reſin which is called gum anime in the ſhops, which makes an excellent varniſh.

It is eaſily raiſed from the ſeeds if they are freſh; theſe muſt be ſown in pots, and plunged into a hot-bed of tanners bark: there ſhould be but one ſeed put into each pot, or if there is more, when the plants appear, they ſhould be all drawn out to one ſoon after they come up, before their roots entangle, when it will be hazardous doing it; for if great care is not taken, the plant intended to be left may be drawn out with the other. As the roots of this plant are but ſlender, ſo they are very difficult to tranſplant; for unleſs a ball of earth is preſerved to their roots, they ſeldom ſurvive their removal, therefore they muſt be ſeldom tranſplanted from one pot to another. The plants muſt conſtantly remain in the tan-bed in the ſtove, and ſhould be treated in the ſame way with other tender plants of the ſame country, giving but little water to them, eſpecially in the winter. When theſe plants firſt appear, they make conſiderable progreſs for two or three months, after which time they are at a ſtand perhaps a whole year without ſhooting, being in their growth very like the Anacardium, or Caſhew Nut, ſo is very difficult to preſerve long in this country.

HYOSCYAMUS. Tourn. Inſt. R. H. 117. tab. 42. Lin. Gen. Plant. 218. [of ὗς, a ſwine, and κύαμος, a Bean, q. d. Hog's-bean,] Henbane; in French, *Juſquaime.*

The CHARACTERS are,

The flower has a cylindrical empalement of one leaf, which is permanent, ſwelling at the bottom, and cut into five acute ſegments at the top. It hath one funnel-ſhaped petal, with a ſhort cylindrical tube, and an erect ſpreading rim, cut into five obtuſe parts, one being larger than the others; it hath five inclined ſtamina, terminated by roundiſh ſummits. In the center is ſituated a roundiſh germen, ſupporting a ſlender ſtyle, crowned by a round ſtigma. The germen afterward becomes an oval obtuſe capſule ſitting in the empalement, divided in two cells by an intermediate partition, opening with a lid at the top, to let out the many ſmall ſeeds which adhere to the partition.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, in which he includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. HYOSCYAMUS (*Niger*) foliis amplexicaulibus ſinuatis, floribus ſeſſilibus. Hort. Cliff. 56. *Henbane with ſinuated leaves embracing the ſtalks, and ſeſſile flowers.* Hyoſcyamus vulgaris, vel niger. C. B. P. *Common Black Henbane.*
2. HYOSCYAMUS (*Major*) foliis petiolatis, floribus pedunculatis terminalibus. *Henbane with leaves having foot-ſtalks, and flowers with foot-ſtalks terminating the branches.* Hyoſcyamus major, albo ſimilis, umbilico floris atro-pupureo. T. Cor. *Great Henbane like the white, but with a dark purple bottom to the flower.*
3. HYOSCYAMUS (*Albus*) foliis petiolatis, floribus ſeſſilibus. Hort. Upſal. 56. *Henbane with leaves having foot-ſtalks, and flowers ſitting cloſe to the branches.* Hyoſcyamus major, albo ſimilis, umbilico floris virenti. Juſſieu. *Greater Henbane like the white, with a green bottom to the flower.*
4. HYOSCYAMUS (*Minor*) foliis petiolatis, floribus ſolitariis lateralibus. *Henbane with leaves having foot-ſtalks, and flowers proceeding ſingly from the ſides of the branches.* Hyoſcyamus minor albo ſimilis, umbilico floris atro purpureo. Tourn. Cor. 5. *Smaller Henbane like the white, with a dark purple bottom to the flower.*
5. HYOSCYAMUS (*Reticulatis*) foliis caulinis petiolatis cordatis ſinuatis acutis, floribus integerrimis, corollis ventricoſis. Lin. Sp. 257. *Henbane with heart-ſhaped, ſinuated,*

ſinuated, acute leaves upon foot-ſtalks, and entire ſwollen flowers. Hyoſcyamus rubello flore. C. B. P. *Henbane with a reddiſh coloured flower.*

6. Hyoscyamus (*Aureus*) foliis petiolatis eroſo-dentatis acutis, floribus pedunculatis fructibus pendulis. Lin. Sp. 257. *Henbane with acute indented leaves ſtanding on foot-ſtalks, the flower having foot-ſtalks, and the fruit hanging.* Hyoſcyamus Creticus luteus major. C. B. P. *Greater yellow Henbane of Candia.*
7. Hyoscyamus (*Puſillus*) foliis lanceolatis dentatis, floralibus inferioribus binis, calycibus ſpinoſis. Hort. Upſal. 44. *Henbane with ſpear-ſhaped indented leaves, and a prickly empalement.* Hyoſcyamus puſillus aureus Americanus, antirrhini foliis glabris. Pluk. Alm. 188. tab. 37. fol. 5. *Low, golden, American Henbane, with a ſmooth Snapdragon leaf.*

The firſt of theſe ſorts is very common in England, growing upon the ſides of banks and old dunghills almoſt every where. It is a biennial plant with long fleſhy roots, which ſtrike deep into the ground, ſending out ſeveral large ſoft leaves, which are deeply ſlaſhed on their edges, and ſpread on the ground; the following ſpring the ſtalks come out, which riſe about two feet high, garniſhed with leaves of the ſame ſhape, but ſmaller, which embrace the ſtalks with their baſe; the upper part of the ſtalk is garniſhed with flowers ſtanding on one ſide in a double row, ſitting cloſe to the ſtalks alternately; theſe are of a dark purpliſh colour with a black bottom, and are ſucceeded by roundiſh capſules, ſitting within the empalement; theſe open with a lid at the top, and have two cells filled with ſmall irregular ſeeds. This is a very poiſonous plant, and ſhould be rooted out in all places where children are ſuffered to come; for in the year 1729, there were three children poiſoned with eating the ſeeds of this plant, near Tottenham-court; two of which ſlept two days and two nights before they could be awakened, and were with difficulty recovered; but the third being older and ſtronger, eſcaped better.

The roots of this plant are uſed for anodyne necklaces to hang about children's necks, being cut to pieces and ſtrung like beads, to prevent fits and cauſe an eaſy breeding of their teeth, but they are very dangerous to uſe inwardly. For ſome years paſt there was a mixture of theſe roots brought over with Gentian, and uſed as ſuch, which was attended with very bad effects, as hath been mentioned under the article of Gentian, ſo I ſhall not repeat it here.

The ſecond ſort grows naturally in the iſlands of the Archipelago. This hath rounder leaves, which are obtuſely ſituated upon their borders, and ſtand upon foot-ſtalks; the ſtalks branch more than thoſe of the firſt, and the flowers grow in cluſters toward the end of the branches, ſtanding upon ſhort foot-ſtalks; they are of a pale yellow colour, with very dark purple bottoms.

The third ſort is much like the ſecond, but the flowers are in larger bunches, ſitting very cloſe on the ends of the branches; they are of a greeniſh yellow colour, with green bottoms. It grows naturally in the warm parts of Europe, and is the ſort whoſe ſeeds ſhould be uſed in medicine, being the white Henbane of the ſhops.

The fourth ſort was brought from the Levant by Dr. Tournefort. This hath a ſmaller ſtalk than either of the former, whoſe joints are further diſtant; the leaves are roundiſh, and deeply indented in obtuſe ſegments, ſtanding upon pretty long foot-ſtalks; the flowers come out ſingly from the ſide of the ſtalks, at a good diſtance from each other; they are of a yellow colour with dark bottoms.

The fifth ſort grows naturally in Syria; this riſes with a branching ſtalk two feet high, garniſhed with long ſpear-ſhaped leaves having foot-ſtalks; the lower leaves are regularly cut on both ſides into acute ſegments which are oppoſite, ſo are ſhaped like the winged leaves; but the upper leaves are entire; the flowers grow at the end of the ſtalks in bunches; they are of a worn-out red colour, and ſhaped like thoſe of the common ſort, but their tubes are ſwollen.

All theſe are biennial plants, which periſh ſoon after they have perfected their ſeeds. They flower in June and July, and their ſeeds ripen in the autumn, which, if permitted to ſcatter, will produce plenty of the plants the following ſpring; or if the ſeeds are ſown at that ſeaſon, they will ſucceed much better than in the ſpring; for when they are ſown in ſpring, the plants ſeldom come up the ſame year. They are all hardy except the fifth ſort, and require no other culture but to keep them clean from weeds, and thin the plants where they are too cloſe. The fifth ſort ſhould have a warm ſituation and a dry ſoil, in which it will live much better through the winter than in rich ground.

The ſixth ſort grows naturally in Candia; this is a perennial plant with weak ſtalks, which require a ſupport; the leaves are roundiſh, and acutely indented on their edges, ſtanding upon pretty long foot-ſtalks; the flowers come out at each joint of the ſtalk; they are large, of a bright yellow, with a dark purple bottom; the ſtyle of this ſort is much longer than the petal. It flowers moſt part of ſummer, and ſometimes ripens ſeeds in the autumn. If theſe ſeeds are ſown in pots as ſoon as they are ripe, and placed under a hot-bed frame in winter, the plants will come up in the ſpring; but if they are kept out of the ground till ſpring, they rarely ſucceed. This ſort will continue ſeveral years, if they are kept in pots and ſheltered in winter, for they will not live in the open air at that ſeaſon, but it only requires to be protected from froſt; therefore if theſe plants are placed under a common hot-bed in winter, where they may enjoy as much free air as poſſible in mild weather, they will thrive better than when they are more tenderly treated. This ſort may be eaſily propagated by cuttings, which, if planted in a ſhady border during any of the ſummer months, will take root in a month or ſix weeks, and may be afterward planted in pots, and treated like the old plants.

HYPECOUM. Tourn. Inſt. R. H. 230. tab. 115. Hypecoum; Lin. Gen. Plant. 157. We have no Engliſh name for this plant.

The Characters are,

The empalement of the flower is compoſed of two ſmall oval leaves, which are oppoſite and erect. The flower hath four petals; the two outer which are oppoſite, are broad, and divided into three obtuſe lobes; the two other which are alternate, are cut into three parts at their points. It hath four ſtamina ſituated between the petals, which are terminated by oblong ſummits. In the center is placed an oblong cylindrical germen, ſupporting two ſhort ſtyles, crowned by acute ſtigma. The germen afterward becomes a long, compreſſed, jointed pod, which is incurved, with one roundiſh compreſſed ſeed in each joint.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourth claſs, which contains the plants whoſe flowers have four ſtamina and two ſtyles.

The Species are,

1. Hypecoum (*Procumbens*) ſiliquis arcuatis compreſſis articulatis. Hort. Upſal. 31. *Hypecoum with compreſſed jointed pods bent inward.* Hypecoum latiore folio. Tourn. *Broad-leaved Hypecoum.*
2. Hypecoum (*Pendulum*) ſiliquis cernuis teretibus cylyndricis. Hort. Upſal. 31. *Hypecoum with taper, cylindrical, nodding pods.* Hypecoum tenuiore folio. Tourn. *Narrow-leaved Hypecoum.*
3. Hypecoum (*Erectum*) ſiliquis erectis teretibus toruloſis. Hort. Upſal. 32. *Hypecoum with taper, erect, wreathed pods.* Hypecoum ſiliquis erectis teretibus. Amm. Ruth. 58. *Hypecoum with erect taper pods.*

The firſt ſort hath many wing-pointed leaves of a grayiſh colour, which ſpread near the ground, and ſlender branching ſtalks, which lie proſtrate on the ſurface of the ground; theſe are naked below, and at the top are garniſhed with two or three ſmall leaves of the ſame ſhape and colour with the under ones; from between theſe leaves come out the foot-ſtalks of the flower, each ſuſtaining one yellow flower with four petals,

petals, and a pointal ſtretched out beyond the petals, which afterward turns to a jointed compreſſed pod about three inches long, which bends inward like a bow, having one roundiſh compreſſed ſeed in each joint. This flowers in June and July, and the ſeeds ripen in Auguſt.

The ſecond ſort hath ſlender ſtalks which ſtand more erect, and the ſegments of the leaves are longer and much narrower than thoſe of the firſt; the flowers are ſmaller, and come out at the diviſion of the branches; theſe are ſucceeded by narrow taper pods, which hang downward. It flowers and ſeeds at the ſame time with the firſt.

The third ſort grows in the eaſt; Dr. Amman received the ſeeds from Dauria, and I received the ſeeds from Iſtria, where it was found growing naturally. This hath much the appearance of the ſecond ſort in leaf and flower, but the pods grow erect, and are wreathed and twiſted about. It flowers and ſeeds at the ſame time with the others.

Theſe plants are all of them annual, ſo their ſeeds ſhould be ſown ſoon after they are ripe, otherwiſe it will be a year before the plants will appear, on a bed of light freſh earth where they are to remain, for they ſeldom ſucceed if they are tranſplanted. When the plants are come up, they ſhould be carefully cleared from weeds; and where the plants are too cloſe, they muſt be thinned, leaving them about ſix or eight inches apart; after this they will require no other culture, but to keep them conſtantly clear from weeds. In June theſe plants will flower, and their ſeeds will be ripe in Auguſt.

When the ſeeds are ſown in the ſpring, and the ſeaſon proves dry, the ſeeds will not grow the firſt year; but if the ground is kept clear from weeds and not diſturbed, the plants will come up the following ſpring. I have known the ſeeds of theſe plants remain in the ground two years, and the plants have come up the third ſpring very well; ſo that it will be very proper to ſow ſome of the ſeeds in autumn, ſoon after they are ripe, in a warm border, where the plants may come up early the following ſpring; and theſe will be ſtronger, and more likely to perfect ſeeds, than thoſe ſown in the ſpring, by which method the kinds may be preſerved.

If the ſeeds of theſe plants are permitted to ſcatter, the plants will come up the following ſpring without any care; and if they are treated in the ſame way as the others, they will thrive equally; but when the ſeeds are ſown in the ſpring, they ſhould be taken out of the pods, and diveſted of their fungous covering, which adheres cloſe to them, ſo prevents their growing, till that is rotted and decayed.

Theſe plants are ſeldom propagated but by thoſe who are curious in botany, though for the ſake of variety they may have a place in large gardens, becauſe they require very little trouble to cultivate them; and as they take up but little room, ſo they may be intermixed with other ſmall annual plants in large borders, where they will make a pretty appearance.

The juice of theſe plants is of a yellow colour, reſembling that of Celandine, and is affirmed by ſome eminent phyſicians to have the ſame effect as opium.

HYPERICUM. Tourn. Inſt. R. H. 254. tab. 131. Lin. Gen. Plant. 808. St. Johnſwort; in French, *Millepertuis*.

The CHARACTERS are,

The flower hath a permanent empalement, divided into five oval concave ſegments; it hath five oblong oval petals which ſpread open, and a great number of hairy ſtamina, which are joined at their baſe in three or five diſtinct bodies, terminated by ſmall ſummits. It hath in the center a roundiſh germen, ſupporting one, three, or five ſtyles, the ſame length of the ſtamina, crowned by ſingle ſtigmas. The germen afterward becomes a roundiſh capſule, having the ſame number of cells as there are ſtyles in the flower, which are filled with oblong ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's eighteenth claſs, intitled Polyadelphia Polygynia, which contains the plants whoſe flowers have many ſtamina joined in diſtinct bodies, and ſeveral ſtyles.

The SPECIES are,

1. HYPERICUM (*Perfoliatum*) floribus trigynis, caule ancipiti, foliis obtuſis pellucido-punctatis. Hort. Cliff. 383. *St. Johnſwort with three ſtyles to the flower, and obtuſe leaves having pellucid punctures.* Hypericum vulgare. C. B. P. 279. *Common St. Johnſwort.*
2. HYPERICUM (*Quadrangulum*) floribus trigynis, caule quadrato herbaceo. Hort. Cliff. 380. *St. Johnſwort with three ſtyles to the flowers, and a ſquare herbaceous ſtalk.* Hypericum Aſcyron dictum, caule quadrangulo. J. B. 3. p. 382. *St. Johnſwort with a ſquare ſtalk, commonly called St. Peterſwort.*
3. HYPERICUM (*Hircinum*) floribus trigynis, ſtaminibus corollâ longioribus, caule fruticoſo ancipiti. Hort. Cliff. 331. *St. Johnſwort with three ſtyles to the flower, ſtamina longer than the petals, and a ſhrubby ſtalk with two ſides.* Hypericum fœtidum fruteſcens. Tourn. 255. *Stinking ſhrubby St. Johnſwort.*
4. HYPERICUM floribus trigynis, calycibus obtuſis, ſtaminibus corollâ longioribus caule fruticoſo. Hort. Cliff. 381. *St. Johnſwort with three ſtyles to the flower, obtuſe empalements, ſtamina longer than the petals, and a ſhrubby ſtalk.* Hypericum fruteſcens Canarienſe multiflorum. Hort. Amſt. 2. p. 135. *Shrubby St. Johnſwort from the Canaries, having many flowers.*
5. HYPERICUM (*Olympicum*) floribus trigynis, calycibus acutis, ſtaminibus corollâ brevioribus, caule fruticoſo. Hort. Cliff. 380. *St. Johnſwort with three ſtyles to the flower, acute empalements, ſtamina ſhorter than the petals, and a ſhrubby ſtalk.* Hypericum Orientale, flore magno. T. Cor. 19. *Eaſtern St. Johnſwort, with a large flower.*
6. HYPERICUM (*Inodorum*) floribus trigynis, calycibus obtuſis, ſtaminibus corollâ longioribus, capſulis coloratis, caule fruticoſo. *St. Johnſwort with three ſtyles to the flower, obtuſe empalements, ſtamina longer than the petals, coloured ſeed-veſſels, and a ſhrubby ſtalk.* Hypericum Orientale, fœtido ſimile, ſed inodorum. Tourn. Cor. 19. *Eaſtern St. Johnſwort, like the ſtinking kind, but without ſmell.*
7. HYPERICUM (*Aſcyron*) floribus pentagynis, caule tetragono herbaceo ſimplici, foliis lævibus integerrimis. Hort. Upſal. 236. *St. Johnſwort with five ſtyles to the flower, a ſquare, ſingle, herbaceous ſtalk, and ſmooth entire leaves.* Aſcyrum magno flore. C. B. P. 280. *Tutſan with a large flower.*
8. HYPERICUM (*Balearicum*) floribus pentagynis, caule fruticoſo, foliis ramiſque cicatriſatis. Lin. Sp. Plant. 783. *St. Johnſwort with five ſtyles to the flower, a ſhrubby ſtalk, and ſcarified leaves and branches.* Aſcyron Balearicum, fruteſcens, maximo flore luteo, foliis minoribus, ſubtus verrucoſis ſalvad. Boerh. Ind. alt. 1. 242. *Shrubby Balearick St. Peterſwort with a large yellow flower, and ſmaller leaves warted on their under ſide.*
9. HYPERICUM (*Androſæmum*) floribus trigynis pericarpiis baccatis, caule fruticoſo ancipiti. Hort. Upſal. 237. *St. Johnſwort with three ſtyles to the flower, a fleſhy ſeed-veſſel, and a ſhrubby ſtalk with two ſides.* Androſæmum maximum fruteſcens. C. B. P. 280. *Common Tutſan, or Park-leaves.*
10. HYPERICUM (*Bartramium*) floribus pentagynis calycibus obtuſis, ſtaminibus corollâ æquantibus, caule erecto herbaceo. *St. Johnſwort with five ſtyles to the flower, obtuſe empalements, ſtamina equalling the petals, and an erect herbaceeus ſtalk.*
11. HYPERICUM (*Monogynum*) floribus monogynis, ſtaminibus corollâ longioribus, calycibus coloratis, caule fruticoſo. *St. Johnſwort with one ſtyle to the flowers, ſtamina longer than the petals, coloured empalements, and a ſhrubby ſtalk.*

There are ſome other ſpecies of this genus, which are preſerved in botanic gardens for the ſake of variety, but as they are ſeldom admitted into other gardens, I have not enumerated them here, leſt the work ſhould ſwell too large.

The

The firſt and ſecond ſorts are both very common plants, growing in the fields in moſt parts of England; the firſt is uſed in medicine, but the ſecond is of no uſe: theſe are rarely propagated in gardens, but I chuſe to mention them, in order to introduce the other ſorts, which deſerve a place in every good garden.

The firſt ſort hath a perennial root, from which ariſe ſeveral round ſtalks a foot and a half high, dividing into many ſmall branches, which are garniſhed at each joint with two ſmall oblong leaves, ſtanding oppoſite, without foot-ſtalks; the branches alſo come out oppoſite. The leaves have many pellucid ſpots in them, which appear like ſo many holes when held up againſt the light. The flowers are numerous on the tops of the branches, ſtanding on ſlender foot-ſtalks; they are compoſed of five oval petals, of a yellow colour, with a great number of ſtamina, not quite ſo long as the petals, terminated by roundiſh ſummits. In the center is ſituated a roundiſh germen, ſupporting three ſtyles, crowned by ſingle ſtigmas. The germen afterward becomes an oblong angular capſule, with three cells, filled with ſmall brown ſeeds. It flowers in June and July, and the ſeeds ripen in autumn. The root is perennial, ſo will continue many years; and if the ſeeds are permitted to ſcatter, the plants will come up in too great plenty, ſo as to be very troubleſome weeds. The leaves and flowers of this are uſed in medicine; it is eſteemed an excellent vulnerary plant, and of great ſervice in wounds, bruiſes, and contuſions: there is a compound oil made from this plant, which is of great uſe in the foregoing accidents. From the ſtamina of the flower is expreſſed a red juice, which is ſometimes uſed in colouring, but fades very ſoon.

The ſecond ſort hath ſquare ſtalks, which riſe about the ſame height with the firſt, but do not branch ſo much. The leaves are ſhorter and broader than thoſe of the firſt, and have no pellucid ſpots. The flowers ſit upon ſhort foot-ſtalks at the end of the branches, which are ſhaped like thoſe of the other. This flowers and ſeeds at the ſame time with the other, and will propagate in as great plenty if the ſeeds are permitted to ſcatter.

The third ſort grows naturally in Sicily, Spain, and Portugal; this riſes with ſhrubby ſtalks about three feet high, ſending out ſmall branches at each joint oppoſite, which are garniſhed with oblong oval leaves, placed by pairs, ſitting cloſe to the ſtalks, which have a rank ſmell like a goat. The flowers are produced in cluſters at the end of the branches; they are compoſed of five oval yellow petals, with a great number of ſtamina which are longer than the petals, and three ſtyles which are longer than the ſtamina. The germen which ſupports theſe, afterward becomes an oval capſule with three cells, filled with ſmall ſeeds. It flowers in June, July, and Auguſt, and the ſeeds ripen in autumn.

The fourth ſort grows naturally in the Canary Iſlands, ſo was formerly preſerved in green-houſes during the winter ſeaſon, but is found to be hardy enough to reſiſt the greateſt cold of this country, ſo is now cultivated in the nurſeries as a flowering ſhrub; this riſes with a ſhrubby ſtalk ſix or ſeven feet high, dividing into branches upward, which are garniſhed with oblong leaves, ſet by pairs cloſe to the branches. The leaves of this have alſo a ſtrong odour, but not quite ſo bad as the former. The flowers are produced at the end of the ſtalks in cluſters, and are very like thoſe of the former ſort, having a great number of ſtamina which are longer than the petals; this flowers at the ſame time with the former, and perfects its ſeeds in autumn. Both theſe plants have a very ſtrong odour like that of a goat; ſo that where the plants grow in large quantities, the ſcent is carried by the wind to a great diſtance; or if the leaves are handled, they emit the ſame odour.

Theſe two ſorts are propagated by ſuckers, which are plentifully ſent forth from the old plants. The beſt ſeaſon for taking off the ſuckers is in March, juſt before they begin to ſhoot; they ſhould be planted in a light dry ſoil, in which they will endure the ſevereſt cold of our climate very well. They may alſo be propagated by cuttings, which ſhould be planted at the ſame ſeaſon; or by ſeeds, which muſt be ſown in Auguſt or September, which is as ſoon as they are ripe; for if they are kept till ſpring, few of them will grow; but as they multiply ſo faſt by ſuckers, the other methods of propagating them are ſeldom practiſed in England.

The fifth ſort grows naturally on Mount Olympus, where it was diſcovered by Sir George Wheeler, who ſent the ſeeds to the Oxford garden; this riſes with many upright ligneous ſtalks about a foot high, garniſhed with ſmall ſpear-ſhaped leaves, ſitting cloſe to the ſtalks oppoſite. The flowers are produced at the the top of the ſtalks, three or four together; they are compoſed of five oblong petals, of a bright yellow colour, with a great number of ſtamina, which are of unequal lengths, ſome being longer, and others ſhorter than the petals, terminated by ſmall roundiſh ſummits. In the center is ſituated an oval germen, ſupporting three ſlender ſtyles, which are longer than the ſtamina. The germen afterward becomes an oval capſule with three cells, filled with ſmall ſeeds. This flowers in July and Auguſt, and in warm ſeaſons ripens its ſeeds in autumn.

This plant is uſually propagated by parting of the roots, becauſe the ſeeds ſeldom ripen in this country; the beſt time for doing of this is in September, that the plants may have time to get root before winter; this will live in the open air, if it is planted in a warm ſituation and a dry ſoil, but it will be proper to keep a plant or two in pots, to be ſheltered under a frame in winter, leſt in very ſevere winters, thoſe in the open air ſhould be deſtroyed. If this is propagated by ſeeds, they ſhould be ſown ſoon after they are ripe, in pots filled with light earth, and placed under a frame in the winter, to ſhelter them from froſt, and in the ſpring the plants will appear; when theſe are fit to remove, ſome of them may be planted in a warm border, and others in pots, and treated in the ſame way as the old plants.

The ſixth ſort riſes with a ſhrubby ſtalk ſeven or eight feet high, with a reddiſh bark, and ſends out many ſmaller branches, garniſhed with oval heart-ſhaped leaves, whoſe baſe ſits cloſe to the ſtalks; they are placed oppoſite. The flowers are produced at the end of the ſtalks in cluſters; they are ſmaller than thoſe of the third ſort, and have obtuſe empalements. The ſtamina are longer than the petals, and are of a deeper colour. The flowers are ſucceeded by conical capſules of a purpliſh red colour, having three cells, filled with ſmall ſeeds. It flowers in May, June, and July, and the ſeeds ripen in autumn. This is now propagated in the nurſeries as a flowering ſhrub, and may be treated in the ſame way as the third and fourth ſorts.

The ſeventh ſort was firſt brought to England from Conſtantinople, but has long been very common in the Engliſh gardens, for the roots ſpread and increaſe very faſt, where it is permitted to ſtand long unremoved. The ſtalks of this are ſlender, and incline downward; they are garniſhed with oval, ſpear-ſhaped, ſmooth leaves, placed by pairs, ſitting cloſe to the ſtalks. The flowers are produced at the end of the ſtalks; theſe are very large, and of a bright yellow colour, with a great number of ſtamina, which ſtand out beyond the petals; there are five ſtyles in each flower, which are of the ſame length with the ſtamina. The flowers are ſucceeded by pyramidal ſeed-veſſels with five cells, containing many ſmall ſeeds. It flowers in June and July.

This plant is eaſily propagated by parting of the root; the beſt time for this is in October, that the plants may be well eſtabliſhed before the drought of ſpring, otherwiſe they will not produce many flowers. As this will grow under trees, ſo it is a very proper plant to place under ſhrubs and trees to cover the ground, where they will make a good appearance during the ſeaſon of their flowering.

The eighth ſort grows naturally in the iſland of Minorca, from whence the ſeeds were ſent to England, by Mr. Salvador, an apothecary at Barcelona, in the year 1718; this riſes with a ſlender ſhrubby ſtalk in this country about two feet high, but in its native ſoil riſes ſeven or eight feet high, ſending out ſeveral weak branches of a reddiſh colour, which are marked where the leaves have fallen off with a cicatrice. The leaves are ſmall, oval, and waved on their edges, having ſeveral ſmall protuberances on their under ſide, ſitting cloſe to the ſtalks, half embracing them with their baſe. The flowers are produced at the top of the ſtalks; they are large, of a bright yellow colour, with a great number of ſtamina, which are a little ſhorter than the petals; theſe flowers have five ſtyles, and are ſucceeded by pyramidal capſules with five cells, which have a ſtrong ſmell of turpentine, and are filled with ſmall brown ſeeds: this plant has a ſucceſſion of flowers great part of the year, which renders it valuable; it is too tender to live through the winter in the open air in England, but requires no artificial heat: if the plants are placed in a dry airy glaſs-caſe in winter, where they may be protected from froſt, and enjoy a good ſhare of freſh air in mild weather, they will thrive better than in a warmer ſituation; but they muſt by no means be placed in a damp air, for their ſhoots ſoon grow mouldy and decay with damp, nor ſhould the plants have much water during the winter; but in ſummer they ſhould be expoſed in the open air, and in warm weather they ſhould be gently watered three times a week; they ſhould have a looſe ſandy ſoil, not over rich. This is propagated by cuttings, which ſhould be planted in June, in pots filled with light earth, and plunged into a very moderate hot-bed, whoſe heat is declining, ſhading them from the ſun in the heat of the day, and now and then refreſhing them with water; theſe cuttings, ſo managed, will put out roots in ſix or ſeven weeks, when they ſhould be carefully taken up, and each planted into a ſeparate ſmall pot, placing them in the ſhade till they have taken new root; then they may be removed to a ſheltered ſituation, where they may remain till the froſt comes, when they ſhould be removed into ſhelter.

If theſe are propagated by ſeeds, they ſhould be ſown in autumn, in the ſame way as is before directed for the fifth ſort, and the plants treated in the ſame manners as thoſe raiſed from cuttings.

The ninth ſort is the common Tutſan, or Park-leaves, which is ſometimes uſed in medicine. It grows naturally in woods in ſeveral parts of England, ſo is not often admitted into gardens; this hath a ſhrubby ſtalk, which riſes two feet high, ſending out ſome ſmall branches toward the top; theſe, and alſo the ſtalks, are garniſhed with oval heart-ſhaped leaves, ſitting cloſe to them with their baſe, they are placed by pairs at every joint. The flowers are produced in ſmall cluſters at the end of the ſtalk; theſe are yellow, but ſmaller than either of the ſorts here mentioned; they have many long ſtamina, which ſtand out beyond the flower, and three ſtyles. The germen afterward turns to a roundiſh fruit, covered with a moiſt pulp, which, when ripe, is black. The capſule has three cells, containing ſmall ſeeds. It flowers in June, and the ſeeds are ripe in autumn. It hath a perennial root, and may be propagated by parting it in autumn; it loves ſhade and a ſtrong ſoil.

The tenth ſort grows naturally in North America; this riſes with an upright herbaceous ſtalk three feet and a half high, ſending out ſeveral ſmall branches upward, which come out oppoſite, and are garniſhed with oblong leaves placed oppoſite, which half embrace the ſtalk with their baſe. At the end of each ſtalk is produced one pretty large yellow flower, with an obtuſe empalement, having many ſtamina, which are equal in length with the petals, and five ſtyles which are ſo cloſely joined as to appear but one. The ſtigmas are reflexed, which denote their number. This ſort ſeldom ripens ſeeds here, ſo is propagated by parting the roots. The beſt time for this is in autumn; it ſhould have a light ſoil and an open ſituation. The flowers appear the latter end of July, and in Auguſt.

The eleventh ſort grows naturally in China, from whence the ſeeds were brought to the Right Hon. the Earl of Northumberland, and the plants were raiſed in his Lordſhip's curious garden at Stanwick, and by his Lordſhip's generoſity the Chelſea garden was furniſhed with this plant.

The root of this plant is compoſed of many ligneous fibres, which ſtrike deep in the ground; from which ariſe ſeveral ſhrubby ſtalks near two feet high, covered with a purpliſh bark, and garniſhed with ſtiff ſmooth leaves about two inches long, and a quarter of an inch broad, placed by pairs, ſitting cloſe to the ſtalk; they are of a lucid green on their upper ſide, and gray on their under, having many tranſverſe veins running from the midrib to the border. The flowers are produced at the top of the ſtalks, growing in ſmall cluſters, each ſtanding upon a ſhort diſtinct foot-ſtalk; theſe have an empalement of one leaf, divided into five obtuſe ſegments almoſt to the bottom, which is of a deep purple colour. The flower is compoſed of five large obtuſe petals, of a bright yellow colour; theſe are concave, and in the center is ſituated an oval germen ſupporting a ſingle ſtyle, crowned by five ſlender ſtigmas, which bend on one ſide; the ſtyle is attended by a great number of ſtamina which are longer than the petals, and terminated by roundiſh ſummits.

This plant continues in flower great part of the year, which renders it the more valuable; and if it is planted in a very warm ſituation, it will live in the open air; but thoſe plants which ſtand abroad will not flower in winter, as thoſe do which are removed into ſhelter in autumn.

It may be propagated by ſlips from the root, or by laying down of the branches; if by ſlips, they ſhould be planted in the ſpring on a moderate hot-bed, which will forward their putting out new roots; the layers ſhould alſo be laid down at the ſame time, which will have taken root by autumn, when they may be tranſplanted into pots, and ſheltered under a frame in winter; and in the ſpring, part of theſe may be planted in a warm border, and the others continued in pots to be ſcreened in winter, leſt thoſe in the open air ſhould be killed.

HYPERICUM FRUTEX. See SPIRÆA.

HYPOCHÆRIS, a ſort of Hawkweed, of which there are two or three ſpecies, which grow naturally in England; the others are ſeldom admitted into gardens, therefore I ſhall not enumerate them.

HYPOPHYLLOSPERMOUS PLANTS [of ὑπὸ, under, φύλλον, a leaf, and σπέρμα, ſeed,] are ſuch plants as bear their ſeeds on the backſides of their leaves.

HYSSOPUS. Tourn. Inſt. R. H. 200. tab. 95. Lin. Gen. Plant. 628. [takes its name from the Hebrew word אזוב, in which language Hyſſop ſignifies a holy herb, or for purging or cleanſing ſacred places, as it is ſaid in the Pſalms, Purge me with Hyſſop. But what plant the Hyſſop of the antients was, is not known, but that it ſeems to have been a low plant, becauſe Solomon is ſaid to have deſcribed the plants from the Cedar to the Hyſſop.] Hyſſop; in French, *Hiſope*.

The CHARACTERS are,

The empalement of the flower is oblong, cylindrical, ſtreaked, and permanent. It is of one leaf, cut into five acute parts at the top. The flower is of one petal, of the grinning kind, with a narrow cylindrical tube the length of the empalement. The chaps are inclining. The upper lip is ſhort, plain, roundiſh, erect, and indented at the top. The under lip is trifid, the two ſide ſegments being ſhorter than the middle one, which is crenated. It hath four ſtamina, which ſtand apart; two of them are longer than the petal, the other two are ſhorter, terminated by ſingle ſummits. It hath four germen, with a ſingle ſtyle

ſituated under the upper lip, crowned by a bifid ſtigma. The germen afterward becomes ſo many oval ſeeds ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, intitled Didynamia Gymnoſpermia, which contains thoſe plants whoſe flowers have two long and two ſhort ſtamina, and are ſucceeded by naked ſeeds in the empalement.

The SPECIES are,

1. HYSSOPUS (*Officinalis*) ſpicis fecundis. Hort. Cliff. 304. *Hyſſop with fruitful ſpikes.* Hyſſopus officinarum cœrulea ſeu ſpicata. C. B. P. 217. *Hyſſop of the ſhops with blue ſpikes, or the common Hyſſop.*
2. HYSSOPUS (*Rubra*) ſpicis brevioribus, verticillis compactis. *Hyſſop with ſhorter ſpikes, and whorls more compact.* Hyſſopus rubro flore. C. B. P. 217. *Hyſſop with a red flower.*
3. HYSSOPUS (*Altiſſimis*) ſpicis longiſſimis verticillis diſtantibus. *Hyſſop with the longeſt ſpikes, and whorls at a greater diſtance.* Hyſſopus verticillis florum rarioribus. Houſt. *Hyſſop with the whorls of flowers thinly ranged.*
4. HYSSOPUS (*Nepetoides*) caule acuto quadrangulo. Hort. Upſal. 163. *Hyſſop with an acute ſquare ſtalk.* Sideritis Canadenſis altiſſima, ſcrophulariæ folio, flore flaveſcente. Tourn. Inſt. 192. *Talleſt Canada Ironwort, with a Figwort leaf and a yellowiſh flower.*
5. HYSSOPUS (*Lophanthus*) corollis ſubreſupinatis ſtaminibus corollâ brevioribus. Hort. Upſal. 162. *Hyſſop with tranſverſe petals, and the lower ſtamina ſhorter than the petal.* Nepeta floribus obliquis. Dill. *Catmint with oblique flowers.*

The firſt ſort, which is the only one cultivated for uſe, grows a foot and a half high. The ſtalks are firſt ſquare, but afterward become round; their lower parts are garniſhed with ſmall ſpear-ſhaped leaves placed oppoſite, without foot-ſtalks, and ſeven or eight very narrow erect leaves (or bractæa) riſing from the ſame joint. The upper part of the ſtalk is garniſhed with whorls of flowers, the lower ones ſtanding half an inch apart, but the upper are almoſt joined together. The upper lip of the flower is indented at the top, and the under is cut into three parts, the middle being deeply indented at the point. There are four ſtamina in each flower, which ſpread at a diſtance from each other; the two upper are the ſhorteſt, which are ſituated on each ſide the upper lip; the two longer ſtand cloſe to the two ſide ſegments, and are terminated by twin ſummits. At the bottom of the tube are ſituated four naked germen, ſupporting a ſlender ſtyle, ſitting cloſe to the upper lip, crowned by a bifid ſtigma; theſe germen afterward become four oblong black ſeeds, ſitting in the empalement. The whole plant has a ſtrong aromatic ſcent. It flowers in July and Auguſt, and the ſeeds ripen in September, but the roots will abide many years; it grows naturally in the Levant. There is a variety of this with white flowers, but doth not differ from the blue in any other particular.

The ſecond ſort doth not grow ſo tall as the firſt; the ſtalks branch more, and the ſpikes of flowers are much ſhorter than thoſe of the firſt. The whorls are cloſer together, and have long narrow leaves ſituated under each. The flowers are of a fine red colour, and appear at the ſame time with the former. This ſort is not quite ſo hardy as the common, for in 1739 the plants were all deſtroyed by the cold; this is certainly a diſtinct ſpecies, for I cultivated it from ſeeds twenty years, and never obſerved it to vary.

The third ſort grows much taller than either of the other. The leaves are narrower, the whorls of flowers are farther aſunder, the ſpikes of flowers are much longer, the flowers are larger, and of a deeper blue than thoſe of the common ſort, and the plant hath not ſo ſtrong an odour. It flowers at the ſame time as the firſt.

Theſe three ſorts of Hyſſop are propagated either by ſeeds or cuttings; if by the ſeeds, they muſt be ſown in March, upon a bed of light ſandy ſoil; and when the plants come up, they ſhould be tranſplanted out to the places where they are to remain, placing them at leaſt a foot aſunder each way; but if they are deſigned to abide in thoſe places for a long time, two feet diſtance will be ſmall enough, for they grow pretty large, eſpecially if they are not frequently cut, to keep them within compaſs; they thrive beſt upon a poor dry ſoil, in which ſituation they will endure the cold of our climate better than when they are planted on a richer ſoil. If you would propagate them by cuttings, they ſhould be planted in April or May, in a border where they may be defended from the violent heat of the ſun; and being frequently watered, they will take root in about two months; after which, they may be tranſplanted where they are to continue, managing them as was before directed for the ſeedling plants.

The firſt ſort was formerly more cultivated than at preſent in England, that being the ſort commonly uſed in medicine. The other ſpecies are preſerved in curious gardens for their variety, but they are ſeldom cultivated for uſe.

They are very hardy plants, which will endure the cold of our winters in the open air, provided they are planted in a dry undunged ſoil; for when they are planted in a rich ſoil, they grow very luxuriant in ſummer, and are leſs able to reſiſt the cold in winter; ſo that when any of theſe plants grow out of the joints of old walls, (as they frequently do) they will reſiſt the moſt ſevere froſt, and will be much more aromatic than thoſe which grow in a rich ſoil.

The fourth ſort grows naturally in North America; this hath a perennial root and an annual ſtalk, which decays in autumn. It riſes with an upright ſquare ſtalk near four feet high, garniſhed with oblique heart-ſhaped leaves, which are ſawed on their edges, and end in acute points; they are placed oppoſite on ſhort foot-ſtalks. The flowers grow in cloſe thick ſpikes four or five inches long, at the top of the ſtalks. The upper lip is divided into two roundiſh ſegments, the lower one is divided into three, the two ſide ſegments ſtanding erect, and the middle one is reflexed, and acutely ſawed at the end. The two upper ſtamina, which are ſituated on each ſide the upper lip are the longeſt, the other two ſhorter join the two ſide ſegments of the lower lip; they are terminated by ſmall ſummits. The germen are ſituated at the bottom of the tube, having a ſlender ſtyle under the upper lip, crowned by a bifid ſtigma. The germen afterward becomes four oblong brown ſeeds, ſitting in the tubulous empalement. This ſort flowers in July, and the ſeeds ripen in September.

There is a variety of this ſort with purple ſtalks and purpliſh flowers. The leaves ſtand upon longer foot-ſtalks, and the ſpikes of flowers are thicker, but I cannot ſay if it is a diſtinct ſpecies or only a variety. It grows naturally in the ſame country with the other. It is titled, Betonica maxima, folio ſcrophulariæ, floribus incarnatis, by Herman. Par. Bat. 106.

The fifth ſort grows naturally in Siberia. The ſeeds of this were ſent me from the Imperial garden at Peterſburgh, by the title of Lophanthus, and afterward I received ſome from Holland, which were titled, Nepeta floribus obliquis. Dill. This is a perennial plant with a ſtrong fibrous root, ſending out many ſquare ſtalks, which divide into ſmaller branches, garniſhed with oblong leaves, crenated on their edges, ſet on by pairs. The flowers are produced at each joint in ſmall cluſters, two foot-ſtalks ariſing from the baſe of the leaves, about half an inch long, both inclining to one ſide of the ſtalk; each of theſe foot-ſtalks divide again into two ſmaller, and theſe do each ſupport a cluſter of four or five flowers, which have ſwelling tubulous empalements, cut into five acute ſegments at the top. The tube of the petal is longer than the empalement. The lips of the flower are oblique to it, being ſituated horizontally. The two upper ſtamina and the ſtyle ſtand out beyond the petal, but the other are ſhorter. The flowers are blue, and appear in June and July, and the ſeeds ripen in September.

Both

Both theſe ſorts are very hardy, and may be eaſily propagated by ſeeds, which ſhould be ſown in autumn; for thoſe ſown in the ſpring, often lie a year in the ground before they vegetate; when the plants come up, they muſt be kept clean from weeds, and thinned where they are too cloſe. The following autumn they ſhould be tranſplanted where they are to remain, and the plants will flower in ſummer, and produce ſeeds, but the roots will abide ſome years.

It hath been a great diſpute amongſt modern writers, whether the Hyſſop now commonly known is the ſame which is mentioned in ſcripture; about which there is great room to doubt, there being very little grounds to aſcertain that plant, though it is moſt generally thought to be the Winter Savory, which plant is now in great requeſt amongſt the inhabitants of the eaſtern countries, for outward waſhings or purification.

J.

JACEA. See CENTAUREA.

JACOBÆA. See SENECIO and OTHONNA.

JACQUINIA. Lin. Gen. 254.

The CHARACTERS are,

The empalement of the flower is compoſed of five roundiſh concave leaves, and is permanent. The flower has one bell-ſhaped petal, which is bellied, cut into ten ſegments. It hath five awl-ſhaped ſtamina ariſing from the receptacle, terminated by halbert-ſhaped ſummits, and an oval germen ſupporting a ſtyle the length of the ſtamina, crowned by a headed ſtigma. The germen afterward becomes a roundiſh berry with one cell, containing one ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, the flowers having five ſtamina and one ſtyle.

The SPECIES are,

1. JACQUINIA (*Ruſcifolia*) foliis lanceolatis acuminatis. Jacq. Amer. 15. Lin. Sp. 271. *Jacquinia with ſpear-ſhaped acute-pointed leaves.* Fruticulus foliis ruſci ſtellatis. Hort. Elth.
2. JACQUINIA (*Armillaris*) foliis obtuſis cum acumine. Jacq. Amer. 15. Lin. Sp. 272. *Jacquinia with blunt leaves ending in acute points.* Chryſophyllum Barbaſco. Lœfl. it. 204.
3. JACQUINIA (*Linearis*) foliis linearibus acuminatis. Jacq. Amer. 15. Lin. Sp. 272. *Jacquinia with linear ſharp-pointed leaves.*

The firſt ſort grows naturally in the iſland of Cuba, and in ſome other warm parts of America; it riſes with a ſhrubby ſtalk about a foot high, which is ligneous at the bottom, and about the ſize of a ſwan's quill, covered with a dark brown bark, ſending out a few ſlender branches, garniſhed at intervals with hand-ſhaped ſtiff leaves, placed in whorls round them; theſe are ſtiff like thoſe of Butcher's Broom, ending with ſharp points, of a deep green on their upper ſide, but pale on their under; the flowers are (according to Plumier's figure) produced from between the leaves on the top of the branches; but having ſeen no flowers in England, ſo I can give no farther account of them.

The ſecond ſort grows naturally at Carthagena, Martinico, and other parts of South America, where it riſes with a ſhrubby ſtalk four or five feet high, dividing toward the top into four branches, which are ſituated in whorls round the principal ſtalk, garniſhed with oblong blunt leaves, placed alſo in whorls, having a ſhort ſlender apex. The flowers are produced in a racemus on the end of the branches, each containing five or ſix white flowers of a thick conſiſtence, which have a ſcent like Jaſmine flowers, which they retain after they decay, ſo are worn by the ladies of thoſe countries for ornament.

The third ſort grows naturally on the borders of the ſea, in the iſland of Dominica; this is an under-ſhrub, of a very low growth, rarely riſing about two feet high, dividing into ſeveral branches, garniſhed with linear ſtiff leaves, ending with a thorn; theſe are placed in whorls round the branches, and from the middle of the whorls come out the foot-ſtalks of the flowers, each being terminated by one ſmall white flower without ſcent.

As theſe plants are natives of hot countries, ſo they will not live in England, unleſs they are placed in a warm ſtove, and treated in the manner directed for other plants from the ſame countries, giving them little water in winter, and in warm weather plenty of freſh air. They are raiſed from ſeeds, when they can be procured from the countries where they naturally grow; which muſt be ſown on a hot-bed, and may afterward be propagated by cuttings, though it is with difficulty they take root.

JALAPA. See MIRABILIS.

JASIONE. Lin. Gen. Plant. 896. This is the Rapunculus ſcabioſæ capitulo cœruleo. C. B. P. 22. Rampions with Scabious heads. This plant grows naturally on ſterile ground in moſt parts of England, and is rarely admitted into gardens.

JASMINOIDES. See CESTRUM and LYCIUM.

JASMINUM. Tourn. Inſt. R. H. 597. tab. 368. Lin. Gen. Plant. 17. [This name is Arabic.] The Jaſmine, or Jeſſamine-tree; in French, *Jaſmin.*

The CHARACTERS are,

The flower hath a tubulous empalement of one leaf, which is permanent, and cut into five ſegments at the brim, which are erect. The flower is of one petal, having a long cylindrical tube, cut into five ſegments at the top, which ſpread open. It hath two ſhort ſtamina, which are terminated by ſmall ſummits, and are ſituated within the tube of the petal. In the center is ſituated a roundiſh germen, ſupporting a ſlender ſtyle, crowned by a bifid ſtigma. The germen afterward turns to an oval berry, with a ſoft ſkin incloſing two ſeeds, which are flat on thoſe ſides which join, and convex on the other.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, intitled Diandria Monogynia, in which he ranges thoſe plants whoſe flowers have two ſtamina and one ſtyle.

The SPECIES are,

1. JASMINUM (*Officinale*) foliis oppoſitis pinnatis, foliolis acuminatis. *Jaſmine with winged leaves placed oppoſite,*

poſite, whoſe lobes end in acute points. Jaſminum vulgatius, flore albo. C. B. P. 397. *The common white Jaſmine.*

2. JASMINUM (*Humile*) foliis alternis ternatis ſimplicibuſque, ramis angulatis. Hort. Upſal. 5. *Jaſmine with trifoliate winged leaves placed alternate, and angular branches.* Jaſminum humile luteum. C. B. P. 397. *Dwarf yellow Jaſmine, commonly called the Italian yellow Jaſmine.*
3. JASMINUM (*Fruticans*) foliis alternis ternatis ſimplicibuſque, ramis angulatis. Hort. Cliff. 5. *Jaſmine with trifoliate ſingle leaves placed alternate, and angular branches.* Jaſminum luteum, vulgò dictum baccifera. C. B. P. 398. *The common yellow Jaſmine.*
4. JASMINUM (*Grandiflorum*) foliis oppoſitis pinnatis, foliolis brevioribus obtuſis. *Jaſmine with winged leaves placed oppoſite, whoſe lobes are ſhorter and obtuſe.* Jaſminum humilis, magno flore. C. B. P. 398. *The Spaniſh white, or Catalonian Jaſmine with a larger flower.*
5. JASMINUM (*Odoratiſſimum*) foliis alternis ternatis, foliolis ovatis, ramis teretibus. *Jaſmine with trifoliate leaves placed alternate, whoſe lobes are oval, and taper branches.* Jaſminum Indicum flavum odoratiſſimum. Fer. Flor. *The ſweet-ſcented yellow Indian Jaſmine.*
6. JASMINUM (*Azoricum*) foliis oppoſitis ternatis, foliolis cordato-acuminatis. *Jaſmine with trifoliate leaves placed oppoſite, whoſe lobes are heart-ſhaped and pointed.* Jaſminum Azoricum trifoliatum, flore albo, odoratiſſimum. Hort. Amſt. *The three-leaved Azorian Jaſmine, with very ſweet white flowers, commonly called the Ivy-leaved Jaſmine.*
7. JASMINUM (*Capenſe*) foliis lanceolatis oppoſitis integerrimis, floribus triandris. *Jaſmine with ſpear-ſhaped entire leaves placed oppoſite, and flowers with three ſtamina.*

The firſt ſort is the common white Jaſmine, which is a plant ſo generally known as to need no deſcription. This grows naturally at Malabar, and in ſeveral parts of India, yet has been long inured to our climate, ſo as to thrive and flower extremely well, but never produces any fruit in England; this hath weak trailing branches, ſo requires the aſſiſtance of a wall or pale to ſupport them. It is eaſily propagated by laying down the branches, which will take root in one year, and may then be cut from the old plant, and planted where they are deſigned to remain: it may alſo be propagated by cuttings, which ſhould be planted early in the autumn, and if the winter ſhould prove ſevere, the ſurface of the ground between them ſhould be covered with tan, ſea-coal aſhes, or ſaw-duſt, which will prevent the froſt from penetrating deep into the ground, and thereby preſerve the cuttings; or where theſe are wanting, ſome Peas-haulm, or other light covering ſhould be laid over the cuttings in hard froſt; but theſe muſt be removed when the weather is mild, for they will keep off the air and occaſion damps, which often deſtroy them.

When theſe plants are removed, they ſhould be planted where they are deſigned to be continued, which ſhould be either againſt ſome wall, pale, or other fence, where the flexible branches may be ſupported; for although it is ſometimes planted as a ſtandard, and formed into a head, yet it will be very difficult to keep it in any handſome order; or if you do, you muſt cut off all the flowering branches; for the flowers are always produced at the extremity of the ſame year's ſhoots, which, if ſhortened before the flowers are blown, will entirely deprive the trees of flowers. Theſe plants ſhould be permitted to grow rude in the ſummer, for the reaſon before given; nor ſhould you prune and nail them until the middle or latter end of March, when the froſty weather is paſt; for if it ſhould prove ſharp froſty weather after their rude branches are pruned off, and the ſtrong ones are expoſed thereto, they are very often deſtroyed; and this plant being very backward in ſhooting, there will be no danger of hurting them by late pruning.

There are two varieties of this with variegated leaves, one with white, and the other yellow ſtripes, but the latter is the moſt common: theſe are propagated by budding them on the plain Jaſmine, and it often happens, that the buds do not take, but yet they have communicated their gilded miaſma to the plants; ſo that in a ſhort time after, many of the branches both above and below the places where the buds have been inſerted have been thoroughly tinctured; and the following year I have often found very diſtant branches, which had no other communication with thoſe which were budded than by the root, have been as compleatly tinged as any of the nearer branches, ſo that the juices muſt have deſcended into the root.

The two ſtriped ſorts ſhould be planted in a warm ſituation, eſpecially the white ſtriped; for they are much more tender than the plain, and are very ſubject to be deſtroyed by great froſts, if they are expoſed thereto; therefore the white ſtriped ſhould be planted to a ſouth or ſouth-weſt aſpect, and in very ſevere winters their branches ſhould be covered with mats or ſtraw, to prevent their being killed: the yellow ſtriped is not ſo tender, ſo may be planted againſt walls to eaſt or weſt aſpects; but theſe plants with variegated leaves, are not ſo much in eſteem as formerly.

The ſecond ſort is frequently called Italian yellow Jaſmine by the gardeners, the plants being annually brought from thence by thoſe who come over with Orange-trees. Theſe plants are generally grafted upon the common yellow Jaſmine ſtocks, ſo that if the graft decays, the plants are of no value. This ſort is ſomewhat tenderer than the common, yet it will endure the cold of our ordinary winters, if it is planted in a warm ſituation. The flowers of this kind are generally larger than thoſe of the common yellow ſort, but have very little ſcent, and are ſeldom produced ſo early in the ſeaſon. It may be propagated by laying down the tender branches, as was directed for the common white ſort; or by budding or inarching it upon the common yellow Jaſmine, the latter of which is preferable, as making the plants hardier than thoſe which are obtained from layers: they ſhould be planted againſt a warm wall, and in very ſevere winters will require to be ſheltered with mats, or ſome other covering, otherwiſe they are ſubject to be deſtroyed. The manner of dreſſing and pruning being the ſame as was directed for the white Jaſmine, I ſhall not repeat it.

The third ſort was formerly more cultivated in the gardens than at preſent, for as the flowers have no ſcent, ſo few perſons regard them. This hath weak angular branches which require ſupport, and will riſe to the height of eight or ten feet, if planted againſt a wall or pale; but the plants do often produce a great number of ſuckers from their roots, whereby they become troubleſome in the borders of the pleaſure-garden; and as they cannot be kept in any order as ſtandards, ſo there are few of the plants at preſent introduced into gardens. It is eaſily propagated by ſuckers or layers.

The fourth ſort grows naturally in India, and alſo in the iſland of Tobago, where the woods are full of it; the late Mr. Robert Millar ſent me over a great quantity of it from thence. This hath much ſtronger branches than the common white ſort; the leaves are winged, and are compoſed of three pair of ſhort obtuſe lobes, terminated by an odd one, ending in an acute point; theſe lobes are placed cloſer than thoſe of the common Jaſmine, and are of a lighter green; the flowers come out from the wings of the ſtalks, ſtanding on foot-ſtalks which are two inches long, each ſuſtaining three or four flowers, which are of a bluſh red on their outſide, but white within; the tube of the flower is longer, the ſegments are obtuſe, twiſted at the mouth of the tube, and are of a much thicker texture than thoſe of the common ſort, ſo that there is no doubt of its being a diſtinct ſpecies: the reaſon for Dr. Linnæus's ſuppoſing it to be ſo, was by miſtake; for as theſe plants are generally grafted upon ſtocks of the common Jaſmine, ſo there are always ſhoots coming out from the ſtocks of that ſort, which,

if permitted to ſtand, will produce flowers; and theſe often ſtarve and kill the grafts, ſo that there will be only the common ſort left; and this has been the caſe with ſome plants which he examined, therefore ſuppoſed the difference of the other ſort was wholly owing to culture; whereas, if he had only obſerved the difference of their leaves, he would have certainly made two diſtinct ſpecies of them, which he has now done in the laſt edition of his ſpecies.

This plant is propagated by budding or inarching it upon the common white Jaſmine, on which it takes very well, and is rendered hardier than thoſe which are upon their own ſtocks. But the plants of this kind being brought over from Italy every ſpring in ſo great plenty, they are ſeldom raiſed here: I ſhall therefore proceed to the management of ſuch plants as are uſually brought into England from the place above-mentioned, which are generally tied up in ſmall bunches, containing four plants, and their roots wrapped about with moſs, to preſerve them from drying; which, if it happen that the ſhip has a long paſſage, will often occaſion them to puſh out ſtrong ſhoots from their roots, which muſt always be taken off before they are planted, otherwiſe they will exhauſt the whole nouriſhment of the plant, and deſtroy the graft.

In the making choice of theſe plants, you ſhould carefully obſerve if their grafts are alive, and in good health: for if they are brown and ſhrunk, they will not puſh out, ſo that there will be only the ſtock left, which is of the common ſort.

When you receive theſe plants, you muſt clear the roots of the moſs, and all decayed branches ſhould be taken off; then place their roots into a pot or tub of water, which ſhould be ſet in the green-houſe, or ſome other room, where it may be ſcreened from the cold; in this ſituation they may continue two days, after which you muſt prune off all the dry roots, and cut down the branches within four inches of the place where they were grafted, and plant them into pots filled with freſh light earth; then plunge the pots into a moderate hot-bed of tanners bark, obſerving to water and ſhade them, as the heat of the ſeaſon may require. In about a month or ſix weeks after they will begin to ſhoot, when you muſt carefully rub off all ſuch as are produced from the ſtock below the graft; and you muſt now let them have a great ſhare of air, by raiſing the glaſſes in the heat of the day; and as the ſhoots extend, they ſhould be topped, to ſtrengthen them, and by degrees ſhould be hardened to endure the open air, into which they ſhould be removed the beginning of June, but muſt have a warm ſituation the firſt ſummer; for if they are too much expoſed to the winds, they will make but indifferent progreſs, being rendered ſomewhat tender by the hot-bed. If the ſummer proves warm, and the trees have ſucceeded well, they will produce ſome flowers in the autumn following, though they will be few in number, and not near ſo ſtrong as they will be the ſucceeding years, when the trees are ſtronger and have better roots.

Theſe plants are commonly preſerved in green-houſes, with Oranges, Myrtles, &c. and during the winter ſeaſon, will require to be frequently watered; which ſhould be performed ſparingly each time, eſpecially in cold weather, for too much wet at that ſeaſon will be apt to rot the fibres of their roots; they ſhould alſo have a great ſhare of freſh air when the weather, will permit, for which purpoſe they ſhould be placed in the cooleſt part of the green-houſe, among plants that are hardy, where the windows may be opened every day, except in froſty weather; nor ſhould they be crowded too cloſe among other plants, which often occaſions the tender part of their ſhoots to grow mouldy and decay. In April the ſhoots of theſe plants ſhould be ſhortened down to four eyes, and all the weak branches ſhould be cut off; and if you have the conveniency of a glaſs-ſtove, or a deep frame, to place the pots in at that ſeaſon, to draw them out again, it will be of great ſervice in forwarding their flowering; yet ſtill you ſhould be careful not to force them too much; and as ſoon as they have made ſhoots three or four inches long, the glaſſes ſhould be opened in the day time, that the plants may, by degrees, be inured to the open air, into which they ſhould be removed by the latter end of May, or the beginning of June; otherwiſe their flowers will not be ſo fair, nor continue ſo long. If the autumn prove favourable, theſe plants will continue to produce freſh flowers until November; and ſometimes when they are ſtrong, they will continue flowering later; but then they muſt have a great ſhare of air when the weather is mild and will admit of it, otherwiſe the flower-buds will grow mouldy and decay. But notwithſtanding moſt people preſerve theſe plants in green-houſes, yet they will endure the cold of our ordinary winters in the open air, if planted againſt a warm wall, and covered with mats in froſty weather; they will alſo produce ten times as many flowers in one ſeaſon as thoſe kept in pots, and the flowers will likewiſe be much larger; but they ſhould not be planted abroad till they have acquired ſtrength, ſo that it will be neceſſary to keep them in pots three or four years, whereby they may be ſheltered from the froſt in winter; and when they are planted againſt the wall, which ſhould be in May, that they may take good root in the ground before the ſucceeding winter, you muſt turn them out of the pots, preſerving the earth to their roots; and having made holes in the border where they are to be planted, you ſhould place them therein, with their ſtems cloſe to the wall; then fill up the holes round their roots with good, freſh, rich earth, and give them ſome water to ſettle the ground about them, and nail up their ſhoots to the wall, ſhortening ſuch of them as are very long, that they may puſh out new ſhoots below to furniſh the wall, continuing to nail up all the ſhoots as they are produced. In the middle, or toward the latter end of July, they will begin to flower, and continue to produce new flowers until the froſt prevents them; which, when you obſerve, you ſhould carefully cut off all the tops of ſuch ſhoots as have buds formed upon them, as alſo thoſe which have the remains of faded flowers left; for if theſe are ſuffered to remain on, they will ſoon grow mouldy, eſpecially when the trees are covered, and thereby infect many of the tender branches, which will greatly injure the trees.

Toward the middle of November, if the weather proves cold and the nights froſty, you muſt begin to cover your trees with mats, which ſhould be nailed over them pretty cloſe; but this ſhould be done when the trees are perfectly dry, otherwiſe the wet being lodged upon the branches, will often cauſe a mouldineſs upon them, and the air being excluded therefrom, will rot them in a ſhort time: it will alſo be very neceſſary to take off the mats as ſoon as the weather will permit, to prevent this mouldineſs, and only keep them cloſe covered in froſty weather, and in the nights; at which time you ſhould alſo lay ſome mulch upon the ſurface of the ground about their roots, and faſten ſome bands of hay about their ſtems, to guard them from the froſt; and in very ſevere weather, you ſhould add a double or treble covering of mats over the trees; by which method, carefully performed, you may preſerve them through the hardeſt winters. In the ſpring, as the weather is warmer, you ſhould by degrees take off the covering; but you ſhould be careful not to expoſe them too ſoon to the open air, as alſo to guard them againſt the morning froſts and dry eaſterly winds, which often reign in March, to the no ſmall deſtruction of tender plants if they are expoſed thereto; nor ſhould you quite remove your covering until the middle of April, when the ſeaſon is ſettled; at which time you ſhould prune the trees, cutting out all decayed and weak branches, ſhortening the ſtrong ones to about two feet long, which will cauſe them to ſhoot ſtrong, and produce many flowers.

There is a variety of this with ſemi-double flowers, which is at preſent more rare in England, and only to be found in ſome curious gardens; though in Italy it is pretty common, from whence it is ſometimes

brought over amongſt the ſingle; the flowers of this kind have only two rows of leaves, ſo that it is rather cultivated for itscurioſity, than for any extraordinary beauty in the flowers. This may be propagated by budding it upon the common white Jaſmine, as hath been directed for the ſingle, and muſt be treated in the ſame manner.

The fifth ſort grows naturally in India; this riſes with an upright woody ſtalk eight or ten feet high, covered with a brown bark, ſending out ſeveral branches which want no ſupport; theſe are cloſely garniſhed with trifoliate leaves of a lucid green, which are placed alternate on the branches; the two ſide lobes of theſe leaves which grow oppoſite, are much leſs than the end one; they are oval and entire, continuing green all the year: the flowers are produced at the end of the ſhoots in bunches, which have long ſlender tubes, and are divided at the top into five obtuſe ſegments which ſpread open; theſe flowers are of a bright yellow, and have a moſt grateful odour. They come out in July, Auguſt, September, and October, and ſometimes continue to the end of November; they are frequently ſucceeded by oblong oval berries, which turn black when ripe, and have each two ſeeds.

This ſort of Jaſmine is propagated either by ſeeds, or laying down the tender branches; if you would propagate them by ſeeds, which they ſometimes produce in England, you ſhould make a moderate hot-bed in the ſpring, into which you ſhould plunge ſome ſmall pots, filled with freſh light earth; and in a day or two after, when you find the earth in the pots warm, you muſt put your ſeeds therein; about four in each pot will be ſufficient, covering them about an inch thick with the ſame light earth, and obſerve to refreſh the pots with water as often as you ſhall perceive the earth dry; but do not give them too much at each time, which would be apt to rot the ſeeds.

In about ſix or eight weeks after ſowing, the plants will appear above ground, at which time it will be neceſſary to remove the pots into another freſh hot-bed, of a moderate temperature, in order to bring the plants forward; you muſt alſo be careful to water them as often as is neceſſary, and in the great heat of the day the glaſſes ſhould be tilted pretty high, and ſhaded with mats, to prevent the plants from being ſcorched with heat. About the middle of May you ſhould begin to harden them to the open air, by taking off the glaſſes when the weather is warm; but this muſt be done cautiouſly, for you ſhould not expoſe them to the open ſun in a very hot day at firſt, which would greatly injure them; but rather take off the glaſſes in warm cloudy weather at firſt, or in gentle ſhowers of rain, and ſo by degrees inure them to bear the ſun; and in June you ſhould take the pots out of the hot-bed, and carry them to ſome well ſheltered ſituation, where they may remain until the beginning of October; at which time they muſt be carried into the green-houſe, obſerving to place them where they may enjoy as much free air as poſſible when the windows are opened, as alſo to be clear from the branches of other plants.

During the winter ſeaſon they will require to be often watered, but you muſt be careful not to give them too much at each time; and in March you muſt remove theſe plants each into a ſeparate pot, being careful not to take the earth from their roots; and if at this time you plunge them into a freſh moderate hot-bed, it will greatly facilitate their rooting again, and be of great ſervice to the plants; but when they are rooted, you muſt give them a great deal of air; for if you draw them too much, they will become weak in their ſtems, and incapable to ſupport their heads, which is a great defect in theſe trees.

You muſt alſo harden them to the open air, into which they ſhould be removed about the middle of May, obſerving, as was before directed, to place them in a ſituation that is defended from ſtrong winds, which are injurious to theſe plants, eſpecially while they are young. In winter houſe them as before, and continue the ſame care, with which they will thrive very faſt, and produce annually great quantities of flowers.

Theſe plants are pretty hardy, and will require no other care in winter, than only to defend them from hard froſts; nor do I know whether they would not live in the open air, if planted againſt a warm wall, which is what ſhould be tried by planting ſome againſt a wall for that purpoſe; and I think we have little reaſon to doubt of the ſucceſs, ſince they are much hardier than the Spaniſh; but there is this difference between them, viz. theſe plants have large, thick, Evergreen leaves, ſo that if they were covered with mats, as was directed for the Spaniſh Jaſmine, the leaves would rot and decay the ſhoots; but as theſe will only require to be covered in extreme froſt, ſo if their roots are well mulched, and a mat or two looſely hung over them in ordinary froſts, it will be ſufficient; and theſe mats being either rolled up, or taken quite off in the day, there will be no great danger of their being hurt, which only can proceed from being too long cloſe covered.

In the ſpring theſe ſhould be pruned, when you ſhould cut off all decayed branches; but you muſt not ſhorten any of the other branches, as was directed for the Spaniſh ſort, for the flowers of this kind are produced only at the extremity of the branches, which, if ſhortened, they would be cut off; and theſe growing of a more ligneous ſubſtance than the other, will not produce ſhoots ſtrong enough to flower the ſame year.

If you would propagate this plant from layers, the ſhoots ſhould be laid down in March; and if you give them a little cut at the joint, as is practiſed in laying of Carnations, it will promote their rooting: you ſhould always obſerve to refreſh them often with water, when the weather is dry; which, if carefully attended to, the plants will be rooted by the ſucceeding ſpring, fit to be tranſplanted, when they muſt be planted in pots filled with light earth, and managed as was before directed for the ſeedling plants.

This ſort is frequently propagated, by inarching the young ſhoots into ſtocks of the common yellow Jaſmine, but the plants ſo raiſed do not grow ſo ſtrong as thoſe which are upon their own ſtock; beſides, the common yellow Jaſmine is very apt to ſend out a great number of ſuckers from the root, which renders the plants unſightly; and if theſe ſuckers are not conſtantly taken off as they are produced, they will rob the plants of their nouriſhment.

The ſixth ſort grows naturally in the Azores; this hath long ſlender branches which require ſupport, and may be trained twenty feet high; they are garniſhed with trifoliate leaves, whoſe lobes are large and heart-ſhaped, of a lucid green, and are placed oppoſite on the branches; they continue all the year. The flowers are produced at the end of the branches, in looſe bunches; they have long narrow tubes, which at the top are cut into five ſegments ſpreading open; they are of a clear white, and have a very agreeable ſcent. This flowers at the ſame time with the former; the gardeners call it frequently the Ivy-leaved Jaſmine.

The Azorian Jaſmine is alſo pretty hardy, and requires no more ſhelter than only from hard froſts; and I am apt to think, if this ſort was planted againſt a warm wall, and managed as hath been directed for the yellow Indian Jaſmine, it would ſucceed very well; for I remember to have ſeen ſome plants of this kind growing againſt a wall in the gardens at Hampton Court, where they had endured the winter, and were in a more flouriſhing ſtate than ever I ſaw any of the kind in pots, and produced a greater quantity of flowers. Theſe plants are propagated in the ſame manner as the yellow Indian, and require the ſame management.

Theſe plants are as deſerving of a place in all green-houſes, as any which are there preſerved; for their leaves being of a ſhining green, make a good appearance all the year; and their flowers having a fine ſcent, and continuing ſo long in ſucceſſion, renders them very valuable.

The

The ſeventh ſort, was brought from the Cape of Good Hope, by Captain Hutchinſon of the Godolphin, who diſcovered it growing naturally, a few miles up the land from the ſea, being drawn to it by the great fragrancy of its flowers, which he ſmelt at ſome diſtance from the plant, which was then in full flower; and after having viewed the plant, and remarked the place of its growth, he returned thither the following day with proper help, and a tub to put it in, and cauſed it to be carefully taken up, and planted in the tub with ſome of the earth on the ſpot, and conveyed on board his ſhip, where it continued flowering great part of the voyage to England, where it arrived in good health, and has for ſome years continued flowering, in the curious garden of Richard Warner, Eſq; at Woodford in Eſſex, who was ſo obliging as to favour me with branches of this curious plant in flower, to embelliſh one of the numbers of my figures of plants, where it is repreſented in the 180th plate.

This plant ſeems not to have been known to any of the botaniſts, for I have not met with any figure or deſcription of it in any of the books; there is one ſort which is figured in the Malabar garden, and alſo in Burman's plants of Ceylon, which approaches near this; it is titled Nandi ervatum major. Hort. Mal. But it differs from this, in having longer and narrower leaves; the tube of the flower is larger, and the ſegments do not ſpread ſo much as this; the flowers alſo of the Cape Jaſmine fade to a buff colour before they decay, therefore there is no doubt of its being a different ſpecies from that of Dr. Burman; but it is ſurprizing that this plant ſhould be unknown to the people at the Cape of Good Hope, for there was not one plant of it in their curious garden, nor could the captain ſee any other plant of it but that which he brought away.

The ſtem of this plant is large and woody, ſending out many branches, which are firſt green, but afterward the bark becomes gray and ſmooth; the branches come out by pairs oppoſite, and have ſhort joints; the leaves are alſo ſet oppoſite, cloſe to the branches; they are five inches long, and two inches and a half broad in the middle, leſſening to both ends, terminating in a point; they are of a lucid green, having ſeveral tranſverſe veins from the midrib to the borders; they are entire, and of a thick conſiſtence. The flowers are produced at the end of the branches, ſitting cloſe to the leaves; they have a tubulous empalement, with five corners or angles, cut deep at the brim, into five long narrow ſegments, ending in acute points: the flower hath but one petal, for although it is cut into many deep ſegments at the top, yet theſe are all joined in one tube below; ſome of theſe flowers are much more double than others, having three or four orders of petals; theſe which have ſo many, have only a bifid ſtigma, but thoſe which are leſs double have trifid ſtigmas. All thoſe flowers which I have examined have but one or two ſtamina, which may be occaſioned by the fulneſs of the flowers; as is often obſerved in many kinds of plants, whoſe flowers have a greater number of petals than uſual, many of which want both parts of generation, and ſome of them have no male parts. This flower, when fully blown, is as large as a middling Roſe, and ſome of them are as double as the Damaſk Roſe; they have a very agreeable odour; on the firſt approach it is ſomething like that of the Orange flower, but when more cloſely ſmelt to, has the odour of the common double white Narciſſus. The ſeaſon of this plant flowering in England, is in July and Auguſt, but in its native country it is ſuppoſed to flower great part of the year; for Captain Hutchinſon, who brought the plant over, ſaid there was a ſucceſſion of flowers on it, till the ſhip arrived in a cold climate, which put a ſtop to its growth.

Dr. Linnæus has been induced from what has been printed in the Tranſactions of the Royal Society, to alter the title of this plant to Gardenia; but as the deſcription of the plant with its characters as there printed, was taken from a double flower by ſome haſty people, who ſhould have remembred what Linnæus has written to caution perſons againſt regarding the double flowers of all kinds, in ranging them in their claſſes and genera, which if they had adhered to, they would not have made this miſtake; for I have ſince raiſed ſeveral of the plants from ſeeds, ſome of which have produced flowers which were ſingle, having all the marks of the double, the flowers altering to a buff colour before they faded, and all theſe flowers had each but three ſtamina and a trifid ſtigma; whereas in the characters ſet down by Linnæus, there is no ſtamina, but five linear antheræ, by which it is plain from the increaſe of the number of petals (or rather their ſegments) has occaſioned an alteration in the parts of generation; which is alſo very conſpicuous in the double flowers of Dianthus, where ſome flowers have but two or three ſtamina, when the ſame ſpecies with ſingle flowers have uſually ten. Linnæus alſo ſuppoſes the capſule of the ſeed to have two cells full of ſmall ſeeds; but the perſons who led him into this miſtake, have ſince ſuppoſed the figure given by Dr. Plukenet in his 448th plate, under the title of Um-ky, to be the fruit of this plant; whereas this has three cells filled with angular ſweet-ſcented ſeeds, as the ſpecimens I have of that demonſtrate, by which it is certain they are the fruit of a different plant; for the ſeeds which I ſowed of this Jaſmine, were a berry compoſed of two ſeeds like the other Jaſmines; therefore I have continued it under the ſame genus, with an addition to the title of its having three ſtamina.

This plant is eaſily propagated by cuttings during the ſummer ſeaſon; the cuttings ſhould be planted in pots, and plunged into a moderate hot-bed, covering them cloſe with either bell or hand-glaſſes to exclude the external air, being careful to ſcreen them from ſun in the day time; when they have taken root they ſhould be carefully parted, and put each into a ſeparate ſmall pot, plunging them again into the hot-bed, and ſhading them until they have taken new root, after which they ſhould be gradually inured to the open air.

Though the cuttings of this plant take root freely, and make ſtrong ſhoots a year or two after, yet in three or four years they are very apt to ſtint in their growth, their leaves turning pale and ſickly, and frequently die ſoon after; this has happened every where within my knowledge, although the plants have been kept in various degrees of heat in winter; and in ſummer when they have been differently managed, they have frequently failed. I have alſo been informed by a gentleman who lived ſome years in India, where he had the plants in his garden, they frequently went off in the ſame manner. This has greatly leſſened the value of the plants in England.

JASMINUM ARABICUM. See COFFEE.

JASMINUM ILICIS FOLIO. See LANTANA.

JASMINE, the Arabian. See NYCTANTHES.

JASMINE, the Perſian. See SYRINGA.

JATROPHA. Lin. Gen. Plant. 961. Manihot. Tourn. Inſt. R. H. 958. tab. 438. Caſſada, or Caſſava; in French *Caſſave*.

The CHARACTERS are,

It hath male and female flowers in the ſame plant; the male flowers have a ſcarce viſible empalement; they are ſalver-ſhaped, of one petal, with a ſhort tube, whoſe brim is cut into five roundiſh ſegments which ſpread open; they have ten awl-ſhaped ſtamina, five being alternately ſhorter than the other, and are joined cloſe together, ſtanding erect in the center of the flower, terminated by roundiſh looſe ſummits. The female flowers which are ſituated in the ſame umbel have no empalement, but have five petals ſpread open like a Roſe. In the center is a roundiſh germen with three deep furrows, ſupporting three ſtyles, crowned by ſingle ſtigmas. The germen afterward becomes a roundiſh capſule with three cells, each containing one ſeed.

This genus of plants is ranged in the ninth ſection of Linnæus's twenty-firſt claſs, intitled Moncœcia Monodelphia,

nodelphia, which includes thoſe plants which have male and female flowers on the ſame plant, and the ſtamina are collected in one body.

The SPECIES are,

1. JATROPHA (*Manihot*) foliis palmatis, lobis lanceolatis integerrimis lævibus. Lin. Sp. Plant. 1007. *Jatropha with hand-ſhaped leaves, whoſe lobes are ſpear-ſhaped, entire, and ſmooth.* Manihot Theveti, juca & caſſavi. J. B. 2. 794. *The Manihot of Thevet, and the Juca or Caſſava of John Bauhin.*
2. JATROPHA (*Quinquelobatus*) foliis quinquelobatis, lobis acuminatis, acutè dentatis lævibus, caule fruticoſo. *Jatropha with leaves compoſed of five ſmooth lobes ending in points, which are ſharply indented on their edges, and a ſhrubby ſtalk.* Juſſievia fruteſcens, non ſpinoſa, foliis glabris & minus laciniatis. Houſt. MSS. *Shrubby Juſſievia without ſpines, and ſmooth leaves leſs divided.*
3. JATROPHA (*Urens*) aculeata, foliis quinquelobatis acutè inciſis, caule herbaceo. *Prickly Jatropha, with leaves having five lobes which are ſharply cut on their edges, and an herbaceous ſtalk.* Juſſievia herbacea, ſpinoſiſſima, urens, foliis digitatis & laciniatis. Houſt. MSS. *The moſt prickly ſtinging and herbaceous Juſſievia, with fingered leaves which are jagged.*
4. JATROPHA (*Herbacea*) aculeata, foliis trilobis, caule herbaceo. Lin. Sp. Plant. 1007. *Prickly Jatropha, with leaves having three lobes and an herbaceous ſtalk.* Juſſievia herbacea ſpinoſiſſima, urens, foliis trilobatis minimè inciſis. Houſt. MSS. *Prickly ſtinging herbaceous Juſſievia, with leaves having three lobes, which are very ſlightly indented.*
5. JATROPHA (*Vitifolius*) foliis palmatis dentatis aculeatis. Hort. Cliff. 445. *Jatropha with hand-ſhaped, indented, prickly leaves.* Manihot ſpinoſiſſima, folio vitigineo. Plum. Cat. 20. *The moſt prickly Caſſava with a Vine leaf.*
6. JATROPHA (*Aconitifolius*) foliis lobatis dentatis acuminatis, urentibus, caule arboreo. *Jatropha with lobated leaves which are indented, acute-pointed, and ſtinging, and a tree-like ſtalk.* Juſſievia arborea, minùs ſpinoſa, floribus albis umbellatis, foliis aconiti urentibus. Houſt. MSS. *Tree Juſſievia which is leſs prickly, with white flowers growing in umbels, and ſtinging leaves like thoſe of Wolfsbane.*
7. JATROPHA (*Multifida*) foliis multipartitis lævibus, ſtipulis ſetaceis multifidis. Hort. Cliff. 445. *Jatropha with ſmooth leaves divided into many parts, and briſtly ſtipulæ with many points.* Ricinoides arbor Americana, folio multifido. 656. *Tree American Baſtard Ricinus with a many pointed leaf, commonly called French Phyſic Nut in America.*
8. JATROPHA (*Curcas*) foliis cordatis angulatis. Hort. Cliff. 445. *Jatropha with angular heart-ſhaped leaves.* Ricinoides Americana goſſypii folio. Tourn. Inſt. 656. *American Baſtard Ricinus with a Cotton leaf, commonly called Phyſic Nut in America.*
9. JATROPHA (*Staphyſagrifolia*) foliis quinquepartitis, lobis ovatis integris, ſetis glanduloſis ramoſis. Flor. Leyd. Prod. 202. *Jatropha with leaves divided into five parts, the lobes whereof are oval and entire, and branching briſtles ariſing from the glands.* Ricinoides Americana ſtaphyſagriæ folio. Tourn. Inſt. 656. *American Baſtard Ricinus, with a Staveſacre leaf, commonly called Belly-ach Weed in America.*

The firſt ſort here mentioned, is the common Caſſada or Caſſava, which is cultivated for food in the warm parts of America, where, after the juice is expreſſed out of the root (which has a poiſonous quality) it is ground into a kind of flour, and made up in cakes or puddings, and is eſteemed a wholeſome food.

This riſes with a ſhrubby ſtalk ſix or ſeven feet high, garniſhed with ſmooth leaves, ſtanding upon long foot-ſtalks alternately; they are compoſed of ſeven lobes, which are joined at their baſe in one center, where they are narrow, but increaſe in their breadth till within an inch and a half of the top, where they diminiſh to an acute point; the three middle lobes are about ſix inches long, and two broad in their broadeſt part; the two next are about an inch ſhorter, and the two outſide lobes are not more than three inches long; the middle lobes are ſituated on each ſide near the top, but the two outer are entire. The flowers are produced in umbels at the top of the ſtalks, theſe are ſome male and others female in the ſame umbel; they are compoſed of five roundiſh petals which ſpread open; the male flowers have their ten ſtamina joined together in a column, and the female flowers have a roundiſh germen with three furrows in the center, ſupporting three ſtyles; two are ſeparated at a diſtance, and the third ariſes between them, but is not ſo long; they are crowned by ſingle ſtigmas. The germen afterward turns to a roundiſh capſule with three lobes, each having a diſtinct cell, containing one ſeed.

The ſecond ſort was diſcovered by the late Dr. Houſtoun at the Havanna, from whence he ſent the ſeeds. This riſes with an upright ſtalk ten or twelve feet high, which is firſt green and herbaceous, but afterward becomes ligneous, ſending out a few branches at the top, which are garniſhed with ſmooth leaves, compoſed of five oval lobes, which end in acute points; the edges are alſo indented in ſeveral irregular points, which are acute. The flowers are produced in an umbel at the extremity of the ſtalks, they are of an herbaceous white colour, and are male and female in the ſame umbel, as the other ſort; the capſule is ſmooth and has three cells, each including a ſingle ſeed.

The third ſort was diſcovered by the late Dr. Houſtoun, growing naturally in the ſandy grounds about the town of La Vera Cruz, from whence he ſent the ſeeds, which ſucceeded in the Chelſea garden. This hath a very thick fleſhy root, in ſhape like the white Spaniſh Radiſh; the ſtalk riſes from one to two feet high, it is taper, herbaceous, and branching, and cloſely armed on every ſide with long white ſpines, which are not very ſtiff, but are pungent and ſtinging; the leaves are divided into five lobes, the middle being the longeſt; the others are ſhortened, the two next being about an inch ſhorter, but the two outer are not more than half the length of the middle; theſe are deeply jagged on both ſides, and are waved on their edges; all the veins of the leaves are cloſely armed with ſtinging ſpines, ſo that it is dangerous handling them; for all the intermediate parts of the leaves have ſmall ſtinging ſpines like thoſe of the Nettle, but they do not appear ſo viſible. At the end of the branches the flowers are produced in umbels; they are white, and have empalements cloſely armed with the ſame ſpines as the ſtalks and leaves: there are male and female flowers in the ſame umbel; the female flowers are ſucceeded by tricapſular veſſels, containing three ſeeds.

The fourth ſort riſes with an herbaceous ſtalk about a foot high, dividing into two or three branches, which are garniſhed with leaves ſtanding alternate upon long foot-ſtalks; they are compoſed of three oblong lobes which are ſlightly ſinuated on their edges, ending in acute points; the whole plant is cloſely armed with long, briſtly, ſtinging ſpines. The flowers grow in an umbel at the end of the branches; they are ſmall, of a dirty white colour, and are male and female in the ſame umbel: the female flowers are ſucceeded by oval capſules with three lobes, which are covered with the ſame ſpines as the plant; theſe have three cells, each containing a ſingle ſeed. This plant is annual.

The fifth ſort was found growing naturally at Carthagena in New Spain, by the late Mr. Robert Millar, who ſent the ſeeds to England, which ſucceeded in ſeveral curious gardens. This hath a thick, ſwelling, fleſhy root, from which ariſes an herbaceous ſtalk as big as a man's thumb, which is four or five feet high, and divides into ſeveral branches; theſe are very cloſely armed with long brown ſpines; the foot-ſtalks of the leaves are ſix or ſeven inches long, which are alſo armed with ſpines, but not ſo cloſely, nor are the ſpines ſo long as thoſe on the ſtalk and branches; the leaves are deeply cut into five lobes, which are jagged deeply on their ſides, and the nerves are armed with

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ſtinging ſpines; the flowers are produced in umbels at the top of the branches, ſtanding upon long naked foot-ſtalks; they are of a pure white colour, and are male and female in the ſame umbel: the male flowers appear firſt, which are compoſed of five petals, forming a ſhort tube at bottom, and the ſtamina ariſe the length of the tube, joined in a column: the petals ſpread open flat above, and the ſtamina fills the mouth of the tube, ſhutting it up: the female flowers are ſmaller, but of the ſame ſhape, having no ſtamina, but an oval three-cornered germen, which afterwards becomes a capſule with three lobes, each having a diſtinct cell, with one ſeed incloſed.

The ſixth ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz, where it is frequently permitted to grow about the town by way of ornament; this riſes with a ſtrong, brittle, ligneous ſtalk, ten or twelve feet high, covered with a gray bark, and divides into many branches, which are garniſhed with leaves, that are divided into parts like thoſe of the common Woolfsbane, but are armed with ſmall ſtinging ſpines like thoſe of the Nettle; at the end of the branches come out the flower-ſtalks, which are five or ſix inches long, ſuſtaining an umbel of white flowers. The male flowers are of one petal, having a pretty long tube, which is divided at the top into five ſegments. The female flowers expand in form of a Roſe, having the germen in the center, which afterward becomes a globular prickly fruit with three lobes, opening in three cells, each containing a ſingle ſeed.

The ſeventh ſort is now very common in moſt of the iſlands in the Weſt-Indies, but was introduced from the continent, firſt into the French iſlands, and from thence it was brought into the Britiſh iſlands, where it is titled French Phyſic Nut, to diſtinguiſh it from the following ſort, which is called Phyſic Nut, from its purging quality.

This riſes with a ſoft thick ſtem eight or ten feet high, dividing into ſeveral branches, covered with a grayiſh bark. The leaves come out on every ſide the branches on ſtrong foot-ſtalks, which are ſeven or eight inches long; they are divided into nine or ten lobes in form of a hand, which are joined at their baſe; theſe are ſeven inches long, and about two inches broad, with many jagged points on their borders ſtanding oppoſite. The upper ſide of the leaves are of a lucid green, but their under ſide gray, and a little cottony. The flowers come out upon long foot-ſtalks from the end of the branches, formed into an umbel, in which there are male and female flowers, as in the other ſpecies; theſe umbels are large, and the flowers being of a bright ſcarlet, they make a fine appearance; and the leaves being very remarkable for their beauty, has occaſioned the plant being cultivated for ornament in moſt of the iſlands of the Weſt-Indies.

The eighth ſort grows naturally in all the iſlands of the Weſt-Indies; this riſes with a ſtrong ſtalk twelve or fourteen feet high, which divides into ſeveral branches; theſe are garniſhed with angular heart-ſhaped leaves, which end in acute points. The flowers come out in umbels at the end of the branches; they are male and female, of an herbaceous colour, ſo make but little appearance; the female flowers are ſucceeded by oblong oval capſules with three cells, each containing one oblong black ſeed.

The ſeeds of the two laſt ſorts have been uſed as a purgative by the inhabitants of the Weſt-Indies, but they operate ſo violently, that now they are ſeldom uſed; three or four of theſe nuts have worked upward and downward near forty times, on a perſon who was ignorant of their effects; but it is affirmed that this purgative quality is contained in a thin film, ſituated in the center of the nut, which, if taken out, the nuts are harmleſs, and may be eaten with ſafety. The leaves of the laſt ſort are uſed in baths and fomentations.

The ninth ſort grows naturally in all the iſlands of the Weſt-Indies, where it is ſometimes called wild Caſſada, or Caſſava, and at others Belly-ach Weed, the leaves of this plant being accounted a good remedy for the dry belly-ach. This plant riſes with a ſoft herbaceous ſtalk to the height of three or four feet, covered with a purple bark, and at the joints have branching briſtly hairs riſing in ſmall bunches, not only upon the principal ſtalk, but alſo on the branches, and the foot-ſtalks of the leaves. The ſtalk divides upward into two or three branches; theſe are garniſhed with leaves ſtanding on very long foot-ſtalks, divided into five lobes which are oval, entire, and end in acute points. The flowers are produced at the end of the branches, upon ſlender naked foot-ſtalks, in ſmall umbels; they are ſmall, of a dark purple colour, having male and female flowers in the ſame umbel; the female flowers are ſucceeded by oblong tricapſular veſſels, ſmooth, and covered with a dark ſkin, when ripe; in each of the cells is lodged one oblong brown ſeed.

All theſe plants are natives of the warm parts of America, ſo are too tender to thrive in the open air in England. The firſt ſort is cultivated in the Weſt-Indies for food, where it is propagated by cutting the ſtalks into lengths of ſeven or eight inches, which, when planted, put out roots; the method of doing this having been mentioned in various books, I ſhall not repeat it here.

The other ſorts are eaſily propagated by ſeeds, which ſhould be ſown on a good hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be each tranſplanted into a ſmall pot filled with light earth, and then plunged into a freſh hot-bed of tanners bark, carefully ſhading them till they have taken freſh root; after which they muſt be treated in the ſame manner as other tender plants from hot countries, admitting freſh air to them daily, in proportion to the warmth of the ſeaſon; but as many of the ſorts have ſucculent ſtalks, ſome of which have a milky juice, they ſhould have but little water given them, for they are ſoon deſtroyed by wet.

The fourth ſort is an annual plant, ſo if the ſeeds are ſown early in the ſping, and the plants are brought forward, they will perfect their ſeeds the ſame year; but the other ſorts are perennial, ſo do not flower till the ſecond or third year; therefore the plants ſhould be plunged into the tan-bed in the ſtove, where they ſhould conſtantly remain, giving them a large ſhare of air in warm weather; but in winter they muſt be tenderly treated, and in that ſeaſon muſt have very little water. With this management the plants will continue ſeveral years, and produce their flowers, and frequently perfect their ſeeds in England.

IBERIS. Dillen. Nov. Gen. 6. Lin. Gen. Plant. 721. Thlaſpidium. Tourn. Inſt. R. H. 214. tab. 101. Sciatica Creſs.

The CHARACTERS are,

The flower hath an empalement of four oval leaves, which ſpread open, are hollowed and fall away. It hath four unequal petals, which are oval, obtuſe, and ſpread open, having oblong erect tails; the two outer petals are longer than the other. It hath ſix awl-ſhaped erect ſtamina, the two on the ſides being ſhorter than the reſt, terminated by roundiſh ſummits. In the center of the tube is ſituated a round compreſſed germen, ſupporting a ſhort ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh compreſſed veſſel, having two cells, each containing one oval ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifteenth claſs, intitled Tetradynamia Siliculoſa, which includes thoſe plants whoſe flowers have four long and two ſhort ſtamina, and the ſeeds grow in ſhort pods.

The SPECIES are,

1. IBERIS (*Semperflorens*) fruteſcens, foliis cuneiformibus obtuſis integerrimis. Lin. Hort. Cliff. 330. *Shrubby Sciatica Creſs with entire, wedge-ſhaped, blunt leaves, commonly called the Tree Candy Tuft.* Thlaſpidium fruticoſum, leucoii folio, ſemperflorens. Tourn. Inſt. 214. *Shrubby Thlaſpidium with a Gilliflower leaf, always flowering.*

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2. Iberis (*Sempervirens*) fruteſcens foliis linearibus acutis integerrimis. Lin. Hort. Cliff. 330. *Shrubby Sciatica Creſs with narrow-pointed whole leaves, commonly called Perennial Candy Tuft.* Thlaſpi montanum, ſempervirens. C. B. P. 106. *Evergreen Mountain Candy Tuft.*
3. Iberis (*Umbellata*) herbacea foliis lanceolatis acuminatis, inferioribus ſerratis, ſuperioribus integerrimis. Lin. Hort. Cliff. 330. *Herbaceous Sciatica Creſs with ſpear-ſhaped pointed leaves, the under ones being ſawed, but the upper entire, commonly called Candy Tuft.* Thlaſpi Creticum quibuſdam, flore rubente & albo. J. B. 2. 924. *True Cretan Treacle Muſtard with a red and white flower.*
4. Iberis (*Odorata*) foliis linearibus ſupernè dilatatis ſerratis. Flor. Leyd. 330. *Sciatica Creſs with narrow leaves dilated at their top, and ſawed.* Thlaſpi umbellatum Creticum, flore albo odoro, minus. C. B. P. 106. *Small umbellated Treacle Muſtard of Crete with a white ſweet flower.*
5. Iberis (*Nudicaulis*) herbacea foliis ſinuatis, caule nudo ſimplici. Lin. Hort. Cliff. 328. *Sciatica Creſs with ſinuated leaves, and a ſingle naked ſtalk.* Naſturtium petræum. Tab. Ic. 451. *Rock Creſs.*
6. Iberis (*Amara*) herbacea foliis lanceolatis acutis ſubdentatis, floribus racemoſis. Lin. Hort. Upſal. 184. *Sciatica Creſs with acute, ſpear-ſhaped, indented leaves, and flowers growing in bunches.* Thlaſpi avenſe umbellatum amarum. J. B. 2. 925. *Bitter, umbellated, Field Treacle Muſtard.*
7. Iberis (*Rotundifolia*) foliis ſubrotundis crenatis. Royen. Lin. Sp. Plant. 49. *Iberis with roundiſh crenated leaves.* Thlaſpi Alpinum, folio rotundiore carnoſo, flore purpuraſcente. Tourn. Inſt. 112. *Alpine Treacle Muſtard with a rounder fleſhy leaf, aud a purpliſh flower.*
8. Iberis (*Linifolia*) fruteſcens, foliis linearibus acutis, corymbis hemiſphæricis. *Shrubby Sciatica Creſs with narrow acute leaves, and hemiſpherical bunches of flowers.* Thlaſpi Luſitanicum umbellatum, gramineo folio, purpuraſcente flore. Tourn. Inſt. R. H. 213. *Portugal, umbellated, Treacle Muſtard, with a Graſs leaf and a purpliſh flower.*

The firſt ſort here mentioned is a low ſhrubby plant, which ſeldom riſes above a foot and a half high, having many ſlender branches, which ſpread on every ſide, and fall toward the ground if they are not ſupported. Theſe branches are well furniſhed with leaves toward their extremity, which continue green all the year; and in ſummer the flowers are produced at the end of the ſhoots, which are white, and grow in an umbel. Theſe flowers continue long in beauty, and are ſucceeded by others, ſo that the plants are rarely deſtitute of flowers for near eight months, from the end of Auguſt to the beginning of June, which renders the plant valuable.

This plant is ſomewhat tender, therefore is generally preſerved in green-houſes in winter, where, being placed among other low plants toward the front of the houſe, it makes an agreeable variety, as it continues flowering all the winter. But although it is commonly ſo treated, yet in moderate winters this plant will live in the open air, if it be planted in a warm ſituation and on a dry ſoil; and if, in very hard froſt, they are covered either with mats, Reeds, Straw, or Peas-haulm, they may be preſerved very well; and theſe plants which grow in the full ground, will thrive better, and produce a greater number of flowers, than thoſe which are kept in pots; but the ſoil in which theſe are planted, ſhould not be over rich, nor too wet, for in either of theſe they will grow too vigorous in ſummer, ſo will be in greater danger of ſuffering by the froſt in winter; but when they grow on a gravelly ſoil, or among lime rubbiſh, their ſhoots will be ſhort, ſtrong, and not ſo replete with moiſture, ſo will better reſiſt the cold.

This plant very rarely produces ſeeds in England, therefore is only propagated by cuttings, which, if planted during any of the ſummer months, and ſhaded from the ſun, and duly watered, will be rooted in two months, and may afterward be either planted in pots, or into the borders where they are deſigned to ſtand.

There is a variety of this with variegated leaves, which is preſerved in ſome of the gardens where perſons delight in theſe ſtriped-leaved plants. This is not ſo hardy as the plain ſort, therefore muſt be treated more tenderly in winter; this is alſo increaſed by cuttings in the ſame manner as the other.

The ſecond ſort is a plant of humbler growth than the firſt; this ſeldom riſes more than ſix or eight inches high, nor do the branches grow woody, but are rather herbaceous; the leaves of this plant continue green through the year, and the flowers are of as long duration as thoſe of the firſt ſort, which renders it valuable. This rarely produces ſeeds in England, but is propagated by ſlips, which in ſummer eaſily take root, and the plants may be treated in the ſame manner as hath been directed for the firſt ſort, and will thrive in the open air.

The third ſort is a low annual plant, the ſeeds of which were formerly ſown to make edgings for borders in the pleaſure-garden, for which purpoſe all the low annual flowers are very improper, becauſe they do not anſwer the intent, which is to prevent the earth of the borders falling into the walks, which theſe plants never can do; and though they make a pretty appearance during their continuance in flower, which is ſeldom more than a fortnight or three weeks, yet after their flowers are paſt they become very unſightly; therefore all theſe ſorts of flowers ſhould be ſown in ſmall patches in the borders of the flower-garden, where, if they are properly mixed with other flowers, they will have a very good effect; and by ſowing of them at three or four different ſeaſons, there may be a ſucceſſion of them continued in flower till autumn.

There are two different varieties of this third ſort, one with red, and the other hath white flowers; but the white is not common in the gardens, but the ſeeds of the ſixth ſort are generally ſold for it, and is ſeldom diſtinguiſhed but by thoſe who are ſkilled in botany: this plant ſeldom riſes more than five or ſix inches high, and if they have room will branch out on every ſide, but when they are left too cloſe, they draw each other up, and are weak: as theſe do not bear tranſplanting well, ſo the ſeeds ſhould be ſown thin in patches, and when the plants are grown pretty ſtrong, they ſhould be thinned, leaving but ſix or eight in in each patch to flower; and by thus treating them, they will put out ſide branches, and flower much ſtronger, and continue longer in beauty than when they are left cloſer together; theſe plants will require no other culture but to keep them clean from weeds.

The fourth ſort ſeldom grows ſo large as the third, and the flowers are much ſmaller, but have an agreeable odour. It grows naturally in Helvetia, and is preſerved in botanic gardens for variety. It is annual, and requires the ſame treatment as the third.

The fifth ſort grows on ſandy and rocky places in ſeveral parts of England, ſo is rarely admitted into gardens. The leaves of this are ſmall, and cut to the midrib into many jags; theſe are ſpread on the ground, and between them ariſe a naked foot-ſtalk two or three inches long, ſuſtaining ſmall umbels of white flowers. This is an annual plant, whoſe ſeeds ſhould be ſown in autumn where the plants are deſigned to remain, and require no other care but to keep them clean from weeds.

The ſixth ſort is very like the third, but differs in the ſhape of the leaves. The flowers of this are white, ſo may be ſown to make a variety with the red. It requires the ſame treatment.

The ſeventh ſort grows naturally on the Alps, from whence it was ſent me; this is a perennial plant, which roots pretty deep in the ground. The lower leaves which riſe from the root, are round, fleſhy, and crenated on their edges. The ſtalk riſes four or five inches high, and is garniſhed with ſmall oblong leaves which half embrace the ſtalks with their baſe. The flowers terminate the ſtalk in a round compact

pact umbel; they are of a purple colour, and appear in June, but are ſeldom ſucceeded by ſeeds in England.

It is propagated by ſeeds, which ſhould be ſown on a ſhady border in autumn, and when the plants are ſtrong enough to remove, they ſhould be tranſplanted on a ſhady border where they are deſigned to remain, and will require no other care but to keep them clean from weeds.

The eighth ſort grows naturally in Spain and Portugal; this hath a great reſemblance of the ſecond, but the ſtalks do not ſpread ſo much; they grow erect, about ſeven or eight inches high, are ligneous and perennial. The leaves are very narrow, and ſeldom more than an inch long, ſtanding thinly upon the ſtalks, having no foot-ſtalks. The flowers grow in hemiſpherical umbels on the top of the ſtalks, and are of a purple colour. It flowers in May and June, but ſeldom produces good ſeeds here.

This ſort may be propagated by cuttings, which ſhould be treated in the ſame way as is before directed for the firſt ſort; and ſome of the plants may be planted on a warm border in a dry ſoil, where they will endure the cold of our ordinary winters very well; but it will be proper to have two or three plants in pots, which may be ſheltered under a frame in winter, to preſerve the kind, if, by ſevere froſt, thoſe in the open air ſhould be deſtroyed.

IBISCUS. See HIBISCUS.

ICACO. See CHRYSOBALANUS.

ICE is a hard tranſparent body, formed from ſome liquor congealed, or fixed.

Ice is ſaid to be the natural ſtate of water, which remains firm, and not liquid, when no external cauſe acts upon it.

The true cauſe of the congelation of water into Ice, ſeems to be the introduction of frigorific particles into the pores or interſtices between the particles of water, and by that means getting ſo near them, as to be juſt within the ſpheres of one another's attractions, and then they muſt cohere into one ſolid or firm body.

It may be wondered why Ice goes to the top of the water, for one would imagine, that being colder than flowing water, it ought to be more condenſed, and conſequently heavier; but is to be conſidered, that there are always ſome bubbles of air interſperſed in Ice. It is certain, by the ſwimming of Ice upon water, that it is ſpecifically lighter than the water out of which it is made by freezing; and it is as certain, that this lightneſs of Ice proceeds from thoſe numerous bubbles that are produced in it by congelation.

Water, when it is frozen into Ice, takes up more ſpace than it did before it was congealed. It is viſible, that the dimenſions of water are increaſed by freezing, its particles being kept at ſome diſtance the one from the other, by the intervention of the frigorific matter.

And, beſides, there are many little volumes of air included at ſeveral diſtances, both in the pores of the watery particles, and in the interſtices made by the ſpherical figures. Now, by the inſinuation of theſe chryſtals, the volumes of air are driven out of the watery particles, and many of them uniting, form larger volumes; theſe have thereby a greater force to expand themſelves than when they are diſperſed, and ſo both enlarge their dimenſions, and leſſen the ſpecific gravity of water thus congealed into Ice.

It ſeems very probable, that cold, and freezing, and conſequently Ice, are produced by ſome ſubſtance of a ſaline nature floating in the air; in that ſalts, and more eminently ſome particular ones, when mixed with Ice or ſnow, do wonderfully increaſe the force and effects of cold.

It is alſo viſible, that all ſaline bodies cauſe a ſtiffneſs and frigidity in thoſe bodies into which they enter.

It is manifeſt, by obſerving ſalts by microſcopes, that the figures of ſome ſalts, before they ſhoot into maſſes, are then double wedge-like particles, which have abundance of ſurface in reſpect to their ſolidity; and this is the reaſon why they ſwim in water, when once they are raiſed in it, although they are ſpecifically heavier, theſe ſmall points of ſalts getting into the pores of the water, whereby they are, in ſome meaſure, ſuſpended in the winter, when the heat of the ſun is not ordinarily ſtrong enough to diſſolve the ſalts into fluid, to break their points, and to keep them in perpetual motion; which being leſs diſturbed, are more at liberty to approach one another, and by ſhooting into chryſtals, of the form above-mentioned, do, by their extremities, inſinuate themſelves into the pores of water, and by that means freeze it into a ſolid form, called Ice.

Monſ. Mariotte, in his Treatiſe of Hydroſtatics, gives the ſubſequent account of what happens to water in freezing, which he diſcovered by the following experiment.

Having filled a cylindric veſſel, of about ſeven or eight inches high, and ſix inches diameter, within two inches of the top, with cold water, he expoſed it to the open air in a great froſt, and obſerved exactly the whole progreſs of the freezing of it.

The firſt congelation was in the upper ſurface of the water, in little long water ſhoots, or laminæ, which were jagged like a ſaw, the water between them remaining ſtill unfrozen, though the reſt of the ſurface was already frozen to the thickneſs of more than two lines; he obſerved that ſeveral bubbles of air were formed in the Ice, that began to fix on the bottom and ſides of the veſſel, ſome would riſe up, and others remained entangled in the Ice, which made him imagine that theſe bubbles taking up more ſpace in the water, than when their matter was, as it were, diſſolved in it, they puſhed up a little water through the hole at the top, after the ſame manner that new wine works out at the bung-hole of a veſſel when it begins to heat, and the little water that ouzed out at this little hole in the Ice, ſpreading itſelf upon the upper ſurface of the water, which was already frozen, became Ice alſo, and there began to form a hill of Ice; and that hole continuing open, by reaſon of the water which paſſed ſucceſſively through it, being puſhed up by the new bubbles which formed themſelves in the Ice, which continue to increaſe about the ſides and bottom of the veſſel, he obſerved that the upper ſurface of the water was frozen above an inch thick towards the edges of the veſſel, and above an inch and a half round about the little hole, before the water that was contained in it, as in a pipe, became frozen, but at laſt it was frozen; then the middle of the water remaining unfrozen, and the water which was compreſſed by the new bubbles, which formed themſelves for two or three hours, having no vent at the little hole, the Ice broke at once towards the top, by the ſpring of the included air.

In like manner the froſt acts upon vegetables, by theſe frigorific particles entering the tender ſhoots of plants, and inſinuating between the pores of the ſap, thereby increaſing its bulk, ſo that the tender veſſels of the plants are torn, and thoſe parts of the plants are ſoon killed; and the greater the quantity of moiſture is in vegetables, the more they are in danger of being deſtroyed, for we frequently ſee many plants which grow on the top, and from the joints of walls, eſcape the ſevereſt froſts, when thoſe of the ſame kinds are all deſtroyed which were in the ground; which is entirely owing to their veſſels being ſtronger and more compact, and not ſo replete with moiſture: ſo when the autumn proves cold and moiſt, whereby the veſſels of plants are not properly hardened, and are replete with moiſture, a ſmall froſt will do great miſchief to them; whereas when the autumn is dry and warm, the tender ſhoots of trees and ſhrubs are hardened, and drained of their moiſture, ſo are not liable to the like accidents.

ICE-HOUSE is a building contrived to preſerve ice for the uſe of a family in the ſummer ſeaſon.

Theſe are more generally uſed in warm countries, than in England, but particularly in Italy, where the meaneſt perſon who rents a houſe, is not without a a vault or cellar for keeping of ice; but as the uſe of ice in England is much greater of late than it was formerly, ſo the number of Ice-houſes has been greatly increaſed; and although the mention of theſe may, at firſt ſight, ſeem foreign to my ſubject, yet if it is conſidered, that theſe buildings are generally erected in gardens, and as often put under the care of gardeners, it may not be amiſs for me to give ſome general directions for the choice of the ſituation and ſtructure of the building, as alſo for the management of the ice.

In the choice of a ſituation for an Ice-houſe, the principal regard ſhould be, that of a dry ſpot of ground, for wherever there is moiſture, the ice will melt; therefore in all ſtrong lands, which detain the wet, there cannot be too much care taken to make drains all round the building to carry off all moiſture; for when this is lodged near the building, it will occaſion a damp there, which will always be prejudicial to the keeping of the ice.

The next conſideration muſt be, to have the place ſo elevated, that there may be deſcent enough to carry off whatever wet may happen near the building, or from the ice melting; alſo, that the place be as much expoſed to the ſun and air as poſſible, and not placed under the drip, or in the ſhade of trees, as hath been too often practiſed, under a falſe notion, that if it ſhould be expoſed to the ſun, the ice will melt away in ſummer, which never can be the caſe where there is ſufficient care taken to exclude the outward air (which muſt always be regarded in the building of theſe houſes) for the heat of the ſun can never penetrate through the double arches of the building, ſo as to add any warmth to the air; but when the building is entirely open to the ſun and wind, all damps and vapours will thereby be removed from about the building, which can never be kept too dry, or free from moiſt vapours. As to the figure of the building, that may be according to the fancy of the owner; but for the well into which the ice is to be put, a circular figure is the moſt convenient; the depth of the well, as alſo the diameter of it, muſt be proportioned to the quantity of ice wanted, but it is always beſt to have enough; for when the houſe is well built, it will keep the ice for two or three years; and there will be this advantage in having it large enough to contain ice for two years conſumption, that if a mild winter ſhould happen, when there is not ice to be had, there will be a ſtock to ſupply the want.

If the quantity wanting is not great, a well of ſix feet diameter, and eight feet deep, will be large enough; but for large conſumption, it ſhould not be leſs than nine or ten feet diameter, and as many deep: where the ſituation is either dry chalk, gravel, or ſand, the pit may be entirely below the ſurface of the ground; but in ſtrong loam, clay, or moiſt ground, it will be the beſt way to raiſe it ſo high above the ſurface, as that there may be no danger from the wet.

At the bottom of the well there ſhould be a ſpace left, about two feet deep, to receive any moiſture which may drain from the ice, and a ſmall underground drain ſhould be laid from this, to carry off the wet; over this ſpace of two feet, ſhould be placed a ſtrong grate of wood, to let the moiſture fall down, which may at any time happen, from melting of the ice. The ſides of this well muſt be bricked up with a wall, at leaſt two bricks and a half thick; but if it is yet thicker, it will be better, becauſe the thicker the walls are made, the leſs danger there will be of the well being affected by any external cauſe. When the well is brought within three feet of the ſurface, there muſt be another outer arch or wall begun, which muſt be carried up to the height of the top of the intended arch of the well; and if there is a ſecond arch turned over from this well, it will add to the goodneſs of the houſe; but this muſt be ſubmitted to the perſon who builds, if he will be at the expence; but if not, then the plate into which the roof is to be framed, muſt be laid on this outer wall, which ſhould be carried high enough above the inner arch, to admit of a door-way in, to get out the ice. If the building is to be covered with ſlates or tiles, there ſhould be a thickneſs of Reeds laid under, to keep out the ſun and external air; if theſe Reeds are laid two feet thick, and plaſtered over with lime and hair, there will be no danger of the heat getting through it.

The external wall need not be built circular, but of any other figure, either ſquare, hexangular, or octangular; and where this ſtands much in ſight may be ſo contrived as to make it a good object. I have ſeen an Ice-houſe built in ſuch a manner as to have a handſome alcove ſeat in the front, and behind this ſeat was contrived a paſſage to get out and put in the ice; and by having the entrance behind, to the north aſpect, a ſmall paſſage being next the ſeat, through which a perſon might enter to take out the ice, and a large door being contrived with a porch, wide enough for a ſmall cart to back in, to ſhoot down the ice upon the floor near the mouth of the well, where it may be well broken, before it is put down. The aperture of this mouth of the well need not be more than two feet and a half diameter, which will be large enough to put down the ice, and if it was greater, it would be inconvenient; there ſhould be a ſtone fitted to ſtop this aperture, which muſt be cloſed up as ſecure as poſſible, after the ice is put in, and all the vacant ſpace above and between this and the outer door, muſt be filled cloſe with Barley Straw, to exclude the air; ſo the door to enter for taking out the ice ſhould be on the oppoſite ſide, immediately behind the alcove ſeat, as was before-mentioned; and this door ſhould be no larger than is abſolutely neceſſary for the coming at the ice, and muſt be ſtrong and cloſe to exclude the air; and at five or ſix feet diſtance from this another door ſhould be contrived, which ſhould be cloſely ſhut before the inner door is opened, whenever the ice is taken out.

The building being finiſhed, ſhould have time to dry before the ice is put into it; for when the walls are green, the damp of them frequently melts the ice. At the bottom of the well, upon the wooden grate, ſhould be laid ſome ſmall faggots; and if upon theſe a layer of Reeds is placed ſmooth for the ice to lie upon, it will be better than Straw, which is commonly uſed; and in the choice of the ice, the thinner it is, the better it may be broken to powder; for the ſmaller it is broken, the better it will unite when put into the well: in putting of it in, there muſt be care taken to ram it cloſe, as alſo to allow a vacancy all round next the wall, of about two inches; this is to give paſſage to any moiſture, which may be occaſioned by the melting of ſome of the ice on the top, which, if pent up, will melt the ice downward; when the ice is put into the well, if there is a little ſalt-petre mixed at every ten inches or a foot thickneſs, it will cauſe the ice to join more cloſely into a ſolid maſs. The inſtructions here given, being carefully obſerved, will be ſufficient to guide perſons wholly ignorant in theſe matters.

JET D'EAU is a French word, which ſignifies a fountain that caſts up water to any conſiderable height in the air.

Monſ. Mariotte, in his Treatiſe of Hydroſtatics, ſays, That a Jet d'Eau will never riſe ſo high as its reſervatory, but always falls ſhort of it by a ſpace which is in a ſubduplicate ratio of that height; and this he proves by ſeveral experiments; that though Jets ought to riſe to the height of the reſervatories, yet the friction of the ſides of the ajutages, and the reſiſtance of the air, are the cauſes that in Jets that have very high reſervatories, the height of the Jets does not come up to that of the reſervatory by a great deal.

He adds, That if a greater branches out in many ſmaller ones, or is diſtributed through ſeveral Jets, the ſquare of the diameter of the main pipe muſt be proportioned

portioned to the ſum of all the expences of its branches; that if the reſervatory be fifty-two high, and the ajutages half an inch in diameter, the pipe ought to be three inches in diameter.

He ſays, That the beauty of Jets of water conſiſts in their uniformity and tranſparency at the going out of the ajutage, and ſpreading but very little, and that to the higheſt part of the Jet.

That the worſt ſort of ajutages are thoſe that are cylindrical, for they retard very much the height of the Jets, the conic retard it leſs; but the beſt way is, to bore the horizontal plane, which ſhuts the extremity of the pipe, or conduit, with a ſmooth and poliſhed hole, taking care that the plate be perfectly plain, poliſhed, and uniform.

Theſe ſpouts of water are ſome of the greateſt beauties of the Italian gardens, and are certainly better adapted for gardens in thoſe warm countries, than they are for our climate, becauſe, in the great heats of ſummer, the ſight of theſe water-ſpouts is cooling and refreſhing to the imagination, and they certainly add a real coolneſs to the air; but in cold countries they cool the air too much, therefore ſhould not be erected; or if they are, they ſhould be placed at ſuch diſtances from the habitation, as that the damp may no ways affect it.

Where theſe Jets are contrived, if there is not a conſtant ſupply for a large column of water, they ſhould by no means be made, for nothing can have a meaner appearance, than thoſe pitiful piſſing ſpouts, ſo frequently to be ſeen in England, which perhaps have not a ſupply of water to play above an hour or two; therefore where there is not a natural body of water, to ſupply theſe Jets, without the expence of raiſing it, there ſhould never be any of theſe contrived in gardens.

ILEX. Lin. Gen. Plant. 158. Aquifolium. Tourn. Inſt. R. H. 600. tab. 371. The Holly-tree; in French, *Houx*.

The CHARACTERS are,

They have male, female, and hermaphrodite flowers on different plants. The male flowers have a ſmall permanent empalement of one leaf, which is indented in four parts; they have but one petal, which is cut into four ſegments almoſt to the bottom; they have four awl-ſhaped ſtamina, which are ſhorter than the petal, and are terminated by ſmall ſummits. The female flowers have their empalements and petals the ſame as the male, but have no ſtamina; in their center is placed the roundiſh germen, having four obtuſe ſtigmas ſitting on it. The germen afterward becomes a roundiſh berry with four cells, each containing a ſingle hard ſeed.

This genus of plants is ranged in the third ſection of Linnæus's fourth claſs, intitled Tetrandria Tetragynia, which includes thoſe plants whoſe flowers have four ſtamina and four ſtyles; but according to his own ſyſtem, it ſhould be placed in the third ſection of his twenty-ſecond claſs, with thoſe plants which have male and hermaphrodite flowers on different plants.

The SPECIES are,

1. ILEX (*Aquifolium*) foliis oblongo-ovatis, undulatis, ſpinis acutis. *Holly-tree with oblong leaves which are waved, and have acute ſpines.* Ilex aculeata baccifera. C. B. P. 425. *Prickly berry-bearing Ilex*; and the Aquifolium ſive agrifolium vulgò. J. B. 1. 114. *The common Holly.*
2. ILEX (*Echinata*) foliis ovatis, undulatis, marginibus aculeatis, paginis ſupernè ſpinoſis. *Holly with oval waved leaves, whoſe borders are armed with ſtrong thorns, and their upper ſurface prickly.* Aquifolium echinatâ folii ſuperfice. Cornut. Canad. 180. *Holly-tree whoſe upper ſurface of the leaves are prickly, commonly called Hedge-hog Holly.*
3. ILEX (*Caroliniana*) foliis ovato-lanceolatis ſerratis. Hort. Cliff. 40. *Holly with oval, ſpear-ſhaped, ſawed leaves.* Aquifolium Carolinienſe, foliis dentatis, baccis rubris. Cateſb. Carol. 1. p. 31. *Carolina Holly with indented leaves and red berries, commonly called Dahoon Holly.*

There are ſeveral varieties of the common Holly with variegated leaves, which are propagated by the nurſery gardeners for ſale, and ſome years paſt were in very great eſteem, but at preſent are but little regarded, the old taſte of filling gardens with ſhorn Evergreens being pretty well aboliſhed; however, in the diſpoſition of the clumps or other plantations of Evergreen trees and ſhrubs, a few of the moſt lively colours may be admitted, which will have a good effect in the winter ſeaſon, if they are properly diſpoſed.

As the different variegations of the leaves of Hollies, are by the nurſery gardeners diſtinguiſhed by different titles, ſo I ſhall here mention the moſt beautiful of them, by the names they are generally known:

Painted Lady Holly, Britiſh Holly, Bradley's beſt Holly, Phyllis, or Cream Holly, Milkmaid Holly, Pritchet's beſt Holly, Gold-edged Hedge-hog Holly, Cheyney's Holly, Glory of the Weſt Holly, Broaderick's Holly, Partridge's Holly, Herefordſhire white Holly, Blind's Cream Holly, Longſtaff's Holly, Eales's Holly, Silver-edged Hedge-hog Holly.

All theſe varieties are propagated by budding or grafting them upon ſtocks of the common green Holly: there is alſo a variety of the common Holly with ſmooth leaves, but this is frequently found intermixed with the prickly-leaved on the ſame tree, and often on the ſame branch, there are both ſorts of leaves.

The common Holly grows naturally in woods and foreſts in many parts of England, where it riſes from twenty to thirty feet high, and ſometimes more, but their ordinary height is not above twenty-five feet. The ſtem by age becomes large, and is covered with a grayiſh ſmooth bark; and thoſe trees which are not lopped or browzed by cattle, are commonly furniſhed with branches the greateſt part of their length, ſo form a ſort of cone; the branches are garniſhed with oblong oval leaves about three inches long, and one and a half broad, of a lucid green on their upper ſurface, but are pale on their under, having a ſtrong midrib: the edges are indented and waved, with ſharp thorns terminating each of the points, ſo that ſome of the thorns are raiſed upward and others are bent downward, and being very ſtiff, renders them troubleſome to handle. The leaves are placed alternate on every ſide of the branches, and from the baſe of their foot-ſtalks come out the flowers in cluſters, ſtanding on very ſhort foot-ſtalks; each of theſe ſuſtain five, ſix, or more flowers. In ſome plants I have obſerved the flowers were wholly male, and produced no berries; in others I have obſerved female and hermaphrodite flowers, but upon ſome large old trees growing on Windſor foreſt, I have obſerved all three upon the ſame trees. The flowers are of a dirty white, and appear in May; they are ſucceeded by roundiſh berries, which turn to a beautiful red about Michaelmas, but continue on the trees if they are not deſtroyed, till after Chriſtmas before they fall away.

The ſecond ſort grows naturally in Canada, from whence it was brought to Europe. The leaves of this ſort are not ſo long as thoſe of the common Holly, and their edges are armed with ſtronger thorns ſtanding cloſer together; the upper ſurface of the leaves is ſet very cloſe with ſhort prickles, from whence the gardeners have given it the title of Hedge-hog Holly. This ſort is uſually propagated in the nurſeries, by budding or grafting it upon the common Holly; but I have raiſed it from the berries, and found the plants to be the ſame as thoſe from whence the ſeeds were taken, ſo make no doubt of its being a diſtinct ſpecies.

There are two varieties of this with variegated leaves, one of which is yellow, and the other white. There is alſo a variety of the common Holly with yellow berries, which is alſo accidental, and is generally found on thoſe plants which have variegated leaves, and but ſeldom on plain Hollies.

The common Holly is a very beautiful tree in winter, therefore deſerves a place in all plantations of

Evergreen trees and ſhrubs, where its ſhining leaves and red berries make a fine variety; and if a few of the beſt variegated kinds are properly intermixed, they will enliven the ſcene. The Holly was alſo formerly planted for hedges, and is a very proper plant for that purpoſe; but then it ſhould not be clipped with ſhears, becauſe when the leaves are cut through the middle, they are rendered unſightly, ſo they ſhould be cut with a knife cloſe to the leaf; and although in this method they are not ſhorn ſo even as with ſhears, yet they will have a much better appearance, and may be made as cloſe and ſecure as by any other method generally practiſed.

The Holly is propagated by ſeeds, which never come up the firſt year, but lie in the ground as the Haws do; therefore the berries ſhould be buried in the ground in a large pot or tub one year, and then taken up and ſown in the autumn upon a bed expoſed only to the morning ſun; the following ſpring the plants will appear, which muſt be kept clean from weeds; and if the ſpring ſhould prove dry, it will be of great ſervice to the plants if they are watered once a week; but they muſt not have it oftener, nor in too great quantity, for too much moiſture is very injurious to theſe plants when young.

In this ſeed-bed the plants may remain two years, and then ſhould be tranſplanted in the autumn, into beds at about ſix inches diſtance each way, where they may ſtand two years longer, during which time they muſt be conſtantly kept clean from weeds; and if the plants have thriven well, they will be ſtrong enough to tranſplant where they are deſigned to remain; for when they are tranſplanted at that age, there will be leſs danger of their failing, and they will grow to a larger ſize than thoſe which are removed when they are much larger; but if the ground is not ready to receive them at that time, they ſhould be tranſplanted into a nurſery in rows at two feet diſtance, and one foot aſunder in the rows, in which place the plants may remain two years longer; and if they are deſigned to be grafted or budded with any of the variegated kinds, that ſhould be performed after the plants have grown one year in this nurſery; but the plants ſo budded or grafted ſhould continue two years after in the nurſery, that they may make good ſhoots before they are removed; though the plain ones ſhould not ſtand longer than two years in the nurſery, becauſe when they are older, they do not tranſplant ſo well. The beſt time for removing of Hollies is in the autumn, eſpecially in dry land; but where the ſoil is cold or moiſt, they may be tranſplanted with great ſafety in the ſpring; if the plants are not too old, or if they have not ſtood long unremoved, there is great odds of their dying when removed.

The Dahoon Holly grows naturally in Carolina, from whence the ſeeds were ſent by the late Mr. Mark Cateſby, who found the trees growing on a ſwamp at a diſtance from Charles-town, but it hath ſince been diſcovered in ſome other countries in North America. This riſes with an upright branching ſtem to the height of eighteen or twenty feet; the bark of the old ſtems is of a brown colour, but that of the branches or younger ſtalks is green and ſmooth, garniſhed with ſpear-ſhaped leaves, which are more than four inches long, and one and a quarter broad in the broadeſt part, of a light green and thick conſiſtence; the upper part of the leaves are ſawed on their edges, each ſerrature ending in a ſmall ſharp ſpine; they ſtand alternately on every ſide the branches, upon very ſhort foot-ſtalks. The flowers come out in thick cluſters from the ſide of the ſtalks; they are white, and ſhaped like thoſe of the common Holly, but are ſmaller; the female and hermaphrodite flowers are ſucceeded by ſmall roundiſh berries in its native country, which make a fine appearance in winter, but they have not as yet produced fruit in England, ſo far as I can learn.

Dr. Linnæus ſuppoſes this plant and the evergreen Caſſine to be the ſame, but they are undoubtedly diſtinct plants: he may probably have been led into this miſtake, by receiving ſeeds of this ſort mixed together with the berries of Caſſine from America, which I have more than once done; but whoever ſees the two plants growing, cannot doubt of their being different.

This ſort is tender while young, ſo requires protection in the winter till the plants are grown ſtrong and woody, when they may be planted in the full ground in a warm ſituation, where they will endure the cold of our ordinary winters pretty well; but in ſevere froſt they ſhould be protected, otherwiſe the cold will deſtroy them.

This ſort is propagated from ſeeds, in like manner as the common ſort; the ſeeds of it will lie as long in the ground, ſo the berries ſhould be buried in the ground a year, and then taken up and ſown in pots filled with light earth, and placed under a frame in winter; in the ſpring the pots ſhould be plunged into a hot-bed, which will bring up the plants; theſe muſt be preſerved in the pots while young, and ſheltered in winter under a common frame till they have obtained ſtrength, when in the ſpring they may be turned out of the pots and planted in the full ground, in a warm ſituation.

From the bark of the common Holly is made the bird-lime, and the wood is made into hones for ſetting of razors. The wood is very white, and takes a fine poliſh, ſo is very proper for ſeveral kinds of furniture. I have ſeen a floor of a room laid in compartments with Holly and Mahogany, which had a very pretty effect.

ILLECEBRUM. Lin. Gen. 291. Corrigiola. Dill. Gen. p. 169. Paronychia. Tourn. Inſt. 281.

The CHARACTERS are,

It hath a five-cornered coloured empalement of five leaves, which is permanent, but has no petals; it hath five ſlender ſtamina within the empalement, terminated by ſimple ſummits, and an oval germen with a ſhort ſtyle, crowned by an obtuſe ſtigma. The empalement afterward becomes a roundiſh capſule with five angles, having one cell, containing one large ſeed, which is pointed on every ſide.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, the flowers having five ſtamina and one ſtyle.

The SPECIES are,

1. ILLECEBRUM (*Suffruticoſum*) floribus lateralibus ſolitariis, caulibus ſuffruticoſus. Lin. Sp. 298. *Illecebrum with an under-ſhrub ſtalk, having ſingle flowers on the ſides.* Paronychia Hiſpanica fruticoſa, myrti folio. Tourn. Inſt. 508.
2. ILLECEBRUM (*Paronychia*) floribus bracteis nitidis obvalatis, caulibus procumbentibus. Lin. Sp. 299. *Illecebrum with neat bractea incloſing the flowers, and trailing ſtalks.* Paronychia Hiſpanica. Cluſ. Hiſt. 2. p. 183.
3. ILLECEBRUM (*Capitatum*) floribus bracteis nitidis occultantibus capitula terminalia, caulibus erectis, foliis ciliatis. Lin. Sp. 299. *Illecebrum with neat bractea terminating the erect ſtalks, and ſilvery leaves.* Paronychia Narbonenſis erecta. Tourn. Inſt. 508.
4. ILLECEBRUM (*Achyrantha*) caulibus repentibus piloſis, foliis ovatis mucronatis oppoſito minore, capitulis ſubgloboſis ſubſpinoſis. Lin. Sp. 299. *Illecebrum with creeping ſtalks, ſmall oval-pointed leaves placed oppoſite, almoſt globular heads of flowers, having ſmall ſpines.* Achyrantha repens, foliis bliti pallidi. Hort. Eith. 8. tab. 7.
5. ILLECEBRUM (*Polygonoides*) caulibus repentibus hirtis, foliis lato-lanceolatis petiolatis, capitulis orbiculatis nudis. Lin. Sp. 300. *Illecebrum with hairy creeping ſtalks, broad ſpear-ſhaped leaves on foot-ſtalks, and orbicular naked heads of flowers.* Amaranthoides humile Curaſſavicum, foliis polygoni. Herm. Parad. 17.
6. ILLECEBRUM (*Vermiculatum*) caulibus repentibus glabris foliis, ſubteretibus carnoſis, capitulis oblongis glabris terminalibus. Lin. Sp. 300. *Illecebrum with ſmooth creeping ſtalks, almoſt taper fleſhy leaves, and oblong ſmooth heads terminating the branches.* Amaranthoides humile Curaſſavicum, cepeæ foliis lucidis, capitulis. Herm. Parad. 15.

The

The three firſt ſorts grow naturally in Spain, Portugal, and the ſouth of France; the firſt has ligneous ſtalks about a foot high, garniſhed with ſmall leaves like thoſe of Knot-graſs; the flowers come out ſingly on the ſide of the ſtalks, which make little appearance, ſo is ſeldom preſerved in gardens.

The ſecond and third ſorts have trailing ſtalks near two feet long, which ſpread on the ground, garniſhed with leaves like thoſe of the firſt ſort; the heads of flowers come out from the joints of the ſtalk, having neat ſilvery bractea ſurrounding them, which make a pretty appearance. Their flowers appear in June, and there is generally a ſucceſſion of them for at leaſt two months; and when the autumn proves warm, they will ripen their ſeeds the beginning of October.

Theſe three ſorts may be propagated by ſeeds, which ſhould be ſown on a bed of light earth the beginning of April; the plants will come up in May, when they ſhould be kept clean from weeds till the plants are fit to remove; then the plants ſhould be carefully taken up, planting ſome of each ſort in ſmall pots, and the other into a warm dry border, obſerving to water and ſhade them until they have taken new root; after which, thoſe which are planted in the full ground will require no other culture but to keep them clean from weeds; for in the ordinary winters of England, they will live in the open air: but as theſe plants are ſometimes killed in ſevere winters, therefore I adviſe ſome plants to be planted in pots, which may be placed in a common frame in winter, where they may enjoy the open air in mild weather, but be ſcreened from froſt.

As the ſeeds of theſe plants do not conſtantly ripen in England, ſo they may be propagated by cuttings, which, if carefully taken off in May or June, and planted in a ſhady border, will in two months put out roots; then in moiſt weather they may be tranſplanted, and afterward treated as the old plants.

The other three ſorts are natives of the warm parts of America; the fourth ſort grows naturally at Beunos Ayres; the fifth and ſixth, in many of the iſlands in the Weſt-Indies.

Theſe have creeping ſtalks, which ſend out roots from the joints, which faſten to the ground in their native ſoil, whereby they ſpread to a great diſtance; and in this country, when the pots are plunged into a tan-bed, they will multiply as faſt, by taking root in tan, or any of the other pots of plants which are near them.

The flowers of the fourth ſort make little appearance, therefore the plant is rarely propagated, except in botanic gardens for variety; but thoſe of the fifth and ſixth ſort have dry heads of flowers, reſembling thoſe of the Amaranthoides, under which genus they were formerly ranged.

Theſe three ſorts are tender, ſo will not thrive in the open air in England; therefore their ſeeds ſhould be ſown on a hot-bed in the ſpring, at the ſame time as the Amaranthus, Gomphrena, and other tender plants; and afterward, if they are plunged into the tan-bed in the ſtove, their branches will put out roots, whereby they may be propagated in plenty.

IMPATIENS. Rivin. Ord. 4. Lin. Gen. Plant. 899. Balſamina. Tourn. Inſt. R. H. 418. tab. 235. Female Balſamine; in French, *Balſamine*.

The CHARACTERS are,

The flower has a two-leaved ſmall empalement, which is coloured, and placed on the ſide of the petals. It hath five petals which are unequal, and ſhaped like a lip-flower; the petals are roundiſh, the upper is erect, ſlightly cut at the point into three parts, where it is ſharp-pointed, forming the upper lip; the two lower petals are broad, obtuſe, irregular, and reflexed; theſe conſtitute the lower lip; the intermediate pair are alike, and are placed oppoſite, joining at their baſe. It hath a nectarium in the bottom of the flower, ſhaped like a hood or cowl, which is oblique to the mouth, riſing on the outſide, whoſe baſe ends in a tail or ſpur. It hath five ſhort ſtamina which are narrow toward their baſe, and incurved, terminated by ſummits, which join at the top round the ſtamina, but are divided at their baſe. In the bottom is ſituated an oval ſharp-pointed germen, having no ſtyle, but a ſingle ſtigma ſhorter than the ſummits. The germen afterward becomes a capſule with one cell, opening with an elaſticity in five valves, which twiſt ſpirally, and contain ſeveral roundiſh ſeeds fixed to a column.

This genus of plants is ranged in the fifth ſection of Linnæus's nineteenth claſs, which includes thoſe plants which have ſingle flowers in the empalement, whoſe ſtamina vary in number and ſituation.

The SPECIES are,

1. IMPATIENS (*Noli tangere*) pedunculis multifloris ſolitariis, foliis ovatis, geniculis caulinus tumentibus. Flor. Suec. 722. *Impatiens with foot-ſtalks ſuſtaining many ſingle flowers, oval leaves, and ſtalks having ſwelling joints.* Balſamina lutea, ſive, Noli me tangere. C. B. P. 306. *Yellow Balſamine, or Touch me not.*
2. IMPATIENS (*Balſamina*) pedunculis unifloris aggregatis, foliis lanceolatis, nectaris floribus brevioribus. Hort. Upſal. 276. *Impatiens with foot-ſtalks ſuſtaining ſingle flowers, which ariſe in cluſters, ſpear-ſhaped leaves, and nectariums which are ſhorter than the flower.* Balſamina fœmina. C. B. P. 306. *The female Balſamine.*
3. IMPATIENS (*Triflora*) pedunculis trifloris ſolitariis, foliis anguſto-lanceolatis. Flor. Zeyl. 315. *Impatiens with three flowers on a foot-ſtalk, and narrow ſpear-ſhaped leaves.* Balſamina erecta, ſc. fœmina, Perſicæ anguſto folio Zeylanica. Herm. Par. Bat. 105. *Upright, or female Balſamine of Ceylon, with a narrow Peach leaf.*

There are ſeveral other ſpecies of this genus, which grow naturally in India, which are plants of little beauty, ſo have not been introduced into the Engliſh gardens; the ſorts here mentioned, are all I have yet ſeen growing here, except one tall ſort from North America.

The firſt ſort grows naturally in ſeveral parts of Weſtmoreland and Yorkſhire, but is frequently introduced into gardens by way of curioſity. It is an annual plant, which riſes about a foot and a half high, with an upright ſucculent ſtalk, whoſe joints are ſwollen, garniſhed with oval ſmooth leaves, which ſtand alternate on every ſide the ſtalk. The flowers come out from the wings of the ſtalks upon long ſlender foot-ſtalks, which branch into ſeveral other ſmaller, each ſuſtaining one yellow flower, compoſed of five petals, which in front are ſhaped like the lip or grinning flowers, but at their baſe have a nectarium with a long tail like the flowers of Indian Creſs; theſe are ſucceeded by taper pods, which, when ripe, burſt open upon being touched, and twiſt ſpirally like a ſcrew, caſting out the ſeeds with great elaſticity. If the ſeeds of this plant are permitted to ſcatter, they generally ſucceed better than when they are ſown; for unleſs they are ſown in the autumn ſoon after they are ripe, they very rarely grow. The plants require no care but to keep them clean from weeds, and thin them where they are too cloſe. It flowers in June, and the ſeeds ripen about a month or five weeks after; this delights in a ſhady ſituation and a moiſt ſoil.

The ſecond ſort is the female Balſamine, of which there are ſeveral varieties; the common ſort has been long an inhabitant in the Engliſh gardens, of this there is the white, the red, and ſtriped flowered, and likewiſe the ſingle and double flowering, with variegated flowers of two colours. Theſe ſorts are ſo hardy as to riſe in the full ground; and where the ſeeds ſcatter, the plants will come up the following ſpring; but ſuch ſelf-ſown plants do not come to flower ſo early as thoſe which are raiſed upon a hot-bed; however, they generally are ſtronger plants, and continue much longer in the autumn in flower than the others, ſo are an ornament to the garden, when there is a greater ſcarcity of flowers.

This ſort riſes a foot and a half high, dividing into many ſucculent branches, which are garniſhed with long, ſpear-ſhaped, ſawed leaves. The flowers come out from the joints of the ſtalks, upon ſlender foot-

ſtalks

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ſtalks about an inch long, each ſuſtaining a ſingle flower; but there are two, three, or four of theſe foot-ſtalks ariſing from the ſame joint. The flowers are compoſed of five large unequal petals, which are ſhaped like thoſe of the former ſort, but are larger, and ſpread open much wider; there are white, purple, and red of this ſort, as alſo ſingle and double flowers. If the ſeeds of theſe are ſown on a moderate hot-bed in the ſpring, the plants will flower in June; but thoſe which are ſown in the full ground, will not flower before the middle of July; and theſe will continue flowering till the froſt puts a ſtop to them in the autumn.

There are two other varieties of this, if not diſtinct ſpecies; one of them grows naturally in the Eaſt, and the other in the Weſt-Indies; that which comes from the Eaſt-Indies, by the title of Immortal Eagle Flower, is a moſt beautiful plant; the flowers are double, much larger than thoſe of the common ſort; they are ſcarlet and white variegated, and purple and white in others; and the plants producing many flowers, render them very valuable; and if the ſeeds of theſe are carefully ſaved, the kinds may always be preſerved; but I have raiſed ſome plants from foreign ſeeds, whoſe flowers were ſo very double as to loſe their male parts, ſo did not produce any ſeeds.

The ſeeds of theſe plants ſhould be ſown on a moderate hot-bed in the ſpring, and when the plants are come up about an inch high, they ſhould be tranſplanted on another moderate hot-bed at about four inches diſtance each way, obſerving to ſhade them from the ſun till they have taken new root; after which they ſhould have a large ſhare of free air admitted to them, at all times when the weather is favourable, to prevent their drawing up tall and weak: they will require to be often refreſhed with water, but it ſhould not be given to them in too great plenty; for as their ſtems are very ſucculent, ſo they are apt to rot with much moiſture. When the plants are grown ſo large as to touch each other, they ſhould be carefully taken up with balls of earth to their roots, and each planted into a ſeparate pot filled with light rich earth, and plunged into a very moderate hod-bed under a deep frame, to admit the plants to grow, ſhading them from the ſun until they have taken freſh root; then they ſhould have a large ſhare of air admitted to them every day, and by degrees hardened, ſo as to bear the open air, into which part of the plants may be removed in July, placing them in a warm ſheltered ſituation; where, if the ſeaſon proves favourable, they will flower and make a fine appearance; but it will be proper to keep part of the plants either in a glaſs-caſe or a deep frame, in order to get good ſeeds, becauſe thoſe in the open air will not ripen their ſeeds unleſs the ſummer proves very warm; and the plants in ſhelter muſt have a good ſhare of free air every day, otherwiſe they will grow pale and ſickly; nor ſhould they have too much of the ſun in the middle of the day, in very hot weather, for that occaſions their leaves hanging and their requiring water, which is often very hurtful; therefore if the glaſſes are ſhaded in the middle of the day for three or four hours, the plants will thrive better, and continue longer in beauty than when they are expoſed to the great heat. Thoſe who are curious to preſerve theſe plants in perfection, pull off all the ſingle and plain coloured flowers from the plants which they preſerve for ſeeds, leaving only thoſe flowers which are double and of good colours; where this is carefully done, they may be continued without the leaſt degeneracy conſtantly.

The ſort which grows in the Weſt-Indies, is there called Cockſpur. This hath ſingle flowers as large as the laſt-mentioned ſort, but I never ſaw any of them more than half double, and only with white and red ſtripes: the plants are very apt to grow to a very large ſize before they produce any flowers, ſo that it is late in the autumn before they begin to flower; and ſometimes in bad ſeaſons they will ſcarce have any flowers, and but rarely ripen their ſeeds here, ſo that few perſons care to cultivate this ſort, eſpecially if they can have the other.

The third ſort here mentioned grows naturally in Ceylon, and in many parts of India; this hath very narrow ſpear-ſhaped leaves, which are ſawed on their edges; the foot-ſtalks ſuſtain each three flowers, which are ſmaller than thoſe of the common ſort, ſo are not worthy of a place in gardens, except for the ſake of variety. This is a tender plant, and requires the ſame treatment as the Immortal Eagle Flower.

IMPERATORIA. Lin. Gen. Plant. 321. Tourn. Inſt. R. H. 316. tab. 168. Maſterwort; in French, *Imperatoire.*

The CHARACTERS are,

It hath an umbellated flower; the principal umbel is plain, and compoſed of many ſmaller; the greater umbel has no involucrum, but the ſmall ones have, which are compoſed of many narrow leaves, almoſt as long as the umbel; the principal umbel is uniform; the flowers have five heart-ſhaped petals, which are equal and inflexed. They have five hairy ſtamina, terminated by roundiſh ſummits. The germen is ſituated under the petals, ſupporting two reflexed ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes a roundiſh compreſſed fruit divided in two parts, containing two oval-bordered ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, intitled Pentandria Digynia, which contains the plants whoſe flowers have five ſtamina and two ſtyles.

We have but one SPECIES of this genus, viz.

IMPERATORIA (*Oſtruthium.*) Hort. Cliff. 103. *Maſterwort.* Imperatoria major. C. B. P. 156. *Greater Maſterwort*; and the Aſtrantia of Dodonæus. Pempt. 320. *Maſterwort, or falſe Pellitory of Spain.*

This plant grows naturally on the Auſtrian and Styrian Alps, and upon other mountainous places in Italy; the root is as thick as a man's thumb, running obliquely in the ground; it is fleſhy, aromatic, and has a ſtrong acrid taſte, biting the tongue and mouth like Pellitory of Spain; the leaves ariſe immediately from the root; they have foot-ſtalks ſeven or eight inches long, dividing into three very ſhort ones at the top, each ſuſtaining a trilobate leaf, indented on the border; the foot-ſtalks are deeply channelled, and when broken emit a rank odour. The flower-ſtalks riſe about two feet high, and divide into two or three branches, each being terminated by a pretty large umbel of white flowers, whoſe petals are ſplit; theſe are ſucceeded by oval compreſſed ſeeds, ſomewhat like thoſe of Dill, but larger. It flowers in June, and the ſeeds ripen in Auguſt.

This plant is cultivated in gardens to ſupply the markets. It may be propagated either by ſeeds, or by parting the roots: if you would propagate it by ſeeds, they ſhould be ſown in autumn ſoon after they are ripe, on a bed or border, in a ſhady ſituation; obſerving not to ſow the ſeeds too thick, nor ſhould they be covered too deep. In the ſpring the plants will appear, when they ſhould be carefully weeded; and if the ſeaſon ſhould prove very dry, they ſhould be now and then refreſhed with water, which will greatly promote their growth. Toward the beginning of May, if you find the plants come up too cloſe together, you ſhould prepare a moiſt ſhady border (and thin the plants carefully, leaving them about ſix inches aſunder;) and plant thoſe which you draw up into the border about the ſame diſtance apart every way, being careful to water them duly, if the ſeaſon ſhould prove dry, until they have taken root; after which time, theſe plants (as alſo thoſe remaining in the ſeed-beds) will require no other culture but to keep them clear from weeds; which may be eaſily effected, by hoeing the ground between the plants now and then in dry weather, which will deſtroy the weeds; and by thus ſtirring the ground, will be of great ſervice to the plants. The following autumn theſe plants ſhould be tranſplanted where they are deſigned to remain, which ſhould be in a rich moiſt ſoil and a ſhady ſituation;

tation; where they will thrive much better than if too much expoſed to the ſun, or in a dry ſoil, for they delight in ſhade and moiſture; ſo that where theſe are wanting the plants will require a conſtant ſupply of water in dry weather, otherwiſe they will thrive but ſlowly. The diſtance which theſe plants ſhould be placed, muſt not be leſs than two feet every way, for where they like their ſituation, they will ſpread and increaſe much. When theſe plants are rooted, they will require no other culture but to keep them clear from weeds; and in the ſpring, before they ſhoot, the ground ſhould be every year gently dug between the plants; in doing of which, great care ſhould be had not to cut or bruiſe their roots. Theſe plants, with this management, will continue ſeveral years, and will produce ſeeds in plenty.

If you would propagate theſe plants by offſets, their roots ſhould be parted at Michaelmas, and planted in a ſhady ſituation, at the ſame diſtance as has been directed for the ſeedling plants, obſerving to water them until they have taken root, after which time they muſt be managed as the ſeedlings.

The roots of this plant are uſed in medicine, and are greatly reccommended for their virtue in contagious diſtempers, or the bites of venomous creatures; they are alexipharmic and ſudorific; by ſome they are recommended for cholics and aſthmas, for the cramp, and all cold diſeaſes of the nerves.

INARCHING is a method of grafting, which is commonly called grafting by approach. This method of grafting is uſed when the ſtock you intend to graft on, and the tree from which you would take the graft ſtand ſo near (or can be brought ſo near) that they may be joined together. The method of performing it is as follows: take the branch you would Inarch, and having fitted it to that part of the ſtock where you intend to join it, pare away the rind and wood on one ſide about three inches in length. After the ſame manner cut the ſtock or branch in the place where the graft is to be united, ſo that the rind of both may join equally together, at leaſt on one ſide, that the ſap may meet; then cut a little tongue upwards in the graft, and make a notch or ſlit in the ſtock downward to admit it; ſo that when they are joined, the tongues will prevent their ſlipping, and the graft will more cloſely unite with the ſtock. Having thus placed them exactly together, you muſt tie them with ſome baſs, or other ſoft bandage; then cover the place with grafting clay, to prevent the air from entering to dry the wound, or the wet from getting in to rot the ſtock: you ſhould alſo fix a ſtake into the ground to which that part of the ſtock, as alſo the graft ſhould be faſtened, to prevent the wind from breaking them aſunder, which is often the caſe when this precaution is not obſerved.

In this manner they are to remain about four months, in which time they will be ſufficiently united, and the graft may then be cut from the mother tree, obſerving to ſlope it off cloſe to the ſtock; and if at this time you cover the joined parts with freſh grafting clay, it will be of great ſervice to the graft.

This operation is always performed in April or May, that the graft may unite with the ſtock before the ſucceeding winter, and is commonly practiſed upon Oranges, Myrtles, Jaſmines, Walnuts, Firs, Pines, and ſeveral other trees, which will not ſucceed ſo well by common grafting or budding. But although I have mentioned Orange-trees among the reſt, yet I would by no means adviſe this practice where the trees are deſigned to grow large, which, in this method, they rarely ever will do; and it is chiefly practiſed upon thoſe trees only as a curioſity, to have a young plant with fruit upon it, in a year or two from ſeed, by Inarching a bearing branch into a young ſtock, whereby it is effected, yet theſe plants are ſeldom long lived.

INDIGOFERA. Lin. Gen. 889. Indigo.

The CHARACTERS are,

The empalement is of one leaf, ſpreading almoſt flat, and cut into five ſegments; the flower is of the butterfly kind, having a roundiſh ſpreading ſtandard, which is indented at the point and reflexed: the wings are oblong, obtuſe, and their under borders ſpreading; the keel is obtuſe, ſpreading, and acute-pointed. It hath ten ſtamina digeſted in a cylinder whoſe points aſcend, terminated by roundiſh ſummits, and a cylindrical germen, ſupporting a ſhort ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a long taper pod, incloſing kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria, from the flowers having ten ſtamina formed in two bodies.

The SPECIES are,

1. INDIGOFERA (*Tinctoria*) leguminibus arcuatis incanis, racemis folio brevioribus. Flor. Zeyl. 273. *Indigo with hoary arched pods, and the bunches of flowers ſhorter than the leaves.* Anil ſive Indigo Americana, ſiliquis in falculæ modum contortis. Acad. R. Scien. 1718. *Guatimala Indigo.*
2. INDIGOFERA (*Suffruticoſa*) leguminibus arcuatis incanis, caule fruticoſa. *Indigo with a ſhrubby ſtalk, and hoary arched pods.* Colutea affinis fruticoſa argentea, floribus ſpicatis è viride purpureis, ſiliquis falcatis. Sloan. Cat. Jam. 142.
3. INDIGOFERA (*Caroliniana*) leguminibus teretibus, foliolis quinis ſpicis longiſſimis ſparſis, radice perenne. *Indigo with taper pods, leaves with five lobes, long looſe ſpikes of flowers, and a perennial root.*
4. INDIGOFERA (*Indica*) leguminibus pendulis lanatis compreſſis, foliis pinnatis. *Indigo with woolly, compreſſed, hanging pods, and winged leaves.*
5. INDIGOFERA (*Glabra*) leguminibus glabris teretibus, foliolis trifoliatis. *Indigo with ſmooth taper pods, and trifoliate leaves.*

The firſt and fifth ſorts are annual plants with us; the ſeeds of theſe muſt be ſown on a hot-bed early in the ſpring of the year, and when the plants are come up two inches high, they ſhould be tranſplanted into ſmall pots filled with good freſh earth, and the pots plunged into a hot-bed of tanners bark; when the plants have obtained ſome ſtrength, they muſt have a great ſhare of free air, by raiſing the glaſſes in the day time; and in June they may be expoſed more to the open air, by which time they will begin to produce their flowers, which will be ſucceeded by pods in a ſhort time after, and in Auguſt their ſeeds will be perfected, if the plants are brought forward in the ſpring.

The ſecond ſort grows to the height of five or ſix feet, and will abide two or three years, if it is preſerved in a very warm ſtove in winter; this produces ſpikes of flowers from the wings of the leaves on the ſides of the ſtems of the plant, and ſometimes will perfect its ſeeds in England. This muſt be raiſed in a hot-bed, as was directed for the two former, but muſt not be wholly expoſed to the open air, even in the hotteſt weather.

The fourth ſort is ſuppoſed to be promiſcuouſly uſed to make the Indigo, but the firſt is the common ſort which is cultivated in the Engliſh plantations in America; but I have been aſſured by a perſon of great credit, that he has made as good Indigo from the ſecond ſort, as any that was produced in our plantations; and this being a much larger plant, will afford a greater quantity from the ſame compaſs of ground, than any one of the other ſpecies, eſpecially if cut before the ſtalks grow ligneous; and this ſort will grow on poorer land, ſo may be cultivated in ſuch places where the firſt ſort will not thrive ſo well, by which means great improvements may be made with this plant in our American plantations. There are ſome other ſorts of this plant which are natives of India, from which this commodity is made; two of which, viz. the fourth and fifth ſorts I have had growing in the garden at Chelſea, both which are very different in their leaves and pods from either of the American ſorts which have been cultivated. I have alſo received ſeeds from India of the third ſort, which is the ſame ſpecies of Indigo which grows naturally in South Carolina, and which was greatly eſteemed

ſome years ago by the Indigo planters of that country, for the beauty of the commodity which it produced; but the plants being ſlender and thinly garniſhed with leaves, which were ſmall, they did not furniſh a quantity of Indigo in proportion to their bulk, ſo of late this ſort has not been much cultivated there; though the account which I received with the ſeeds was, that it was what the beſt Indigo of India was made from.

The whole proceſs in making the Indigo being exactly deſcribed by Pere Labat in his voyages, I thought it would not be unacceptable to the Engliſh reader, to tranſlate his account in this place, which is as follows:

There was formerly a great deal of Indigo made in the pariſh of Macauba: there is not a ſtream nor river in it, where one does not meet with Indigo works, that is, backs or vats of ſtone-work well cemented, in which the plant that yields the dye is put to digeſt: there are uſually three of theſe vats one above another, in the manner of a caſcade; ſo that the ſecond, which is lower than the bottom of the firſt, may receive the liquor contained in the firſt, when the holes which are made in the bottom of the firſt are unſtopped; and that the third may in its turn receive what was in the ſecond.

The firſt, largeſt, and higheſt of theſe vats is called the ſteeper or rot; it is uſually made twenty feet long, twelve or fifteen feet wide, and three or four feet deep. The ſecond is called the battery, it is almoſt half as ſmall again as the firſt: and the third, which is much leſs than the ſecond, is called the devilling.

The names of the two firſt perfectly agree with their uſes, for the plant is laid to ſteep in the firſt, where it ferments, is macerated, and becomes like rotten dung: after that the ſalts and ſubſtance of the leaf and rind are diffuſed in the water by the fermentation, which the heat and ripeneſs of the plant has excited in it. It is in the ſecond that they agitate and beat this water, impregnated and loaded with the ſalts of the plant, till having collected, re-united, and, as it were, coagulated them with one another, they form the particles which compoſe the dye.

As for the name of the third, I do not ſee how it agrees with it, unleſs it be becauſe this vat is deeper coloured than the others; for the Indigo already formed remaining in it, conſequently dyes and colours it much deeper than the others.

To which I ſhould add, that it is only at St. Domingo that they make uſe of this name. In the Windward Iſlands they call this laſt vat the ſettler, and this name ſuits it perfectly well, becauſe it is in this, that the Indigo begun in the ſteeper, and perfected in the battery unites, grows into a maſs, ſeparates itſelf from the particles of water which remained in it, leaves them at top, and ſettles at the bottom of the vat; whence it is taken out to be put into little bags, and then into the boxes, as I ſhall mention hereafter.

Nothing ought to be omitted in the building and making theſe vats ſubſtantial; the ſtrength of the fermentation is ſo great, that unleſs the ſtone-work and plaſter be very well done, and the mortar carefully choſen and wrought, they crack; and a very moderate crack is ſufficient to let out a vat of Indigo, and cauſe a conſiderable loſs to the owner.

When this misfortune happens, the following is an eaſy and infallible remedy, which I can anſwer for, as having experienced it. Take ſome ſea ſhells of any kind whatever, pound them without burning them, powder them, and ſift them through a fine ſieve. Take an equal quantity of quick lime and ſift it; mix theſe together with water enough to make a ſtiff mortar, and as quick as you can, ſtop the cracks of your vats with it. This mixture incorporates, ſticks, and dries in a moment, and immediately prevents the matter's running out of the vat.

Every body does, or ſhould know, that Indigo is a dye uſed to dye wool, ſilk, cloths, and ſtuffs, blue: the Spaniards call it Anilo: the fineſt they make, i. e. in New Spain, comes from Guatimala, which makes a great many people call it barely Guatimalo. It is made alſo in the Eaſt-Indies, particularly in the dominions of the Great Mogul, the kingdom of Golconda, and other places thereabouts, as Mr. Tavernier relates in his voyages. This ſort is in Europe oftener called India than Indigo or Anil, people taking for its proper name the name of the place it was made at. Some authors, and among others, Father du Tertre of our order, having fancied that the Indigo which comes from the Eaſt-Indies is more beautiful, finer, and dearer, than that which comes from the Weſt-Indies, which they call flat Indigo, while they call that from the Eaſt barely India. They would have ſpoken more properly, if they had called the latter round India; for, by their leave, all the difference between the two Indias, or Indigos, is, that that made in the Eaſt-Indies is ſhaped like half eggs, and that of the Weſt like cakes; for as for goodneſs and beauty, the one will not be a whit ſuperior to the other, if both are wrought with equal care and fidelity.

The ſhape of the Oriental Indigo obliges the merchants who would carry it into Europe to pound it, that they may put the more into the cheſts, or barrels they put it up in. It is certain, that being thus pounded, its grain having been broken under the peſtle, ground, and reduced to powder, makes it finer than the Weſt-Indian Indigo, which coming in cakes juſt as it was dried, ſhews its grain entire, and conſequently muſt appear coarſer; but what is that to the intrinſic goodneſs of the commodity; I maintain it is the ſame in both, though there ſeems to be a difference.

To be convinced of this truth, take a lump of ſugar equally white throughout, break it in two, pound one part of it, and reduce it to powder; this will look finer and whiter than that which is whole, which proceeds only from this, that the grain of the one has been ſeparated and divided into a greater number of parts, which, though very ſmall, and almoſt inſenſible, yet have a greater number of ſurfaces, and conſequently reflect more light; whereas the other remaining entire, preſenting to the ſight only a large grain, which has but little ſurface, of courſe reflects leſs light, and by a neceſſary conſequence muſt appear leſs white; which is the ſame as appearing leſs beautiful, ſince the beauty of ſugar conſiſts in its whiteneſs. Methinks we may reaſon in the ſame manner upon Indigo, and ſay, that cæteris paribus, the Weſt-Indian Indigo is as beautiful as the Eaſt-Indian, when they are both wrought alike.

I think I ſhould add, that the American Indigo is better for uſe than the other; for who does not ſee, that there is no pounding this dye, without the moſt ſubtle parts being diſſipated in the air, as Mr. Tavernier allows? And who can doubt that theſe parts are the beſt, and thoſe that go fartheſt when it is uſed?

I grant that the Indigo which comes from the Eaſt-Indies, is dearer than that which is made in the Weſt-Indies; the reaſon is plain, it comes farther, runs greater riſks; and thoſe who bring it would not find their account in ſelling it, at the ſame price with that which comes from a much nearer place; but that does not at all prove it to be more beautiful, or better.

Indigo is compoſed of the ſalt and ſubſtance of the leaves and rind of a plant of the ſame name; ſo that one may ſay, it is a diſſolution or digeſtion of the plant, cauſed by the fermentation it has excited in the water it was laid to ſteep in. I know ſome writers pretend, that the ſubſtance of the leaves does not produce the Indigo, which (as they would have it) is only a viſcous tincture, or colour, which the fermentation of the plant diffuſes in the water: but before I take their words for it, I deſire they would tell me what becomes of the ſubſtance of the plant; for when it is taken out of the ſteeper, it is certain, that it has no longer the ſame weight, conſiſtence, nor colour, it had before. The leaves, which were very plump,

plump, and very full of juice, are light, flabby, and withered, and look more like dung than any thing elſe, which makes them frequently give the name of rot to the ſteeper. If then we no longer find in the leaves, and the reſt of the plant, the ſame ſubſtance that was obſervable in it before it was laid to ſteep, is it not moſt natural to believe, that it is the ſame ſubſtance and ſalts, which, being freed from their incloſures, and diffuſed in the water, have thickened it, and by their union or coagulation have formed that blue maſs which they call Indigo, ſo uſeful in painting and dyeing?

The culture.] This plant requires a good rich level ſoil, not too dry; it greatly robs and impoveriſhes the ground where it grows, and muſt be alone. There cannot be too much care taken to keep it clean, and to hinder herbs of any kind whatever from growing near it. They weed and cleanſe the ground where they intend to plant the Indigo ſeed, five times over. I ſhould think they ſhould call it ſowing, but the term of planting is conſecrated in our iſles, and I do not think I ought for the ſake of a word to fall out with our planters, who deſerve our eſteem upon a thouſand accounts, though they have got a habit of murdering the French language. They ſometimes carry their neatneſs to ſuch a pitch, that they ſweep the piece of ground as they do a room. After that they make the holes wherein the ſeeds are to be put for this purpoſe; the ſlaves, or others, who are to work at it, range themſelves in the ſame line, at the top of the piece of ground; and going backwards they make little drills the breadth of their hoe, of the depth of two or three inches, at about a foot diſtance every way, and as much as poſſible in a ſtrait line. When they are come to the end of the ground, each furniſhes himſelf with a little bag of ſeeds, and returning that way they came, they put eleven or thirteen ſeeds into each of the holes they have made. A relick of ſuperſtition has taught them that the number muſt be odd. I by no means approve of this practice, but I ſhall take care not to endeavour to ſhew them the uſeleſſneſs and folly of it, being ſatisfied I ſhall only loſe my time and labour.

This work is the moſt toilſome of any in the manufacture of Indigo; for thoſe who plant it muſt be always ſtooping, without riſing up, till the planting of the whole length of the piece is ended; ſo that when that is large, which almoſt always happens, they are obliged to remain two hours, and often more, in this poſture.

When they come to the top of the piece, they go back again, and cover the holes where they have put the ſeed in, by thruſting in with their feet the earth they had taken out of them, and ſo the ſeed is covered with about two inches of earth.

The culture of this plant may be rendered very eaſy, provided the inhabitants of our colonies in America could be brought to make uſe of the drill plough; for with this inſtrument two perſons and a horſe or mule will ſow more land with Indigo in one day, than twenty perſons can perform in the ſame time, in the method now practiſed; for the plough makes the drill, and the hopper which is fixed to the plough follows, and ſcatters the ſeeds at equal diſtances in the drills; and another inſtrument behind the hopper covers in the drills, whereby the whole operation is performed at the ſame time, and with great eaſe. Indeed the uſe of this machine muſt be underſtood by the perſons who are to perform it, otherwiſe they will do it in a bad manner, but a little practice will bring any perſon to the right uſe of it.

As the Indigo is ſown in rows, a hoeing plough may be made of a proper dimenſion, in order to clean the ground between the rows; with this contrivance it may be performed in much leſs time than in the method now practiſed. But in doing of this, I would adviſe the ſtirring of the ground, ſoon after the Indigo plants are come up, before the weeds have got much ſtrength, at which time they are ſoon deſtroyed; and by ſtirring of the ground the plants will be greatly encouraged; and the ſtrongeſt and moſt thriving plants will always make the beſt Indigo.

What Le Bat ſays of cutting the plants before they are too old, in order to have the Indigo of a better colour, is certainly right. Therefore as ſoon as the flowers begin to appear, it ſhould be cut; for if it ſtands much longer the ſtems of the plants will grow hard and ſtringy, and the lower leaves will change to a yellowiſh colour, which will render the Indigo leſs valuable; as will alſo the plants being too cloſe together, which will occaſion their bottom leaves to decay for want of free air: the ſame will happen if weeds are ſuffered to grow among the plants. Therefore there muſt be great regard to their being kept always clean.

Though all ſeaſons are good for the planting of Indigo, yet care muſt be taken not to put it in the ground in a dry time: it is true, the ſeed may keep a whole month in the ground, without being ſpoiled; but when it is planted ſo, one runs the riſk of having it eaten up by vermin, or carried away by the wind, or choked by the weeds that ſpring up with it; ſo that the prudent planters never run the riſk of planting it dry, i. e. at a time when they do not probably expect rain in two or three days after the planting is ended: they chuſe therefore, uſually, a moiſt ſeaſon, which promiſes rain, and then they are ſure of ſeeing the plant ſpring up in three or four days after its being planted.

Notwithſtanding all the care that has been taken in clearing the ground where the ſeeds have been planted, the planter muſt not be careleſs when the Indigo is got above ground; becauſe the goodneſs of the ſoil, joined to the moiſture and warmth of the climate, and the plentiful dews that fall every night, makes a prodigious quantity of weeds ſpring up, which would choke and abſolutely ſpoil the Indigo, if extreme care was not taken to weed them up as ſoon as they appear, and to keep the plant extraordinary neat; and very often the weeds are partly the cauſe of the breeding of a kind of caterpillars, which devour all the leaves in a ſhort time.

From the time of the plants riſing above ground, to its perfect maturity, is but two months, and then it is fit to cut: if one was to ſtay longer it would bloſſom, its leaves would grow drier and harder, and conſequently they would yield leſs ſubſtance, and the colour would not be near ſo beautiful.

After this firſt cutting, the new branches and leaves which the plant produces may be cut about every ſix weeks, provided the ſeaſon be rainy, and that care be taken not to cut it in a time of drought, becauſe then we ſhould infallibly loſe the plant, or, as they call it there, the Choupues, and be obliged to plant again; but all things being rightly managed, the plant may laſt two years; after which it muſt be plucked up, and new ones planted.

When the plant is ripe, which is known by the leaves, which grow brittle and leſs ſupple, they cut it ſome inches from the ground. They uſe for the cutting of it great crooked knives made like ſickles. Some planters make it into bundles like double bottles of hay, that a negro may eaſily carry them to the ſteeper; but moſt people put it into large pieces of coarſe cloth, which they tie by the four corners; and this is more convenient, the plant is leſs handled and ſqueezed, and the ſmall are carried away as ſafely as the great; and beſides the work goes on quicker this way, than in making bottles; and as time is precious every where, and eſpecially in America, there cannot be too much care taken not to loſe any.

Eighteen or twenty packets of plants, each about the ſize of two bottles of hay, are ſufficient to fill a ſteeper of the afore-mentioned ſize. When it is filled with water, ſo that it covers the plants, they put pieces of wood on the top, that the plants may not riſe above the water (much after the manner as they do upon the Grapes that are put into the preſs) and let all ferment. According as the heat is greater or leſs, or the plant more or leſs ripe, the fermentation is raiſed ſooner or later,

later, ſometimes in ſix, eight, or ten hours; and ſometimes one is obliged to wait eighteen or twenty hours, but very ſeldom longer. Then the effect of the fermentation viſibly appears, the water heats, and boils up on all ſides, as the Grapes do in the vat; and the water which at firſt was clear, inſenſibly grows thick, and becomes of a blue, inclining to a Violet colour. Then without meddling at all with the plants, they open the cocks, which are at the bottom of the ſteeper, and let all this water, loaded with the ſalts and ſubſtance of the plant, which were freed by the fermentation, run into the battery; and while they throw away as uſeleſs, and almoſt rotten, the plants that were in the ſteeper, and clean it, that it may be filled with freſh, they beat the water, which they have let out of the ſteeper into the battery.

They formerly uſed for this purpoſe a battledoor wheel, whoſe axle was placed upon the middle of the vat, and which they turned by two handles that were at the end of the ſame axle. Since that, in the room of battledoors, they have put little bottomleſs boxes, and afterwards others, whoſe bottoms were bored full of holes: at preſent they uſe a kind of pretty large pails, faſtened to ſtrong poles, placed upon chandeliers, by means of which, the negroes violently and continually raiſe, beat, and ſtir the water, till the ſalts and other parts of the ſubſtance of the plant are united, and ſufficiently, as it were, coagulated to incorporate.

The hitting this minute exactly ſhews the ſkill of him who overſees the making of the Indigo; for if he makes them leave off beating a little too ſoon, the grain not yet formed, remains diſperſed in the water, without ſinking and gathering together at the bottom of the vat, and is loſt with the water, when they are obliged to let it out, which is a great loſs to the owner; or if when it is formed they continue to beat, they diſſolve it, and the ſame inconvenience follows. This minute then muſt be nicked, and when it is found, they muſt leave off beating and let the matter reſt.

To find this minute, they make uſe of a little ſilver cup, deſigned for this uſe alone; they fill it with this water, while the negroes beat it, and according as they obſerve that the fæces ſink to the bottom of the cup, or remain diſperſed in the water, they ceaſe, or continue beating.

The General Dictionary printed at Trevoux, relates very ſeriouſly, upon the credit of father Plumier a minim, that the Indigo-maker having taking up ſome of the water of this battery in his cup, ſpits in it; and that if the Indigo be formed, the fæces immediately ſink to the bottom of the cup, and that then he makes them leave off beating, if not, he makes them continue it. This is not the only incident in which people have impoſed upon father Plumier's credulity and ſimplicity. I have been a witneſs of it upon other occaſions.

When they have left off beating they let the matter reſt, the fæces ſink to the bottom of the vat, and gather together like a kind of mud; and the water freed from all the ſalts it was impregnated with, ſwims above it, and grows clear. Then they open the cocks, which are placed in the battery at different diſtances from the bottom, and let this water run away; and when they come to the ſurface of the fæces, they open the cocks of the bottom, that the fæces may all fall into the devilling or ſettler. There they let it ſettle a little while longer, after which they put it into linen bags, fifteen or eighteen inches long, made with a point, where it perfectly purges itſelf from the reſt of the water, which remained among its particles. When that is done, they ſpread it in little boxes three or four feet long, two feet broad, and about three inches deep, and expoſe it to the air to dry it perfectly. They obſerve not to expoſe it to the ſun, becauſe it would ſtarve the colour in drying it; and they take a great deal of care to keep it from the rain, becauſe that would diſſolve and utterly ſpoil it.

It ſometimes happens that the caterpillars get among the Indigo; and if they are let alone ever ſo little a while they eat all the leaves, and often the very rind and ends of the branches, and kill the ſtocks; it is but loſt time to endeavour to deſtroy them, or hinder them from ravaging a whole piece, by ſtopping them with a ditch. The ſureſt way is to cut down the Indigo with all ſpeed, let its age be what it will, and to throw both plants and caterpillars together into the ſteeper; there they burſt, and part with what they had devoured, and the Indigo is not the leſs beautiful for it. It is true, when the plant is not come to its perfect maturity, it yields much leſs; but many experiments have taught us, that the colour it yields is much more beautiful; ſo that what is loſt one way is gained another.

I would not wait for ſo perfect a ripeneſs before I cut the plant. Perhaps all the ſecret of thoſe, whoſe Indigo is ſo much extolled beyond ours, lies only in cutting the plant when it yields the livelieſt colour. I have experienced that in leaving ſome cochineal flies upon ſome Indian Figs, which were too ripe, inſtead of being red, they grew of a filemot colour, like the fruit they fed upon. The ſame thing might happen in Indigo; and what I here propoſe is not a groundleſs doubt, ſince it is backed by the experiment I have juſt related; which plainly proves, that the ſame plant, cut at different ages, produces colours different in beauty. I would not venture to give this advice to men wedded to their intereſt, who value the quantity rather than the quality of their commodity; but I believe I have nothing to fear from our iſlanders, who are generous and magnificent, ſometimes even beyond their abilities: I adviſe them therefore to make different trials, as to the ſoil, the ſeaſon, the age of the plant, the water they ſteep it in, the point of diſſolution, &c. and I am ſure, that with a little time, labour, and patience, they will make Indigo that will equal, and even excel, the moſt boaſted Indigo of foreign countries. The planters of St. Domingo know that in 1701 their coarſe ſugar was very bad, and was not made without infinite trouble; and at preſent every body allows, that by their labour, aſſiduity, and enquiries, it is grown much more eſteemed than that of the Windward Iſlands: why may not the ſame be hoped for in Indigo?

Mr. Pomet, author of the General Hiſtory of Drugs, ſays in his firſt part, chap. 10. That the Indians of the village of Sarqueſſe, near Amadabat, uſe only the leaves of the Indigo, and throw away the plant and branches; and that it is from thence the moſt eſteemed Indigo comes.

I am pretty much of his opinion; for we ſee, that thoſe who take the pains to ſtrip off the Grapes from the branches, before they put them into the vat, and throw away the ſtalks entirely, make much the beſt wine; becauſe the ſtalks always contain an acid, which mixes with the juice of the Grape in the treading and preſſing them both together; and for the ſame reaſon, the ſtalks of the Indigo plant muſt contain a liquid much leſs perfect in colour than that of the leaves: but one ought to have the leiſure and patience of the Indians to undertake ſuch a work, and have workmen as cheap as they are in that country, ſuppoſing the fact true, as Mr. Pomet delivers it from the relation of Mr. Tavernier.

Though I am a great friend to thoſe experiments which may carry our manufactures to a greater perfection, yet I dare not propoſe this, becauſe of the expence they muſt be at, who would try it; and becauſe the profit ariſing from it would not perhaps quit coſt: however, I have here given the method of the Indians of Sarqueſſe, that I may have no reaſon to reproach myſelf with having omitted a thing which may be of ſome uſe to my country.

Good Indigo ought to be ſo light, as to ſwim upon water; the more it ſinks the more it is to be ſuſpected of being mixed with earth, aſhes, or powdered ſlate. Its colour ought to be a deep blue, inclining to a Violet, brilliant, lively, and bright: it ought to be more

more beautiful within than without, and look ſhining, and as it were ſilvered.

If it is too heavy in proportion to its bulk, it ought to be ſuſpected, and its quality examined into; for as it often bears a conſiderable price, it is fit that thoſe who buy it, ſhould be acquainted with the frauds that may be committed in it.

The firſt is the beating the plant too much in the ſteeper, that the leaves and rind of it may be entirely conſumed. It is certain that the quantity of the matter is very conſiderably increaſed by this diſſolution, but the Indigo is a great deal the leſs beautiful for it; it is blackiſh, thick, heavy, and fitter to be thrown away than uſed.

The ſecond is the mixing aſhes, earth, or a certain brown ſhining ſand (which is pretty commonly found in the bays by the ſea-ſide) and eſpecially powdered ſlate, with the fæces, as they fall into the devilling, and ſtirring all well together, that it may incorporate, and the fraud not appear: and this fraud is much more eaſily committed in the powdered Indigo, than in that which is in cakes; becauſe it is very difficult for thoſe heterogeneous bodies to unite ſo well together, as not to make in many places, as it were, beds of a different matter; and then, by breaking the piece of Indigo, they are eaſily perceived.

The two following expedients may be made uſe of, in order to know the goodneſs or badneſs of Indigo.

The firſt is to diſſolve a bit of it in a glaſs of water. If it is pure and well made, it it will entirely diſſolve; but if it is adulterated, the foreign matter will ſink to the bottom of the glaſs.

The ſecond is to burn it. The good Indigo will burn all away, whereas the aſhes, earth, ſand, and ſlate, remain after the true Indigo is conſumed.

In 1694, Indigo was ſold at the Windward Iſlands, from three livres ten ſols, to four livres per pound, according to its beauty, and the number of veſſels to be freighted with it. I have known it ſince at a much lower price; however, the planter would not fail of making a very conſiderable profit of it, though he ſhould ſell it for no more than forty ſols per pound, becauſe this commodity requires fewer utenſils and leſs charges than a ſugar-work.

Since the cultivation of Indigo was introduced in South Carolina, great quantities of that uſeful dye has been brought from thence to England; and it may be hoped that the encouragement granted by parliament to the planters, will enable them to proſecute this branch of commerce with ſuch ſucceſs, as to be a great national benefit, and of equal advantage to that colony: but as yet the planters have not arrived to ſo much perfection in the making of it as could be wiſhed; for moſt of the Indigo which I have ſeen of the produce of that country, has been ſo hard as to render it difficult to diſſolve, occaſioned by their pouring a quantity of lime-water into the vat, in order to make the fæces of the plant ſubſide. I have alſo been informed by letters from many of the planters, that after the fermentation of the plant in the vat, it comes out again almoſt entire, being but in a very ſmall proportion leſſened, either in bulk or weight. This may probably be owing, in great part, to their culture of the plant, as alſo from their vats not being large enough to contain a ſufficient quantity of the herb, to make the fermentation ſtrong enough to diſſolve it; or from the vats being built in the open air, whereby the fermentation may be impeded, by the cooler breezes of the evening air: for in the iſlands where the beſt Indigo is made, their vats are all built under cover, where their heat is much greater than that in Carolina, therefore this requires the attention of the planters of Indigo.

As to the culture of the plant, by all the information I have been able to procure from thence, they commit a great error in ſowing their ſeeds too thick, whereby the plants are drawn up with ſlender ſtems, which are not ſufficiently garniſhed with leaves; nor are the leaves ſo large and ſucculent as they would naturally

grow, were the plants allowed a greater ſhare of room, ſo that the ſtalks conſiſt of little elſe but ſtrong veſſels which are not diſſolvable by the fermentation, and it is only the upper parts of the plant which are furniſhed with leaves, like young trees growing cloſe together which are drawn up with ſlender ſtems, having no lateral branches, nor leaves, but at their tops; therefore it is not to be ſuppoſed, a great quantity of Indigo can be produced from plants ſo managed; for it is a common obſervation of the cultivators of Woad, that when their plants ſpire, and have narrow thin leaves, they produce but little of the dye; ſo that they make choice of rich ſtrong land for ſowing the ſeeds of this plant, and are careful to thin them, that they may have room to ſpread, and produce large ſucculent leaves, from which they always reap the greateſt profit. If the planters of Indigo in America would but imitate the cultivators of Woad in this particular, they would certainly find their advantage in ſo doing.

Another thing in which they err is, letting the plant ſtand too long before they cut it, ſuppoſing from the height of the plant to procure a great quantity of the dye; but in this they are greatly miſtaken, for the older the plant is before it is cut, the drier and firmer will be the ſtalks; therefore but little of the plant will be diſſolved by fermentation, nor will the fæces of the old plants be near ſo beautiful as that of the young. Therefore it is to be wiſhed, that they would try ſome few experiments in the culture and management of the plants, by ſowing thin, and keeping the plants perfectly clean from weeds; as alſo to cut them while young and full of juice, and hereby they will be better informed how to improve it to the greateſt advantage. But as labour is dear in that country, ſo many perſons probably object to the expence of cultivating the Indigo in this method; therefore, to avoid this, I have before propoſed ſowing the ſeeds with a drill plough, whereby the firſt expence will be greatly leſſened, and the ſeeds more equally ſown; and by the uſe of the hoe plough, ten acres may be kept clean from weeds with as ſmall expence, as one when managed by the hand hoe; and by ſtirring of the ground often, and earthing up the plants, they would grow much ſtronger, be leſs liable of being deſtroyed by flies, and have larger and more ſucculent ſtalks and leaves.

INGA. See MIMOSA.

INOCULATING, or Budding. This is commonly practiſed upon all ſorts of ſtone fruit, in particular, ſuch as Peaches, Nectarines, Cherries, Plums, &c. as alſo Oranges and Jaſmines, and is preferable to any ſort of grafting for moſt ſorts of fruit. The method of performing it is as follows: you muſt be provided with a ſharp penknife, having a flat haft (the uſe of which is to raiſe the bark of the ſtock, to admit the bud) and ſome ſound baſs mat, which ſhould be ſoaked in water to increaſe its ſtrength, and make it more pliable; then having taken off the cuttings from the trees you would propagate, you ſhould chooſe a ſmooth part of the ſtock about five or ſix inches above the ſurface of the ground, if deſigned for dwarfs, and for half ſtandards at three feet; but for ſtandards, they ſhould be budded ſix or more feet above ground; then with your knife make an horizontal cut croſs the rind of the ſtock, and from the middle of that cut make a ſlit downwards about two inches in length, ſo that it may be in the form of a T; but you muſt be careful not to cut too deep, leſt you wound the ſtock: then having cut off the leaf from the bud, leaving the foot-ſtalk remaining, you ſhould make a croſs cut about half an inch below the eye, and with your knife ſlit off the bud, with part of the wood to it, in form of an eſcutcheon: this done, you muſt with your knife pull off that part of the wood which was taken with the bud, obſerving whether the eye of the bud be left to it, or not (for all thoſe buds which loſe their eyes in ſtripping, ſhould be thrown away, being good for nothing) then having gently raiſed the bark of the ſtock where the croſs in-

ciſion was made, with the flat haft of your penknife clear to the wood, you ſhould thruſt the bud therein, obſerving to place it ſmooth between the rind and the wood of the ſtock, cutting off any part of the rind belonging to the bud, which may be too long for the ſlit made in the ſtock; and ſo having exactly fitted the bud to the ſtock, you muſt tie them cloſely round with baſs mat, beginning at the under part of the ſlit, and ſo proceed to the top, taking care that you do not bind round the eye of the bud, which ſhould be left open.

When your buds have been inoculated three weeks or a month, you will ſee which of them have taken; thoſe of them which appear ſhrivelled and black, being dead, but thoſe which remain freſh and plump, you may depend are joined; and at this time you ſhould looſen the bandage, which, if not done in time, will pinch the ſtock, and greatly injure, if not deſtroy, the bud.

The March following you muſt cut off the ſtock about three inches above the bud, ſloping it that the wet may paſs off, and not enter the ſtock; to this part of the ſtock left above the bud, it is very proper to faſten the ſhoot which proceeds from the bud, and would be in danger of being blown out, if not prevented; but this muſt continue no longer than one year, after which it muſt be cut off cloſe above the bud, that the ſtock may be covered thereby.

The time for Inoculating is, from the middle of June until the middle of Auguſt, according to the forwardneſs of the ſeaſon, and the particular ſorts of trees to be propagated; but the time may be eaſily known, by trying the buds, whether they will come off well from the wood. However, the moſt general rule is, when you obſerve the buds formed at the extremity of the ſame year's ſhoots, which is a ſign of their having finiſhed their ſpring growth. The firſt ſort commonly inoculated is the Apricot, and the laſt the Orange-tree, which ſhould never be done until the middle of Auguſt; and in doing of this work, you ſhould always make choice of cloudy weather; for if it be done in the middle of the day, in very hot weather, the ſhoots will perſpire ſo faſt, as to leave the buds deſtitute of moiſture; nor ſhould you take off the cuttings from the trees long before they are uſed; but if you are obliged to fetch your cuttings from ſome diſtance, as it often happens, you ſhould then be provided with a tin box or caſe, having a ſocket about ten inches long, and a cover to the top, which muſt have five or ſix holes; in this ſocket you ſhould put as much water as will fill it about two or three inches high, and place your cuttings therein in an upright poſition, ſo that that part which was cut from the tree may be ſet in the water, and ſo faſten down the cover to keep out the air; and the holes in the cover will be ſufficient to let the perſpiration of theſe branches paſs off, which, if pent in, would be very hurtful to them; you muſt alſo be careful to carry it upright, that the water may not reach to the buds; for it is a very wrong practice in thoſe who throw their cuttings all over in water, which ſo ſaturates the buds with moiſture, that they have no attractive force left to imbibe the ſap of the ſtock, whereby they very often miſcarry.

But before I leave this head, I beg leave to obſerve, that though it is the ordinary practice to diveſt the bud of that part of the wood which was taken from the ſhoot with it; yet, in many ſorts of tender trees, it is beſt to preſerve a little wood to the bud, without which they often miſcarry. The not obſerving this, has occaſioned ſome people to imagine, that ſome ſorts of trees are not to be propagated by Inoculation; whereas, if they had performed it in this method, they might have ſucceeded, as I have ſeveral times experienced.

INTYBUS. See CICHORIUM.

INULA. Lin. Gen. Plant. 860. Enula. Cæſalp. Helenium. Raii Meth. 33. After. Tourn. Inſt. R. H. 481. tab. 274. Elecampane.

The CHARACTERS are,

It hath a radiated compound flower, with an imbricated empalement, compoſed of looſe, ſpreading, ſmall leaves, the outer being the broadeſt. The diſk, or middle of the flower, is compoſed of hermaphrodite florets, and the border, or ray of the female half florets, ſtretched out like a tongue. The hermaphrodite florets are funnel-ſhaped, erect, and cut into five ſegments at the top; theſe have five ſhort ſlender ſtamina, terminated by cylindrical ſummits, which coaleſce at the top: they have one long germen, crowned with down, ſupporting a ſlender ſtyle the length of the ſtamina, crowned by an upright bifid ſtigma. The female half florets have a narrow entire tongue, no ſtamina, but a long crowned germen with a hairy ſtyle, and an upright ſtigma. The germen in both flowers become a ſingle, narrow, four-cornered ſeed, crowned with a down, ſitting on a naked receptacle.

This genus of plants is ranged in the ſecond ſection of Linnæus's nineteenth claſs, intitled Syngeneſia Polygamia ſuperflua, which includes the plants with a compound flower, made up of hermaphrodite florets in the diſk, and female half florets for the rays, which are fruitful.

The SPECIES are,

1. INULA (*Helenium*) foliis amplexicaulibus ovatis, rugoſis, ſubtus tomentoſus, calycum ſquamis ovatis. Amœn. Acad. 1. p. 410. *Elecampane with oval rough leaves, which embrace the ſtalks, woolly on their under ſide, and the ſcales of the empalement oval.* After omnium maximus, Helenium dictus. Tourn. Inſt. 483. *The greateſt Starwort, called Elecampane.*
2. INULA (*Odora*) foliis amplexicaulibus dentatis hirſutiſſimis radicalibus ovatis, caulinus lanceolatis caule paucifloro. Lin. Sp. Plant. 1236. *Inula with hairy indented leaves embracing the ſtalks, thoſe at the bottom oval, but thoſe on the ſtalks ſpear-ſhaped, which have but few flowers.* After luteus radice odorâ. C. B. P. 266. *Yellow Starwort with a ſweet root.*
3. INULA (*Salicina*) foliis ſeſſilibus lanceolatis recurvis ſerrato-ſcabris, floribus inferioribus altioribus, ramis ſub-angulatis. Amœn. Acad. 1. p. 410. *Inula with ſpear-ſhaped, recurved, rough, ſawed leaves, ſitting cloſe to the ſtalks, and the under flowers growing taller than the upper, and angular branches.* After montanus luteus, ſalicis glabro folio. C. B. P. 266. *Yellow Mountain Starwort with a ſmooth Willow leaf.*
4. INULA (*Germanica*) foliis ſeſſilibus lanceolatis recurvis, ſcabris, floribus ſubfaſciculatis. Lin. Sp. Plant. 883. *Inula with ſpear-ſhaped recurved leaves ſitting cloſe to the ſtalks, which are rough, and flowers growing in cluſters.* After Thuringiacus altiſſimus latifolius, montanus, flore luteo parvo. Haller. Jen. 181. *Talleſt broad-leaved Mountain Starwort of Thuringia, with a ſmall yellow flower.*
5. INULA (*Crithmoides*) foliis linearibus carnoſis tricuſpidatis. Lin. Sp. Plant. 883. *Inula with narrow fleſhy leaves ending in three points.* After maritimus flavus crithmum chryſanthemum dictus. Raii Syn. Ed. 3. p. 174. *Yellow maritime Starwort, called Golden Samphire.*
6. INULA (*Montana*) foliis lanceolatis hirſutis integerrimis, caule unifloro calyce brevi imbricato. Lin. Sp. Plant. 124. *Inula with hairy, ſpear-ſhaped, entire leaves, one flower on a ſtalk, having a ſhort ſcaly cup.* After montanus luteo magno flore. C. B. P. 267. *Mountain Starwort with a large yellow flower.*
7. INULA (*Oculis Chriſti*) foliis amplexicaulibus oblongis, integerrimis hirſutis, caule piloſo, corymboſo. Lin. Sp. Plant. 1237. *Inula with oblong, entire, hairy leaves, and flowers growing in a corymbus.* Conyza Pannonica lanuginoſa. C. B. P. 265. *Hungarian woolly Fleabane.*
8. INULA (*Britannica*) foliis amplexicaulibus lanceolatis, diſtinctis ſerratis, ſubtus villoſis, caule ramoſo villoſo erecto. Flor. Suec. 756. *Inula with ſpear-ſhaped ſawed leaves embracing the ſtalk, hairy on their under ſide, and an erect branching ſtalk.* After paluſtris luteus, folio longiore lanuginoſo. Tourn. Inſt. 483. *Yellow Marſh Starwort with a longer woolly leaf.*

9. Inula (*Hirta*) foliis ſeſſilibus lanceolatis, recurvatis, ſubſerrato-ſcabris, floribus inferioribus, altioribus, caule teretiuſculo ſubpiloſo. Lin. Sp. 1239. *Inula with ſpear-ſhaped, recurved, rough leaves, ſitting cloſe to the ſtalks, and the lower flowers riſing above the other.* After luteus, ſalicis folio hirſuto. C. B. P. 266. *Yellow After with a hairy Willow leaf.*

10. Inula (*Bifrons*) foliis oblongis decurrentibus denticulatis, floribus congeſtis terminalibus ſubſeſſilibus. Lin. Sp. 1236. *Inula with oblong indented leaves running along the ſtalks, and flowers in cluſters terminating the ſtalks.* Conyza Pyrenaica, foliis primulæ veris. Par. Bat. 127.

11. Inula (*Squarroſa*) foliis ovalibus lævibus reticulato-venoſis ſubcrenatis, calycibus ſquarroſis. Lin. Sp. 1240. *Inula with ſmooth oval leaves and netted veins, with rough empalements to the flowers.* After Conyzoides odoratus luteus. Tourn. Inſt. 483.

12. Inula (*Canarienſis*) foliis linearibus carnoſis tricuſpidatis, caule fruticoſo. *Inula with narrow, fleſhy, three-pointed leaves, and a ſhrubby ſtalk.* After Canarienſis fruteſcens, folio tridentato craſſa. Hort. Chelſ. 26. *Shrubby Canary Starwort with a thick leaf, ending in three points.*

13. Inula (*Saturejaoides*) foliis linearibus hirſutis oppoſitis, pedunculatis nudis unifloris. *Inula with narrow hairy ſtalks placed oppoſite, and naked foot-ſtalks, having one flower.* After ſaturejæ foliis conjugatis & piloſis, flore luteo. Houſt. MSS. *Starwort with hairy Savoury leaves growing by pairs, and a yellow flower.*

14. Inula (*Mariana*) caule erecto hiſpido, foliis lanceolatis aſperis, floribus alaribus ſolitariis ſeſſilibus, terminalibus umbellatis. *Inula with an erect prickly ſtalk, ſpear-ſhaped rough leaves, flowers proceeding ſingly from the ſides of the ſtalks, ſitting cloſe, and terminating in an umbel.* After luteus Marianus Saligneis brevioribus foliis hirſutis pubeſcentibus, ſummo caule ramoſus. Pluk. Mant. 30. *Yellow Starwort of Maryland, with ſhorter, ſallow, hairy leaves, and the top of the ſtalk branching.*

15. Inula (*Fruticoſa*) foliis lanceolatis acutis, ſubtus trinerviis, ſquamis calycinis acutis caule fruticoſa. *Inula with ſpear-ſhaped acute leaves, having three veins on their under ſide, the ſcales of the empalement ſharp-pointed, and a ſhrubby ſtalk.*

The firſt ſort grows naturally in ſeveral parts of England, but it is alſo cultivated in gardens for the ſake of the roots, which are uſed in medicine, and are accounted carminative, ſudorific, and alexipharmic, of great ſervice in ſhortneſs of breath, coughs, ſtuffing of the lungs, and infectious diſtempers.

This hath a perennial root, which is thick, branching, and of a ſtrong odour. The lower leaves are a foot long, and four inches broad in the middle, rough on their upper ſide, but downy on their under. The ſtalks riſe about three feet high, and divide toward the top into ſeveral ſmaller branches, garniſhed with oblong oval leaves, which are indented on their edges, and end in acute points. The flowers terminate the ſtalks, each branch ending with one large, yellow, radiated flower, ſitting in a ſcaly empalement, whoſe ſcales are oval, and placed like the ſcales on fiſh over each other. The flowers are ſucceeded by narrow four-cornered ſeeds crowned with down. It flowers in June and July, and the ſeeds ripen the latter end of Auguſt.

This ſort may be propagated by ſeeds, which ſhould be ſown in autumn ſoon after they are ripe; for if they are kept till the ſpring, they ſeldom grow; but where they are permitted to ſcatter, the plants will come up the following ſpring without any care, and may be either tranſplanted the following autumn; or if they are deſigned to remain, they ſhould be hoed out to the diſtance of ten inches, or a foot each way, and conſtantly kept clean from weeds; theſe roots will be fit for uſe the ſecond year.

But moſt people propagate the plant by offsets, which, if carefully taken from the old roots, with a bud, or eye, to each, will take root very eaſily; the beſt time for this is the autumn, as ſoon as the leaves begin to decay; theſe ſhould be planted in rows about a foot aſunder, and nine or ten inches diſtance in the rows; the ſpring following the ground muſt be kept clean from weeds, and if in autumn it is ſlightly dug, it will promote the growth of the roots; theſe will be fit for uſe after two years growth, but the roots will abide many years, if they are permitted to ſtand; however, the young roots are preferable to thoſe which are old and ſtringy. It loves a gentle loamy ſoil, not too dry.

The ſecond ſort hath a perennial root, from which ariſe ſeveral ſtalks, about two feet high. The leaves at bottom are oval, indented, and hairy; thoſe above embrace the ſtalks with their baſe. The ſtalks are divided into ſeveral branches, garniſhed with a few ſcattering yellow flowers. The root has a very ſweet odour when broken. It flowers in July, but rarely ripens ſeeds here.

The third ſort hath a perennial root, from which ariſes many ſpear-ſhaped leaves, which are ſmooth and recurved. The ſtalks riſe near two feet high; they are angular, and branch at the top into ſeveral foot-ſtalks, each ſuſtaining one yellow radiated flower. It flowers in June, July, and Auguſt, and the ſeeds ripen in September.

The fourth ſort riſes with an upright ſtalk between three and four feet high, with ſpear-ſhaped leaves, which are turned backward, indented on their edges, and rough on their upper ſide. The flowers are collected in cloſe bunches on the upper part of the ſtalks; they are ſmall and yellow. It grows on the Alps, and other mountainous parts of Europe. It flowers in June, and the ſeeds ripen in autumn.

The fifth ſort grows naturally on the ſea-coaſts in many parts of England. I have ſeen it growing plentifully near Sheerneſs, in the iſle of Sheepy, in Kent; this riſes with an upright ſtalk a foot and a half high, garniſhed with fleſhy ſucculent leaves, which come out in cluſters, and are about an inch and a quarter long, and one eighth of an inch broad, ending in three points. The flowers come out at the top of the ſtalks in ſmall umbels; they are yellow, and have a border of rays; this flowers in July, and the ſeeds ripen in autumn. The younger branches of this plant are frequently ſold in the London markets for Samphire; but this is a great abuſe, becauſe this plant has none of the warm aromatic taſte of the true Samphire.

The ſixth ſort grows naturally in Germany; this riſes with upright ſtalks a foot and a half high, garniſhed with ſpear-ſhaped leaves which are covered with ſoft hairs, and are entire. The ſtalks each ſupport one large yellow flower, which appears in July, but rarely ripens ſeeds here.

The ſeventh ſort hath a perennial root and an annual ſtalk; this grows naturally in Hungary. The leaves are oblong and hairy; the ſtalks branch at the top in form of a corymbus. The flowers are ſmall, yellow, and are in cloſe cluſters; theſe appear in July, but ſeldom perfect ſeeds in England.

The eighth ſort grows naturally in Auſtria, Bohemia, and other parts of Germany; it hath a perennial root, and an annual ſtalk which riſes near two feet high, garniſhed with ſpear-ſhaped woolly leaves, which are ſawed, and cloſely embrace the ſtalks with their baſe. The upper part of the ſtalk divides into two or three erect branches, or foot-ſtalks, each ſuſtaining one pretty large deep yellow flower; theſe are in beauty in July, but ſeldom ripen ſeeds here.

The ninth ſort grows naturally in the ſouth of France, Spain, and Italy; this hath a perennial root, from whence ariſe ſeveral ſtalks about one foot high; the lower leaves are ſpear-ſhaped and prickly; the upper half embrace the ſtalks, which divide into ſeveral branches, each being terminated by one yellow flower, which appears in July, but ſeldom perfects ſeeds here.

The tenth ſort riſes about a foot high, dividing into many branches, which are garniſhed by oval hairy leaves, which half embrace the ſtalks with their baſe; each

each of the branches is terminated by one large yellow flower, whoſe empalement is compoſed of oval ſcales. It flowers in July and Auguſt, but never perfects ſeeds in this country.

The eleventh ſort grows naturally in Hungary; this riſes with ſingle upright ſtalks near two feet high, garniſhed with oval ſpear-ſhaped leaves, which are ſlightly indented on the edges, and ſit cloſe to the ſtalks, which are hairy, and divide in form of a corymbus at the top. The flowers are pretty large, of a pale yellow colour, and appear in July, but are not ſucceeded by ſeeds in this country.

The twelfth ſort grows naturally in the Canary Iſlands; this riſes with ſeveral ſhrubby ſtalks near four feet high, which divide into ſmaller branches, garniſhed with cluſters of narrow fleſhy leaves, which are divided into three ſegments at their points. The flowers come out on the ſide of the branches at the top of the ſtalks; they are ſmall, and of a pale yellow colour, appearing in Auguſt.

The ſecond, third, fourth, ſixth, ſeventh, eighth, and ninth ſorts are abiding plants, which will thrive and flower in the open air in England; they may be all propagated by parting of their roots. The beſt time for doing of this is in autumn, at which time the plants may be removed; theſe may be intermixed with other flowering plants in the borders of large gardens, where they will make an agreeable variety during their continuance in flower. As theſe roots multiply pretty faſt, they ſhould be allowed room to ſpread, therefore ſhould not be planted nearer than two feet from other plants; and if they are removed every third year, it will be often enough, provided the ground between them is dug every winter, and, in ſnmmer, if they are kept clean from weeds, they will require no other care.

As ſome of theſe ſorts produce good ſeeds in England, they may be propagated by ſowing of the ſeeds in the autumn, on a border of light earth expoſed to the eaſt, where the morning ſun only is admitted; and in the ſpring, when the plants appear, they ſhould be kept clean from weeds till they are fit to remove, when they ſhould be tranſplanted on a ſhady border, ſix inches aſunder, obſerving to ſhade and water them till they have taken new root; and during the ſummer ſeaſon they ſhould be kept clean from weeds, and in autumn they may be tranſplanted into the borders where they are to remain.

The tenth ſort grows naturally in the ſouth of France, and on the Pyrenean mountains. This hath a thick fibrous root, which is perennial, ſending out many oblong indented leaves, whoſe baſe runs along the ſtalks from one joint to another: from the root ariſe three or four ſtalks about two feet high, which divide each into three or four ſmall branches, which are terminated by cluſters of ſmall yellow flowers, ſitting cloſe between the ſmall leaves; theſe appear in June and July, and are ſucceeded by narrow ſeeds, crowned with down, which ripen in the autumn.

It is propagated by ſeeds, which ſhould be ſown on a bed of light earth early in the ſpring; in May the plants will appear, which ſhould be kept clean from weeds till they are fit to tranſplant, when they ſhould be planted in an eaſt border, at about ſix inches diſtance each way, watering and ſhading them till they have taken new root; after which they will require no other culture but to keep them clean from weeds till the autumn, when they ſhould be planted where they are deſigned to remain.

The eleventh ſort grows naturally near Montpelier, and alſo in Italy; this hath a fibrous root, from which ariſe two or three erect ſtalks about two feet high, garniſhed with ſmooth oval leaves placed alternate, ſitting cloſe to the ſtalks; the veins of the leaves are ſlender, and formed like net-work. The ſtalks are terminated by one yellow flower incloſed in a rough ſcaly empalement, and at the two joints of the ſtalk immediately under the flower, come out ſmall foot-ſtalks, with ſmaller flowers than thoſe on the top.

This plant ſeldom continues above two or three years, therefore young plants ſhould be raiſed from ſeeds to ſucceed them. The ſeeds may be ſown at the ſame time, and in the ſame manner as is directed for the tenth ſort, and the plants afterward treated in the ſame way.

The fifth ſort grows naturally in the ſalt marſhes in ſeveral parts of England, which are flowed by the tides, therefore is ſeldom admitted into gardens. The roots of this are perennial, but the ſtalks decay in autumn; and if any one has curioſity to keep a plant or two of it in their gardens, they may tranſplant it into a ſhady border from the place of its natural growth, and, by keeping it moiſt in dry weather, it will thrive pretty well, but the ſtalks will not riſe ſo high, nor will the leaves be near ſo fleſhy as in the ſalt marſhes.

The twelfth ſort will not live abroad in the open air in England, during the winter ſeaſon, ſo muſt be removed into ſhelter in autumn, but ſhould have as much free air as poſſible at all times, when the weather is mild, otherwiſe it is apt to draw up weak. In cold weather the plants muſt have very little water, for their ſtalks and leaves being ſucculent, they are very apt to rot with too much wet; in ſummer they ſhould be placed abroad with other hardy exotic plants in a ſheltered ſituation, where they will add to the variety, though they are plants of no great beauty, and ſeldom flower in England, unleſs the ſummer is very warm. This is eaſily propagated by cuttings, any time in ſummer, which, if planted in a ſhady border, will take root in a ſhort time.

The thirteenth ſort was diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz; this riſes with a ſhrubby ſtalk about two feet high, dividing into many ſmaller branches, which are hairy, and garniſhed with narrow ſtiff leaves placed oppoſite, without foot-ſtalks; from the edges of theſe ariſe long hairs, which are ſtiff, and come out by pairs; at the end of the branches ariſe the naked foot-ſtalks, which are four or five inches long, ſuſtaining one ſmall, yellow, radiated flower.

This is propagated by cuttings during the ſummer ſeaſon, which muſt planted on a bed of light earth, and ſhaded till they have taken root; after which the plants muſt be treated in the ſame manner as other hardy exotics, ſheltering them from froſt in winter.

The fourteenth ſort was ſent me from Maryland, where it grows naturally; this riſes with a ſtrong ſtalk about a foot and a half high, which is pretty cloſely ſet with prickly hairs, and garniſhed with rough ſpear-ſhaped leaves, about three inches long, and near one inch broad in the middle: toward the upper part of the ſtalk there are ſingle flowers coming from the wings at each joint, and the ſtalk is terminated by a cluſter of ſmall yellow flowers, diſpoſed in form of an umbel. This plant flowers here in Auguſt, but has not as yet perfected ſeeds in England.

The fifteenth ſort was diſcovered growing naturally at Carthagena, by the late Dr. Houſtoun; this riſes with a ſhrubby ſtalk to the height of ten or twelve feet, divided into ſeveral ligneous branches, garniſhed with ſpear-ſhaped leaves five inches long, and one inch and a half broad in the middle, and ſmooth on their upper ſide, but on their under have three longitudinal veins. The flowers are produced at the end of the branches, having very large ſcaly empalements; they are as large as a ſmall Sun-flower, of a pale yellow colour. This plant is too tender to live in the open air in England, ſo muſt be conſtantly kept in the bark-ſtove. It is propagated by ſeeds, which muſt be procured from the country where it naturally grows, for it does not produce any here; theſe muſt be ſown upon a hot-bed, and when the plants are fit to remove, they ſhould be each planted into a ſmall pot filled with light earth, and plunged into a freſh hot-bed, treating them in the ſame manner as other tender plants from the ſame country.

JOHNSONIA. Dale. Callicarpa. Lin. Gen. Plant. 127. Spondylococus. Mitch. 20. This plant was ſo titled by the late Dr. Dale, of South Carolina, in memory of Dr. Johnſon, who publiſhed an edition of Gerard's Herbal, corrected and much improved.

The CHARACTERS are,

The flower hath an empalement of one leaf, cut at the brim into four ſhort ſegments, which are erect. It hath one petal, which is tubulous, and divided into four parts at the brim, which ſpread open. It hath four ſlender ſummits, which are longer than the petal, terminated by oblong yellow ſummits. In the center is ſituated a roundiſh germen, ſupporting a ſlender ſtyle, crowned by a thick obtuſe ſtigma. The germen afterward becomes a ſmooth globular berry, incloſing four hard oblong ſeeds.

Dr. Linnæus ranges this genus of plants in the firſt ſection of his fourth claſs, intitled Tetrandria Monogynia, which includes the plants whoſe flowers have four ſtamina and one ſtyle. As the ſeeds of this plant were ſent me from Carolina by the late Dr. Dale with this title, in the year 1739, and with them the characters of the genus, which was before it was mentioned by Dr. Linnæus, I have continued it under the Doctor's title.

We have but one SPECIES of this genus, viz.

JOHNSONIA (*Americana*) floribus verticillatis ſeſſilibus, foliis ovato lanceolatis oppoſitis, caule fruticoſo. Dale. *Shrubby Johnſonia with oval ſpear-ſhaped leaves placed oppoſite, and flowers growing in whorls ſitting cloſe to the ſtalks.* Callicarpa. Act. Upſal. 1741. Mr. Cateſby, in his Hiſtory of Carolina, has figured it under the following title, Frutex baccifer verticillatus, foliis ſcabris latis dentatis & conjugatis, baccis purpureis denſè congeſtis, vol. ii. p. 47.

This ſhrub grows plentifully in the woods near Charles-town, in South Carolina. It riſes from four to ſix feet high, ſending out many branches from the root, which are woolly when young, like thoſe of the Wayfaring-tree, garniſhed with oval ſpear-ſhaped leaves placed oppoſite, ſtanding on ſhort foot-ſtalks; they are about three inches long, and one inch and a quarter broad in the middle, growing narrow at both ends, and a little indented on their edges, their ſurface rough, and a little hoary. The flowers come out in whorls round the ſtalks, ſitting very cloſe to the branches at the foot-ſtalks of the leaves; they are ſmall, tubulous, cut into four obtuſe ſegments at the top, which expand, and are of a deep purple colour; theſe are ſucceeded by ſoft ſucculent berries, which turn firſt to a bright red colour, but afterward change to a deep purple when ripe, and incloſe four hard oblong ſeeds.

The ſeeds of this plant were ſent me by Mr. Cateſby, from Carolina, in 1724; and many of the plants were then raiſed in ſeveral curious gardens in England; moſt, if not all all of them were afterward planted in the open air, where they flouriſhed very well for ſome years, and ſeveral of the plants produced flowers in the Chelſea garden for four or five years, but theſe were not ſucceeded by fruit; and in the ſevere froſt in 1740, they were moſt of them deſtroyed, as were alſo the young plants which were raiſed from Dr. Dale's ſeeds the year before, which were only ſheltered under a frame; ſo that until the Doctor ſent a freſh ſupply of ſeeds in 1744, there were ſcarce any of the plants living in the Engliſh gardens; but ſince then, there has been quantities of the ſeeds brought to England.

This plant riſes eaſily from ſeeds, if they are ſown in a moderate hot-bed; the beſt way is to ſow the ſeeds in pots, and plunge them into a tan-bed of a moderate warmth; and when the plants come up, and have obtained ſome ſtrength, they ſhould be gradually inured to the open air, into which they ſhould be removed in June, and placed in a ſheltered ſituation, where they may remain till autumn; during which time they muſt be kept clear from weeds, and gently refreſhed with water in dry weather; but as theſe young plants are tender, they ſhould be placed under a frame before the early froſt comes on; for a froſt in autumn will kill the tender part of their ſhoots, which often cauſes their ſtalks to decay moſt part of their length before the ſpring. During the winter ſeaſon they ſhould be ſcreened from froſt, but in mild weather they muſt enjoy the free air, otherwiſe their ſhoots will turn mouldy and decay. The following ſpring, juſt before the plants ſhoot, they ſhould be carefully turned out of the pots, ſo as not to break their roots; and part of them may be planted in ſmall pots filled with light earth, and the others into a nurſery-bed in a warm ſituation, at about four or five inches aſunder; thoſe in the pots ſhould be plunged into a moderate hot-bed, which will forward their taking root, but afterward muſt be hardened to bear the open air as before; theſe plants in the pots ſhould be ſheltered under a frame in winter for three or four years, till they have obtained ſtrength; then they may be turned out of the pots, and planted in a warm ſituation, where they will live in the open air in common winters; but in ſevere froſt they are in danger of being killed, if they are not ſheltered; therefore the ſurface of the ground about their roots ſhould be covered with old tan to keep out the froſt, and their tops covered with Straw, Peas-haulm, or Fern, which will protect them.

Thoſe plants in the beds ſhould alſo be covered with mats, or Straw, in froſty weather, and after they have obtained ſtrength, they may be tranſplanted into a warm ſituation, and treated every winter in the ſame manner as the other.

The leaves of this ſhrub were often uſed by Dr. Dale, in dropſical caſes, with very good ſucceſs. A particular account of the virtues of this, and many other plants of Carolina, was ſent me with dried ſamples of each, by the Doctor, during the laſt war; but as the ſhips were taken in their paſſage, they were all loſt, and the Doctor dying ſoon after, I could never recover them.

JONTHLASPI. See CLYPEOLA.

JONQUIL. See NARCISSUS.

IPOMOEA. Lin. Gen. Plant. 199. Quamoclit. Tourn. Inſt. R. H. 116. tab. 39. *Quamoclit, or Scarlet Convolvulus.*

The CHARACTERS are,

The flower hath a ſmall permanent empalement, cut into five parts at the top. The petal is funnel-ſhaped, having a long cylindrical tube, whoſe brim is five-pointed, ſpreading open flat. It hath five awl-ſhaped ſtamina, nearly the length of the petal, terminated by roundiſh ſummits. In the bottom of the tube is ſituated a round germen, ſupporting a ſlender ſtyle, crowned by a roundiſh ſtigma. The germen afterward becomes a roundiſh capſule with three cells, incloſing three oblong ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. IPOMOEA (*Quamoclit*) foliis pinnatifidis linearibus, floribus ſubſolitariis. Hort. Cliff. 60. *Ipomoea with very narrow many-pointed leaves, and ſolitary flowers.* Quamoclit foliis tenuiter inciſis & pennatis. Tourn. Inſt. R. H. 116. *Quamoclit with narrow, cut, winged leaves.*
2. IPOMOEA (*Coccinea*) foliis cordatis acuminatis, baſi angulatis, pedunculis multifloris. Hort. Upſal. 39. *Ipomoea with heart-ſhaped pointed leaves, angular at the baſe, and many flowers on a ſtalk.* Quamoclit Americana folio hederæ flore coccineo. Com. Rar. Plant. 21. *American Quamoclit with an Ivy leaf and a ſcarlet flower, commonly called Scarlet Convolvulus.*
3. IPOMOEA (*Solanifolia*) foliis cordatis acutis integerrimis, floribus ſolitaris. Prod. Leyd. 430. *Ipomoea with acute, heart-ſhaped, entire leaves, and ſolitary flowers.* Quamoclit Americana ſolani folio, flore roſeo. Plum. Cat. 3. *American Quamoclit with a Nightſhade leaf, and a Roſe-coloured flower.*
4. IPOMOEA (*Violacea*) foliis cordatis integerrimis, floribus confertis corollis indiviſis. Sauv. Monſp. 114. *Ipomoea with heart-ſhaped entire leaves, flowers growing in cluſters, and undivided petals.* Quamoclit foliis ampliſſimis cordiformibus. Plum. Cat. 4. *Quamoclit with large heart-ſhaped leaves.*
5. IPOMOEA (*Tuberoſa*) foliis palmatis, lobis ſeptenis lanceolatis integerrimis pedunculis trifloris. Hort. Upſal. 39. *Ipomoea with hand-ſhaped leaves, compoſed of ſeven ſpear-ſhaped entire lobes, and foot-ſtalks having three flowers.* Convolvulus major heptaphyllus, flore ſulphureo odorato. Sloan. Cat. 55. *Greater ſeven-leaved*

I P O

Bindweed with a yellow ſweet flower, called Spaniſh Arbour Vine.

6. IPOMOEA (*Triloba*) foliis trilobis cordatis, pedunculis trifloris. Lin. Sp. Plant. 161. *Ipomea with heart-ſhaped leaves having three lobes, and three flowers on a foot-ſtalk.* Convolvulus pentaphyllos minor, flore purpureo. Sloan. Cat. 55. *Smaller five-leaved Bindweed with a purple flower.*
7. IPOMOEA (*Hepaticæfolia*) foliis palmatis, floribus aggregatis. Flor. Zeyl. 79. *Ipomoea with hand-ſhaped leaves, and flowers growing in cluſters.* Volubilis Zeylanica pes tigrinus dicta. Hort. Elth. 318. *Volubilis of Ceylon, called Tyger's-foot.*
8. IPOMOEA (*Digitata*) foliis digitatis glabris floribus ſeſſilibus, caule lævi. Lin. Sp. Plant. 162. *Ipomoea with ſmooth hand-ſhaped leaves, whoſe lobes ſit cloſe, and a ſmooth ſtalk.* Convolvulus quinquefolius glaber Americanus. Pluk. Alm. 116. *Smooth five-leaved American Bindweed.*

The firſt ſort grows naturally in both Indies; in the Weſt-Indies it is called Sweet-William, and by ſome Indian Pink. It riſes with a twining ſtalk ſeven or eight feet high, ſending out many ſlender twining branches, which twiſt about any neighbouring plants for ſupport; the leaves are winged, being compoſed of ſeveral pair of very fine narrow lobes, not thicker than fine ſowing thread; they are about an inch long, of a deep green, and ſometimes are by pairs oppoſite, and at others they are alternate; the flowers come out ſingly from the ſide of the ſtalks, ſtanding upon ſlender foot-ſtalks about one inch long; they are funnel-ſhaped, having a tube an inch long, which is narrow at bottom, but gradually widens to the top, which ſpreads open flat, with five corners or angles: they are of a moſt beautiful ſcarlet colour, ſo make a fine appearance. This is an annual plant in England, but whether it is ſo in its native place I cannot tell; for as the ſeeds fall to the ground, ſo there is a ſucceſſion of young plants, which continue flowering great part of the year.

This is a tender plant, ſo will not thrive in the open air in England; it is propagated by ſeeds, which ſhould be ſown on a hot-bed in the ſpring; and as the plants will ſoon appear, they ſhould be each tranſplanted into a ſmall pot filled with light earth, before they twine about each other, for then it will be difficult to diſengage them without breaking their tops. When they are potted, they ſhould be plunged into a new hot-bed, and ſticks placed down by each plant for their ſtalks to twine about; after they have taken new root, they ſhould have a good ſhare of air in warm weather to prevent their drawing up weak; and when they are advanced too high to remain under the frame, they ſhould be removed into the tan-bed in the ſtove, where they ſhould have ſupport, for their branches will extend to a conſiderable height. They will begin to flower in June, and there will be a ſucceſſion of flowers till the end of September, and the ſeeds will ripen well in this ſituation every autumn.

The ſecond ſort grows naturally in Carolina and the Bahama Iſlands; this is alſo an annual plant in England, but is not ſo tender as the former. It hath a twining ſtalk, which riſes ſix or eight feet high, garniſhed with heart-ſhaped leaves ending in acute points, which are divided into angles at their baſe; the flowers come out from the ſide of the branches, upon ſlender foot-ſtalks, which ſupport three or four flowers of the ſame form and ſize as the former, but are not ſo deep coloured. There is a variety of this with Orange-coloured flowers, but they do not differ in any other reſpect. If the ſeeds of this ſort are ſown on a hot-bed in the ſpring, and when the plants come up, if they are gradually hardened, and afterward tranſplanted into a warm border, in favourable ſeaſons they will flower and produce good ſeeds; but moſt people raiſe the plants on a very gentle hot-bed, and tranſplant them afterward into another; by which method they are brought forward, ſo will perfect their ſeeds earlier.

The third ſort is like the ſecond, but the leaves have no angles, and the flowers are of a Roſe colour, each foot-ſtalk ſuſtaining one flower. This may be treated in the ſame manner as the ſecond ſort.

The fourth ſort grows naturally in the Weſt-Indies, where it twines about any neighbouring ſupport, and riſes ten or twelve feet high, garniſhed with large heart-ſhaped entire leaves: the flowers come out from the ſide of the branches upon ſlender foot-ſtalks, in cluſters; they are of a blue colour, and their brims are not angular as in the former ſpecies, but entire. This ſort is propagated by ſeeds, which ſhould be ſown on a hot-bed in the ſpring, and the plants afterward treated in the ſame way as is before directed for the firſt ſort, for it is too tender to thrive in the open air here.

The fifth ſort is cultivated in moſt of the iſlands in the Weſt-Indies, but is ſuppoſed to have been introduced there from the Spaniſh Main. Theſe plants riſe to a very great height, and ſend out many branches, ſo are planted to cover arbours for ſhade in the iſlands, from whence it had the appellation of Spaniſh Arbour Vine. The ſtalks of this plant are covered with a purple bark; they twine about any neighbouring ſupport, ſending out many ſide branches, ſo that one plant will cover an arbour of fifty feet long. The leaves are divided into ſeven lobes almoſt to the bottom; the flowers come out from the ſide of the ſtalks; they are large, funnel-ſhaped, of a bright yellow colour, and ſmell very ſweet; theſe are ſucceeded by large roundiſh capſules with three cells, containing one large ſeed in each, which are of a dark colour.

This is a perennial plant, but too tender to thrive in the open air in England; the ſeeds of this muſt be ſown upon a hot-bed in the ſpring, and when the plants come up, they muſt be tranſplanted into ſeparate pots, and plunged into a freſh hot-bed; but as they will ſoon grow too tall to ſtand under a frame, they ſhould be removed into the bark-ſtove, where they muſt be ſupported, otherwiſe they will twine about all the neighbouring plants. As theſe plants extend their ſhoots to a very great length, they require a tall ſtove, where they may have room to grow, without which they will never produce any flowers. I have had theſe plants ſeveral years, but have only ſeen one flower produced from them; for they grow ſo very large before they begin to have flowers, as that few of the ſtoves in England have height enough for their growth.

The ſixth ſort grows naturally in moſt of the iſlands in the Weſt-Indies; this hath a twining ſtalk, which riſes ten or twelve feet high, garniſhed with leaves divided into three lobes, which are heart-ſhaped; the foot-ſtalks ariſe from the ſide of the ſtalks, each ſuſtaining three purple flowers. This is alſo tender, ſo the plants muſt be raiſed on a hot-bed in the ſpring, and afterward planted in ſeparate pots, plunging them into another hot-bed, where they may remain till they reach the glaſſes, when they ſhould be removed into a glaſs-caſe where they may have room, and be ſcreened from the cold, but ſhould have a large ſhare of free air admitted to them in warm weather; with this treatment the plants will flower and produce ripe ſeeds.

The ſeventh ſort grows naturally in India; this riſes with a twining hairy ſtalk four or five feet high, garniſhed with hand-ſhaped leaves which are hairy, and divided at the bottom into ſeveral lobes; the flowers come out in cluſters, incloſed in a five-cornered involucrum; they are of a purpliſh colour, but ſmall, and open only in the evening, ſo make no figure. This is propagated by ſeeds, and requires the ſame treatment as the ſixth ſort.

The eighth ſort grows naturally in the Weſt-Indies; this hath a ſmooth twining ſtalk which riſes four or five feet high, garniſhed with hand-ſhaped leaves having five lobes, which ſit cloſe to the ſtalks; the flowers come out from the ſide of the ſtalks upon ſhort foot-ſtalks, which ſuſtain two or three purple flowers; theſe are ſucceeded by round tricapſular ſeed-veſſels; in each cell there is one brown ſeed.

This

This ſort requires the ſame treatment as the two former, with which it will produce flowers and perfect its ſeeds in England.

IRESINE. Lin. Gen. 1113. Amaranthus. Sloan. Cat. Jam. 49.

The CHARACTERS are,

It hath male and female flowers on different plants; the male flowers have an empalement compoſed of two neat ſmall leaves, and five erect, ſmall, ſpear-ſhaped petals, and five nectarii ſituated between the five erect ſtamina, which are terminated by roundiſh ſummits; the female flowers on the other plants, have the like empalement and corolla as the male, with an oval germen but no ſtyle, crowned by two roundiſh ſtigma; the empalement afterward becomes an oval capſule, incloſing woolly ſeeds.

This genus is ranged in the fifth order of Linnæus's twenty-ſecond claſs of plants, intitled Dicœcia Pentandria, from their having male and female flowers on different plants, and the male flowers having five ſtamina.

We know but one SPECIES of this genus, viz.

IRESINE (*Celoſioides.*) Lin. Sp. 1456. Amaranthus panicula flavicante gracili holoſericea. Sloan. Cat. Jam. 49. *Amaranthus with ſlender yellowiſh panicles of ſilky flowers.* This plant grows naturally in Jamaica, and moſt of the other iſlands in the Weſt-Indies, from whence I have received the ſeeds. It is perennial; the ſtalks are weak, ſo require ſupport; they riſe ten or twelve feet high, having large knots at each joint, garniſhed with oval, ſpear-ſhaped, ſmooth leaves. The ſtalks are very diffuſed, branching out on every ſide; the flowers are produced on the top, in ſlender looſe panicles, covered with a ſilky down, of a pale yellow colour; theſe appear in July and Auguſt, and in warm ſeaſons the ſeeds will ripen in the autumn.

It is propagated by ſeeds, which ſhould be ſown upon a hot-bed in the ſpring, and the plants ſhould be afterward treated in the ſame manner as hath been directed for the tender ſorts of Amaranthus, till they are grown too tall to remain in the frame, when they ſhould be removed to the bark-ſtove, plunging the pots into the tan-bed, and ſupporting the branches of the plants with a trellis to prevent their falling on other plants; in this ſituation they will produce flowers and ſeeds the ſecond year, but the plants may be continued three or four years longer.

IRIS. Tourn. Inſt. R. H. 358. tab. 186, 187, 188. Lin. Gen. Plant. 57. Flower-de-luce; in French, *Flambe.*

The CHARACTERS are,

The flowers are incloſed in ſpathæ (or ſheaths) which are permanent; the flowers are divided into ſix parts; the three outer petals are oblong, obtuſe, and reflexed, the three inner are erect, and end in acute points; theſe all join at their baſe: they have three awl-ſhaped ſtamina, which lie upon the reflexed petals, and are terminated by oblong depreſſed ſummits. Under the flower is ſituated an oblong germen, ſupporting a ſlender ſtyle, crowned by a large three-pointed ſtigma; the germen afterward becomes an oblong angular capſule with three cells, filled with large ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's third claſs, intitled Triandria Monogynia, which contains thoſe plants whoſe flowers have three ſtamina and one ſtyle.

The SPECIES are,

1. IRIS (*Pſeudoacorus*) corollis imberbibus, petalis interioribus ſtigmate minoribus, foliis enſiformibus. Hort. Cliff. *Iris with an unbearded flower, the inner petals ſmaller than the ſtigma, and ſword-ſhaped leaves.* Iris paluſtris lutea. Tabern. Icon. 643. *Yellow Marſh Flower-de-luce.*
2. IRIS (*Squalens*) corollis barbatis, caule foliis longiore multifloro. Hort. Cliff. 18. *Iris with bearded flowers, and the ſtalks longer than the leaves, having many flowers.* This is the Iris vulgaris Germanica ſive ſylveſtris. C. B. P. 30. *Common German, or wild Flower-de-luce.*
3. IRIS (*Aphylla*) corollis barbatis, ſcapo nudo longitudine foliorum multifloro. Prod. Leyd. 17. *Iris with a bearded flower, and a naked ſtalk the length of the leaves, with many flowers.* Iris latifolia, caule aphyllo. C. B. P. 32. *Broad-leaved Flower-de-luce, whoſe ſtalks are without leaves.*
4. IRIS (*Variegata*) corollis barbatis, caule ſubfolioſo longitudine foliorum multifloro. Prod. Leyd. 17. *Iris with a bearded flower, and a leafy ſtalk the length of the leaves, with many flowers.* Iris latifolia pannonica, colore multiplici. C. B. P. 31. *Broad-leaved Hungarian Flower-de-luce of many colours.*
5. IRIS (*Suſiana*) corollis barbatis, caule foliis longiore unifloro. Hort. Cliff. 18. *Iris with a bearded flower, and a ſtalk longer than the leaves, having one flower.* Iris Suſiana, flore maximo ex albo nigricante. C. B. P. 31. *Flower-de-luce with a very large flower of a black and white colour, commonly called Chalcedonian Iris.*
6. IRIS (*Biflora*) corollis barbatis, caule foliis breviore trifloro. Hort. Upſal. 17. *Iris with a bearded flower, and a ſtalk ſhorter than the leaves, with three flowers.* Iris humilis major, ſaturatè purpurea biflora. Tourn. Inſt. 361. *Greater Dwarf Flower-de-luce of a dark purple colour, and having two flowers on each ſtalk.*
7. IRIS (*Pumila*) corollis barbatis, caule foliis breviore unifloro. Lin. Sp. Plant. 38. *Iris with a bearded flower, and a ſtalk ſhorter than the leaves, with one flower.* Iris humilis minor, flore purpureo. Tourn. Inſt. 361. *Smaller Dwarf Flower-de-luce with a purple flower.*
8. IRIS (*Germanica*) corollis barbatis, caule foliis longiore multifloro, floribus inferioribus pedunculatis. Lin. Sp. 55. *Iris with a bearded flower, a ſtalk longer than the leaves with many flowers, and the lower flowers on foot-ſtalks.* Iris Aſiatica cærulea polyanthos. C. B. P. *Blue Aſiatic Flower-de-luce with many flowers, called greater Dalmatian Iris.*
9. IRIS (*Orientalis*) corollis barbatis, germinibus trigonis, foliis enſiformibus longiſſimis caule foliis longiore bifloro. Pluk. 154. *Iris with a bearded flower, a three-cornered germen, very long ſword-ſhaped leaves, and a ſtalk longer than the leaves, with two flowers.*
10. IRIS (*Graminea*) corollis imberbibus, germinibus ſexangularibus, caule ancipiti, foliis linearibus. Hort. Cliff. 19. *Iris with flowers having no beards, a ſix-cornered germen, a ſtalk having flowers on both ſides, and narrow leaves.* Iris anguſtifolia prunum redolens minor. C. B. P. 33. *Smaller narrow-leaved Flower-de-luce ſmelling like Plums.*
11. IRIS (*Maritima*) corollis imberbibus, caule foliis breviore trifloro, foliis lineari-enſiformibus. *Iris whoſe flowers are not bearded, the ſtalk ſhorter than the leaves, having three flowers, and narrow ſword-ſhaped leaves.* Iris anguſtifolia maritima major. C. B. P. 33. *Greater narrow-leaved maritime Flower-de-luce.*
12. IRIS (*Anguſtifolia*) corollis imberbibus, caule foliis æqualibus multifloro, ſpathâ majoribus erectis. *Iris whoſe flowers have no beards, the ſtalks equal in length with the leaves, having many flowers which are larger and more erect than the ſpatha.* Iris anguſtifolia, maritima minor. C. B. P. *Smaller narrow-leaved maritime Flower-de-luce.*
13. IRIS (*Bicolor*) corollis imberbibus, caule foliis longiore multifloro, germinibus ſexangularibus, foliis linearibus. *Iris whoſe flowers have no beards, the ſtalks longer than the leaves, with many flowers, a ſix-cornered germen, and very narrow leaves.* Iris anguſtifolia, bicolor. C. B. P. 33. *Narrow-leaved Flower-de-luce with two colours.*
14. IRIS (*Spuria*) corollis imberbibus, germinibus ſexangularibus, caule tereti, foliis ſublinearibus. Hort. Cliff. 19. *Iris whoſe flowers have no beards, with a ſix-cornered germen, a taper ſtalk, and very narrow leaves.* Iris pratenſis anguſtifolia, folio fœtido. C. B. P. 32. *Narrow-leaved Meadow Flower-de-luce, with a ſtinking leaf.*
15. IRIS (*Sativa*) corollis imberbibus, ſpathâ bifoliâ, caule folioſo longitudine foliorum, pedunculis longioribus. *Iris with flowers having no beards, a ſheath containing two leaves, a leafy ſtalk the length of the leaves, and longer foot-ſtalks to the flowers.* Iris ſativa lutea. C. B. P. 32. *Yellow Garden Flower-de-luce.*
16. IRIS (*Picta*) corollis imberbibus, caule longitudine foliorum multifloro, foliis enſiformibus. *Iris with an unbearded flower, a ſtalk the length of the leaves, with*

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many flowers, and ſword-ſhaped leaves. Iris humilis minor, flore picto. Tourn. Inſt. 362. *Leſſer Dwarf Flower-de-luce with a painted flower.*

17. Iris (*Verna*) corollis imberbibus, caule unifloro foliis breviore, radice fibroſâ. Flor. Virg. 10. *Iris with an unbearded flower, a ſtalk ſhorter than the leaves, with one flower, and a fibrous root.* Iris Virginiana pumila ſive chamæiris verna anguſtifolia, flore purpuro-cæruleo odorato. Pluk. Alm. 196. *Dwarf Spring Virginia Flower-de-luce, with a narrow leaf, and a purple blue ſweet ſmelling flower.*

18. Iris (*Verſicolor*) corollis imberbibus, germinibus ſubtrigonis, caule tereti, foliis enſiformibus. Lin. Sp. Plant. 39. *Iris with an unbearded flower, a three-cornered germen, a taper ſtalk, and ſword-ſhaped leaves.* Iris Americana verſicolor ſtylo crenato. Dill. Hort. Elth. 188. *Party-coloured American Flower-de-luce, with a crenated ſtyle.*

19. Iris (*Fœtidiſſima*) corollis imberbibus petalis interioribus patentiſſimis, caule uniangulato foliis enſiformibus. Hort. Cliff. 19. *Iris with an unbearded flower, the inner petals ſpreading, a ſtalk with one angle, and ſword-ſhaped leaves.* Iris fœtidiſſima, ſeu Xyris. Tourn. Inſt. 360. *Moſt ſtinking Flower-de-luce, or Xyris, called Stinking Gladwyn.*

20. Iris (*Siberica*) corollis imberbibus, germinibus trigonis, caule tereti, foliis linearibus. Lin. Hort. Cliff. 19. *Iris with an unbearded flower, a three-cornered germen, a taper ſtalk, and narrow leaves.* Iris pratenſis, anguſtifolia non fœtida altior. C. B. P. 32. *Taller narrow-leaved Meadow Flower-de-luce, not ſtinking.*

21. Iris (*Tuberoſa*) corollis imberbibus, foliis tetragonis. Vir. Cliff. 6. *Iris with an unbearded flower and four-cornered leaves.* Hermodactylus folio quadrangulo. Tourn. Cor. 50. *Hermodactyle with a four-cornered leaf.*

22. Iris (*Florentina*) corollis barbatis, caule foliis altiore ſubbifloro floribus ſeſſilibus. Lin. Sp. 55. *Iris with a bearded corolla, ſtalks taller than the leaves, having two ſeſſile flowers.* Iris alba Florentina. C. B. P. 31. *White Florentine Iris.*

23. Iris (*Sambucina*) corollis barbatis, caule foliis altiore multifloro, petalis deflexis planis, erectis emarginatis. Lin. Sp. 55. *Iris with a bearded corolla, ſtalks taller than the leaves, having many flowers whoſe petals are deflexed, and the upright are indented.* Iris latifolia Germanica, ſambuci odore. C. B. P. 31.

The firſt ſort grows naturally in ditches and ſtanding waters in moſt parts of England; this is titled in the Pharmacopeia, Acorus adulterinus, or Pſeudo acorus. *Baſtard Acorus.* The roots of this are pretty thick, fleſhy, and ſpread every way near the ſurface of the ground; the leaves are ſword-ſhaped, very long, of a deep green colour, and not ſo ſtiff as thoſe of the Garden Iris; the ſtalks riſe from two to three feet high, toward the top of which grow three or four flowers one above another, which gradually ſucceed each other; they are ſhaped like the ordinary Flower-de-luce, but the three inner petals are leſs than the ſtigmas, ſo they want the three upright petals which are termed ſtandards. Theſe appear in June, and are ſucceeded by large three-cornered capſules, containing three rows of flat ſeeds.

This ſort is not cultivated in gardens, but being an officinal plant, it is here mentioned to introduce the other.

The ſecond ſort grows naturally in Germany, but has been long cultivated in the Engliſh gardens for ornament; the roots of this are very thick, fleſhy, and divided into joints, ſpreading juſt under the ſurface of the ground; they are of a browniſh colour on their outſide, but white within; the leaves ariſe in cluſters, embracing each other at their baſe, but ſpread aſunder upward in form of wings; they are a foot and a half long, and two inches broad, having ſharp edges, ending in points like ſwords; the ſtalks between theſe, which are a little longer than the leaves, having at each joint one leaf without a foot-ſtalk; theſe diminiſh in their ſize upward; the ſtalks divide into three branches, each of which produce two or three flowers one above another at diſtances, each incloſed in a ſheath; they have three large Violet-coloured petals which turn backward, and are called falls; theſe have beards near an inch long on their midrib toward their baſe, and have a ſhort arched petal which cover the beard, with three broad erect petals of the ſame colour, called ſtandards; the ſtamina lie upon the reflexed petals. Under each flower is ſituated an oblong germen, which turns to a large three-cornered capſule with three cells, filled with large compreſſed ſeeds. This flowers in June, and the ſeeds ripen in Auguſt.

There is a variety of this with blue ſtandards and purple falls, which is titled Iris hortenſis latifolia, by Caſpar Bauhin; and one with pale purple ſtandards, another with white, and a third with a ſmaller flower, but theſe are accidental varieties which have come from ſeeds.

The third ſort has broader leaves than the laſt, the ſtalks have no leaves upon them, and are equal in length with the leaves; they have three or four large bright purple flowers, which ſtand above each other, having purpliſh ſheaths or hoods; the three bending petals or falls are ſtriped with white, from the baſe to the end of the beard; the flowers are ſucceeded by large blunt triangular capſules with three cells, filled with compreſſed ſeeds. It flowers the latter end of May, and the ſeeds ripen the beginning of Auguſt.

The fourth ſort grows naturally in Hungary; the leaves of this are like thoſe of the ſecond ſort, but are of a darker green; the ſtalks riſe as tall as the leaves, and toward the bottom are garniſhed with one leaf at each joint, whoſe baſe embrace the ſtalks; the upper part is naked, and branches into three, each having two or three flowers above one another; the three upright petals or ſtandards are yellow, and the bending petals or falls are variegated with purple ſtripes. This flowers in June, but is rarely ſucceeded by ſeeds in England.

The fifth ſort grows naturally near Conſtantinople, and in other parts of the eaſt. The leaves of this ſort are not ſo broad as thoſe of the ſecond, and are of a grayiſh colour; the ſtalks riſe two feet and a half high, ſupporting one very large flower; the three upright petals are almoſt as broad as a hand, but very thin, of mixed black and white ſtripes; the three bending petals or falls are of a darker colour, from whence ſome gardeners have called it the Mourning Iris. This flowers the latter end of May, or the beginning of June, but never has any ſeeds in England.

The ſixth ſort hath broad leaves like thoſe of the ſecond ſort, but ſhorter; the ſtalks riſe nine or ten inches high, branching into two or three at the top, each ſuſtaining two deep purple flowers. This flowers in May, but is not ſucceeded by ſeeds in England.

The ſeventh ſort hath narrower and ſhorter leaves than the former; the ſtalks are ſhorter than the leaves, and ſupport one flower on the top, of a light purple colour. This flowers the beginning of May, but rarely produces ſeeds in this country. There are two or three varieties of this, which differ in the colour of their flowers.

The eighth ſort hath the largeſt leaves of any of the Flower-de-luce, they are of a grayiſh colour and ſpread wide, embracing each other at their baſe, where they are purpliſh. The ſtalks riſe near four feet high, and divide into ſeveral branches, each ſupporting three or four flowers above each other at diſtances, covered with a thin ſheath; the three bending petals or falls, are of a faint purple inclining to blue, with purple veins running lengthways; the beard is yellow, and the three erect petals or ſtandards are of a bright blue, with ſome faint purple ſtripes, the flowers have an agreeable ſcent. They appear the latter end of June, but are ſeldom ſucceeded by ſeeds in England.

The ſeeds of the ninth ſort were brought from Carniola, by the Right Rev. Dr. Pocock, Biſhop of Oſſory, who found the plants growing there naturally: theſe were ſown in the Chelſea garden, where they ſucceeded very well, and the plants have been ſince communicated to many curious gardens in Europe.

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This plant hath a thick fleſhy root, divided into many knots or tubers, which ſpread and multiply in the ground; theſe ſend out many ſtrong, thick, fleſhy fibres, which ſtrike deep in the earth, putting out ſeveral ſmaller fibres from their ſides. From theſe roots ariſe cluſters of flat ſword-ſhaped leaves of a deep green colour, which are more than three feet long, and little more than one inch broad in the broadeſt part, ending in points; theſe leaves are connected together at their baſe into ſeveral heads or bundles, wrapping over each other; and between theſe ariſe the flower-ſtalks, which grow four feet high and are jointed, having very long ſpathæ or ſheaths at each of the upper joints, which include the flowers. Theſe ſtalks generally ſuſtain two flowers, one coming out of each ſheath or ſpatha; theſe are permanent, and when the flowers are paſt, cloſely cover the ſeed-veſſel. The flowers are divided into nine leaves, three of theſe ſtand erect, which are white, and ſix turn down, which are joined together at their baſe, the lower ſpreading out into a broad, obtuſe, reflexed fall, having a beard which is of a bright yellow colour; the upper ſegment is arched over the lower, ſo as to form a ſort of lip, which is reflexed backward; under theſe is ſituated an oblong three-cornered germen, which afterward becomes an oblong, ſwollen, three-cornered ſeed-veſſel, ending in a long point, which opens into three longitudinal cells, in which the ſeeds are ranged; theſe are angular and compreſſed. This plant flowers the latter end of June, or the beginning of July, and the ſeeds ripen in the autumn. It is very hardy, and thrives well in the open air without any protection. The leaves decay to the root in the autumn, and new ones ariſe in the ſpring. The roots alſo propagate very faſt, when they are in a light moiſt ſoil, ſo that it may ſoon be had in plenty, without waiting for plants from ſeeds.

The tenth ſort grows naturally in Auſtria; this hath narrow, flat, Graſs-like leaves, about a foot long, of a light green colour; between theſe ariſe the ſtalks about ſix inches high, having two narrow green leaves, which are much longer than the ſtalks; theſe ſtalks ſuſtain two or three flowers, which are ſmaller than any of the former ſpecies; the petals have no beards, but have a broad yellow line adorned with purple ſtripes; the three falls are of a light purple colour ſtriped with blue, and have a convex ridge running longitudinally, the other are of a reddiſh purple variegated with violet; they have a ſcent like freſh Plums. It flowers in July, and is ſucceeded by ſeed-veſſels which are ſhort, having three borders or wings running lengthways, opening in three cells, which are filled with angular ſeeds, which ripen in September.

The eleventh ſort grows naturally near the ſea, in the ſouth of France, and in Italy. This hath narrow ſword-ſhaped leaves, little more than a foot long, of a deep green colour; the ſtalks do not riſe ſo tall as the leaves; they ſuſtain at the top two or three flowers which ſtand near together; they are of a bright purple colour with very deep falls, and the three ſtandards are blue; the bending petals have no beards, but inſtead of that white broad ſtripes through the middle. This flowers in July, and the ſeeds ripen in September.

The twelfth ſort hath narrower leaves than the former, but of the ſame deep green colour; the ſtalks do not riſe higher than the leaves, and ſupport two or three flowers, which have long permanent empalements ſtanding erect, which cover the ſeed-veſſel till the ſeeds are ripe; the flowers are ſmaller, and of a paler colour than thoſe of the eleventh ſort.

The thirteenth ſort has very narrow, long, Graſs-like leaves, of a light green; the ſtalks riſe two feet and a half high, ſuſtaining three or four flowers above each other, which have blue falls, and purple ſtandards ſtriped with pale blue lines. This flowers in July, and the ſeeds ripen at Michaelmas.

The fourteenth ſort grows naturally in Germany; this hath leaves like thoſe of the eleventh ſort, which, when broken, have a diſagreeable ſcent; but this is accidental, and not common to all the plants; the ſtalks of this are taper, and riſe a little above the leaves, and ſuſtain three or four flowers one above another, which have light blue ſtandards, and purple variegated falls without beards; inſtead of which, they have a broad white line in the middle; theſe are ſucceeded by ſhort thick capſules, which have ſcarce any angles, opening in three cells, which are filled with angular ſeeds. It flowers in July, and the ſeeds ripen in September.

The fifteenth ſort has narrower leaves than thoſe of the ſecond, of a pale green colour, and not ſo ſtiff; the ſtalks are equal in height with the leaves, and branch out on both ſides with long foot-ſtalks, each ſuſtaining one pretty large yellow flower, incloſed in a long two-leaved ſheath; at each joint where the foot-ſtalks come out there is a ſingle leaf, which embraces the ſtalks with their baſe. This flowers in June, but rarely produces ſeeds in this country.

There are two varieties of this ſort, one with a ſulphur-coloured, and the other with a variegated flower, which are ſuppoſed to be only varieties which have been accidentally produced from ſeeds.

The ſixteenth ſort hath broad ſword-ſhaped leaves about eight inches long; the ſtalks riſe about the ſame height with the leaves, and divide into two or three foot-ſtalks, each ſuſtaining two or three flowers one above another, which have yellow ſtandards, and the falls are variegated with dark ſtripes. This flowers in June, but does not produce ſeeds here.

The ſeventeenth ſort grows naturally in North America; this hath tufted fibrous roots, from which ariſe many Graſs-like leaves about nine inches long; from between theſe come out the ſtalks, which are ſhorter than the leaves, ſupporting one purple flower with blue ſtandards. This ſort flowers in May, but ſeldom produces ſeeds in England.

The eighteenth ſort grows alſo in North America; this hath narrow ſword-ſhaped leaves about a foot long, of a light green colour; the ſtalks riſe a little above the leaves, they are taper, and ſupport two or three flowers one above another; the ſtandards are of a light blue, and the falls are purple variegated, with a broad white line inſtead of a beard through the middle. The germen, which is ſituated under the flower, is three-cornered below, but taper toward the top. This flowers in June, and often produces ſeeds here.

The nineteenth ſort grows naturally in moiſt places in many parts of England, ſo is ſeldom admitted into gardens. This hath thick tufted fibrous roots; the leaves are of a Graſs-green, ſword-ſhaped, and when broken emit a ſtrong odour, not much unlike that of hot roaſt beef at the firſt ſcent, but if ſmelt too cloſe, becomes diſagreeable. It is generally called ſtinking Gladwyn in England; the ſtalks riſe about the ſame height with the leaves, ſupporting two ſmall flowers, of a purple colour, variegated. It flowers in June, and the ſeeds ripen in autumn.

The twentieth ſort grows naturally in Auſtria and Bohemia; this hath narrow ſword-ſhaped leaves near a foot and a half long, of a dark green colour; the flower-ſtalks riſe above the leaves, and ſupport two or three flowers with light blue ſtandards, and deep blue falls, with a broad ſtripe of white, inſtead of the beard. This flowers in July, and the ſeeds ripen in September.

There are ſeveral varieties of theſe flag or ſword-leaved Iriſes, which chiefly differ in the colour of their flowers, ſo are not to be regarded as diſtinct ſpecies; thoſe which are here enumerated are ſuppoſed to be ſpecifically different, great part of them I have cultivated by ſeeds, and found them conſtantly produce the ſame as the parent plants.

All theſe ſorts are generally propagated by parting of their roots, which moſt of them multiply faſt enough. The beſt time to remove and part the roots is in autumn, that they may get good root before the ſpring, otherwiſe they will not flower ſtrong the following ſummer. All thoſe ſorts which ſpread much

at their roots ſhould be tranſplanted every other year, to keep them within bounds, otherwiſe they will ſpread ſo much as to become troubleſome, eſpecially if they are planted near other flowers; indeed, the large growing kinds are moſt of them too ſpreading for the flower-garden, ſo are only fit to fill up the ſpaces between trees and ſhrubs in large plantations, where they will have a good effect during the time of their flowering.

The fifth, ſixth, ſeventh, tenth, eleventh, ſixteenth, ſeventeenth and eighteenth ſorts, grow in leſs compaſs, ſo may be admitted into the large borders, or in clumps of flowers in the pleaſure-garden, where they will add to the variety. The fifth ſort ſhould have a warmer ſituation, being a little tender, but all the other ſorts will grow in almoſt any ſoil or ſituation; theſe may all be propagated by ſeeds, which ſhould be ſown ſoon after they are ripe, then the plants will come up the following ſpring; but if the ſeeds are ſown in the ſpring, they will lie a year in the ground before they vegetate: when the plants come up they muſt be kept clean from weeds, and the following autumn ſhould be tranſplanted into beds at ten inches or a foot diſtance, where they may remain till they flower, which will be the ſecond ſummer after tranſplanting; but as moſt of the ſorts are ſo eaſily propagated by their roots, few people care to wait for ſeedling plants, unleſs of thoſe ſorts which are ſcarce.

The twenty-firſt ſort grows naturally in the iſlands of the Archipelago; this hath a tuberous knobbed root, from which ariſe five or ſix long, narrow, four-cornered leaves, between which ariſe the ſtalk, which ſupports one flower, ſhaped like thoſe of the Iris, but ſmall, and of a dark purple colour. This flowers in April, but does not produce ſeeds in England. It is propagated by the roots, which ſend out offſets; theſe may be taken up and tranſplanted when their leaves decay, but ſhould not be kept too long out of the ground. If theſe are planted in a deep looſe ſoil, the roots will run down, and be loſt in a few years where they are not diſturbed, ſo they ſhould be annually tranſplanted, and have a ſhallow ſoil; they are hardy in reſpect to cold, and require no farther care but to keep them clean from weeds.

The twenty-ſecond ſort grows naturally in the warm parts of Europe, but is hardy enough to thrive in the open air in England; the leaves of this ſort are broad, of a pale green colour; the flower-ſtalks riſe taller than the leaves, ſupporting one or two white flowers which ſit cloſe to the ſtalks. The roots of this are uſed in medicine, and is uſually called Sweet Iris.

The twenty-third ſort hath broad leaves, of a deeper green than thoſe of the laſt ſort. The ſtalks riſe much above the leaves, each having four or five flowers, which have a yellow ground, variegated with dark brown ſtripes, and have a ſcent like Elder; the two ſorts flower the latter end of May, or beginning of June.

They are ſo hardy as to thrive as well as the ſecond ſort in the open air in this country, and may be propagated by parting of their roots, or by ſeeds, in the ſame way as is directed for that ſort.

IRIS bulboſa. } See XIPHIUM.
IRIS Perſica. }

ISATIS. Tourn. Inſt. R. H. 211. tab. 100. Lin. Gen. Plant. 738. Woad; in French, *Paſtel.*

The CHARACTERS are,

The empalement of the flower is compoſed of four oval coloured leaves, which ſpread open and fall away. The flower hath four oblong petals, placed in form of a croſs, which are narrow at their baſe, but broad and obtuſe at their ends. It hath ſix ſtamina, four of which are as long as the petals, the other two are ſhorter; theſe are terminated by oblong lateral ſummits. It has an oblong compreſſed germen, the length of the two ſhorter ſtamina, crowned by an obtuſe ſtigma. The germen becomes an oblong compreſſed pod with one cell, opening with two valves, incloſing one oval compreſſed ſeed in the center.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifteenth claſs, intitled Tetradynamia Siliquoſa, which includes the plants whoſe flowers have four long and two ſhorter ſtamina, and their ſeeds in pods.

The SPECIES are,

1. ISATIS (*Tinctoria*) foliis radicalibus oblongo-ovatis obtuſis integerrimis, caulinis ſagittatis ſiliculis oblongis. *Woad with oblong, oval, blunt, entire leaves at bottom, but thoſe on the ſtalks arrow-pointed, and oblong pods.* Iſatis ſativa vel latifolia. C. B. P. 113. *Broad-leaved cultivated Woad.*
2. ISATIS (*Dalmatica*) foliis radicalibus lanceolatis crenatis, caulinis lineari-ſagittatis, ſiliculis brevioribus emarginatis. *Woad with ſpear-ſhaped lower leaves which are ſlightly crenated, thoſe on the ſtalks very narrow and arrow-pointed, and ſhorter indented pods.* Iſatis Dalmatica major. Bobart. *Greater Woad of Dalmatia.*
3. ISATIS (*Luſitanica*) foliis radicalibus crenatis, caulinis ſagittatis, pedunculis ſubtomentoſis. Lin. Sp. 936. *Woad with crenated lower leaves, thoſe on the ſtalks halbert-ſhaped, and the foot-ſtalks of the flowers woolly.* Iſatis ſylveſtris, minor Luſitanica. H. L. App. *Smaller wild Portugal Woad.*
4. ISATIS (*Ægyptiaca*) foliis omnibus dentatis. Lin. Sp. 937. *Woad whoſe leaves are all indented.*

The firſt ſort is cultivated in ſeveral parts of England for the purpoſes of dyeing, this being uſed as a foundation for many of the dark colours.

This is a commodity well worth propagating in all places where the land is ſuitable for it, which muſt be a pretty ſtrong ſoil, but not too moiſt.

The plant is biennial, in which it differs from the third and fourth ſort, which are annual. The lower leaves of this are of an oblong oval figure, and pretty thick conſiſtence, when growing in a proper ſoil; they are narrow at their baſe, but broad above, and end in obtuſe roundiſh points, entire on their edges, and of a lucid green. The ſtalks riſe near four feet high, dividing into ſeveral branches, garniſhed with arrow-ſhaped leaves, ſitting cloſe to the ſtalks; the ends of the branches are terminated by ſmall yellow flowers, in very cloſe cluſters, which are compoſed of four ſmall petals, placed in form of a croſs; theſe are ſucceeded by pods ſhaped like a bird's tongue, half an inch long, and one eighth of an inch broad, which when ripe turn black, and open with two valves, having one cell, in which is ſituated a ſingle ſeed. It flowers in July, and the ſeeds ripen the beginning of September.

The third ſort has been ſuppoſed to be the ſame ſpecies as the firſt, only differing by culture; but I have propagated both ſorts more than forty years, and have not found either of them alter; there are alſo very eſſential differences between the two plants, particularly in the ſhape of the under leaves, which in the wild ſort are narrow and ſpear-ſhaped, and thoſe on the ſtalks are not more than half the breadth of thoſe of the cultivated Woad. The ſtalks do not branch ſo much, and the pods are narrower than thoſe of the other ſort, nor do the roots abide ſo long, for they generally die the ſame year.

The ſecond ſort grows naturally in Dalmatia; this is a biennial plant; the lower leaves are ſpear-ſhaped, and crenated on their edges, but thoſe on the ſtalks are very narrow and arrow-pointed. The ſtalks branch more than thoſe of the firſt ſort, and riſe higher. The flowers are larger, and of a brighter yellow colour. The ſeed-veſſels are ſhorter, and broader at their ends, which are indented. Theſe plants all flower in July, and their ſeeds ripen in September.

The fourth ſort grows naturally in Egypt, and is an annual plant, which is too tender to thrive in the open air in England, therefore the ſeeds ſhould be ſown on a hot-bed in the ſpring; and when the plants are fit to remove they muſt be tranſplanted on a freſh hot-bed to bring them forward, but as ſoon as they have taken new root, they ſhould have a large ſhare of freſh air admitted to them daily, to prevent their being drawn up weak. In this bed they may remain five or ſix weeks, by which time they will be fit to tranſplant into pots, which ſhould be carefully performed, not

to let the earth fall from their roots; the pots ſhould alſo be plunged into a moderate hot-bed, giving the plants plenty of air at all times when the weather will permit, and ſupporting their ſtalks, which will otherwiſe trail on the ground; with this management the plants will flower in June, and ripen their ſeeds in September.

The three laſt ſorts are not cultivated for uſe, ſo are only preſerved in botanic gardens for the ſake of variety; the ſecond and third ſorts are propagated by ſeeds, which ſhould be ſown in autumn; and when the plants come up, they muſt be thinned, leaving them ſix inches apart; afterward they muſt be kept clean from weeds: the ſummer following they will flower and produce ripe ſeeds, after which theſe ſorts ſoon decay; the roots of the firſt ſort will live another year. The firſt ſort which is propagated for uſe, is ſown upon freſh land which is in good heart, for which the cultivators of Woad pay a large rent; they generally chuſe to have their land ſituated near great towns, where there is plenty of dreſſing, but they never ſtay long on the ſame ſpot, for the beſt ground will not admit of being ſown with Woad more than twice; for if it is oftener repeated, the crop ſeldom pays the charges of culture, &c.

Thoſe who cultivate this commodity, have gangs of people, who have been bred to this employment, ſo that whole families travel about from place to place, wherever their principal fixes on land for the purpoſe; but theſe people go on in one track, juſt as their predeceſſors taught them; nor have their principals deviated much from the practice of their anceſtors, ſo that there is a large field for improvement, if any of the cultivators of Woad were perſons of genius, and could be prevailed on to introduce the garden culture ſo far as it may be adapted to this plant; this I know from experience, having made numbers of trials in the culture of this plant, therefore I ſhall inſert them here for the benefit of thoſe who may have ingenuity enough to ſtrike out of the old beaten track.

As the goodneſs of Woad conſiſts in the ſize and fatneſs of the leaves, the only method to obtain this, is by ſowing the ſeed upon ground at a proper ſeaſon, and allow the plants proper room to grow, as alſo to keep them clean from weeds; which, if permitted to to grow, will rob the plants of their nouriſhment. The method practiſed by ſome of the moſt ſkilful kitchen-gardeners in the culture of Spinach, would be a great improvement to this plant, for ſome of them have improved the round-leaved Spinach ſo much by culture, as to have the leaves more than ſix times the ſize they were formerly; and their fatneſs has been in the ſame proportion, upon the ſame land, which has been effected by thinning of the plants when young, and keeping the ground conſtantly clean from weeds; but to return to the culture of Woad.

After having made choice of a proper ſpot of land, which ſhould not be too light and ſandy, nor over ſtiff and moiſt, but rather a gentle hazel loam, whoſe parts will eaſily ſeparate: the next is to plough this up juſt before winter, laying it in narrow high ridges, that the froſt may penetrate through the ridges, to mellow and ſoften the clods; then in the ſpring plough it again croſſway, laying it again in narrow ridges; after it has lain ſome time in this manner, and the weeds begin to grow, it ſhould be well harrowed to deſtroy them; this ſhould be twice repeated while the weeds are young, and if there are any roots of large perennial weeds, they muſt be harrowed out, and carried off the ground. In June the ground ſhould be a third time ploughed, when the furrows ſhould be narrow, and the ground ſtirred as deep as the plough will go, that the parts may be as well ſeparated as poſſible; and when the weeds appear again, the ground ſhould be well harrowed to deſtroy them. Toward the end of July, or the beginning of Auguſt, it ſhould be ploughed the laſt time, when the land ſhould be laid ſmooth, and when there is a proſpect of ſhowers, the ground muſt be harrowed to receive the ſeeds, which ſhould be ſown either in rows with the drill plough, or in broad-caſt, after the common method; but it will be proper to ſteep the ſeeds one night in water before they are ſown, which will prepare them for vegetation: if the ſeeds are ſown in drills with a plough, they will be covered by an inſtrument fixed to the plough for that purpoſe; but thoſe which are ſown broad-caſt in the common way, muſt be well harrowed in. If the ſeeds are good and the ſeaſon favourable, the plants will appear in a fortnight, and in a month or five weeks after will be fit to hoe; for the ſooner this is performed when the plants are diſtinguiſhable, the better they will thrive, and the weeds being then young, will be ſoon deſtroyed. The method of hoeing theſe plants is the ſame as for Turneps, with this difference only, that theſe plants need not be thinned ſo much; for at the firſt hoeing, if they are ſeparated to the diſtance of three or four inches, and at the laſt to ſix inches, it will be ſpace enough for the growth of the plants; if this is carefully performed, and in dry weather, moſt of the weeds will be deſtroyed: but as ſome of them may eſcape in this operation, and young weeds will ariſe, ſo the ground ſhould be a ſecond time hoed in October, always chuſing a dry time for this work; at this ſecond operation, the plants ſhould be ſingled out to the diſtance they are to remain. After this the ground will be clean from weeds till the ſpring, when young weeds will come up, therefore about a fortnight in April will be a good time to hoe the ground again, when the weeds will be young, ſo may be performed in leſs than half the time it would require if the weeds were permitted to grow large, and the ſun and wind will much ſooner kill them; this hoeing will alſo ſtir the ſurface of the ground, and greatly promote the growth of the plants; if it is performed in dry weather, the ground will be clean till the firſt crop of Woad is gathered, after which it muſt be again well cleaned; if this is carefully repeated, after the gathering of each crop, the land will always lie clean, and the plants will thrive the better. The expence of the firſt hoeing will be about ſix ſhillings per acre; and for the after-hoeings half that price will be ſufficient, provided they are performed when the weeds are young; for if they are ſuffered to grow large, it will require more labour, nor can it be ſo well performed; therefore it is not only the beſt huſbandry to do this work ſoon, but it will be found the cheapeſt method; for the ſame number of men will hoe a field of ten acres three times, when it is performed while the weeds are young, as is required to hoe it twice only, becauſe the weeds have longer time to grow between the operations.

If the land in which the ſeed is ſown, ſhould have been in culture before for other crops, ſo not in good heart, it will require dreſſing before it is ſown, in which caſe, rotten ſtable dung is preferable to any other; but this ſhould not be laid on till the laſt ploughing before the ſeeds are ſown, and not ſpread but as the land is ploughed, that the ſun may not exhale the goodneſs of it, which in ſummer is ſoon loſt, when ſpread on the ground. The quantity ſhould not be leſs than twenty loads to each acre, which will keep the ground in heart till the crop of Woad is ſpent.

The time for gathering the crop is according to the ſeaſon, but it ſhould be performed as ſoon as the leaves are fully grown, while they are perfectly green; for when they begin to change pale, great part of their goodneſs is over; for the quantity will be leſs, and the quality greatly diminiſhed.

If the land is good, and the crop well huſbanded, it will produce three or four gatherings, but the two firſt are the beſt; theſe are commonly mixed together in the manufacturing of it, but the after-crops are always kept ſeparate; for if theſe are mixed with the other, the whole will be of little value. The two firſt crops will ſell from twenty-five to thirty pounds a ton; but the latter will not bring more than ſeven or eight pounds, and ſometimes not ſo much.

An acre of land will produce a ton of Woad, and in good ſeaſons near a ton and a half.

When the planters intend to ſave the ſeeds, they cut three crops of the leaves, and then let the plants ſtand till the next year for ſeed; but if only one crop is cut, and that only of the outer leaves, letting all the middle leaves ſtand to nouriſh the ſtalks, the plants will grow ſtronger, and produce a much greater quantity of ſeeds.

Theſe ſeeds are often kept two years, but it is always beſt to ſow new ſeeds when they can be obtained. The ſeeds ripen in Auguſt; when the pods turn to a dark colour, the ſeeds ſhould be gathered; it is beſt done by reaping the ſtalks in the ſame manner as Wheat, ſpreading the ſtalks in rows upon the ground, and in four or five days the ſeeds will be fit to threſh out, provided the weather is dry; for if it lies long, the pods will open and let out the ſeeds.

There are ſome of the Woad planters who feed down the leaves in winter with ſheep, which is a very bad method; for all plants which are to remain for a future crop, ſhould never be eaten by cattle, for that greatly weakens the plants; therefore thoſe who eat down their Wheat in winter with ſheep are equally blameable.

ISOPYRUM. Lin. Gen. Plant. 621. Helleborus. Amman.

The CHARACTERS are,

The flower has no empalement. It hath five equal oval petals, which fall off, and five ſhort tubulous nectarii, ſituated within the petals, divided at their brim into three lobes, the middle one being the largeſt. It hath a great number of ſhort hairy ſtamina, terminated by ſingle ſummits, and ſeveral oval germen, with ſingle ſtyles of the ſame length, crowned by an obtuſe ſtigma the length of the ſtamina. The germen afterward become ſo many recurved capſules with one cell, filled with ſmall ſeeds.

This genus of plants is ranged in the ſeventh ſection of Linnæus's thirteenth claſs, intitled Polyandria Polygynia, which includes thoſe plants whoſe flowers have many ſtamina and ſtyles.

The SPECIES are,

1. ISOPYRUM (*Fumaroides*) ſtipulis ſubulatis, petalis acutis. Hort. Upſal. 157. *Iſopyrum with awl-ſhaped ſtipulæ, and acute petals.* Helleborus fumariæ foliis. Amman. Ruth. 57. tab. 12. *Hellebore with Fumitory leaves.*
2. ISOPYRUM (*Thalictroides*) ſtipulis ovatis, petalis obtuſis. Lin. Sp. Plant. 557. *Iſopyrum with oval ſtipulæ, and obtuſe petals.* Ranunculus nemoroſus, thalictri folio. C. B. P. 178. *Wood Crowsfoot with a Meadow Rue leaf.*
3. ISOPYRUM (*Aquilegioides*) ſtipulis obſoletis. Lin. Sp. Plant. 557. *Iſopyrum with obſolete ſtipulæ.* Aquilegia montana, flore parvo, thalictri folio. C B. P. 144. *Mountain Columbine with a ſmall flower, and Meadow Rue Leaf.*

The firſt ſort grows naturally in Siberia, from whence the ſeeds were ſent to the Imperial garden at Peterſburgh, and the late Dr. Amman, profeſſor of botany there, ſent me part of the ſeeds; this is an annual plant, which ſeldom riſes more than three or four inches high. The leaves are ſhaped like thoſe of Fumitory; they are ſmall, and of a gray colour. The ſtalk is naked to the top, where there is a circle of leaves juſt under the flowers. The flowers are ſmall, of an herbaceous colour on their outſide, but yellow within, having five acute petals, and as many honey glands, with a great number of ſtamina which are ſhorter than the petals, and ſeveral reflexed moon-ſhaped germen, having ſo many ſingle ſtyles, crowned by obtuſe ſtigmas. The flowers are ſucceeded by many recurved ſeed-veſſels with one cell, filled with ſmall ſhining black ſeeds. It flowers the beginning of April, and the ſeeds ripen in May, then the plants decay.

The ſeeds of this plant ſhould be ſown in a ſhady border ſoon after they are ripe, for when they are kept long out of the ground, they ſeldom grow the firſt year; therefore when the ſeeds are permitted to ſcatter, they ſucceed better than thoſe which are ſown, and the plants will require no other care but to keep them clean from weeds; as there is no great beauty in this plant, ſo a ſmall patch or two of them in any ſhady part of the garden, by way of variety, will be ſufficient.

The ſecond and third ſorts were ſent me from Verona, near which place they grow naturally. The ſecond ſort hath leaves very like thoſe of the ſmalleſt Meadow Rue. The ſtalks riſe four or five inches high, ſupporting a few ſmall white flowers, with obtuſe petals, containing many ſmall ſeeds. It flowers the latter end of March, and the ſeeds ripen in May.

The third ſort hath leaves like the ſecond, but a little larger, and of a greener colour. The ſtalks riſe about ſix inches high, ſupporting two or three ſmall white flowers, ſhaped like thoſe of the ſecond ſort; theſe are ſucceeded by recurved ſeed-veſſels, filled with ſmall ſeeds. It flowers in April, and the ſeeds ripen in June.

Both theſe plants delight in a moiſt ſhady ſituation; they are propagated by ſeeds in the ſame way as the firſt ſort, but theſe will live two or three years.

ISORA. See HELICTERES.

ITEA. Lin. Gen. Plant. 243. Flor. Virg. 143. Diconangia. Mitch. Gen. 5.

The CHARACTERS are,

The empalement of the flower is ſmall, permanent, and erect, ending in five acute points. The flower has five petals, which are inſerted in the empalement. It hath five awl-ſhaped ſtamina inſerted in the empalement, which are as long as the petals, terminated by roundiſh ſummits, and an oval germen ſupporting a cylindrical ſtyle, which is permanent, crowned by an obtuſe ſtigma. The germen afterward becomes a long oval capſule, with the ſtyle at the top, having one cell filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

We have but one SPECIES of this genus, viz.

ITEA (*Virginica.*) Flor. Virg. 143. We have no Engliſh title for this plant,

This ſhrub grows in moiſt ſoils in ſeveral parts of North America, where it riſes to the height of ſix or ſeven feet, ſending out many branches from the ground upward, garniſhed with ſpear-ſhaped leaves placed alternately, ſlightly ſawed on their edges, which are reflexed, veined, and of a light green. At the extremity of the ſame year's ſhoots, in the month of July, are produced fine ſpikes of white flowers, three or four inches long, erect; and when theſe ſhrubs are in vigour, they will be entirely covered with theſe ſpikes of flowers, ſo that they make a fine appearance at their ſeaſon of flowering.

This ſhrub is now pretty common in England; but the garden where I have ſeen it in the greateſt vigour, is that of his late Grace the Duke of Argyle, at Whitton, near Hounſlow, where the ſoil agrees ſo well with this plant, that it thrives and flowers there as well as in its native country.

This ſhrub will live in the open air in England, the cold never injuring it; but it will not thrive upon dry gravelly ground, being very apt to die in ſuch places in the ſummer ſeaſon. It is propagated by layers, which, if laid down in the autumn, will put out roots ſo as to be fit to remove by the following autumn; when they may be tranſplanted into a nurſery, or to the place where they are to remain. This ſhrub flowers at a ſeaſon when there are few others in beauty, ſo it is the more valuable on that acount.

IVA. Lin. Gen. 1059. Tarconanthus. Vail. Act. Par. 1719.

The CHARACTERS are,

It hath male and female flowers in the ſame plant; the flowers have a roundiſh permanent empalement, including ſeveral florets, which are convex; the male flowers have one petal, which is funnel-ſhaped, and indented in five parts at the brim; theſe are ſituated in the diſk; they have five briſtly ſtamina, terminated by erect ſummits, approach-

ing each other; the female half florets have neither petal or ſtamina; they have an oblong germen ſupporting two hair-like ſtyles, crowned with acute ſtigmas. The empalement afterward becomes the capſule, including one naked ſeed.

This genus of plants is ranged in the fifth ſection of Linnæus's twenty-firſt claſs, intitled Moncœcia Pentandria, from the plants having male and female florets, and the male florets having five ſtamina.

The SPECIES are,

1. IVA (*Annua*) foliis lanceolato-ovatis, caule herbaceo. Hort. Upſal. 285. *Ivy with oval ſpear-ſhaped leaves and an herbaceous ſtalk.* Tarconanthus foliis cordatis ſerratis trinervis. Prod. Leyd. 538.
2. IVA (*Fruteſcens*) foliis lanceolatis, caule fruticoſo. Amœn. Acad. 3. p. 25. *Iva with ſpear-ſhaped leaves and a ſhrubby ſtalk.* Agerato affinis, Peruviana fruteſcens. Pluk. Alm. 12.

The firſt ſort grows naturally in many parts of the Weſt-Indies; it is an annual plant, with an herbaceous ſtalk, which riſes from two to three feet high, ſending out ſeveral branches from the ſides, which are garniſhed with oval ſpear-ſhaped leaves, having three deep longitudinal veins, and are ſawed on their edges; the ſtalks and branches are terminated by ſmall cluſters of pale blue flowers, which appear in July, and are ſucceeded by ſeeds which ripen in the autumn.

This is propagated by ſeeds, which ſhould be ſown in the ſpring upon a moderate hot-bed: and when the plants are fit to remove, they ſhould be tranſplanted on another hot-bed to bring them forward, treating them in the ſame way as is directed for Impatiens, with which management the plants will flower and perfect their ſeeds.

The ſecond ſort has been long an inhabitant of the Engliſh gardens, where it has been known by the title of Jeſuits Bark-tree. It hath ſlender ligneous branches which riſe eight or ten feet high, garniſhed with ſpear-ſhaped ſawed leaves; the branches (in warm ſeaſons) are terminated by ſmall cluſters of flowers, of a pale purple colour, which appear the latter end of Auguſt, but are not ſucceeded by ſeeds in England.

This ſhrub was ſome years paſt preſerved in greenhouſes, being ſuppoſed too tender to live through the winter in the open air; but late trials have made it appear, that the ordinary winters in England ſeldom hurt it, provided it is planted in a dry ſoil and a ſheltered ſituation. It is propagated in the nurſery-gardens about London for ſale, and if the branches are layed into the ground in the ſpring, they will put out roots in ſix months; or if cuttings are planted in a ſhady border in May, they will take root.

JUDAICA ARBOR. See CERCIS.

JUGLANS. Lin. Gen. Plant. 950. Nux. Tourn. Inſt. R. H. 581. tab. 346. Walnut; in French, *Noiſetier.*

The CHARACTERS are,

It hath male and female flowers at ſeparate diſtances on the ſame tree. The male flowers are diſpoſed in an oblong rope, or katkin, which is cylindrical and imbricated, with ſpaces between the ſcales; each ſcale has one flower, with one petal fixed in the outer center, toward the outſide of the ſcale. The petal is divided into ſix equal parts; in the center is ſituated many ſhort ſtamina, terminated by erect acute ſummits. The female flowers grow in ſmall cluſters, ſitting cloſe to the branches; theſe have a ſhort, erect, four-pointed empalement, ſitting on the germen, and an acute erect petal, divided into four parts. Under the empalement ſits a large oval germen, ſupporting two ſhort ſtyles, crowned by large reflexed ſtigmas. The germen afterward becomes a large oval dry berry, with one cell, incloſing a large oval nut with netted furrows, whoſe kernel hath four lobes, which are variouſly furrowed.

This genus of plants is ranged in the eighth ſection of Linnæus's twenty-firſt claſs, intitled Moncœcia Polyandria, including thoſe plants which have male and female flowers on the ſame plant, and the male flowers have many ſtamina.

The SPECIES are,

1. JUGLANS (*Regia*) foliolis ovalibus glabris ſubſerratis ſubæqualibus. Hort. Cliff. 449. *Walnut with oval ſmall leaves or lobes, which are ſmooth, ſawed, and equal.* Nux juglans ſive Regia vulgaris. C. B. P. 417. *Common Walnut.*
2. JUGLANS (*Nigra*) foliolis quindenis lanceolatis ſerratis, exterioribus minoribus gemmulis ſuper axillaribus. Lin. Sp. 1415. *Walnut-tree with ſpear-ſhaped lobes which are ſharply ſawed, the middle being the largeſt.* Nux juglans Virginiana nigra. H. L. 452. *Black Virginia Walnut.*
3. JUGLANS (*Oblonga*) foliolis cordato-lanceolatis inferne nervoſis, pediculis foliorum pubeſcentibus. *Walnut with heart ſpear-ſhaped lobes, having many veins on their under ſide, and downy foot-ſtalks to the leaves.* Juglans nigra, fructu oblongo profundiſſime inſculpto. Cat. Hort. Chelſ. *Black Virginia Walnut, with an oblong fruit very deeply furrowed.*
4. JUGLANS (*Alba*) foliolis lanceolatis ſerratis, exterioribus latioribus. Lin. Sp. Plant. 997. *Walnut with ſpear-ſhaped ſawed lobes, the outer being the broadeſt.* Nux juglans alba Virginienſis. Park. Theat. 1414. *White Virginia Walnut called Hickery Nut.*
5. JUGLANS (*Glabra*) foliolis cuneiformibus ſerratis, exterioribus majoribus. *Walnut with wedge-ſhaped lobes which are ſawed, the outer beiug the largeſt.* Juglans alba fructu minori cortice glabro. Clayt. Flor. Virg. *White Walnut with a ſmaller fruit, and a ſmooth bark.*
6. JUGLANS (*Ovata*) foliolis lanceolatis ſerratis glabris ſubæqualibus. *Walnut with ſmooth, ſpear-ſhaped, ſawed lobes, which are equal.* Juglans alba fructu ovato compreſſo, nucleo dulce, cortice ſquamoſo. Clayt. Flor. Virg. *White Walnut with an oval compreſſed fruit, a ſweet kernel, and a ſcaly bark, commonly called Shagbark in America.*

There are ſeveral varieties of the common Walnut, 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 dependence 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 chuſe.

The ſecond ſort is commonly called Black Virginia Walnut; this grows to a large ſize in North America. The leaves of this ſort 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.

The third ſort grows naturally in North America, where the trees grow to a large ſize. The leaves of this ſort 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 is very hard. The kernel is ſmall, but well flavoured.

The fourth ſort is very common in moſt parts of North America, where it is called Hickery Nut. The leaves of this ſort 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 Wal-

nut; but the ſhell is not furrowed, and is of a light colour.

The fifth ſort is not ſo large as the fourth. 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.

The ſixth ſort grows naturally in North America, where it riſes to a middling ſtature. The leaves of this ſort 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 of the tree are covered with a very ſmooth browniſh bark, but the ſtems and older branches have a rough ſcaly bark, from whence it had the appellation of Shagbark, in America.

The common Walnut is propagated in many parts of England for the fruit, and formerly the trees were propagated for their wood, which was in very great eſteem, till the quantity of Mahogany, and other uſeful woods which have been of late years imported into England, have almoſt baniſhed the uſe of Walnut.

Theſe trees are propagated by planting their nuts, which, as was before obſerved, ſeldom produce the ſame ſort of fruit as are 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 may be a good number of the 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; by this method a ſufficient number of the trees may be generally found among them to remain, which will thrive and flouriſh greatly when they have room; but as many people do not care to wait ſo long for the fruit, ſo 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 ſo long lived, as thoſe which are planted young.

All the ſorts of Walnuts which are propagated 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 are 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, are always the moſt fruitful and beſt flavoured.

The nuts ſhould be preſerved in their outer covers in dry ſand until February, when they ſhould be planted in lines, at the diſtance you intend them to remain; but in the rows they may be placed pretty cloſe, for fear the nuts ſhould miſcarry; and the young trees, where they are too thick, may be removed, after they have grown two or three years, leaving the remainder at the diſtance they are to ſtand.

In tranſplanting theſe trees, you ſhould obſerve never to prune either their roots or large branches, both which 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, although they are eight or ten years old, as I have ſeveral times experienced; though, as was before obſerved, theſe trees will not grow ſo large, or continue ſo long, as thoſe which are removed young.

This tree delights in a firm, rich, loamy ſoil, or ſuch as is inclinable to chalk or marl; and will thrive very well in ſtony ground, and on chalky hills, as may be ſeen by thoſe large plantations near Leatherhead, Godſtone, and Carſhalton in Surry, where are great numbers of theſe trees planted upon the downs, which annually produce large quantities of fruit, to the great advantage of their owners; one of which I have been told, farms the fruit of his trees, to thoſe who ſupply the markets, for 30 l. per annum.

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 much nearer, it promotes their upright growth. The black Virginia Walnut is much more inclinable to grow upright than the common ſort, and the wood being generally of a more beautiful grain, renders it preferable to that, and better worth cultivating. I have ſeen ſome of this wood which hath been beautifully veined with black and white, which, when poliſhed, has appeared at a diſtance, like veined marble. This wood is greatly eſteemed by the cabinet-makers for inlaying, as alſo for bedſteads, ſtools, tables, and cabinets; and is one of the moſt durable woods for thoſe purpoſes of Engliſh growth, being leſs liable to be infected with inſects than moſt other kinds (which may proceed from its extraordinary bitterneſs;) but it is not proper for buildings of ſtrength, it being of a brittle nature, and exceeding ſubject to break very ſhort, though it commonly gives notice thereof, by its cracking ſome time before it breaks.

The general opinion is, that the beating of this fruit improves the trees, which I do not believe, ſince in the doing of this, the younger branches are generally broken and deſtroyed; but as it would be exceeding troubleſome to gather it by hand, ſo in beating it off, great care ſhould be taken that it be not done with violence, for the reaſon before aſſigned. In order to preſerve the fruit, it ſhould remain upon the trees till it is thorough ripe, when it ſhould be beaten down, and laid in heaps for two or three days; after which they ſhould be ſpread abroad, when, in a little time, their huſks will eaſily part from the ſhells; then you muſt dry them well in the ſun, and lay them up in a dry place, where mice or other vermin cannot come to them, in which place they will remain good for four or five months; but there are ſome perſons who put their Walnuts into an oven gently heated, where they let them remain four or five hours to dry, and then put them up in oil jars, or any other cloſe veſſel, mixing them with dry ſand, by which method they will keep good ſix months. The putting of them in the oven is to dry the germ, and prevent their ſprouting; but if the oven be too hot it will cauſe them to ſhrink, therefore great care muſt be had to that.

All the other ſorts are propagated in the ſame way, but as few of the ſorts produce fruit in England, ſo their nuts muſt be procured from North America; which ſhould be gathered when fully ripe, and put up in dry ſand, to preſerve them in their paſſage to England: when they arrive here, the ſooner they are planted the greater chance there will be of their ſucceeding;

ceeding; when the plants come up, they ſhould be kept clean from weeds; and if they ſhoot late in the autumn, and their tops are full of ſap, they ſhould be covered with mats, or ſome other light covering, to prevent the early froſts from pinching their tender ſhoots, which often cauſes them to die down a conſiderable length before the ſpring; but if they are ſcreened from theſe early froſts, the ſhoots will become firmer and better able to reſiſt the cold. Some of theſe ſorts are tender while young, ſo require a little care for the two firſt winters, but afterward will be hardy enough to reſiſt the greateſt cold of this country.

The black Virginia Walnut is full as hardy as the common ſort: there are ſome large trees of this kind in the Chelſea garden, which have produced great quantities of fruit upward of forty years; the nuts have generally ripened ſo well there as to grow, but their kernels are ſmall, ſo are of little value.

The trees all require the ſame culture as the common Walnut, but they grow beſt in a ſoft loamy ſoil not too dry, and where there is a depth of ſoil for their roots to run down. The Hickery, when young, is very tough and pliable, ſo the ſticks of it are much eſteemed; but the wood when grown large is very brittle, ſo not of any great uſe. The black Virginia Walnut is the moſt valuable wood of all the ſorts; ſome of the trees are beautifully veined, and will take a good poliſh, but others have very little beauty, which is the caſe of many other ſorts of wood.

JUJUBE. See ZIZIPHUS.

JULIANS, or ROCKETS. See HESPERIS.

JULY FLOWER. See DIANTHUS.

JUNCUS. Tourn. Inſt. R. H. 246. tab. 127. Lin. Gen. Plant. 396. Ruſh; in French, *Jonc.*

The CHARACTERS are,

It hath a chaff opening with two valves, an empalement with ſix oblong pointed little leaves which are permanent; the flower hath no petals, but the coloured empalement is by ſome taken for petals. It hath ſix ſhort hairy ſtamina, terminated by oblong erect ſummits, and a three-cornered pointed germen, with a ſhort ſlender ſtyle, crowned by three long, hairy, ſlender ſtigmas, which are reflexed. The germen afterward becomes a cloſe three-cornered capſule with one cell, opening with three valves, incloſing roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, intitled Hexandria Monogynia, which contains the plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. JUNCUS (*Acutus*) culmo ſubnudo tereti mucronato, paniculâ terminali, involucro diphyllo ſpinoſo. Lin. Sp. Plant. 325. *Ruſh with a naked, taper, pointed ſtalk, terminated by a panicle, and a prickly two-leaved involucrum.* Juncus acutus, capitulis ſorghi. C. B. P. 11. *Prickly large Sea Ruſh.*
2. JUNCUS (*Filiformis*) culmo nudo, apice membranaceo incurvo, paniculâ laterali. Lin. Sp. Plant. 326. *Ruſh with a naked ſtalk, an incurved membranacous apex, and a lateral panicle.* Juncus acutus, panicula ſparſa. C. B. P. *Common hard Ruſh.*
3. JUNCUS (*Effuſus*) culmo nudo ſtricto, paniculâ laterali. Flor. Leyd. 44. *Ruſh with a naked cloſe ſtalk, and a lateral panicle.* Juncus lævis, paniculâ ſparsâ, major. C. B. P. *Larger common ſoft Ruſh, with a ſpreading panicle.*
4. JUNCUS (*Conglomeratis*) culmo nudo ſtricto, capitulo laterali. Prod. Leyd. 44. *Ruſh with a cloſe naked ſtalk and lateral heads.* Juncus lævis, paniculâ non ſparsâ. C. B. P. *Soft Ruſh with a more compact panicle.*

There are many other ſpecies of this genus, ſome of which grow naturally in England, and are very troubleſome weeds in many places, ſo are not worthy of being enumerated here; and thoſe which are here mentioned, is only to point out a method of deſtroying them.

The firſt and ſecond ſorts grow on the ſea-ſhores, where they are frequently watered by the ſalt water. Theſe two ſorts are planted with great care on the banks of the ſea in Holland, in order to prevent the water from waſhing away the earth; which being very looſe, would be in danger of removing every tide, if it were not for the roots of theſe Ruſhes, which faſten themſelves very deep in the ground, and mat themſelves near the ſurface, ſo as to hold the earth cloſely together. Therefore, whenever the roots of theſe Ruſhes are deſtroyed, the inhabitants immediately repair them to prevent farther damage. In the ſummer time, when the Ruſhes are fully grown, the inhabitants cut them, and tie them up into bundles, which are dried, and afterward carried into the larger towns and cities, where they are wrought into baſkets, and ſeveral other uſeful things, which are frequently ſent into England. Theſe ſorts do not grow ſo ſtrong in England, as they do on the Maeſe, and ſome other places in Holland, where I have ſeen them upward of four feet high.

The third and fourth ſorts 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, to lay them in heaps, and burn them gently; and the aſhes which theſe afford, will be good 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.

JUNIPERUS. Tourn. Inſt. R. H. 588. tab. 361. Lin. Gen. Plant. 1005. Juniper; in French, *Genévrier.*

The CHARACTERS are,

It hath male and female flowers in different plants, and ſometimes at ſeparate diſtances on the ſame plant. The male flowers grow on a conical katkin; the flowers are placed by threes, two of them faſtened along the common tail oppoſite, terminated by a ſingle one; the ſcales are broad, ſhort, lying over each other, and fixed to the column by a very ſhort foot-ſtalk. The flower has no petal, but three ſtamina in the male flower which are joined in one body below, having three diſtinct ſummits, adhering to the ſcales of the lateral flowers. The female flowers have a ſmall three-pointed empalement ſitting upon the germen, which is permanent; they have three ſtiff, acute, permanent petals; the germen ſitting below the empalement, ſupports three ſingle ſtyles, crowned by ſtigmas. The germen afterward becomes a roundiſh berry, incloſing three ſtony ſeeds, which are oblong and angular on one ſide, but convex on the other.

This genus of plants is ranged in the twelfth ſection of Linnæus's twenty-ſecond claſs, intitled Dicœcia Monodelphia, which includes thoſe plants which have male and female flowers in different plants, whoſe ſtamina are joined in one body.

The SPECIES are,

1. JUNIPERUS (*Communis*) foliis ternis patentibus mucronatis bacca longioribus. Lin. Sp. Plant. 1040. *Juniper with ſpreading ſharp-pointed leaves placed by threes.* Juniperis vulgaris fruticoſa. C. B. P. 488. *The common Engliſh Juniper.*
2. JUNIPERIS (*Suecia*) foliis ternis patentibus, acutioribus, ramis erectioribus, bacca longioribus. *Juniper with longer and more acute-pointed leaves placed by threes, erect branches, and longer berries.* Juniperis vulgaris arbor. C. B. P. 488. *The Tree, or Swediſh Juniper.*
3. JUNIPERUS (*Virginiana*) foliis ternis omnibus patentibus. *Juniper with leaves placed by threes, which are all of them ſpreading.* Juniperus Virginiana. H. L. Folio ubique juniperino. Boerh. Ind. *Cedar of Virginia, or red Cedar.*
4. JUNIPERUS (*Caroliniana*) foliis ternis baſi adnatis, junioribus imbricatis, ſenioribus patulis. Hort. Cliff. 464. *Juniper with leaves placed by threes adhering at their baſe, the young ones lying over each other, and the old ones ſpreading.* Juniperus Virginiana, foliis inferioribus juniperinis, ſuperioribus ſabinam, vel cypreſſum referentibus. Boerh. Ind. *Carolina Cedar.*

5. JUNI-

5. JUNIPERUS (*Bermudiana*) foliis inferioribus ternis, ſuperioribus quadrifariàm imbricatis. *Juniper with ſpreading under leaves placed by threes, and the upper by fours, which lie cloſe over each other.* Juniperis Bermudiana. H. L. *Cedar of Bermudas.*
6. JUNIPERIS (*Thurifera*) foliis quadrifariàm imbricatis acutis. Lin. Sp. 1471. *Juniper with awl-ſhaped acute leaves placed by fours, lying over each other.* Juniperus major baccâ cæruleâ. C. B. P. *Greater Juniper with blue berries.*
7. JUNIPERUS (*Phœnicia*) foliis ternis obliteratis imbricatis obtuſis. Lin. Sp. 1471. *Juniper with leaves placed by threes, which are obliterate, obtuſe, and lying over each other.* Cedrus folio cupreſſi major, fructu flaveſcente. C. B. P. *Greater Cedar with a Cypreſs leaf and yellowiſh fruit.*
8. JUNIPERUS (*Lycia*) foliis ternis undique imbricatis ovatis obtuſis. Flor. Leyd. 90. *Juniper with oval blunt leaves, which every where lie over each other.* Cedrus folio cupreſſi media, majoribus baccis. C. B. P. 488. *Middle Cedar, with a Cypreſs leaf and larger berries.*
9. JUNIPERUS (*Barbadenſis*) foliis omnibus quadrifariàm imbricatis junioribus ovatis ſenioribus acutis. Prod. Leyd. 90. *Juniper with all the leaves placed by fours, lying over each other, the young being oval, the older acute.* Juniperus maxima cupreſſi folio minimo, cortice exteriore in tenues philyras ſpiralis ductili. Sloan. Cat. Jam. 128. *Greateſt Juniper with the leaſt Cypreſs leaf, and the outer bark ſplitting off in thin ductile pieces, commonly called Jamaica Berry-bearing Cedar.*
10. JUNIPERUS (*Sabina*) foliis oppoſitis erectis decurrentibus, ramis patulis. *Juniper with oppoſite, erect, running leaves, and ſpreading branches.* Sabina folio tamariſci. C. B. P. 487. *Savin with a Tamariſk leaf, or common Savin.*
11. JUNIPERUS (*Luſitanica*) foliis oppoſitis patulis decurrentibus, ramis erectioribus. *Juniper with oppoſite ſpreading leaves, which run over each other, and more erect branches.* Sabina folio cupreſſi. C. B. P. 487. *Savin with a Cypreſs leaf, commonly called Berry-bearing Savin.*
12. JUNIPERUS (*Oxycedrus*) foliis undique imbricatis obtuſis, ramis teretibus. *Juniper with obtuſe leaves everywhere lying over each other, and taper branches.* Juniperus major, baccâ rufeſcente. C. B. P. 489. *Greater Juniper with a browniſh berry.*
13. JUNIPERUS (*Hiſpanica*) foliis quadrifariàm imbricatis acutis. Prod. Leyd. 90. *Juniper with acute leaves lying over each other, placed four ways.* Cedrus Hiſpanica procerior, fructu maximo nigro. Tourn. Inſt. 588. *Taller Spaniſh Cedar, with a very large black fruit.*

The firſt ſort grows naturally upon chalky lands in many parts of England. This is a low ſhrub, ſeldom riſing more than three feet high, ſending out many ſpreading branches, which incline on every ſide, covered with a brown bark, and garniſhed with narrow awl-ſhaped leaves ending in acute points, which are placed by threes round the branches, pointing outward; theſe are of a grayiſh colour, and continue through the year; the male flowers ſometimes are ſituated on the ſame plant with the female, but at diſtances, at other times they are upon diſtinct plants: the female flowers are ſucceeded by roundiſh berries, which are firſt green, but when ripe, are of a dark purple colour. The berries ripen in the autumn.

The wood, the berries, and the gum, are uſed in medicine; the gum is titled Sandaracha.

The ſecond ſort is known in the gardens by the title of Swediſh Juniper: this is by many ſuppoſed to be only a variety of the firſt, but is undoubtedly a diſtinct ſpecies, for I have many years raiſed both ſorts from the ſeeds, and have never found them alter. This ſort riſes to the height of ten or twelve feet, the branches grow more erect, the leaves are narrower, and end in more acute points: they are placed farther aſunder on the branches, and the berries are longer. It grows naturally in Sweden, Denmark, and Norway.

The third ſort grows naturally in moſt parts of North America, where it is called red Cedar, to diſtinguiſh it from a ſort of Cypreſs, which is called white Cedar there. Of this there are two, if not three varieties, beſides the ſpecies here enumerated; one of which has leaves in every part, like thoſe of the Savin, and upon being rubbed, emit a very ſtrong ungrateful odour: this is commonly diſtinguiſhed in America, by the title of Savin-tree. There is another with leaves very like thoſe of Cypreſs, but as theſe generally ariſe from the ſame ſeeds when they are ſent from America, ſo they may be ſuppoſed to be only ſeminal variations.

The lower leaves of the fourth ſort are like thoſe of the Swediſh Juniper, but the upper leaves are like thoſe of the Cypreſs; and this difference is conſtant, if the ſeeds are carefully gathered from the ſame tree; but as moſt of thoſe people who ſend over theſe ſeeds, are not very careful to diſtinguiſh the difference, ſo it often happens that the ſeeds of two or three ſorts are mixed together, which has given occaſion to people to imagine them but one ſpecies; but all the leaves of the third are like thoſe of the Juniper, ſo the gardeners call this the red Virginia Cedar; and the fourth they call Carolina Cedar, though all the ſorts grow naturally in Virginia.

The fifth ſort is the Bermudas Cedar, whoſe wood has a very ſtrong odour; and was formerly in great eſteem for wainſcotting of rooms, and alſo for furniture; but the odour being too powerful for many perſons, has rendered it leſs valuable, and at preſent there is not much of it imported into England. Theſe plants, while young, have acute-pointed leaves, which ſpread open, and are placed by threes round the branches; but as the trees advance, ſo their leaves alter, and the branches are four-cornered; the leaves are very ſhort, and placed by fours round the branches, lying over each other like the ſcales of fiſh; the berries are produced toward the end of the branches; theſe are of a dark red colour, inclining to purple. As there are few of theſe trees of any great ſize in England, ſo I have not had an opportunity of examining their flowers, therefore do not know if they have male and female flowers on the ſame plant, or if they are on different plants; for although I have received very fine ſpecimens from Bermudas, yet they are all with fruit on them almoſt fully grown, and not one with male flowers; and as theſe trees are commonly deſtroyed in England whenever there happens a ſevere winter, where they are not ſheltered, ſo we have little hopes of ſeeing them in flower here.

The ſixth ſort grows naturally in Iſtria, from whence I received the berries, which have ſucceeded with me in the Chelſea garden. This hath ſpreading branches, growing thinly, which are garniſhed with acute-pointed leaves, placed by fours round the branches; they are of a deep green, and not very cloſe to each other, but grow horizontally, pointing outward; the berries are much larger than thoſe of the common Juniper, and are blue when ripe.

The ſeventh ſort grows naturally in Portugal, from whence I have frequently received the berries. This ſort grows with its branches in a pyramidical form; the lower ones are garniſhed with ſhort, acute-pointed, grayiſh leaves, placed by threes round the branches, pointing outward; but thoſe on the upper branches are of a dark green, lying over each other like the ſcales of fiſh, but end in acute points. The male flowers are produced at the extremity of the branches; they are ſituated in a looſe, ſcaly, conical katkin, ſtanding upon a ſhort foot-ſtalk erect; the fruit is produced ſometimes upon the ſame tree, at diſtances from the flowers, and at other times they are upon ſeparate trees; the berries of this are of a pale yellow when ripe, and about the ſize of thoſe of the common Juniper.

The eighth ſort grows naturally in Spain and Italy, from both which countries I have received it. The branches of this ſort grow erect, and are covered with a reddiſh brown bark; the leaves are ſmall, obtuſe,

and

and lie over each other like the ſcales of fiſh; the male flowers grow at the extremity of the branches in a conical katkin, and the fruit grows ſingle from the ſide of the branches below the katkins, on the ſame branch; the berries are large, oval, and, when ripe, are brown.

The ninth ſort grows naturally in Jamaica, and alſo in the other iſlands of the Weſt-Indies, where it riſes to be one of the largeſt timber trees in thoſe countries; the wood is frequently fetched from thence by the inhabitants of North America, for building of ſhips. This ſort is generally confounded with the Bermudas Cedar, and taken for the ſame, but the ſpecimens of it which were ſent me by the late Dr. Houſtoun, prove them to be different trees; for the branches of this ſpread very wide, the leaves are extremely ſmall, and are every where lying imbricatim over each other; the bark is rugged, and ſplits off in ſtrings, and is of a very dark colour; the berries are ſmaller than thoſe of the Bermudas Cedar, and are of a light brown colour when ripe: this ſort is male and female in different trees.

The tenth ſort is the common Savin; this grows naturally in Italy, Spain, and the Levant, upon the mountains where it is cold. It ſends out its branches horizontally, ſo ſeldom riſes more than three or four feet high, but ſpreads to a conſiderable diſtance every way; the branches are garniſhed with very ſhort acute-pointed leaves placed oppoſite, which run over each other along the branches, whoſe ends point upward. This ſort very rarely produces either flower or ſeed in the gardens; I have frequently examined old plants which have been ſtanding more than fifty years, and have not more than three times found any male flowers upon them, and but once have ſeen any berries, which were upon a ſeparate tree from the flowers; theſe berries were ſmaller than thoſe of the common Juniper, but of the ſame colour, and were a little compreſſed; the whole plant has a very rank ſtrong odour when touched. The leaves of this ſhrub are much uſed by the farriers for horſes when they have worms; and Mr. Ray commends the juice of it mixed with milk, and ſweetened with ſugar, as an excellent medicine for children who are troubled with worms. The leaves beaten into a cataplaſm with hog's-lard, will cure children's ſcabby heads.

The eleventh ſort has, by many, been ſuppoſed to be only an accidental variety of the former, but there is a a manifeſt difference between them; for the branches of this grow more erect than thoſe of the eleventh ſort, the leaves are ſhorter, and end in acute points which ſpread outward. This ſort will riſe to the height of ſeven or eight feet, and produces great quantities of berries. I have propagated this ſort from ſeeds, but have never found it vary. It has been diſtinguiſhed by moſt of the old botaniſts, by the title of Berry-bearing Savin. It grows naturally on the Alps, from whence I have received the berries.

The twelfth ſort grows naturally in Spain, Portugal, and the ſouth of France, where it riſes ten or twelve feet high, ſending out branches the whole length of the ſtem, which are garniſhed with ſmall obtuſe leaves, lying over each other like the ſcales of fiſh; the branches are ſmall and taper, having no angles or corners, as moſt of the others have; the male flowers are ſituated at the end of the branches in conical ſcaly katkins, and the berries grow below from the ſide of the ſame branches. Theſe are larger than thoſe of the common Juniper, and when ripe are brown.

The thirteenth ſort grows naturally in Spain and Portugal, where it riſes from twenty-five to thirty feet high, ſending out many branches which form a ſort of pyramid; the branches are garniſhed with acute-pointed leaves, which lie over each other four ways, ſo as to make the branches four-cornered; the berries of this ſort are very large, and black when ripe.

Theſe plants are all propagated by ſowing their ſeeds, the beſt ſeaſon for which is as ſoon as they are ripe, if they can then be procured; for when they are kept until ſpring before they are ſown, they will not come up until the ſecond year. The ground in which the ſeeds of the hardy ſorts are ſown, ſhould be freſh and light, but it ſhould not be dunged: it ſhould be well dug and levelled very even; then ſow your ſeeds thereon pretty thick, and ſift ſome earth over them about half an inch thick; this bed will require no farther care than only to keep it clear from weeds, and toward the middle or latter end of April, you will find ſome of your plants appear above ground, though, perhaps, the greateſt part of them may lie till the ſpring following before they come up; therefore you ſhould carefully clear the beds from weeds, and in very dry weather refreſh them with ſome water, which will greatly promote the growth of thoſe plants which are up, and alſo cauſe the other ſeeds to vegetate; but if the bed in which theſe ſeeds are ſown is much expoſed to the ſun, it ſhould be ſhaded with mats in the day; for when the plants come firſt up, they will not bear too much heat. In this bed they ſhould remain till the ſecond autumn, when you muſt prepare ſome beds to tranſplant them into, which ſhould alſo be of light, freſh, undunged ſoil; and having well dug and cleanſed the ground from all noxious weeds and roots, you ſhould make it level; and then in the beginning of October, which is the proper ſeaſon for removing theſe plants, you ſhould raiſe up the young plants with a trowel, preſerving as much earth as poſſible to their roots, and plant them into beds about five or ſix inches aſunder each way, giving them ſome water to ſettle the earth to their roots; and if it ſhould prove very dry weather, you may lay a little mulch upon the ſurface of the ground round their roots, which will be of great ſervice to the plants. But as many of the ſeeds will be yet left in the ground where they are ſown, ſo the beds ſhould not be diſturbed too much in taking up the plants; for I have known a bed ſown with theſe berries, which has ſupplied plants for three years drawing, ſome of the berries having lain ſo long in the ground before they ſprouted; therefore the ſurface of the beds ſhould be kept level, and conſtantly clean from weeds.

The plants may remain two years in theſe beds, obſerving to keep them clear from weeds; in the ſpring you ſhould ſtir the ground gently between them, that their roots may with greater eaſe ſtrike into it; after which time they ſhould be tranſplanted, either into a nurſery, at the diſtance of three feet row from row, and eighteen inches aſunder in the rows, or into the places where they are to remain for good. The beſt ſeaſon to tranſplant them (as I before obſerved) is in the beginning of October, when you ſhould take them up carefully, to preſerve a ball of earth to their roots; and when planted, their roots ſhould be mulched; all which, if carefully attended to, as alſo obſerving to refreſh them with water in very dry weather until they have taken new root, will preſerve them from the danger of not growing; and they being extreme hardy in reſpect to cold, will defy the ſevereſt of our winters to injure them, provided they are not planted in a moiſt or rich ſoil.

In order to have theſe trees aſpire in height, their under branches ſhould be taken off, eſpecially where they are inclined to grow ſtrong, but they muſt not be kept too cloſely pruned, which would retard their growth; for all theſe Evergreen trees do more or leſs abound with a reſinous juice, which in hot weather is very apt to flow out from ſuch places as are wounded; ſo that it will not be adviſeable to take off too many branches at once, which would make ſo many wounds, from which their ſap in hot weather would flow in ſuch plenty, as to render the trees weak and unhealthy.

The two ſorts of Virginian Cedars grow to a much greater height than the former, and in their native country afford excellent timber for many uſes; but with us there are very few which are above twenty-

five or thirty feet high, though there is no doubt of their growing larger; for they thrive very faſt after the three firſt years, and reſiſt the ſharpeſt froſt of our climate exceeding well, and are very apt to grow ſtrait and regular, provided they are not ſuffered to ſhoot out too much at bottom.

Theſe plants are alſo propagated by ſeeds, which muſt be procured from Virginia or Carolina (for they rarely produce ripe ſeeds in England) and ſown as was directed for the other Junipers; but as this ſeed cannot be procured in England till ſpring, ſo when ſown at that ſeaſon, it remains in the ground until the ſucceeding ſpring before the plants appear; therefore you muſt obſerve to keep the beds clear from weeds, and not ſuffer the ſeeds to be diſturbed, which is often the fault of ſome impatient people, who think, becauſe the plants do not riſe the firſt year, that they will never come up, and ſo dig up the ground again, whereby their ſeeds are buried; but if they are let remain, they ſeldom fail to grow, though ſometimes it is two years after ſowing before they come up. When the plants come up they muſt be carefully weeded, and in dry weather ſhould be refreſhed with water, which will greatly forward their growth; and the autumn following they ſhould have a little rotten tan laid between them, to keep out the froſt. In this bed the plants may remain till they have had two years growth, then they ſhould be tranſplanted into other beds, as was directed before for the other ſorts, obſerving to preſerve a ball of earth to their roots; and after they are planted, if the ſeaſon proves dry, they muſt be carefully watered, and the ſurface of the ground covered with mulch, to prevent the ſun and wind from entering the earth to dry their fibres; but they ſhould not be too much watered, which often proves injurious to theſe trees, by rotting their tender fibres ſoon after they are emitted, whereby the plants have been often deſtroyed.

In theſe beds they may remain two years, obſerving to keep them clear from weeds; and in winter you ſhould lay a little freſh mulch upon the ſurface of the ground round their roots, which will prevent the froſt from penetrating to them, and effectually preſerve them; for while the plants are ſo young, they are liable to be injured by hard froſts, when too much expoſed thereto; but when they have attained a greater ſtrength, they will reſiſt the ſevereſt of our cold.

After two years, they ſhould either be removed into a nurſery (as was directed for the common Juniper) or tranſplanted where they are deſigned to remain, obſerving always to take them up carefully, otherwiſe they are ſubject to fail upon tranſplanting; as alſo to mulch the ground, and water them as was before directed, until they have taken root; after which they will require no farther care, than only to keep the ground clear about their roots, and to prune up their ſide branches to make them aſpire in height.

The ſoil in which you plant theſe trees ſhould be freſh and light, but muſt not be dunged, eſpecially at the time when they are planted; for dung is very hurtful to them, if it be not quite rotted to mould; therefore the mulch which is laid upon the ſurface of the ground ſhould not be dung, but rather ſome old tanners bark or ſea-coal aſhes, which will prevent the froſt from penetrating deep in the ground.

Theſe trees being thus managed, will in a few years riſe to a conſiderable ſtature, and by the variety of their evergreen leaves and manner of growth, will greatly add to the beauty of all plantations, if rightly diſpoſed, which indeed is what we ſeldom obſerve in any of the Engliſh gardens or wilderneſſes; for there are few people who conſider the different growths of the ſeveral trees with which they compoſe ſuch plantations, ſo as to place the talleſt growing trees the backwardeſt from ſight, and the next degree to ſucceed them, and ſo gradually diminiſhing till we come to the common Juniper, and others of the ſame growth, whereby all the trees will be ſeen, and the gradual declivity of their tops will appear like a verdant ſlope, and be much more agreeable to the ſight, as alſo more advantageous to the growth of the trees, than to place ſhrubs of humble growth near ſuch plants as will grow to the firſt magnitude, whereby the ſhrub is hid from ſight, and will be over-ſhadowed and deſtroyed; nor can the diſtance which each tree requires, be ſo juſtly proportioned any other way; for in this diſtribution, the largeſt trees being ſeparated by themſelves, may be placed at a due diſtance; and then thoſe of a middling growth ſucceeding, may be accordingly allowed ſufficient room; and the ſmaller, which are next the ſight, being placed much cloſer, will hide the naked ſtems of the larger trees, and have an agreeable effect to the ſight.

The timber of theſe trees is of excellent uſe in America, for building of veſſels, wainſcotting houſes, and for making many ſorts of utenſils, it abounding with a bitter reſin, which prevents its being deſtroyed by vermin, but itis very brittle, therefore not ſo proper for ſtubborn uſes; but however, by increaſing the number of our timber trees, we ſhall find many advantages, beſides the pleaſure their variety affords; for we may hereby have trees of very different kinds, which are adapted to grow in various ſoils and ſituations, whereby we ſhall never want proper trees for all the different ſorts of ſoils in England, if proper care be taken in their choice; which would be a great improvement to many parts of this kingdom, which now lie unplanted, becauſe the owner, perhaps, find that neither Oaks nor Elms will thrive there, and conſequently concludes, that no other ſort of tree will, which is a great miſtake; for if we conſider how different the ſtructure of trees are (being deſigned by the wiſe Author and contriver of all things, to grow on different ſoils and ſituations) and only obſerve what ſorts are adapted for growing on dry barren mountains, and what are deſigned for the lower and richer valleys, we need never be at a loſs for proper trees for all ſorts of ground.

The Bermudas Cedar being a native of that iſland, and alſo of the Bahama Iſlands, is much tenderer than either of the former ſorts, except that of Jamaica, ſo is not likely to thrive well in this country; for although many of theſe plants have lived ſeveral years in the open air in England, yet whenever a ſevere winter happens, it either kills them, or ſo much defaces them, that they do not recover their verdure in a year or two after.

Theſe plants are propagated by ſeeds in the ſame manner as the former, with only this difference, that theſe ſhould be ſown in pots or tubs of earth, that they may be removed into ſhelter in the winter time, otherwiſe the young plants are often hurt by hard froſts; but they will require no more care than only to be placed under a common hot-bed frame, where the glaſſes may be conſtantly kept off in mild weather, when they cannot have too much free air, and only covered in hard froſts. Theſe ſeeds conſtantly remain in the ground until the ſecond year before they come up, therefore the earth in the pots ſhould not be diſturbed; and in the ſummer time they ſhould be placed in the ſhade, to prevent the earth from drying too faſt; and in very dry weather they ſhould be often watered, but do not give too much water to them at once, which would rot the ſeeds.

The ſpring following, when the young plants come up, they muſt be carefully cleared from weeds, and in dry weather refreſhed with water; but ſhould ſtand, during the ſummer ſeaſon, in a place defended from ſtrong winds; and in winter muſt be placed under frames, where they may be covered in hard froſty weather, but muſt have open air when the weather is mild. In April following you ſhould tranſplant them each into a ſingle halfpenny pot filled with freſh light earth, being careful to raiſe them up with a ball of earth to their roots; and when they are planted, you ſhould water them, to ſettle the earth to their roots; then place the pots in a warm ſituation, where they may be defended from ſun and wind: but if you will beſtow a moderate hot-bed to plunge the pots in, it

will

will greatly promote their taking new root; however, you muſt carefully defend them from the great heat of the ſun, which is injurious to them when freſh removed; but when they have taken root, you may expoſe them by degrees to the open air. If you ſuffer the pots to remain plunged all the ſummer, it will preſerve the earth therein from drying ſo faſt as it would do, if they were ſet upon the ground.

In October you ſhould again remove theſe plants into ſhelter, or elſe plunge their pots into the ground under a warm hedge, where they may be protected from the cold north and eaſt winds; and in the ſpring following you muſt ſhift the plants into pots a ſize larger, taking away ſome of the earth from the outſide of the ball, and adding ſome freſh, which will promote their growth; and ſo continue to manage them as was before directed, until you plant them out in the places where they are deſigned to remain; which ſhould not be done till they are four or five years old, by which time they will be ſtrong enough to bear the cold of our common winters.

The reaſon for my directing theſe plants to be preſerved in pots until they are planted out for good is, becauſe they are difficult to tranſplant, and being tender will require ſome ſhelter while young; and whoever obſerves the method here laid down, will find the plants ſo managed to gain two years growth in ſix, from thoſe raiſed in the open air, and be in leſs danger of being deſtroyed; and as the trouble and expence in raiſing them this way is not great, ſo it is worth practiſing, ſince in a few years the trees will recompenſe the trouble.

The timber of this tree is of a reddiſh colour, and very ſweet, and is commonly known in England by the name of Cedar Wood; though there are divers ſorts of wood called by that name, which come from very different trees, eſpecially in the Weſt-Indies, where there are ſeveral trees of vaſtly different appearances and genera, which have that appellation: it is this wood which is uſed for pencils, as alſo to wainſcot rooms, and make ſtair-caſes, it enduring longer ſound than moſt other ſorts of timber, which, perhaps, may be owing to ſome extreme bitter taſte in the reſin, with which the tree abounds; for it is very remarkable, that the worms do not eat the bottoms of the veſſels built with this wood, as they do thoſe built with Oak; ſo that the veſſels built with Cedar are much preferable to thoſe built with any other ſort of timber, for the uſe of the Weſt-India ſeas, but they are not fit for ſhips of war, the wood being ſo brittle as to ſplit to pieces with a cannon ball.

The Jamaica Juniper is more impatient of cold than the Bermudas, ſo will not live through the winter in the open air in England, and the plants muſt be preſerved in pots and houſed in the winter; this is propagated by ſeeds, in the ſame way as the Bermudas Cedar; but if the pots are plunged into a moderate hot-bed the ſecond ſpring after the ſeeds are ſown, it will bring up the plants ſooner, and they will have more time to get ſtrength before winter.

All the other ſorts are hardy enough to live in the open air, ſo are very well worth propagating, as they will add to the variety of Evergreen plantations; ſome of the ſorts will riſe to a very conſiderable height, ſo may prove to be uſeful timber, and may be adapted to ſuch ſoils as will not ſuit many other trees.

The common Savin ſhould not be neglected, becauſe it is ſo very hardy as never to be injured by the ſevereſt froſt; and as this ſpreads its branches near the ground, ſo if the plants are placed on the borders of woods, they will have a good effect in winter, by ſcreening the nakedneſs of the ground from ſight.

All theſe ſorts are propagated by their ſeeds, which may be ſown in the ſame way as the common Juniper, and the plants afterward ſo managed; and moſt of the ſorts may be propagated by cuttings, which, if planted in autumn in a ſhady border will take root; but thoſe plants which are raiſed from cuttings will never grow ſo upright, nor to ſo large a ſize as the plants which are raiſed from ſeeds; ſo that when theſe can be procured, it is much the better method, but the other is frequently practiſed on thoſe ſorts which do not perfect their ſeeds in England.

As ſeveral of theſe ſorts grow to the height of eighteen or twenty feet, the procuring as many of the ſorts as can be gotten from the countries of their growth, will be adding to the variety of our Evergreen plantations, which cannot be too much propagated in England, where, in general, our winters are temperate enough for them to thrive to advantage; and as the ſorts which are a little more tender than the others obtain ſtrength, they will be in leſs danger of ſuffering by ſevere winters, as we find by many other plants, which were ſo tender as not to live in the open air at firſt, but now defy the ſevereſt cold of our climate.

JUSSIÆA. Lin. Gen. Plant. 478.

The CHARACTERS are,

It hath a ſmall permanent empalement, divided into five ſegments at the top, ſitting upon the germen. The flower has five roundiſh ſpreading petals, and ten ſhort ſlender ſtamina, terminated by roundiſh ſummits. The oblong germen ſupports a ſlender ſtyle, crowned by a flat ſtigma, marked with five ſtripes. The germen afterward becomes a thick oblong capſule, crowned by the empalement, which opens lengthways, and is filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes the plants whoſe flowers have ten ſtamina and one ſtyle.

The SPECIES are,

1. JUSSIÆA (*Suffruticoſa*) erecta villoſa, floribus tetrapetalis, decandriis ſeſſilibus. Lin. Sp. Plant. 555. *Upright hairy Juſſiæa, with flowers ſitting cloſe to the ſtalks, having four petals and ten ſtamina.* Lyſimachia Indica non pappoſa, flore luteo minimo, ſiliquis caryophyllum aromaticum æmulantibus. H. L. 396. *Indian Primroſe with a very ſmall yellow flower, and pods reſembling Cloves.*
2. JUSSIÆA (*Pubeſcens*) villoſa, caule erecto ramoſo, floribus pentapetalis, decandriis ſeſſilibus. *Hairy Juſſiæa with an erect branching ſtalk, flowers having five petals, and ten ſtamina which ſit cloſe to the ſtalk.* Lyſimachia lutea erecta, non pappoſa major, foliis hirſutis, fructu caryophylloide. Sloan. Cat. Jam. 85. *Yellow upright larger Tree-Primroſe with hairy leaves, and a fruit like Cloves.*
3. JUSSIÆA (*Erecta*) erecta glabra, floribus tetrapetalis octandris ſeſſilibus. Flor. Zeyl. 170. *Smooth upright Juſſiæa with four petals, and eight ſtamina to the flowers, which ſit cloſe to the ſtalk.* Lyſimachia lutea non pappoſa, erecta, foliis glabris, fructu caryophylloide. Sloan. Cat. Jam. 85. *Yellow upright Tree-Primroſe with ſmooth leaves, and a fruit like Cloves.*
4. JUSSIÆA (*Onagra*) caule erecta ramoſo glabro, floribus tetrapetalis octandris ſeſſilibus, foliis lanceolatis. *Juſſiæa with an upright, branching, ſmooth ſtalk, flowers having four petals, and eight ſtamina ſitting cloſe to the ſtalk, and ſpear-ſhaped leaves.* Onagra foliis perſicariæ amplioribus, parvo flore luteo. Plum. Cat. 7. *Tree-Primroſe with a large Arſeſmart leaf, and a ſmall yellow flower.*
5. JUSSIÆA (*Hirſuta*) caule erecto ſimplici hirſuto, foliis lanceolatis, floribus pentapetalis decandris ſeſſilibus. *Juſſiæa with a ſingle, upright, hairy ſtalk, ſpear-ſhaped leaves, and flowers which have five petals, and ten ſtamina ſitting cloſe to the ſtalk.* Onagra erecta, caule rubro hirſuto, foliis oblongis, flore magno luteo. Houſt. MSS. *Upright Primroſe with a hairy leaf of a reddiſh colour, oblong leaves, and a large yellow flower.*

The firſt ſort grows naturally at Campeachy, from whence the ſeeds were ſent me by the late Mr. Robert Millar; this riſes with a ſhrubby ſtalk near three feet high, ſending out ſeveral ſide branches, which are garniſhed with oblong hairy leaves placed alternate. The flowers come out from the ſide of the ſtalks ſingly, having ſhort foot-ſtalks; they have four ſmall yellow petals with eight ſtamina; theſe ſit upon the germen, which afterward becomes an oblong ſeed-veſſel, crowned by the four-leaved empalement, and has a great reſemblance

ſemblance to Cloves. This plant flowers in July and Auguſt, and the ſeeds ripen in October.

The ſecond ſort grows naturally in Jamaica. The ſeeds of this were ſent me by the late Dr. Houſtoun; this riſes with a hairy branching ſtalk two feet high, and is garniſhed with narrow ſpear-ſhaped leaves, placed alternate. The flowers come out toward the end of the branches ſingly from the wings of the leaves, ſitting cloſe to the ſtalk; they are compoſed of five pretty large yellow petals, and ten ſtamina; theſe ſit upon a long germen, which afterward becomes the ſeed-veſſel, crowned by the empalement; theſe are filled with ſmall ſeeds. It flowers and ſeeds about the ſame time with the laſt.

The third ſort grows naturally in Jamaica, from whence the ſeeds were ſent me with thoſe of the former ſort; this riſes with a ſmooth erect ſtalk three feet high, garniſhed with long, narrow, ſmooth, ſpear-ſhaped leaves. The flowers are large and yellow, ſitting cloſe to the ſtalk; theſe are ſucceeded by long ſeed-veſſels, ſhaped like thoſe of the other ſorts. It flowers and ſeeds at the ſame time with the former.

The fourth ſort was ſent me from Carthagena by the late Dr. Houſtoun; this hath a branching ſmooth ſtalk near three feet high, garniſhed with ſpear-ſhaped leaves, ſtanding upon ſhort foot-ſtalks. The flowers are ſmall, yellow, and are compoſed of four petals and eight ſtamina; theſe ſit very cloſe to the ſtalk, and are ſucceeded by ſeed-veſſels, ſhaped like thoſe of the former ſorts.

The fifth ſort was ſent me from La Vera Cruz, by the late Dr. Houſtoun; this riſes with ſingle upright red ſtalks three feet high, which are hairy and channelled. The leaves are ſpear-ſhaped, and placed alternate on the ſtalks, ſtanding nearer together than in any of the other ſorts. The flowers come out from the wings of the leaves, toward the top of the ſtalk; they are compoſed of five large yellow petals, and ten ſtamina ſitting cloſe to the ſtalks, and are ſucceeded by ſeed-veſſels which are one inch long, and ſhaped like thoſe of the former ſorts.

The firſt, ſecond, and fourth ſorts are annual plants, at leaſt they are ſo in England; for if the plants are raiſed early in the ſpring, they will flower in July, and ripen their ſeed the beginning of October; and thoſe plants which are raiſed later in the ſpring, cannot be preſerved through the winter, though they are placed in a warm ſtove; nor do their ſtalks ever grow ligneous, or ſhew any ſigns of their being perennial in their native country.

The third and fifth ſorts have continued through the winter in the bark-ſtove, but thoſe have been ſuch plants as did not flower and ſeed the firſt year; for after they had perfected ſeeds, the following ſummer the plants decayed.

All theſe ſorts are propagated by ſeeds, which ſhould be ſown early in the ſpring, in pots filled with a ſoft loamy ſoil, and plunged into a moderate hot-bed; but as theſe ſeeds often lie a whole year in the ground before they vegetate, the earth muſt be kept moiſt, and the glaſſes of the hot-bed ſhaded in the heat of the day, by this method the ſeeds may be brought ſoon to vegetate; when the plants come up, and are fit to remove, they ſhould be each planted into a ſmall ſeparate pot, filled with light loamy earth, and plunged into a hot-bed of tanners bark, where they ſhould be ſhaded from the ſun till they have taken new root; after which they ſhould have free air admitted to them every day, in proportion to the warmth of the ſeaſon; they muſt alſo be frequently refreſhed with water, but it muſt not be given to them in too great plenty: when the roots of the plants have filled theſe ſmall pots, the plants ſhould be removed into others a ſize larger; and if the plants are too tall to ſtand under the frames of the hot-bed, they ſhould be removed into the bark-ſtove, where they may remain to flower and perfect their ſeeds; for when the plants riſe early in the ſpring, and are brought forward in hot-beds, all the ſorts will flower and perfect their ſeeds the ſame year, which is better than to have them to keep through the winter.

JUSTICIA. Houſt. Nov. Gen. Lin. Gen. Plant. 27. Adhatoda. Tourn. Inſt. R. H. 175. tab. 79. This plant was ſo named by the late Dr. Houſtoun, in honour of James Juſtice, Eſq; a great lover and encourager of gardening and botany.

The CHARACTERS are,

The empalement of the flower is ſmall, and divided into five acute ſegments at the top. The flower hath one petal, which is divided into two lips almoſt to the bottom, which are entire. The upper lip is raiſed archways, and the under is reflexed. It hath two awl-ſhaped ſtamina ſituated under the upper lip, terminated by erect ſummits which are bifid at their baſe. It hath an oblong germen, ſupporting a ſlender ſtyle which is longer than the petal, crowned by a ſingle ſtigma. The germen afterward becomes an oblong capſule with two cells, divided by a partition, which is contrary to the two valves, which open with an elaſticity, and caſt out the roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, intitled Diandria Monogynia, which includes thoſe plants whoſe flowers have two ſtamina and one ſtyle. To this genus of Dr. Houſtoun's is joined the Adhatoda of Tournefort, but there is a diſtinction in their flowers; the two lips of Juſticia are entire, but the upper lip of Adhatoda is indented at the end, and the under is divided into three parts; and in the capſule of Juſticia there are ſeldom more than two ſeeds, but in Adhatoda ſeveral.

The SPECIES are,

1. JUSTICIA (*Scorpioides*) foliis oblongo-ovatis hirſutis, ſeſſilibus, floribus ſpicatis alaribus, caule fruticoſo. *Juſticia with oblong, oval, hairy leaves ſitting cloſe to the ſtalks, and flowers growing in ſpikes proceeding from the ſide of the ſtalks, which are ſhrubby.* Juſticia fruteſcens, floribus ſpicatis majoribus, uno verſu diſpoſitis. Houſt. MSS. *Shrubby Juſticia with larger flowers growing in ſpikes, which are ranged on one ſide.*
2. JUSTICIA (*Sexangularis*) caule erecto ramoſo hexangulari, foliis ovatis oppoſitis, bracteis cuneiformibus confertis. *Juſticia with an erect branching ſtalk, having ſix angles, oval leaves placed oppoſite, and wedge-ſhaped ſmall leaves (or bracteæ) growing in cluſters.* Juſticia annua hexangulari caule, foliis Circææ conjugatis, flore miniato. Houſt. MSS. *Annual Juſticia with an hexangular ſtalk, Enchanters Nightſhade leaves ſet by pairs, and a carmine flower.*
3. JUSTICIA (*Fruticoſa*) foliis ovato-lanceolatis, pediculatis, hirſutis, bracteis cordatis acuminatis, caule fruticoſo. *Juſticia with oval ſpear-ſhaped leaves growing on foot-ſtalks, heart-ſhaped acute-pointed bracteæ, and a ſhrubby ſtalk.* Juſticia fruteſcens & hirſuta, foliis oblongis pediculis longiſſimis, flore rubro. Houſt. MSS. *Shrubby and hairy Juſticia with oblong leaves growing on very long foot-ſtalks, and a red flower.*
4. JUSTICIA (*Adhatoda*) arborea, foliis lanceolato-ovatis, bracteis ovatis perſiſtentibus, corollarum galeâ concavâ. Flor. Zeyl. 16. *Tree-Juſticia with oval ſpear-ſhaped leaves, oval permanent bracteæ, and a concave helmet to the flower.* Adhatoda Zeylanenſium. H. L. 642. *Adhatoda of Ceylon, commonly called Malabar Nut.*
5. JUSTICIA (*Hyſſopifolia*) fruticoſa, foliis lanceolatis integerrimis, pedunculis trifloris ancipitibus, bracteis calyce brevioribus. Lin. Sp. Plant. 15. *Shrubby Juſticia with entire ſpear-ſhaped leaves, foot-ſtalks having three flowers placed different ways, and a bractea ſhorter than the empalement.* Adhatoda Indica, folio ſaligno, flore albo. Boerh. Ind. alt. 1. 239. *Indian Adhatoda with a Willow leaf and white flower, commonly called Snap-tree.*
6. JUSTICIA (*Spinoſa*) ſpinoſa, foliis oblongo-ovatis emarginatis, caule fruticoſo ramoſo. *Prickly Juſticia with oblong oval leaves indented at their edges, and a ſhrubby branching ſtalk.* Adhatoda Antegoana, Lycii facie, ſpinoſa. Petiv. *Prickly Adhatoda of Antigua, with the appearance of Boxthorn.*
7. JUSTICIA (*Arborea*) arborea, foliis lanceolato-ovatis ſeſſilibus, ſubtus tomentoſis, floribus ſpicatis congeſtis terminalibus. *Tree-Juſticia with ſpear-ſhaped oval leaves, woolly*

woolly on their under ſide, ſitting cloſe to the ſtalks, with ſpikes of flowers growing in cluſters at the ends of the branches. Adhatoda arborea, foliis oblongis, ſubtus villoſis, floribus ſpicatis albis. Houſt. *Tree-Adhatoda with oblong leaves, hairy on their under ſide, and ſpikes of white flowers.*

8. JUSTICIA (*Echolium*) arborea, foliis lanceolato ovatis, bracteis ovatis deciduis mucronatis, corollarum galeâ reflexâ. Flor. Zeyl. 17. *Tree-Juſticia with ſpear-ſhaped oval leaves, oval-pointed bracteæ which fall off, and a reflexed helmet to the flowers.* Adhatoda ſpicâ longiſſimâ, flore reflexo. Burman. Zeyl. 7. tab. 4. f. 1. *Adhatoda with a very long ſpike, and a reflexed flower.*

The firſt ſort was diſcovered growing naturally at La Vera Cruz, by the late Dr. Houſtoun, who ſent the ſeeds to England; this riſes with a ſhrubby brittle ſtalk five or ſix feet high, ſending out many branches, which are garniſhed with oblong oval leaves, two inches long, and one inch broad, which are hairy and placed oppoſite; from the wings of the leaves come out the ſpikes of flowers, which are reflexed like a ſcorpion's tail. The flowers are large, of a carmine colour, and ranged on one ſide of the ſpike; theſe are ſucceeded by ſhort pods about half an inch long.

The ſecond ſort was diſcovered by the ſame gentleman, in the ſame country; this is an annual plant with an upright ſtalk, having ſix angles, which riſes two or three feet high, dividing into many branches, garniſhed with oval leaves placed oppoſite, an inch and a half long, and one inch broad; they are ſmooth, as are alſo the ſtalks. At each joint come out cluſters of ſmall wedge-ſhaped leaves, which are by Dr. Linnæus termed bracteæ, and long before the ſtalks decay, moſt of the larger leaves fall off, ſo there are only theſe ſmall leaves remaining. The flowers are produced in ſmall ſpikes at the ſide of the branches, ſitting very cloſe among the leaves; they are of a beautiful carmine colour, and have but one petal, which has two lips. The upper lip is arched, bending over the lower, which is alſo a little reflexed, but both are entire. The flowers are ſucceeded by ſhort wedge-ſhaped capſules, opening lengthways, incloſing two ſmall oval ſeeds.

The third ſort was diſcovered by the ſame gentleman at Campeachy; this riſes with a hairy ſhrubby ſtalk four or five feet high, dividing into ſeveral branches, garniſhed with oval, ſpear-ſhaped, hairy leaves, four inches long, and two inches and a half broad, ſtanding upon foot-ſtalks which are above an inch long, placed oppoſite. At the baſe of the foot-ſtalks come out a cluſter of ſmall heart-ſhaped leaves, ending in acute points, which are termed bracteæ. The flowers come out in looſe cluſters from the wings of the ſtalks, toward the end of the branches; they are of a pale red colour, and ſhaped like thoſe of the former ſort.

Theſe plants are propagated by ſeeds, which ſhould be ſown early in the ſpring, in ſmall pots filled with freſh light earth, and plunged into a moderate hot-bed of tanners bark, obſerving to water the earth gently as it appears dry. The ſeeds of theſe plants frequently lie a year in the ground, ſo that the pots muſt not be diſturbed, if the plants do not come up the ſame year; but in the winter ſhould be kept in the ſtove, and the ſpring following plunged into a freſh hot-bed, which will bring up the plants if the ſeeds were good. When the plants begin to appear, the glaſſes of the hot-bed ſhould be raiſed every day, when the weather is warm, to admit freſh air to them. The plants muſt alſo be frequently watered in warm weather; but water ſhould not be given in large quantities while the plants are young, becauſe they are then very tender, and ſubject to rot at the bottom of their ſtems, with much moiſture.

When the plants are about two inches high, they ſhould be carefully taken up, and each tranſplanted into a ſeparate ſmall pot filled with freſh light earth, and then plunged into the hot-bed again, being careful to water and ſhade them until they have taken new root; after which time they ſhould have air admitted to them every day, in proportion to the warmth of the ſeaſon, and ſhould be duly watered every two or three days in hot weather.

As the plants advance in their growth, they ſhould be ſhifted into larger pots, for if their roots are too much confined, the plants will not make any conſiderable progreſs; but they ſhould not be over potted, for that will be of worſe conſequence than the other; becauſe when they are planted in very large pots, they will ſtarve and decay, without producing any flowers. They are too tender to endure the open air in this country, therefore they ſhould always remain in the hot-bed, being careful to let them have a due proportion of air in hot weather; and the annual ſort ſhould be brought forward as faſt as poſſible in the ſpring, that the plants may flower early, otherwiſe they will not produce good ſeeds in England.

The firſt and third ſorts ſhould remain in the hot-bed during the ſummer ſeaſon (provided there is room under the glaſſes, without being ſcorched;) but at Michaelmas they ſhould be removed into the ſtove, and plunged into the bark-bed, where they muſt remain during the winter ſeaſon, obſerving to keep them warm, as alſo to water them gently once or twice a week, according as they ſhall require. The following ſummer theſe plants will flower, and abide ſeveral years, but they rarely produce good ſeeds in Europe.

The fourth ſort grows naturally in the iſland of Ceylon, but has been long in the Engliſh gardens, where it is commonly known at preſent by the title of Malabar Nut; but was formerly called Beetle Nut, and was by ſome ſuppoſed to be the tree of which the Chineſe chew the leaves and nuts: this, though a native of ſo warm a country, is hardy enough to live in a good 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, which are garniſhed with ſpear-ſhaped oval leaves more than 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; theſe appear in July, but are not ſucceeded by any ſeeds in England.

This ſort may be propagated by cuttings, which, if planted in pots in June or July, and plunged into a very moderate hot-bed, will take root; but they muſt be every day 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 their young branches, which will take root in the tubs or pots in one year; then the young plants ſhould be put each into a ſeparate pot, filled with ſoft loamy earth, and placed in the ſhade till they have taken new root, when they may be placed in a ſheltered ſituation during the ſummer, but in winter they muſt be houſed, and treated in the ſame way as Orange-trees, with only this difference, that theſe require more water.

The fifth ſort grows naturally in India; this riſes with a ſhrubby ſtalk from three to four feet high, ſending out branches on every ſide from the bottom, ſo as to form a kind of pyramid; theſe are covered with a white bark, and garniſhed with ſpear-ſhaped entire leaves, near two inches long, and one third of an inch broad; they are ſmooth, ſtiff, and of a deep green, ſtanding oppoſite. At the baſe of the foot-ſtalks come out cluſters of ſmaller leaves, of the ſame ſhape and texture. The flowers come out upon ſhort foot-ſtalks from the ſide of the branches, each foot-ſtalk ſupporting one or two white flowers, having long empalements; theſe are ſucceeded by oblong ſeed-veſſels, which, when ripe, caſt out their ſeeds with an elaſticity, from whence it had the title of Snap-tree.

This is propagated by cuttings during any of the ſummer months; they ſhould be planted in pots filled with light loamy earth, and plunged into a moderate hot-bed, and ſhaded from the ſun, and now and then gently refreſhed with water, and not too much air admitted to them. In about two months the cuttings will have taken root, then they muſt be gradually

inured to bear the open air, into which they ſhould be removed, placing them in a ſheltered ſituation, where they may ſtay till autumn; but if they get root pretty early in the ſummer, it will be proper to ſeparate them each into a ſingle ſmall pot, ſetting them in the ſhade till they have taken new root, after which they may be placed as before directed; but when it is late in the ſeaſon before they take root, it will be better to let them remain in the ſame pots till the following ſpring. In winter theſe plants muſt be placed in a warm green-houſe, or in a moderately warm ſtove, for they are impatient of cold and damp, nor will they thrive in too much warmth; they will often require water in winter, but during that ſeaſon it muſt be given them moderately; in ſummer they muſt be removed into the open air, but ſhould have a warm ſheltered ſituation, and in warm weather they muſt have plenty of water. This plant flowers at different ſeaſons, but never produces fruit here.

The ſixth ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent it to England; this riſes with many ſhrubby ſlender ſtalks about five feet high, ſending out branches on every ſide from the root upward, which grow erect, and are covered with a whitiſh bark, garniſhed with ſmall, oblong, oval leaves, coming out on each ſide the ſtalk oppoſite, and under the leaves are placed at every joint two ſharp thorns like thoſe of the Berberry; the flowers come out ſingly from the wings of the leaves, they are ſmall, and of a pale red colour, ſhaped like thoſe of the other ſorts.

The ſeventh ſort was found by the late Dr. Houſtoun, growing naturally at Campeachy. This riſes with a ſtrong woody ſtem twenty feet high, dividing into many crooked irregular branches, covered with a light brown bark, garniſhed with ſpear-ſhaped oval leaves, near four inches long and two broad, which are covered with a ſoft down on their under ſide. The flowers grow in ſpikes from the end of the branches, three, four, or five of theſe ſpikes ariſing from the ſame point, the middle ſpike being near three inches long, and the others about half that length. The flowers are ſmall and white, but ſhaped like thoſe of the other ſpecies.

The eighth ſort grows naturally at Malabar and in Ceylon; this riſes in its native ſoil with a ſtrong woody ſtem ten or twelve feet high, dividing into many branches, which are garniſhed with ſpear-ſhaped oval leaves five inches long, and two and a half broad, of a lucid green, placed oppoſite. The flowers grow in very long ſpikes from the end of the branches, they are of a greeniſh colour with a ſhade of blue; the helmet of the flower is reflexed.

Theſe three ſorts are propagated by ſeeds in the ſame manner as the three firſt, and the plants muſt be treated in the ſame way, eſpecially while they are young; but afterward the eighth ſort may be more hardily treated, when they have gotten ſtrength. This ſort may alſo be propagated by cuttings, in the ſame manner as the fifth ſort; and when the plants are two or three years old, they will thrive in a moderate degree of warmth in winter, and in the ſummer they may be placed abroad for two months in the warmeſt ſeaſon of the year; but they ſhould have a warm ſheltered ſituation, and when the nights begin to grow cold, they muſt be removed into the ſtove, but they muſt have free air admitted to them at all times when the weather is warm. The other two ſorts ſhould conſtantly remain in the bark-ſtove, and require the ſame treatment as other tender plants from the warmeſt countries.

IXIA. Lin. Gen. Plant. 54. Siſyrinchium. Com. Hort. Amſt.

The CHARACTERS are,

It hath oblong permanent ſpathæ (or ſheaths) which incloſe the germen; the flower has ſix oblong ſpear-ſhaped petals which are equal, and three awl-ſhaped ſtamina which are ſhorter than the petals, ſituated at equal diſtances, terminated by ſingle ſummits. It hath an oval three-cornered germen ſituated below the flower, ſupporting a ſingle ſtyle which is the length of the ſtamina, crowned by a thick trifid ſtigma; the germen afterward becomes an oval three-cornered capſule with three cells, filled with roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's third claſs, intitled Triandria Monogynia, which includes thoſe plants whoſe flowers have three ſtamina and one ſtyle.

The SPECIES are,

1. IXIA (*Chinenſis*) foliis enſiformibus, floribus remotis panicula dichotoma, floribus pedunculatis. Hort. Upſal. 16. *Ixia with ſword-ſhaped leaves, and flowers ſtanding remote in forked panicles upon foot-ſtalks.* Bermudiana iridis folio majori flore croceo, eleganter punctato. Krauſ. Hort. 25. tab. 25. *Bermudiana with a larger Iris leaf, and a Saffron-coloured flower, which is beautifully ſpotted.*
2. IXIA (*Africana*) floribus capitatis, ſpathis laceris. Lin. Sp. Plant. 36. *Ixia with flowers growing in heads, having ragged ſheaths.* Bermudiana Capenſis, capitulis lanuginoſis. Pet. Hort. Sicc. 242. *Bermudiana from the Cape of Good Hope, with woolly heads.*
3. IXIA (*Scillariis*) foliis gladiolatis, nervoſis, hirſutis, floribus ſpicatis terminalibus. Icon. tab. 155. fig 1. *Ixia with ſword-ſhaped, hairy, veined leaves, and flowers growing in ſpikes at the ends of the ſtalks.*
4. IXIA (*Polyſtacia*) foliis lineari-gladiolatis, floribus alaribus & terminalibus. Icon. tab. 155. fig. 2. *Ixia with narrow ſword-ſhaped leaves, and flowers proceeding from the ſides and tops of the ſtalk.*
5. IXIA (*Crocata*) foliis gladiolatis glabris, floribus corymboſis terminalibus. Icon. tab. 156. *Ixia with ſmooth ſpear-ſhaped leaves, and flowers growing in a corymbus terminating the ſtalk.* Siſyrinchium Africanum majus, flore luteo maculâ notato. Olden. *Greater African Siſyrinchium with a yellow ſpotted flower.*
6. IXIA (*Bulbifera*) foliis lineari-gladiolatis, floribus alternis, caule bulbifero. *Ixia with narrow ſword-ſhaped leaves, flowers placed alternate, and ſtalks bearing bulbs.*
7. IXIA (*Sparſa*) foliis gladiolatis, floribus diſtantibus. *Ixia with ſword-ſhaped leaves, and flowers growing diſtant.*
8. IXIA (*Flexuoſa*) foliis lineari-gladiolatis, floribus ſpicatis ſeſſilibus terminalibus. *Ixia with narrow ſword-ſhaped leaves, and ſeſſile flowers growing in ſpikes at the top of the ſtalk.*

The firſt ſort grows naturally in India, where the ſtalks riſe to the height of five or ſix feet, but in England they are ſeldom more than half that height. It hath a pretty thick fleſhy root, divided in knots or joints of a yelloviſh colour, ſending out many fibres; the ſtalk is pretty thick, ſmooth, and jointed, garniſhed with ſword-ſhaped leaves a foot long and one inch broad, with ſeveral longitudinal furrows embracing the ſtalks with their baſe, ending in acute points; the upper part of the ſtalk divaricates into two ſmaller, with a foot-ſtalk ariſing between them, which ſupports one flower; the ſmaller branches divaricate again in the ſame manner into foot-ſtalks, which are two inches long, each ſuſtaining one flower. At each of theſe joints is a ſpatha or ſheath embracing the ſtalk, which at the lower joints are three inches long, but the upper are not more than one inch, ending in acute points which are permanent; the flowers are compoſed of ſix equal petals, of a yellow colour within, and variegated with dark red ſpots; the outſide is of an Orange colour. Theſe appear in July and Auguſt, and in warm ſeaſons are ſucceede by ſeeds.

This ſort may be propagated either by ſeeds or parting of the roots: if by ſeeds they ſhould be ſown in pots, and plunged into a moderate hot-bed, which will bring up the plants much ſooner than when they are ſown in the full ground; when the plants are fit to remove, they ſhould be each planted in a ſmall ſeparate pot filled with light earth, and if they are placed under a frame till they have taken good root in the pots, it will greatly forward their growth; afterward they may be placed in the open air in a ſheltered ſituation, where they may remain till the autumn, when they

they muſt be placed under a frame to ſcreen them from froſt; and in the ſpring moſt of the plants may be turned out of the pots and planted in a warm border, where they will abide through the common winters very well, but in ſevere froſts they are often killed, unleſs they are covered with tan, or other covering to keep out the froſt; therefore a few of the plants may be kept in pots, and ſheltered under a frame in winter.

The ſtalks and leaves of this plant decay to the root in autumn, ſo that if the ſurface of the ground about the roots is covered two or three inches thick with tan, it will ſecure them from the danger of froſt; and in the ſpring, before the roots ſhoot, will be the beſt time to remove and part the roots; but this ſhould not be done oftener than every third year, for when they are often parted they will be weak, and will not flower ſo well.

The ſecond ſort grows naturally at the Cape of Good Hope; this is a low plant, which rarely riſes more than three or four inches high; the leaves are narrow and veined, the flowers are ſmall, growing in a downy head on the top of the ſtalk, but they make little appearance, ſo are only kept for the ſake of variety.

The third ſort I raiſed from ſeeds, which were ſent me from the Cape of Good Hope. This hath a round bulbous root a little compreſſed, covered with a red ſkin, from which ariſe five or ſix ſword-ſhaped leaves about three or four inches long, hairy, and with ſeveral longitutinal furrows; theſe embrace each other at their baſe, but ſpread aſunder at the top; between theſe come out the flower-ſtalk, which riſes ſix or eight inches high, is naked to the top, and terminated by a cluſter of flowers, each having a ſpatha or hood, which dries and is permanent; the flowers are of a deep blue colour, and appear in May; theſe are ſucceeded by roundiſh three-cornered ſeed-veſſels with three cells, filled with roundiſh ſeeds which ripen in July, then the leaves and ſtalks decay.

The fourth ſort was raiſed from ſeeds in the Chelſea garden, which came with thoſe of the former ſort. This hath a ſmall round bulbous root, from which ariſe four or five narrow, long, ſword-ſhaped leaves, ſix or ſeven inches long; between theſe come out a very ſlender round ſtalk about ten inches long, from the ſide of which there comes out one or two cluſters of flowers, ſtanding upon ſhort foot-ſtalks, and at the top of the ſtalk the flowers grow in a looſe ſpike; they are of a pure white, and ſhaped like thoſe of the other ſpecies. Theſe appear in May, and the ſeeds ripen in July.

The ſeeds of the fifth ſort were ſent me from the Cape of Good Hope; this has an oval bulbous root which is a little compreſſed, from which come up three or four narrow, thin, ſword-ſhaped leaves, near a foot long; the flower-ſtalk riſes a little above the leaves, it is very ſlender, naked, and terminated by a round cluſter of flowers, each having a ſpatha or hood; they are compoſed of ſix pretty large oblong petals which are concave, and of a deep yellow colour, each having a large black ſpot at the baſe. This flowers early in May, and the ſeeds ripen the latter end of June.

The ſixth ſort hath narrow ſpear-ſhaped leaves about ſix or ſeven inches long; the ſtalk riſes near a foot and a half high, garniſhed with one leaf at each of the lower joints, of the ſame ſhape with the other, but ſmaller; theſe embrace the ſtalk with their baſe, and ſtand erect; the upper part of the ſtalk is adorned with flowers, compoſed of ſix oblong oval petals of a ſulphur colour, which are placed alternate on the ſtalk, which is bent at each joint where the flowers ſtand; the flowers have three ſhort ſtamina which are joined at their baſe, terminated by long, flat, erect ſummits; the germen is ſituated under the flower, ſupporting a long ſlender ſtyle, crowned by a trifid ſtigma; the germen afterward becomes a roundiſh capſule with three cells, filled with roundiſh ſmall ſeeds. The ſtalks at each of the lower joints thruſt out ſmall

bulbs, which, if planted, will grow and produce flowers.

The ſeventh ſort hath ſhorter and broader leaves than the former; the ſtalk is ſlender and furrowed, and at each of the lower joints is garniſhed with one leaf of the ſame ſhape, embracing the ſtalk with their baſe; the flowers come out toward the top of the ſtalk, at two or three inches diſtance, each ſtalk ſupporting two or three ſulphur-coloured flowers, which are each compoſed of ſix ſpear-ſhaped petals an inch and a half long, equal in their ſize and regular in poſition; they have a ſhort permanent empalement, cut into two long and two ſhorter acute ſegments; theſe are ſucceeded by round capſules with three cells, filled with round ſeeds. This ſort flowers in March, and the ſeeds ripen about two months after.

The eighth ſort hath very ſmall, round, bulbous roots, from which ariſe three or four long, ſlender, Graſs-like leaves, of a dark green colour; between theſe come out the ſtalk, which is very ſlender and round, riſing a foot and a half high; at the top the flowers are collected in a ſpike ſitting cloſe to the ſtalk, each having a thin, dry, permanent ſpatha or ſheath, which covers the capſule after the flower is fallen. The flowers are of a pure white, and ſhaped like thoſe of the other ſpecies, but are ſmaller; they are ſucceeded by ſmall round ſeed-veſſels with three cells, each containing two or three round ſeeds. It flowers the latter end of May, and the ſeeds ripen in July.

There are ſome other varieties of this genus, which have flowered in the Chelſea garden, differing only in the colour of their flowers, ſo are not ſuppoſed to be diſtinct ſpecies; one of which is purple on the outſide, and white within; another has white flowers, with a blue ſtripe on the outſide of each petal, and a third has white flowers with yellow bottoms. Theſe have already flowered in the Chelſea garden, where there are many more, which have been ſince raiſed from ſeeds, whoſe flowers have not as yet appeared; and at the Cape of Good Hope, where theſe plants grow naturally, there are more than thirty varieties mentioned in a catalogue of Dr. Herman's. The roots of moſt, if not all theſe ſorts, are frequently eaten by the inhabitants at the Cape of Good Hope, who greatly eſteem them.

All the ſorts multiply very faſt by offsets, ſo that when once obtained, there will be no occaſion to raiſe them from ſeeds; for the roots put out offsets in great plenty, moſt of which will flower the following ſeaſon, whereas thoſe from ſeeds are three or four years before they flower. Theſe plants will not live through the winter in the full ground in England, ſo ſhould be planted in ſmall pots filled with light earth, and placed under a frame in winter, where they may be protected from froſt, but in mild weather ſhould enjoy the free air; but during the winter they muſt be guarded from mice, who are very fond of theſe roots, and if not prevented will devour them.

IXORA. Lin. Gen. 131. Jaſminum. Burman.

The CHARACTERS are,

It hath a ſmall permanent empalement cut into four ſegments; the flower has one funnel-ſhaped petal, having a ſlender tube, cut into four ſegments at the top. It hath four ſhort ſtamina ſituated in the diviſions of the petal, terminated by oblong ſummits, and a roundiſh germen ſituated at the bottom of the involucrum, ſupporting a ſlender ſtyle the length of the tube, crowned by a bifid ſtigma; the germen afterward becomes a berry with two cells, containing two convex angular ſeeds.

This genus of plants is ranged in the firſt order of Linnæus's fourth claſs, intitled Tetrandria Monogynia, the flowers having four ſtamina and one ſtyle.

The SPECIES are,

1. IXORA (*Coccinea*) foliis ovatis ſemiamplexicaulibus, floribus faſciculatis. Flor. Zeyl. 22. *Ixora with oval leaves half embracing the ſtalks, and flowers growing in bunches.* Jaſminum Indicum lauri folio, inodorum umbellatum, floribus coccineis. Pluk. Phyt. tab. 59. f. 2.

IXORA (*Alba*) foliis ovato-lanceolatis, floribus faſciculatis. Lin. Sp. 160. *Ixora with oval ſpear-ſhaped leaves, and flowers growing in bunches.* Jaſminum Indicum, lauri folio, inodorum, floribus albicantibus & ſchetti album. Pluk. Phyt. 109. f. 2.

3. IXORA (*Americana*) foliis ternis lanceolato-ovatis, floribus thyrſoideis. Amœn. Acad. 5. p. 393. *Ixora with oval ſpear-ſhaped leaves placed by threes, and flowers in a looſe ſpike.* Pavetta foliis oblongo-ovatis oppoſitis, ſtipulis ſetaceis. Brown. Jam. tab. 6. f. 2.

The firſt ſort grows naturally in India, where it riſes with a woody ſtalk five or ſix feet high, ſending out many ſlender branches covered with a brown bark, garniſhed with oval leaves, placed ſometimes oppoſite, and at others there are three or four at each joint. The flowers terminate the branches in cluſters; they have very long ſlender tubes, are cut into four oval ſegments at the top, and are of a deep red colour.

The ſecond ſort grows alſo in India; this hath a woody ſtalk riſing ſix or ſeven feet high, ſending out weak branches, garniſhed with oval ſpear-ſhaped leaves placed oppoſite, ſitting cloſe to the branch; the flowers terminate the branches in ſmall cluſters; they have long ſlender tubes, divided into four ſegments at the top, and are white, without ſcent.

The third ſort grows naturally in Jamaica, and ſome other iſlands in the Weſt-Indies, where it is called Wild Jaſmine. This riſes with a ſhrubby ſtalk four or five feet high, ſending out ſlender branches oppoſite, which are garniſhed with oval ſpear-ſhaped leaves placed oppoſite, which are ſix inches long, and two inches and a half broad, having ſhort foot-ſtalks; the flowers are produced at the end of the branches in a looſe ſpike, they are white, and have a ſcent like Jaſmine.

Theſe plants are propagated by ſeeds, when they can be procured from the countries where they grow naturally, for they do not perfect any ſeeds in England. They ſhould be ſown in ſmall pots as ſoon as they arrive, and plunged into a hot-bed; if they arrive in autumn or winter, the pots may be plunged in the tan-bed in the ſtove, between the other pots of plants, ſo will take up little room; but when they arrive in the ſpring, it will be beſt to plunge them in a tan-bed under frames; the ſeeds will ſometimes come up in about ſix weeks, if they are quite freſh; otherwiſe they will lie in the ground four or five months, and ſometimes a whole year, therefore the earth ſhould not be thrown out of the pots till there is no hopes of their growing; when the plants come up, and are fit to remove, they ſhould be each planted in a ſeparate ſmall pot, filled with light earth, and afterward treated in the manner directed for the Coffee-tree.

They may alſo be increaſed by cuttings during the ſummer months, and planted in ſmall pots plunged into a moderate hot-bed, covering them cloſe either with bell or hand-glaſſes to exclude the external air, ſhading them carefully from the ſun during the heat of the day, until they have put out good roots, when they ſhould be parted, and each put into a ſeparate pot, treating them as the ſeedling plants.

K.

KALI. See SALSOLA.

KALMIA. Lin. Gen. Plant. 482. Chamærhododendros. Tourn. Inſt. R. H. 604. tab. 373.

The CHARACTERS are,

The flower has a ſmall permanent empalement cut into five parts, and one petal cut into five ſegments, which ſpread open and are roundiſh. It hath ten ſtamina the length of the petal, which decline in the middle, terminated by oval ſummits. In the center is ſituated a roundiſh germen, ſupporting a ſlender ſtyle as long as the petal, crowned by an obtuſe ſtigma. The germen afterward becomes an oval or globular capſule with five cells, filled with very ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

The SPECIES are,

1. KALMIA (*Latifolia*) foliis ovatis, corymbis terminalibus. Amœn. Acad. 3. p. 19. *Kalmia with oval leaves, and flowers growing in bunches terminating the branches.* Chamædaphne foliis tini, floribus bullatis umbellatis. Cateſb. Carol. 2. p. 98. tab. 98. *Dwarf Laurel with a Tinus leaf, and ſtudded flowers growing in umbels, commonly called Ivy-tree in America.*

2. KALMIA (*Anguſtifolia*) foliis lanceolatis corymbus lateralibus. Lin. Gen. Nov. 1079. *Kalmia with ſpear-ſhaped leaves, and flowers growing in round bunches on the ſides of the ſtalk.* Chamædaphne ſempervirens, foliis oblongis anguſtis, foliorum faſciculis oppoſitis. Cateſb. Carol. 3. p. 17. *Evergreen Dwarf Laurel, with oblong narrow leaves growing in bunches, which are placed oppoſite.*

The firſt ſort grows naturally upon rocks and in barren ſoils in Virginia and Penſylvania, where it riſes with a branching ſtalk to the height of ten or twelve feet, garniſhed with very ſtiff leaves, which are two inches long and one broad, of a lucid green on their upper ſide, but of a pale green on their under; they have ſhort foot-ſtalks, and ſtand without order round the branches; between theſe the buds are formed for the next year's flowers, at the extremity of the branches; theſe buds ſwell during the autumn and ſpring months, till the beginning of June, when the flowers burſt out from their empalements, forming a round bunch (or corymbus) ſitting very cloſe to the branch; they are of a pale bluſh colour, the outſide of the petal is of a Peach colour. The flower has but one petal, whoſe baſe is tubulous, but is cut into five roundiſh ſegments, ſtudded with purple ſpots, which are prominent; after the flowers are paſt, the germen in the center becomes an oval capſule, crowned by the permanent ſtyle, having five cells, which are full of very ſmall ſeeds. This ſhrub in its native ſoil continues flowering great part of the ſummer, and is one of the greateſt ornaments to the country; but as yet it is not ſo well naturalized to our climate as could be wiſhed, though the plants are not injured by the cold, and ſome of them have flowered ſeveral years paſt in the Chelſea garden.

In

In the country where this ſhrub grows naturally, it ſends out plenty of ſuckers from the roots, ſo that they form thickets which are almoſt impaſſable; but here they have not as yet produced any ſuckers, nor do the ſeeds come to maturity, ſo that the plants are not very common in England; for the ſeeds which are ſent from America lie in the ground a whole year before the plants appear, and afterward they make very ſlow progreſs, which has diſcouraged moſt people from attempting to raiſe the plants in that method. The only perſon who has ſucceeded well in the raiſing of theſe, is Mr. James Gordon of Mile End, who has a good number of the plants which have ariſen from ſeeds.

The ſecond ſort is a native of the ſame country with the firſt, where it riſes from three to ſix feet high, dividing into ſmall ligneous branches which are very cloſe, covered with a dark gray bark, garniſhed with ſtiff leaves about two inches long and half an inch broad, of a lucid green, placed without order upon the branches, ſtanding upon ſlender foot-ſtalks; the flowers grow in looſe bunches on the ſide of the branches, upon ſlender foot-ſtalks; they are of one petal, having a ſhort tube, but ſpread open at the top, where they are cut into five angles: the flowers are of a bright red colour when they firſt open, but afterward fade to a bluſh or Peach bloom colour; theſe are ſucceeded by roundiſh compreſſed ſeed-veſſels crowned by the permanent ſtyle, divided into five cells, which are filled with ſmall roundiſh ſeeds. This ſhrub flowers great part of ſummer in its native country, but is not yet ſo well naturalized to this country as to do the like.

The leaves of this elegant plant are ſuppoſed to have a noxious quality, deſtroying ſheep and oxen when they feed upon them, yet the deer eat them with impunity.

Both theſe ſorts multiply by their creeping roots in their native ſoil, and at Whitton, where they have ſtood unremoved a conſiderable time, they put out ſuckers in pretty great plenty; and as theſe plants which come from ſuckers, are much more likely to produce others than thoſe which are raiſed from ſeeds, and will flower much ſooner, ſo the plants ſhould not be removed, but encouraged to ſpread their roots and ſend out ſuckers.

KARATAS, the Penguin or wild Ananas.

The CHARACTERS are,

It hath a tubulous bell-ſhaped flower, which is divided into three parts at the mouth, from whoſe empalement where the germen is ſituated ariſes the pointal, fixed like a nail in the hinder part of the flower, attended by ſix ſhort ſtamina; the germen afterward becomes a fleſhy almoſt conical fruit, which is divided by membranes into three cells, that are full of oblong ſeeds.

There is but one ſort of this plant at preſent known in England, which is,

KARATAS (*Penguin*) foliis ciliato ſpinoſis mucronatis, racemo terminali. *The wild Ananas or Penguin.*

Father Plumier has made a great miſtake in the figure and deſcription of the characters of this plant, and the Caraguata; for he has joined the flower of the Caraguata to the fruit of the Karatas, and vice versâ; this has led many perſons into miſtakes, who have joined the Bromelia and Ananas to this, making them all of the ſame genus, whereas by their characters they ſhould be ſeparated.

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 very 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 in this country, though it has often produced fruit in the gardens, which ſometimes has ripened pretty well; but if it were to ripen as thoroughly here as in its native country, it would 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 filled with light rich earth, and plunged into a hot-bed of tanners bark. When the plants are ſtrong enough to tranſplant, they ſhould be carefully taken up, and each planted into a ſeparate pot filled with light rich earth, and plunged into the hot-bed again, obſerving to refreſh them frequently with water, until they have taken new root, after which time they ſhould have air and water in proportion to the warmth of the ſeaſon. In this bed the plants may remain till Michaelmas, at which time 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.

Theſe plants will not produce their fruit in England until they are three or four years old, ſo they ſhould be ſhifted into larger pots, as the plants advance in their growth; for if their roots are too much confined, they will make but little progreſs. They ſhould alſo be placed at a pretty great diſtance from each other, for their leaves will be three or four feet long, which turning downward occupy a large ſpace.

The leaves of this plant are ſtrongly armed with crooked ſpines, which renders it very troubleſome to ſhift or handle the plants; 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 of them.

The fruit of this plant is produced in cluſters, growing upon a ſtalk about three feet high, and having generally a tuft of leaves growing on the top, ſo has, at firſt ſight, the appearance of a Pine Apple; but, when cloſer viewed, they will be found to be a cluſter of oblong fruit, each being about the ſize of a finger.

A KATKIN is an aggregate of ſummits, hanging down in form of a rope, or Cat's tail, as in the Sallow, Hazel, Birch, &c. and is called in Latin iulus.

KÆMPFERIA. Lin. Gen. Plant. 7.

The CHARACTERS are,

It hath a ſingle ſpatha (or ſheath) of one leaf; the flower hath one petal, with a long ſlender tube, divided into ſix parts above; three of them are alternately ſpear-ſhaped and equal, the other are oval, and at bottom cut into two ſegments which are vertically heart-ſhaped. It hath but one ſtamen, which is membranaceous, oval, and indented, terminated by a linear ſummit, faſtened to it all the length, ſcarcely emerging out of the tube of the petal. It hath a round germen ſupporting a ſtyle the length of the tube, crowned by an obtuſe ſtigma; the germen afterward becomes a roundiſh three-cornered capſule with three cells, filled with ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's firſt claſs, intitled Monandria Monogynia, which includes thoſe plants whoſe flowers have one ſtamen and one ſtyle.

The SPECIES are,

1. KÆMPFERIA (*Galanga*) foliis ovatis ſeſſilibus. Flor. Zeyl. 8. *Kæmpferia with oval leaves ſitting cloſe to the root.* Katsjuli Kelengu. Hort. Mal. and the Wanhom. Kæmpf. Amœn. 901. *Galangale.*
2. KÆMPFERIA (*Rotunda*) foliis lanceolatis petiolatis. Flor. Zeyl. 9. *Kæmpferia with ſpear-ſhaped leaves having foot-ſtalks.* Zedoaria rotunda. C. B. P. *Round Zedoary.*

Theſe plants are both natives of the Eaſt-Indies, where their roots are greatly uſed in medicine as ſudorific and carminative. The firſt ſort hath much the ſcent of green Ginger, when freſh taken out of the ground; the roots are divided into ſeveral fleſhy tubers, which are ſometimes jointed, and grow about four or five inches long; the leaves are oval, about four inches long

and two broad; theſe are without foot-ſtalks, growing cloſe to the root, and ſeem as if ſet on by pairs, ſpreading open each way; and from between theſe leaves the flowers are produced ſingly, having no foot-ſtalks, but are cloſely embraced by the leaves; the flowers are white, having a bright purple bottom. Theſe are not ſucceeded by any fruit in England.

The ſecond ſort hath roots ſomewhat like thoſe of the firſt, but are ſhorter, growing in large cluſters, covered with an Aſh-coloured ſkin, but within are white; from the roots ariſe the leaves, which fold over each other at their baſe; they are ſix or eight inches long, and three broad in the middle, gradually ending in acute points; the flowers ariſe immediately from the roots, each having a ſpatha (or ſheath) at bottom cut into two ſegments, which cloſely embrace the foot-ſtalk; theſe have ſix petals, the three lower which decline downward are long and narrow, the two upper are divided ſo deeply as to appear like a flower with four petals, and the ſide petal is bifid; they are of mixed colours, blue, purple, white and red, having a fragrant odour: they flower in July and Auguſt, but do not produce ſeeds in England.

Theſe plants being natives of hot countries, will not bear the open air in England, ſo requires a warm ſtove to preſerve them through the winter; but as their leaves decay in the autumn, ſo the plants ſhould not have too much wet while they are in an inactive ſtate. If the plants are placed in the bark-ſtove, and treated in the ſame manner as is directed for the Ginger, they will thrive, and produce plenty of flowers every ſummer. They are both propagated by parting of their roots; the beſt time for this is in the ſpring, juſt before they begin to put out their leaves.

KETMIA. See HIBISCUS.

KIGGELARIA. Lin. Gen. Plant. 1001. Laurus. Sterb. We have no Engliſh title for this plant.

The CHARACTERS are,

It hath male and hermaphrodite flowers ſituated on different trees; the male flowers have an empalement of one leaf, cut into five concave ſegments, and five concave petals which are longer than the empalement, ſhaped like a pitcher; each of the petals have a honey gland faſtened to their baſe, which have three obtuſe lobes and are coloured, faſtened to the tails of the petals; they have ten ſmall ſtamina, terminated by oblong ſummits. The hermaphrodite flowers have empalements and petals like the male, but few of them have ſtamina. In the center is ſituated a roundiſh germen, ſupporting five ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes a rough globular fruit with a thick cover, having one cell, filled with angular ſeeds.

This genus of plants is ranged in the ninth ſection of Linnæus's twenty-ſecond claſs, intitled Dicœcia Decandria; but it ſhould be removed to his twenty-third claſs, as the hermaphrodite flowers are fruitful, tho' they are ſituated upon diſtinct plants, whoſe male flowers have ten ſtamina.

We have but one SPECIES of this genus, viz.

KIGGELARIA (*Africana.*) Hort. Cliff. 462. fol. 29. Euonymo-affinis Æthiopica ſempervirens, fructu globoſo ſcabro, foliis ſalicis rigidis ſerratis. H. L. 139. *An Ethiopian Evergreen plant reſembling the Spindle-tree, with a rough globular fruit, and ſtiff ſawed Willow leaves.*

This plant grows naturally at the Cape of Good Hope, where it riſes to be a tree of middling ſtature; but as it will not live in the open air here, they cannot be expected to grow to a great magnitude in England. There are plants of it in the Chelſea garden upward of ten feet high, with ſtrong woody ſtems and pretty large heads; the branches have a ſmooth bark, which is firſt green, but afterward changes to a purpliſh colour; the leaves are about three inches long and one broad, of a light green colour, and ſawed on their edges, ſtanding upon ſhort foot-ſtalks alternately. The flowers come out in cluſters from the ſide of the branches, and hang downward; they are of an herbaceous white colour, and appear in May, at which time the plants are thinly garniſhed with leaves, for moſt of the old leaves drop juſt before the new ones appear. The male flowers fall away ſoon after their farina is ſhed, but the hermaphrodite flowers are ſucceeded by globular fruit about the ſize of common red Cherries; the cover of theſe is very rough, and of a thick conſiſtence, opening in five valves at the top, having one cell filled with ſmall angular ſeeds. Theſe fruit have grown to their full ſize in the Chelſea garden, but the ſeeds have rarely come to maturity here.

Theſe plants were not very common in Europe ſome years paſt, being very difficult to propagate, unleſs by ſeeds, which ſome plants both in Holland and England have lately produced, ſo that they are now much more plenty than they were in both countries; for when any of the young branches are laid down, they are two years before they put out roots, and ſcarce one in five will then have any roots; nor do the cuttings ſucceed better, for not one in twenty of them will take root, when planted with the utmoſt care: the beſt time to plant the cuttings is in the ſpring, juſt before the plants begin to ſhoot; theſe ſhould be planted in pots filled with a ſoft loamy earth, and plunged into a very moderate hot-bed, covering them cloſe with a glaſs, to exclude the air from them, and ſhade them every day from the ſun; they ſhould have very little water after their firſt planting. If any of them grow, they ſhould be planted into ſeparate ſmall pots, filled with loamy earth, and may be expoſed to the air in a ſheltered ſituation till autumn, when they muſt be removed into the green-houſe, and treated in the ſame manner as Orange-trees.

KITCHEN-GARDEN. A good Kitchen-garden is almoſt as neceſſary to a country ſeat, as a kitchen to the houſe; for without one, there is no way of being ſupplied with a great part of neceſſary food; the markets in the country being but poorly furniſhed with eſculent herbs, and thoſe only upon the market days, which are ſeldom oftener than once a week; ſo that unleſs a perſon has a garden of his own, there will be no ſuch thing as procuring them freſh, in which their goodneſs conſiſts; nor can any variety of theſe be had in the country markets; therefore whoever propoſes to reſide in the country, ſhould be careful to make choice of a proper ſpot of ground for this purpoſe; and the ſooner that is made and planted, the produce of it will be earlier in perfection; for fruit-trees and Aſparagus require three years to grow, before any produce can be expected from them; ſo that the later the garden is made, the longer it will be before a ſupply of theſe things can be had for the table. And although the uſefulneſs of this garden is acknowledged by almoſt every one, yet there are few who make a proper choice of ſoil and ſituation for ſuch a garden; the modern taſte, which is, perhaps, carried to as extravagant lengths, in laying open and throwing every obſtruction down, as the former cuſtom of incloſing within walls was ridiculous; ſo that now one frequently ſees the Kitchen-garden removed to a very great diſtance from the houſe and offices, which is attended with great inconveniencies; and often ſituated on a very bad ſoil, ſometimes too moiſt, and at others without water, ſo that there is a great expence in building walls and making the garden, where there can be little hopes of ſucceſs.

Nor will a Kitchen-garden be well attended to, when it is ſo ſituated as to be out of ſight of the poſſeſſor, eſpecially if the gardener has not a love and value for it, or if it lies at a great diſtance from his habitation, or the other parts of the garden; for when it ſo happens, a great part of the labourer's time will be loſt in going from one part to the other: therefore, before the general plan of the pleaſure-garden is ſettled, a proper piece of ground ſhould be choſen for this purpoſe, and the plan ſo adapted, as that the Kitchen-garden may not become offenſive to the ſight, which may be effected by proper plantations of ſhrubs to ſcreen the walls; and through theſe ſhrubs may be

contrived

contrived ſome winding walks to lead to the Kitchen-garden, which will have as good an effect as thoſe which are now commonly made in gardens for pleaſure only. In the choice of the ſituation, if it does not obſtruct the view of better objects, or ſhut out any material proſpect, there can be no objection to the placing it at a reaſonable diſtance from the houſe or offices; for as particular things may be wanted for the kitchen, which were not thought of at the time when directions were given to the gardener what to bring in; ſo if the garden is ſituated at a great diſtance from the houſe, it will be found very inconvenient to ſend thither as often as things are wanting: therefore it ſhould be contrived as near the ſtables as poſſible, for the conveniency of carrying the dung thither; which, if at a great diſtance, will add to the expence of the garden.

As to the figure of the ground, that is of no great moment, ſince in the diſtribution of the quarters all irregularities may be hid; though if you are at full liberty, an exact ſquare or an oblong, is preferable to any other figure.

The great thing to be conſidered is, to make choice of a good ſoil, not too wet, nor over dry, but of a middling quality; nor ſhould it be too ſtrong or ſtubborn, but of a pliable nature, and eaſy to work; and if the place where you intend to make the Kitchen-garden ſhould not be level, but high in one part and low in another, I would by no means adviſe the levelling it; for by this ſituation you will have an advantage which could not be obtained on a perfect level, which is, the having one part dry ground for early crops, and the low part for late crops, whereby the kitchen may be the better ſupplied throughout the ſeaſon with the various ſorts of herbs, roots, &c. And in very dry ſeaſons, when in the upper part of the garden the crop will greatly ſuffer with drought, then the lower part will ſucceed, and ſo vice versâ; but I would by no means direct the chuſing a very low moiſt ſpot of ground for this purpoſe; for although in ſuch ſoils garden-herbs are commonly more vigorous and large in the ſummer ſeaſon, yet they are ſeldom ſo well taſted or wholeſome as thoſe which grow upon a moderate ſoil; and eſpecially ſince in this garden your choice fruits ſhould be planted, it would be wrong to have a very wet ſoil.

This garden ſhould be fully expoſed to the ſun, and by no means overſhadowed with trees, buildings, &c. which are very injurious to your kitchen plants and fruit-trees; but if it be defended from the north wind by a diſtant plantation, it will greatly preſerve your early crops in the ſpring; as alſo from the ſtrong ſouth-weſt winds, which are very hurtful in autumn to fruit and garden-herbs. But theſe plantations ſhould not be too near nor very large; for I have generally found where Kitchen-gardens are placed near woods or large plantations, they have been much more troubled with blights in the ſpring, than thoſe which have been more expoſed.

The quantity of ground neceſſary for a Kitchen-garden muſt be proportioned to the largeneſs of the family, or the quantity of herbs deſired: for a ſmall family, one acre of ground may be ſufficient; but for a large family, there ſhould not be leſs than three or four acres; becauſe, when the ground is regularly laid out, and planted with eſpaliers of fruit-trees, as will hereafter be directed, this quantity will be found little enough, notwithſtanding what ſome perſons have ſaid on this head.

This ground muſt be walled round, and if it can be conveniently contrived, ſo as to plant both ſides of the walls which have good aſpects, it will be a great addition to the quantity of wall fruit; and thoſe ſlips of ground which are without ſide of the walls, will be very uſeful for planting of Gooſeberries, Currants, Strawberries, and ſome ſorts of kitchen plants, ſo that they may be rendered equally uſeful with any of the quarters within the walls; but theſe ſlips ſhould not be too narrow, leſt the hedge, pale, or plantation

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of ſhrubs, which incloſe them, ſhould ſhade the borders where the fruit-trees ſtand: the leaſt width of theſe ſlips ſhould be twenty-five or thirty feet, but if they are double that, it will be yet better, and the ſlips will be more uſeful, and the fruit-trees will have a larger ſcope of good ground for their roots to run. Theſe walls ſhould be built about twelve feet high, which will be a ſufficient height for any ſort of fruit.

If the ſoil where you intend to place your Kitchen-garden be very ſtrong, then you ſhould plough or dig it three or four times before you plant any thing therein; and if you throw it up in ridges to receive the froſt in winter, it will be of great ſervice to meliorate and looſen its parts.

The manure which is moſt proper for ſuch ſoils, is ſea-coal aſhes, and the cleanſing of ſtreets or ditches, which will render it light much ſooner than any other dung or manure; and the greater the quantity of aſhes the better, eſpecially if the ground be cold; and where theſe aſhes are not to be obtained in plenty, ſea-ſand is a very proper dreſſing, where it can be eaſily procured, or rotten wood, or the parts of vegetables rotted are very good; all which will greatly looſen the ſoil, and cauſe it to be not only eaſier to work, but alſo more advantageous for the growth of plants.

But, on the contrary, if your ſoil be light and warm, you ſhould manure it with rotten neats dung, which is much preferable to any other dreſſing for hot ſoils; but if you uſe horſe dung, it muſt be well rotted, otherwiſe it will burn up the crops upon the firſt hot dry weather.

The ſoil of this garden ſhould be at leaſt two feet deep, but if deeper it will be ſtill better, otherwiſe there will not be depth enough of ſoil for many ſorts of eſculent roots, as Carrots, Parſneps, Beets, &c. which run down pretty deep in the ground, and moſt other ſorts of eſculent plants delight in a deep ſoil; and many plants, whoſe roots appear ſhort, yet if their fibres by which they receive their nouriſhment are traced, they will be found to extend to a conſiderable depth in the ground; ſo that when theſe are ſtopped by meeting with gravel, chalk, clay, &c. the plants will ſoon ſhew it by their colour and ſtinted growth.

You ſhould alſo endeavour to have a ſupply of water in the different parts of the garden, which, if poſſible, ſhould be contained in large baſons or reſervoirs, where it may be expoſed to the open air and ſun, that it may be ſoftened thereby; for ſuch water as is taken out of wells, &c. juſt as it is uſed, is by no means proper for any ſort of plants.

In the diſtribution of this garden, after having built the walls, you ſhould lay out banks or borders under them, which ſhould be at leaſt eight or ten feet broad, whereby the roots of the fruit-trees will have greater liberty than in ſuch places where the borders are not above three or four feet wide; and upon theſe banks you may ſow many ſorts of early crops, if expoſed to the ſouth; and upon thoſe expoſed to the north, you may have ſome late crops; but I would by no means adviſe the planting any ſort of deep rooting plants too near the fruit-trees, eſpecially Peas and Beans; tho' for the advantage of the walls, to preſerve them in winter, and to bring them forward in the ſpring, the gardeners in general are too apt to make uſe of thoſe borders, which are near the beſt aſpected walls, to the great prejudice of their fruit-trees; but for theſe purpoſes it is much better to have ſome Reed-hedges fixed in ſome of the warmeſt quarters, under which you ſhould ſow and plant early Peas, Beans, &c. where they will thrive as well as if planted under a wall, and hereby your fruit-trees will be entirely freed from ſuch troubleſome plants.

Then you ſhould proceed to dividing the ground out into quarters, which muſt be proportioned to the largeneſs of the garden; but I would adviſe never to make them too ſmall, whereby your ground will be loſt in walks; and the quarters being incloſed by eſpaliers of fruit-trees the plants therein will draw up ſlender,

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and never arrive to half the ſize as they would do in a more open expoſure.

The walks of this garden ſhould be alſo proportioned to the ſize of the ground, which in a ſmall garden ſhould be four feet, but in a large one ſix; and on each ſide of the walk ſhould be allowed a border five or ſix feet wide between the eſpalier and the walk, whereby the diſtance between the eſpaliers will be greater, and the borders being kept conſtantly worked and manured, will be of great advantage to the roots of the trees; and in theſe borders may be ſown ſome ſmall ſallad, or any other herbs, which do not continue long or root deep, ſo that the ground will not be loſt.

The breadth of theſe middle walks which I have here aſſigned them, may by many perſons be thought too great; but my reaſon for this is to allow proper room between the eſpaliers, that they may not ſhade each other, or their roots interfere and rob each other of their nouriſhment: but where the walks are not required of this breadth, it is only enlarging of the borders on each ſide, and ſo reducing the walks to the breadth deſired.

But the walks of theſe gardens ſhould not be gravelled, for as there will conſtantly be occaſion to wheel manure, water, &c. upon them, they would ſoon be defaced, and rendered unſightly; nor ſhould they be laid with turf; for in green walks, when they are wheeled upon or much trodden, the turf is ſoon deſtroyed, and thoſe places where they are much uſed, become very unſightly alſo; therefore the beſt walks for a Kitchen-garden are thoſe which are laid with a binding ſand; but where the ſoil is ſtrong and apt to detain the wet, there ſhould be ſome narrow under ground drains made by the ſide of the walks, to carry off the wet, otherwiſe there will be no uſing of the walks in bad weather; and where the ground is very wet, and the water is detained by the ſtiffneſs of the ſoil, if ſome lime-rubbiſh, flints, chalk, or any ſuch material as can be procured with the leaſt expence, and is laid at the bottom of theſe walks; or if neither of theſe can be had, a bed of Heath or Furze ſhould be laid, and the coat of ſand laid over it; the ſand will be kept drier, and the walks will be ſound and good in all ſeaſons. Theſe ſand-walks when they are well laid, are by much the eaſieſt kept of any; for when either weeds or Moſs begin to grow, it is but ſcuffling them over with a Dutch hoe in dry weather, and raking them over a day or two after, and they will be as clean as when firſt laid.

The beſt figure for the quarters to be diſpoſed into, is a ſquare or an oblong; where the ground is adapted to ſuch a figure; otherwiſe they may be triangular, or of any other ſhape, which will be moſt advantageous to the ground.

When the garden is laid out in the ſhape intended, if the ſoil is ſtrong, and ſubject to detain the moiſture, or is naturally wet, there ſhould always be underground drains made, to carry off the wet from every quarter of the garden, for otherwiſe moſt ſorts of kitchen plants will ſuffer greatly by moiſture in winter; and if the roots of the fruit-trees get into the wet, they will never produce good fruit, ſo that there cannot be too much care taken to let off all ſuperflous moiſture from the Kitchen-garden.

Theſe quarters ſhould be conſtantly kept clear from weeds, and when any part of the ground is unoccupied, it ſhould always be trenched up into ridges, that it may ſweeten and imbibe the nitrous particles of the air, which is of great advantage to all ſorts of land, and the ground will then be ready to lay down whenever it is wanted.

The ground in theſe quarters ſhould not be ſown or planted with the ſame crop two years together, but the crops ſhould be annually changed, whereby they will prove much better than when they conſtantly grow upon the ſame ſpot. Indeed the kitchen-gardeners near London, where the land is dear, are often obliged to put the ſame crop upon the ground for two or three years together; but then they dig and manure

their land ſo well every year, as to render it almoſt new; though notwithſtanding all this, it is conſtantly obſerved, that freſh land always produces the beſt crops.

In one of theſe quarters, which is ſituated neareſt to the ſtables, and beſt defended from the cold winds; or if either of the ſlips without the garden wall, which is well expoſed to the ſun, lies convenient, and is of a proper width, that ſhould be preferred for a place to make hot-beds for early Cucumbers, Melons, &c. The reaſons for my giving the preference to one of theſe ſlips, is, firſt, there will be no dirt or litter carried over the walks of the Kitchen-garden in winter and ſpring, when the weather is generally wet, ſo that the walks will be rendered unſightly; ſecondly, the view of the hot-beds will be excluded from ſight; and laſtly, the convenience of carrying the dung into theſe ſlips, for by making of a gate in the hedge, or pale, wide enough for a ſmall cart to enter, it may be done with much leſs trouble than that of barrowing it thro' the garden; and where there can be a ſlip long enough to contain a ſufficient number of beds for two or three years, it will be of great uſe; becauſe by the ſhifting of the beds annually, they will ſucceed much better than when they are continued for a number of years on the ſame ſpot of ground; and as it will be abſolutely neceſſary to fence this Melon-ground round with a Reed-hedge, it may be ſo contrived as to move away in pannels; and then that hedge which was on the upper ſide the firſt year, being carried down to a proper diſtance below that which was the lower hedge, and which may remain, there will be no occaſion to remove more than one of the croſs hedges in a year; therefore I am perſuaded, whoever will make trial of this method, will find it the moſt eligible.

The moſt important points of general culture conſiſt in well digging and manuring the ſoil, and giving a proper diſtance to each plant, according to their diffrent growths (which is conſtantly exhibited in their ſeveral articles in this book) as alſo in keeping them clear from weeds; for if weeds aae permitted to grow until their ſeeds are ripe, they will ſhed upon the ground, and fill it ſo as not to be gotten out again in ſeveral years. You ſhould alſo obſerve to keep your dunghills always clear from weeds, for it will be to litte purpoſe to keep the garden clean, if this is not obſerved; for the ſeeds falling among the dung, will be brought into the garden, whereby there will be a conſtant ſupply of weeds yearly introduced, to the no ſmall damage of your plants, and a perpetual labour occaſioned to extirpate them again. Another thing which is abſolutely neceſſary to be obſerved, is, to carry off all the refuſe leaves of Cabbages, the ſtalks of Beans and haulm of Peaſe, as ſoon as they are done with, for the ill ſcent which moſt people complain of in the Kitchen-gardens, is wholly occaſioned by theſe things being ſuffered to rot upon the ground; therefore when the Cabbages are cut, all leaves ſhould be carried out of the garden while they are freſh, at which time they may be very uſeful for feeding of hogs, or other animals, and this will always keep the garden neat and free from ill ſcents. As for all other neceſſary directions, they will be found in the articles of the ſeveral ſorts of kitchen plants, which renders it needleſs to be repeated in this place.

KLEINIA. See CACALIA.

KNAUTIA. Lin. Gen. Plant. 109. Lychni-Scabioſa. Boerh. Ind. 1. 131.

This name was applied to this plant by Dr. Linnæus, in honour of the memory of Dr. Chriſtian Knaut, who publiſhed a method of claſſing plants.

The CHARACTERS are,

It hath a ſingle oblong empalement, containing ſeveral floſcular flowers, which are ranged ſo as to appear regular, but each irregular, having tubes the length of the empalement, but are cut at the brim into four irregular ſegments, the outer being the biggeſt; it hath four ſtamina the length of the tube, inſerted in the receptacle, terminated by oblong incumbent ſummits; and a germen under the petal, ſupporting a ſlender ſtyle, crowned by a thick bifid ſtigma, which

which afterward becomes a four-cornered ſeed with a hairy apex.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, intitled Tetrandria Monogynia, the flowers having four ſtamina and one ſtyle.

The SPECIES are,

1. KNAUTIA (*Orientalis*) foliis omnibus pinnatifidis, corollis calyce longioribus. Lin. Sp. App. 1679. *Knautia with all the leaves wing-pointed, and the petal longer than the empalement.* Lychni-ſcabioſa, flore rubro, annua. Boerh. Ind. alt.
2. KNAUTIA (*Propontica*) foliis ſuperioribus lanceolatis indiviſis, corollis calyce æqualibus. Lin. Sp. App. 1666. *Knautia whoſe upper leaves are ſpear-ſhaped and whole, and the petal of the flower equal to the empalement.* Scabioſa Orientalis villoſa, flore ſuaverubente, fructu pulchro oblongo. Tourn. Cor. 35.

Theſe plants are natives of the Eaſt, they are both annual; the firſt has been long cultivated in the Engliſh gardens; this riſes with an erect branching ſtalk four feet high, garniſhed with wing-pointed leaves; the branches are terminated by ſingle foot-ſtalks, each ſupporting one flower, having a tubular empalement cut into four ſegments at the top, and each contain four florets of a bright red colour, cut into four unequal ſegments, the outer being much larger than the other; theſe have four ſtamina the length of the tube of the petal, terminated by oblong ſummits; and the flowers are ſucceeded by oblong four-cornered ſeeds, which, when ripe, ſoon fall out of the cup if they are not gathered.

The ſecond ſort differs from the firſt in its upper leaves being whole, and the petal of the flower being equal to the cup. The lower leaves of this are ſawed on their edges, and terminate in acute points.

Theſe plants propagate eaſily; if their ſeeds are permitted to ſcatter in the autumn, the plants will come up ſoon after; and if ſome of theſe are planted in the borders of the pleaſure-garden, or among low ſhrubs near the walks in October, the plants will live through the winter, and flower in June; ſo their ſeeds will ripen the end of July or beginning of Auguſt, therefore require no other culture but to keep them clean from weeds.

KNIGHTS CROSS, or SCARLET CROSS, is the Scarlet Lychnis. See LYCHNIS.

L.

LABIATE FLOWERS are ſuch as have lips, or more properly a labiated flower, is an irregular monopetalous flower, divided into two lips; the upper is called the creſt, the under the beard; ſometimes the creſt is wanting, and then the ſtyle and chives ſupply its place, as in the Ground Pine, Scordium, Bugula, &c. but the greateſt part have two lips, which, in ſome ſpecies the upper lip is turned upwards, as the Ground Ivy, &c. but moſt uſually the upper lip is convex above, and turns the hollow part down to the lower lip, and ſo repreſents a kind of helmet, or monk's hood, from whence theſe are called galeate, cucullate, and galericulate flowers, in which form are moſt of the verticillate plants.

LABLAB. See PHASEOLUS.

LABRUM VENERIS. See DIPSACUS.

LABRUSCA. See VITIS.

LABURNUM. See CYTISUS.

LABYRINTH [Λαβύρινθος,] a winding, mazy, and intricate turning to and fro, through a wilderneſs or a wood.

The deſign of a Labyrinth is, to cauſe an intricate and difficult labour to find out the center, and the aim is, to make the walks ſo intricate, that a perſon may loſe himſelf in them, and meet with as great a number of ſtops and diſappointments as is poſſible, they being the moſt valuable that are moſt intricate.

As to the contrivance of them, it will not be poſſible to give directions in words, there are ſeveral plans and deſigns in books of gardening; they are rarely met with but in great and noble gardens, as Hampton-court, &c.

There are two ways of making them, the firſt is with ſingle hedges; this method has been practiſed in England. Theſe, indeed, may be beſt, where there is but a ſmall ſpot of ground to be allowed for the making them, but where there is ground enough, the double are moſt eligible.

Double ones, or thoſe that are made with double hedges of a conſiderable thickneſs of wood between hedge and hedge, are approved as much better than ſingle ones, as is the manner of making them in France, and other places, of all which, that of Verſailles is allowed by all to be the nobleſt of its kind in the world.

It is an error in Labyrinths in making them too narrow, for by that means the hedges muſt be kept cloſe clipped; whereas, if the walks are made wider, according to the foreign practice, they will not ſtand in ſo much need of it.

The walks are made with gravel, and the hedges are uſually ſet with Hornbeams; the palliſades ought to be ten, twelve, or fourteen feet high; the Hornbeam ſhould be kept cut, and the walks rolled.

LACRYMA JOBI [ſo called, becauſe the ſeed of it reſembles a tear, or drop.] Job's Tears. See COIX.

LACTIFEROUS PLANTS are ſuch as abound with a milky juice, as the Euphorbia, Sonchus, Lactuca, &c.

LACTUCA. Tourn. Inſt. R. H. 473. tab. 267. Lin. Gen. Plant. 814. [ſo called from lac, *Lat.* milk, becauſe the leaves, ſtalks, flower, and branch, being broken, plentifully emit a milk, or white milky juice, quickly turning yellow and bitteriſh.] Lettuce; in French, *Laitue.*

The CHARACTERS are,

The flowers are compoſed of ſeveral hermaphrodite florets, incloſed in one ſcaly oblong empalement; theſe lie over each other like the ſcales of fiſh. The florets have one petal, which is ſtretched out on one ſide like a tongue, and is ſlightly indented at the end in three or four parts; theſe have each five ſhort hairy ſtamina; the oval germen ſup-

ports a ſlender ſtyle, crowned by two reflexed ſtigmas, and afterward becomes one oblong pointed ſeed, crowned with a ſingle down, ſitting in the ſcaly empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's nineteenth claſs, intitled Syngeneſia Polygamia æqualis, which includes thoſe plants whoſe flowers are compoſed of all hermaphrodite, or fruitful florets, and have their ſtamina and ſtyle connected.

It would be beſide my purpoſe to mention in this place the ſeveral ſorts of Lettuce that are to be found in botanic writers, many of which are plants of little uſe, and are never cultivated but in botanic gardens for variety; ſome of them are found wild in many parts of England. I ſhall therefore paſs over thoſe, and only mention the ſeveral varieties which are cultivated in the kitchen-garden for uſe: 1. Common or Garden Lettuce. 2. Cabbage Lettuce. 3. Cilicia Lettuce. 4. Dutch Brown Lettuce. 5. Aleppo Lettuce. 6. Imperial Lettuce. 7. Green Capuchin Lettuce. 8. Verſailles, or Upright White Cos Lettuce. 9. Black Cos. 10. Red Capuchin Lettuce. 11. Roman Lettuce. 12. Prince Lettuce. 13. Royal Lettuce. 14. Egyptian Cos Lettuce.

The firſt of theſe ſorts is commonly ſown for cutting very young, to mix with other ſmall ſallad herbs, and is only different from the ſecond ſort, in being a degeneracy therefrom, or otherwiſe the ſecond is an improvement by frequent cultivation from the firſt; for if the ſeeds are ſaved from ſuch plants of the ſecond ſort as did not cabbage cloſely, the plants produced from that ſeed will degenerate to the firſt ſort, which is by the gardeners called Lapped Lettuce, to diſtinguiſh it from the other, which they call Cabbage Lettuce. The ſeeds of the firſt, which are commonly ſaved from any of the plants, without having regard to their goodneſs, are generally ſold at a very cheap rate (eſpecially in dry ſeaſons, when theſe plants always produce the greateſt quantity of ſeeds,) though ſometimes this ſeed is ſold in the ſeed-ſhops, and by perſons who make a trade of ſelling ſeeds, for the Cabbage Lettuce, which is often the occaſion of peoples being diſappointed in their crop; ſo that this ſort ſhould never be cultivated but to be cut up very young, for which purpoſe this is the only good ſort, and may be ſown any time of the year, obſerving only in hot weather to ſow it in ſhady borders; and in the ſpring and autumn upon warm borders, but in winter it ſhould be ſown under glaſſes, otherwiſe it is ſubject to be deſtroyed by ſevere froſts.

The Cabbage Lettuce may alſo be ſown at different times of the year, in order to have a continuation of it through the whole ſeaſon. The firſt crop is generally ſown in February, which ſhould be upon a warm ſpot of ground, and when the plants are come up, they ſhould be thinned out to the diſtance of ten inches each way, which may be done by hoeing them out, as is practiſed for Turneps, Carrots, Onions, &c. provided you have no occaſion for the ſuperfluous plants, otherwiſe they may be drawn up, and tranſplanted into another ſpot of good ground at the ſame diſtance, which, if done before the plants are too large, they will ſucceed very well, though they will not be ſo large as thoſe which are left upon the ſpot where they were ſown, but they will come ſomewhat later, which will be of ſervice where people do not continue ſowing every fortnight or three weeks in ſummer.

You muſt alſo obſerve in ſowing the ſucceeding crops, as the ſeaſon advances, to chuſe a ſhady moiſt ſituation, but not under the drip of trees, otherwiſe, in the heat of ſummer they will run up to ſeed before they cabbage. In the beginning of Auguſt you ſhould ſow the laſt crop, which is to ſtand over winter; the ſeeds ſhould be ſown thin upon a good light ſoil, in a warm ſituation, and when the plants are come up they muſt be hoed out, ſo as they may ſtand ſingly, and cut down all the weeds to clear them. In the beginning of October they ſhould be tranſplanted into warm borders, where, if the winter is not very ſevere, they will ſtand very well; but in order to be ſure of a crop, it will be adviſeable to plant a few upon a bed pretty cloſe together, where they may be arched over with hoops, and in ſevere froſts they ſhould be covered with mats and ſtraw, or Peas-haulm, to ſecure them from being deſtroyed; and in the ſpring of the year they may be tranſplanted out into a warm rich ſoil, at the diſtance before-mentioned; but ſtill thoſe which grew under the wall, if they eſcaped the winter, and were ſuffered to remain, will cabbage ſooner than thoſe which are removed again; but you muſt obſerve not to place them too cloſe to the wall, which would occaſion their growing up tall, and prevent their being large or hard.

In order to ſave good ſeeds of this kind, you ſhould look over your Lettuces when they are in perfection, and ſuch of them as are very hard, and grow low, ſhould have ſticks thruſt into the ground, by the ſides of as many of them as you intend for ſeed, to mark them from the reſt; and you ſhould carefully pull up all the reſt from amongſt them as ſoon as they begin to run up, if any happen to be left, leſt when they are run up to flower, they ſhould, by the intermixing their farina with the good ones, degenerate the ſeeds. It may be ſome perſons may object, that ſuppoſe ſome bad ones ſhould happen to be left among them (for ſeeds to ſow for ſmall ſallads,) yet the good ones being marked, the ſeeds need not be mixed, and ſo no danger can enſue from thence; but notwithſtanding ever ſo much care be taken to keep the ſeeds ſeparate, yet, whether from the intermixing of the farina during the time of their being in flower, or what other cauſe, I cannot ſay, but it hath been frequently obſerved, that where good and bad plants have been left for ſeed upon the ſame ſpot, the ſeeds of the good plants which were carefully ſaved ſeparately, have very much degenerated, and proved worſe than ſuch as have ſeeded by themſelves. The ſeeds ſhould always be ſaved either from thoſe which ſtood through the winter, or thoſe which were ſown early in the ſpring, for the late ones very ſeldom perfect their ſeeds.

The Cilicia, Imperial, Royal, Black, White, and Upright Cos Lettuces may be ſown at the following times; the firſt ſeaſon for ſowing theſe ſeeds is at the latter end of February, or the beginning of March, upon a moderate hot-bed, or on a warm light ſoil in a ſheltered ſituation; and when the plants are come up and are fit to tranſplant, thoſe which were ſown on the hot-bed ſhould be planted on another warm bed about four inches aſunder, row from row, and two inches diſtance in the rows, obſerving to ſhade them from the ſun till they have taken new root; after which they ſhould have a larger ſhare of air admitted to them daily, to prevent their drawing up weak; but if the ſeaſon proves favourable, they ſhould be tranſplanted the beginning of April to the place where they are to remain, allowing them ſixteen inches room every way, for theſe large ſorts muſt not be planted too near each other; thoſe which were ſown in the full ground will be later before they come up, ſo ſhould be either hoed out, or tranſplanted into another ſpot of ground (as was directed for thoſe ſown on the hot-bed allowing them as much room) eſpecially if the ſoil be good; after they have taken new root, you muſt carefully keep them clear from weeds, which is the only culture they will require, except the Black Cos Lettuce, which ſhould be tied up when they are full grown (in the manner as was directed for blanching of Endive,) to whiten their inner leaves, and render them criſp, otherwiſe they are ſeldom good for much, rarely cabbaging without this aſſiſtance.

When your Lettuces are in perfection, you ſhould look over them, and mark as many of the beſt of them as you intend for ſeed (in the ſame manner as was before directed for the common Cabbage Lettuce,) being very careful not to ſuffer any ordinary ones to ſeed amongſt them, as was before obſerved, which would prove more injurious to theſe ſorts than to the common, as being more inclinable to degenerate with us, if they are not carefully ſaved.

You may alſo continue theſe ſorts through the whole ſeaſon of Lettuce, by ſowing them in April, May, and June, obſerving, (as was before directed) to ſow the late crops in a ſhady ſituation, otherwiſe they will run up to ſeed before they grow to any ſize; but in the middle of September you may ſow of theſe ſorts, to abide the winter; which plants ſhould be tranſplanted either under glaſſes, or into a bed, which ſhould be arched over with hoops, in order to be covered in the winter, otherwiſe in hard winters they are often deſtroyed; but you muſt conſtanly let theſe plants have as much free air as poſſible, when the weather is mild, only covering them in hard rains or froſty weather; for if they are kept too cloſely covered in winter, they will be ſubject to a mouldineſs, which ſoon rots them.

In the ſpring theſe plants ſhould be planted out into a rich light ſoil, allowing them at leaſt ſixteen inches diſtance each way; for if they are planted too cloſe, they are very ſubject to grow tall, but ſeldom cabbage well; and from this crop, if they ſucceed well, it will be proper to ſave your ſeeds; though you ſhould alſo ſave from that crop ſown on the hot-bed in the ſpring, becauſe ſometimes it happens, that the firſt may fail by a wet ſeaſon, when the plants are full in flower, and the ſecond crop may ſucceed, by having a more favourable ſeaſon afterwards; and if they ſhould both ſucceed, there will be no harm in that, ſince the ſeeds will grow very well when two years old, and if well ſaved, at three, but this will not always happen.

The moſt valuable of all the ſorts of Lettuce in England, are the Egyptian Green Cos, and the Verſailles, or White Coſs, and the Cilicia, though ſome people are very fond of the Royal and Imperial Lettuces, but they ſeldom ſell ſo well in the London markets as the other, nor are ſo generally eſteemed. Indeed of late years, ſince the White Cos has been commonly cultivated, it has obtained the preference of all the other ſorts, until the Egyptian Green Cos was introduced, which is ſo much ſweeter and tenderer than the White Cos, that it is by all good judges eſteemed the beſt ſort of Lettuce yet known. This ſort will endure the cold of our ordinary winters full as well as the White Cos; but at the ſeaſon of its cabbaging, if there happens to be much wet, this being very tender, is very ſubject to rot.

The Brown Dutch and Green Capuchin Lettuces are very hardy, and may be ſown at the ſame ſeaſons as was directed for the common Cabbage Lettuce, and are very proper to plant under a wall, or hedge, to ſtand the winter, where many times theſe will abide, when moſt of the other ſorts are deſtroyed, and therefore they will prove very acceptable at a time when few other ſorts are to be had; they will alſo endure more heat and drought than moſt other ſorts of Lettuce, which renders them very proper for late ſowing; for it very often happens, in very hot weather, that the other ſorts of Lettuce will run up to ſeed in a few days after they are cabbaged, whereas theſe will abide near a fortnight in good order, eſpecially if care be taken to cut the forwardeſt firſt, leaving thoſe that are not ſo hard cabbaged to be laſt. If ſome plants of theſe two laſt ſorts are planted under frames, on a moderate hot-bed in October, they will be fit for uſe in April, which will prove acceptable to thoſe who are lovers of Lettuce, and being covered by glaſſes, will render them tender. In ſaving of theſe ſeeds, the ſame care ſhould be taken to preſerve only ſuch as are very large and well cabbaged, otherwiſe the ſeeds will degenerate, and be good for little.

The Red Capuchin, Roman, and Prince Lettuces are pretty varieties, and cabbage very early, for which reaſon a few of them may be preſerved, as may alſo ſome of the Aleppo, for the beauty of its ſpotted leaves; though very few people care for either of theſe ſorts at table, when the other more valuable ones are to be obtained; but in a ſcarcity, theſe may ſupply the place pretty well, and theſe ſorts are very proper for ſoups. The ſeeds of theſe muſt alſo be ſaved from

ſuch as cabbage beſt, otherwiſe they will degenerate, and be good for little.

In ſaving ſeeds of all theſe ſorts of Lettuce, you ſhould obſerve never to let two ſorts ſtand near each other, for by their farina mixing, they will both vary from their original, and partake of each other; and there ſhould be a ſtake fixed down by the ſide of each, to which the ſtem ſhould be faſtened, to prevent their being broken, or blown out of the ground by wind, to which the Cilicia, Cos, and the other large growing Lettuces, are very ſubject when they are in flower. You muſt alſo obſerve to cut ſuch branches of the large growing Lettuce as ripen firſt, and not wait to have the ſeed of the whole plant ripe together, which never happens; but, on the contrary, ſome branches will be ripe a fortnight or three weeks before others; and when you cut them, they muſt be ſpread upon a coarſe cloth in a dry place, that the ſeeds may dry, after which you ſhould beat them out, and dry them again, and then preſerve them for uſe, being careful to hang them up where mice and other vermin cannot come at them; for if they do, they will ſoon eat them up.

LACTUCA AGNINI. See VALERIANELLA.

LADY's SLIPPER. See CYPRIPEDIUM.

LADY's SMOCK. See CARDAMIN.

LAGŒCIA, Baſtard Cumin.

The CHARACTERS are,

It hath many flowers collected into a head, which have one common empalement, compoſed of eight indented leaves, but the ſimple empalement to each flower hath five leaves, which are very narrow and pinnated, ending in many hair-like points. The flower conſiſts of five horned petals, which are ſhorter than the empalement; at the bottom of each flower is ſituated the germen, ſupporting a ſtyle crowned by a ſimple ſtigma, attended by five ſtamina, which are long and narrow; the germen afterward changes to an oval ſeed, crowned with the empalement.

There is but one SPECIES of this plant, viz.

LAGOECIA (*Cuminoides.*) Lin. Hort. Cliff. *Baſtard, or Wild Cumin.*

We have no other Engliſh name for this plant, nor is this a very proper one, but as it has been titled by ſome of the antient botaniſts Cuminum ſylveſtre, i. e. Wild Cumin, and by Dr. Tournefort it is made a diſtinct genus, by the title of Cuminoides, it may be ſtyled Wild, or Baſtard Cumin.

This is an annual plant, which grows about a foot high. The leaves reſemble thoſe of the Honeywort. The flowers, which are of a greeniſh yellow colour, are collected in ſpherical heads at the extremity of the ſtalks; but there being little beauty in the plant, it is rarely cultivated, except in botanic gardens. It grows plentifully about Aix, in Provence, as alſo in moſt of the iſlands of the Archipelago. It is annual, and periſhes ſoon after the ſeeds are ripe. The ſeeds of this plant ſhould be ſown in autumn on a warm border, ſoon after they are ripe; or if they are permitted to ſcatter, the plants will come up, and require no other care but to clear them from weeds. When the ſeeds are ſown in the ſpring, they commonly remain in the ground a year before they grow, and ſometimes I have known them to lie two or three years in the ground, ſo that if the plants do not come up the firſt year, the ground ſhould not be diſturbed.

LAGOPUS. See TRIFOLIUM.

LAMINATED ſignifies platted. Thoſe things are ſaid to be laminated, whoſe contexture diſcovers ſuch a diſpoſition as that of plates lying over one another, or the ſcales of fiſh.

LAMIUM. Tourn. Inſt. R. H. 183. tab. 89. Lin. Gen. Plant. 636. Dead Nettle, or Archangel.

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, which is tubulous, and cut into five equal ſegments at the top, which end in beards. The flower is of the lip kind; it hath one petal, with a ſhort cylindrical tube, ſwollen at the chaps and compreſſed; the upper lip is arched, roundiſh, obtuſe, and entire; the under is ſhort, heart-ſhaped, reflexed, and indented at the end. It hath four awl-ſhaped

ſtamina

ſtamina joined to the upper lip, two of which are longer than the other, terminated by oblong hairy ſummits. It hath a four-cornered germen, ſupporting a ſlender ſtyle ſituated with the ſtamina, and crowned by an acute two-pointed ſtigma; the germen afterward become four three-cornered ſeeds, ſitting in the open empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, intitled Didynamia Gymnoſpermia, in which he ranges thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and are ſucceeded by naked ſeeds ſitting in the empalement.

The SPECIES are,

1. LAMIUM (*Purpureum*) foliis cordatis obtuſis petiolatis. Hort. Cliff. 314. *Dead Nettle with heart-ſhaped obtuſe leaves ſtanding on foot-ſtalks.* Lamium purpureum fœtidum, folio ſubrotundo, ſive Galeopſis Dioſcoridis. C. B. P. *Purple ſtinking Archangel, or Dead Nettle, or the Galeopſis of Dioſcorides with a roundiſh leaf.*
2. LAMIUM (*Album*) foliis cordatis acuminatis ſerratis petiolatis. Hort. Cliff. 314. *Dead Nettle with pointed heart-ſhaped leaves, which are ſawed, and have foot-ſtalks.* Lamium album, non fœtens, folio oblongo. C. B. P. *White Archangel or Dead Nettle which does not ſtink, with an oblong leaf.*
3. LAMIUM (*Garganicum*) folis cordatis pubeſcentibus, corollis fauce inflata, tubo recto dente utrinque gemino. Lin. Sp. 808. *Dead Nettle with heart-ſhaped hairy leaves, and the chaps of the flower inflated, indented with two teeth.* Lamium garganicum ſubincanum, flore purpuraſcente, cum labio ſuperiore crenato. Micheli. *Hoary Dead Nettle with a purpliſh flower, whoſe upper lip is crenated.*
4. LAMIUM (*Moſchatum*) foliis cordatis obtuſis glabris, floralibus ſeſſilibus, calycibus profundè inciſis. *Dead Nettle with heart-ſhaped, obtuſe, ſmooth leaves, the upper ſitting cloſe to the ſtalks, and empalements deeply cut.* Lamium Orientale, nunc moſchatum, nunc fœtidum, magno flore. Tourn. Cor. *Eaſtern Dead Nettle, ſometimes ſweet-ſcented and ſometimes ſtinking, with a large flower.*
5. LAMIUM (*Meliſſæfolium*) foliis cordatis nervoſis ſerratis, petiolis longioribus, caule erecto. *Dead Nettle with heart-ſhaped veined leaves which are ſawed, and longer foot-ſtalks with an erect ſtalk.* Lamium montanum meliſſæ folio. C. B. P. 231. Icon. Pl. 158. *Mountain Dead Nettle with a Balm leaf.*

There are ſeveral other ſpecies of this genus, as alſo ſome varieties of it, but as moſt of them are weeds, I have paſſed them over, for there are few who care to admit them into their gardens.

The firſt ſort grows naturally in moſt parts of England, under hedges and by the ſide of highways; it is alſo a troubleſome weed in gardens, but as it ſtands in moſt of the diſpenſaries as a medicinal plant, I have choſen to inſert it. This is an annual plant, whoſe ſtalks ſeldom riſe more than four or five inches high; the under leaves are heart-ſhaped, blunt, and ſtand upon pretty long foot-ſtalks, but the upper leaves ſit nearer to the ſtalks; the flowers come out in whorls on the upper part of the ſtalk; they are of a pale purple colour, and are ſucceeded by four naked ſeeds ſitting in the empalement; after the ſeeds are ripe the plant decays. It flowers in the middle of March, when the autumnal ſelf-ſown plants appear; theſe are ſucceeded by others, which continue in ſucceſſion all the ſummer.

The ſecond ſort is commonly called Archangel; this is alſo uſed in medicine, for which reaſon I have enumerated it here. The roots of this are perennial, and creep much in the ground, ſo is difficult to extirpate, where it happens to grow under buſhes and hedges; for the roots intermix with thoſe of the buſhes, and every ſmall piece of them grow and ſpread. The ſtalks of this riſe much higher than thoſe of the laſt, the flowers are larger, white, and grow in whorls round the ſtalks; theſe continue in ſucceſſion moſt part of the ſummer.

The third ſort grows naturally upon the mountains in Italy; this hath a perennial creeping root, from which ariſe many thick ſquare ſtalks a foot high, garniſhed with heart-ſhaped leaves which are hairy, placed oppoſite, ſtanding upon pretty long foot-ſtalks; the flowers come out in whorls at the upper joints of the ſtalk, they are large, and of a pale purpliſh colour; theſe continue in ſucceſſion moſt part of the ſummer, and the flowers are ſucceeded by ſeeds which ripen about ſix weeks after. This may be propagated by ſeeds, but as the roots ſpread greatly in the ground, ſo when once it is obtained, it will propagate faſt enough without culture.

The fourth ſort grows naturally in the Archipelago; this is an annual plant, which, if permitted to ſcatter its ſeeds, the plants will come up and thrive better than when ſown by the hand. The plants come up in the autumn, and during the winter their leaves make a pretty appearance, for they are marked with white ſomewhat like thoſe of the autumnal Cyclamen; the ſtalks riſe eight or nine inches high, and are garniſhed with ſmooth heart-ſhaped leaves placed oppoſite; theſe in dry weather have a muſky ſcent, but in wet weather are fetid; the flowers are white, ſtanding in whorls round the ſtalks. They appear in April, and the ſeeds ripen in June, then the plants decay; this requires no culture, but to keep the plants clear from weeds.

The fifth ſort grows naturally in Portugal; this hath a perennial root and an annual ſtalk, which riſes a foot and a half high; it is ſtrong, ſquare, and grows erect; the leaves are large, heart-ſhaped, and much veined; they are deeply ſawed on their edges, and are placed oppoſite. The flowers come out in whorls round the ſtalks at every joint; they are very large, and of a deep purple colour; thoſe on the lower part of the ſtalks appear the beginning of May, which are ſucceeded by others above, ſo that there is a continuance of flowers almoſt two months on the ſame ſtalks. This plant very rarely produces good ſeeds in England, nor do the roots propagate very faſt, ſo that it is not common here.

The beſt time to remove and part theſe roots is in October, but they muſt not be tranſplanted oftener than every third year if they are required to flower ſtrongly; for the great beauty of this plant conſiſts in the number of ſtalks, which are always proportional to the ſize of the plants; for ſmall plants will put out one or two ſtalks only, whereas the larger ones will have eight or ten. The roots are hardy, and will thrive beſt in a ſoft loamy ſoil.

LAMPSANA. See LAPSANA.

LAND. Its improvement.

1. By incloſing.

Incloſing of Lands, and dividing the ſame into ſeveral fields, for paſture or tillage, is one of the principal ways of improvement; firſt, by aſcertaining to every man his juſt property, and thereby preventing an infinity of treſpaſſes and injuries, that Lands in common are ſubject unto, beſide the diſadvantage of being obliged to keep the ſame ſeaſons with the other people who have Land in the ſame field; ſo that the ſowing, fallowing, and tilling the ground, muſt be equally performed by all the landholders; and when there happens a ſlothful negligent perſon, who has Land intermixed with others, it is one of the greateſt nuiſances imaginable. Secondly, it being of itſelf a very great improvement; for where Land is properly incloſed, eſpecially in open countries, and the hedge-rows planted with timber trees, &c. it preſerves the Land warm, and defends and ſhelters it from the violent cold nipping winds, which, in ſevere winters, deſtroy much of the corn, pulſe, or whatever grows on the open field or champain grounds. And where it is laid down for paſture, it yields much more Graſs than the open fields, and the Graſs will begin to grow much ſooner in the ſpring. The hedges and trees will afford ſhelter for the cattle from the cold winds in winter, as alſo ſhade for them in the great heats of ſummer. And theſe hedges afford the diligent huſbandman plenty of fuel, as plough-boot, cart-

cart-boot, &c. And where they are carefully planted and preſerved, furniſh him with timber and alſo maſt for his ſwine; or where the hedge-rows are planted with fruit-trees, there will be a ſupply of fruit for cyder, perry, &c. which in moſt parts of England are of no ſmall advantage to the huſbandman.

By this method of incloſing, there is alſo much more employment for the poor, and is therefore a good remedy againſt beggary; for in thoſe open countries, where there are great downs, commons, heaths, and waſtes, there is nothing but poverty and idleneſs to be ſeen amongſt the generality of their inhabitants. It is very obſervable of late years, how much advantage the incloſing of the Land in Worceſterſhire, and ſome other counties at a diſtance from London, has been to the inhabitants: for before this method was introduced amongſt them, the Lands for the moſt part lay in commons, &c. Upon which the poorer ſort of people built themſelves cottages with mud walls, where they contented themſelves with a cow or two, and ſome ſwine; and thoſe of them who were more induſtrious than the reſt, travelled to the neighbourhood of London every ſpring, where they were employed in the gardens and fields for the ſummer ſeaſon; and in autumn they returned to their native countries, where they lived in winter upon what money they had ſaved in ſummer. But ſince they have converted their waſtes and commons into incloſures, there are but few of the inhabitants of thoſe countries, who come to London for work, in compariſon to the numbers that formerly came; ſo that moſt of the labourers, who come to London for employment, are either Welch, or inhabitants of ſome more diſtant counties, or from Ireland, where this improvement hath not as yet been introduced.

The advantages of incloſing Land are now ſo generally known, that there is no occaſion for me to enumerate them here; ſince the improvements which have been made of late years in ſeveral parts of England, and the increaſe of rent that is every where made by thoſe who incloſe, are ſufficient arguments to enforce the practice, and render it general; more eſpecially in the north, where it is moſt neglected, becauſe it would greatly ſhelter the Lands, and render them much warmer than they now are.

In incloſing of Land, regard ſhould be had to the nature of the ſoil, and what it is intended for, becauſe Corn Land ſhould not be divided into ſmall parcels; for beſides the loſs of ground in hedges, &c. the Corn doth ſeldom thrive ſo well in ſmall incloſures, as in more open fields, eſpecially where the trees are large in the hedge-rows. The Graſs alſo in paſtures is not ſo ſweet near hedges, or under the drip of trees, as in an open expoſure; ſo that where the incloſures are made too ſmall, or the Land overplanted with trees, the herbage will not be near ſo good, nor in ſo great plenty, as in larger fields; therefore, before a perſon begins to incloſe, he ſhould well conſider how he may do it to the greateſt advantage; as for inſtance, it is always neceſſary to have ſome ſmaller incloſures near the habitation, for the ſhelter of cattle, and the conveniency of ſhifting them from one field to another, as the ſeaſon of the year may require; and hereby the habitation, barns, ſtables, and outhouſes, will be better defended from ſtrong winds, which often do great damage to thoſe that are expoſed to their fury. Theſe ſmall incloſures may be of ſeveral dimenſions, ſome of them three, four, ſix, or eight acres in extent; but the larger diviſions for Corn ſhould not contain leſs than twenty or thirty acres or more, according to the ſize of the farm, or the ſituation of it.

The uſual method of incloſing Land is, with a ditch and bank ſet with quick. But in marſh Land, where there is plenty of water, they content themſelves with only a ditch, by the ſides of which they uſually plant Sallows or Poplars, which being of quick growth, in a few years afford ſhade to the cattle; and when they are lopped, produce a conſiderable profit to their owners. In ſome counties the diviſion of their Lands is by dry walls made of flat ſtones, laid regularly one upon another, and laying the top courſe of ſtones in clay, to keep them together, the weight of which ſecures the under ones. But in ſome parts of Suſſex and Hampſhire, they often lay the foundation of their banks with flat ſtones, which is of a conſiderable breadth at bottom; upon which they raiſe the bank of earth, and plant the hedge on the top, which in a few years makes a ſtrong durable fence, eſpecially if they are planted with Holly, as ſome of thoſe in Suſſex are.

In marſhes and open paſtures, where there are no hedges, the ditches are generally made ſix feet wide at the top, eſpecially thoſe which are on the ſide of highways or commons; but the common ditches about incloſures are ſeldom more than three feet and a half wide at top, and one foot and a half at bottom, and two feet deep, that the ſides may have a good ſlope, and not be too upright, as they are frequently made about London, ſo that they are continually waſhing down with great rains. In theſe narrow bottomed ditches, the cattle cannot ſtand to turn themſelves, ſo as to crop the quick; but where the ditches are made wider, they ſhould be proportionally deeper: as for inſtance, if the ditch is made five feet broad, it muſt be three feet deep; and if ſix feet broad, three feet and a half deep, and ſo in proportion.

The method of incloſing Lands, by raiſing high banks of earth, on the ſide of which the quick is planted (as is too much practiſed in many places near London) is intolerable, for it is not only unſightly, but very expenſive; becauſe theſe banks are continually waſhing down, ſo that they muſt be repaired every year at leaſt, if not oftener, otherwiſe the earth will be in a few years waſhed from the roots of the quick, and for want of proper nouriſhment, the hedge will ſoon decay, which is the caſe with the greateſt number of the hedges about London: beſides, it is a very uncertain way of planting quick on the ſide of a ſteep bank, where all the moiſture runs off; ſo that if the ſpring ſhould prove dry after it is planted, there is a great hazard whether half the plants will grow, and thoſe that take ſeldom make much progreſs; whereas thoſe planted on the plain ſurface, where they enjoy the advantages of ſun and moiſture, will in four years make a better fence than one of theſe bank hedges will in eight or ten, and will continue good much longer than the other. Therefore I adviſe, that the banks on which the hedges are to be planted, ſhould not be raiſed more than one foot above the ſurface of the ground, where the Land is dry, and in wet Land not more than two feet, which will be enough.

I ſhall now mention the moſt proper plants for making of fences for the different ſoils and ſituations, ſo as to anſwer the expectation of the planter: and firſt, the white Thorn is eſteemed the beſt for fencing, and will grow upon almoſt any ſoil and in any ſituation, but it ſucceeds beſt on a hazle loam. Of this there are three or four varieties, which differ in the breadth of their leaves and the ſize of their Haws, but that ſort with the ſmalleſt leaves and Haws will make the cloſeſt fence. For it is very certain, that the branches of all ſorts of trees are produced at a diſtance, in proportion to the ſize of their leaves; ſo that Yews, and other Evergreen trees with ſmall leaves, will always make a cloſer hedge than other trees whoſe leaves are larger. Therefore, for the cloſeſt hedge, the ſmalleſt Haws ſhould be choſen; but where the moſt vigorous ſhooters are required, for the advantage of lopping, there the largeſt Haws ſhould be preferred. But as theſe hedges are uſually planted from a nurſery, where the Haws are promiſcuouſly ſown, it is very common to ſee two or three ſorts planted in the ſame hedge; which may be eaſily diſtinguiſhed, when they have obtained ſtrength, by the difference of their growth. Indeed, where a perſon is curious in raiſing of his own quick, it is worth while to gather the Haws ſeparately, and ſow them apart; and each ſort ſhould be planted in a ſeparate hedge, which will render the

hedges more equal in their growth. If theſe Haws are ſown in the places where they are deſigned to remain for a fence, they will make a much greater progreſs in a few years, than thoſe which are tranſplanted; but as the ſeeds remain a whole year in the ground before the plants appear, few people care to practiſe this method; however, thoſe who are deſirous to raiſe their hedges this way, ſhould bury the Haws, by putting them in pots ſoon after they are ripe, and burying the pots two feet deep in the ground, where they may remain one year, then take them up and ſow them; by this preparation the plants will come up the following ſpring; but before they are ſown, the Haws ſhould be bruiſed with hands, and their outer coverings waſhed off, whereby the ſeeds may be ſown at a more regular diſtance; for as moſt of the Haws incloſe four or five ſeeds, ſo if they are ſown entire there will be as many plants ariſe in a cluſter, which if permitted to ſtand, will prevent each other's growth; and in drawing out the ſuperfluous plants, there will be great danger of injuring thoſe which are to remain.

The next to the white Thorn is the black Thorn, which, though not ſo generally eſteemed as the white, yet it will make an excellent fence, where proper care is taken in the planting and after management of it; and the loppings of this hedge make much the beſt buſhes for draining of Land, and are of longer duration for dead hedges than thoſe of any other ſort of tree, and are very proper to mend gaps in fences; for their branches being beſet with ſharp thorns, the cattle are not ſo apt to crop them as the white Thorn, and ſome other ſorts. Theſe hedges are alſo better, if the ſtones of the Plumbs are ſown on the ſpot where they are to remain, than where the plants are taken from a nurſery; if theſe are ſown in the autumn ſoon after the fruit is ripe, the plants will come up the ſpring following.

The Crab will alſo make a ſtrong durable fence; this may be raiſed by ſowing the kernels in the place where the hedge is deſigned; but then there ſhould be great care taken of the plants while they are young, to keep them clear from weeds, as alſo to guard them from cattle. When theſe ſtocks have obtained ſtrength, ſome of them may be grafted with Apples for cyder, where the fence is not expoſed to a public road; but theſe grafts ſhould not be nearer than thirty-five or forty feet, leſt they ſpoil the hedge, by their heads overgrowing and dripping on it.

The Holly is alſo an excellent plant for evergreen hedges, and would claim the preference to either of the former, were it not for the ſlowneſs of its growth while young, and the difficulty of tranſplanting the plants when grown to a moderate ſize. This will grow beſt in cold ſtony Lands, where, if once it takes well, the hedges may be rendered ſo cloſe and thick, as to keep out all ſorts of animals, and will grow to a conſiderable height, and is of long duration. Theſe hedges may be raiſed, by ſowing the berries, either in the place where they are deſigned to remain, or by planting young plants of three or four years growth; but as the berries continue in the ground an entire year before the plants appear, few perſons care to wait ſo long; therefore the uſual method is, to plant the hedges with plants of the before-mentioned age. But where this is practiſed, they ſhould be tranſplanted, either early in the autumn, or deferred till toward the end of March; then the ſurface of the ground ſhould be covered with mulch near their roots after they are planted, to keep the earth moiſt; and if the ſeaſon ſhould prove dry, the plants ſhould be watered at leaſt once a week, until they have taken root, otherwiſe they will be in danger of miſcarrying; for which reaſon the autumnal planting is generally preferred to the ſpring, eſpecially in dry grounds.

The Alder will alſo make a good hedge, when planted on a moiſt ſoil, or on the ſide of rivers, or large ditches; and will preſerve the bank from being waſhed away, where there are running ſtreams; for they ſpread pretty much at bottom, and ſend forth ſuckers from their roots in great plenty; but theſe hedges ſhould be ſheared at leaſt once a year, in order to make them thick. Theſe Alder hedges are very ornamental, when they are well kept in large gardens; and as they will thrive beſt on wet ſwampy Lands, where many other plants will not live, they ſhould be ſelected for ſuch ſituations.

Of late years the Furz has been much propagated for hedges in ſeveral parts of England, and indeed will make a good fence on poor, ſandy, or gravelly ſoils, where few other plants will grow. The beſt method of raiſing theſe hedges is, to ſow the ſeed about the latter end of March, or the beginning of April, in the place where the hedge is deſigned; for the plants will not bear to be tranſplanted, unleſs it be done while they are young, and then there is great hazard of their taking. The ground where the ſeeds are to be ſown ſhould be well cleanſed of weeds, and the ſurface made light; then there ſhould be two or three drills made (according to the width which the hedge is intended) about half an inch deep, into which the ſeeds ſhould be ſcattered pretty thick; and then the drills ſhould be filled up with the head of a rake, to cover the ſeeds. This work ſhould be performed in dry weather, for if much wet falls ſoon after the ſeeds are ſown, it is apt to burſt them. When the plants are come up, they ſhould be kept clear from weeds, that they may ſpread and grow thick at bottom; and if theſe hedges are ſecured from cattle brouſing on them, and are cut every ſpring juſt before they begin to ſhoot, they will make an exceeding cloſe fence; but where they are deſigned to be cut for fuel, then the beſt way is to let them ſpread in width; and when they are two years old, to cut them down in the ſpring, juſt before they begin to ſhoot, within two or three inches of the ground, which will cauſe them to ſend forth a number of ſhoots from each root, and thereby increaſe the width of the hedge; and by ſo doing, the plants will not run up tall and weak, and be in danger of being weighed down by great falls of ſnow. Theſe hedges when they are well grown, may be cut down every third or fourth year for fuel; wherefore if there is a treble row of Furz ſown, at about three feet apart, they may be cut down alternately, ſo that there will be a fence always remaining. But this is only recommended for ſuch ſandy Lands as lett for a ſmall rent, and where fuel is ſcarce. The beſt ſort of Furz for this purpoſe is the greater kind, commonly called the French Furz, which will grow to eight or ten feet high, and is not apt to ſpread ſo much as the ordinary ſmall ſort.

Elder is ſometimes planted for hedges, being very quick of growth; ſo that if ſticks or truncheons about four or five feet long be thruſt into a bank ſlopewiſe each way, ſo as to croſs each other, and thereby form a ſort of chequer work, it will make a fence for ſhelter in one year. But as this is a vigorous growing plant, it will never form a cloſe fence; and the young ſhoots being very ſoft and pithy, are ſoon broken by cattle or boys in their ſport. Beſides, where they are ſuffered to bear berries, and theſe are ſcattered over the neighbouring Land, they will come up the following ſpring, and become very troubleſome. Where theſe hedges are planted, they may be cut down every third year near the ground; and theſe ſtakes (when diveſted of their bark, ſo as to prevent their growing) will laſt longer in the ground, to ſupport Vines or any other plants, which do not require tall ſtakes, than any other ſort of tree yet known. And where the trees are ſuffered to grow to any conſiderable ſize, the wood is as hard as Box, and therefore very uſeful for turners and inſtrument makers. The beſt ſeaſon for planting theſe truncheons is ſoon after Michaelmas, becauſe the plants ſhoot very early in the ſpring. Of late years there have been many hedges, and other plantations, made of the white berried Elder, for the ſake of their fruit to make wine; which, if rightly made, hath the flavour of Frontiniac wine, and is by ſome perſons mixed with white wines, and vended for it.

There are ſome other plants which have been recommended for fences, but thoſe here enumerated are the moſt uſeful ſorts for ſuch purpoſes; wherefore I ſhall paſs over the others, as not worthy of the care of the huſbandman. And as to the farther directions for planting and preſerving of hedges, with inſtructions for plaſhing or laying them, the reader is deſired to turn to the articles of FENCES and HEDGES, where there are particular directions for theſe works exhibited, which I ſhall not here repeat.

The draining of Land is alſo another great improvement to it; for though meadows and paſtures, which are capable of being overflowed, produce a greater quantity of herbage than dry Land, yet where the wet lies too long upon the ground, the Graſs will be ſour and extremely coarſe; and where there is not care taken in time to drain this Land, it will produce little Graſs, and ſoon be overun with Ruſhes and Flags, ſo as to be of ſmall value. The land which is moſt liable to this, is cold ſtiff clays where the water cannot penetrate, but is contained as in a diſh; ſo that the wet which it receives in winter, continues till the heat of the ſun exhales the greateſt part of it.

The beſt method for draining of theſe Lands is, to cut ſeveral drains acroſs the Land, in thoſe places where the water is ſubject to lodge; and from theſe croſs drains to make a convenient number of other drains, to carry off the water to either ponds or rivers in the lower parts of the Land. Theſe drains need not be made very large, unleſs the ground be very low, and ſo ſituated as not to be near any river to which the water may be conveyed; in which caſe there ſhould be large ditches dug at proper diſtances, in the loweſt part of the ground, to contain the water; and the earth which comes out of the ditches ſhould be equally ſpread on the Land, to raiſe the ſurface. But where the water can be conveniently carried off, the beſt method is, to make under ground drains at proper diſtances, which may empty themſelves into large ditches, which are deſigned to carry off the water. Theſe ſort of drains are the moſt convenient, and as they are hid from the ſight do not incommode the Land, nor is there any ground loſt where theſe are made.

The uſual method of making theſe drains, is to dig trenches, and fill the bottoms with ſtones, bricks, Ruſhes, or buſhes, which are covered over with the earth which was dug out of the trenches; but this is not the beſt method, becauſe the water has not a free paſſage through theſe drains, ſo that whenever there is a flood, theſe drains are often ſtopped by the ſoil which the water frequently brings down with it. The beſt method I have yet obſerved to make theſe drains, is to dig trenches to a proper depth for carrying off the water, which for the principal drains ſhould be three feet wide at their top, and ſloped down for two feet and a half depth, where there ſhould be a ſmall ledge or bank left on each ſide, upon which the croſs ſtakes or bearers ſhould be laid, and below theſe banks there ſhould be an open drain left, at leaſt one foot deep, and ten or eleven inches wide, that there may be room for the water to paſs through. Theſe larger drains ſhould be at convenient diſtances, and ſmaller drains of about ſeven or eight inches wide at top, and the hollow under the buſhes eight or nine inches deep, ſhould be cut acroſs the ground, which ſhould diſcharge the water into theſe larger drains. The number and ſituation of them muſt be in proportion to the wetneſs of the Land; and the depth of the earth above the buſhes, muſt alſo be proportioned to the intended uſe of the Land; for if it is arable Land to be ploughed, it muſt not be ſhallower than fourteen inches, that there may be ſufficient depth for the plough, without diſturbing the buſhes; but for paſture Land, one foot deep will be full enough; for when the buſhes lie too deep in ſtrong Land, they will have little effect, the ground above will bind ſo hard as to detain the wet on the ſurface. When the drains are dug, there ſhould be prepared a quantity of good bruſh wood, the larger ſticks ſhould be cut out to pieces of about ſixteen or eighteen inches in length, which ſhould be laid acroſs upon the two ſide banks of the drain, at about four inches diſtance; then cover theſe ſticks with the ſmaller bruſh wood, Furz, Broom, Heath, or any other kind of bruſh, laying it lengthwiſe pretty cloſe; on the top of theſe may be laid Ruſhes, Flags, &c. and then the earth laid on to cover the whole. Theſe ſort of drains will continue good for a great number of years, and are never liable to the inconveniencies of the other, for the water will find an eaſy paſſage through them; and where there is plenty of bruſh wood, they are made at an eaſy expence; but in places where wood is ſcarce, it would be chargeable to make them: however, in this caſe, it would be a great advantage to theſe Lands, to plant a ſufficient number of cuttings of Willow, or the black Poplar, on ſome of the moiſt places, which would furniſh bruſh wood for theſe purpoſes in four or five years; and as the expence of planting theſe cuttings is trifling, there cannot be a greater advantage to an eſtate which wants draining, than to practiſe this method, which is in every perſon's power, ſince there is little expence attending it.

In countries where there is plenty of ſtone, that is the beſt material for making theſe under ground drains; for when theſe are properly made, they will never want repairing.

The beſt time of the year for making theſe drains is about Michaelmas, before the heavy rains of autumn fall, becauſe at this ſeaſon the Land is uſually dry, ſo that the drains may be dug to a proper depth; for when the ground is wet, it will be very difficult to dig to any depth, becauſe the water will drain in wherever there is an opening in the ground.

When theſe drains are made, and the water carried off the Land, it will be proper to pare off the Ruſhes, Flags, &c. which may be laid in heaps in proper places to rot, and will afford a good manure for the land. The ground muſt alſo be ploughed to deſtroy the roots of noxious weeds, and if it be laid fallow for one ſeaſon, and ploughed two or three times, it will greatly mend the Land. The Ruſhes and Flags which were pared off the ground when rotten, ſhould be ſpread over the ſurface, and the Graſs-ſeed ſown thereon, which will greatly forward the Graſs, ſo that it may ſoon be brought to a good turf; which Land thus mended, has been lett for four times the rent it was ſet at before.

There are ſome perſons, who, after they have pared off the Flags, Ruſhes, &c. from their Land, lay them in ſmall heaps, and burn them in dry weather, then ſpread the aſhes on the Land to improve it, which is a good method, where a perſon is in haſte to have Graſs again; but where the ground can be fallowed one year, it will looſen the ſoil, and more effectually deſtroy the roots of all noxious weeds; and the Ruſhes, &c. when rotted, will afford a much larger quantity of manure for the Land than when it is burnt: beſides, this can only be practiſed in the ſummer ſeaſon, when the weather is very dry; for if there ſhould fall much rain, the fires will go out, and it will be impracticable to burn it. But where the method of burning is practiſed, the heaps ſhould not be too great, and it ſhould burn very ſlowly; which will render the aſhes a much better manure, than when the fire is too violent, or the heaps too large; for in this caſe, the inner part will be over-burnt before the fire reaches the outſide of the heap.

As the draining of cold wet Lands is a great improvement to them, ſo the floating or watering of dry looſe Land is not a leſs advantage to them. This may be eaſily effected where there are rivers, or reſervoirs of water, which are ſituated above the level of the ground deſigned to be floated, by under ground drains (made after the manner of thoſe before directed for draining of Land,) through which the water may be conveyed at proper ſeaſons, and let out on the ground: in order to this, there muſt be good ſluices made at the heads of the drains, ſo that the water may never get out, but at ſuch times as is required; for

for if this be not taken care of, the water, inſtead of improving the Land, will greatly damage it.

But where the Land lies ſo high, as that there is no water in the neighbourhood lying above its level, it will be more expenſive; becauſe in ſuch caſe, the water muſt be raiſed by machines, from reſervoirs or ſtreams which lie below it. The moſt common engine uſed for this purpoſe is the Perſian wheel (which, being well deſcribed and figured in Woolridge's Art of Huſbandry, is needleſs for me here to repeat.) Yet notwithſtanding the expence of raiſing the water, it has been found greatly advantageous in many parts of England, to drown the Lands, for the profit has many times more than doubled the charge.

The time for drowning of Land, is uſually from November till the end of April; but though this is the general practice, yet I cannot approve of it for many reaſons. The firſt is, that by the wet lying continually on the ground in winter, the roots of the finer ſort of Graſs are rotted and deſtroyed; and by letting on the water, at the ſeaſon when the ſeeds of Docks, and other bad weeds, which commonly grow by river ſides, are falling, theſe ſeeds are carried upon the Land, where they remain and grow, and fill the ground with bad weeds, which is commonly the caſe with moſt of the water meadows in England, the Graſs in general being deſtroyed; ſo that Ruſhes, Docks, and other trumpery, make up the burden of theſe Lands: but if theſe meadows were judiciouſly managed, and never floated till March or April, the quantity of ſweet good Graſs would be thereby greatly increaſed, and the beautiful verdure of the meadows preſerved: but there is little hope of convincing thoſe perſons by any arguments, who are ſo much wedded to their own prejudices, as to ſhut their eyes and ears againſt experiments or reaſon. Where the Land is very hot and dry, and it lieth convenient to be watered at a ſmall expence, it ſhould be repeated every week in dry hot weather, which will prove a great advantage to the Land. But whenever this is done, there ſhould no cattle be admitted while it is wet, for they will poach, and ſpoil the turf.

Another great improvement of Land, is by burning of it, which, for ſour, heathy, and ruſhy Land, be it either hot or cold, wet or dry, is a very great improvement; ſo that ſuch Lands will, in two or three years after burning, yield more, excluſive of the charges, than the inheritance was worth before; but this is not to be practiſed on rich fertile Land; for as the fire deſtroys the acid juice, which occaſions ſterility in the poor Land, ſo it will in like manner conſume the good juices of the richer Land, and thereby impoveriſh it, ſo that it hath been with great reaſon diſuſed in deep rich countries.

The uſual method of burning Land is, to pare off the turf with a breaſt plough, turning it over as it is cut, that it may dry the better. And if it proves hot dry weather when this work is done, then it needs no more turning; but if rain ſhould fall, it muſt be turned, and the turfs ſet a little hollow, that they may dry the better; and when they are thorough dry, they may be laid on ſmall heaps, about half a cart load on a heap, or leſs, for the ſmaller the heaps are, provided there is quantity enough to make a good fire, ſo as to conſume the whole to aſhes, it is the better; if the turf be full of fibrous roots, or hath much Moſs or Fern on it, it will burn without any additional fuel; but if it hath not, the heaps ſhould be raiſed on ſmall bundles of Heath, Fern, Gorze, &c. which will ſet the whole on fire; yet there ſhould be no more of theſe things applied, than what is neceſſary to kindle the fire, becauſe the ſlower the turf conſumes, the better will be the aſhes. When the turf is wholly conſumed, the aſhes ſhould be equally ſcattered over the ground in a calm day, leſt the wind ſhould drive it in heaps. Then the Land ſhould be gently ploughed, and the ſeeds ſown thereon; for if the ground is ploughed too deep, the aſhes will be buried too low for the roots of the Graſs or Corn to reach them for a conſiderable time; nor ſhould the aſhes lie too near the ſurface, becauſe then the roots will reach them too ſoon, and the ſtrength of the aſhes will be ſpent to nouriſh only the blade, ſo that the Corn will grow too rank in winter; and when the roots in the ſpring ſtrike down lower, they will meet with a poorer ſoil, nor will the ſtalks and ears have ſo much advantage from the improvement, as the uſeleſs blade. But when care is taken in this particular, it is wonderful what ſucceſs it hath; for by this method the pooreſt plains, and ſour heathy Lands, have been rendered as fertile as almoſt any good cultivated ground whatever.

It is alſo a very great improvement, where Land is overgrown with Broom, Furz, &c. to ſtub them up by the roots, and when they are dry, lay them on heaps, and cover them with the parings of the earth, and burn them, and ſpread the aſhes over the ground. By this method vaſt tracts of Land, which at preſent produce little or nothing to their owners, might be made good at a ſmall expence, ſo as to become good eſtates to the proprietors.

There are ſeveral other methods of improving Land beſide thoſe here mentioned, as by planting of wood, or adapting the ſeveral ſorts of plants to the particular ſoils with which they agree; but as moſt of theſe things are treated of under the ſeveral articles where theſe plants are mentioned, I ſhall forbear to repeat them in this place, but ſhall beg leave to offer a few general hints on the preſent ſituation of the Lands in England, which may probably excite ſome abler hand to undertake a fuller and more complete diſquiſition of this ſubject.

For ſome years paſt, the quantity of Corn raiſed in England, has greatly exceeded the conſumption, ſo that great quantities of Corn have been exported, by which great ſums of money have been brought into England; but this was accidental; for had not the crops failed in the neighbouring countries, there would have been no demand for the produce of England, ſo that the quantity here grown muſt have reduced the price ſo low, as to have almoſt ruined the farming intereſt; nor is it poſſible to contrive any ſcheme, in a country circumſtanced as this, whereby the public may not, at times, ſuffer from the extravagant price, which, in a ſcarcity, this commodity may be raiſed to; or, on the other hand, the farmers are ſometimes almoſt undone by the low price which it is often reduced to in times of plenty; and ſurely there can be no one thing more worthy of the ſerious attention of every perſon, who has the leaſt regard for the public welfare, than this, of always making ſuch proviſion of Corn, againſt accidental ſcarcities, as that the inhabitants may never be diſtreſſed for want of the ſtaff of life, or the price be ſo high, as that the common people cannot purchaſe it. If I am not greatly miſtaken, there has been, within the ſpace of three or four years, ſuch a diſproportion in the price of Corn, as can hardly be conceived, and this within the memory of numbers of perſons; the time I mean is between 1705 and 1709, in the compaſs of which time the peck loaf of fine bread was riſen from fourteen pence to four ſhillings and twopence; the low price of this commodity was as detrimental to the farmers, as the extravagant price was afterward to the public, neither of which would have ſo ſeverely felt the effects, had there been public granaries where the Corn might have been depoſited, and this purchaſed from the farmer, at a price by which he might live, at the public expence, and ſold out again at an eaſy rate in times of ſcarcity; but I fear this is not an age for encouraging any ſcheme for public utility, when in every thing of this kind, however beneficial it may be to the country, and though propoſed as ſuch to the public, if it meets with any reception, it is with a view to turn it to private intereſt; the practice of turning all things into private jobs, has ſo much prevailed of late years, as to have almoſt extinguiſhed every ſocial virtue;

virtue; but I fear I may have incurred the cenſure of many for this digreſſion; but, be it as it will, I could not omit it, when it ſo properly came in my way; and as it is from a ſincere love and regard to my country, that I have mentioned this, ſo it may be hoped, that if any harſh expreſſion has been uſed, it will be forgiven. But to return to my ſubject; as the quantity of Land now in tillage is very great in England, from the deſtruction of woods, the ploughing up of downs, the incloſing of commons, &c. ſo that, unleſs there happens a failure in the crops of Corn in great part of England, the markets muſt be ſo low, as that the farmer will always find it difficult to ſupport his family, and pay his rent; the firſt muſt be done, let the landlord fare as he will, for the farmers know, that when the farms are occupied by the landlords, few of them can make the produce of the Land and pay their expence, ſo that the whole rent of the farm is often ſunk, beſide the trouble and fatigue of managing the farms; and it is greatly to be feared, from the preſent condition of the farmers in general, that many landlords will be obliged to undertake this diſagreeable affair, which will be the more ſo, as their Lands will be left without ſtock, and the ſoil exhauſted, and overgrown with weeds, which will require ſome years to put into proper condition, and will be attended with great expence.

The extraordinary price which Corn bore ſome years ſince, tempted the farmers to break up the downs in many parts of England; and the landlords were brought to comply with the requeſt of the farmer, for the ſake of a little advance of the rent, not conſidering the future conſequence of it; ſo that hereby great extents of downs have been ruined, and not likely to be recovered again; for the ſoil in many places was not more than four or five inches deep, upon beds of flint or chalk, which, in ploughing, were turned up on the ſurface, and the little ſoil which covered them, was in a few years ſo much exhauſted, as not to produce the quantity of grain which was ſown upon them; and as there was no probability of procuring dreſſing for the Lands, the farmers have been obliged to throw them up, which now lie waſte, and appear like quarries of flints, or beds of chalk, without Graſs, or almoſt any other plant growing upon them. By this paſſion for ploughing, the farmers have leſſened their ſtock of cattle, and, of conſequence, their quantity of manure has been leſſened in proportion, ſo that they have either been obliged to purchaſe dreſſing at a great expence, or deſtroy their Lands of their vegetative quality: by the former method, when grain bears a low price, the farmer is ruined, and by the latter, every one muſt know what will be the conſequence to both tenant and landlord; therefore it is a matter of great concern to the proprietors of Lands, to ſee that no more ground in their farms is kept in tillage, than the tenant can ſupply with dreſſing, ſo as to maintain the Land in heart; and that a proper ſtock of cattle be kept up, in proportion to the ſize of the farms, which cannot be done where there is not a proportion of paſture kept to that of the arable Land in each farm. There are many perſons, who, by a miſtake in the article of incloſing Lands, are likely to fall into a great error, by ſuppoſing, that the incloſing of commons will be a great advantage to their eſtates, and perhaps there may be tenants on their eſtates, who may encourage the gentlemen ſo to do, from a preſent intereſt of their own; but wherever this has been done, the eſtates have ſoon fallen in their rents, much lower than the addition made by incloſing the commons, which muſt always be the caſe; for if there is not common paſture, where the farmers can turn out their cattle in ſummer, it cannot be ſuppoſed they can keep up a ſtock of live cattle upon their incloſed paſture; ſo that, although the dividing and incloſing the Lands in the common fields would be a very great benefit, yet the deſtroying of paſture commons would on the other extreme be a national diſadvantage and loſs. There are many other particulars, which might be here enumerated, to ſhew the cauſe of the low condition of the farmers in general; but theſe few hints may probably lead ſome perſons of abler heads to the conſideration of this affair, ſo I ſhall not enlarge upon them here.

LANIGEROUS TREES are ſuch as bear a woolly or downy ſubſtance, as is commonly contained in the katkins of Willows, &c.

LANTANA. Lin. Gen. Plant. 683. Camara. Plum. Nov. Gen. 32. tab. 2. American Viburnum, or Camara.

The CHARACTERS are,

The empalement of the flower is cut into four ſegments. The flower is monopetalous, of an irregular ſhape, having a cylindrical tube, which extends beyond the empalement, and is ſpread open at the brim, where it is divided into five ſegments. In the center of the flower is ſituated the pointal, ſupporting a crooked ſtigma, attended by four ſtamina, two being longer than the other. The pointal afterward changes to a roundiſh fruit, opening into two cells, and incloſing a roundiſh ſeed.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, intitled Didynamia Angioſpermia, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and the ſeeds are incloſed in the capſule.

The SPECIES are,

1. LANTANA (*Aculeata*) foliis oppoſitis, caule aculeato ramoſo, floribus capitato-umbellatis. Lin. Sp. 874. *Lantana with leaves growing oppoſite, a branching prickly ſtalk, and umbellated flowers growing in heads.* Viburnum Americanum odoratum, urticæ foliis latioribus ſpinoſum, floribus miniatis. Pluk. Alm. 285. tab. 223. *Sweet prickly American Viburnum, with broad Nettle leaves, and carmine flowers.*
2. LANTANA (*Inerma*) caule inermi, foliis lanceolatis dentatis alternis, floribus corymboſis. *Lantana with a ſmooth ſtalk, ſpear-ſhaped indented leaves placed alternate, and flowers growing in round bunches.* Periclymenum rectum, ſalviæ foliis majoribus oblongis, mucronatis, ſubtus villoſis, alternatim ſitis, flore & fructu minoribus. Sloan. Cat. Jam. 164. *Upright Honeyſuckle with larger, oblong, acute-pointed Sage leaves, which are hairy on their under ſide, placed alternate, and a ſmaller flower and fruit.*
3. LANTANA (*Lanuginoſa*) caule ramoſo lanuginoſo, foliis orbiculatis crenatis oppoſitis, floribus capitatis. *Lantana with a hairy branching ſtalk, round crenated leaves placed oppoſite, and flowers collected in heads.* Periclymenum rectum, ſalviæ folio rugoſo minore, ſubrotundo. Cat. Jam. 164. *Upright Honeyſuckle with a ſmaller rough roundiſh leaf.*
4. LANTANA (*Trifolia*) foliis ternis, caule inermi ſpicis oblongis imbricatis. Lin. Sp. Plant. 873. *Lantana with leaves placed by threes round the ſtalk, without ſpines, and oblong imbricated ſpikes of flowers.* Camara trifolia, purpuraſcente flore. Plum. Nov. Gen. 32. *Three-leaved Camara, with a purpliſh flower.*
5. LANTANA (*Urticæfolia*) caule aculeato, foliis oblongo-cordatis ſerratis oppoſitis, floribus corymboſis. *Lantana with a prickly ſtalk, oblong, heart-ſhaped ſawed leaves, and flowers growing in a corymbus.* Periclymenum rectum urticæ folio hirſuto majore, flore flavo. Sloan. Cat. Jam. 163. *Upright Honeyſuckle with a larger Nettle leaf, and a yellow flower.*
6. LANTANA (*Camara*) caule inermi, foliis ovato-lanceolatis, ſerratis, rugoſis, floribus capitatis lanuginoſis. *Lantana with a ſmooth ſtalk, oval, ſpear-ſhaped, rough, ſawed leaves, and flowers growing in woolly heads.* Periclymenum rectum, ſalviæ folio rugoſo, majore, ſubrotundo & bullato. Sloan. Cat. Jam. 163. *Upright Honeyſuckle with a large, rough, Sage leaf, which is roundiſh and ſtudded.*
7. LANTANA (*Bullata*) foliis oblongo-ovatis acuminatis ſerratis rugoſis alternis, floribus capitatis. *Lantana with oblong, oval-pointed, ſawed leaves, which are rough, placed alternate, and flowers growing in heads.* Periclymenum rectum, ſalviæ folio rugoſo, minore, bullato, flore

flore albo. Sloan. Cat. 163. *Upright Honeyſuckle with a ſmaller rough Sage leaf, which is ſtudded, and a white flower.*

8. LANTANA (*Alba*) caule inermi, foliis ovatis ſerratis, floribus capitatis alaribus ſeſſilibus. *Lantana with a ſmooth ſtalk, oval ſawed leaves, and flowers growing in heads proceeding from the wings of the leaves, ſitting cloſe to the ſtalks.* Camara foliis urticæ, floribus minoribus albis, ex alis foliorum prodeuntibus. Houſt. *Camara with a Nettle leaf, and ſmaller white flowers proceeding from the wings of the leaves.*

9. LANTANA (*Annua*) foliis quaternis, caule aſpero, ſpicis oblongis. *Four-leaved Lantana with a rough ſtalk, and oblong ſpikes of flowers.* Periclymenum rectum humilius, folio rugoſo majore, flore purpureo, fructu oblongo, eſculento purpureo. Sloan. Cat Jam. 164. *Lower upright Honeyſuckle with a larger rough leaf, a purple flower, and an oblong, purple, eſculent fruit.*

10. LANTANA (*Anguſtifolia*) caule inermi, foliis ovato-lanceolatis oppoſitis, floribus capitatis pedunculis longiſſimis. *Lantana with a ſmooth ſtalk, oval ſpear-ſhaped leaves placed oppoſite, flowers collected in heads, and very long foot-ſtalks.* Periclymenum rectum, ſalviæ folio rugoſo, longo & anguſtiſſimo. Sloan. Cat. 164. *Upright Honeyſuckle with a rough Sage leaf, which is long and narrow.*

11. LANTANA (*Africana*) foliis alternis ſeſſilibus, floribus ſolitariis. Hort. Cliff. 320. *Lantana with alternate leaves ſitting cloſe to the ſtalks, and flowers growing ſingly.* Jaſminum Africanum, illicis folio, flore ſolitario ex foliorum alis proveniente albo. Com. Plant. Rar. 6. tab. 6. *African Jaſmine with an Ilex leaf, and a ſolitary white flower coming from the wing of the leaves.*

12. LANTANA (*Salvifolia*) foliis oppoſitis ſeſſilibus, floribus racemoſis. Lin. Sp. 875. *Lantana with leaves placed oppoſite cloſe to the ſtalks, and flowers in a racemus.* Frutex Africanus, foliis conjugatis ſalviæ anguſtis, floribus hirſutis. Herm. Afr. 10.

The firſt ſort is pretty common in thoſe Engliſh gardens, where there are collections of exotic plants; this grows naturally in Jamaica, and moſt of the other iſlands in the Weſt-Indies, where it is called wild Sage, as are ſeveral of the other ſorts which are not diſtinguiſhed by the inhabitants. It riſes with a woody ſtalk five or ſix feet high, ſending out many branches, which have four angles, armed with ſhort crooked ſpines. The leaves are placed oppoſite; they are oval, ſpear-ſhaped, about an inch and a half long, and three quarters of an inch broad, hairy, and ſtand upon ſhort foot-ſtalks; toward the end of the branches the flowers come out from the wings of the ſtalks, two foot-ſtalks ariſing from the ſame joint, one on each ſide; they are near two inches long, and are terminated by roundiſh heads of flowers, thoſe which are on the outſide and form the border, are firſt of a bright red, or ſcarlet colour; theſe change to a deep purple before they fall. Thoſe flowers which are in the center are of a bright yellow, but after ſome time fade to an Orange colour. The flowers are ſucceeded by roundiſh berries, which, when ripe, turn black, having a pulpy covering over a ſingle hard ſeed. This plant in the Weſt-Indies continues to flower moſt part of the year; but in England they begin to flower in June, and continue in ſucceſſion till near Chriſtmas, and the early flowers are ſucceeded by ripe ſeeds.

The ſecond ſort grows naturally in Jamaica; this riſes with a ſlender, ſmooth, ſhrubby ſtalk, about four feet high, dividing into many ſmall quadrangular branches which grow erect, garniſhed with ſpear-ſhaped leaves about two inches long, and one inch broad, indented on their edges, and hoary on their under ſide, ſtanding alternate upon ſhort foot-ſtalks. Toward the end of the branches the foot-ſtalks of the flowers ariſe alternately from the wings of the leaves; theſe are very ſlender, and ſupport ſmall heads of pale purple flowers, which are ſucceeded by ſmall purple berries, each having one ſeed. This flowers at the ſame time with the former ſort. The ſeeds of this ſort were firſt ſent me by the late Dr. Houſtoun, from La Vera Cruz, but I have ſince received them from Jamaica.

The third ſort was ſent me from La Vera Cruz, by the late Dr. Houſtoun; this riſes with a ſhrubby ſtalk about three feet high, dividing into ſeveral upright branches. The leaves are oblong, and ſawed on their edges, ſtanding oppoſite, on the lower part of the branches, but toward the upper part they are placed by threes round the branches. The foot-ſtalks of the flowers come out from the wings of the leaves; they are near three inches long, ſuſtaining an oblong ſpike of purple flowers, which come out from imbricated ſcales, which end in acute points. The flowers are ſucceeded by pretty large purple berries. This flowers at the ſame time with the former ſorts.

The ſeeds of the fourth ſort were ſent me from the Havanna, by the late Dr. Houſtoun; this riſes with a ſhrubby ſtalk about three feet high, covered with a gray bark, which is woolly. It divides into branches by pairs, which are garniſhed with round leaves, indented on their edges, whoſe upper ſurface is corrugated and rough, like thoſe of Sage; they are placed oppoſite, ſtanding upon ſhort foot-ſtalks. At the end of the branches ariſe the foot-ſtalks of the flowers, which are ſhort, and ſuſtain a globular head of purple flowers; theſe are ſucceeded by pretty large purple berries containing one ſeed. This flowers at the ſame time with the former ſorts.

There is a variety of this with white flowers, whoſe leaves are not quite ſo round, nor are they crenated on their edges; but I ſuſpect they both come from the ſame ſeeds, ſo I have not enumerated it as a diſtinct ſpecies.

The fifth ſort was ſent me from La Vera Cruz, by the late Dr. Houſtoun; this riſes with a woody branching ſtalk four or five feet high, garniſhed with oblong heart-ſhaped leaves, which are ſawed on their edges, and end in acute points. At the end of the branches the flowers come out in round bunches, ſtanding upon ſlender upright foot-ſtalks, about one inch long. The flowers are yellow, and grow in looſer bunches or heads than thoſe of the former ſorts, but flowers at the ſame time.

The ſixth ſort riſes with a woody branching ſtalk five or ſix feet high, covered with a dark brown bark. The branches are more divided than thoſe of the other ſorts, and are much more ligneous. The leaves are two inches and a half long, and one inch and a quarter broad, deeply ſawed on their edges, and their upper ſurface very rough, and many of them cloſely ſet with white prominent ſpots as if ſtudded; theſe are placed alternately on the branches. The flowers come out from the wings of the ſtalk, ſtanding upon pretty long foot-ſtalks; they are white, and are collected in ſmall woolly heads. This flowers about the ſame time with the former ſorts.

The ſeventh ſort riſes with a branching ſhrubby ſtalk about four feet high, covered with a dark brown bark, and garniſhed with ſmall, oblong, oval leaves, ending in acute points; they are an inch long, and half an inch broad, very much veined on their upper ſide, ſtanding alternately pretty cloſe to the branches. The flowers come out at the end of the branches upon ſhort foot-ſtalks, in cloſe ſmall heads; theſe are white, and make but little appearance. It flowers at the ſame time with the former.

The eighth ſort was ſent me by the late Dr. Houſtoun, from Campeachy; this hath a ſlender ſhrubby ſtalk which riſes three or four feet high, dividing into many ſlender, ſmooth, ſquare branches, which are garniſhed with ſmall, oval, ſawed leaves placed oppoſite; from the wings of the ſtalk, at every joint, come out the flowers; they are ſmall, white, and are collected in cloſe heads; theſe come out by pairs, and ſit cloſe to the branches. This flowers at the ſame time with the former.

The ninth ſort is annual; this was firſt ſent me by the late Dr. Houſtoun from La Vera Cruz, but I have ſince received the ſeeds from the north ſide of the iſland of Jamaica; it riſes with a ſtrong, upright,

rough

rough ſtalk near three feet high, dividing toward the top into two or three erect branches, which are garniſhed with oblong, oval, ſawed leaves, ending in acute points; they are placed by fours at each joint, and are a little woolly on their under ſide. The flower-ſtalks ariſe by pairs, and ſometimes three come out at the ſame joint; they are from two to three inches long, and ſuſtain a thick ſpike of large purple flowers, which are ſucceeded by large purple berries that are very ſucculent, and are frequently eaten by the inhabitants. This ſort flowers in July, provided the plants are raiſed early in the ſpring and brought forward, and the ſeeds will ripen in autumn, ſoon after which the plants decay.

The tenth ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent me the ſeeds; this riſes with a ſlender, ſmooth, branching ſtalk three feet high. The branches are garniſhed with oval ſpear-ſhaped leaves two inches long, and one inch broad; they are crenated on their edges, and rough on their upper ſide, ſtanding by pairs oppoſite, upon very ſhort foot-ſtalks, having an agreeable odour. The flowers come out from the wings of the ſtalk, upon very long foot-ſtalks; they are placed oppoſite the whole length of the young branches, ſuſtaining ſmall round heads of white flowers; theſe appear at the ſame time with the other ſorts, but rarely produce ſeeds in England.

Theſe plants are all of them eaſily propagated by cuttings except the ninth, which is an annual plant, ſo can only be propagated by ſeeds. They may alſo be propagated by ſeeds, which ſeveral of the ſorts produce in England, and the others may be eaſily procured from the Weſt-Indies, where there are a greater variety of theſe plants growing naturally, than are at preſent known in Europe; they are all of them called Wild Sage, by the inhabitants of the Britiſh Iſlands, but they do not diſtinguiſh the ſorts. Theſe ſeeds ſhould be ſown in pots filled with light earth, and plunged into a hot-bed of tan; the reaſon for my adviſing them to be ſown in pots, is, becauſe the ſeeds frequently remain long in the ground before they vegetate; therefore if the plants ſhould not come up the ſame year, the pots ſhould be placed in the ſtove in winter, and the following ſpring plunged into a new hot-bed, which will bring up the plants. When theſe are fit to remove they ſhould be each planted in a ſmall pot, and plunged into another hot-bed, obſerving to ſhade them till they have taken new root; then they ſhould have air admitted to them every day, in proportion to the warmth of the ſeaſon, to prevent their being drawn up with weak ſtalks; afterward they muſt be treated in the ſame manner as other plants from the ſame country, till they have obtained ſtrength; then they may be removed into an airy glaſs-caſe, or a dry ſtove, where they may have a large ſhare of air in warm weather, but protected from the cold. This is neceſſary for the young plants, which ſhould not the firſt year be expoſed to the open air, but afterward they may be placed abroad in the warmeſt part of ſummer, and in winter placed upon ſtands in the dry ſtove, where they will continue long in flower, and many of the ſorts will ripen their ſeeds; but in winter they ſhould be ſparingly watered, for much moiſture will rot their roots.

If they are propagated by cuttings, the beſt time for planting them is in July, after the plants have been expoſed to the open air for about a month, by which time the ſhoots will be hardened ſo as to be out of danger of rotting with a little moiſture. Theſe cuttings ſhould be planted in ſmall pots filled with light earth, and plunged into a moderate hot-bed; and if they are ſcreened from the violence of the ſun in the middle of the day, they will be rooted in about ſix weeks time, when they muſt be hardened gradually to bear the open air, and afterward treated as the old plants.

The eleventh ſort has been long in the Engliſh gardens, and is commonly called the Ilex-leaved Jaſmine. This ſort riſes with a ſhrubby ſtalk five or ſix feet high, ſending out many irregular branches, which are cloſely garniſhed with thin oval leaves ending in points, and ſawed on their edges, which embrace the branches with their baſe, and from the boſom of each leaf comes out one ſolitary white flower, which is cut at the top into five parts, and at firſt ſight has the appearance of a Jaſmine flower; but when cloſer viewed, the tube will be found curved in the ſame manner with thoſe which Dr. Linnæus titles ringent flowers. The flowers are not ſucceeded by ſeeds in England, but the plants are eaſily propagated by cuttings, which, if planted upon an old hot-bed any time in July, and covered with a bell or hand-glaſs, and ſhaded from the ſun, will put out roots in a month or five weeks; then they may be planted in pots, and placed in the ſhade till they have taken freſh root; after which they may be removed to a ſheltered ſituation, where they may remain till the froſts come on. This plant was brought from the Cape of Good Hope, ſo is not very tender, therefore may be preſerved in a good green-houſe in winter; but during that ſeaſon it muſt have a large ſhare of air in mild weather, otherwiſe it is apt to grow mouldy, and this will cauſe the tender branches to decay. In the ſummer ſeaſon it may be expoſed in the open air, with other green-houſe plants, in a ſheltered ſituation, where it will add to the variety; and although the flowers are ſmall, and are produced ſingly from between the leaves, ſo do not make any great appearance; yet as there is a ſucceſſion of theſe flowers moſt part of the year, and the leaves continuing green throughout the year, it is rendered worthy of a place in every collection of plants.

The laſt ſort is a native of Africa; this riſes with a ſhrubby four-cornered ſtalk eight or ten feet high, covered with a pale looſe bark, ſending out many ſide branches, garniſhed with rough leaves five or ſix inches long, whoſe baſe embrace the ſtalks, but they end with ſharp points, and are downy on their under ſide; the branches are terminated by looſe ſpikes of pale purple flowers, covered with a meally down; theſe appear in ſummer, but are rarely ſucceeded by ſeeds in England.

This is propagated by cuttings in the ſame manner as the eleventh ſort, and the plants require the ſame treatment.

LANUGINOUS, ſignifies downy, or to be covered with a ſoft down, as a Quince.

LAPATHUM. See RUMEX.

LAPSANA. Lin. Gen. Plant. 823. Lampſana & Rhagadiolus. Tourn. Inſt. R. H. 479. tab. 272. Nipplewort.

The CHARACTERS are,

The flower is compoſed of ſeveral hermaphrodite florets, which are included in one common imbricated empalement. The florets have one petal, which is tubulous and ſtretched out at the top, in ſhape of a tongue; theſe have each five ſhort hairy ſtamina, terminated by cylindrical ſummits which coaleſce. The germen is ſituated at the bottom of the floret, ſupporting a ſlender ſtyle, crowned by a reflexed bifid ſtigma; the germen afterward becomes an oblong three-cornered ſeed, ſituated in the ſcale of the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's nineteenth claſs, intitled Syngeneſia Polygamia Æqualis, in which he ranges thoſe plants with hermaphrodite flowers which are fruitful, whoſe ſtamina and ſtyle are connected together; and to this genus he has joined the Rhagadiolus and Zacintha of Tournefort, making them only ſpecies of the ſame genus.

The SPECIES are,

1. LAPSANA (*Communis*) calycibus fructûs angulatis, pedunculis tenuibus ramoſiſſimis. Hort. Cliff. 384. *Nipplewort with angular empalements to the fruit, and very narrow branching foot-ſtalks.* Lampſana. Dod. p. 675. *Common Nipplewort.*
2. LAPSANA (*Rhagadiolus*) calycibus fructûs undique patentibus, radiis ſubulatis, foliis lyratis. Hort. Upſal. 245. *Nipplewort with empalements to the fruit ſpreading open every way, awl-ſhaped rays, and ſpear-ſhaped undivided*

vided leaves. Rhagadiolus alter. Cæſalp. 511. *Another Rhagadiolus.*

3. LAPSANA (*Lampſanæfoliis*) calycibus fructûs undique patentibus, radiis ſubulatis, foliis lyratis. Hort. Upſal. 245. *Nipplewort with empalements to the fruit ſpreading open every way, awl-ſhaped rays, and harp-ſhaped leaves.* Rhagadiolus Lampſanæ foliis. Tourn. Cor. 36. *Rhagadiolus with a Nipplewort leaf.*
4. LAPSANA (*Zacintha*) calycibus fructûs toruloſis depreſſis obtuſis ſeſſilibus. Lin. Sp. Plant. 811. *Nipplewort with a depreſſed knotted empalement which is obtuſe, and ſits cloſe to the branches.* Zacintha five cichorium verrucarium. Tourn. Inſt. 476. *Zacintha, or warted Cichory.*

The firſt ſort is a common weed, which grows by the ſide of foot-paths and hedges in moſt parts of England, ſo is not permitted to have room in gardens.

The ſecond and third ſorts grow naturally in Portugal, from whence I have received their ſeeds. Theſe are annual plants, of no beauty or uſe, but are preſerved in botanic gardens for the ſake of variety. If the ſeeds of theſe are permitted to ſcatter, the plants will come up without trouble, and two or three of them will be enough to leave to keep the ſorts.

The fourth ſort grows naturally in Italy; this is alſo an annual plant, of neither uſe or beauty, but is like the others kept for variety. If the ſeeds of this ſort ſcatter in the autumn, the plants will come up better than if ſown in the ſpring. The plants require no culture, but will thrive like weeds.

LARIX. Tourn. Inſt. R. H. 586. tab. 353. Pinus. Lin. Gen. Plant. 956. The Larch-tree; in French, *Meleſe.*

The CHARACTERS are,

It hath male and female flowers growing ſeparate on the ſame tree. The male flowers are diſpoſed in a ſcaly katkin; theſe have no petal, but a great number of ſtamina which are connected in a column below, but are ſeparated at their points, and are terminated by erect ſummits. The female flowers are diſpoſed in a conical ſhape, having no petals; theſe are placed by pairs under each ſcale, having a ſmall germen, ſupporting an awl-ſhaped ſtyle, crowned by a ſingle ſtigma. The germen afterward becomes a nut with a membraneous wing, incloſed in the ſcales of the cones.

This genus of plants is ranged in the ninth ſection of Linnæus's twenty-firſt claſs, intitled Moncœcia Monodelphia, the ſame tree having male and female flowers in different parts, and the ſtamina of the male flowers are united in one cluſter. Dr. Linnæus has joined this genus, and the Abies of Tournefort, to the genus of Pinus, which, according to his ſyſtem, may very well be brought together; but as Tournefort and all former botaniſts have ſeparated them by the form of their leaves, thoſe of the Abies coming out ſingle from the branches, thoſe of the Pine coming out by two, three, or five out of each ſheath, and thoſe of this genus ariſing in cluſters in the bottom, but are ſpread above like a painter's pencil; ſo theſe diſtinctions being pretty generally known by gardeners, I have choſen to continue them under their former ſeparate titles to prevent confuſion.

The SPECIES are,

1. LARIX (*Decidua*) foliis deciduis, conis ovatis obtuſis. *Larch-tree with deciduous leaves, and oval obtuſe cones.* Larix folio deciduo, conifera. J. B. 1. p. 265. *Common Cone-bearing Larch-tree.*
2. LARIX (*Chinenſis*) foliis deciduis, conis mucronatis ſquamis acutis. *Larch-tree with deciduous leaves, and pointed cones having acute ſcales.*
3. LARIX (*Cedrus*) foliis acutis perennantibus, conis obtuſis. *Larch-tree with acute evergreen leaves and obtuſe cones.* Cedrus conifera, foliis laricis. C. B. P. 490. *Cone-bearing Cedar with a Larch-tree leaf, or the Cedar of Lebanus.*

The firſt ſort grows naturally upon the Alps and Apennines, and of late years has been very much propagated in England. This tree is of quick growth, and will riſe to the height of fifty feet; the branches are ſlender, and their ends generally hang downward. Theſe are garniſhed with long narrow leaves, which

ariſe in cluſters from one point, and ſpread open above like the hairs of a painter's bruſh; they are of a light green, and fall away in autumn like other deciduous trees. In the month of April the male flowers appear, which are diſpoſed in form of ſmall cones; the female flowers are collected into oval obtuſe cones, which in ſome ſpecies have bright purple tops, and in others they are white: theſe differences are accidental, for I have found the ſeeds taken from either of theſe varieties, will produce plants of both ſorts; the cones are about one inch long, obtuſe at their points, and the ſcales lie over each other, and are ſmooth; under each ſcale there is generally lodged two ſeeds which have wings.

There are two other varieties of this tree, one of which is a native of America, and the other of Siberia; the latter requires a colder climate than England, for they are very apt to die in ſummer here, eſpecially if they are planted on a dry ſoil. The cones of this ſort which have been brought to England, ſeem to be in general larger than thoſe of the common kind; but there is ſo little difference between the trees in their characteriſtic notes, as not to be diſtinguiſhed as different ſpecies, though by the growth of the trees there is a remarkable difference.

The cones of the ſecond ſort were ſent from China, to the Right Hon. the Earl of Northumberland, who was ſo good as to communicate ſome of the ſeeds to me, which were ſown in the Chelſea garden, where they ſucceeded, as they alſo did in his Lordſhip's garden at Stanwick. The cones of this ſort were much larger than thoſe of the common ſort, and ended in acute points; the ſcales were prominent like thoſe of the Scotch Pine, and had ſo little reſemblance to thoſe of the Larch, as that every one who ſaw them, imagined they were a ſort of Pine; they were titled, Fir good to keep up banks. As theſe plants make but little progreſs the firſt year, ſo they were weak, and in the autumn caſting off their leaves, they were ſuppoſed to be dead, and moſt of the plants were thereby loſt; but thoſe which eſcaped, afterward ſhot their branches out horizontally, ſpreading cloſe to the ground, and by their preſent appearance, ſeem to be a ſhrub which never will riſe upright. This ſort is ſo hardy, as to thrive in the open air without any protection.

The common Larch is now very plenty in moſt of the nurſeries in England, and of late years there has been great numbers of the trees planted; but thoſe which have been planted in the worſt ſoil and in bad ſituations, have thriven the beſt; for where trees of equal ſize have been planted in good garden earth at the ſame time, the others on the cold ſtiff land, have in twelve years been twice the height of thoſe planted in good ground; which is an encouragement to plant theſe trees, ſince they will thrive in the moſt expoſed ſituations, provided they are planted in clumps near each other, and not ſingle trees; nor ſhould the plants which are planted in very open expoſed places be taken from warm nurſeries, but rather raiſed as near to the ſpot where they are to remain as poſſible; nor ſhould the plants be more than three or four years growth when planted, where they are deſigned to grow large; for though trees of greater ſize will remove very well, and grow ſeveral years as well as if they had not been tranſplanted; yet after twenty or thirty years growth they will frequently fail, where the young planted trees have continued very vigorous.

Theſe trees are raiſed from ſeeds, which moſt years ripen well in England: the cones ſhould be gathered about the end of November, and kept in a dry place till the ſpring, when they ſhould be ſpread on a cloth and expoſed to the ſun, or laid before a fire, which will cauſe the ſcales of the cones to open and emit their ſeeds. Theſe ſeeds ſhould be ſown on a border expoſed to the eaſt, where the morning ſun only comes on it; or if they are ſown on a bed more expoſed to the ſun, they ſhould be ſcreened with mats from the ſun in the middle of the day; for when the plants firſt appear above ground, they are very impatient of heat;

and

and when the bed is much expoſed to the ſun, the ſurface of the ground will dry ſo faſt, as to require to have water very often, which frequently rots the tender ſtems of the plants; which will be prevented by properly ſhading them while young, and afterward they will be in no danger. Theſe young plants ſhould be conſtantly kept clean from weeds, and if they have made good progreſs, they may be tranſplanted the following autumn, otherwiſe they may remain in the ſeed-bed another year, eſpecially if the plants are not too cloſe together. When they are tranſplanted, it ſhould be performed in the autumn as ſoon as their leaves decay; they may be planted in beds at about ſix inches aſunder each way, which will be diſtance enough for the growth of the plants the two following years, by which time they will be fit to tranſplant where they are to remain.

When the young trees are planted out for good, they need not be more than eight or ten feet diſtant from each other, always planting them cloſer on expoſed ſituations, than where they are more defended; after the trees are planted, they will require no other care but to keep them clean from weeds for three or four years till the trees have obtained ſtrength, when they will over-top the weeds and prevent their growth; but the ground between theſe trees ſhould not be dug, for that I have found has greatly ſtopped their growth.

The Siberian Larch is of ſlow growth in this country, for when the ſpring is mild, the trees will begin to ſhoot in February, or early in March; and there are frequently ſharp froſts after, whereby theſe ſhoots are often killed, and this ſtops the growth of the trees. Likewiſe when they are planted on a warm dry ſoil, they are frequently killed by drought in the ſummer; therefore this is a very improper tree for this country, unleſs for ſome cold, moiſt, peaty land, where they may probably thrive, and in ſuch ſituations few other trees will grow.

The American or black Larch, thrives pretty well upon moiſt land, but on dry ground will make but little progreſs. A few of theſe trees by way of variety, may be allowed to have place in every collection of trees deſigned for pleaſure; but for profit, the common Larch is to be preferred to any other ſpecies.

In Switzerland, where theſe trees abound, and they have a ſcarcity of other wood, they build moſt of their houſes with it; and great part of their furniture is alſo made of the wood, ſome of which is white, and ſome red, but the latter is moſt eſteemed. The redneſs of the wood is by ſome ſuppoſed to be from the age of the trees, and not from any difference between them, but is rather owing to the quantity of turpentine contained in them. They frequently cut out the boards into ſhingles of a foot ſquare, with which they cover their houſes, inſtead of tiles or other covering; theſe are at firſt very white, but after they have been two or three years expoſed, become as black as charcoal; and all the joints are ſtopped by the reſin, which the ſun draws out from the pores of the wood, which is hardened by the air, and becomes a ſmooth ſhining varniſh, which renders the houſes ſo covered impenetrable to either wind or rain; but as this is very combuſtible, the magiſtrates have made an order of police, that the houſes ſo covered ſhould be built at a diſtance from each other to prevent fire, which has often done great damage in villages.

In moſt countries where this wood is in plenty, it is preferred to all the kinds of Fir for every purpoſe; and in many places there are ſhips built of this wood, which they ſay are durable; therefore this may be a very proper tree for planting upon ſome of the cold barren hills in many parts of England, which at preſent produce nothing to their proprietors, and in one age may be large eſtates to their poſterity, and a national advantage; which might be effected without a great expence, where the buſineſs is properly conducted.

The beſt method for doing this, would be by making ſmall nurſeries on or near the place where the plantation is intended to be made, in thoſe nurſeries the ſeeds ſhould be ſown; and if there are any poor cottagers there, theſe may be employed in raiſing of the plants, keeping of them clean, and afterward in tranſplanting them. This will leſſen the number of indigent poor, and by employing them in this ſort of huſbandry, they may be brought to have a love and regard for trees of their own planting, ſo will not be tempted to deſtroy them themſelves, or ſuffer others to do it; and as the ſeaſon for planting happens at a time of year when the farmers have little employment for their labourers, ſo the finding them uſeful employment this way, will be of infinitely more advantage than the giving them alms from the pariſh; and the children may be taught to weed and keep the young plants clean in ſummer, whereby they may be rendered uſeful, and kept from being burdenſome to the pariſhes.

From the Larch-tree is extracted the Venice turpentine, which the inhabitants of the valley of St. Martin near Lucern, make a conſiderable merchandize of. They collect this by boring holes in the trunk of the trees, at about two or three feet from the ground, into which they fix narrow troughs about twenty inches long; the end of theſe are hollowed like a ladle, and in the middle is a ſmall hole bored for the turpentine to run into a receiver, which is placed below it; as the turpentine runs from the trees, it paſſes along the ſloping gutter or trough to the ladle, and from thence runs through the holes into the receiver. The people who gather this viſit the trees morning and evening, from the end of May to September, to collect the turpentine from out of the receivers.

The third ſort is the Cedar of Libanus, which is a tree of great antiquity; and what is remarkable, this tree is not found as a native in any other part of the world, ſo far as hath come to our knowledge.

The cones of this tree are frequently brought from the Levant, which, if preſerved entire, will preſerve their ſeeds good for ſeveral years. The time of their ripening is commonly in the ſpring, and ſo conſequently are near one year old before we receive them, for which they are not the worſe, but rather the better; the cones having diſcharged a great part of their reſin by lying, and the ſeeds are much eaſier to get out of them than ſuch as are freſh taken from the tree.

The beſt way to get the ſeeds out is to ſplit the cones, by driving a ſharp piece of iron through the center lengthways, which will ſplit the cone; then you may pull the ſeeds out with your fingers, which you will find are faſtened to a thin leafy ſubſtance called wings, as are thoſe of the Fir-tree: but before the ſeeds are taken out, it will be proper to put the cones in water for twenty-four or thirty hours, which will render them eaſier to ſplit, ſo that the ſeeds may be taken out with greater ſafety; for there will require care in the doing of it, otherwiſe many of the ſeeds will be ſpoiled, as they are very tender, and will bruiſe where there is any force employed to get them out.

Theſe ſeeds ſhould be ſown in boxes or pots of light freſh earth, and treated as was directed for the Firs (to which I refer the reader) but only ſhall obſerve, that theſe require more ſhade in ſummer while young than the Firs, and ſhould be frequently refreſhed with water.

When the plants come up they muſt be guarded from the birds, otherwiſe they will pick off their tops, as they do of the young Firs where they are not guarded; they muſt alſo be conſtantly kept clean from weeds, and not placed under the drip of trees. The plants may remain in theſe boxes or pots in which they were ſown till the following ſpring, but it will be proper to place them under a frame in winter, or cover them with mats; for while they are young they are in danger of loſing their tops, if they are pinched by froſt, for the young plants often ſhoot late in the autumn. In the ſpring, before the plants begin to ſhoot, they ſhould be carefully taken up and tranſplanted into beds at about four inches diſtance, cloſing the earth

gently to their roots; theſe beds ſhould be arched over with hoops, and covered with mats in the heat of the day, to ſhade the plants from the ſun till they have taken new root; and if the nights prove froſty, it will be proper to keep the mats over them in the night, but in cloudy or moiſt weather they muſt be always open. After the plants are well rooted, they will require no other care but to keep them clean from weeds, unleſs the ſeaſon ſhould prove very dry, in which caſe it will be proper to give them ſome water once or twice a week; but it muſt be but in ſmall quantities, for too much wet is often very injurious to them; ſo that it will be better to ſcreen them from the ſun in hot weather, to prevent the earth from drying too faſt, or cover the ſurface of the ground with moſs to keep it cool, than to water the plants often.

In theſe beds the plants may ſtand two years, then they ſhould be either tranſplanted to the places where they are deſigned to remain, or to a nurſery where they may grow two years more; but the younger theſe plants are when they are planted out for good, the better the trees will thrive, and the longer they will continue.

When theſe plants begin to ſhoot ſtrong, you will generally find the leading ſhoot incline to one ſide; therefore, if you intend to have them ſtrait, you muſt ſupport them with ſtakes, obſerving to keep the leader always cloſe tied up, until you have got them to the height you deſign them, otherwiſe their branches will extend on every ſide, and prevent their growing tall.

Theſe trees are by many people kept in pyramids, and ſheared as Yews, &c. in which form they loſe their greateſt beauty; for the extenſion of the branches is very ſingular in this tree, their ſhoots for the moſt part are declining, and thereby ſhewing their upper ſurface, which is conſtantly clothed with green leaves in ſo regular a manner, as to appear at ſome diſtance like a green carpet; and theſe waving about with the wind, make one of the moſt agreeable proſpects that can be to terminate a viſta, eſpecially if planted on a riſing ground.

It is matter of ſurpriſe to me, that this tree hath not been more cultivated in England formerly, for till within a few years paſt, there were but few here; ſince it would be a great ornament to barren bleak mountains, where few other trees will grow ſo well, it being a native of the coldeſt parts of Mount Libanus, where the ſnow continues great part of the year. And from the obſervations I have made of thoſe now growing in England, I find they thrive beſt on the pooreſt ſoil; for ſuch of them as have been planted in a ſtrong, rich, loamy earth, have made but a poor progreſs, in compariſon to ſuch as have grown upon a ſtony meagre ſoil. And that theſe trees are of quick growth, is evident from four of them now growing in the phyſic garden at Chelſea, which (as I have been credibly informed) were planted there in the year 1683, and at that time were not above three feet high; two of which trees are at this time (viz. 1766) upwards of twelve feet and a half in girt, at two feet above ground, and their branches extend more than twenty feet on every ſide their trunks; which branches (though they are produced twelve or fourteen feet above the ſurface) do at every termination hang very near the ground, and thereby afford a goodly ſhade in the hotteſt ſeaſon of the year.

The ſoil in which theſe trees are planted, is a lean hungry ſand mixed with gravel, the ſurface of which is ſcarcely two feet deep before a hard rocky gravel appears. Theſe trees ſtand at four corners of a pond, which is bricked up within two feet of their trunks, ſo that their roots have no room to ſpread on one ſide, and conſequently are cramped in their growth; but whether their ſtanding ſo near the water may not have been advantageous to them, I cannot ſay, but ſure I am, if their roots had had full ſcope in the ground, they would have made a greater progreſs. I have alſo obſerved, that lopping or cutting of theſe trees is very injurious to them (more, perhaps, than to any other of the reſinous trees) in retarding their growth; for two of the four trees above-mentioned, being unadviſedly planted near a green-houſe, when they began to grow large had their branches lopped, to let the rays of the ſun into the houſe, whereby they have been ſo much checked, as at preſent they are little more than half the ſize of the other two.

Theſe trees have all of them produced, for ſeveral years, large quantities of katkins (or male flowers,) though there are but three of them which have as yet produced cones; nor is it above thirty-five years that theſe have ripened their cones, ſo as to perfect the ſeed; but now the ſeeds which fall out of the cones on the ground near them, produce plants in plenty, which come up naturally without care: and ſince we find that they are ſo far naturalized to our country as to produce ripe ſeeds, we need not fear being ſoon ſupplied with enough, without depending on thoſe cones which are brought from the Levant; as there are many trees of this kind in England, which already do, and abundance more which in a few years muſt certainly bear: but I find they are more ſubject to produce and ripen their cones in hard winters than in mild ones; which is a plain indication, that they will ſucceed, even in the coldeſt parts of Scotland, where, as well as in England, they might be propagated to great advantage.

What we find mentioned in ſcripture of the lofty Cedars, can be no ways applicable to the ſtature of this tree; ſince, from the experience we have of thoſe now growing in England, as alſo from the teſtimony of ſeveral travellers, who have viſited thoſe few remaining trees on Mount Libanus, they are not inclined to grow very lofty, but, on the contrary, extend their branches very far; to which the alluſion made by the Pſalmiſt agrees very well, when he is deſcribing the flouriſhing ſtate of a people, and ſays, They ſhall ſpread their branches like the Cedar-tree.

Rauwolf, in his Travels, ſays, there were not at that time (i. e. anno 1574) upon Mount Libanus more than 26 trees remaining, 24 of which ſtood in a circle; and the other two, which ſtood at a ſmall diſtance, had their branches almoſt conſumed with age; nor could he find any younger trees coming up to ſucceed them, though he looked about diligently for ſome. Theſe trees (he ſays) were growing at the foot of a ſmall hill, on the top of the mountains, and amongſt the ſnow. Theſe having very large branches, commonly bend the tree to one ſide, but are extended to a great length, and in ſo delicate and pleaſant order, as if they were trimmed and made even with great diligence, by which they are eaſily diſtinguiſhed at a great diſtance from Fir-trees. The leaves (continues he) are very like to thoſe of the Larch-tree, growing cloſe together in little bunches upon ſmall brown ſhoots.

Maundrel in his Travels, ſays, there were but ſixteen large trees remaining when he viſited the mountains, ſome of which were of a prodigious bulk, but that there were many more young trees of a ſmaller ſize; he meaſured one of the largeſt, and found it to be 12 yards 6 inches in girt, and yet ſound, and 37 yards in the ſpread of its boughs. At about five or ſix yards from the ground it was divided into five limbs, each of which was equal to a great tree. What Maundrel hath related, was confirmed to me by a worthy gentleman of my acquaintance, who was there in the year 1720, with this difference only, viz. in the dimenſions of the branches of the largeſt tree, which he aſſured me he meaſured, and found to be twenty-two yards diameter. Now, whether Mr. Maundrel meant thirty-ſeven yards in circumference of the ſpreading branches, or the diameter of them, cannot be determined by his expreſſions, yet either of them well agrees with my friend's account.

Monſieur Le Brun reckons about 35 or 36 trees remaining upon Mount Libanus when he was there, and would perſuade us it was not eaſy to reckon their numbers (as is reported of our Stonehenge on Saliſbury Plain.) He alſo ſays, their cones do ſome of them grow dependent. Which is abundantly confuted by the above-mentioned travellers, as alſo from our own

experience, for all the cones grow upon the upper part of the branches, and ſtand erect, having a ſtrong, woody, central ſtyle, by which it is firmly annexed to the branch, ſo as with difficulty to be taken off; which central ſtyle remains upon the branches after the cone is fallen to pieces, ſo that they never drop off whole, as the Pines do.

The wood of this famous tree is accounted proof againſt all putrefaction of animal bodies; the ſawduſt of it is thought to be one of the ſecrets uſed by thoſe mountebanks, who pretend to have the embalming myſtery. This wood is alſo ſaid to yield an oil, which is famous for preſerving books and writings; and the wood is thought by my Lord Bacon, to continue above a thouſand years ſound. It is alſo recorded, that in the temple of Apollo at Utica, there was found timber of near two thouſand years old. And the ſtatue of the goddeſs, in the famous Epheſian temple, was ſaid to be of this material alſo, as was moſt of the timber work of that glorious ſtructure.

This ſort of timber is very dry and ſubject to ſplit, nor does it well endure to be faſtened with nails, from which it uſually ſhrinks, therefore pins of the ſame wood are much preferable.

LARKSPUR. See DELPHINIUM.

LASERPITIUM. Tourn. Inſt. R. H. 324. tab. 172. Lin. Gen. Plant. 306. Laſerwort.

The CHARACTERS are,

It hath an umbellated flower, compoſed of many ſmall umbels; both the ſmall and principal umbels have a many-leaved involucrum. The general umbel is uniform; the flowers have five equal petals, whoſe points are heart-ſhaped and inflexed; they have five ſtamina which are as long as the petals, terminated by ſingle ſummits; the roundiſh germen is ſituated under the flower, ſupporting two thick acuminated ſtyles, crowned by obtuſe ſpreading ſtigmas. The germen afterward becomes an oblong fruit with eight longitudinal wings or membranes, reſembling the fliers of a water-mill; the fruit divides into two parts, each containing one ſeed.

This genus of plants is ranged by Dr. Linnæus's in the ſecond ſection of his fifth claſs, intitled Pentandria Digynia, which includes thoſe plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. LASERPITIUM (*Commune*) foliolis oblongo-cordatis, inciſo-ſerratis. *Laſerwort with oblong heart-ſhaped lobes, which are cut like a ſaw.* Laſerpitium foliis latioribus lobatis. Mor. Umbel. 29. *Laſerwort with broader leaves, having lobes.*
2. LASERPITIUM (*Latifolium*) foliolis-cordatis inciſo-ſerratis. Hort. Cliff. 96. *Laſerwort with heart-ſhaped lobes cut like a ſaw.* Laſerpitium foliis amplioribus, ſemine criſpo. Inſt. R. H. 324. *Laſerwort with large leaves and curled ſeeds.*
3. LASERPITIUM (*Paludapifolium*) foliolis ovatis obtuſis acutè ſerratis. *Laſerwort with oval obtuſe lobes ſharply ſawed.* Laſerpitium humilius, paludapii folio, flore albo. Inſt. R. H. *Lower Laſerwort, with a Smallage leaf and a white flower.*
4. LASERPITIUM (*Gallicum*) foliolis cuneiformibus furcatis. Lin. Sp. Plant. 248. *Laſerwort with wedge-ſhaped forked lobes.* Laſerpitium Gallicum. 156. C. B. P. *French Laſerwort.*
5. LASERPITIUM (*Anguſtifolium*) foliolis lanceolatis integerrimis ſeſſilibus. Hort. Cliff. 96. *Laſerwort with ſpear-ſhaped entire leaves ſitting cloſe to the branches.* Laſerpitium anguſtiſſimo & oblongo folio. Inſt. R. H. 324. *Laſerwort with a very narrow oblong leaf.*
6. LASERPITIUM (*Selinoides*) foliolis trifidis acutis. *Laſerwort with acute trifid lobes.* Laſerpitium ſelinoides, ſemine criſpo. Inſt. R. H. *Laſerwort reſembling ſweet Smallage, with a curled ſeed.*
7. LASERPITIUM (*Trilobum*) foliolis trilobis inciſis. Lin. Sp. 357. *Laſerwort with trifid leaves.* Libanotis latifolia aquilegiæ folio. C. B. P. 157.
8. LASERPITIUM (*Prutenicum*) foliolis lanceolatis integerrimis extimis coalitis. *Laſerwort with ſpear-ſhaped entire lobes, whoſe outer ones coaleſce.* Laſerpitium daucoides prutenicum viſcoſo ſemine. Breyn. Cent. 167.
9. LASERPITIUM (*Peucedanoides*) foliolis lineari-lanceolatis venoſo-ſtriatis diſtinctis Amœnit. Acad. 4. p. 310. *Laſerwort with linear ſpear-ſhaped leaves, which are diſtinct and veined.* Laſerpitium exoticum, lobis anguſtiſſimis integris. Pluk. Phyt. tab. 96. f. 2.
10. LASERPITIUM (*Siler*) foliolis ovato-lanceolatis integerrimis petiolatis. Hort. Cliff. 96. *Laſerwort with oval, ſpear-ſhaped, entire leaves, having foot-ſtalks.* Siler Montanum. Mor. Hiſt. 3. p. 276.
11. LASERPITIUM (*Chironium*) foliolis oblique cordatis, petiolis hirſutis. Lin. Sp. 358. *Laſerwort with oblique heart-ſhaped lobes, having hairy foot-ſtalks.* Panax Heracleum. Mor. Hiſt. 3. p. 315. *Herculus's All-heal.*
12. LASERPITIUM (*Ferulaceum*) foliolis linearibus. Lin. Sp. 358. *Laſerwort with linear leaves.* Cachrys Orientalis, ferulæ folio tenuiore, fructu alato plano. Tourn. Cor. 23.

There are ſome other varieties, if not diſtinct ſpecies of this plant; ſome of which have been put down as diſtinct ſpecies, which differ only in the colour of their flowers, therefore ſhould not be regarded as ſuch; but the number of ſpecies has been greatly leſſened by ſome late writers, who have erred as much in leſſening, as thoſe before them had done in multiplying of the ſpecies: which miſtake they may have fallen into by ſowing of the ſeeds near old plants of the ſame genus, or on ground where ſome of theſe ſorts have grown, ſo that their ſeeds have been ſcattered and buried in the ground, where they will remain two or three years, and afterward grow; ſo that unleſs their ſeeds are ſown at a diſtance from any of the other ſpecies, there will commonly ſome other ſpecies come up, whereby people have been often confuſed in diſtinguiſhing theſe plants; nay, I have frequently obſerved the ſeeds of one ſpecies fall, and the plants come up on the head of another plant which grew near it; and this young plant, if not timely rooted out, has gotten the better of the old plant, and deſtroyed it; therefore where there is not great care taken to prevent this, the different ſorts cannot be preſerved in gardens where the ſpecies grow near each other.

Theſe plants grow naturally in the ſouth of France, in Italy, and Germany, and are preſerved in botanic gardens for the ſake of variety; but as they have no great beauty, ſo are ſeldom cultivated in other gardens: they require much room, for their roots extend far every way, and the leaves of many ſorts will ſpread three feet, when the plants are ſtrong; their flower-ſtalks riſe four or five feet high, and their umbels of flowers are very large; they have all of them perennial roots but annual ſtalks. They flower in June, and the ſeeds ripen in September.

It is generally ſuppoſed, that the Silphium of the antients was procured from one ſpecies of this genus, but from which of them we are at preſent ignorant. All the ſpecies, if wounded, drop a very acrid juice, which turns to a reſinous gummy ſubſtance, very acrimonious. This was externally applied by the antients to take away black and blue ſpots that came by bruiſes and blows, as alſo to take away excreſcences; it was alſo by ſome of the antients preſcribed in internal medicines, but others have cautioned people not to make uſe of it this way, from the effects which they mention to have ſeen produced from the violence of its acrimony.

All theſe plants are extreme hardy, except the laſt, which requires a warmer ſituation, otherwiſe will be killed in ſharp winters; the other ſorts will thrive in moſt ſoils and ſituations; they are propagated by ſeed, which if ſown in autumn, the plants will come up the following ſpring; but when they are ſown in the ſpring, the ſeeds commonly remain in the ground a whole year. The plants ſhould be tranſplanted the following autumn where they are deſigned to remain, for they ſend out long deep roots, which are frequently broken by tranſplanting if they are large; when the plants are removed, they ſhould be planted three

three feet aſunder, for they grow very large; they decay to the ground every autumn, and come up again the following ſpring, but the roots will continue many years, and require no other culture but to clear them from weeds, and to dig between the roots every ſpring.

LATHYRUS. Tourn. Inſt. R. H. 394. tab. 216, 217. Lin. Gen. Plant. 781. Chichling Vetch; in French, *Geſſe*.

The CHARACTERS are,

The flower has a bell-ſhaped empalement of one leaf, cut into five parts at the top, the two upper being ſhort, and the under longer. The flower is of the butterfly kind. The ſtandard is heart-ſhaped, large, and reflexed at the point. The wings are oblong and blunt; the keel is half round, the ſize of the wings. It hath ten ſtamina, nine of them joined, and one ſeparate, crowned by roundiſh ſummits. It hath an oblong, narrow, compreſſed germen, ſupporting a riſing ſtyle, which is flat, and the upper part broad, with an acute point, crowned by a hairy ſtigma. The germen afterward becomes a long compreſſed pod, ending in a point, having two valves, and filled with roundiſh ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria which includes thoſe plants whoſe flowers have ten ſtamina formed in two bodies.

The SPECIES are,

1. LATHYRUS (*Sativus*) pedunculis unifloris, cirrhis diphyllis, leguminibus ovatis compreſſis dorſo bimarginatis. Hort. Cliff. 367. *Chichling Vetch with one flower upon a foot-ſtalk, tendrils having two leaves, and oval compreſſed pods with two borders on their back part.* Lathyrus annuus, flore cæruleo, Ochri ſiliquâ. H. L. *Annual Chichling Vetch with a blue flower, and a pod like Ochrus.*
2. LATHYRUS (*Cicera*) pedunculis unifloris, cirrhis diphyllis, leguminibus ovatis compreſſis, dorſo canaliculatis. Lin. Sp. Plant. 730. *Chichling Vetch with one flower upon a foot-ſtalk, two-leaved tendrils, and an oval compreſſed pod a little channelled on the back.* Lathyrus ſativus flore purpureo. C. B. P. 344. *Cultivated Chichling Vetch with a purple flower.*
3. LATHYRUS (*Setifolius*) pedunculis unifloris, cirrhis diphyllis, foliolis ſetaceo-linearibus. Lin. Sp. 1031. *Chichling Vetch with one flower upon a foot-ſtalk, a two-leaved tendril, and linear briſtly lobes.* Lathyrus foliis anguſtis, floribus ſingularibus coccineis. Seg. Pl. Veron. *Chichling Vetch, with narrow leaves and ſingle ſcarlet flowers.*
4. LATHYRUS (*Pariſienſus*) pedunculis unifloris, cirrhis polyphyllis, ſtipulis lanceolatis. Hort. Cliff. 368. *Chichling Vetch with one flower upon a foot-ſtalk, a many-leaved tendril, and ſpear-ſhaped ſtipulæ.* Clymenum Pariſienſe flore cæruleo. Tourn. Inſt. R. H. 396. *Chichling Vetch of Paris with a blue flower.*
5. LATHYRUS (*Hiſpanicus*) pedunculis bifloris, cirrhis polyphyllis, foliolis alternis. Hort. Cliff. *Chichling Vetch with two flowers upon a foot-ſtalk, a many-leaved tendril, and the lobes placed alternate.* Clymenum Hiſpanicum, flore vario ſiliquâ articulatâ. Tourn. Inſt. R. H. 296. *Spaniſh Chichling Vetch, with a variable flower and jointed pod.*
6. LATHYRUS (*Odoratus*) pedunculis bifloris, cirrhis diphyllis, foliis ovato-oblongis, leguminibus hirſutis. Hort. Cliff. 368. *Chichling Vetch with two flowers on a foot-ſtalk, a two-leaved tendril, oblong oval leaves, and hairy pods.* Lathyrus diſtoplatyphyllos hirſutus, mollis, magno & peramæno flore odore. Hort. Cath. *The ſweet-ſcented Pea.*
7. LATHYRUS (*Hirſuta*) pedunculis bifloris, cirrhis diphyllis, foliolis lineari-lanceolatis, leguminibus hirſutis, ſeminibus ſcabris. Flor. Leyd. Prod. 363. *Chichling Vetch with two flowers on a foot-ſtalk, a two-leaved tendril, narrow ſpear-ſhaped lobes, hairy pods, and rough ſeeds.* Lathyrus anguſtifolius ſiliquâ hirſutâ. C. B. P. *Narrow-leaved Chichling Vetch with a hairy pod.*
8. LYTHYRUS (*Tingitanus*) pedunculis bifloris, cirrhis diphyllis foliolis alternis lanceolatis. Flor. Leyd. Prod. 263. *Chichling Vetch with two flowers on a foot-ſtalk, a two-leaved tendril, and ſpear-ſhaped alternate leaves.* Lathyrus Tingitanus ſiliquis orobi flore amplo ruberrimo. Mor. Hiſt. 2. 55. *Chichling Vetch of Tangier, with a bitter Vetch pod, and a large red flower.*
9. LATHYRUS (*Annuus*) pedunculis bifloris, cirrhis diphyllis, foliolis enſiformibus, leguminibus glabris, ſtipulis bipartitis. Amœn. Acad. 3. p. 417. *Chichling Vetch with two flowers on a foot-ſtalk, a two-leaved tendril, ſword-ſhaped lobes, ſmooth pods, and a bifid ſtipula.* Lathyrus luteus latifolius. Bot. Monſp. *Yellow broad-leaved Chichling Vetch.*
10. LATHYRUS (*Tuberoſus*) pedunculis multifloris, cirrhis diphyllis, foliolis ovalibus, internodis nudis. Hort. Cliff. 367. *Chichling Vetch with many flowers on a foot-ſtalk, a two-leaved tendril, oval leaves, and naked between the joints.* Lathyrus arvenſis repens tuberoſus. C. B. P. 344. *Creeping Field Chichling Vetch with a tuberous root.*
11. LATHYRUS (*Pratenſis*) pedunculis multifloris, cirrhis diphyllis, foliolis lanceolatis cirrhis ſimpliciſſimis. Hort. Cliff. 367. *Chichling Vetch with many flowers on a foot-ſtalk, a two-leaved tendril, ſpear-ſhaped leaves, and ſingle tendrils.* Lathyrus luteus ſylveſtris dumetorum. J. B. 2. p. 304. *Yellow wild Chichling Vetch of the woods.*
12. LATHYRUS (*Heterophyllus*) pedunculis multifloris, cirrhis diphyllis tetraphylliſque, foliolis lanceolatis. It. W. Goth. 75. *Chichling Vetch with many flowers on a foot-ſtalk, a two-leaved, and ſometimes four-leaved tendril, and ſpear-ſhaped leaves.* Lathyrus major Narbonenſis anguſtifolius. J. B. 2. 304. *Greater Chichling Vetch of Narbonne with narrow leaves.*
13. LATHYRUS (*Latifolius*) pedunculis multifloris, cirrhis diphyllis, foliolis lanceolatis, internodiis membranaceis. Hort. Cliff. 367. *Chichling Vetch with many flowers on a foot-ſtalk, a two-leaved tendril, ſpear-ſhaped leaves, and a membranaceous ſtalk between the joints.* Lathyrus latifolius. C. B. P. 344. *Broad-leaved Chichling Vetch, commonly called Everlaſting Pea.*
14. LATHYRUS (*Magnoflore*) pedunculis multifloris, cirrhis diphyllis foliolis ovato-lanceolatis, internodiis membranaceis. *Chichling Vetch with many flowers on a foot-ſtalk, a two-leaved tendril, oval ſpear-ſhaped leaves, and a membranaceous ſtalk between the joints.* Lathyrus latifolius minor flore majore. Boerh. Ind. alt. 2. p. 42. *Smaller broad-leaved Chichling Vetch with a larger flower, or large, red, flowering, Everlaſting Pea.*
15. LATHYRUS (*Piſiformis*) pedunculis multifloris, cirrhis polyphyllis, ſtipulis ovatis, baſi acutis. Hort. Upſal. 217. *Chichling Vetch with many flowers on a foot-ſtalk, a many-leaved tendril, and oval ſtipulæ acute at the baſe.*
16. LATHYRUS (*Niſſolia*) pedunculis unifloris, foliis ſimplicibus ſtipulis ſubulatis. Lin. Sp. Plant. 729. *Chichling Vetch with one flower on a foot-ſtalk, ſingle leaves, and awl-ſhaped ſtipulæ.* Niſſolia vulgaris. Tourn. Inſt. 656. *Crimſon Graſs Vetch.*
17. LATHYRUS (*Amphicarpos*) pedunculis unifloris calyce longioribus, cirrhis diphyllis ſimpliciſſimis ſubtus venoſis. *Chichling Vetch with ſingle flowers upon a foot-ſtalk, which are longer than the empalement, and a two-leaved ſingle tendril.*
18. LATHYRUS (*Aphaca*) pedunculis unifloris, cirrhis aphyllis, ſtipulis ſagitto-cordatis. Lin. Sp. 1029. *Chichling Vetch with one flower on each foot-ſtalk, a tendril without leaves, and a heart arrow-ſhaped ſtipula.* Aphacha. Lob. Ic. 2. p. 70.
19. LATHYRUS (*Americana*) pedunculis bifloris, foliis reniformibus ſimpliciſſimis ſubtus venoſis. *Chichling Vetch with two flowers upon a foot-ſtalk, and kidney-ſhaped ſingle leaves, which are veined on their under ſide.* Niſſolia Americana procumbens, folio rotundo, flore luteo. Houſt. MSS. *Trailing American Niſſolia, with a round leaf and a yellow flower.*

The firſt ſort grows naturally in France, Spain, and Italy; this is an annual plant, with a climbing ſtalk about two feet high. The leaves come out at each joint alternate; they are compoſed of two long narrow lobes,

lobes, with a tendril or claſper riſing between, which faſtens to any ſupport near. The flowers come ſingly upon foot-ſtalks at each joint; they are blue, and ſhaped like thoſe of the Pea; theſe are ſucceeded by oval compreſſed pods, with a double membrane or wing running longitudinally on the back. This flowers in June and July, and the ſeeds ripen in September. It is ſeldom cultivated, unleſs in botanic gardens for the ſake of variety.

The ſecond ſort is cultivated in ſome countries for the ſeeds, which are uſed for feeding of poultry; this grows wild in Italy and Spain. It does not riſe ſo high as the firſt ſort. The leaves are longer, the pods are near twice the length of thoſe, and are channelled on their back ſide; this is cultivated in the ſame manner as Vetches or Tares.

The third ſort was ſent me from Verona, where it grows naturally; this is an annual plant, which ſeldom riſes more than ſix or eight inches high. The two lobes of the leaves are ſmall, and end with claſpers. The flowers are of a bright ſcarlet, and are ſucceeded by taper pods, filled with roundiſh ſeeds. This is only kept for variety in ſome botanic gardens.

The fourth ſort grows naturally about Paris; this is an annual plant, with a ſlender ſtalk about one foot high, garniſhed with leaves, compoſed of ſeveral narrow lobes placed alternate along the midrib, which end in claſpers. The flowers come out ſingly upon pretty long foot-ſtalks; they are blue, and about the ſize of thoſe of the common Tare. It grows naturally in ſome parts of England, particularly on Windſor foreſt, in moiſt meadows, and has often a variable flower.

The fifth ſort grows naturally in Spain and Italy; it is an annual plant, with a climbing ſtalk which riſes near three feet high, garniſhed with leaves compoſed of ſeveral lobes, which are ſpear-ſhaped, placed alternately along the midrib, which is terminated by very long claſpers. The foot-ſtalks of the flowers are five or ſix inches long, upon which ſtand two flowers one above the other, ſhaped like thoſe of the Pea. The ſtandard, which is large, is of a bright red colour, but the keel and wings are white. The flowers are ſucceeded by pretty long jointed pods, filled with roundiſh ſeeds. This flowers in June and July, and the ſeeds ripen in autumn.

The ſixth ſort is commonly known by the title of Sweet Pea; this grows naturally in Ceylon, but is hardy enough to thrive in the open air in England. It is an annual plant with a climbing ſtalk, which riſes from three to four feet high, garniſhed with leaves compoſed of two large oval lobes, whoſe midrib is terminated by long claſpers. The foot-ſtalks come out at the joints; they are about ſix inches long, and ſuſtain two large flowers with dark purple ſtandards; the keel and wings are of a light blue colour. The flowers have a ſtrong ſweet odour, and are ſucceeded by oblong inflated pods, which are hairy, containing four or five roundiſh ſeeds in each.

There are two other varieties of this ſort, one of which has a Pink-coloured ſtandard with a white keel, and the wings of a pale bluſh colour; this is commonly called Painted Lady Pea. The flowers of the other are all white, which are the only differences between them.

The ſeventh ſort grows naturally in Eſſex. I have found it in places which were ſpread over with Brambles, near Hockerel; this hath a perennial root, ſending out three or four weak ſtalks, which are near two feet long, garniſhed with leaves compoſed of two oblong lobes, whoſe midrib is terminated by claſpers. The foot-ſtalks are about four inches long, and ſuſtain two purple flowers, which are ſucceeded by rough hairy pods, little more than an inch long, containing three or four roundiſh ſeeds. This ſort is very rarely preſerved in gardens.

The eighth ſort was originally brought from Tangier to England; this is an annual plant, whoſe ſtalk riſes four or five feet high, garniſhed with leaves compoſed of two oval veined lobes, whoſe midrib ends with claſpers. The foot-ſtalks are ſhort, and ſuſtain two large flowers with purple ſtandards, whoſe wings and keel are of a bright red; theſe are ſucceeded by long jointed pods, containing ſeveral roundiſh ſeeds. This is ſometimes titled by the gardeners Scarlet Lupine.

The ninth ſort is an annual plant, which grows naturally about Montpelier. I have alſo received the ſeeds from Siberia; this riſes with a climbing ſtalk five or ſix feet high, which has two membranes, or wings, running along from joint to joint. The leaves are compoſed of two long narrow lobes, whoſe midrib ends with claſpers. The flowers ſtand upon long foot-ſtalks, each ſuſtaining two pale yellow flowers, which are ſucceeded by long taper pods, containing ſeveral roundiſh ſeeds.

The tenth ſort grows naturally amongſt the Corn in the South of France, and in Italy, but is cultivated in the Dutch gardens for the roots, which are there ſold in the markets, and are commonly eaten: this hath an irregular tuberous root about as big as thoſe of the Pignut, covered with a brown ſkin; theſe ſhoot up ſeveral weak trailing ſtalks, garniſhed with leaves compoſed of two oval lobes, ending with claſpers. The foot-ſtalks of the flowers are weak, about three inches long, each ſuſtaining two deep red flowers, which are ſeldom ſucceeded by pods, but the roots increaſe plentifully in the ground. This ſort will grow in moſt ſoils, but will thrive beſt on light ground.

The eleventh ſort grows naturally on the banks and under thickets in moſt parts of England; this hath a perennial creeping root, whereby it propagates ſo faſt as to be a very troubleſome weed, ſo ſhould not be admitted into gardens.

The twelfth ſort grows naturally by the ſide of hedges, and in thickets, in ſeveral parts of England; this hath a perennial creeping root, which ſends out many climbing ſtalks which riſe five or ſix feet high, garniſhed with leaves, which have ſometimes two, and at others four long narrow lobes, terminated by claſpers. The foot-ſtalks ſuſtain ſeveral ſmall flowers with pale ſtandards, whoſe wings and keels are blue; theſe are ſucceeded by long taper pods, containing ſeveral roundiſh ſeeds. It flowers in June and July, and the ſeeds ripen in autumn.

The thirteenth ſort has been found growing naturally in ſeveral parts of England, but is frequently cultivated in gardens for ornament, therefore it is doubtful if it is a native here; this hath a perennial root, from which ariſe ſeveral thick climbing ſtalks from ſix to eight feet high, which have membranaceous wings on each ſide between the joints. The leaves are compoſed of two ſpear-ſhaped lobes, and the midrib is terminated by claſpers. The foot-ſtalks are eight or nine inches long, and ſuſtain ſeveral large red flowers, which are ſucceeded by long taper pods, containing ſeveral roundiſh ſeeds. It flowers in June, July, and Auguſt, and the ſeeds ripen in autumn, ſoon after which the ſtalks die to the root, and new ones ariſe in the ſpring, from whence it is called Everlaſting Pea.

The fourteenth ſort differs from the laſt in the ſtalks, being much ſhorter and ſtronger. The leaves are broader, and of a deeper green. The flowers are much larger, and of a brighter red colour, ſo make a better appearance; theſe differences are laſting from ſeeds, for I have raiſed many plants from ſeeds within forty years paſt, and have always found them them to be the ſame as the parent plant.

The fifteenth ſort grows naturally in Siberia; this hath a perennial root and an annual ſtalk, which is garniſhed with leaves, compoſed of ſix or eight pair of oblong acute lobes. The flowers are blue, and many of them ſtand upon each foot-ſtalk; theſe are ſucceeded by pods, ſhaped like thoſe of the Pea. It flowers in June, and the ſeeds ripen in Auguſt.

The ſixteenth ſort grows naturally in moiſt meadows in many parts of England; this riſes with an upright ſtalk one foot high, which is garniſhed with

long, narrow, ſingle leaves at each joint. The foot-ſtalks of the flowers come out from the joints toward the upper part of the ſtalk; they are ſlender, about three inches long, ſome having but one, and others have two bright red flowers on their tops. It flowers in May and June, and the ſeeds ripen in autumn. This is rarely kept in gardens.

The ſeventeenth ſort grows naturally in Syria; this is an annual plant with a trailing ſtalk, garniſhed with leaves compoſed of two lobes, whoſe midrib is terminated by a ſingle tendril. The foot-ſtalk ſupports one flower of a pale purple colour, and when the flowers decay, the germen is thruſt into the ground, where the pods are formed, and the ſeeds ripen.

The eighteenth ſort was diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz in New Spain; this is annual plant, with a trailing ſtalk a foot long, garniſhed with a ſingle kidney-ſhaped leaf at each joint. The flowers grow two together upon very ſhort foot-ſtalks; they are ſmall, and of a deep yellow colour; theſe are ſucceeded by ſhort taper pods, including three or four ſmall roundiſh ſeeds.

This ſort is tender, ſo the ſeeds ſhould be ſown upon a hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be each planted into a ſmall pot filled with light earth, and plunged into a tan-bed, where they ſhould conſtantly remain, treating them in the ſame manner as other tender plants from warm countries; if they are brought forward in the ſpring, they will flower in July, and their ſeeds will ripen in autumn.

Several of the other ſorts are preſerved in curious gardens for the variety of their flowers, ſome of which make a fine appearance, and continue long in flower. Theſe may all be propagated by ſowing their ſeeds, either in ſpring or autumn; but thoſe which are ſowed in autumn ſhould have a light ſoil and a warm ſituation, where the plants will abide the winter, and come to flower early the following ſpring, and their ſeeds will ripen in July; but thoſe which are ſown in the ſpring ſhould have an open expoſure, and be planted upon almoſt any ſoil, if not too wet, for they are not tender plants, nor do they require much culture: theſe ſorts ſhould all of them be ſown where they are deſigned to remain, for they ſeldom ſucceed when they are tranſplanted, unleſs it is done while the plants are young; ſo that where they are ſown for ornament, there ſhould be four or five ſeeds ſown in a ſmall patch, in different parts of the borders of the flower-garden; and when the plants come up, they ſhould be carefully kept clear from weeds; but when they are grown two or three inches high, there ſhould be ſome ſticks put down by them to ſupport them, otherwiſe they will trail on the ground, or on whatever plants ſtand near them, and become unſightly.

The ſixth ſort, with the two varieties of it, are deſerving room in every good garden for the beauty and odour of their flowers; and the eighth ſort is by ſome cultivated for the colour of the flowers; but there are few of the other ſorts worthy of room in gardens, except the thirteenth and fourteenth ſorts, which, if they are planted in a proper ſituation, and are rightly trained, will make a fine appearance.

LATIFOLIOUS trees and plants are ſuch as have broad leaves.

LAVATERA. Tourn. Act. Gal. 1706. tab. 3. Dill. Gen. 10. Lin. Gen. Plant. 752.

The CHARACTERS are,

The flower has a double empalement; the outer is of one leaf, ſhort, obtuſe, and trifid; the inner is of one leaf, and quinquefid; they are both permanent. The flower hath five petals, which are joined at their baſe, plain, and ſpread open above. It has many ſtamina, which are joined in a column below, but above are looſe; they are inſerted in the petal, and terminated by kidney-ſhaped ſummits. It has an orbicular germen, ſupporting a ſhort cylindrical ſtyle, crowned by many briſtly ſtigmas. The empalement afterward becomes a fruit with ſeveral capſules, covered in front by a hollow ſhield, each capſule having one kidney-ſhaped ſeed.

This genus of plants is by Dr. Linnæus ranged in the fifth order of his ſixteenth claſs, intitled Monodelphia Polyandria, which includes thoſe plants whoſe flowers have many ſtamina joined in a column.

The SPECIES are,

1. LAVATERA (*Althææfolia*) foliis infimis cordato-orbiculatis, caulinis trilobis acuminatis glabris, pedunculis unifloris, caule herbaceo. *Lavatera whoſe lower leaves are orbicularly heart-ſhaped, thoſe on the ſtalks ſet with three acute ſmooth lobes, and one flower upon a foot-ſtalk, and an herbaceous ſtalk.* Lavatera folio & facie althææ. Act. R. P. 1706. *Lavatera with the leaves and appearance of Marſhmallow.*
2. LAVATERA (*Africana*) foliis infimis cordato-angulatis, ſupernè ſagittatis, pedunculis unifloris, caule herbaceo hirſuto. *Lavatera with the lower leaves angularly heart-ſhaped, the upper ones arrow-pointed, a ſingle flower upon each foot-ſtalk, and a hairy herbaceous ſtalk.* Lavatera Africana, flore pulcherrimo. Boerh. Ind. alt. *African Lavatera with a beautiful flower.*
3. LAVATERA (*Trimeſtris*) foliis glabris, caule ſcabro herbaceo, pedunculis unifloris, fructibus orbiculo tectis. Hort. Upſal. 203. *Lavatera with ſmooth leaves, a rough herbaceous ſtalk, one flower upon a foot-ſtalk, and an orbicular cloſed fruit.* Malva folio vario. C. B. P. *Mallow with a variable leaf.*
4. LAVATERA (*Thuringiaca*) caule herbaceo, fructibus denudatis, calycibus inciſis. Hort. Upſal. 203. *Lavatera with an herbaceous ſtalk, naked fruit, and a cut empalement.* Althæa flore majore. C. B. P. 316. *Marſhmallow with a larger flower.*
5. LAVATERA (*Hirſuta*) foliis quinquelobatis hirſutis, caule erecto fruticoſo. Icon. tab. 161. *Lavatera with hairy leaves having five lobes, and a ſhrubby upright ſtalk.*
6. LAVATERA (*Veneta*) caule arboreo, foliis ſeptemangularibus tomentoſis plicatis, pedunculis confertis unifloris axillaribus. Hort. Upſal. 202. *Lavatera with a tree-like ſtalk, woolly plaited leaves having ſeven angles, and foot-ſtalks with ſingle flowers ariſing in cluſters from the wings of the leaves.* Malva arborea veneta dicta, parvo flore. C. B. P. 215. *Tree Mallow with a ſmall flower.*
7. LAVATERA (*Triloba*) caule fruticoſo, foliis ſubcordatis ſubtrilobis rotundatis crenatis ſtipulis cordatis, pedunculis unifloris. Lin. Sp. Plant. 691. *Lavatera with a ſhrubby ſtalk, heart-ſhaped leaves having three round indented lobes, which are crenated, heart-ſhaped ſtipulæ, and foot-ſtalks with ſingle flowers.* Althæa fruteſcens, folio rotundiore incano. C. B. P. 316. *Shrubby Marſhmallow with a rounder hoary leaf.*
8. LAVATERA (*Olbia*) caule fruticoſo, foliis quinquelobo-haſtatis. Hort. Upſal. 202. *Lavatera with a ſhrubby ſtalk, and leaves having five arrow-pointed lobes.* Althæa fruteſcens, folio acuto, parvo flore. C. B. P. 316. *Shrubby Marſhmallow with an acute leaf, and a ſmall flower.*
9. LAVATERA (*Hiſpanica*) caule fruticoſo, foliis orbiculatis crenatis tomentoſis, pedunculis confertis unifloris axillaribus. *Lavatera with a ſhrubby ſtalk, round, crenated, woolly leaves, and foot-ſtalks growing in cluſters at the wings of the ſtalk, each ſuſtaining a ſingle flower.* Althæa fruteſcens Hiſpanica folio rotundiori. Tourn. Inſt. R. H. 97. *Spaniſh ſhrubby Marſhmallow with a rounder leaf.*
10. LAVATERA (*Undulata*) caule fruticoſo tomentoſo, foliis orbiculato-cordatis undatis incanis, ſerrato-crenatis, pedunculis ſæpius trifloris. *Lavatera with a ſhrubby woolly ſtalk, round heart-ſhaped hoary leaves, which are waved, ſharply indented, and foot-ſtalks which have frequently three flowers.* Althæa fruteſcens Luſitanica, folio rotundiori undulato. Tourn. Inſt. 97. *Portugal ſhrubby Marſhmallow with a rounder waved leaf.*
11. LAVATERA (*Bryonifolia*) caule fruticoſo, foliis quinquelobatis acutis crenatis tomentoſis, racemis terminalibus. *Lavatera with a ſhrubby ſtalk, woolly leaves having five acute lobes, and long ſpikes of flowers terminating*

nating the ſtalks. Althæa fruteſcens, folio bryoniæ. C. B. P. 316. *Shrubby Althæa with a Briony leaf.*

The firſt ſort grows naturally in Syria; it is an annual plant, with an erect, branching, herbaceous ſtalk, riſing two feet high; the under leaves are orbicularly heart-ſhaped, ſmooth, and ſtand upon long foot-ſtalks, the upper are divided into three acute lobes; the flowers come out upon long foot-ſtalks from the wings of the leaves; they are very large, and ſpread open like thoſe of the Marſhmallow, and are of a pale red or Roſe colour. Theſe come out in July, the ſeeds ripen in September, and the plants decay in autumn.

There is a variety of this with white flowers, which has accidentally riſen from ſeeds.

The ſecond ſort grows naturally at the Cape of Good Hope, from whence the ſeeds were brought to Holland, and the plants there cultivated, and the ſeeds have ſince been communicated to moſt parts of Europe. This differs from the firſt in the ſhape of the leaves, the lower having angles, and the upper being arrow-pointed; the ſtalks are hairy, the flowers larger, and of a brighter red colour.

This ſort is annual, and flowers at the ſame time with the former, and the ſeeds are ripe in the autumn.

The third ſort grows naturally in Spain and Sicily; this is an annual plant, which riſes with ſlender herbaceous ſtalks about two feet high, covered with a brown bark; the lower leaves are roundiſh, and the upper are angular, and ſome arrow-pointed. The flowers are not half ſo large as thoſe of either of the former, and are of a pale red colour; theſe ſtand upon ſhort foot-ſtalks, and appear about the ſame time with the former. This is certainly a diſtinct ſpecies, for I have cultivated it more than forty years, and I have never found it vary.

The fourth ſort hath a perennial root and an annual ſtalk, which riſes five or ſix feet high, is woolly, garniſhed with angular heart-ſhaped leaves, ſtanding upon long foot-ſtalks. The flowers come out from the wings of the leaves toward the top, ſitting cloſe to the ſtalks at every joint; they are of a purpliſh colour, and ſhaped like thoſe of the Marſhmallow, but are larger. Theſe appear in July and Auguſt, and the ſeeds ripen in the autumn, then the ſtalks decay to the root. It grows naturally in Auſtria and Bohemia.

The fifth ſort grows naturally at the Cape of Good Hope, the ſeeds of it were ſent me by the ingenious Mr. Storm, gardener at Amſterdam. This riſes with a ſhrubby branching ſtalk to the height of eight or ten feet, garniſhed with large hairy leaves, deeply divided into five roundiſh lobes, which are indented on their edges, of a bright green, ſtanding alternately upon long foot-ſtalks; as the plants become more ſhrubby the leaves decreaſe in ſize, ſo that the upper leaves are not more than a ſixth part of the bigneſs of the firſt or lower leaves. The flowers come out ſingly at the wings of the leaves at every joint, ſo that as the branches extend there is a ſucceſſion of flowers, whereby the plants are ſeldom deſtitute of them the whole year. The flowers are of a bright purple colour, but are not very large; theſe are ſucceeded by capſules having many partitions, in each of theſe is one kidney-ſhaped ſeed, which ripen in ſucceſſion as the flowers are produced.

The ſixth ſort is commonly called Mallow-tree; this riſes with a very ſtrong thick ſtalk the height of eight or ten feet, dividing into many branches at the top, which are garniſhed with ſoft woolly leaves that are plaited, and the edges cut into ſeveral angles. The flowers are produced in cluſters at the wings of the leaves, each ſtanding upon a ſeparate foot-ſtalk; they are of a purple colour, and ſhaped like thoſe of the common Mallow, and are ſucceeded by ſeeds of the ſame form. This ſort flowers from June to September, and the ſeeds are ripe in the autumn.

The ſeventh ſort riſes with a ſhrubby ſtalk ſeven or eight feet high, ſending out ſeveral long branches, garniſhed with woolly leaves, differing greatly in ſize and ſhape, the lower being partly heart-ſhaped at their baſe, but divide into five roundiſh lobes; the upper, which are ſmall, have three lobes, which are indented on their edges. The flowers come out from the wings of the ſtalk, three or four at each joint, upon very ſhort foot-ſtalks; they are of a light purple colour, and ſhaped like thoſe of Marſhmallow. There is a ſucceſſion of theſe flowers from June to the autumn.

The eighth ſort is a ſhrub which grows to the ſame ſize as the ſeventh, and differs from it in the ſhape of the leaves, which are divided into three or five acute-pointed lobes; the flowers are ſmaller, but of the ſame ſhape and colour, it continues in flower at the ſame time. This grows naturally in the ſouth of France.

The ninth ſort riſes with a ſhrubby ſtalk ſix or eight feet high, ſending out many branches, garniſhed with roundiſh, crenated, woolly leaves, ſtanding upon long foot-ſtalks; the foot-ſtalks of the flowers come out in cluſters from the wings of the leaves, each ſuſtaining one large pale blue flower, of the ſame ſhape with thoſe of the other ſpecies. This flowers at the ſame time with them, and the ſeeds ripen in the autumn.

The tenth ſort hath a ſoft, ſhrubby, woolly ſtalk, which riſes to the height of four or five feet; theſe ſtand more erect than either of the former ſorts, and do not branch ſo much; the leaves are heart-ſhaped at their baſe, but round on their edges, very hoary and waved, ſtanding upon long foot-ſtalks. The flowers come out in cluſters from the wings of the leaves, ſtanding upon foot-ſtalks of different lengths; theſe generally ſupport but one flower, but ſometimes they have two or three; the flowers are large, and of a pale blue colour. They appear at the ſame time with the former, and their ſeeds ripen in the autumn. It grows naturally in Portugal.

The eleventh ſort riſes with a ſhrubby ſtalk ſix or ſeven feet high, ſending out ſeveral ſhrubby branches, which are garniſhed with woolly leaves, divided into five lobes, which end in acute points, and are crenated on their edges; the lower part of the branches are adorned with a ſingle flower at each joint, ſitting cloſe to the ſtalk, but the branches are terminated by looſe ſpikes of flowers, which are of a pale blue colour, and ſhaped like thoſe of the former.

The ſix laſt mentioned ſorts, though they have ſhrubby ſtalks, yet are but of ſhort duration here; the ſixth, tenth, and eleventh ſorts, ſeldom continue longer than two years, unleſs when they happen to grow upon dry rubbiſh, where they make but little progreſs, and their ſtalks and branches being firmer, ſo are better able to reſiſt the cold; for when they are in good ground, they are very vigorous and full of ſap, ſo are killed by the froſt in common winters. The other three ſorts are not quite ſo tender, nor of ſo ſhort duration; theſe will continue three or four years, and ſometimes longer, provided the winters are not very ſevere; or if the plants ſtand in a warm ſituation and on a dry ſoil, but in moiſt rich ground they ſeldom continue long.

All theſe ſhrubby ſorts are eaſily propagated by ſeeds, which ſhould be ſown in the ſpring upon a bed of light earth; and when the plants are about three or four inches high, they ſhould be tranſplanted to the places where they are deſigned to remain; for as they ſhoot out long fleſhy roots which have but few fibres, ſo they do not ſucceed well if they are tranſplanted after they are grown large. If the ſeeds of theſe plants are permitted to ſcatter on the ground, the plants will come up the following ſpring; and when they happen to fall into dry rubbiſh, and are permitted to grow therein, they will be ſhort, ſtrong, woody, and produce a greater number of flowers than thoſe plants which are more luxuriant. As theſe plants continue a long time in flower, ſo a few plants of each ſort may be allowed a place in all gardens where there is room.

The

The three firſt ſorts are annual plants, which are propagated by ſeeds: the ſeaſon for ſowing them is the end of March or the beginning of April, upon a bed of freſh light earth; and when the plants are come up, you muſt carefully clear them from weeds; and in very dry weather they muſt be now and then refreſhed with water. When they are about two inches high, you muſt tranſplant them into the places where they are deſigned to remain, which ſhould be in the middle of the borders in the flower-garden; for if the ſoil is good, they will grow two or three feet high; in tranſplanting them, you muſt take them up very carefully, preſerving a ball of earth to their roots, otherwiſe they are apt to miſcarry; and alſo water and ſhade them until they have taken root, after which they will require no other care but to clear them from weeds, and to faſten them to ſtakes, to prevent their being injured by ſtrong winds. You may alſo ſow their ſeeds in autumn, and when the plants are come up, tranſplant them into ſmall pots, which, towards the end of October, ſhould be placed in a common hot-bed frame, where the plants being defended from ſevere froſts, will abide the winter very well; and in the ſpring, you may ſhake them out of the pots, and plant them into larger, or elſe into the full ground, where they may remain to flower. The plants thus managed will be larger, and flower ſtronger and earlier than thoſe ſown in the ſpring, and from theſe you will conſtantly have good ſeeds, whereas thoſe ſown in the ſpring ſometimes miſcarry. The ſeeds of the third ſort ſhould be ſown in the ſpring in the place where they are to remain, for they do not well bear removing in the ſummer.

The two firſt ſorts are very ornamental plants in a fine garden, when placed among other annuals, either in pots or borders.

The fourth ſort hath a perennial root which abides ſeveral years, but the ſtalks decay in the autumn, and new ones ariſe in the ſpring. This is propagated by ſeeds, which ſhould be ſown upon a bed of light earth in the ſpring, and when the plants are fit to remove, they ſhould be either tranſplanted to the places where they are to remain, or into pots where they may ſtand to get more ſtrength, before they are planted in the full ground. After the plants are well rooted, they will require no other care but to keep them clear from weeds. And if the winter ſhould prove very ſevere, it will be proper to cover the ground about them with old tanners bark to keep out the froſt; but they will endure the cold of our ordinary winters very well, and will produce their flowers and ripen their ſeeds annually.

The fifth ſort will not live through the winter in the open air in England, ſo the ſeeds ſhould be ſown in the ſame manner as thoſe of the other ſorts; and when the plants are fit to remove, they ſhould be each planted into a ſmall pot filled with light earth, and placed in the ſhade till they have taken new root; then they may be removed to a ſheltered ſituation, and mixed with other hardy exotic plants. As the plants advance in their growth, ſo they will require larger pots, and muſt be treated in the ſame way as other exotic plants; in the autumn they muſt be removed into the green-houſe, and placed with Myrtles and the other kinds of plants, which only require protection from hard froſt, but muſt have as much free air as poſſible in mild weather.

LAVENDULA. Tourn. Inſt. R. H. 198. tab. 93. Lin. Gen. Plant. 630. Lavender; in French, *Lavende*. [It takes its name of Lavando, *Lat.* waſhing, becauſe it was uſed to be thrown into baths for the fragrancy of the ſcent; or becauſe uſed in lye, to give a fragrancy to linen; and becauſe it is very good to waſh the face with, and give it both beauty and a grateful ſcent.]

The CHARACTERS are,

The flower hath an oval permanent empalement of one leaf, which is obſcurely indented at the brim. The flower is of the lip kind, with one petal, having a cylindrical tube longer than the empalement, but ſpreading above; the upper lip is large, bifid, and open; the under lip is cut into three equal ſegments. It hath four ſhort ſtamina ſituated within the tube of the petal, two being ſhorter than the other, terminated by ſmall ſummits. It hath a germen divided in four parts, ſupporting a ſlender ſtyle the length of the tube, crowned by an obtuſe indented ſtigma. The germen afterward turns to four oval ſeeds, ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, intitled Didynamia Gymnoſpermia, which includes thoſe plants whoſe flowers have two ſhort and two longer ſtamina, and have four naked ſeeds ſitting in the empalement.

The SPECIES are,

1. LAVENDULA (*Spica*) foliis lanceolatis integerrimis ſpicis nudis. Hort. Cliff. 303. *Lavender with entire ſpear-ſhaped leaves and naked ſpikes.* Lavendula latifolia. C. B. P. 216. *Broad-leaved Lavender.*
2. LAVENDULA (*Anguſtifolia*) foliis lanceolato-linearibus, ſpicis nudis. *Lavender with ſpear-ſhaped narrow leaves, and naked ſpikes.* Lavendula anguſtifolia. C. B. P. 216. *Narrow-leaved Lavender.*
3. LAVENDULA (*Multifida*) foliis duplicato-pinnatifidis. Vir. Cliff. 56. *Lavender with leaves doubly wing-pointed.* Lavendula folio diſſecto. C. B. P. 216. *Lavender with a cut leaf.*
4. LAVENDULA (*Canarienſis*) foliis duplicato-pinnatifidis hirſutis, ſpicis faſciculatis. *Lavender with doubly wing-pointed hairy leaves, and ſpikes of flowers growing in cluſters.* Lavendula folio longiore tenuius & elegantius diſſecto. Tourn. Inſt. R. H. 198. *Lavender with a longer, narrower, and more elegant cut leaf.*

The firſt ſort is cultivated in ſeveral of the Engliſh gardens, and has been generally known by the title of Spike, or Lavender Spike; the leaves of this ſort are much ſhorter and broader than thoſe of the common Lavender, and the branches are ſhorter, more compact, and fuller of leaves. This ſort doth not often produce flowers, but when it does, the flower-ſtalks are garniſhed with leaves very different from thoſe on the other branches, approaching nearer to thoſe of the common ſort, but are broader; the ſtalks grow taller, the ſpikes of the flowers are larger, the flowers are ſmaller, and are in looſer ſpikes. It generally flowers a little later in the ſeaſon. This has been frequently confounded with the common Lavender, and has been ſuppoſed the ſame ſpecies, but is undoubtedly a different plant.

This I believe to be the ſame with what Dr. Moriſſon calls Lavendula latifolia ſterilis, for the plants will continue ſeveral years without producing flowers; during which time they have a very different appearance from thoſe of the common Lavender, as thoſe branches of the ſame plant always have which do not flower; but I have planted ſlips taken from thoſe flowering branches with narrow leaves, and others from thoſe with the broad leaves, but have always found the plants ſo propagated return to their original ſort, the cuttings with the narrow leaves have become broad again.

The ſecond ſort is the common Lavender, which is ſo well known as to require no deſcription. Both theſe ſorts flower in July, at which time the ſpikes of the ſecond ſort are gathered for uſe; there is a variety of this with white flowers.

Theſe are propagated by cuttings or ſlips; the beſt ſeaſon for which is in March, when they ſhould be planted in a ſhady ſituation, or at leaſt they ſhould be ſhaded with mats until they have taken root, after which they may be expoſed to the ſun; and when they have obtained ſtrength, may be removed to the places where they are deſigned to remain. Theſe plants will abide much longer in a dry, gravelly, or ſtony ſoil, in which they will endure our ſevereſt winters; though they will grow much faſter in the ſummer, if they are planted upon a rich, light, moiſt ſoil, but then they are generally deſtroyed in winter; nor are the plants half ſo ſtrong ſcented, or fit for medicinal uſes, as thoſe which grow upon the moſt barren rocky ſoil.

Theſe

Theſe plants were formerly in uſe to make edgings to borders in gardens, for which purpoſe they are by no means proper, for they will grow too large for ſuch deſigns; and if they are often cut in very dry weather, they are ſubject to decay; and in hard winters they are very often killed, ſo that the edging will not be complete: beſides, theſe plants greatly exhauſt the goodneſs of the ſoil, whereby the plants in the borders will be deprived of their nouriſhment; ſo that they ſhould never be planted in a fine garden amongſt other choice plants and flowers, but rather be placed in beds in the phyſic-garden, or in any part of the kitchen-garden, if the ſoil is dry.

The third ſort grows naturally in Andaluſia; this is an annual plant, which riſes with an upright branching ſtalk two feet high; the ſtalks are woolly, and garniſhed with hoary leaves growing oppoſite, which are cut into many diviſions to the midrib; theſe ſegments are again divided on their borders toward the top, into three obtuſe ſegments, ſo that they end in many points. The foot-ſtalk of the flower is continued from the end of the branches, which is naked, and about ſix inches long, having four corners or angles, and is terminated by a cloſe ſpike of flowers about one inch long; the ſpike has the rows of flowers twiſted ſpirally: under this ſpike there are commonly two ſmall ones proceeding from the ſide of the ſtalk, at about an inch diſtance from the middle ſpike. This ſort flowers in July, and the ſeeds ripen in autumn. There are two varieties of this, one with blue, and the other with white flowers.

This ſort is ſown every ſpring on borders or beds of light freſh earth, and when the plants come up, they may be tranſplanted into other borders of the flower-garden, or into pots, to remain for good; where they will require no farther care, but to keep them clean from weeds. Theſe are pretty plants to place in large borders, amongſt other plants, for variety, but they are never uſed with us; they may alſo be preſerved over the winter, if placed in a green-houſe in autumn; but they never continue longer than two years with us, and many times (if they have produced ſeeds the firſt year) they will not continue longer. Nor do thoſe plants which are thus preſerved, appear handſome the following ſummer, ſo that, unleſs in bad ſeaſons, when the ſeeds do not ripen in the open air, it is not worth while to preſerve the plants. If the ſeeds of this ſort are permitted to ſcatter, the plants will come up the following ſpring without care, and may be treated in the manner before directed.

The fourth ſort grows naturally in the Canary Iſlands, from whence the ſeeds were ſent to the Biſhop of London, which were ſown in his Lordſhip's garden at Fulham, where this plant was firſt raiſed. This riſes with an upright, branching, ſquare ſtalk four feet high, garniſhed with leaves which are longer, and cut into narrower ſegments than thoſe of the third ſort. They are of a lighter green and almoſt ſmooth; the naked flower-ſtalk is alſo much longer than thoſe of the former, and terminated with a cluſter of ſpikes of blue flowers; at two or three inches below theſe, are two ſmall ſpikes of flowers, ſtanding one on each ſide the ſtalk. The flowers are ſmaller than thoſe of the common Lavender, but are of the ſame ſhape.

This ſort is tenderer than either of the former, ſo the ſeeds of this muſt be ſown on a moderate hot-bed in the ſpring; and when the plants come up, they ſhould be each planted into a ſeparate ſmall pot filled with light earth, and plunged into another hot-bed, to bring the plants forward; and in the beginning of June, they ſhould be inured to the open air, when they ſhould be placed in a ſheltered ſituation toward the end of that month; in July the plants will flower, and if the autumn proves warm, the ſeeds will ripen in September; but when they do not perfect ſeeds, the plants may be preſerved through the winter in a good green-houſe, where they will produce flowers moſt part of that ſeaſon, whereby good ſeeds may be obtained.

LAUREOLA. See THYMELÆA.

LAUROCERASUS. See PADUS.

LAURUS. Tourn. Inſt. R. H. 597. tab. 367. Lin. Gen. Plant. 452. The Bay-tree; in French, *Laurier*.

The CHARACTERS are,

It hath male and hermaphrodite flowers on different plants, the male flowers have no empalement: they have one petal, which is cut into ſix ſegments at the top, and nine ſtamina which are ſhorter than the petal, ſtanding by threes, terminated by ſlender ſummits. The hermaphrodite flowers have noempalement; they have one petal, which is ſlightly cut into ſix ſegments at the top. In the bottom is ſituated an oval germen, ſupporting a ſingle ſtyle of the ſame length with the petal, crowned by an obtuſe ſtigma, attended by ſix or eight ſtamina: there are two globular glands, ſtanding upon very ſhort foot-ſtalks, fixed to the baſe of the petal. The germen afterward becomes an oval berry with one cell, incloſing one ſeed of the ſame form.

This genus of plants is ranged in the firſt ſection of Linnæus's ninth claſs, intitled Enneandria Monogynia, which includes thoſe plants whoſe flowers have nine ſtamina and one ſtyle; but it ſhould be ranged in his twenty-ſecond claſs, which includes thoſe plants whoſe male and female flowers are upon different plants.

The SPECIES are,

1. LAURUS (*Nobilis*) foliis lanceolatis venoſis perennantibus, floribus quadrifidis dicœciis. Hort. Cliff. 105. *Bay-tree with evergreen, ſpear-ſhaped, veined leaves, and flowers cut into four points, which are male and female on different plants.* Laurus latifolia Diſcoridis. C. B. P. *The broad-leaved Bay of Dioſcorides.*
2. LAURUS (*Undulatis*) foliis lanceolatis venoſis perennantibus, marginibus undatis. *Bay-tree with evergreen ſpear-ſhaped leaves, which are veined and waved on their edges.* Laurus vulgaris folio undulato. H. R. Par. *Common Bay-tree with waved leaves.*
3. LAURUS (*Tenuifolia*) foliis lineari-lanceolatis venoſis perennantibus, floribus quinquefidis dicœciis. *Bay-tree with narrow ſpear-ſhaped leaves which are evergreen and veined, flowers cut into five points, which are male and female on different plants.* Laurus tenuifolia. Tab. Icon. 925. *Narrow-leaved Bay.*
4. LAURUS (*Indica*) foliis venoſis lanceolatis perennantibus planis, ramulis tuberculatis cicatricibus, floribus racemoſis. Hort. Cliff. 154. *Bay-tree with evergreen, veined, ſpear-ſhaped, plain leaves, branches having tubercles and cicatrices, and flowers growing in bunches.* Laurus Indica. Ald. Hort. Farneſ. 61. *The Indian Bay.*
5. LAURUS (*Borbonia*) foliis venoſis lanceolatis calycibus fructus baccatis. Lin. Sp. 529. *Bay-tree with veined ſpear-ſhaped leaves, and the empalement becomes berries.* Laurus Carolinienſis, foliis acuminatis, baccis cæruleis, pediculis longis rubris inſidentibus. Cateſb. Carol. 1. p. 63. *Carolina Bay-tree with pointed leaves, and blue berries ſitting upon long red foot-ſtalks.*
6. LAURUS (*Benzoin*) foliis ovato-lanceolatis obtuſis integris annuis. *Bay-tree with oval, obtuſe, ſpear-ſhaped, entire leaves, which are annual.* Arbor Virginiana, citreæ vel limonii folio, Benzoinum fundens. Hort. Amſt. 1. p. 168. *The Benjamin-tree.*
7. LAURUS (*Saſſafras*) foliis integris trilobiſque. Hort. Cliff. 154. *Bay-tree with entire leaves, or having three lobes.* Cornus mas odorato, folio trifido, margine plano, ſaſſafras dicta. Pluk. Alm. 120. *The Saſſafras.*
8. LAURUS (*Enervius*) foliis venoſis oblongis acuminatis annuis, ſubtus rugoſis. *Bay-tree with oblong, acute-pointed, veined, annual leaves, which are rough on their under ſide.* Laurus foliis lanceolatis enervibus annuis. Flor. Virg. 159. *Bay-tree with ſpear-ſhaped, winged, unveined, annual leaves.*
9. LAURUS (*Camphora*) foliis trinerviis lanceolato-ovatis, nervis ſupra baſin unitis. Lin. Mat. Med. 192. *Bay-tree with oval ſpear-ſhaped leaves, having three veins which unite above the baſe.* Camphora officinarum. C. B. P. 500. *The Camphire-tree.*
10. LAURUS (*Americana*) foliis ovatis planis integerrimis, pedunculis racemoſis, floribus in capitulum collectis. *Bay-tree with plain, oval, entire leaves, branching foot-*

foot-ſtalks, and flowers collected into heads. Laurus Americana, foliis ſubrotundis, floribus in capitulum collectis. Houſt. MSS. *American Bay-tree with roundiſh leaves, and flowers collected into heads.*

11. Laurus (*Cinnamomum*) foliis trinerviis ovato-oblongis nervis verſus apicem evaneſcentibus. Flor. Zeyl. 145. *Laurel with oblong leaves which diminiſh toward their end.* Cinnamomum foliis latis ovatis frugiferum. Burm. Zeyl. 62. *Cinnamon-tree.*

12. Laurus (*Canella*) foliis triplinerviis lanceolatis. Flor. Zeyl. 146. *Laurel with ſpear-ſhaped leaves, having three veins.* Cinnamomum, ſc. Canella Malabarica, ſc. Javanenſis. C. B. P. 409. *Caſſia or Wild Cinnamon.*

13. Laurus (*Perſea*) foliis venoſis ovatis coriaceis perennantibus, floribus corymboſis. Lin. Sp. 529. *Bay-tree with oval, thick, veined leaves, which continue through the year, and flowers growing in a corymbus.* Perſea. Cluſ. Hiſt. 1. p. 2.

The firſt ſort is the broad-leaved Bay, which grows naturally in Aſia, Spain and Italy; from all thoſe places I have received the berries ſeveral times. This is almoſt too tender to thrive in the open air in England, for in ſevere winters they are frequently killed, or their branches are ſo much injured as to appear ſo for a long time; therefore they are generally planted in tubs, and removed into the green-houſe in winter. The leaves of this ſort are much broader than thoſe of the common Bay, and are ſmoother: there are male and female plants of this, as there are alſo of all the other ſorts.

The ſecond is the common Bay; of this there are plants with plain leaves, and others which are waved on their edges, but they ſeem to be the ſame ſpecies; for the young plants which I have raiſed from the berries of one, have been a mixture of both ſorts; but this is undoubtedly a different ſpecies from the firſt, for this ſort thrives well in the open air, and is ſeldom hurt, except in very ſevere winters; whereas the firſt will ſcarce live abroad, while young, in common winters, without ſhelter.

The third ſort hath very long narrow leaves which are not ſo thick as thoſe of the two former, and are of a light green; the branches are covered with a purpliſh bark, and the male flowers come out in ſmall cluſters from the wings of the leaves ſitting cloſe to the branches. This ſort is too tender to thrive in the open air in England, ſo the plants are generally kept in pots or tubs, and houſed in winter as the firſt ſort.

The fourth ſort grows naturally at Madeira and the Canary Iſlands, from whence it was formerly brought to Portugal, where it has been propagated in ſo great plenty, as to appear now as if it was a native of that country. In the year 1620, this plant was raiſed in the Farneſian garden, from berries which were brought from India, and was ſuppoſed to be a baſtard ſort of Cinnamon. This grows to the height of thirty or forty feet in temperate countries, but it is too tender to thrive in the open air in England, ſo the plants are kept in pots and tubs, and removed into the green-houſe in winter.

The leaves of this ſort are much larger than thoſe of the common Laurel; they are thick, ſmooth, and of a light green, the foot-ſtalks inclining to red; the branches are regularly diſpoſed on every ſide, and the male flowers are diſpoſed in long bunches; they are of a whitiſh green colour; the berries are much larger than thoſe of the other ſorts. It is called by ſome the Royal Bay, and by others the Portugal Bay.

The fifth ſort grows naturally in Carolina in great abundance, where it is called the Red Bay; it alſo is found in ſome other parts of America, but not in ſo great plenty. In ſome ſituations near the ſea, this riſes with a ſtrait trunk to a conſiderable height, and their ſtems are large, but in the inland parts of the country they are of an humbler ſtature. The wood of this tree is much eſteemed, being of a fine grain, ſo is of excellent uſe for cabinets, &c.

The leaves of this ſort are much longer than thoſe of the common Bay, and are a little woolly on their under ſide, their edges are a little reflexed; the veins run tranſverſly from the midrib to the ſides, and the male flowers come out in long bunches from the wings of the leaves. The female trees produce their flowers in looſe bunches, ſtanding upon pretty long foot-ſtalks, which are red; theſe are ſucceeded by blue berries ſitting in red cups.

This ſort is alſo too tender to thrive in the open air in England; for although ſome plants have lived abroad in a mild winter, which were planted in a warm ſituation, yet the firſt ſharp winter has deſtroyed them, ſo that theſe plants muſt be kept in pots or tubs, and houſed in winter like the former.

Theſe five ſorts may be propagated by layers, and the common ſort is generally propagated by ſuckers; but thoſe plants never keep to one ſtem, but generally ſend out a great number of ſuckers from their roots, and form a thicket, but do not advance in height; therefore the beſt way to have good plants, is to raiſe them from the berries, when they can be procured, for the plants which come from ſeeds, always grow larger than the others, and do not put out ſuckers from their roots, ſo may be trained up with regular ſtems. The beſt way is to ſow the berries in pots, and plunge them into a moderate hot-bed, which will bring up the plants much ſooner than if they are ſown in the full ground, ſo they will have a longer time to get ſtrength before winter; but the plants muſt not be forced with heat, therefore they ſhould be inured to bear the open air the beginning of June, into which they ſhould be removed, where they may remain till autumn; then the pots ſhould be placed under a common frame, that the plants may be protected from hard froſt, but in mild weather they may enjoy the free air; for while the plants are ſo young, they are in danger of ſuffering in hard froſt, even the common ſort of Bay. The ſpring following, thoſe ſorts which will not live in the open air, ſhould be each tranſplanted into ſeparate pots; but the common ſort may be planted in nurſery-beds ſix inches aſunder each way, where they may grow two years, by which time they will be fit to plant where they are deſigned to grow. The other ſorts muſt be conſtantly kept in pots, ſo ſhould every year be new potted, and as they advance in growth, they muſt have larger pots. As theſe plants require ſhelter in winter, a few of each ſort will be enough for a large green-houſe.

The common Bay will make a variety in all evergreen plantations; and as it will grow under the ſhade of other trees, where they are not too cloſe, ſo it is very proper to plant in the borders of woods, where it will have a good effect in winter.

The ſixth ſort grows naturally in North America, where it riſes to the height of ten or twelve feet, dividing into many branches, garniſhed with oval ſpear-ſhaped leaves near three inches long, and one inch and a half broad, ſmooth on their upper ſurface, but with many tranſverſe veins on their under ſide; theſe leaves fall off in the autumn like other deciduous trees. The flowers I have but once ſeen, thoſe were all male, and of a white herbaceous colour; but if I remember right, they had but ſix ſtamina in each.

The Saſſafras-tree is alſo very common in moſt parts of North America, where it ſpreads greatly by its roots, ſo as to fill the ground with ſuckers wherever they are permitted to grow; but in England this ſhrub is with difficulty propagated. In America it is only a ſhrub, ſeldom riſing more than eight or ten feet high; the branches are garniſhed with leaves of different ſhapes and ſizes, ſome them are oval and entire, about four inches long and three broad; others are deeply divided into three lobes; theſe are ſix inches long, and as much in breadth from the extremity of the two outſide lobes; they are placed alternately upon pretty long foot-ſtalks, and are of a lucid green; theſe fall off in the autumn, and in the ſpring, ſoon after the leaves begin to come out, the flowers appear juſt below them, upon ſlender foot-ſtalks, each

ſuſtaining

ſuſtaining three or four ſmall yellow flowers, which have five oval concave petals, and eight ſtamina in the male flowers, which are upon different plants from the hermaphrodite flowers, which have an oval germen, that afterward becomes an oval berry, which, when ripe, is blue, but thoſe plants do not produce fruit in England.

The eighth ſort grows naturally in North America, in ſwampy lands; this riſes with a ſhrubby branching ſtalk eight or ten feet high, covered with a purple bark. The leaves are placed oppoſite, and are near two inches long and one broad, ſmooth on their upper ſide, but are veined on their under, where they are rough. This hath not as yet produced flowers here, but the berries which were ſent me from Maryland were red, and nearly the ſize and ſhape of the common Bay-berry.

The Camphire-tree grows naturally in Japan, and in ſeveral parts of India, and alſo at the Cape of Good Hope, where it riſes to a tree of middling ſtature, dividing into many ſmall branches, garniſhed with oval ſpear-ſhaped leaves, ſmooth on their upper ſide, having three longitudinal veins which unite above the baſe; if theſe are bruiſed, they emit a ſtrong odour of Camphire, as alſo the branches when broken. Theſe are male and hermaphrodite on different trees; I have only ſeen thoſe of the male, which has flowered plentifully in England; theſe were ſmall, and compoſed of five concave yellow petals, very like thoſe of the Saſſafras-tree, and were produced three or four upon each foot-ſtalk, in like manner.

The tenth ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz; this riſes with a woody ſtalk to the height of twenty feet, dividing into many branches, which are covered with a gray rough bark; at the extremity of the branches are produced the foot-ſtalks, which are unequal in length, but divide into ſeveral ſmaller, each ſuſtaining a cluſter of ſmall white flowers, which are collected into a head or ſmall umbel, having one general involucrum; theſe are male and hermaphrodite on different trees. The hermaphrodite flowers are ſucceeded by oval berries, not quite ſo large as thoſe of the common Bay. The leaves of this tree are about two inches long and one broad, rounded at the top and entire, ſtanding upon very ſhort foot-ſtalks.

The Saſſafras-tree is commonly propagated by the berries, which are brought from America; but theſe berries generally lie in the ground a whole year, and ſometimes two or three years before they grow, when they are ſown in the ſpring; therefore the ſureſt method of obtaining the plants will be, to get the berries put into a tub of earth ſoon after they are ripe, and ſent over in the earth; and as ſoon as they arrive, to ſow the berries on a bed of light ground, putting them two inches in the earth; and if the ſpring ſhould prove dry, the bed muſt be frequently watered, and ſhaded from the great heat of the ſun in the middle of the day; with this management many of the plants will come up the firſt ſeaſon, but as a great many of the berries will lie in the ground till the next ſpring, ſo the bed ſhould not be diſturbed, but wait until the ſeaſon after, to ſee what will come up. The firſt winter after the plants come up, they ſhould be protected from the froſt, eſpecially in the autumn; for the firſt early froſt at that ſeaſon is apt to pinch the ſhoots of theſe plants, which, when young, are tender and full of ſap, ſo will do them more injury than the ſevere froſt of the winter; for when the extreme part of the ſhoots are killed, it greatly affects the whole plant.

When the plants have grown a year in the ſeed-bed, they may be tranſplanted into a nurſery, where they may ſtand one or two years to get ſtrength, and may then be tranſplanted into the places where they are to remain for good.

There have been ſome of theſe plants propagated by layers, but theſe are commonly two, and ſometimes three years before they put out roots; and if they are not duly watered in dry weather, they rarely take root; ſo that it is uncertain, whether one in three of theſe layers do ſucceed, which makes theſe plants very ſcarce in England at preſent.

The wood of this ſhrub is frequently uſed to make tea, which is eſteemed a great antiſcorbutic; and in Carolina they frequently give a decoction of the wood and leaves in intermitting fevers; but the flowers of the ſhrub are gathered, and dried by the moſt curious, and are uſed for tea.

The Benjamin-tree, as it is falſly called, may be propagated in the ſame manner as the Saſſafras, by ſowing of the berries: theſe generally lie long in the ground, ſo that unleſs they are brought over in earth, in the ſame way as before directed, they often fail, or at leaſt remain long in the ground; but this is now frequently propagated by layers in England, which put out roots pretty freely, when the young ſhoots are choſen to make layers.

The eighth ſort is alſo a native of the ſame country with the laſt, and may be propagated by ſeeds in the ſame manner as thoſe, and require the ſame treatment. This may alſo be propagated by layers, which put out roots pretty freely; and as the ſhrubs do not produce ſeeds in England, ſo this is the beſt method to propagate them.

Theſe three ſorts will live in the open air in England, but the Saſſafras is often injured by very ſevere froſts, eſpecially if they are in an expoſed ſituation; therefore theſe plants ſhould have a warm ſituation and a looſe ſoil; and in moiſt ground this, and alſo the eighth ſort, will thrive much better than in a dry ſoil; for when they are planted on a hot gravelly ſoil, they frequently die in ſummer when the ſeaſon proves dry. They are all of them now much cultivated in England, to add to the variety of ſhrubs, but they are not very ornamental plants; though indeed the Saſſafras makes a good appearance in ſummer, when it is fully clothed with its large leaves, which being of different ſhapes, makes an agreeable variety, when intermixed with ſhrubs of the ſame growth.

The Camphire-tree is very near a-kin to the Cinnamon-tree, from which it differs in the leaves, thoſe of the Cinnamon-tree having three ribs running longitudinally from the foot-ſtalk to the point, where they ſoon diminiſh; whereas the ribs of the leaves of this tree are ſmall, and extend toward the ſides, and have a ſmooth ſhining ſurface: they are both male and hermaphrodite in different trees.

In Europe this tree is propagated by layers, which are generally two years, and ſometimes longer, before they take root, ſo that the plants are very ſcarce; and as all thoſe which I have ſeen flower are male trees, ſo there can be no hopes of procuring ſeeds from them here: but if the berries of this, and alſo of the Cinnamon-tree, were procured from the places of their growth, and planted in tubs of earth, as hath been directed for the Saſſafras-tree, there may be a number of theſe plants procured in England: and if they were ſent to the Britiſh colonies in America, they might be there cultivated, ſo as to become a public advantage; eſpecially the Cinnamon-tree, which will grow as well in ſome of our iſlands in the Weſt-Indies, as it does in the native places of its growth, and in a few years the trees might be had in plenty; for they propagate eaſily by the berries, as the French experienced in their American iſlands. The Portugueze brought ſome of the Cinnamon-trees from the Eaſt-Indies, and planted them on the iſland of Princes, on the coaſt of Africa, where they now abound, having ſpread over a great part of the iſland; there is alſo one tree now growing at the Madeiras, which I have been informed is a male, ſo never produces berries.

The Camphire-tree does not require any artificial heat in winter, ſo that if they are placed in a warm dry green-houſe they will thrive very well. During the winter ſeaſon they muſt be ſparingly watered, and in the ſummer they ſhould be placed abroad in a warm ſituation, where they may be defended from ſtrong winds, and not too much expoſed to the direct rays of

of the ſun; but during this ſeaſon, they muſt be frequently refreſhed with water.

They may be propagated by laying down the young branches in autumn, which ſhould be treated in the ſame manner as is before directed for the Benjamin.

The tenth ſort requires a ſtove to preſerve it through the winter in England; this is propagated by ſeeds, which muſt be procured from the country where it grows naturally.

This plant requires the ſame treatment as the Coffee-tree, ſo ſhould be planted in a ſtove, with that and other tender plants of thoſe warm countries, and always remain there.

The eleventh and twelfth ſorts have been generally confounded by moſt, if not all the writers who have treated of them; though their bark, which is the material part of theſe trees in uſe, is pretty eaſily diſtinguiſhed by the dealers in theſe commodities.

Dr. Linnæus is certainly miſtaken in referring the latter to the figure of Dr. Burman, which he has given in his Hiſtory of Ceylon plants, by the title of Cinnamomum perpetuo florens, &c. which is a true repreſentation of the male Cinnamon-tree, and is not the Caſſia Lignea; but as there are plants of all theſe ſorts now in the Britiſh Iſlands of America, ſo we may hope ſoon to have their ſpecies better aſcertained.

The plants of both theſe kinds are not ſo tender as moſt people do imagine, and the treating of thoſe plants which have been brought to England ſo tenderly has deſtroyed them; for ſo far as I have made trial of their culture it has appeared, that great heat is very prejudicial to them; therefore I would adviſe thoſe perſons who may have any of the plants come under their care, to treat them in a different manner, otherwiſe there will be little hopes of keeping them; for when the plants have taken new root in the pots, they ſhould in ſummer be placed in a glaſs-caſe, where they may have plenty of air in warm weather, and in winter placed in a ſtove kept moderately warm.

LAURUS ALEXANDRINA. See Ruscus.

LAURUS TINUS. See Tinus.

LAWN is a great plain in a park, or a ſpacious plain adjoining to a noble ſeat.

As to the dimenſions of it, it ſhould be as large as the ground will permit; but never leſs, if poſſible, than thirty or forty acres; but this is to be underſtood of Lawns in large parks, for in gardens a Lawn of ſix or eight acres is a reaſonable ſize for gardens of a moderate extent, ten or twelve acres for thoſe of the largeſt ſize.

As to the ſituation of a Lawn, it will be beſt to be in the front of the houſe, and to lie open to the neighbouring country, and not pent up too much with trees.

If the houſe front the eaſt, or ſouth-eaſt, it will be moſt convenient, becauſe the rooms will be ſhaded in the afternoon, and ſo the objects to be viewed from the houſe will be much better ſeen, by the ſun's ſhining upon them at that time of the day; for if the beſt room of the houſe front the Lawn, as it always ſhould do, the afternoon being the moſt uſual time for people of faſhion to ſolace themſelves in ſuch rooms, the ſun will not be offenſive to thoſe rooms, nor will the proſpect be interrupted, but rendered more pleaſant; whereas, were it on the weſt ſide of the houſe, the ſun, by ſhining from the object, and directly againſt thoſe rooms, would, by both, hinder the proſpect, for the generality of proſpects are moſt pleaſant when the ſun ſhines upon the objects.

Beſides, there is another inconvenience, if the Lawn be on the weſt ſide of the houſe, it will give the more way to the weſt wind (which is commonly the greateſt) to injure the houſe, by its having a free paſſage to it.

If the Lawn be on the ſouth ſide of the houſe, it may do well enough, for the reaſons before-mentioned, for the ſun's rays being then darted obliquely, will not ſo much interrupt the proſpect, and the ſun ſhining moſt part of the day on that ſide of the houſe, will ſtill add to the beauty of that front, which ought to be the beſt front in the houſe, therefore a Lawn on that ſide will much help the proſpect of the houſe.

But the moſt deſirable aſpect for a Lawn is that of the ſouth-eaſt, which is generally the moſt favourable point in England; for as the ſun riſes upon the front of the houſe facing this point, ſo it will add a chearfulneſs to the rooms in the morning, and by noon the rays will be oblique to this front, and in the afternoon will have entirely left theſe apartments.

It will not be at all convenient to have the Lawn on the north ſide of the houſe, becauſe it will lay the houſe too open to the cold north winds, &c. therefore it will be more eligible to plant wilderneſſes and woods on the weſt and north ſides of the houſe, by way of ſcreen to it, provided theſe do not ſhut out agreeable objects.

As to the figure of the Lawn, ſome contend for an exact ſquare, others an oblong ſquare, ſome an oval, and others a circular figure; but neither of theſe are to be regarded, for it will be much better if contrived ſo as to ſuit the figure of the ground; and as there ſhould be trees planted for ſhade on the boundaries of the Lawn, ſo the ſides may be broken by irregular plantations of trees; for if there are not ſome good proſpects beyond the Lawn, it will be proper to have it bounded on every ſide by plantations, which may be brought round pretty near to each end of the houſe, ſo that perſons may ſoon get into ſhade, which is a very deſirable thing in hot weather; for where that is wanting, few perſons care to ſtir abroad when the ſun ſhines warm.

If in the plantations round the Lawn, the trees are placed irregularly, ſome breaking much forwarder on the Lawn than others, and not crowded too cloſe together, they will make a much better appearance than any regular plantations can poſſibly do; and if there are varieties of trees properly diſpoſed, they will have a good effect; but it ſhould be obſerved, that no other but thoſe which make a fine appearance, and that grow large, ſtrait, and handſome, ſhould be admitted here, as they are placed in the conſtant view from the houſe.

Many perſons have preferred the Lime-tree for this purpoſe, on account of their regular growth; but as the leaves of this tree often change their colour, and begin to fall very ſoon in autumn, occaſioning a great litter in the garden; and from the end of July the trees make but an indifferent appearance, ſo they are not to be eſteemed for theſe plantations.

The Elm, Oak, Beech, and Cheſtnut, among the deciduous trees, are to be preferred to all others, as they keep their leaves late in autumn; and theſe are all of them large growing trees, ſo are very proper for this purpoſe.

If there are ſome clumps of Evergreen trees intermixed with the deciduous trees in this plantation, if they are properly diſpoſed, it will add to the beauty, eſpecially in the winter ſeaſon; the beſt ſorts for this purpoſe are Lord Weymouth's Pine, the Silver and Spruce Firs, which will grow faſt, and become large trees; and as the two latter ſorts always grow pyramidically, ſo they will have a good effect to the ſight, if they are rightly placed, but they ſhould not be intermixed in the ſame clumps with the deciduous trees; but as theſe generally feather out their branches near the ground, they ſhould be planted where they do not obſtruct the view of any diſtant objects.

But as moſt perſons who take pleaſure in beautifying their ſeats in the country, are in haſte for ſhade, they generally plant the trees too cloſe together, and often in ſuch a manner as to render it difficult when the trees are advanced to reduce their number, without injury to the deſign; therefore thoſe trees ſhould be firſt planted, which are deſigned to remain, and then there may be ſome few others planted for preſent ſhade, which may afterward be taken away. When perſons who are beautifying their ſeats meet with full grown trees on the ſpot, it is a great pleaſure, for theſe ſhould not be deſtroyed, if they can poſſibly ſtand without prejudice.

LAWSONIA. Lin. Gen. Plant. 433. Henna. Ludw. 143.

The CHARACTERS are,

The flower has a ſmall permanent empalement, divided into four parts at the top. The flower is compoſed of four oval ſpear-ſhaped petals, which ſpread open, and eight ſlender ſtamina the length of the petals, which ſtand by pairs between them, terminated by roundiſh ſummits. It hath a roundiſh germen, ſupporting a ſlender permanent ſtyle, crowned by a headed ſtigma. The germen afterward becomes a globular capſule ending in a point, having four cells, filled with angular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's eighth claſs, intitled Octandria Monogynia, which includes thoſe plants whoſe flowers have eight ſtamina and one ſtyle.

The SPECIES are,

1. LAWSONIA (*Inermis*) ramis inermibus. Flor. Zeyl. 134. *Lawſonia whoſe branches have no ſpines.* Liguſtrum Ægyptiacum latifolium. C. B. P. 476. *Broad-leaved Egyptian Privet, called Alhenna, or Henna, by the Arabians.*
2. LAWSONIA (*Spinoſa*) ramis ſpinoſis. Flor. Zeyl. 134. *Lawſonia with prickly branches.* Rhamnus Malabaricus MAIL-ANSKI. Pluk. Alm. 38. tab. 220. *Malabar Buckthorn, called Mail-anſki.*

The firſt ſort grows naturally in India, Egypt, and other warm countries, where it riſes with a ſhrubby ſtalk eight or ten feet high. The branches come out by pairs oppoſite; theſe are ſlender, and covered with a whitiſh yellow bark, and garniſhed with oblong ſmall leaves of a pale green, ending in acute points, placed oppoſite. The flowers are produced in looſe bunches at the end of the branches; they are of a gray or dirty white colour, and are compoſed of four ſmall petals which turn backward at the top. The flowers are ſucceeded by roundiſh capſules with four cells, filled with angular ſeeds.

The leaves of this ſhrub are much uſed by the Egyptian women to colour their nails yellow, which they eſteem an ornament.

The ſecond ſort grows naturally in both Indies, for I have received ſpecimens of it from the Spaniſh Weſt-Indies, where it was found growing naturally in great plenty.

This riſes with a woody trunk eighteen feet high or more. The wood is hard and cloſe, covered with a light gray bark. The branches come out alternate, and are garniſhed with oblong oval leaves, which ſtand without order; and at the joints where the leaves are placed, come out ſingle, ſtrong, ſharp thorns. The flowers are produced in looſe bunches from the ſide of the branches; they are of a pale yellow colour, and of a diſagreeable ſcent; they have four petals, which ſpread open; between each of theſe are ſituated two pretty ſtrong ſtamina, terminated by roundiſh ſummits. After the flowers are paſt, the germen becomes a roundiſh capſule with four cells, including many angular ſeeds.

Theſe plants are both propagated by ſeeds, which ſhould be ſown on a hot-bed early in the ſpring, that the plants when they come up may have time to get ſtrength before winter. When the plants are fit to remove, they ſhould be each planted in a ſmall pot filled with light ſandy earth, and plunged into a hot-bed of tanners bark, where they muſt be ſcreened from the ſun till they have taken new root; then their treatment ſhould be the ſame as that of the Coffee-tree, with this difference only, not to let theſe plants have ſo much water; but eſpecially in the winter, during which ſeaſon it ſhould be given to them very ſparingly, for by over-watering theſe plants I have known many of them deſtroyed; theſe plants are too tender to thrive in the open air in England, ſo they muſt conſtantly remain in the ſtove, but in hot weather they ſhould have plenty of free air admitted to them.

LAYERS. Many trees and ſhrubs may be propagated by Layers, which do not produce ſeeds here, ſo are not eaſily increaſed by any other method.

This is to be performed by ſlitting the branches a little way upward, and laying them under the mould about half a foot; the ground ſhould firſt be well digged and made very light, and after they are laid they ſhould have a little water given them.

If they do not comply well in the laying of them down, they muſt be pegged down with a forked ſtick cut in form of a hook to keep them down; if the Layers have taken ſufficient root by the next winter, they muſt be cut off from the main plants, and planted in the nurſery, as is directed about ſeedlings.

Some twiſt the branch or bare the rind, and if it be out of the reach of the ground, they faſten a tub or baſket near the branch, which they fill with good mould, and lay the branch in it.

Laying of Trees.

This operation is thus performed:

1ſt, Take ſome of the moſt flexible boughs and lay them into the ground about half a foot deep in fine freſh mould, faſtening them down with forked ſticks, leaving them with the end of the Layer about a foot or a foot and a half out of the ground, and keep them moiſt during the ſummer ſeaſon, and they will probably have taken root and be fit to remove in autumn, and if they have not by that time taken root they muſt lie longer.

2dly, Tie a piece of wire hard round the bark of the bough, at the place you intend to lay in the ground, and twiſt the ends of the wire, ſo that they may not untie, and prick the place above the wire through the bark, with an awl in ſeveral places, and then lay it in the ground as before directed; this will often ſucceed when the other fails.

3dly, Cut a ſlit upwards at a joint, as is practiſed in laying of Carnations, which by gardeners is called tonguing the Layers.

4thly, Twiſt the part of the branch deſigned to lay in the ground like a withy, if it is pliable, and lay it into the ground as directed in the firſt way of laying.

5thly, Cut a circle almoſt round about the bough (that is deſigned to be laid) half an inch, at the place that is moſt convenient to lay into the ground, and manage it as is directed in the firſt method of laying.

The ſeaſon for laying hardy trees that ſhed their leaves is in October, but for ſuch as are tender in the beginning of March; for Evergreens, June or July are good ſeaſons.

Though Layers may be laid at any time in the year, yet the before-mentioned ſeaſons are moſt proper, for the reaſons following, becauſe they have the whole winter and ſummer to prepare and draw root; for at theſe times of the year the ſun has ſufficient power on the ſap of the tree to feed the leaf and bud, but has not power ſufficient to make a ſhoot.

And if that ſmall quantity of ſap that does ariſe be hindered, as it will by ſome of the preceding ways of laying, the leaves and buds will gently crave of the Layer, and by that means will prepare the Layer to take root, or put forth roots a little to maintain itſelf, finding it cannot have it from the mother plant. And therefore, becauſe it wants but little nouriſhment at that time of the year, it is better to lay Layers of trees, or to ſet cuttings than at other times, either in the autumn, when the ſap ſtirs but little, or in the ſpring when it begins to riſe, becauſe it is then apt to come too ſuddenly to draw ſap from the Layer, before the Layer has drawn or prepared for root; but for ſome ſorts the middle of ſummer is beſt.

However, the ſpring or ſummer may do well for ſmall plants, becauſe ſuch plants being but ſhort-lived draw root the quicker.

If you would lay young trees from a high ſtandard, the boughs of which cannot be bent down to the ground, then you muſt make uſe of Oſier baſkets, boxes, or pots, filled with fine mould, mixed with a little rotten Willow duſt, which will keep moiſture to aſſiſt the Layer in taking root; this baſket, box, &c. muſt be ſet upon a poſt or treſſel, &c. and the bough muſt

be laid according to either of the four firſt ways of laying, but too much head muſt not be left on, leſt that be injured by the wind, or by its own motion rub off the tender root; and the ſmaller the boughs are, the leſs way they ſhould be left out of the ground, and care muſt be taken to keep them clear from weeds.

The harder the wood of the tree is, the young ſhoots will take root beſt; but if the wood be ſoft, the older boughs will take root the beſt.

There are many kinds of trees and plants which will not put out roots from their woody branches, though laid down with the utmoſt care; yet if the young ſhoots of the ſame year are laid in July, they will often put out roots very freely, ſo that when any plants are found difficult to propagate by Layers in the common way, they ſhould be tried at this ſeaſon; but as theſe ſhoots will be ſoft and herbaceous, they muſt not have too much wet, for that will cauſe them to rot; therefore it will be a better method to cover the ſurface of the ground over the Layers with Moſs, which will prevent the ground from drying too faſt, ſo that a little water now and then will be ſufficient.

LEAVES. A Leaf is defined to be a part of a plant extended into length and breadth, in ſuch a manner as to have one ſide diſtinguiſhable from the other; they are properly the moſt extreme part of a branch, and the ornament of the twigs, and conſiſt of a very glutinous matter, being furniſhed every where with veins and nerves; one of their offices is, to ſubtilize and give more ſpirit to the abundance of nouriſhing ſap, and to convey it to the little buds.

We ſhall firſt conſider the diſtinctions which are made by botaniſts in their definitions of the ſhape and form of Leaves in their titles and deſcriptions of plants, and afterward conſider their uſes in vegetation.

The Leaf of a plant or tree is diſtinguiſhed from that of flowers, the firſt is called Folium in Latin, and the other Petalum; therefore what is to be underſtood here of Leaves, are thoſe which are ranged on the branches and ſtalks of plants, and have no connection with the flower.

Theſe Leaves are either ſimple or compound.

Simple Leaves are thoſe of which the foot-ſtalk or petiole ſupports but one, compound are thoſe of which the foot-ſtalk ſuſtains many Leaves or ſmall foliola.

Simple Leaves differ in reſpect to circumſcription, angles, ſinus, apices, margin, ſuperficies and ſubſtance; circumſcription conſiders the form of the circumference of Leaves where there are no angles or ſinuations; in which reſpect Leaves are,

Orbiculate, or round Leaves (*Orbiculatum*) are ſuch whoſe breadth are equal to their length, and every part of their edges equally diſtant from the center, as in fig. 1.

A roundiſh Leaf (*Subrotundum*) when the Leaf is nearly orbiculate, as in fig. 2.

An oval or egg-ſhaped Leaf (*Ovatum*) when the length of the Leaf exceeds the breadth, and the baſe or lower part of it forms a ſegment of a circle; but the upper extremity is not in proportion, but ſmaller, as in fig. 3.

An obverſe oval Leaf is one whoſe foot-ſtalk is fixed to its ſmaller end.

An oval or elliptic Leaf (*Ovale ſive ellipticum*) is one whoſe length exceeds its breadth, and both ends are narrower than the ſegments of circles, as fig. 4.

A parabolical Leaf (*Parabolicum*) is one whoſe length exceeds its breadth, and is narrowed from the baſe upward, ſo becomes half egg-ſhaped, fig. 5.

A ſpatulated Leaf (*Spatulatum*) is of a roundiſh figure, but narrow at the baſe, and linearly lengthened, fig. 6.

A wedge-ſhaped Leaf (*Cuneiforme*) is one whoſe length exceeds the breadth, and is narrowed to the baſe, fig. 7.

An oblong Leaf (*Oblongum*) is one whoſe length greatly exceeds its breadth, and each extremity is narrower than a ſegment of a circle, fig. 8.

A ſpear-ſhaped or ſpear-pointed Leaf (*Lanceolatum*) is oblong, and grows narrower toward both ends, and terminates in a point, fig. 9.

A linear Leaf (*Lineare*) is one whoſe two ſides run almoſt parallel to each other; they are uſually narrow, and ſomewhat broader in the middle than at the two ends, fig. 10.

A chaffy Leaf (*Aceroſum*) is when the linear Leaf ſtays on the tree, and is evergreen, as in the Fir, Yew, &c. fig 11.

An awl-ſhaped Leaf (*Subulatum*) is one which is linear below, but gradually contracting towards the top, fig. 12.

A triangular Leaf (*Triangulare*) is when the diſk is ſurrounded by three prominent angles, fig. 13.

A quadrangular and quinquangular Leaf, only differ from the former in the number of their ſides or angles, fig. 14.

A deltoide Leaf is one with four angles, of which thoſe of the extremities are farther diſtant from the center than thoſe of the ſides, fig. 15.

A round Leaf (*Rotundum*) is one without any angles.

A ſinus (*or Hollow*) is uſed to expreſs thoſe openings or cavities in Leaves which diſtinguiſh them into parts.

A kidney-ſhaped Leaf (*Reniforme*) is of a roundiſh figure, and hollowed a little at the baſe, but without any angles, fig. 16.

A heart-ſhaped Leaf (*Cordatum*) when they are ovate and hollowed a little at the baſe, but without any angles, fig. 17.

A moon-ſhaped Leaf (*Lunulatum*) is a roundiſh Leaf hollowed at the baſe, with two curvilinear angles in form of ſickles, fig. 18.

An arrow-ſhaped Leaf (*Sagittatum*) is one which is triangular, and hollowed at the baſe for the inſertion of the foot-ſtalk, fig. 19.

A heart arrow-ſhaped Leaf (*Cordatum-ſagittatum*) is like the former, but the ſides of it are convex, fig. 20.

A ſpear-pointed Leaf (*Haſtatum*) is of a triangular form, the ſides and baſe of which are hollowed, and the angles ſpreading ſo as to reſemble a Leaf compoſed of three parts, fig. 21.

A fiddle-ſhaped Leaf (*Panduræ forme*) is oblong, larger at both ends than in the middle, the two ſides being compreſſed like the body of a violin, fig. 22.

A cleft or divided Leaf (*Fiſſum*) is divided by linear ſinuations and ſtrait margins; from the number of the diviſions they are termed a two, three, or many pointed leaf, fig. 23.

A lobated Leaf (*Lobatum*) is one which is divided almoſt to the midrib, into parts which ſtand diſtant from each other, and have convex margins according to the number of theſe parts; it is called bilobed, trilobed, or quadrilobed, &c. fig. 24.

A handed Leaf (*Palmatum*) is one which is divided into ſeveral longitudinal ſegments down to the baſe, where they are united, and reſemble an open hand, fig. 25.

A wing-pointed Leaf (*Pinnatifidum*) is one which is tranſverſly divided into oblong horizontal diviſions, fig. 26.

A lyre-ſhaped Leaf (*Lyratum*) is one which is divided into tranſverſe ſegments, the upper ones being larger than the lower, which are farther aſunder, fig. 27.

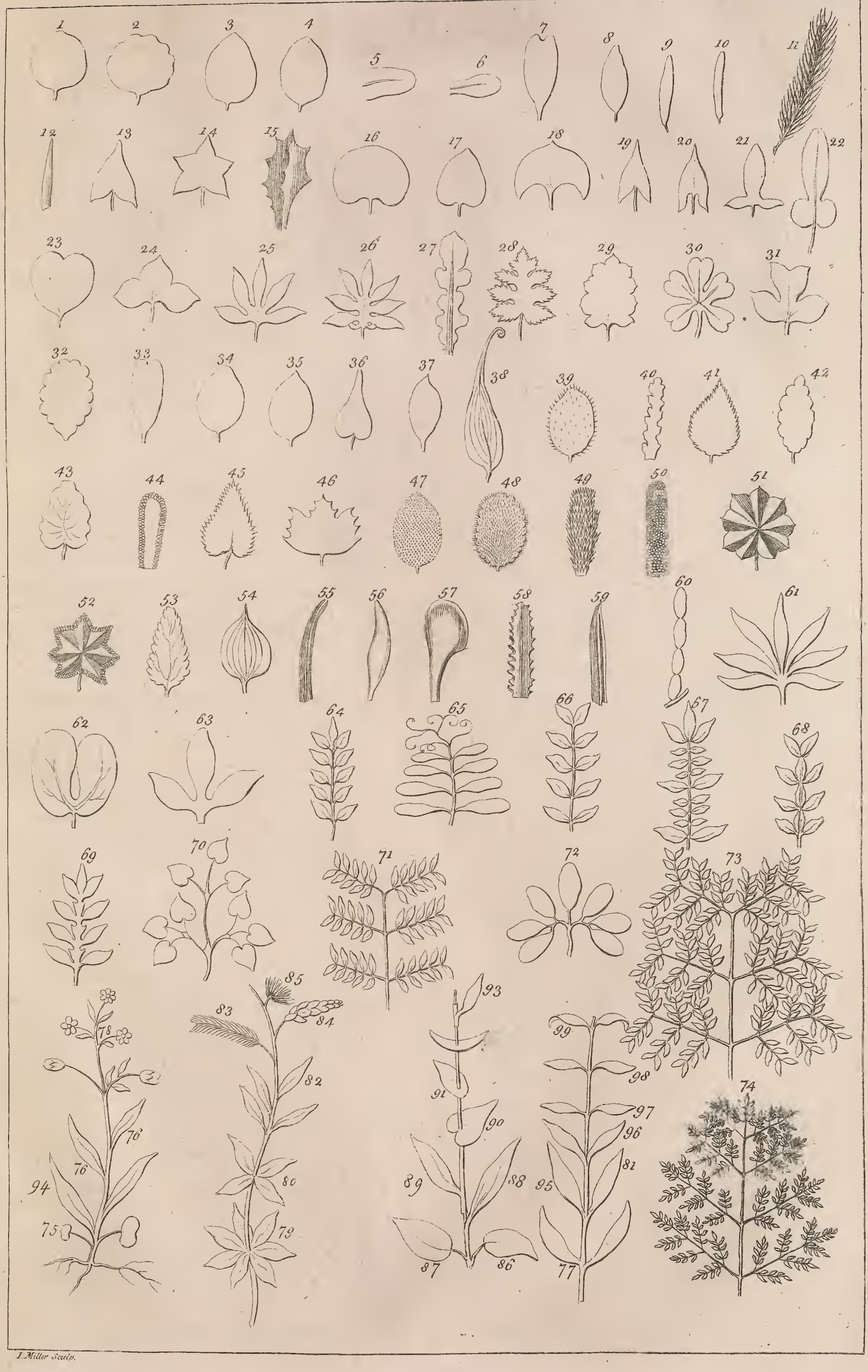
A laciniated or jagged Leaf (*Laciniatum*) is one whoſe ſides are variouſly divided into jags, which are again divided without any order, fig. 28.

A ſinuated Leaf (*Sinuatum*) is one which has many ſinuations on its ſides, but is not indented or notched on its edges, fig. 29.

An indented ſinuated Leaf (*Dentato-ſinuatum*) is one like the former, but the ſide lobes are of a linear figure.

A divided Leaf (*Partitum*) is one which is divided into many parts to the baſe, ſo as to appear like many Leaves till cloſely examined. Theſe are called bipartite, tripartite, &c. according to the number of parts, fig. 30.

An entire Leaf (*Integrum*) is one that is undivided, and has ſmooth edges.



I. Miller Sculp.

Apex tip, is the extremity in which the Leaf terminates; Leaves in reſpect to theſe are termed,
A truncated Leaf (*Truncatum*) is one whoſe ſummit ſeems as though it were cut off by a ſtrait line, in a tranſverſe direction.
A bitten Leaf (*Præmorſum*) is one which is terminated by very blunt unequal cuts, fig. 31.
A blunt Leaf (*Retuſum*) is one whoſe extremity is terminated by an obtuſe ſinus, fig. 32.
A nicked Leaf (*Emarginatum*) is one whoſe extremity is a little notched, fig. 33.
An obtuſe Leaf (*Obtuſum*) is one whoſe point is terminated bluntly, or by a ſegment of a circle, fig. 34.
A ſharp Leaf (*Acutum*) is one whoſe point is terminated in an acute angle, fig. 35.
An acuminated Leaf (*Acuminatum*) is one which is terminated by an awl-ſhaped point, fig. 36.
A pointed obtuſe Leaf (*Obtuſum acumine*) is one whoſe upper part is rounded, but draws to an acute point, fig. 37.
A claſper Leaf (*Cirrhoſum*) is one which terminates with a tendril, fig. 38. as in Glorioſa, Flagellaria, &c.
The margin of a Leaf is the outermoſt boundary of its ſides, excluſive of its diſk or middle, ſo in reſpect to their margin are,
A ſpinous Leaf (*Spinoſum*) is one whoſe edge or border ends with hard ſtiff prickles, fig. 39.
An indented Leaf (*Dentatum*) is one whoſe edge has horizontal points of the ſame conſiſtence with the Leaf, but are ſeparated from each other, fig. 40.
A ſawed Leaf (*Serratum*) is one whoſe edges are ſharply notched like the teeth of a ſaw, which make acute angles bending toward the top, fig. 41.
A backward ſawed Leaf (*Retrorſo-ſerratum*) is one whoſe ſerratures or teeth, are bent toward the baſe of the Leaf.
A double ſawed Leaf (*Duplicato-ſerratum*) is one whoſe edges are ſawed with larger teeth, and the edges of theſe are again ſawed in the ſame manner.
A notched Leaf (*Crenatum*) is one whoſe edges are indented with angles, which neither turn toward the point nor baſe. When theſe indentings terminate obtuſely, it is called obtuſe crenated; when acutely, acute crenated; when the indentures are again indented, it is called double crenated (*Duplicato-crenatum*,) fig. 42.
A bowed or ſerpentine Leaf (*Repandum*) is one whoſe margin has ſeveral obtuſe ſinuſes which are inſcribed with the ſegments of circles, fig. 43.
A cartilaginous or griſly Leaf (*Cartilagineum*) is one whoſe edge is furniſhed with a firm cartilage of a different ſubſtance with the Leaf, fig. 44.
A ciliated Leaf (*Ciliatum*) is one whoſe edge is ſet with parallel hairs, ſo as to reſemble the hairs of the eye-lid, fig. 45.
A torn Leaf (*Laceratum*) is one whoſe edges are cut into ſegments of irregular ſhapes.
A gnawed Leaf (*Eroſum*) is one which is ſinuated, and the ſinuſes have their edges again indented with ſmall obtuſe ſinuations, fig. 46.
A very entire Leaf (*Integerrimum*) is one whoſe margin is entirely free of all notches or indentures.
The ſurface (*Superficies*) is the outſide, or what covers the diſk of the Leaf, and reſpects both the upper and under ſurface, ſo are termed,
A viſcous Leaf (*Viſcidum*) has its ſuperfices covered with a clammy moiſture which is not fluid, but ſticky.
A downy Leaf (*Tomentoſum*) is one whoſe ſurface is covered with a nap of interwoven hairs ſo ſhort and fine, that the eye does not diſtinguiſh them ſingly, though the Leaf is evidently downy both to the ſight and touch, fig. 47.
A woolly Leaf (*Lanatum*) is one whoſe ſurface is covered with a kind of woolly ſubſtance, like a ſpider's web, as in Salvia, Sideritis, &c.
A hairy Leaf (*Piloſum*) has its ſurface furniſhed with long diſtinct hairs, fig. 48.
A rough or ſtinging Leaf (*Hiſpidum*) is one whoſe ſurface is covered with rigid hairs, which either ſting or prick on being touched, fig. 49.
A rough Leaf (*Scabrum*) is one whoſe ſurface has on it ſeveral little irregular prominences.
A prickly Leaf (*Aculeatum*) is one whoſe ſurface is covered with ſtrong ſharp points or thorns, which adhere lightly to the ſurface.
A ſtreaked or channelled Leaf (*Striatum*) is when its ſurface has a number of parallel longitudinal furrows.
A pimpled Leaf (*Papilloſum*) is one whoſe ſurface has many little roundiſh protuberances like nipples or bladders, fig. 50.
A punctuated Leaf (*Punctatum*) is one whoſe ſurface has many hollow points diſperſed over it.
A bright or ſplendent Leaf (*Nitidum*) is one whoſe ſurface is ſmooth and ſhining, as if poliſhed by art.
A plaited Leaf (*Plicatum*) is one which has ſeveral angular riſings and hollows towards its borders, as if folded up, as in Alchimilla, fig. 51.
A waved Leaf (*Undulatum*) is one whoſe ſurface toward the edges riſes and falls convexly like the waves of the ſea.
A curled Leaf (*Criſpum*) is when the circumference of the Leaf grows larger than the diſk will admit, ſo that the whole ſurface is raiſed in waves, fig. 52.
A rough leaf (*Rugoſum*) is one whoſe veins are contracted and ſunk below the diſk, and the intermediate fleſhy parts riſe in irregular forms, ſo as to appear rough, fig. 53.
A hollow or concave Leaf (*Concavum*) is one whoſe margin contracts, ſo is leſs than the middle, and is ſunk down or hollowed.
A veined Leaf (*Venoſum*) is one whoſe veins are branched, and appear to the naked eye.
A convex Leaf (*Convexum*) is one whoſe middle riſes into a protuberant form.
A nervous Leaf (*Nervoſum*) is when the veins are extended lengthways from the baſe toward the ſummit without branching, fig. 54.
A coloured Leaf (*Coloratum*) is one which has other colours than green.
A ſmooth Leaf (*Glabrum*) is one whoſe ſurface is ſmooth, without any inequalities.
The ſubſtance of a Leaf reſpects the conditions of its ſides, in this reſpect Leaves are,
A taper Leaf (*Teres*) is one of a thick ſubſtance, and for the moſt part of a cylindrical form.
A half taper Leaf (*Semicylindraceum*) is one which is of a cylindrical form, flatted on one ſide.
A hollow Leaf (*Tubuloſum*) is one which is hollow like a pipe, as thoſe of the Onion.
A fleſhy Leaf (*Carnoſum*) is one that is ſucculent or full of pulp.
A compreſſed Leaf (*Compreſſum*) is one whoſe marginal ſides are preſſed, ſo that the ſubſtance of the Leaf is larger than the diſk.
A plane Leaf (*Planum*) is one whoſe ſurfaces are every where parallel.
A gibbous Leaf (*Gibbum*) is one which is convex on both ſides, the middle being fuller of pulp.
A depreſſed Leaf (*Depreſſum*) is one whoſe diſk is more depreſſed than the ſides.
A guttered Leaf (*Canaliculatum*) is one which has a longitudinal deep furrow running through the middle of the Leaf, and is almoſt cylindrical, fig. 55.
A double-faced Leaf (*Ancipites*) is one whoſe diſk is convex, and has two prominent longitudinal angles.
A ſword-ſhaped Leaf (*Enſiforme*) is one with thin edges, with a prominent rib running from the baſe to the point in the middle.
A faulchion or ſcymiter-ſhaped Leaf (*Acinaciforme*) is one which is fleſhy and compreſſed, with one of its edges convex and narrow, the other thick and ſtrait, fig. 56.
An ax-ſhaped Leaf (*Dolabriforme*) is one which is roundiſh, obtuſe, and compreſſed, gibbous on the outſide, the inſide ſharp-edged and taper below, fig. 57.
A tongue-ſhaped Leaf (*Linguiforme*) is linear, fleſhy, and obtuſe, convex on the under ſide, and has often cartilaginous edges, fig. 58.

A two-

A two-edged Leaf (*Anceps*) is one which has two prominent angles, running lengthways on a convex diſk.
A three-cornered Leaf (*Triquetrum*) has three longitudinal plain ſides like an awl-ſhaped Leaf.
A three-edged Leaf (*Trigonal*) is much like the former, but in this the ribs are ſharp and membranaceous, the ſurface of the Leaf being channelled. When a Leaf has four or five angles, it is called tetragonal and pentagonal, &c.
A furrowed Leaf (*Sulcatum*) is one that has ſeveral ridges running lengthways, which have obtuſe ſinuſus, fig. 59.
A keel-ſhaped Leaf (*Carinatum*) is one that has the under part of the diſk prominent the whole length, and the upper concave like the keel of a boat.
A membranaceous Leaf (*Membranaceum*) is one wholly compoſed of membranes, without any apparent pulp between.
A compound Leaf (*Compoſitum*) in general means one, which is formed of ſeveral ſmall Leaves ſtanding upon one foot-ſtalk, but theſe Leaves are diviſible again to the ſtructure and poſition of the ſmall Leaves.
1ſt, Into ſuch as are properly and diſtinctly called compound Leaves; 2dly, the decompound; 3dly, the ſupradecompound, of each of theſe in its place.
In deſcribing theſe kinds of Leaves, the whole Leaf which is the reſult of the combination, is conſidered as one Leaf, called (*Folium*) and the ſmall leaves which together compoſe it (*Folioli*) or lobes.
A ſimple compound Leaf, is one whoſe ſimple foot-ſtalk bears more than one Leaf.
A jointed one (*Articulatum*) is when one Leaf grows out of the point of another, fig. 60.
A fingered Leaf (*Digitatum*) is one which is compoſed of ſeveral ſmall Leaves joining to one foot-ſtalk at their baſe, ſpreading open like the fingers of a hand, fig. 61.
A two-lobed Leaf (*Binatum*) is one with two ſmall Leaves on one foot-ſtalk, fig. 62.
A three-lobed Leaf (*Ternatum*) is one with three ſmall leaves, which is frequently called a trifoliate Leaf, fig. 63.
A cinquefoil Leaf (*Quinatum*) has five ſmall Leaves on the ſame foot-ſtalk.
A winged Leaf (*Pinnatum*) is one which has many ſmall Leaves, ranged on each ſide a ſingle foot-ſtalk like wings; of theſe there are ſeveral kinds.
An unequal winged Leaf (*Pinnatum cum impare*) is a winged Leaf, terminated by an odd lobe or (*Folioli*) fig. 64.
A claſper-winged Leaf (*Pinnatum cum cirrho*) is a winged Leaf ending with a tendril or claſper, fig. 65.
An abrupt-winged Leaf (*Abruptum*) is a winged Leaf not terminated by an odd lobe or claſper, fig. 66.
An oppoſite-winged Leaf (*Oppoſite pinnatum*) is when the ſmall Leaves or lobes are placed oppoſite on the midrib.
An alternate-winged Leaf (*Alternatim pinnatum*) is when the ſmall Leaves ſtand alternate.
An interrupted-winged Leaf (*Interruptè pinnatum*) is when there are ſmaller lobes intermixed with larger upon the ſame midrib, fig. 67.
A jointed-winged Leaf (*Articulatè pinnatum*) is when the common foot-ſtalk is jointed, fig. 68.
A running-winged Leaf (*Decurſivè pinnatum*) is one whoſe ſmall Leaves run along the foot-ſtalk from one to another, fig. 69.
A conjugated Leaf (*Conjugatum*) is one which has but two ſmall Leaves on the ſame foot-ſtalk.
We next proceed to the decompounded Leaves.
A decompounded Leaf (*Decompoſitum*) is one whoſe foot-ſtalk is once divided, and joins together many ſmall Leaves.
A double conjugated Leaf (*Bigeminatum*) is one whoſe foot-ſtalk divides in forks, and connects four ſmall Leaves on the top, or it is compoſed of two conjugations.
A double trifoliate Leaf (*Biternatum*) is one whoſe foot-ſtalk is divided, and each diviſion ſuſtains three ſmall Leaves, fig. 70.
A double-winged Leaf (*Bipinnatum*) is one whoſe foot-ſtalk is divided, and theſe diviſions have ſmall Leaves ranged on their ſide like wings, fig. 71.
A foot-ſhaped or branched Leaf (*Pedatum*) is one whoſe foot-ſtalk is divided, and has ſome ſmall Leaves placed on the inner ſide, as in Paſſiflora and Arum, fig. 72.
A greater compounded Leaf (*Supra decompoſitum*) is one whoſe foot-ſtalk is many times divided, and each diviſion is garniſhed with ſmall Leaves.
A triternate Leaf (*Triternatum*) is one whoſe foot-ſtalk connects three double trifoliate Leaves.
A triple-winged Leaf (*Tripinnatum*) is one compoſed of ſeveral double-winged Leaves; if theſe are terminated by two ſmall Leaves, they are ſaid to be abrupt, fig. 73. but when they are terminated by an odd one, they are called an irregular, triple, winged Leaf, fig. 74.
We next come to conſider the diſtinctions of Leaves from their place, poſition, inſertion, or their direction, when joined to the other parts of plants.
A ſeed Leaf (*Seminale*) is the firſt Leaf of the plant, and is what former writers called cotyledones; theſe are different in form and ſubſtance from the other Leaves, fig. 75.
A bottom Leaf (*Radicale*) is one whoſe foot-ſtalk riſes immediately from the root.
An upper or ſtalk Leaf (*Caulinum*) is one which grows from the ſtalk of the plant, fig. 76.
An axillary Leaf (*Axillare*) is one which grows from the inſertions of the branches, fig. 77.
A flower Leaf (*Florale*) is one that is inſerted near the flower, and never appears but with it, fig. 78.
A ſtarry Leaf (*Stellate*) fig. 79. or whorled Leaf (*Verticillata*) is when ſeveral Leaves are diſpoſed in whorls round the ſtalk, fig. 80.
Oppoſite Leaves (*Oppoſita*) are when thoſe upon the ſtalks ſtand by pairs on each ſide, fig. 81.
Alternate Leaves (*Alterna*) are when they ſtand alternate above each other, fig. 82.
Sparſed Leaves (*Sparſa*) are ſuch as ſtand without order over the whole plant.
Cluſter Leaves (*Conferta*) are ſuch as come out from the ſide of the branches in cluſters, and are ſo cloſe to one another, that it is not eaſy to diſcover their exact ſituation, fig. 83.
Imbricated Leaves (*Imbricata*) are ſuch as are placed over each other like tiles on a houſe, or the ſcales of fiſhes, fig. 84.
Faſciculated Leaves (*Faſciculata*) are ſuch as grow in cluſters from the ſame point, fig. 85.
Diſticha is when the Leaves are ranged along only upon two ſides of the branches, as in the Fir-tree.
A target or ſhield-ſhaped Leaf (*Peltatum*) is one whoſe foot-ſtalk is fixed to the diſk, and not to the baſe or edge of the Leaf, fig. 86.
Petiolatum is when the foot-ſtalk is inſerted to the baſe of the margin, fig. 87.
Seſſile is when the Leaf ſits cloſe to the ſtalk or branch, and has no foot-ſtalk, fig. 88.
A running Leaf (*Decurrens*) is when the Leaf adheres to the ſtalk or branch, and is extended along the ſtalk from the baſe, ſo as to form a leafy border on each ſide the ſtalk, fig. 89.
Amplexicaule is when the baſe of the Leaf environs or embraces the ſides of the ſtalk entirely, fig. 90.
Semiamplexicaule, is when the baſe of the Leaf reach but half round the ſtalk.
A perfoliate Leaf (*Perfoliatum*) is one which is perforated by the ſtalk or branch, which do not touch the margin, fig. 91.
Connatum, is when the two oppoſite Leaves cohere at their baſe, ſo as to form one body embracing the ſtalk, fig. 92.
Vaginans, is when the baſe of the Leaf forms a kind of cylinder, embracing the ſtalk like a ſheath, as in Corn, Graſs, fig. 93.
The direction of Leaves.
An adverſe Leaf (*Adverſum*) is one whoſe ſides reſpect the meridian and not the heavens, as the Ginger, &c.

An oblique Leaf (*Obliquum*) is when the baſe of the Leaf regards the ſky, and the ſummit the horizon.
An inflexed or incurved Leaf (*Inflexum*) is one which grows in form of a bow, turning its point toward the ſtalk again, fig. 94.
Adpreſſum, is when the diſk of the Leaf approaches near the ſtalk.
An erect Leaf (*Erectum*) is one ſo ſituated as to make a very acute angle with the ſtalk, fig. 95.
Patens, is when the Leaf does not make ſo acute an angle with the ſtalk as the former, and yet does not ſtand horizontal, fig. 96.
An horizontal Leaf (*Horizontale*) is one which ſtands perfectly at right angles with the ſtalk, fig. 97.
A reclined Leaf (*Reclinatum*) is one whoſe ſummit is lower than the baſe, fig. 98.
A rolled Leaf (*Revolutum*) is one whoſe upper part is rolled downward, fig. 99.
A dependent Leaf (*Dependens*) is one whoſe ſummits point to the earth.
A rooting Leaf (*Radicans*) is one which puts out roots.
A floating Leaf (*Natans*) is one which floats on the ſurface of the water, as the Water Lily, &c.
Demerſum, is uſed to expreſs a Leaf ſunk below the ſurface of the water.
Having explained the ſeveral forms of Leaves, by which botaniſts diſtinguiſh them, and alſo their poſition, both in regard to the other parts of the tree, or plant, and that of the earth, we ſhall next proceed to their ſtructure and uſes; for theſe were not deſigned by the wiſe Creator only for ornament, but they are of more important uſe in vegetation, and are as variouſly conſtructed in their ſeveral parts, as their ſeveral uſes for which they are deſigned.
Some plants have very thick fleſhy Leaves, whoſe pulpy ſubſtance is always moiſt; theſe are ſuch plants as naturally grow upon dry barren rocky places, and for the moſt part are natives of warm countries; and as they perſpire very little in compariſon of moſt other plants, they are adapted to grow in ſuch places where they can receive very little nouriſhment from the earth. Moſt of the Leaves of theſe plants have a thin compact ſkin over their ſurface, with very ſmall minute pores, whereby the deſcending moiſture is thrown off, which, if admitted into the ſubſtance of the Leaves, or ſtalks, would in a very ſhort time cauſe a mortification, and deſtroy the plant.
The Leaves of all thoſe trees and ſhrubs which continue their verdure all the year, have alſo a thin compact ſkin or cover over their ſurfaces, as is eaſily diſcovered by macerating them in water, in order to ſeparate the parenchyma from the veſſels of the leaves, which cannot be effected in any of theſe Evergreens, till the thin parchment-like cover is taken off; theſe trees and ſhrubs are found, by experiment, to imbibe and perſpire but little in the ſame ſpace of time, when compared with the deciduous trees and ſhrubs; and it is principally owing to this cloſe covering, as alſo to the ſmall proportion of moiſture contained in their veſſels, that they retain their verdure, and continue through the winter on the trees. The nutritive juices of theſe plants always abound more or leſs with an oily or terebinthinous quality, which ſecures them from the injury of froſt, ſo that many of theſe evergreen trees are adapted to grow in the coldeſt parts of the habitable world.
In all the Leaves of trees and plants which I have examined, there are two orders of veins or nerves, one belonging to each ſurface; and I have generally obſerved, that the lower lamina or under ſide of the Leaf, had the ramifications larger, and were capable of admitting a liquid to paſs through them, which thoſe of the upper ſurface would not; theſe two orders of veins are inoſculated at ſeveral places, but not ſo cloſely connected, but that they may be eaſily ſeparated, after they have been macerated in water a proper time, for ſome Leaves require a much longer time than others, to render the parenchyma ſoft enough to ſeparate eaſily from the veins without tearing them.

Theſe two laminæ, or orders of veins, are ſuppoſed to be deſtined for different purpoſes; the upper lamina is thought to be air-veſſels, or trachæ, through which the perſpiring matter is protruded, and by which the air is inſpired; that theſe are pores through which that ſubſtance paſſes, which is thrown out of the plants, is pretty evident; for the clammy ſubſtance which is commonly called honey-dew, is always found ſticking to the upper ſurface of Leaves, from whence many have ſuppoſed that this ſubſtance fell from above, and lodged upon the Leaves in the night. This is the Manna which is collected from Aſh-trees in Calabria, and from the Alhagi in Perſia, &c. and is no other than the nutritive juices, or a ſubſtance ſeparated from that, which iſſues from the pores of the Leaves, and is concreted on the ſurface of the Leaves by the cold air; but whenever this is found in quantity upon the Leaves, it is a ſure ſign of a diſeaſed plant.
The lower lamina of veins are ſuppoſed to be deſtined for another purpoſe, which is that of receiving, preparing, and conveying the moiſture imbibed from the riſing vapours of the earth, by which trees and plants are greatly nouriſhed; and for this uſe we ſee how differently the two ſurfaces are formed; the upper one is commonly ſmooth and lucid, and the under is frequently covered with hairs, or a ſoft down, the better to ſtop and detain the riſing vapours, and tranſmit them to the inner veſſels; and where the ſtructure of the Leaves are different, it is found by experience, that their functions alter; for thoſe Leaves, whoſe upper ſurfaces are garniſhed with down or hairs, are found to be the receivers and conveyers of the moiſture, and not the under ones, as in the other plants.
If the ſurfaces of theſe Leaves are altered, by reverſing the branches on which they grow, the plants are ſtopped in their growth, until the foot-ſtalks are turned, and the Leaves recover their former poſition. This ſhews how neceſſary it is to ſupport all thoſe weak ſhoots of plants, which are naturally diſpoſed for upright growth, and that either twine about the neighbouring trees for ſupport, or that put out claſpers, by which they take hold of whatever trees or plants grow near them, and are thereby ſupported; and, on the contrary, how abſurd is that practice of tying up the ſhoots of thoſe plants which are naturally diſpoſed to trail upon the ground; for, in both theſe caſes, nature is reverſed, and conſequently the growth of both ſorts of plants is greatly retarded.
This is one of the great functions for which the Leaves of trees and plants are deſigned; but, beſides this, there are others of equal importance to the well-being of plants and fruits; the firſt is that of the foot-ſtalks of Leaves nouriſhing and preparing the buds of the future ſhoots, which are always formed at the baſe of theſe foot-ſtalks, and during the continuance of the Leaves in perfect health, theſe buds increaſe in their magnitude, and, in the deciduous trees, are brought to maturity before the foot-ſtalks ſeparate from the buds in autumn; but if by accident the Leaves are blighted, or if the entire ſurface of the Leaves are cut off, and the foot-ſtalks are left remaining, yet the buds will decay, or not arrive to their proper ſize, for want of that nouriſhment which is conveyed to them from the Leaves; ſo that whenever trees are diveſted of their Leaves, or thoſe Leaves are cut, or otherwiſe impaired, though it may in either caſe happen when the buds may be nearly formed; yet if it is before the foot-ſtalks ſeparate naturally from the branches, the future ſhoots will be weakened in proportion to the time when this is done; therefore, as from all the experiments which have been made in order to know how ſerviceable the Leaves of trees and plants are to their well-being, it has been found, that where the plants have been diveſted of their Leaves, or their Leaves have been eaten, or cut, during their growth, the plants have been remarkably weakened thereby. This ſhould teach us not to pull, or cut off the Leaves of trees, or plants, on any account, while they retain their verdure or are in

health. As alſo how abſurd that common practice is, of feeding down Wheat in the winter and ſpring with ſheep; for by ſo doing, the ſtalks are rendered very weak, and the ears are in proportion ſhorter; nor are the grains of Corn ſo plump and well nouriſhed, as that which is not fed down upon the ſame ground: this is a fact which I can aſſert from many years experience; for when Corn or Graſs is fed down cloſe to the root, the ſucceeding blades will be much finer than if the firſt Leaves had been left remaining; which is evident from all ſheep paſtures, where the Graſs is much finer and ſhorter than in other places; as alſo upon lawns and bowling-greens, where the Graſs is often mowed, the blades will be rendered finer in proportion to the frequency of mowing it, yet the ſpecies of Graſs is the ſame with that on the richeſt paſtures; ſo that although this may be a deſirable thing for lawns, &c. in gardens, yet where regard is had to the produce, this ſhould be avoided.

Beſides theſe, there are other uſes for which Leaves are deſigned, one of which is that of ſhading the buds for the future ſhoots from the ſun, which would exhale and dry up all their moiſture, as alſo the ſhading of the young fruit, which is abſolutely neceſſary during the time of their growth; for I have ſuſpended the Leaves of trees which were growing againſt walls, ſo as to expoſe the fruit to the ſun, and not taken any of them off the branches, yet I have always found thoſe fruits ſo expoſed, have been greatly ſtinted in their growth, and have never arrived to near the ſize of others above and below them on the ſame branches, nor were they ſo well taſted, or replete with juice.

In making this experiment, I was as careful as poſſible not to reverſe the ſurfaces of the Leaves, having been thoroughly convinced, from many repeated experiments, how prejudicial that is to all plants; but notwithſtanding this precaution, the event was as before-mentioned.

Another principal uſe of the Leaves is to throw off by tranſpiration, what is unneceſſary for the growth of the plants, anſwering to the diſcharge made by ſweat in animal bodies; and as plants receive and tranſpire much more, in equal time than large animals, ſo it appears how neceſſary the Leaves are to preſerve the plants in perfect health; for it has been found by the moſt exact calculations, made from repeated experiments, that a plant of the Sun-flower receives and perſpires, in twenty-four hours, ſeventeen times more than a man.

As naturaliſts have generally aſcribed a four-fold uſe to Leaves, I ſhall beg leave to mention them here, and then ſhall give an account of the moſt accurate experiments which have been made to aſcertain the truth of their hypotheſes.

1. Chiefly, that they do in the ſpring time receive the crude humours into themſelves, divide them very minutely, and move them ſtrongly in the utricles, and perhaps draw in from the air what is neceſſary, though unknown to us, and carry back great plenty of elaborate juice to the plant.

2. That there may be a tranſpiration of what is unprofitable, anſwering to the diſcharge made by ſweat; for ſometimes thoſe excretory veſſels of the Leaves are ſo overcharged by the great plenty of diſtending humour [juice,] that they burſt in the middle, and let go the more ſubtile parts; nor is it ſeldom, that, in a hot ſeaſon, great plenty of juices are this way diſcharged and imbibed. Thus Manna is found to exſude [ſweat forth] from the Leaves of certain trees, if a cold night ſhould follow a hot day; and the ſame thing frequently happens in divers other plants and trees, as we learn from the bees flying to the Lime-tree, that they may gather that gumous ſubſtance from their Leaves; and it is from the ſurfaces of the Leaves, as well as from the flowers, thoſe animals collect their honey; but if the heat ſhould be leſs, all the ſuperfluous humours, except thoſe which, perhaps, are tranſmitted by inſenſible tranſpiration thro' the arterial veſſels, exhaling naturally, are ſeen to return into the trunk.

3. That the bibulous veſſels, dried by the diurnal heat, and for this reaſon to be compared to veins, may imbibe, in the night-time eſpecially, thoſe watery parts, which, among others, lie hid in the air under the form of a very thin dew, and ſo make amends for the loſs made by the arteries, by the new moiſture received.

4. Laſtly, the Leaf ſerves chiefly for this purpoſe, that it may keep and nouriſh the eye, or gem, until the gem, by degrees growing out to a greater bulk, preſſes together the veſſels of the foot-ſtalk, from whence the humour is by little and little ſtopped in the Leaf, till it cannot any more return to the foot-ſtalk; which, by the ceaſing of the afflux and reflux of the nutritive juice, grows putrid, whence a conſumption being cauſed, the Leaf dies, and falls off, which is the chief cauſe of the falling of the Leaves in autumn.

The Rev. Dr. Hales, in his excellent Treatiſe of Vegetable Statics, ſpeaking of the perſpiration of plants, gives an account of the following experiments, viz.

That in July or Auguſt he cut off ſeveral branches of Apple-trees, Cherry-trees, Pear-trees, and Apricot-trees, two of a ſort; they were of ſeveral ſizes, from three to ſix feet long, with proportional lateral branches, and the tranſverſe cut of the largeſt part of the ſtems was about an inch diameter.

That he ſtripped off the Leaves of one bough of each ſort, and then ſet their ſtems in ſeveral glaſſes, pouring in known quantities of water.

The boughs with Leaves on them imbibed ſome fifteen ounces, ſome twenty, twenty-five, or thirty, in twelve hours day, more or leſs, in proportion to the quantity of Leaves they had, and when he weighed them at night, they were lighter than in the morning. While thoſe without Leaves imbibed but one ounce, and were heavier in the evening than in the morning, they having perſpired little.

The quantity imbibed by thoſe with Leaves decreaſed very much every day, the ſap-veſſels being probably ſhrunk at the tranſverſe cut, and too much ſaturate with water, to let any more paſs, ſo that uſually in four or five days the Leaves faded and withered much.

He adds, that he repeated the ſame experiments with Elm branches, Oak, Oſier, Willow, Sallow, Aſpen, Currant, Gooſeberry, and Filbert branches, but none of theſe imbibed ſo much as the foregoing, and ſeveral ſorts of Evergreens very much leſs.

He adds alſo another experiment: That on the 15th of Auguſt, he cut off a large Pippin with two inches ſtem, and its twelve adjoining Leaves: that he ſet the ſtem in a little phial of water, which imbibed and perſpired in three days one third of an ounce.

And that at the ſame time he cut off from the ſame tree another bearing twig of the ſame length, with twelve Leaves, no Apple on it, which imbibed in the ſame three days near three-fourths of an ounce.

That about the ſame time, he ſet in a phial of water a ſhort ſtem of the ſame tree, with two large Apples on it, without leaves, and they imbibed near three-fourths of an ounce in two days.

So in this experiment, the Apples and Leaves imbibed four-fifths of an ounce, the Leaves alone near three-fifths, but the two large Apples imbibed and perſpired but one third part ſo much as the twelve Leaves, then the one Apple imbibed the one-ſixth part of what was imbibed by the twelve Leaves; therefore two Leaves imbibe and perſpire as much as one Apple; whence their perſpirations ſeem to be proportinable to their ſurfaces, the ſurface of the Apple being nearly equal to the ſum of the upper and under ſurfaces of the two Leaves.

Whence it is probable that the uſe of theſe Leaves (which are placed juſt where the fruit joins to the tree) is to bring nouriſhment to the fruit.

And accordingly he obſerves, that the Leaves next adjoining to the bloſſoms are in the ſpring very much expanded, when the other Leaves on barren ſhoots are but beginning to ſhoot, and that all Peach Leaves are very large before the bloſſom goes off.

And that, in Apples and Pears, the Leaves are one-third or half grown, before the bloſſom opens, ſo provident is nature in making timely proviſion for the nouriſhing the yet embryo fruit.

He alſo adds another experiment: he ſtripped the Leaves of an Apple-tree branch, and then fixed the great end of the ſtem in the gage, it raiſed the mercury 2 + ½ inches, but it ſoon ſubſided, for want of the plentiful perſpiration of the Leaves, ſo that the air came in almoſt as faſt as the branch imbibed water.

And as a farther proof of the influence of the Leaves in raiſing the ſap, he alſo made the following experiment.

On the ſixth of Auguſt, he cut off a large Ruſſet Pippin, with a ſtalk 1 + ½ inch long, and twelve adjoining Leaves growing to it.

He cemented the ſtalk faſt in the upper end of a tube, which tube was ſix inches long, and one-fourth diameter; as the ſtalk imbibed the water, it raiſed the mercury four inches high.

That he fixed another Apple of the ſame ſize in the ſame manner, but firſt pulled off the Leaves, and it raiſed the mercury but one inch; that in the ſame manner he fixed a like-bearing twig, with twelve Leaves on it, but no Apple, and it raiſed the mercury three inches.

He then took a like-bearing twig, without either Leaves or Apple, and it raiſed the mercury one-fourth of an inch.

So a twig, with an Apple and Leaves, raiſed the mercury four inches; one with Leaves, only three inches; one with an Apple without Leaves, only one inch.

A Quince, which had two Leaves juſt at the twig's inſertion, raiſed the mercury 2 + ½ inches, and held it up a conſiderable time.

A ſprig of Mint, fixed in the ſame manner, raiſed the mercury 3 + ½ inches, = to 4 feet 5 inches height of water.

Theſe, and many more experiments of the Rev. Dr. Hales, that curious enquirer into the cauſes, ſtate, and progreſs of vegetation, evidently ſhew the great perſpiration of the Leaves of plants, and their great uſe in raiſing the ſap, and other functions of vegetable nature; to whoſe excellent treatiſe before-mentioned, I refer the curious enquirer.

I ſhall add, That nature has directed us as to the true diſtance we ought to train the branches of trees againſt walls or eſpaliers, which ſhould always be in proportion to the ſize of their Leaves; for if we regard her progreſs in the great varieties of trees, which are within our obſervation, we ſhall always find their branches grow diſtant from each other in proportion to the breadth of their Leaves; and it was upon this account that the Romans ſo much admired the Platanus, becauſe the Leaves, being large, afforded them a kindly ſhade in ſummer, but in winter, when they are deſtitute of Leaves, their branches growing at a great diſtance, eaſily admitted the beams of the ſun.

I ſhall next beg leave to mention a few, out of the many experiments which have been made by Monſ. Bonnet, of Geneva, to prove that moſt Leaves imbibe the moiſture of the air on their under ſurface, and not from their upper: they are as follow:

He gathered the Leaves of ſixteen ſorts of herbaceous plants when fully grown; of each he put ſeveral Leaves upon the ſurface of water in glaſs vaſes, ſome were poſited with their upper ſurface, and others with their under ſurface upon the water; theſe were adjuſted exactly to the ſurface of the water, with great care not to let any moiſture reach their oppoſite ſurfaces, and the ſame care was taken to prevent their foot-ſtalks from receiving any moiſture. The glaſſes in which theſe Leaves were thus placed, were kept in a cloſet, where the air was very temperate; and as the water in the glaſſes evaporated, there was from time to time a ſupply of freſh, which was added with a ſyringe, ſo that the Leaves were not diſturbed. The Leaves were taken from the following plants; the Plantain, the Mullein, the Wake Robin, the great Mallow, the Nettle, the Marvel of Peru, the Kindney-bean, the Sun-flower, the Cabbage, the Balm, the Cock's-comb, the purple-leaved Amaranth, Spinach, and the ſmaller Mallow.

Six of theſe ſorts he found continued green a long time, and theſe were with different ſurfaces upon the water; they were of the following ſorts, the Wake Robin, the Kidney-bean, the Sun-flower, the Cabbage, the Spinach, and ſmall Mallow; among the others the following ſorts were found to draw the moiſture better with their upper ſurface than their under, the Plantain, the Mullein, the great Mallow, the Nettle, the Cock's-comb, and the purple Amaranth.

The Leaves of the Nettle whoſe under ſurface was upon the water, were decayed in three weeks, whereas thoſe whoſe upper ſurface was next the water continued two months.

The Leaves of Mullein, whoſe under ſurface was next the water, did not continue freſh more than five or ſix days, but thoſe whoſe upper ſurface was next the water laſted five weeks.

The Leaves of the purple Amaranth, whoſe upper ſurface was next the water, continued freſh three months, whereas thoſe whoſe under ſurface was next the water, were decayed in a week.

The Leaves of the Marvel of Peru and the Balm, appeared to have the advantage, whoſe under ſurfaces were next the water.

The Leaves of Wake Robin and of the Cock's-comb, whoſe foot-ſtalks only were put into the water, continued freſh a longer time than thoſe which were placed with either ſurface next the water.

The Leaves of the Great Mallow, the Nettle, the Sun-flower, the Marvel of Peru, and Spinach, whoſe foot-ſtalks were plunged into the water, continued freſh a ſhorter time than thoſe which had either of their ſurfaces next the water.

The Leaves of the Mullein, of Plantain, and Amaranth, which received the water at their foot-ſtalk, continued freſh much longer than thoſe, whoſe under ſurface was next the water.

It is not difficult to explain the reaſon of this fact, for the orifices of the ſap-veſſels in the foot-ſtalk, are much larger than thoſe of either ſurface, ſo that the moiſture inſinuates in greater quantities, and with more eaſe, the firſt than by the ſecond way.

After this the ſame gentleman made experiments on the Leaves of ſixteen ſorts of trees and ſhrubs of the following ſorts, the Lilac, the Pear-tree, the Vine, the Aſpen, the Laurel, the Cherry-tree, the Plumb-tree, the Horſe Cheſnut, the White Mulberry, the Lime-tree, the Poplar, the Apricot, the Walnut, the Filbert, the Oak, and the Creeper.

Among theſe ſpecies, he found that the Lilac and the Aſpen imbibed the moiſture on their upper ſurface, equally with the under ſurface; but in all the other ſorts, the under ſurface imbibed it in much greater quantities than the oppoſite. The difference was very remarkable in the Leaves of the White Mulberry, for thoſe whoſe upper ſurface was laid upon the water, faded in five days, whereas the other whoſe under ſurface was next the water, preſerved their verdure near ſix months.

The Vine, the Poplar, and Walnut-tree are very remarkable inſtances, how little diſpoſed the upper ſurfaces of the Leaves of ligneous plants are to imbibe the moiſture; for thoſe of theſe three ſorts, whoſe upper ſurfaces were applied to the water, decayed almoſt as ſoon as thoſe which had no nouriſhment.

In all the experiments made by this curious gentleman upon the various Leaves of trees and herbs, it is remarkable, that all thoſe Leaves which imbibed the moiſture by their upper ſurface, were ſuch as had

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that ſurface covered with either hairs or down; and on the contrary, where the under ſurface was garniſhed with either hairs or down, the moiſture was imbibed by that ſurface. He likewiſe mentions many experiments made by himſelf, and alſo by Monſ. du Hamel de Monceau, of the Royal Academy of Sciences at Paris, in rubbing the Leaves over with varniſh, oil, wax, and honey, to ſee the effect of theſe upon various Leaves, ſome of which were rubbed over on both ſurfaces, others only upon one; ſome only a part of the ſurface, others the edges of the Leaves were rubbed over, and in ſome only the foot-ſtalks of the Leaves were rubbed with theſe. They likewiſe anointed the trunks of ſome trees and ſhrubs, and left the Leaves and branches in their natural ſtate.

The reſult of theſe experiments was, that where the Leaves were anointed on both ſurfaces with varniſh, they decayed preſently; and where they were anointed with the other things, in proportion as thoſe were moſt penetrating, ſo the Leaves continued a ſhorter time than the others; and where one ſurface only was anointed, they continued much longer than thoſe which were anointed on both; and where the pedicle only was anointed, they continued ſtill longer; but the anointing of the trunks, made no ſenſible alteration, excepting in very hot weather; when they both imagine, that the anointing them was of ſervice, by hindering the too great tranſpiration which might weaken the trees; for they obſerved, that thoſe trees which were varniſhed, ſuffered leſs from the violent heat, than the trees which were left in their natural ſtate.

Monſ. Bonnet alſo obſerved, that thoſe Leaves which were varniſhed, the tender parts of the Leaves were deſtroyed by it, and the tough fibres only were left remaining.

As it would ſwell this work much beyond its intended bulk, were I to mention more of theſe curious experiments, I ſhall refer the curious to his book, where they will find a great number of the moſt accurate and well conducted experiments related, to aſcertain the uſes of the Leaves of plants in vegetation.

The before-mentioned Rev. Dr. Hales, in his Treatiſe of Vegetation, ſays, it is plain from many experiments and obſervations he had before mentioned, that Leaves are very ſerviceable in this work of vegetation, by being inſtrumental in bringing nouriſhment from the lower parts, within the reach of the attraction of the growing fruit, which, like young animals, is furniſhed with proper inſtruments to ſuck it thence; but the Leaves ſeem alſo deſigned for many other noble and important ſervices; for nature admirably adapts her inſtruments, ſo as to be at the ſame time ſerviceable to many good purpoſes.

Thus the Leaves, in which are many excretory ducts in vegetables, ſeparate and carry off the redundant watery fluid, which, by being long detained, would turn rancid, and prejudicial to the plant, leaving the more nutritive parts to coaleſce; part of which nouriſhment, we have good reaſon to think, is conveyed into vegetables through the Leaves, which plentifully imbibe the dew which contain ſalt, ſulphur, &c.

For the air is full of acid and ſulphureous particles, which, when they abound much, do, by the action and reaction between them and the elaſtic air, cauſe that ſultry heat which uſually ends in lightning and thunder; and theſe new combinations of air, ſulphur, and acid ſpirit, which are conſtantly forming in the air, are doubtleſs very ſerviceable in promoting the work of vegetation; when, being imbibed by the Leaves, they may not improbably be the materials, out of which the more ſubtile and refined principles of vegetables are formed; for ſo fine a fluid as the air ſeems to be a more proper medium, wherein to prepare and combine the more exalted principles of vegetables, than the groſſer watery fluid of the ſap: and for the ſame reaſon it is likely that the moſt refined and active principles of animals are alſo prepared in the air, and thence conveyed through the lungs into the blood; and that there is plenty of theſe ſulphureo-aereal particles in the Leaves, is evident from the ſulphureous exſudations that are found in the edges of Leaves, of which bees are obſerved to make their waxen cells, as well as of the duſt of flowers. And that wax abounds with ſulphur, is plain from its burning freely, &c.

We may therefore reaſonably conclude, that one great uſe of Leaves is what has been long ſuſpected by many, viz. to perform, in ſome meaſure, the ſame office for the ſupport of the vegetable life, as the lungs of animals do for the ſupport of animal life; plants, very probably, drawing through their Leaves ſome part of their nouriſhment from the air.

LEDUM. Raii Syn. 1—142. Lin. Gen. Plant. 483. Marſh Ciſtus, or wild Roſemary.

The CHARACTERS are,

The flower has a ſmall empalement of one leaf, indented in five parts. It hath five oval, concave, ſpreading petals, and ten ſlender ſtamina the length of the petals, which ſpread open, terminated by oblong ſummits, and a roundiſh germen ſupporting a ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh capſule with five cells, opening at the baſe in five parts, and filled with ſmall, narrow, acute-pointed ſeeds.

This genus of plants is by Dr. Linnæus ranged in the firſt ſection of his tenth claſs, intitled Decandria Monogynia, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

We have but one SPECIES of this genus, viz.

LEDUM (*Paluſtre*) foliis linearibus ſubtus hirſutis, floribus corymboſis. Flor. Suec. 341. *Ledum with very narrow leaves, hairy on their under ſide, and flowers growing in a corymbus.* Roſmarinum ſylveſtre minus noſtras. Park. Hiſt. 76. *Our ſmall wild Roſemary.*

This plant grows naturally upon moſſes and bogs in many parts of Yorkſhire, Cheſhire, and Lancaſhire, where it riſes with a ſlender ſhrubby ſtalk about two feet high, dividing into many ſlender branches, which are garniſhed with narrow leaves not much unlike thoſe of Heath. The flowers are produced in ſmall cluſters at the end of the branches, which are ſhaped like thoſe of the Strawberry-tree, but ſpread open wider at the top. Theſe are of a reddiſh colour, and appear in May, and in the natural places of their growth, are ſucceeded by ſeed-veſſels filled with ſmall ſeeds, which ripen in the autumn.

It is with great difficulty this plant is kept in a garden, for as it naturally grows upon bogs, ſo unleſs the plants have ſome ſuch ſoil and a ſhady ſituation, they will not thrive. The plants muſt be procured from the places of their growth, and taken up with good roots, otherwiſe they will not live. They cannot be propagated in gardens, but in the moſſes their roots ſpread and propagate pretty freely.

LEEKS. See PORRUM.

LEGUMES, or LEGUMENS, are a ſpecies of plants which are called pulſe, ſuch as Peas, Beans, &c. and are ſo called, becauſe they may be gathered by the hand without cutting. Mr. Ray reckons all thoſe plants which have a papilionaceous flower, among the Legumes; but the French comprehend moſt ſorts of eſculent plants, under this general title of Legumes.

LEGUMINOUS, of or belonging to pulſe.

LEMNA. Lin. Gen. 1038. Lens Paluſtris, Duck-Meat. This is a very common plant, growing upon ſtanding waters in moſt parts of England; where, if it is not diſturbed, it will ſoon cover the whole ſurface.

LEMON-TREE. See LIMON.

LENS. See ERVUM.

LENTISCUS. See PISTACIA.

LEONTICE. Lin. Gen. Plant. 423. Leontopetalon. Tourn. Cor. 49. tab. 484. Lion's Leaf.

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The CHARACTERS are,

The empalement of the flower is made up of ſix very narrow leaves, which are alternately ſmaller and drop off. The flower has ſix oval acute petals, which are twice the length of the empalement, and ſix nectariums which are fixed by ſmall foot-ſtalks to the baſe of the petals. It has ſix ſhort ſlender ſtamina, terminated by erect ſummits. In the center is placed an oblong oval germen, ſupporting a ſhort taper ſtyle, inſerted obliquely to the germen, crowned by a ſimple ſtigma. The germen afterward becomes a globular ſwollen berry a little ſucculent, with one cell, incloſing two or three globular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which includes thoſe plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. LEONTICE (*Chryſogonum*) foliis pinnatis, petiolo communi ſimplici. Hort. Cliff. 122. *Lion's Leaf, with winged leaves having one common ſingle foot-ſtalk.* Leontopetalon foliis coſtæ ſimplici innaſcentibus. Tourn. Cor. 49. *Lion's Leaf with a ſingle foot-ſtalk to the leaves.*
2. LEONTICE (*Leontopetalum*) foliis decompoſitis, petiolo communi trifido. Hort. Cliff. 122. *Lion's Leaf with decompounded leaves, and a common trifid foot-ſtalk.* Leontopetalon foliis coſtæ ramoſæ innaſcentibus. Tourn. Cor. 49. *Lion's Leaf with a branching foot-ſtalk to the leaves.*

Theſe plants both grow naturally in the iſlands of the Archipelago, and alſo in the Corn fields about Aleppo, where they flower ſoon after Chriſtmas. They have large tuberous roots about the ſize of thoſe of Cyclamen, covered with a dark brown bark; the leaves ariſe upon ſlender foot-ſtalks immediately from their roots, which grow about ſix inches high; that of the firſt ſort is ſingle, having many ſmall folioli ranged along the midrib, but the footſtalks of the ſecond ſort are branched into three ſmaller; upon each of theſe are ranged ſeveral folioli or ſmall leaves, in the ſame form as the winged leaves. The flowers ſit upon naked foot-ſtalks, thoſe of the firſt ſort ſuſtain many yellow flowers, but the flowers of the ſecond are ſmaller and of a paler colour. Theſe in their native country appear ſoon after Chriſtmas, but in England they do not flower till the beginning of April, and are never ſucceeded by ſeeds here.

Both theſe plants are propagated by ſeeds, which require to be ſown ſoon after they are ripe, otherwiſe they ſeldom ſucceed; but as they are brought from diſtant countries, they ſhould be preſerved in ſand to be ſent to England. I received a few of the ſeeds from the Duke D'Ayen, which were ſent him from Aleppo, put up in ſand, and theſe came up better than any of thoſe which came over dry; for of ſeveral parcels of theſe ſeeds which I have ſown of both kinds for three years ſucceſſively, I had not more than two plants ariſe.

The plants are very difficult to preſerve in England, for the roots will not thrive in pots; and when they are planted in the full ground, the froſt frequently deſtroys them in winter, eſpecially where the roots are young. Of late years the winters have proved ſo very unfavourable, as to kill all the young roots which I had raiſed in the Chelſea garden: but before the ſevere winter in 1740, I had ſome of the roots which were planted in a ſouth-weſt border that flowered ſeveral years, and without any ſhelter ſurvived the winters; but although I covered many of thoſe roots which I had lately raiſed, yet I could not preſerve them.

The leaves of theſe plants decay about Midſummer, and the roots remain in an inactive ſtate till the following ſpring, at which time the flowers and leaves come up nearly at the ſame time.

When the ſeeds are procured from abroad, the beſt way is to ſow them as ſoon as they arrive, and cover them with glaſſes in the winter to protect them from froſt; and in the ſpring, when the plants begin to appear, they muſt have the free air admitted to them at all times when the weather is mild, otherwiſe they are very ſubject to draw up tall with weak ſtems, and their roots do not increaſe in their bulk. If the plants are not too cloſe, it will be beſt to let them remain in the place unremoved till the ſecond year; but where they are too cloſe, part of the roots may be taken up in October, and tranſplanted cloſe to a warm wall, being very careful not to diſturb the roots which are left ſtanding; and in November, before the hard froſt ſets in, it will be a good way to lay ſome old tanners bark over the ſurface of the ground, three or four inches thick, to prevent the froſt from penetrating to the roots; but this ſhould be moſt of it taken off in March, before the roots begin to puſh out their leaves; and if this is removed in part ſoon after the hard froſt is over in February, and another part three weeks or a month after, it will be better than taking it all off at the ſame time; and if a thin covering of the tan is left at the laſt over the ſurface of the ground, it will prevent the drying winds of the ſpring from drying the ground, which will be of great ſervice to the roots. Theſe roots ſhould have a dry looſe ſoil, and muſt be ſeldom removed; but when that is done, October is the beſt time, for then the roots are inactive.

LEONTODON. Lin. Gen. Plant. 817. Dens leonis. Tourn. Inſt. R. H. 468. Dandelion; in French, *Dent de Lion.*

There are four or five ſpecies of this genus, which grow naturally in the fields either in England or France, ſo are ſeldom cultivated in gardens; but as ſome people in the ſpring gather the roots out of the fields, and blanch them in their gardens for a ſallad herb, ſo I have mentioned the genus, but ſhall forbear ſaying any thing more of them, than that they are very bad weeds both in gardens and fields; ſo ſhould be rooted out before their ſeeds are ripe, otherwiſe they will ſpread to a great diſtance, as they have down adhering to them, by which they are wafted about by the wind.

LEONTOPODIUM. See PLANTAGO.

LEONURUS. Tourn. Inſt. R. H. 187. tab. 87. Phlomis. Lin. Gen. Plant. 642. [Λεώνυρος, of Λέων, a lion, and οὐρὰ, a tail, becauſe the creſt of this flower ſeems to reſemble the tail of a lion.] Lion's Tail.

The CHARACTERS are,

The flower has a tubulous, five-cornered, permanent empalement of one leaf; the flowers have one petal, of the lip or ringent kind; the upper lip is long, cylindrical, hairy, and entire; the lower is ſhort, reflexed, and cut into three parts. It hath four ſtamina ſituated under the lower lip, two of which are ſhorter than the other; theſe are terminated by oblong compreſſed ſummits. In the bottom of the tube are ſituated four germen ſupporting a ſlender ſtyle, ſituated with the ſtamina, crowned by a bifid acute ſtigma. The germen afterward become four oblong angular ſeeds, ſitting in the empalement.

This genus of plants is ranged in the ſecond ſection of Tournefort's fourth claſs, which includes the herbs with a lip flower of one leaf, whoſe upper lip is hollowed like a ſpoon. Dr. Linnæus has joined the ſpecies of this genus to the Phlomis, and has applied this title to the Cardiaca, from which he ſeparates theſe plants, becauſe they have no punctures on their ſummits. Theſe he ranges in the firſt ſection of his fourteenth claſs, which includes the plants with a ringent (or grinning) flower, that have two long and two ſhorter ſtamina, and naked ſeeds ſucceeding, ſitting in the empalement.

The CHARACTERS are,

1. LEONURUS (*Africana*) foliis lanceolatis, obtusè ſerratis. Hort. Cliff. 312. *Lion's Tail with ſpear-ſhaped leaves which are bluntly ſawed.* Leonurus perennis Africanus, ſideritidis folio, flore Phœnicio majore. Breyn. Cent. 1. 171. *Perennial African Lion's Tail with an Ironwort leaf, and a larger ſcarlet flower.*
2. LEONURUS (*Nepetæfolia*) foliis ovatis, calycibus decagonis, ſeptem dentatis, inæqualibus. Hort. Cliff. 312. *Lion's Tail with oval leaves, an empalement having ten corners, and ſeven unequal indentures.* Leonurus minor capitis Bonæ Spei, vulgò. Boerh. Ind. alt. 180. *Small Lion's Tail of the Cape of Good Hope.*

L E P

The firſt ſort is a native of Ethiopia, but has been long cultivated in the Engliſh gardens. This riſes with a ſhrubby ſtalk ſeven or eight feet high, ſending out ſeveral branches from the ſide, which are four-cornered; theſe are garniſhed with oblong narrow leaves, acutely indented on their edges; they are about three inches long, and half an inch broad, hairy on their upper ſide, and veined on their under, ſtanding oppoſite. The flowers are produced in whorls round the branches, each of the branches having two or three of theſe whorls toward their ends, ſitting very cloſe to the branches; they are of the lip kind, ſhaped ſomewhat like thoſe of the Dead Nettle, but their creſts are much longer and covered with ſhort hairs; they are of a golden colour, ſo make a fine appearance. The flowers commonly appear in October and November, and ſometimes continue till the middle of December, but are not ſucceeded by ſeeds here.

There is a variety of this ſort with variegated leaves, which is by ſome admired; but as this ſeldom produces ſo large whorls of flowers as the plain ſort, it is not ſo generally eſteemed.

The ſecond ſort is mentioned by ſeveral authors as an annual plant; they alſo ſuppoſe it to be a native of America, and believe it was brought from Surinam to Holland; but it is undoubtedly a native of the Cape of Good Hope, from whence I have two or three times received the ſeeds; and the late Dr. Boerhaave aſſured me, that he frequently received the ſeeds from that country, as alſo a painting of the plant, ſo that he made no doubt of the plant growing naturally there.

This riſes with a ſquare ſhrubby ſtalk about three feet high, ſending out ſeveral four-cornered branches, which are garniſhed with oval crenated leaves, rough on their upper ſide like the Dead Nettle, but veined on the under, which is of a pale green: theſe are placed oppoſite by pairs, as are alſo their branches. The flowers come out in whorls round the branches, in like manner as the former, but are not ſo long nor ſo deep coloured; they appear at the ſame ſeaſon with the firſt, and continue as long in beauty.

Both theſe ſorts are propagated by cuttings in Europe, for they do not produce any ſeeds here. If the cuttings are planted in July, after the plants have been ſo long expoſed to the open air as to harden the ſhoots, they will take root very freely. They ſhould be planted in a loamy border to an eaſt aſpect, and if they are covered cloſely with a bell or hand-glaſs to exclude the air, and ſhaded from the ſun, it will forward their putting out roots; but when they begin to ſhoot, the glaſſes ſhould be raiſed to admit the free air, to prevent their drawing up weak, and by degrees they muſt be expoſed to the open air. As ſoon as they have taken good root they muſt be taken up, and each planted in a ſeparate pot filled with ſoft loamy earth, and placed in the ſhade till they have taken new root; then they may be removed to a ſheltered ſituation, where they may remain till October, when they muſt be removed into the green-houſe, and afterward treated as the Myrtle, and other hardy green-houſe plants, obſerving to water the firſt ſort plentifully.

LEPIDIUM. Tourn. Inſt. R. H. 215. tab. 103. Lin. Gen. Plant. 718. Dittander, or Pepperwort.

The CHARACTERS are,

The empalement of the flower is compoſed of four oval concave leaves, which fall off. The flower has four oval petals placed in form of a croſs, which are much larger than the empalement, and ſix awl-ſhaped ſtamina the length of the empalement, two of which are ſhorter than the other, terminated by ſingle ſummits. In the center is ſituated a heart-ſhaped germen, ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward turns to a ſpear-ſhaped ſeed-veſſel with two cells, divided by an intermediate partition, containing oblong ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifteenth claſs, intitled Tetradynamia ſiliculoſa, the flower having four long and two ſhorter ſtamina, and the ſeeds being included in ſhort pods.

The SPECIES are,

1. LEPIDIUM (*Latifolium*) foliis ovato-lanceolatis integris ſerratis. Hort. Cliff. 330. *Dittander with entire, oval, ſpear-ſhaped leaves, which are ſawed.* Lepidium latifolium. C. B. P. 97. *Broad-leaved Dittander.*
2. LEPIDIUM (*Arvenſe*) foliis lanceolatis amplexicaulibus dentatis. Hort. Cliff. 331. *Dittander with ſpear-ſhaped indented leaves which embrace the ſtalks.* Lepidium humile, incanum arvenſe. Tourn. Inſt. R. H. 216. *Low hoary Dittander of the fields.*
3. LEPIDIUM (*Chalepenſe*) foliis ſagittatis ſeſſilibus dentatis. Amœn. Acad. 4. p. 321. *Dittander with arrow-ſhaped indented leaves ſitting cloſe to the ſtalks.* Lepidium humile minus incanum, Alepicum. Tourn. Inſt. 216. *Low Dittander of Aleppo with leſs hoary leaves.*
4. LEPIDIUM (*Iberis*) floribus diandris tetrapetalis, foliis inferioribus lanceolatis ſerratis, ſuperioribus linearibus integerrimis. Flor. Leyd. Prod. 334. *Dittander with flowers having four petals and two ſtamina, whoſe under leaves are ſpear-ſhaped and ſawed, and the upper narrow and entire.* Lepidium gramineo folio ſive, Iberis. Tourn. Inſt. 216. *Dittander with a Graſs leaf, or Iberis.*
5. LEPIDIUM (*Perfoliatum*) foliis caulinis pinnato-multifidis, ramiferis cordatis, amplexicaulibus integris. Hort. Cliff. 331. *Dittander with lower leaves wing-pointed, and thoſe on the branches heart-ſhaped, entire, and embracing the ſtalks.* Thlaſpi verum Dioſcoridis. 1 Zan. Hiſt. 193. *The true Mithridate Muſtard of Dioſcorides.*
6. LEPIDIUM (*Virginicum*) floribus ſubtriandris tetrapetalis, foliis linearibus pinnatis. Lin. Gen. Plant. 645. *Dittander with flowers having four petals, chiefly with three ſtamina, and very narrow winged leaves.* Iberis humilior annua Virginiana ramoſior. Mor. Hiſt. 2. p. 311. *Lower, annual, branching Sciatica Creſs of Virginia.*
7. LEPIDIUM (*Lyratum*) foliis lyratis criſpis. Lin. Sp. Plant. 644. *Dittander with curled lyre-ſhaped leaves.* Lepidium Orientale naſturtii criſpi folio. Tourn. Cor. 15. *Eaſtern Dittander with a leaf like curled Creſs.*
8. LEPIDIUM (*Nudicaule*) ſcapo nudo ſimpliciſſimo, floribus tetrandris. Lœfl. It. 155. *Dittander with a ſingle naked ſtalk, and flowers with four ſtamina.* Naſturtium minimum vernum, foliis tantum circa radicem. Magn. Montp. 187.
9. LEPIDIUM (*Petræum*) foliis pinnatis integerrimis, petalis emarginatis calyce minoribus. Flor. Suec. *Dittander with entire winged leaves, and indented petals to the flowers which are ſmaller than the empalement.* Naſturtium pumilum vernum. C. B. P. 105.
10. LEPIDIUM (*Sativum*) floribus tetradynamis, foliis oblongis multifidis. Vir. Cliff. 63. *Dittander with ſix ſtamina in the flowers, and oblong leaves with many points.* Naſturtium hortenſe. *Garden Creſs.*
11. LEPIDIUM (*Subulatum*) foliis ſubulatis indiviſis ſparſis, caule ſuffruticoſo. Lin. Sp. 899. *Dittander with awl-ſhaped undivided leaves, and a ſhrubby ſtalk.* Lepidium capillaceo folio, fruticoſum Hiſpanicum. Tourn. Inſt. 216.
12. LEPIDIUM (*Ruderale*) floribus diandris apetalis, foliis radicalibus dentato-pinnatis, ramiferis linearibus integerrimis. Flor. Suec. 534. *Dittander with two ſtamina in the flowers, fugacious petals, the bottom leaves indented, and thoſe on the branches linear and entire.* Naſturtium ſylveſtre Oſyridis folio. C. B. P. 105.
13. LEPIDIUM (*Bonarienſe*) floribus diandris tetrapetalis, foliis omnibus pinnato-multifidis. Lin. Sp. 901. *Dittander with two ſtamina and four petals to the flowers, and all the leaves wing-pointed.* Thlaſpi Bonarienſe multiciſſum flore inviſibili. Hort. Elth. 286.

The firſt ſort grows naturally in moiſt places in many parts of England, ſo is now ſeldom cultivated in gardens. It hath ſmall, white, creeping roots, by which it multiplies very faſt, ſo as to render it difficult to eradicate the plant, after it has grown long in any place; the lower leaves are oval, ſpear-ſhaped, about three inches long, and one and a half broad toward the baſe, ſawed upon the edges, having long foot-ſtalks. The ſtalks riſe two feet high, they are ſmooth,

and

and ſend out many ſide branches; the leaves upon the ſtalks are longer, narrower, and more acute-pointed than the lower, and are not ſawed on their edges. The flowers grow in cloſe bunches toward the top of the branches, which come out from the ſide; they are ſmall, and are compoſed of four ſmall white petals, which appear in June and July, and the ſeeds ripen in the autumn. The whole plant has a hot biting taſte like Pepper, and the leaves have been often uſed by the country people to give a reliſh to their viands inſtead of Pepper, from whence it had the appellation of Poor Man's Pepper.

This plant is eaſily propagated, for every piece of the root will grow and multiply wherever it is planted, ſo will become troubleſome to root out after growing for ſome time in a garden. The leaves of this plant bruiſed and mixed with hog's lard, and applied as a cataplaſm to the hip, help the ſciatica; and chewed in the mouth, cauſe a great defluxion of rheum, ſo is ſaid to help ſcrophulous tumours in the throat.

The ſecond ſort grows naturally in Auſtria and Italy; this hath a fleſhy fibrous root, from whence ariſe ſeveral weak ſtalks about a foot and a half high, which are garniſhed with ſpear-ſhaped leaves, three inches long and one and a half broad, deeply cut in upon the edges; theſe are ſmooth, a little hoary, and embrace the ſtalks with their baſe; the flowers are ſmall, white, and grow in looſe bunches at the end of the branches. They flower from June till the beginning of September, and the ſeeds ripen in the autumn.

This is a perennial plant, which propagates very faſt by its roots, and is ſeldom admitted into gardens.

The third ſort grows naturally about Aleppo; this hath creeping roots, which extend to a great diſtance, ſo will ſoon ſpread over a large piece of ground. The leaves of this are longer and narrower than thoſe of the former, and are leſs hoary; the flowers grow in looſe bunches at the end of the branches; they are ſmall and white like thoſe of the firſt. This is a hardy perennial plant, which propagates by its creeping roots in as great plenty as either of the former.

The fourth ſort grows naturally in the ſouth of France, Italy, and Sicily, but is preſerved in ſome Engliſh gardens for variety. This hath a long fleſhy root, which runs deep into the ground, and ſends out many oblong leaves, which are ſawed on their edges, and ſpread flat on the ground; the ſtalks are ſlender, ſtiff, and branch out horizontally on every ſide; they riſe about two feet high, and are garniſhed with very narrow entire leaves. The flowers come out in cloſe ſmall cluſters at the ends of the branches; they are white, and appear in June and July, and the ſeeds ripen in the autumn. If the ſeeds are permitted to ſcatter, the plants will come up early in the ſpring, and require no other care but to keep them clean from weeds; the roots will abide ſeveral years if they are in a dry ſoil. This plant is alſo commended for its virtues in ſciaticas, if bruiſed and mixed with hog's lard as the firſt, and from its virtues it obtained the title of Sciatica Creſs.

The fifth ſort grows naturally in Perſia and Syria; this is ſuppoſed to be the true Mithridate Muſtard of Dioſcorides. It is an annual plant, whoſe lower leaves are winged, and finely cut into many ſegments; the ſtalks riſe a foot high, dividing into many ſlender branches, which are garniſhed with heart-ſhaped leaves that are entire, and embrace the ſtalks with their baſe. The flowers grow in long looſe ſpikes from the end of the branches; they are ſmall, yellow, and appear in June and July, and the ſeeds ripen in September, ſoon after which the plant decays.

The ſeeds of this plant ſhould be ſown in the autumn, for thoſe which are ſown in the ſpring ſeldom flower the ſame year, and are often killed by the froſt in winter; whereas thoſe which are ſown in the autumn, or the plants that riſe from ſcattered ſeeds, will always flower about Midſummer, and the ſeeds ripen in Auguſt and September following. The plants require no other care but to thin them, and keep them clean from weeds.

The ſixth ſort is an annual plant, which grows naturally in Virginia, and alſo in all the iſlands of the Weſt-Indies, where the inhabitants gather the leaves, and eat them in their ſallads, as we do the Garden Creſs.

The lower leaves of this ſort are three inches long and one broad, ſawed on their edges, and are of a light green, with a biting taſte like Creſs. The ſtalk riſes a foot and a half high, ſending out a great number of ſmall ſide branches, which are garniſhed with narrow leaves regularly ſawed on their edges, ſo as to reſemble winged leaves; theſe ſit cloſe to the branches. The flowers are produced at the end of the branches in looſe ſpikes; they are ſmall and white, and are ſucceeded by roundiſh or heart-ſhaped compreſſed ſeed-veſſels, which have a border round them. It flowers in June and July, and the ſeeds ripen in the autumn; this ſort is eaſily propagated by ſeeds, which may be ſown upon an open bed in April, where the plants are deſigned to remain; and when they come up, they will require no other care but to thin them where they are too cloſe, and keep them conſtantly clean from weeds; or if the ſeeds are permitted to ſcatter in the autumn, the plants will come up very well, and may be treated in the ſame way as the other.

The ſeventh ſort grows naturally in Aſia, and alſo in Spain, from whence I have received the ſeeds. This is a biennial plant; the lower leaves which ſpread on the ground, are near two inches long, and about half an inch broad, indented on both ſides in ſhape of a lyre, and curled on the edges; the ſtalks riſe a foot high, and divide into a great number of ſlender branches, garniſhed with ſmall oblong leaves, which are cut on their ſides, and a little curled on their edges; the ſtalks and leaves are of a gray colour, inclining toward hoarineſs. The flowers are produced in cluſters at the end of the branches; they are very ſmall and white, appearing in July, and are ſucceeded by roundiſh bordered ſeed-veſſels, which are compreſſed, and have two cells each, containing two ſmall oblong ſeeds, which are ripe in the autumn.

This ſort may be propagated by ſeeds in the ſame manner as the former; or if the ſeeds are permitted to ſcatter in the autumn, the plants will come up without care, and ſhould be treated in the ſame way as the former ſort; but this does not flower till the ſecond year, ſo the plants ſhould be left farther aſunder.

The eighth ſort grows naturally about Montpelier. It is a ſmall annual plant, having a few wing-pointed leaves which ſpread on the ſurface of the ground; between which ariſes a naked ſtalk two or three inches high, ſupporting five or ſix ſmall white flowers, each having four petals placed croſswiſe, and four ſtamina placed near the ſtyle; the germen afterward becomes a ſhort capſule, including four or five roundiſh ſeeds.

If the ſeeds of this ſort are ſown in the autumn, the plants will flower in April and their ſeeds ripen in May; which, if permitted to ſcatter, the plants will come up in autumn, and require no other care but to thin them where they are too cloſe, and weed them.

The ninth ſort is alſo a low annual plant, which grows naturally on Putney-heath; the leaves of this are winged and entire, theſe are placed near the ground; the flower-ſtalks riſe two inches high, ſupporting a few white flowers, whoſe petals are leſs than the empalement, and are indented at their points. This flowers in May and June, and if their ſeeds are permitted to ſcatter, the plants will come up as the former.

The tenth ſort is the Garden Creſs, ſo much uſed in winter and ſpring ſallads, and being ſo well known requires no deſcription. There are three varieties of this, one with broad leaves, another with curled leaves, and the common ſort which is uſed; the ſeeds

of

of this ſhould be ſown in drills pretty cloſe, in winter, on moderate hot-beds, but in ſpring and autumn on borders, and will ſoon be fit for uſe; therefore ſhould be cut while young, otherwiſe it will be too rank.

The eleventh ſort is a low ſhrubby plant, garniſhed with entire awl-ſhaped leaves, which are very narrow; theſe are placed alternately on the ſtalks; the foot-ſtalks of the flowers proceed from the wings, and alſo terminate the ſtalks; the flowers are white, and ſhaped like thoſe of the other ſpecies.

This ſort may be propagated by ſeeds or cuttings; the ſeeds ſhould be ſown in the ſpring on a bed of light earth, in the open air; and when the plants are fit to tranſplant, a few of them ſhould be planted in pots, which may be ſheltered in winter under a common frame; for in ſharp winters, thoſe plants which are expoſed in the open air are frequently killed: the remaining plants ſhould be planted in a ſheltered ſituation in a dry rubbiſhing ground, where they will grow ſlowly, ſo will become more ſhrubby, and in leſs danger of ſuffering by cold.

The twelfth ſort is an annual plant, which grows naturally in ſeveral parts of England, ſo is rarely preſerved in gardens, being a plant of no great beauty or uſe; yet I have known it eaten in ſallads, though the taſte is very rank. The plants, when young, have ſome reſemblance to the Swine's Creſs. The ſtalks riſe eight or ten inches high, ſupporting a number of ſmall white flowers, ſhaped like thoſe of the other ſpecies, which are ſucceeded by ſeeds like thoſe of the Garden Creſs, which, if permitted to ſcatter, will abundantly ſupply the place with young plants.

The thirteenth ſort grows naturally in many warm countries, for it has come up in the earth which came from the Braſils, and from ſeveral parts of America, ſo that it may be found in many other parts. The leaves and ſtalks are much like thoſe of the Garden Creſs, but are more divided, and differ in ſmell and taſte from it: the petals of the flowers are ſo ſmall as to be almoſt imperceptible, and there appears but two ſtamina in each.

This ſort is only cultivated in botanic gardens for variety; the ſeeds ſhould be ſown on a moderate hot-bed in the ſpring, and when the plants have obtained ſtrength, they may be tranſplanted on a warm border, where they will flower and perfect their ſeeds.

LEPIDOCARPODENDRON. See PROTEA.

LETTUCE. See LACTUCA.

LEUCANTHEMUM. See ANTHEMIS.

LEUCOJUM. Lin. Gen. Plant. 363. Narciſſo-leucojum. Tourn. Inſt. R. H. 387. tab. 208. [Λευκόϊον, of λευκὸν, white, and Ἴον, a Violet; i. e. White Violet,] Snowdrop; in French, *Perce-neige*.

The CHARACTERS are,

It hath an oblong, obtuſe, compreſſed ſpatha or ſheath, which opens on the ſide. The flower is of the ſpreading bell ſhape, cut into ſix parts, which join at their baſe. It hath ſix ſhort briſtly ſtamina, terminated by oblong, obtuſe, four-cornered ſummits, which are erect. The roundiſh germen is ſituated under the flower, ſupporting a ſtyle which is thick and obtuſe at the top, crowned by an erect briſtly ſtigma. The germen afterward becomes a turbinated capſule with three cells, opening with three valves, and filled with roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which includes the plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. LEUCOJUM (*Vernum*) ſpathâ uniflorâ, ſtylo clavato. Lin. Sp. Plant. 289. *Snowdrop with a ſheath incloſing one flower, with a key-ſhaped ſtyle.* Narciſſo-leucojum vulgare. Tourn. Inſt. R. H. 387. *Common great Snowdrop.*
2. LEUCOJUM (*Æſtivum*) ſpathâ multiflorâ, ſtylo clavato. Lœfl. Lin. Sp. Plant. 289. *Snowdrop with many flowers in a ſheath, and a key-ſhaped ſtyle.* Narciſſo-leucojum pratenſe multiflorum. Tourn. Inſt. R. H. 387. *Meadow Snowdrop with many flowers, commonly called the tall late Snowdrop.*

The firſt ſort grows naturally in Switzerland and Germany, as alſo upon the mountains near Turin. This hath an oblong bulbous root, ſhaped like that of the Daffodil, but ſmaller; the leaves are flat, of a deep green, four or five in number, broader and longer than thoſe of the ſmall Snowdrop; between theſe ariſe an angular ſtalk near a foot high, which is naked, hollow, and channelled; toward the top comes out a ſheath, which is whitiſh, opening on the ſide, out of which come two or three white flowers, hanging upon ſlender foot-ſtalks; theſe have but one petal, which is cut into ſix parts almoſt to the bottom, which are much larger than thoſe of the ſmall Snowdrop, and the ends of the ſegments of the petal are tipped with green, where they are of a thicker ſubſtance than in any other part. Theſe flowers appear in March, ſoon after thoſe of the ſmall ſort; they have an agreeable ſcent, not much unlike that of the flowers of Hawthorn; after the flower is paſt, the germen which is ſituated below the flower, ſwells to a Pear-ſhaped capſule with three cells, incloſing ſeveral oblong ſeeds.

The leaves of this ſort decay toward the end of May, after which time the roots may be taken up and tranſplanted, for they ſhould not be long kept out of the ground. It is propagated here by offsets, which the roots put out pretty plentifully when they are in a ſituation agreeable for them, and when they are not too often removed. They ſhould have a ſoft, gentle, loamy ſoil, and an expoſure to the eaſt; the roots ſhould be planted ſix inches aſunder, and four or five inches deep, and muſt not be tranſplanted oftener than every third year.

The ſecond ſort is generally known by the title of late, or tall Snowdrop; this grows naturally in the meadows near Piſa in Italy, in Hungary, and alſo near Montpelier.

The root of this ſort is nearly as large as thoſe of the common Daffodil, and are very like them in ſhape; the leaves alſo are not unlike thoſe of the Daffodil, and are more in number than thoſe of the other ſort; they are of a pale green, and keel-ſhaped at the bottom, where they fold over each other, and embrace the ſtalk, which riſes a foot and a half high; at the top is ſituated a ſpatha (or ſheath) which opens on one ſide, and lets out three or four flowers, which hang downward, upon pretty long foot-ſtalks; theſe are cut into ſix oval concave ſegments almoſt to the bottom, and are of a clear white, with a large green tip to each ſegment, which is of a thicker conſiſtence than any other part of the petal; within are ſituated ſix awl-ſhaped ſtamina, with oblong yellow ſummits, ſtanding erect round a very ſlender ſtyle, crowned by an obtuſe ſtigma. Theſe flowers appear the latter end of April or the beginnning of May, and as all flowers in each ſheath do not come out together, but following each other, ſo there is a ſucceſſion of them for three weeks or longer, in cool weather. The flowers are ſucceeded by large triangular ſeed-veſſels, having three cells, each containing two rows of ſeeds. This ſort is generally propagated in England by offſets, for the plants raiſed by ſeeds will not come to flower in leſs than four years; and as the roots put out offsets in plenty, ſo that is the more expeditious method. Theſe roots may be treated in the ſame way as the firſt ſort, and ſhould have a ſoft loamy ſoil, and be expoſed only to the morning ſun, where they will flower ſtronger, and continue longer in beauty, than when they are in an open ſituation, though they will thrive in almoſt any ſoil or ſituation.

LEUCOJUM INCANUM. } See CHEIRAN-
LEUCOJUM LUTEUM. } THUS.

LEUCOJUM BULBOSUM. See GALANTHUS.

LEVEL, a mathematical inſtrument ſerving to draw a line parallel to the horizon, not only for various uſes in maſonry, &c. but alſo to meaſure the difference of aſcent and deſcent between ſeveral places, for the conveying of water, draining of fens, &c.

A Water

A water Level ſhews the horizontal line, by means of a ſurface of water, or other liquid, founded on this principle, That water always naturally places itſelf level.

The moſt ſimple inſtrument for this uſe is made of a long wooden trough, or canal, whoſe ſides are parallel to its baſe, ſo that, being equally filled with water, the ſurface thereof ſhews the line of Level.

This Level is alſo made with two cups fixed to the two ends of a pipe three or four feet long, about an inch in diameter; by means whereof, the water communicates from the one to the other cup, and this pipe being moveable on its ſtand, by means of a ball and ſocket, when the two cups become equally full of water, the two ſurfaces mark the line of Level.

Inſtead of cups, this inſtrument may be made with two ſhort cylinders of glaſs three or four inches long, faſtened to each end of the pipe with wax or maſtich; then the pipe, being filled either with common or coloured water, will ſhew itſelf through the cylinder, by means of which the line of Level is determined, the height of the water, with reſpect to the center of the earth, being always the ſame in both cylinders. This Level is very commodious in levelling ſmall diſtances.

If you would level any piece of ground that you can ſee from ſide to ſide, or from the middle to any ſide, ſet up your inſtrument in the middle of it, whether it be a water Level, or a ground Level with ſights; place it ſo high, that you may ſee over the higheſt part of the ground half a foot or a foot; then ſet up a ſtake in the middle, ſo that the top may be exactly level with the ſights, and another ſtake on the higheſt ſide, the top of which muſt be level with the middle ſtake; then either turn the Level, or look-back ſight, and ſet up another ſtake on the lower ground level with the two firſt; then you will have three ſtakes ſtanding in a Level.

Then keeping your Level true to the middle ſtake, turn it till it makes right angles with the three ſtakes, and ſet up two ſtakes on each ſide one Level with thoſe three, then you will have five ſtakes in two lines ſet true level.

If the ground be large, you may ſet up two rows more by the Level, but five ſtakes are enough in a ſmall ground.

When this is done, you may lay your Level aſide, and look over the head of one to the head of another, and cauſe the perſon who aſſiſts you to put down ſtakes between two and two, till you have ſet as many ſtakes level in the ground as you think convenient; or you may uſe a rule, which being placed level with the head of the ſtake, you may look over that to the head of the other, and put ſtakes down between you and the other ſtake, to what number you pleaſe.

The ground being thus ſtaked out with all the ſtakes heads level, and half a foot higher than the higheſt ground, in ſome grounds the middle ſtake, and the ſtakes in the croſs line, will be the Level line the ground muſt be brought to; that is, abating the hill, and filling up the low ſide to the Level of the mid-line. But if the ground be very uneven, then you muſt meaſure over all the ſtakes, and take them middle high for their mean of Level, and, by the rule of three, proportion your ground to that.

As for inſtance: If a valley be ten poles in length, and two feet in depth from the ſtrait line, and there be a hill five poles long; how many feet deep muſt a perſon ſink thoſe five poles to fill up the valley? This queſtion may be reſolved by the inverſe or back rule of three, and will ſtand thus: As 5 to 2, ſo is 10 to 4.

5 —— 2 —— 10

2

5)20(4

So that a perſon muſt go four feet deep in ſuch a hill to make good ſuch a valley.

If you are to abut the top of the hill four feet deep, and two poles from the top of that hill, thoſe four feet are to come out.

To perform this, ſet up a ſtake on the top of a hill two or three feet above ground, and another of the ſame height where the depth comes out, ſet down a ſtake three rods from that, till the head comes to be in a line with theſe two, and at that ſtake you muſt be one foot deep.

At ſix poles ſtake down another as before, and there you muſt be two feet deep: then ſtake down another at nine poles, and there you muſt be three feet deep, and you may ſet more ſtakes at equal diſtances, which will direct you ſo as that you cannot go amiſs.

LEVITY is the privation or want of weight in any body, when compared with another which is heavier, in which ſenſe it is oppoſed to gravity.

The ſchoolmen maintain, that there is ſuch a thing as poſitive and abſolute Levity, and impute this to the riſe and emergency of bodies lighter in ſpecie than the fluids wherein they riſe.

But, beſides that the common ſenſe of mankind diſcovers, that Levity is only a relative term, we find that all bodies tend towards the earth, ſome ſlower, and ſome faſter, in all fluids or mediums, whether water, air, &c.

Thus cork is ſaid to be lighter than gold, becauſe under equal dimenſions of bulk the gold will ſink in, and the cork ſwim upon the water.

Archimedes has demonſtrated, That a ſolid body will float any where in a fluid of the ſame ſpecific gravity, and that a lighter body will keep above a heavier.

The reaſon of this is, becauſe bodies falling towards the earth, thoſe which have a like number of equal parts, have equal gravity, ſince the gravity of the whole is the ſum of the gravity of all its parts.

Now, two bodies having an equal number of equal parts, if under the ſame dimenſions there are no intervals deſtitute of matter; whence it follows, that as no portion of matter is ſo ſmall, but that body wherein it is contained may be wholly divided into parts equally ſmall, there can be no reaſon for the deſcent of theſe, which will not hold equally for the deſcent of that.

Hence it may be concluded, that thoſe bodies which do not equally gravitate under the ſame dimenſions, do not contain the ſame equal portions of matter, and therefore when we ſee, that a cube of gold ſubſides in water, at the ſame time that an equal bulk of cork ſwims upon it, it is evident, that the gold muſt have a greater number of equal parts of matter under the ſame bulk than the cork, or the cork muſt have a greater number of vacuities than the gold, and that there are alſo in the water a greater number of vacuities than in the gold.

Hence we have a clear idea both of denſity or gravity, and of Levity, and know, that in a ſtrict ſenſe the latter cannot be accounted any thing poſitive, but a mere negation, or abſence of body, which determines that body to be lighter than another which contains more matter.

LICHEN. Liverwort.

There being two ſorts of this plant which are uſed in medicine, and one of thoſe being accounted a ſovereign remedy for the bite of mad dogs, I thought it would not be improper to mention them here, though they are plants which cannot be propagated by any method, except by paring up the turf of Graſs whereon they grow, and laying it down on ſome moiſt ſhady place, where, if the turf takes root, and thrives, the plants will ſpread and do well.

The two SORTS are,

1. LICHEN (*Petræus*) petræus latifolius, ſive Hepatica fontana. C. B. P. *Common broad-leaved Liverwort.*
2. LICHEN (*Officinarum*) terreſtris cinereus. Raii Syn. *Aſh-coloured Ground Liverwort.*

The firſt ſort grows on the ſides of wells, and in moiſt ſhady places, not only on the ground, but on ſtones, bricks, or wood. Of this there are ſeveral varieties,

which are diſtinguiſhed by the curious in botany; but as they are plants of no uſe, I ſhall not enumerate them.

The ſecond ſort (which is uſed to cure the bite of mad dogs) grows on commons and open heaths, where the Graſs is ſhort, and the ground almoſt bare, in moſt parts of England, eſpecially on declivities, and on the ſides of pits. This ſpreads on the ſurface of the ground, and, when in perfection, is of an Aſh-colour, but as it grows old, it alters, and becomes of a dark colour. This is often carried into gardens with the turf which is laid for walks and ſlopes, and where the ſoil is moiſt and cool, it will ſpread, and be difficult to deſtroy, ſo that it renders the Graſs unſightly; but this is the only method yet known to have it grow in gardens, where it is deſired. This is eſteemed a ſovereign remedy for the bite of mad dogs, and hath been for many years uſed with great ſucceſs. It was communicated to the Royal Society by Mr. George Dampier, whoſe uncle had long uſed this plant, to cure the bite of mad dogs on men and animals, with infallible ſucceſs. The method of taking it he has delivered as followeth: "Take of the "herb, and dry it either in an oven, by the fire, or "in the ſun; then powder it, and paſs it through a "fine ſieve; mix this with an equal quantity of fine "powdered pepper. The common doſe of this mix-"ture is four ſcruples, which may be taken in warm "milk, beer, ale, or broth." He alſo adviſes, that the part bitten be well waſhed, as alſo the clothes of the perſon who was bit, leſt any of the ſnivel, or drivel of the mad dog ſhould remain. If the perſon bitten be full grown, he adviſes, that he be blooded before the medicine is taken, and to uſe the remedy as ſoon after the bite as poſſible, as alſo to repeat the doſe two or three ſeveral mornings faſting.

LIGHT is uſed in various ſenſes: 1. Sometimes it ſignifies that ſenſation which is occaſioned in the mind by the view of luminous bodies.

2. For thoſe properties in thoſe bodies, whereby they are fitted to excite thoſe ſenſations in us.

3. A certain action of the luminous body on the medium between that and the eye, by the means of which the one is ſuppoſed to act on the other, and this is called ſecondary Light, or derived Light, in diſtinction to that of luminous bodies, which is called primary or innate Light.

As to the phænomenon of light, philoſophers have explained it ſeveral ways; Ariſtotle by ſuppoſing ſome bodies to be tranſparent, as air, water, ice, &c. The Carteſians have conſiderably refined upon this notion of Light, and own, that Light, as it exiſts in the luminous body, is nothing elſe but a power or faculty of exciting in us a very clear and vivid ſenſation; and Father Malebranche explains the nature of Light by a ſuppoſed analogy between it and ſound, the latter of which is allowed to be produced by the ſhaking or vibration of the inſenſible parts of the ſonorous body.

But the greateſt diſcoveries into this wonderful phænomenon have been made by Sir Iſaac Newton, that the primary light conſiſts wholly in a certain motion of the particles of the lucid body, whereby they do not propel any fictitious matter ſuppoſed to be lodged in the hidden pores of tranſparent bodies, but throw off from the luminous body certain very ſmall particles, which are emitted every way with great force. And the ſecondary or derived Light, not in a conatus, but in a real motion of theſe particles receding every way from the luminous body in right lines, and with an incredible velocity.

For it has been demonſtrated by Mr. Reaumur, from the obſervation on the ſatellites of Jupiter, that the progreſs of Light from the ſun to our earth is not above ten minutes, and therefore, ſince the earth is at leaſt 10,000 of its own diameters diſtant from the ſun, Light muſt run 10,000 of thoſe diameters in a minute, which is above 100,000 miles in a ſecond.

And if a bullet, moving with the ſame celerity with which it leaves the muzzle of a cannon, requires twenty-five years to paſs from the earth to the ſun, as Mr. Huygens has computed; then the velocity of Light will be to that of a cannon ball, as twenty-five years is to ten minutes, which is above 10,000 to 1: ſo that the particles of Light move above a million of times ſwifter than a cannon ball, from which rapidity of motion very ſtrange effects may be produced; but Sir Iſaac Newton has ſhewn, paſt contradiction, that the Light of the ſun is near ſeven minutes in its paſſage to the earth, which is the ſpace of 50,000,000, a velocity 10,000,000 times greater than that wherewith a ball flies out of the mouth of a cannon.

Sir Iſaac Newton alſo obſerves, that bodies and Light act mutually on one another: bodies on Light, in emitting, reflexing, refracting, and inflecting it, and Light on bodies, by heating them, and putting their parts into a vibrating motion, wherein heat principally conſiſts; for he obſerves, that all fixed bodies, when heated beyond a certain degree, emit Light and ſhine, which ſhining, &c. appears to be owing to the vibrating motion of the parts, and all bodies abounding in earthy and ſulphureous particles, if they be ſufficiently agitated emit Light, which way ſoever the agitation be effected.

The ſame great author obſerves, that there are but three affections of Light wherein the rays differ, viz. refrangibility, reflexibility, and colour; and thoſe rays which agree in refrangibility, agree alſo in the other two, whence they may be well defined homogeneal. Again, the colours exhibited by homogeneal Light, he calls homogeneal colours, and thoſe produced by heterogeneal Light, heterogeneal colours; from which definitions he advances ſeveral propoſitions:

1. That the ſun's Light conſiſts of rays differing by indefinite degrees of refrangibility.

2. That rays, which differ in refrangibility, when parted from one another, do proportionably differ in the colours which they exhibit.

3. That there are as many ſimple and homogeneal colours, as there are degrees of refrangibility, for to every degree of refrangibility belongs a different colour.

4. Whiteneſs, in all reſpects, like that of the ſun's immediate Light, and of all the uſual objects of our ſenſes, cannot be compounded of ſimple colours, without an indefinite variety of them, for to ſuch a compoſition there are required rays endued with all the indefinite degrees of refrangibility, which infer as many ſimple colours.

5. The rays of Light do not act one on another in paſſing through the ſame medium.

6. The rays of Light do not ſuffer any alteration of their qualities from refraction, nor from the adjacent quieſcent medium.

7. There can be no homogeneal colours produced out of Light by refraction, which are not commixed in it before, ſince refraction changes not the qualities of the rays, but only ſeparates thoſe that have divers qualities by means of their different refrangibility.

8. The ſun's Light is an aggregate of homogeneal colours, whence homogeneal colours may be called primitive or original.

Hence proceeds the whole theory of colours in plants and flowers.

Thoſe parts, v. g. which are the moſt refrangible, conſtitute Violet colour, the dimmeſt and moſt languid of all colours.

And, on the contrary, thoſe particles that are the leaſt refrangible, conſtitute a ray or a red colour, which is the brighteſt and moſt vivid of all colours; the other particles being diſtinguiſhed into little rays, according to their reſpective magnitudes and degrees of refrangibility, excite intermediate vibrations, and ſo occaſion the ſenſations of the intermediate colours. See Sir Iſaac Newton's Doctrine of Colours.

Perhaps theſe obſervations of Light may to ſome perſons ſeem foreign to the ſubject matter of this book, yet, if thoroughly underſtood might probably be found very uſeful. The learned and curious enquirer into the buſineſs of vegetation, the Rev. Dr. Hales,

Hales, in his treatiſe on that head, does, upon the query put by Sir Iſaac Newton [" Are not groſs bo-
" dies and Light convertible into one another? And
" may not bodies receive much of their activity
" from the particles of Light which enter their com-
" poſition? The change of bodies into Light, and
" of Light into bodies, is very conformable to the
" courſe of nature, which ſeems delighted with tranſ-
" mutations,"] add this query, " And may not
" Light alſo, by freely entering the expanded ſur-
" faces of leaves and flowers, contribute much to the
" ennobling the principles of vegetables?"

That Light has been found to be of infinite ſervice to the growth of vegetables, has been fully proved by many experiments: 1. By painting the walls of the inſide of a green-houſe black, whereby there will be no reflected rays of Light, when the weather becomes ſo cold, as that the ſhutters to the windows have been obliged to be kept ſhut a few days, the leaves of thoſe plants which have been placed therein have dropped off.

And plants which have been placed in dark rooms, have been found to do the ſame. The earthing up plants to blanch them, whereby they become tender, and better for uſe; yet if theſe are not uſed, when properly blanched, will ſoon decay: the like will happen if plants are covered cloſe, ſo as no Light can come to them, they will ſoon grow pale and ſicken, and afterward decay.

How much the fine racy flavour of fruits is owing to Light is hard to ſay, but from a few experiments it appears, moſt of their rich juices are beholden to Light for their excellence; therefore we may truly aver, that Light is as neceſſary to promote vegetation as for animal œconomy.

LIGUSTICUM. Tourn. Inſt. R. H. 323. tab. 171. Lin. Gen. Plant. 308. [takes its name of Liguria, becauſe this plant, in old time, grew in greateſt plenty near a river of Genoa, called Liguria.] Lovage; in French, *Livêche.*

The CHARACTERS are,

It hath an umbellated flower. The general umbel is compoſed of ſeveral ſmaller, which are alſo compoſed of other yet ſmaller. The general umbel has an involucrum compoſed of ſeven unequal leaves. The perianthium of the flower is indented in five parts, ſitting upon the germen. The flower hath five equal petals, which are inflexed at their points, and keel-ſhaped within. It hath five hairy ſtamina, which are ſhorter than the petals, terminated by ſimple ſummits. The germen, which is ſituated under the flower, ſupports two ſimple ſtyles, crowned by ſimple ſtigmas. The germen afterward turns to an oblong fruit, divided into two parts, which is angular and channelled, containing two oblong ſmooth ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, which contains thoſe plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. LIGUSTICUM (*Leviſticum*) foliis multiplicibus, foliolis ſuperne inciſis. Hort. Cliff. 97. *Lovage with many leaves, whoſe lobes are cut outward toward the top.* Leviſticum vulgare. Mor. Hiſt. 3. p. 275. *Common Lovage.*
2. LIGUSTICUM (*Scoticum*) foliis biternatis. Lin. Sp. Plant. 250. *Lovage with double trifoliate leaves* Liguſticum Scoticum Apii folio. Tourn. Inſt. R. H. 324. *Scotch Lovage with a Smallage leaf.*
3. LIGUSTICUM (*Auſtriacum*) foliis bipinnatis, foliolis confluentibus inciſis integerrimis. Lin. Sp. 360. *Lovage with double winged leaves, whoſe lobes run together, and have entire ſegments.* Liguſticum cicutæ folio glabrum. Tourn. Inſt. R. H. 323. *Lovage with a ſmooth Hemlock leaf.*
4. LIGUSTICUM (*Lucidum*) foliis pinnatifidis, foliolis linearibus planis. *Lovage with wing-pointed leaves, whoſe lobes are very narrow and plain.* Liguſticum Pyrenaicum, fœniculi folio lucidum. Tourn. Inſt. 324. *Lovage of the Pyrenees, with a ſhining Fennel leaf.*
5. LIGUSTICUM (*Peloponnaſiacum*) foliis multiplicato-pinnatis, foliolis pinnatim inciſis. Lin. Sp. 36. *Lovage with leaves many times winged, and lobes cut like wings.* Cicutaria latifolia fœtida. C. B. P. 161. *Broad-leaved, ſtinking, Baſtard Hemlock.*

The firſt ſort is the common Lovage of the ſhops; this was formerly cultivated in the kitchen-gardens as an eſculent herb, but has been long diſuſed as ſuch in England. It grows naturally upon the Appenines, and alſo near the river Liguria not far from Genoa; this hath a ſtrong, fleſhy, perennial root, which ſtrikes deep into the ground, and is compoſed of many ſtrong fleſhy fibres covered with a brown ſkin, and has a ſtrong, hot, aromatic ſmell and taſte. The leaves are large, winged, and compoſed of many large lobes ſhaped like thoſe of Smallage, but are larger, and of a deeper green. The lobes toward the top are cut into acute ſegments. The ſtalks riſe to the height of ſix or ſeven feet; they are large and channelled, dividing into ſeveral branches, each being terminated by a large umbel of yellow flowers, which are ſucceeded by oblong ſtriated ſeeds. It flowers in June and July, and the ſeeds ripen in autumn.

This is eaſily propagated by ſeeds, which ſhould be ſown in autumn ſoon after they are ripe; for when they are kept out of the ground till ſpring, they ſeldom grow the firſt year; when the plants come up and are fit to remove, they may be tranſplanted into a moiſt rich border, at about three feet diſtance from each other; and after they have taken new root, they will require no other care but to keep them clean from weeds. The roots will abide many years, and where the ſeeds are permitted to ſcatter, the plants will come up without care.

The roots, leaves, and ſeeds of Lovage, are heating and drying; they warm and comfort the ſtomach, expel wind, and provoke urine.

The ſecond ſort grows naturally near the ſea in many parts of Scotland; this hath a biennial root, but of much leſs ſize than the former; the leaves are compoſed of broader and ſhorter lobes, each leaf having two or three trifoliate leaves, whoſe lobes are indented on their edges. The ſtalk riſes about a foot high, ſuſtaining a ſmall umbel of yellow flowers on the top, ſhaped like thoſe of the former; theſe appear in June, and are ſucceeded by oblong channelled ſeeds, which ripen in autumn. This plant may be cultivated in the ſame manner as the former.

The third ſort grows naturally on the Alps; this is a perennial plant. The ſtalks riſe about two feet high, and at every joint are bent alternately, firſt to one ſide, then to the oppoſite; at every joint they are garniſhed with doubly winged leaves, compoſed of ſmall lobes which run into each other, and juſt above each leaf comes out a ſide branch; theſe, as alſo the principal ſtalks, are terminated by umbels of white flowers, which appear in June, and are ſucceeded by oblong channelled ſeeds, which ripen in autumn.

The fourth ſort grows naturally on the Pyrenean Mountains; this hath a biennial root. The leaves are doubly winged. The lobes are very narrow, and finely divided. The ſtalks are ſtrong, and riſe a foot and a half high, garniſhed with ſhining winged leaves, and are terminated by pretty large umbels of whitiſh flowers, which appear in June, and the ſeeds ripen in September.

The fifth ſort grows naturally on the Peloponeſian Mountains; this hath a very thick fleſhy root like that of Parſnep, which ſtrikes deep in the ground. The leaves are very large, being compoſed of many winged leaves, whoſe lobes are cut into acute points; theſe are of a deep green, and, when bruiſed, emit a fœtid odour. The ſtalks riſe three or four feet high; they are very large and hollow, like thoſe of Hemlock, and ſuſtain at their top large umbels of yellowiſh flowers, in ſhape of a corymbus; theſe appear in June, and are ſucceeded by oblong channelled ſeeds which ripen in autumn.

This has by ſome perſons been thought to be the Hemlock of the antients, their conjectures being founded upon the plant anſwering in many particulars

lars to the deſcription, and alſo from the poiſonous quality of this together with its fœtid ſcent; and as this grows naturally in many parts of Aſia, ſo they have been induced to believe it might be the ſame plant.

All theſe plants are preſerved in botanic gardens for the ſake of variety, but are ſeldom cultivated any where elſe; they riſe eaſily from ſeeds, which ſhould be ſown in autumn, and the plants afterward treated in the ſame way as the firſt; they love a moiſt ſoil and a ſhady ſituation.

LIGUSTRUM. Tourn. Inſt. R. H. 596. tab. 367. Lin. Gen. Plant. 18. Privet; in French, *Troëne*.

The CHARACTERS are,

The flower has a ſmall tubular empalement, cut at the top into four obtuſe ſegments. It hath one funnel-ſhaped petal, with a cylindrical tube cut into four oval ſegments at the top, which ſpread open. It hath two ſtamina which ſtand oppoſite, terminated by erect ſummits which are the length of the tube of the petal, and one roundiſh germen ſupporting a ſhort ſtyle, crowned by an obtuſe bifid ſtigma. The germen afterward turns to a ſmooth round berry with one cell, incloſing two oblong ſeeds, flat on one ſide, but convex on the other.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, which includes thoſe plants whoſe flowers have two ſtamina and one ſtyle.

The SPECIES are,

1. LIGUSTRUM (*Vulgare*) foliis lanceolato-ovatis obtuſis. *Privet with ſpear-ſhaped, oval, obtuſe leaves.* Liguſtrum Germanicum. C. B. P. 475. *The common Privet.*
2. LIGUSTRUM (*Italicum*) foliis lanceolatis acutis. *Privet with ſpear-ſhaped leaves.* Liguſtrum foliis majoribus & magis acuminatis toto anno folia retinens. Pluk. Alm. 217. *Privet with larger and more acute-pointed leaves, which continue all the year, commonly called the Italian ever-green 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 ſtem, covered with a ſmooth gray bark, ſending out many lateral branches which are garniſhed with ſpear-ſhaped, oval, ſmooth leaves, ending with obtuſe points; they are placed by pairs oppoſite, ſitting cloſe to the branches, and are of a dark green. The flowers are produced in thick ſpikes at the end of the branches; they are white, with one tubular petal cut at the top into four parts, which ſpread open. Theſe come out in June, and are ſucceeded by ſmall round black berries, which ripen in the autumn; each of theſe contain two ſeeds. The leaves of this ſort frequently remain green till after Chriſtmas, when they alter their colour and fall off. There are two varieties of this ſort, one whoſe leaves are variegated with white, and the other hath leaves variegated with yellow; but in order 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 other ſort grows naturally in Italy; this riſes with a ſtronger ſtalk 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; they are alſo of a brighter green, and continue upon the ſhrubs in verdure, till they are thruſt off by the young leaves in the ſpring, as the Phillyrea and moſt other Evergreens do; ſo that it is undoubtedly a diſtinct ſort, though many have ſuppoſed they were the ſame. The flowers of this are rather larger than thoſe of the common ſort, and are not often ſucceeded by berries in this country.

The leaves and flowers of the firſt ſort are uſed in medicine; they are reckoned to be cooling, drying, and reſtringent, good for ulcers and inflammations of the mouth and throat, bleeding of the gums, and relaxation of the uvula.

This ſhrub is frequently cultivated in the nurſeries near London, to furniſh the ſmall gardens and balconies in the city, it being one of the few plants which will thrive in the ſmoke of London; but although it will live ſome years in the cloſe part of the town, yet it ſeldom produces flowers there after the firſt year, unleſs it is in ſome open places, where there is a free air. In the country, the leaves of this plant will continue green great part of the winter. It flowers in June, and the berries ripen in autumn, which generally hang upon the branches till Chriſtmas.

The Italian ſort is now generally preferred to the common ſort for planting in gardens, the leaves being larger and continuing green all the year, renders 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. I have frequently planted it under the dropping of large trees, where I find it will thrive better than moſt other ſhrubs.

I cannot but think this ſort which is the moſt common in Italy, is the Liguſtrum mentioned by Virgil in the ſecond Eclogue: and my reaſon for it is, that as the flowers of this ſhrub are of a pure white, but fall off very ſoon, they are by no means proper to gather for garlands, &c. and the berries being of a fine black colour, and continuing long upon the plants, make a fine appearance. To confirm that theſe berries were gathered for uſe, we find in ſeveral authors of undoubted credit, that they were uſed in dyeing, as alſo that the beſt ink was made of theſe berries.

Beſides, is it not much more reaſonable to ſuppoſe, that Virgil would rather draw his compariſon from the flowers and fruit of the ſame plant, when he is warning the youth not to truſt to his beauty, than to mention two different plants, as has been generally ſuppoſed? for here are the white flowers of the Privet appearing early in the ſpring, which is an alluſion to youth; but theſe are of ſhort duration, ſoon falling away; whereas the berries, which may be applied to mature age, are of long continuance, and are gathered for uſe.

Theſe plants are eaſily propagated by laying down their tender ſhoots in autumn, which in one year's time will be rooted enough to tranſplant; when they may be removed to the places where they are deſigned to remain, or planted in a nurſery for two or three years, where they may be trained for the purpoſes deſigned.

They are alſo propagated by ſuckers, which theſe plants ſend forth in great plenty; but theſe are too apt to put out a great number of ſuckers from their roots, ſo are not eaſily kept within bounds; nor do the plants riſe ſo high as thoſe which are propagated by layers, therefore this method ſhould be preferred.

They may alſo be propagated by cuttings, which, if planted in the autumn on a ſhady border and in a loamy ſoil, will take root very freely, and may be afterward treated in the ſame way as the layers.

But the ſtrongeſt and beſt plants, are thoſe which are raiſed from ſeeds; indeed, this is a much more tedious method than the other, ſo is ſeldom practiſed, for the ſeeds generally lie a year in the ground before they vegetate; therefore, whoever would propagate the plants in this method, ſhould gather the berries when ripe, and put them into a pot with ſand between them, and bury the pot in the ground, as is practiſed for Holly berries and Haws; and after they have laid a year in the ground, take them up in the autumn, and ſow them on a border expoſed to the eaſt, where the plants will come up the following ſpring, and theſe will make great progreſs after they have gotten ſome ſtrength, ſo will grow upright, and not ſend out ſuckers like the other.

Formerly theſe plants were greatly in uſe for hedges, but ſince ſo many others of great beauty have been introduced, which are much preferable to theſe for ſuch purpoſes, they have been entirely rejected, the trouble of keeping them in order being very great; nor are the hedges made with them ever ſo thick and handſome, as thoſe made with divers other plants.

The two variegated kinds are pretty varieties amongſt other ſtriped ſhrubs. Theſe may be propagated by budding, or inarching them upon the plain ſort, as alſo

alſo by laying down their branches; but as they ſeldom ſhoot ſo faſt, as to produce any branches proper for layers, the other method is chiefly uſed. The ſilver ſtriped ſort is ſomewhat tenderer than the plain, but will endure the open air, if planted in a dry ſoil and in a warm ſituation.

LILAC. See SYRINGA.

LILIASTRUM. See HEMEROCALLIS.

LILIO-ASPHODELUS. See HEMEROCALLIS and CRINUM.

LILIO-FRITILLARIA. See FRITILLARIA.

LILIO-HYACINTHUS. See SCILLA.

LILIO-NARCISSUS. See AMARYLLIS.

LILIUM. Tourn. Inſt. R. H. 369. tab. 191. Lin. Gen. Plant. 371. [takes its name of λειῶ, ſmooth, poliſhed, becauſe its leaves are, as it were, poliſhed; or of λειρὸν, which ſignifies the ſame thing,] the Lily; in French, *Lis*.

The CHARACTERS are,

The flower has no empalement; it hath ſix petals, which are narrow at their baſe, but are broad, obtuſe, and reflexed at their points. The flower is of the open bell-ſhape, the petals are thick, obtuſe, and keel-ſhaped; on their back each petal has a narrow longitudinal nectarium at their baſe. It hath ſix ſtamina which are erect and ſhorter than the petals, terminated by oblong proſtrate ſummits, with a cylindrical oblong germen having ſix furrows, ſupporting a cylindrical ſtyle the length of the petals, crowned by a thick triangular ſtigma. The germen afterward becomes an oblong capſule with ſix rough furrows hollowed at the top, having three cells which are filled with flat half round ſeeds, lying above each other in a double order.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which includes thoſe plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. LILIUM (*Candidum*) foliis ſparſis, corollis campanulatis erectis, intus glabris. Hort. Cliff. 120. *Lily with ſparſed leaves, and a bell-ſhaped erect flower which is ſmooth within.* Lilium album, flore erecto & vulgare. C. B. P. 76. *Common white Lily with an erect flower.*
2. LILIUM (*Peregrinum*) foliis ſparſis, corollis campanulatis cernuis, petalis baſi anguſtioribus. *Lily with ſparſed leaves, and a bell-ſhaped nodding flower, whoſe petals are narrower at their baſe.* Lilium album, floribus dependentibus, ſive peregrinum. C. B. P. 76. *White foreign Lily with pendent flowers.*
3. LILIUM (*Bulbiferum*) foliis ſparſis, corollis campanulatis erectis, intus ſcabris. Hort. Cliff. 120. *Lily with ſparſed leaves, and an erect bell-ſhaped flower, rough within.* Lilium purpureo-croceum majus. C. B. P. 76. *Greater Lily with a purple Saffron-coloured flower, commonly called Orange Lily.*
4. LILIUM (*Humile*) humile, foliis linearibus ſparſis, corollis campanulatis erectis, caule bulbifero. *Dwarf Lily with narrow ſparſed leaves, erect bell-ſhaped flowers, and a ſtalk bearing bulbs.* Lilium bulbiferum minus. C. B. P. 77. *Smaller bulb-bearing Lily, by ſome called the fiery Lily.*
5. LILIUM (*Pomponium*) foliis ſparſis ſubulatis, floribus reflexis, corollis revolutis. Hort. Cliff. 120. *Lily with awl-ſhaped ſparſed leaves and reflexed flowers, whoſe petals are turned backward.* Lilium rubrum anguſtifolium. C. B. P. 78. *Narrow-leaved red Lily or Martagon.*
6. LILIUM (*Anguſtifolium*) foliis linearibus ſparſis, pedunculis longiſſimis. *Lily with narrow ſparſed leaves, and very long foot-ſtalks to the flowers.* Lilium brevi & gramineo folio. C. B. P. 79. *Lily with a ſhort Graſs leaf, commonly called Martagon of Pompony.*
7. LILIUM (*Chalcedonicum*) foliis ſparſis lanceolatis, floribus reflexis, corollis revolutis. Hort. Cliff. 120. *Lily with ſparſed ſpear-ſhaped leaves, and reflexed flowers whoſe petals turn backward.* Lilium Byzantinum miniatum. C. B. P. 78. *Lily of Byzantium with a carmine flower, commonly called the ſcarlet Martagon.*
8. LILIUM (*Superbum*) foliis ſparſis lanceolatis, floribus pyramidatis reflexis, corollis revolutis. *Lily with ſparſed ſpear-ſhaped leaves, and pyramidal reflexed flowers, whoſe petals turn backward.* Martagon multis & magnis floribus luteis alios ſuperans. Suvert. Icon. Pl. 57. *The great yellow Martagon.*
9. LILIUM (*Martagon*) foliis verticillatis, floribus reflexis, corollis revolutis. Hort. Cliff. 120. *Lily with leaves growing in whorls, and reflexed flowers whoſe petals turn backward.* Lilium floribus reflexis montanum. C. B. P. 77. *Mountain Lily with reflexed flowers, commonly called purple Martagon.*
10. LILIUM (*Hirſutum*) foliis verticillatis hirſutis, floribus reflexis, corollis revolutis. *Lily with hairy leaves growing in whorls, and reflexed flowers whoſe petals turn backward.* Lilium floribus reflexis alterum lanugine hirſutum. C. B. P. 718. *Another Lily with reflexed flowers which is hairy and downy, commonly called the red Martagon.*
11. LILIUM (*Canadenſe*) foliis verticillatis, floribus reflexis corollis campanulatis. Lin. Sp. Plant. 303. *Lily with leaves growing in whorls, and reflexed bell-ſhaped flowers.* Lilium, ſc. martagon Canadenſe maculatum. Mor. Hiſt. 2. p. 408. *Lily, or Martagon of Canada with ſpotted flowers.*
12. LILIUM (*Campſchatenſe*) foliis verticillatis, floribus erectis, corollis campanulatis. Amœn. Acad. 2. p. 348. *Lily with leaves growing in whorls, and an erect bell-ſhaped flower.*
13. LILIUM (*Philadelphicum*) foliis verticillatis brevibus, corollis campanulatis, unguibus petalorum anguſtioribus, floribus erectis. Icon. tab. 165. *Lily with very ſhort leaves growing in whorls, and bell-ſhaped flowers whoſe petals are very narrow at their baſe.*

There is a greater variety of Martagons than are here mentioned, but as they are ſuppoſed to be only accidental ariſing from culture, ſo I thought it would be to little purpoſe to inſert them here; therefore I ſhall only give their common titles hereafter.

The common white Lily is ſo well known as to need no deſcription; this grows naturally in Paleſtine and Syria, but has been long cultivated in all the gardens of Europe. It is ſo hardy that no froſt ever injures the roots in England, and it propagates ſo faſt by offſets from the roots, that it is become ſo common as to be little regarded, though there is great beauty in the flowers, and they emit an agreeable odour. Of this ſort there are the following varieties:

The white Lily ſtriped with purple.

The white Lily with variegated leaves.

The white Lily with double flowers.

Theſe are varieties which have accidentally riſen from culture; the ſort with variegated flowers has not been in England much more than thirty-five years, but is now very common in moſt of the gardens, and is by ſome perſons eſteemed for the variety of its purple ſtripes; but as the pure white of the flower is ſtained by the purple, ſo as to appear of a dull colour, therefore many prefer the common white Lily.

The ſort with variegated leaves is chiefly valued for its appearance in winter and ſpring, for as the leaves come up early in the autumn, which ſpread themſelves flat on the ground, and being finely edged with broad yellow ſtripes, they make a pretty appearance during the winter and ſpring months. The flowers are the ſame as thoſe of the common ſort, but appear earlier in ſummer, which may be occaſioned by the roots being weaker than thoſe of the plain ſort, for all variegated plants are weaker than thoſe which are plain.

The white Lily with double flowers is leſs valuable than either of the other, becauſe their flowers never open well, unleſs they are covered with glaſſes to ſhelter them from the rain and dew, ſo often rot without expanding. Theſe flowers have none of the agreeable odour which the ſingle ſort is valued for, even when they open the faireſt; for as by the multiplicity of petals in the flowers, the parts of generation are deſtroyed, ſo there is a want of the fecundating powder from whence the odour is ſent out.

The roots, leaves, and flowers of the common white Lily are uſed in medicine; the roots are frequently uſed to ſoften, ripen, and digeſt tumours and hard ſwellings. Matthiolus ſays, that the diſtilled water

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of the flowers, is properly and ſucceſsfully given to women in hard labour; and the diſtilled water of the leaves is of great uſe in diſtempers of the lungs.

The white Lily with dependent flowers, was originally brought from Conſtantinople. This is by ſome ſuppoſed to be only a variety of the common ſort, but is undoubtedly a diſtinct ſpecies; the ſtalk is much ſlenderer than the common, the leaves are narrower and fewer in number; the flowers are not quite ſo large, and the petals are more contracted at their baſe; theſe always hang downward, whereas thoſe of the common ſort grow erect. The ſtalks of this kind ſometimes are very broad and flat, and appear as if two or three were joined together; when this happens, they ſuſtain from ſixty to a hundred flowers, and ſometimes more; this has occaſioned many to think it a different ſort, who have mentioned this with broad ſtalks and many flowers as a diſtinct ſpecies, though it is accidental, for the ſame root ſcarce ever produces the ſame two years.

Theſe ſorts are eaſily propagated by offsets, which the roots ſend out in ſo great plenty, as to make it neceſſary to take them off every other, or at moſt every third year, to prevent their weakening the principal roots. The time for removing the roots is at the end of Auguſt, ſoon after the ſtalks decay; for if they are left longer in the ground, they will ſoon put out new fibres and leaves, when it will be improper to remove them, becauſe that will prevent their flowering the following ſummer. They will thrive in almoſt any ſoil or ſituation, and as they grow tall and ſpread, ſo they muſt be allowed room; therefore in ſmall gardens they take up too much ſpace, but in large borders they are very ornamental.

The common Orange or red Lily, is as well known in the Engliſh gardens as the white Lily, and has been as long cultivated here. This grows naturally in Auſtria and ſome parts of Italy. This ſort multiplies very faſt by offsets from the roots, and is now ſo common, as to be almoſt rejected; however, in large gardens theſe ſhould not be wanting, for they make a good appearance when in flower, if they are properly diſpoſed. Of this ſort there are the following varieties:

The Orange Lily with double flowers.
The Orange Lily with variegated leaves.
The ſmaller Orange Lily.

Theſe varieties have been obtained by culture, and are preſerved in the gardens of floriſts. They all flower in June and July, and their ſtalks decay in September, when the roots may be tranſplanted, and their offsets taken off, which ſhould be done once in two or three years, otherwiſe their bunches will be too large, and the flower-ſtalks weak. This doth not put out new leaves till toward ſpring, ſo that the roots may be tranſplanted at any time after the ſtalks decay till near Chriſtmas. It will thrive in any ſoil or ſituation, but will be ſtrongeſt in a ſoft gentle loam not too moiſt.

The bulb-bearing fiery Lily ſeldom riſes much more than half the height of the former; the leaves are narrower, the flowers are ſmaller, and of a brighter flame colour; they are few in number, and ſtand more erect. Theſe come out a month before the common ſort, and the ſtalks put out bulbs at moſt of the joints, which, if taken off, when the ſtalks decay, and planted, will produce plants, ſo that it may be propagated in plenty. There are ſeveral varieties of this, which are mentioned as diſtinct ſpecies, but are ſuppoſed to have been produced by culture. Theſe are,

The greater broad-leaved bulb-bearing Lily.
The many-flowered bulb-bearing Lily.
The ſmall bulb-bearing Lily.
The hoary bulb-bearing Lily.

All theſe ſorts of Lilies will thrive under the ſhade of trees, ſo may be introduced in plantations, and on the borders of woods, where they will have a good effect during the time they are in flower.

There is a great variety of the Martagon Lily; theſe differ from the common Lilies, in having their petals reflexed backward in form of a Turk's turbant, from whence many give them the title of Turk's Cap. In the gardens of the floriſts, particularly thoſe in Holland, they make a great variety of theſe flowers, amounting to the number of thirty or upward; but in the Engliſh gardens, I have not obſerved more than half that number, and moſt of theſe are accidental, for thoſe before enumerated, are all that I think may be ſuppoſed ſpecifically different. However, for the ſake of ſuch as are curious in collecting theſe ſorts of flowers, I ſhall here mention all thoſe varieties which are to be found in the Engliſh gardens.

The common Martagon with double flowers.
The white Martagon.
The double white Martagon.
The white ſpotted Martagon.
The Imperial Martagon.
The early ſcarlet Martagon.
The Conſtantinople Vermillion Martagon.

The common Martagon with red flowers, which is the fifth ſort before enumerated, has very narrow leaves, growing without order. The ſtalk riſes near three feet high, ſuſtaining at the top eight or ten bright red flowers, which ſtand at a diſtance from each other. Theſe appear in June, and the ſtalks decay in Auguſt, ſoon after which time the roots may be tranſplanted.

The ſixth ſort is called Martagon of Pompony; the ſtalks of this riſe higher than thoſe of the former, the leaves are ſhorter, and ſet cloſer upon the ſtalks; each of theſe ſtalks ſuſtain from fifteen to thirty flowers, of a very bright red, approaching to ſcarlet. The foot-ſtalks of the flowers are very long, ſo that the head of flowers ſpreads out very wide; theſe hang downward, but their petals are reflexed quite back. This flowers ſoon after the fifth ſort.

The ſeventh ſort is commonly known by the title of Scarlet Martagon; this riſes with a ſtalk from three to four feet high; the leaves are much broader than thoſe of the former ſorts, and appear as if they were edged with white; they are placed very cloſely upon the ſtalks, but without any order. The flowers are produced at the top of the ſtalk; they are of a bright ſcarlet, and are ſeldom more than five or ſix in number. This flowers late in July, and in cool ſeaſons will continue in beauty great part of Auguſt.

The eighth ſort riſes with a ſtrong ſtalk from four to five feet high, garniſhed with leaves as broad as thoſe of the laſt mentioned, which ſtand without order; the flowers are produced in form of a pyramid, on the upper part of the ſtalk. When the roots of this kind are ſtrong, they produce forty or fifty flowers upon each ſtalk; they are large, of a yellow colour, ſpotted with dark ſpots, ſo make a fine appearance; but the flowers have ſo diſagreeable ſtrong ſcent, that few perſons can endure to be near them, which has occaſioned their being thrown out of moſt Engliſh gardens. This flowers the latter end of June.

The ninth ſort is frequently called the Purple Martagon, though in moſt of the old gardens it is known ſimply by the title of Turk's Cap. This riſes with a ſtrong ſtalk from three to four feet high, garniſhed by pretty broad leaves, which ſtand in whorls round the ſtalk, at certain diſtances. The flowers are of a dark purpliſh colour, with ſome ſpots of black; they are produced in looſe ſpikes on the top of the ſtalks. This flowers in June; the flowers of this ſort have a very diſagreeable odour when near, but it is not ſo offenſive as the former ſort.

The tenth ſort is very like the former, but the leaves are narrower; the whorls ſtand farther aſunder, the leaves and ſtalks are ſomewhat hairy, and the buds of the flowers are covered with a ſoft down: the flowers are of a brighter colour with few ſpots, and come out earlier in the ſummer, though the ſtalks appear much later above ground. This flowers early in June, and the ſtalks decay in Auguſt.

The eleventh ſort is commonly called the Canada Martagon, as it was firſt brought to Europe from thence,

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but it grows naturally in moſt parts of North America. The roots of this are oblong and large, made up of ſcales like the other ſorts; the ſtalks riſe from four to five feet high, garniſhed with oblong pointed leaves placed in whorls round the ſtalk. The flowers are produced toward the top of the ſtalk; they are large, of a yellow colour, ſpotted with black, which are ſhaped like the flowers of the Orange Lily; the petals of them are not turned backward ſo much as thoſe of the other ſorts of Martagon. This flowers the beginning of Auguſt, and when the roots are large, the ſtalks have a good number of flowers, ſo make a fine appearance. There are two varieties of this, one with larger and deeper coloured flowers than the other, but they are ſuppoſed to have accidentally come from ſeeds.

The twelfth ſort grows naturally in North America, and is alſo mentioned to grow at Campſchatſki. This hath erect flowers ſhaped like thoſe of the Canada Martagon, but the petals of this are oval, not narrowed at their baſe as are thoſe, and ſit cloſe to the foot-ſtalk; the flowers are of a deeper colour, and not ſo much ſpotted as the other ſort. It flowers in July, and the ſtalks decay in the autumn.

This ſort is at preſent rare in England, being in very few gardens. It was ſent me a few years ago from Maryland, but after it had flowered the root periſhed.

The thirteenth ſort was ſent me from Penſylvania by Mr. John Bartram, who found it growing naturally in that country. The root of this is ſmaller than thoſe of the other ſorts; it is ſcaly and white; in the ſpring it ſends out one upright ſtalk near a foot and a half high; the leaves come out in whorls round the ſtalks, at diſtances; they are ſhort, pretty broad, and have obtuſe points. The ſtalk is terminated by two flowers which ſtand erect, upon ſhort ſeparate foot-ſtalks; they are ſhaped like the flowers of the bulb-bearing fiery Lily, but the petals are narrower at their baſe, ſo that there are ſpaces between each, but upward they enlarge and join, forming a ſort of open bell-ſhaped flower; their petals are ſpear-ſhaped, ſo are contracted at the top, where they terminate in acute points. The flowers are of a bright purple colour, marked with ſeveral dark purple ſpots toward their baſe. In the center of the flower is ſituated a ſix-cornered germen, ſupporting a ſtrong ſtyle, crowned by a three-cornered ſtigma; round this are ſituated ſix awl-ſhaped ſtamina, terminated by oblong proſtrate ſummits; theſe are a little ſhorter than the ſtyle. The germen afterward turns to an oblong capſule with three angles, blunt at the top, divided into three cells, filled with flat ſeeds lying over each other. It flowers in July, and the ſeeds ripen the latter end of September.

This ſort is at preſent very rare in the Engliſh gardens, but as it has ripened ſeeds the laſt ſeaſon here, ſo it may in a few years become very common. As this ſort grows in a ſmall compaſs, and the flowers have no ill ſcent, it is proper furniture for the borders of ſmall gardens. The ſtalks of this decay ſoon after the ſeeds are ripe, when it will be a proper time to remove the roots, for theſe do not put out new fibres till after Chriſtmas. The roots of this kind do not put out many offſets, ſo that unleſs it is propagated by ſeeds, it cannot be increaſed in any plenty.

All the ſorts of Martagon may be propagated by offſets from the roots, in the ſame way as the common Lily, which ſome of the ſorts produce in as great plenty; but there are others which ſend out very few offſets, which occaſion their preſent ſcarcity. The roots of all the ſorts of Martagon may be ſafely taken up when their ſtalks decay; and if there is a neceſſity for keeping the roots out of the ground, if they are wrapped in dry Moſs, they will keep perfectly well for two months; ſo that if the roots are to be tranſported to a diſtant place, this precaution of wrapping them up is neceſſary; but where they are to be planted in the ſame garden, there will be no occaſion for this, eſpecially if they are not kept too long out of the

ground; for if the place is ready to receive the roots, they ſhould be planted the beginning of October; ſo if the roots are put in a dry cool place, they will keep very good without any further care; but if the ground is not ready to receive them till later in the year, then it will be proper to cover the roots with dry ſand, or wrap them in Moſs to exclude the air, which, if they are much expoſed to, will cauſe their ſcales to ſhrink, which weakens the roots, often cauſing a mouldineſs, and is ſometimes the occaſion of their rotting.

Theſe roots ſhould be planted five or ſix inches deep in the ground, eſpecially if the ſoil is light and dry; but where the ground is moiſt, it will be proper to raiſe the borders in which theſe are to be planted, five or ſix inches above the level of the ſurface of the ground; for if the water riſes ſo high in winter as to come near the roots, it will cauſe them to rot; and where the ſoil is naturally ſtiff and ſubject to bind, there ſhould be a good quantity of ſea-coal aſhes or rough ſand, well mixed in the border, to ſeparate the parts, and prevent the ground from binding in the ſpring, otherwiſe the roots will not ſend up very ſtrong ſtalks, nor will they make ſo good increaſe.

As the Canada Martagon, the Martagon of Pompony, and the laſt ſort, are ſomewhat tenderer than the others, ſo if in very ſevere winters the ſurface of the ground over them is covered with old tanners bark or ſea-coal aſhes, it will be a good way to ſecure them from being injured by the froſt; and in the ſpring the covering may be removed, before the roots ſhoot up their ſtalks.

The tall growing ſorts of theſe are only proper for large gardens, ſo they may be intermixed with the white and Orange Lilies, the tall growing Iriſes, and other flowers of the ſame growth; where, if they are not too much crowded, and are properly diſpoſed, they will make a good appearance; and as they flower one after another, ſo they may be diſpoſed according to their ſeaſons of flowering. There are ſome of the common Martagons hardy enough to thrive under the ſhade of trees, ſo they may be diſpoſed in wilderneſs quarters, with the common ſort of Lilies, where they will have a good effect.

The roots of all theſe kinds muſt never be tranſplanted after they have made any ſhoots, for that will ſo much weaken them (if it does not entirely kill them) as not to be recovered in leſs than two or three years, as I have experienced to my coſt; for being obliged to remove a fine collection of theſe roots early in the ſpring, I loſt a great part of them, and the others were long recovering their ſtrength.

All the ſorts of Lilies and Martagons may be propagated by ſowing their ſeeds, by which method ſome new varieties may be obtained, provided the ſeeds are ſaved from the beſt ſorts; eſpecially the Martagons, which are more inclinable to vary than the other Lilies. The manner of ſowing them is as follows:

You muſt be provided with ſome ſquare boxes about ſix inches deep, which ſhould have holes bored in their bottoms to let the wet paſs off: theſe boxes ſhould be filled with freſh light ſandy earth, and in the beginning of October, ſoon after the ſeeds are ripe, you muſt ſow them thereon pretty thick, covering them over with light ſifted earth about half an inch; then place the boxes where they may have the morning ſun only, obſerving if the ſeaſon ſhould prove dry, to refreſh them often with water, as alſo to pull out all weeds which may be produced. In this ſituation the boxes ſhould remain until the beginning of November, when you muſt remove them where they may have as much ſun as poſſible, as alſo be ſcreened from the cold north and eaſt winds during the winter ſeaſon; but in the ſpring of the year, about the beginning of April, you muſt remove the boxes into their former poſition; for now the young plants will appear above ground, which are impatient of too much heat; beſides, the earth in the boxes will dry too faſt at this ſeaſon, if expoſed to the full ſun at noon. You muſt alſo obſerve at this ſeaſon to keep them entirely

entirely clear from weeds, as alſo to refreſh them gently with water, if the ſeaſon ſhould prove dry, but this muſt be done ſparingly and with caution. In this place you ſhould let the boxes remain until the beginning of Auguſt; at which time you ſhould prepare ſome beds of the above mentioned freſh light earth, which muſt be levelled very even; then take the earth out of the boxes, together with the ſmall bulbs, and ſtrew it equally over the beds, covering it over about half an inch thick with fine ſifted earth; and if the ſeaſon ſhould prove very hot and dry, you would do well to ſhade the beds in the middle of the day from the great heat of the ſun, and refreſh them now and then with water.

You muſt alſo obſerve to keep them entirely clear from weeds, and if the following winter ſhould prove very cold, you muſt cover the beds with Peas-haulm, or ſome other light covering, to keep out the froſt, which would prejudice the roots, if ſuffered to enter deep into the ground (eſpecially while they are ſo young:) but you muſt never let the covering remain on in mild weather, which would alſo be very injurious to them.

The end of February, or the beginning of March, when the hard froſts are over, you ſhould gently clear off the earth upon the ſurface of the beds (which, during the winter ſeaſon, will often have contracted a moſſineſs;) and ſift a little freſh earth equally over the beds, which will greatly encourage the roots; but in doing this, you muſt be very careful not to ſtir the ground ſo deep as to diſturb or injure the roots; nor ſhould you defer doing it too late, leſt the ſhoots ſhould be coming up, which, by this operation might be broken and greatly hurt; and as the ſeaſon advances, you muſt be careful to clear them from weeds, and in dry weather to water them gently, but they ſhould not have it in great plenty; and in very hot days, if you ſhade them from the ſun, it will be of great ſervice to them; but this need not be done till the latter end of April or the beginning of May, when the ſeaſon is ſometimes very hot and dry. When their leaves are quite decayed, you ſhould ſtir the ſurface of the beds again (but do not go too deep) which will prevent the weeds from growing very faſt, and be of ſervice to the roots; and in September you muſt ſift ſome more freſh earth over the beds about half an inch thick, and in winter and ſpring you muſt manage them as was directed for the preceding year.

In September following theſe roots will require to be tranſplanted to a greater diſtance, when you muſt prepare ſome beds of the ſame freſh light earth as was before directed, making them level; then take up the roots and tranſplant them into the beds, placing them about eight inches aſunder, obſerving to put the roots with their buds uppermoſt, and about four inches below the ſurface.

This work ſhould be done when the weather is moiſt, for if the roots are tranſplanted in a very dry ſeaſon, and there doth not happen rain ſoon after, they will take a mouldineſs which many times rots them.

You muſt alſo obſerve, as was before directed, to keep the beds entirely clear from weeds; and in winter, if the froſt ſhould be very ſevere, you muſt cover them with Peas-haulm or decayed tan, to prevent the roots from being injured thereby; and in the ſpring you ſhould take off the covering, alſo the earth from the ſurface of the beds, as before, laying ſome freſh thereon, and ſo continue the ſummer and winter's work, as before.

The ſecond year after being planted in theſe beds, the ſtrongeſt roots will begin to flower; at which time, if you obſerve any peculiar varieties, you ſhould put down a ſtick by each of theſe roots to mark them; which may be taken up when their leaves are decayed, and removed into the borders of the flower-garden, or tranſplanted into other beds at a greater diſtance, to encourage them to flower ſtrong. But you cannot be ſo good a judge which of thoſe will be

good by their firſt flowers, therefore you ſhould never reject any of them until they have flowered two years; for many times, ſome of theſe flowers will make but a mean appearance the firſt year, and afterwards become fair handſome flowers when they have obtained ſtrength; ſo that you ſhould ſuffer all ſuch, of whoſe worth you are not aſſured, to remain undiſturbed two years, that you may be aſcertained which of them are worth preſerving; theſe ſhould be removed into the flower-garden at a proper ſeaſon, but the ordinary ones may be rejected, or planted in ſhady outer walks, where, though they are mean flowers, they will appear well enough.

LILIUM CONVALLIUM. See CONVALLARIA.

LILIUM PERSICUM. See FRITILLARIA.

LILIUM SUPERBUM. See GLORIOSA.

LIME-TREE. See TILIA.

LIMODORUM. Flor. Virg. 110. Lin. Gen. Plant. 904. Helleborine. Tourn. Inſt. R. H. 436. tab. 249. Baſtard Hellebore.

The CHARACTERS are,

It hath a ſingle naked flower-ſtalk, ariſing immediately from the root. The flowers have no empalement, but a ſpatha (or ſheath) ſituated below them. The flower is compoſed of five oval petals, which are diſſimilar. The ſide petals ſpread open, but the two upper are connected together; the lower one is keel-ſhaped, ſo that it has much the appearance of a butterfly flower. Within the petals is ſituated a concave nectarium of one leaf, which is as long as the petals. It has two ſtamina, which are as long as the petals, terminated by two oval ſummits. It hath a column-ſhaped germen ſituated under the flower, which is as long as the petals, ſupporting a ſlender ſtyle, faſtened to the ſtamina, crowned by a funnel-ſhaped ſtigma. The column-ſhaped germen afterward turns to a capſule of the ſame form, opening with three valves, having one cell, in which are lodged four or five roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's twentieth claſs, which includes thoſe plants whoſe flowers have but two ſtamina, which are connected with the ſtyle.

We have but one SPECIES of this genus at preſent in England, viz.

LIMODORUM (*Tuberoſum*) foliis longis anguſtis ſulcatis & acuminatis, pedunculis longiſſimis. *Limodorum with long narrow leaves ending in acute points, and a very long foot-ſtalk to the flower.* Helleborine Americana, radice tuberoſâ, foliis longis anguſtis, caule nudo, floribus ex rubro pallidè-purpuraſcentibus. Martyn. Cent. 1. Pl. 50. Icon. tab. 165. *American Baſtard Hellebore with a tuberoſe root, long narrow leaves, a naked ſtalk, and flowers of a red and pale purpliſh colour.*

This plant grows naturally in Jamaica, eſpecially on the north ſide of that iſland, from whence many of the roots were ſent me by the late Dr. Houſtoun, with the following title, Helleborine purpurea, tuberoſâ radice. Plum. Cat. 9. ſo that it is the ſame plant with Plumier's. It alſo grows naturally in the French Iſlands of America. The roots of this were afterward brought me from the Bahama Iſlands, where it was found growing naturally; and it was ſince ſent me from Penſylvania, by Mr. John Bartram, who found it growing naturally in that country.

The root of this plant is ſhaped like that of the true Saffron Crocus, but the outer cover is of a darker brown colour; from this comes out two or three leaves, according to the ſize and ſtrengthof the root; theſe are nine or ten inches long, and near three quarters of an inch broad in the middle, being contracted toward both ends, terminating with long acute points, folding over each other at their baſe; they have five longitudinal furrows, like the firſt leaves of young Palms; theſe leaves come out in the ſpring, and frequently decay the following winter; but when the plants are kept in a warm ſtove, they are not very long deſtitute of leaves. The flower-ſtalk ariſes immediately from the root, on one ſide of the leaves; this is naked, ſmooth, and of a purpliſh colour toward the top. It is near a foot and a half high, and terminated by a looſe ſpike of purpliſh red flowers,

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ſtanding upon ſhort foot-ſtalks; they are compoſed of five or ſix petals, the two upper are connected together, forming a ſort of helmet, the two ſide petals expand like the wings of a butterfly flower, and the lower forms a ſort of keel. In the center of the petals is ſituated a column-ſhaped germen, which riſes from the baſe of the petals, ſupporting a ſlender ſtyle, to which adhere two ſtamina, terminated by oval ſummits, as the ſtyle is by a funnel-ſhaped ſtigma; after the flowers are faded, the germen becomes a three-cornered column-ſhaped capſule, with one cell, opening with three valves, containing ſeveral roundiſh ſeeds, but theſe ſeeds are rarely produced in England.

This plant is not conſtant to any particular ſeaſon of flowering; for ſometimes it has flowered in April and May, and in other years it has not flowered till September or October; but the moſt uſual time of its flowering is in June and July, when the flowers appear early in the ſpring; they are ſucceeded by ſeed-veſſels, which ſometimes ripen in this country.

There are ſeveral other ſpecies of this genus mentioned by Father Plumier, but I have only ſeen one more than this here mentioned, which had oval obtuſe leaves, furrowed in the ſame manner as the leaves of this ſort, but were of a thicker conſiſtence; the flowers of this I have not yet ſeen. The root was ſent me from Maryland, where it grew naturally in a thicket.

The ſort here deſcribed is too tender to thrive in the open air in England, and although with care it may be preſerved in a warm green-houſe, yet it ſeldom flowers in ſuch a ſituation; ſo that to have it in perfection, it is neceſſary to keep it in the tan-bed in the ſtove in winter; and if in ſummer the pots are plunged in a tan-bed under a deep frame, the plants will thrive, and flower as ſtrong as in their native ſoil.

It is propagated by offsets from the root, which are ſent out pretty freely when the plants are in vigour; theſe ſhould be taken off, and the roots tranſplanted when they are the moſt deſtitute of leaves. The roots ſhould have a ſoft loamy ſoil, and muſt have but little water, eſpecially in winter.

LIMODORUM. See ORCHIS.

LIMON. Tourn. Inſt. R. H. 621. Citrus. Lin. Gen. Plant. 807. [ſo called of Λείμων, a meadow, becauſe the leaves of this tree are of a green colour, as is likewiſe the fruit before it comes to maturity.] The Lemon-tree; in French, *Limonier*.

The CHARACTERS are,

The flower is compoſed of five oblong thick petals, which are a little concave, ſpreading open; theſe ſit in a ſmall empalement of one leaf, indented at five parts at the top. It hath about ten or twelve ſtamina, which are joined in three or four bodies, which are terminated by oblong ſummits. It hath an oval germen, ſupporting a cylindrical ſtyle the length of the ſtamina, crowned by a globular ſummit. The germen afterward becomes an oval fruit with a fleſhy rind, incloſing a thin pulpy fruit with ſeveral cells, each having two hard ſeeds.

This genus of plants is ranged in the ſixth ſection of Tournefort's twenty-firſt claſs, which includes the trees and ſhrubs with a Roſe-ſhaped flower, whoſe pointal becomes a fleſhy fruit with hard dry ſeeds. Dr. Linnæus has joined the Citron, Orange, and Lemon together, making them only different ſpecies of the ſame genus; but if we admit of the fruit being a characteriſtic note to diſtinguiſh the genus, the Limon cannot be joined with the Orange, for the Orange has a globular fruit, compreſſed at both ends, but the Limon has an oval fruit, prominent at the top, and the latter hath not ſo many cells as the former. It is placed in the ſecond ſection of Linnæus's eighteenth claſs, which includes the plants whoſe flowers have about twenty ſtamina joined in ſeveral bodies.

The SPECIES are,

1. LIMON (*Vulgaris*) foliis ovato-lanceolatis acuminatis, ſubſerratis. *Limon-tree with oval, ſpear-ſhaped, acute-pointed leaves, which are little ſawed.* Limon vulgaris. Ferr. Heſp. 193. *The common Limon.*
2. LIMON (*Spinoſum*) foliis ovatis integris, ramis ſubſpinoſis. *Limon with oval entire leaves, and branches which are ſomewhat ſpiny.* Limon acris. Ferr. Heſp. 331. *The ſour Limon, commonly called Lime.*
3. LIMON (*Racemoſum*) foliis ovato-lanceolatis ſubſerratis, fructu conglomerato. *Limon with oval ſpear-ſhaped leaves, which are ſomewhat ſawed, and fruit growing in cluſters.* Limon fructu racemoſo. Tourn. Inſt. R. H. 621. *Limon with fruit growing in bunches.*

There are great varieties of this fruit, which are preſerved in ſome of the Italian gardens, and in both the Indies there are ſeveral which have not yet been introduced to the European gardens; but theſe, like Apples and Pears, may be multiplied without end from ſeeds, therefore I ſhall only mention the moſt remarkable varieties which are to be found in the Engliſh gardens at preſent, as it would be to little purpoſe to enumerate all thoſe which are mentioned in the foreign catalogues.

The Limon-tree with variegated leaves.
The ſweet Limon.
The Pear-ſhaped Limon.
The imperial Limon.
The Limon called Adam's Apple.
The furrowed Limon.
The childing Limon.
The Limon with double flowers.

The common Limon and the ſweet Limon are brought to England from Spain and Portugal in great plenty, but the fruit of the latter are not much eſteemed. The Lime is not often brought to England, nor is that fruit much cultivated in Europe, but in the Weſt-Indies it is preferred to the Limon, the juice being reckoned wholeſomer, and the acid is more agreeable to the palate; there are ſeveral varieties of this fruit in the Weſt-Indies, ſome of which have a ſweet juice, but thoſe are not greatly eſteemed; and as the inhabitants of thoſe iſlands do not propagate theſe fruits by grafting or budding, being contented with ſowing their ſeeds, ſo there is no doubt but a great variety of them may be found by any perſon who is curious in diſtinguiſhing them.

As I have never known the common Limon ever vary to the Lime, when raiſed from ſeeds, nor the Lime vary to the Limon, I ſuppoſe they are ſpecifically different, for I have frequently raiſed both from ſeeds, and have always found them continue their difference in leaf and branch, for I never waited to ſee their fruit, as they were only deſigned for ſtocks, to bud other ſorts into them.

The Pear-ſhaped Limon is a ſmall fruit with very little juice, ſo is not much propagated any where; the curious, who have room and convenience for keeping many of theſe trees, may preſerve a plant or two of this ſort for the ſake of variety.

The fruit of the Imperial Limon is ſometimes brought to England from Italy, but I do not remember to have ſeen any of this ſort imported from Spain or Portugal, ſo that I ſuppoſe they are not much propagated in either of theſe countries; for the inhabitants of both thoſe fine countries are ſo very incurious, eſpecially in horticulture, as to truſt almoſt entirely to nature, that the products of their gardens are inferior both in numbers and quality, to many other parts of Europe, where the climate is much leſs favourable for theſe productions. And in the article we are now upon, there are many ſtrong inſtances of the ſlothfulneſs, or incurioſity of the Portugueze particularly, for they had many of the moſt curious ſorts of Orange, Limon, and Citron-trees, brought from the Indies to Portugal formerly, which ſeemed to thrive almoſt as well there, as in their native ſoil, and yet they have not been propagated; there are a few trees of theſe ſorts ſtill remaining in ſome neglected gardens near Liſbon, almoſt unnoticed by the inhabitants. As there are alſo ſeveral curious trees and plants, which were formerly introduced from both Indies, ſome of which thrive and produce fruit amidſt the wild

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buſhes and weeds, with which thoſe gardens are ſpread over.

All theſe ſorts are propagated by budding or inarching them either on ſtocks of Lemons or Citrons, produced from ſeeds, but they will not ſo readily unite on Orange ſtocks, for which reaſon the Citrons are preferable to either Oranges or Lemons for ſtocks, as they readily join with either ſort, and being of larger growth, cauſe the buds of the other ſorts to ſhoot much ſtronger than if they were on ſtocks of their own kind. The method of raiſing theſe ſtocks, and the manner of budding them, being already exhibited under the article of AURANTIUM, it would be ſuperfluous to repeat it here.

The culture of the Lemon being the ſame with that of the Orange-tree, it would be needleſs to repeat it here; therefore I ſhall only obſerve, that the common Lemons are ſomewhat hardier than the Oranges, and will bring their fruit to maturity with us better than they will do, and require to have a greater ſhare of freſh air in winter; for which reaſon, they ſhould always be placed nearer to the doors or windows of the green-houſe; and in ſome curious gardens, theſe trees have been planted againſt walls, where, by covering them with glaſſes in winter, and protecting them from ſevere froſt, they have produced plenty of large fruit: as theſe trees do generally produce ſtronger ſhoots, they require more water to be given them than the Orange; but as to the tender ſorts, they muſt be treated with a little more care, otherwiſe their fruit will fall in winter, and come to nothing; theſe things being fully exhibited before, I refer the reader (as I hinted) to the article AURANTIUM, where their culture is fully ſet forth.

LIMONIUM. Tourn. Inſt. R. H. 341. tab. 177. Statice. Lin. Gen. Plant. 348. [takes its name of Λειμῶν, a marſh, as growing in marſhes.] Sea Lavender.

The CHARACTERS are,

The flowers have an imbricated perianthium, riſing one above another. The flower is funnel-ſhaped, compoſed of five petals, which are narrow at their baſe, but are broad and ſpreading at the top. It hath five awl-ſhaped ſtamina which are ſhorter than the petals, crowned by proſtrate ſummits. It hath a ſmall germen, ſupporting five ſlender ſtyles, crowned by pointed ſtigmas. The empalement of the flower afterward becomes a capſule, ſhut cloſe at the neck, but expanded above where the ſeeds are lodged. This genus of plants is ranged in the ſecond ſection of Tournefort's eighth claſs, which includes the herbs with a Clove Gilliflower flower, whoſe pointal becomes the ſeed incloſed in the empalement. Dr. Linnæus has joined this genus to the Statice of Tournefort, and places it in the fifth ſection of his fifth claſs, which contains the plants whoſe flowers have five ſtamina and five ſtyles. As the flowers of this genus are ranged one above another in form of ſpikes, and thoſe of the Statice are collected in globuar heads, they may, without impropriety, be kept ſeparate; and as there are ſeveral ſpecies of each genus, therefore I have the rather been inclined ſo to do, than by joining them, to ſwell the genus.

The SPECIES are,

1. LIMONIUM (*Vulgare*) foliis ovato-lanceolatis, caule tereti nudo paniculato. *Sea Lavender with oval ſpear-ſhaped leaves, and a taper paniculated ſtalk.* Limonium maritimum majus. C. B. P. 192. *Common great Sea Lavender.*
2. LIMONINM (*Narbonenſe*) foliis oblongo-ovatis, caule paniculato patulo, ſpicis florum brevioribus. *Sea Lavender with oblong oval leaves, a ſpreading paniculated ſtalk, and ſhorter ſpikes of flowers.* Limonium maritimum majus alterum ſerotinum Narbonenſe. H. R. Par. *Another large late flowering Sea Lavender of Narbonne.*
3. LIMONIUM (*oleæfolium*) foliis ovatis obtuſis, petiolis decurrentibus, caule paniculato, ſpicis florum erectioribus. *Sea Lavender with oval obtuſe leaves, running foot-ſtalks, a paniculated ſtalk, and more upright ſpikes of flowers.* Limonium maritimum minus, oleæ folio. C. B. P. 192. *Small Sea Lavender, with an Olive leaf.*
4. LIMONIUM (*Humile*) foliis lanceolatis, caule humile patulo, ſpicis florum tenuioribus. *Sea Lavender with ſpear-ſhaped leaves, a low ſpreading ſtalk, and ſlender ſpikes of flowers.* Limonium Anglicum minus, caulibus ramoſioribus, floribus in ſpicis rariùs ſitis. Raii Hiſt. 217. *Leſſer Engliſh Sea Lavender, with more branched ſtalks, and flowers ſeldom growing in a ſpike.*
5. LIMONIUM (*Tartaricum*) foliis lineari-lanceolatis, caule ramoſo patulo, floribus diſtantibus uno verſu diſpoſitis. *Sea Lavender with narrow ſpear-ſhaped leaves, a branching ſpreading ſtalk, and flowers placed aſunder on one ſide the ſtalk.* Limonium Orientale, plantaginis folio, floribus umbellatis. T. Cor. *Oriental Sea Lavender with Plantain leaves, and flowers growing in an umbel.*
6. LIMONIUM (*Sinuatum*) foliis radicalibus alternatim pinnato-ſinuatis, caulinis ternis triquetris ſubulatis decurrentibus. *Sea Lavender with the lower leaves alternately ſinuated like wings, and thoſe upon the ſtalks three-cornered, awl-ſhaped, and running along the foot-ſtalk.* Limonium peregrinum, foliis aſplenii. C. B. P. *Foreign Sea Lavender with Spleenwort leaves.*
7. LIMONIUM (*Siculum*) caule fruticoſo patulo, foliis lineari lanceolatis craſſis, floribus ſolitariis diſtantibus. *Sea Lavender with a ſpreading ſhrubby ſtalk, narrow, thick, ſpear-ſhaped leaves, and flowers growing ſingly at a diſtance from each other.* Limonium Siculum lignoſum, gallas ferens, & non ferens. Bocc. Rar. *Woody Sicilian Sea Lavender, ſometimes producing galls, at other times not.*
8. LIMONIUM (*Africanum*) foliis inferioribus lanceolatis hirſutis ferratis caulinis ternis linearibus acutis decurrentibus. *Sea Lavender with ſpear-ſhaped lower leaves which are hairy and ſawed, but growing by threes on the ſtalks, narrow, acute-pointed, and running along the ſtalk.* Limonium Africanum caule alato, foliis integris hirſutis, petalo pallidè flavo calyce amœnè purpureo. Martyn. Cent. 48. tab. 48. *African Sea Lavender with a winged ſtalk, entire hairy leaves, pale yellow petals to the flower, and a beautiful purple empalement.*
9. LIMONIUM (*Reticulatum*) foliis cuneiformibus, caule erecto paniculato, ramis inferioribus ſterilibus nudis. *Sea Lavender with wedge-ſhaped leaves, an upright paniculated ſtalk, and the under branches ſterile and naked.* Limonium minus flagellis tortuoſis. Bocc. Muſ. *Small Sea Lavender with twiſted ſhoots.*
10. LIMONIUM (*Cordatum*) caule nudo paniculato, foliis ſpathulatis retuſis. *Sea Lavender with a paniculated naked ſtalk, and ſpatule-ſhaped blunt leaves.* Limonium maritimum minus, foliolis cordatis. C. B. P. *Small Sea Lavender with little leaves, which are heart-ſhaped.*
11. LIMONIUM (*Echoideum*) caule nudo paniculato, tereti, foliis tuberculatis. *Sea Lavender with a naked, taper, paniculated ſtalk, and leaves ſet with tubercles.* Limonium minus annuum, bullatis foliis vel echioides. Bot. Monſp. *Small annual Sea Lavender with ſtudded leaves.*
12. LIMONIUM (*Fruticoſum*) caule erecto fruticoſo, foliis lineari-lanceolatis obtuſis, floribus alternis. *Sea Lavender with an upright ſhrubby ſtalk, narrow ſpear-ſhaped leaves, ending in obtuſe points, and flowers ranged alternately.* Limonium Egyptiacum fruticoſum, foliis lanceolatis obtuſis. *Shrubby Egyptian Sea Lavender with blunt ſpear-ſhaped leaves.*

The firſt ſort grows naturally in the marſhes which are flowed by the ſea, in ſeveral parts of England. The roots of this plant are thick, of a reddiſh colour, and an aſtringent taſte, ſending out many ſtrong fibres, which ſtrike deep in the ground; and from the upper part of the root comes out ſeveral oval ſpear-ſhaped leaves, from four to five inches long, and more than two inches broad in the middle; they are ſmooth, of a pretty thick conſiſtence, and of a dark green. The ſtalks riſe upward of a foot high, is naked of leaves, divided into many branches, which are again divided into ſmaller toward the top; theſe are terminated by ſlender ſpikes of pale blue flowers, ranged on one ſide the ſtalk above each other, coming out of narrow covers like ſheaths; theſe appear in July, and are ſucceeded by oblong ſeeds, which are incloſed in the empalement, ripening in autumn.

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The ſecond ſort grows naturally in the ſouth of France on the ſea-coaſt. The leaves of this ſort are of an oblong oval form; they are ſix inches long, and three broad, ſmooth, entire, and of a deep green. The ſtalk riſes fifteen or ſixteen inches high, dividing into ſeveral ſpreading branches, which are divided again into ſmaller, and are terminated by ſeveral ſhort ſpikes of pale blue flowers, ranged on one ſide the foot-ſtalk. This ſort ſeldom flowers till the end of Auguſt, ſo never produces any good ſeeds in England.

The third ſort grows naturally in Narbonne and Provence; this hath ſmall, oval, obtuſe leaves, about two inches long, and one broad, with pretty long foot-ſtalks, which are bordered, or winged with part of the leaves, which runs cloſe to, and partly embrace the upper part of the root; theſe are of a lighter green than either of the former. The ſtalk riſes a foot and a half high, ſending out branches alternately on each ſide; the lower ones being long, the others gradually diminiſhing to the top, ſo as to form a looſe kind of pyramid: theſe all point upward, and toward their ends ſend out ſpikes of pale blue flowers, which are erect. This ſort flowers late in Auguſt, ſo never perfects ſeeds in England.

The fourth ſort grows naturally in England. It was firſt diſcovered on the ſea banks near Walton, in Eſſex, afterward near Malden, in the ſame county, and ſince at the mouth of the river that runs from Chicheſter, in Suſſex. The leaves of this ſort are ſpear-ſhaped, about three inches long, and one broad in the middle, leſſening gradually to both ends. The ſtalk riſes four or five inches high, dividing into many ſpreading branches, which are very thick ſet with ſhort ſpikes of whitiſh blue flowers. Theſe appear in Auguſt, and the ſeeds ripen in October.

The fifth ſort was diſcovered by Dr. Tournefort in the Levant, from whence he ſent the ſeeds to the Royal Garden at Paris, where they grew, and have produced ſeeds many years, which have been communicated to many of the curious gardens in Europe. The ſeeds of this ſort were ſent me from the Dardanelles, where the plants grow in plenty. The leaves of this ſort are about four inches long, and three quarters of an inch broad in the middle, diminiſhing gradually to both ends. The ſtalks riſe about five or ſix inches high, dividing into ſeveral ſpreading branches, which are again divided into ſmaller; theſe are terminated by ſpikes of pale blue flowers, ranged on one ſide the foot-ſtalk; the whole, when growing, being ſpread wide, has ſomewhat the appearance of an umbel of flowers. This ſort flowers in Auguſt, ſo never ripens ſeeds here.

The ſixth ſort grows naturally in Sicily and Paleſtine; this is a biennial plant. The lower leaves which ſpread on the ground, are indented almoſt to the middle rib; theſe indentures are alternate and blunt. The ſtalks riſe a foot and a half high, dividing upward into ſeveral branches, garniſhed at each joint with three narrow leaves ſitting cloſe to the ſtalks, from whoſe baſe proceeds a leafy membrane, or wing, which runs along on both ſides the ſtalk; theſe are rough, and a little hairy. The ſtalks are terminated by panicles of flowers, which ſit upon winged foot-ſtalks, each ſuſtaining three or four flowers of a light blue colour, which continue long without fading. This ſort flowers in July and Auguſt, but unleſs the ſummer is very warm and dry, the ſeeds do not ripen in England.

The ſeventh ſort grows naturally in Sicily; this hath a ſhrubby ſtalk, which riſes about two feet high, dividing into ſeveral ligneous branches, which ſpread out on every ſide; the lower part of theſe are cloſely garniſhed with gray leaves, like thoſe of the Sea Purſlain, and are of a thick conſiſtence. The branches are terminated by panicles of blue flowers, having one funnel-ſhaped petal, which come out ſingly at a diſtance from each other, having long tubes, but divide into five ſegments upward, which ſpread open. This flowers from June till autumn, but never produces ſeeds in England: there is a variety of this, which bears galls like thoſe upon the Oak, which grows naturally in Sicily, but I do not know if it is a different ſpecies, for thoſe plants which are in the Engliſh gardens have no appearance of any.

The eighth ſort was raiſed in the Chelſea garden, from ſeeds which were brought me from Africa; this is a biennial plant, which dies ſoon after it has produced flowers and ſeeds. The lower leaves are but few in number; they are ſpear-ſhaped, hairy, and ſlightly ſawed on their edges, about two inches long, and half an inch broad. The ſtalk riſes about fifteen inches high, which at each joint is garniſhed with three narrow leaves, ending in acute points; from the baſe of theſe leaves is continued a leafy membrane, or wing, running along the ſtalk on each ſide; theſe ſtalks branch out but little, and are terminated by ſhort panicles of flowers, whoſe foot-ſtalks are not winged as in the former; each foot-ſtalk ſuſtains two or three flowers of a bright blue colour, out of the middle of which ariſes another ſmall flower of a pale yellow colour. This ſort flowered in July and Auguſt, 1757, but did not ripen ſeeds.

The ninth ſort grows naturally in Sicily, and was found growing on the border of the ſea in Norfolk, by Mr. Henry Scott, a gardener, and has ſince been found in plenty in Lincolnſhire, by —— Banks, Eſq; The lower leaves of this ſort are narrow at their baſe, but enlarge upward, where they are broad, and rounded at the top, in ſhape of a wedge. The ſtalks are ſlender and ſtiff, riſing from ſeven to fourteen inches high, ſending out many ſlender ſide branches; all thoſe which proceed from the lower part of the ſtalk are barren, having no flowers; but toward the top they have ſhort panicles of whitiſh flowers, which are ſmall, and ſit three or four together upon one foot-ſtalk. This ſort flowers in July and Auguſt.

The tenth ſort grows naturally near the ſea, about Marſeilles and Leghorn; this hath many thick fleſhy leaves, which are ſhaped like a ſpatula, growing near the root, and ſpread on the ground; they are ſmooth, and of a grayiſh colour. The ſtalks are naked, and riſe about ſix inches high, dividing toward the top into many ſmaller branches, which are terminated by ſhort crooked panicles of ſmall flowers, of a pale red colour. This ſort flowers in Auguſt, but never produces ſeeds in this country.

The eleventh ſort grows naturally about Montpelier and in Italy; this is an annual plant, with long narrow leaves, which are ſet with rough tubercles like the leaves of Viper's Bugloſs. The ſtalks riſe about eight inches high, dividing into two or three ſmall branches, which are terminated by reflexed ſhort ſpikes of pale blue flowers; theſe come out late in Auguſt, and the ſeeds are ſeldom perfected in England.

The twelfth ſort grows naturally in Egypt, from whence the ſeeds were ſent to the Royal Garden at Paris, part of which were ſent me by Dr. Bernard de Juſſieu, which grew in the Chelſea garden, where there are ſeveral plants, which have produced flowers many years. This riſes with an upright ſhrubby ſtalk to the height of eight or ten feet, divided upward into many branches, garniſhed with narrow ſpear-ſhaped leaves, placed without order; they are of a thick conſiſtence, and of a gray colour, ſitting cloſe to the branches. The flowers are produced at the end of the branches in looſe panicles, ſtanding alternate on each ſide the ſtalk, one above another, with intervals between them; they have pretty long tubes, which enlarge upward, where they are cut into five obtuſe ſegments, which ſpread open; theſe are of a bright ſky blue, but fade to a purple before they fall off. The flowers begin to appear in July, and there is a ſucceſſion of them till winter.

The firſt, ſecond, third, fourth, fifth, and eighth ſorts, are abiding plants, which will thrive in the open air in England; ſuch of theſe as grow naturally in England, may be eaſily procured from the places where they grow; theſe plants may be tranſplanted at almoſt any time of the year, provided they are carefully

carefully taken up, preſerving ſome earth to their roots, and in hot weather to ſhade them till they have taken new root; after which time they will require no other culture but to keep the ground clean from weeds, and in the ſpring to ſtir up the ground between them to looſen it. As theſe plants do not require much culture, nor do they take up much room, ſo a few of each ſort may be allowed to have a place in gardens, where there is room, for the ſake of variety. Theſe plants do not propagate very faſt in gardens, ſo the roots need not be removed oftener than every third or fourth year, at which time they may be ſlipped to increaſe them; the beſt time for this is in the autumn, that the plants may be well rooted before the ſpring, otherwiſe they will not flower very ſtrong the following ſummer. They ſhould be planted in a loamy ſoil, on an eaſt aſpected border, where they may enjoy the morning ſun, but ſcreened from the great heat in the middle of the day; in ſuch a ſituation the roots will continue ſeveral years, and flower as well as in their native ſoil.

Theſe plants may alſo be propagated by ſeeds, ſo that ſuch of them as do not grow naturally in England, may be obtained by procuring their ſeeds from abroad. Theſe ſhould be ſown upon a border expoſed to the morning ſun, and on a ſoft loamy ſoil, early in the ſpring, for the ſeeds lie a conſiderable time in the ground before the plant comes up; therefore the ground muſt be kept entirely clean from weeds, and if the ſeaſon ſhould prove very dry, the border ſhould be watered two or three times a week, otherwiſe the ſeeds will lie a whole year before they vegetate; when the plants come up, they muſt be kept clean from weeds, and in very dry weather watered, and in the autumn they may be tranſplanted where they are deſigned to remain.

The ſixth and eighth ſorts are biennial plants, which rarely perfect their ſeeds in England, ſo that unleſs freſh ſeeds can be procured from warm countries, where they ripen well, it will be very difficult to continue the ſorts. If the ſeeds of theſe can be obtained time enough to ſow them in the autumn, the plants will come up the following ſpring; but when they are ſown in the ſpring, they ſeldom grow the ſame year. Theſe ſeeds ſhould be ſown on a border of loamy earth, not ſtiff or moiſt, and expoſed to the ſouth; but when the ſun is warm, the border ſhould be ſhaded with mats, to prevent the earth from drying too faſt. When the plants come up, they muſt be kept clean from weeds; and if they are too cloſe, ſome of them ſhould be carefully taken out as ſoon as they are fit to remove, and planted in ſmall pots, placing them in the ſhade till they have taken new root; then they may be placed where they may enjoy the morning ſun till autumn, when they ſhould be put into a hot-bed frame, where they may be ſcreened from hard froſt, but enjoy the free air in mild weather; and thoſe plants which are left in the border where they were ſown, muſt be covered with mats in hard froſt; for though they will often live through the winter in mild ſeaſons, yet hard froſt will always deſtroy them. The following ſummer the plants will flower, and if the ſeaſon proves warm and dry, they will ripen ſeeds, and the roots ſoon after decay.

The ſeventh and twelfth ſorts are ſhrubby plants, which are too tender to live through the winter in the open air in England, ſo the plants muſt be removed into ſhelter in the autumn, but they only require protection from hard froſt: theſe plants may be placed with Myrtles, Oleanders, and other hardy green-houſe plants, where they often continue to flower great part of winter, and make a pretty variety. Theſe ſorts are eaſily propagated by cuttings, which, if planted in July on a ſhady border, and duly watered, will take root in ſix or ſeven weeks, when they ſhould be taken up and planted into pots filled with light loamy earth, placing them in the ſhade till they have taken root; then they may be expoſed till October, at which time they muſt be removed into ſhelter.

The eleventh ſort is annual, and rarely ripens ſeeds here, ſo theſe muſt be procured from abroad, and ſowed in the ſame way as the ſixth and eighth ſorts.

LINARIA. Tourn. Inſt. R. H. 168. tab. 76. Antirrhinum. Lin. Gen. Plant. 668. [ſo called of Linum, *Lat.* flax, becauſe its leaves reſemble flax.] Toad-flax; in French, *Linaire*.

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, divided into five parts almoſt to the bottom. The flower hath one petal, and is of the ringent (or grinning) kind, with an oblong ſwelling tube, having two lips above, with the chaps ſhut. The upper lip is bifid and reflexed on the ſides, the lower lip is trifid and obtuſe. It hath an oblong nectarium, which is awl-ſhaped and prominent behind, and four ſtamina, which are included in the upper lip, two of which are ſhorter than the other, and a roundiſh germen ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward turns to a roundiſh obtuſe capſule with two cells, filled with ſmall ſeeds.

This genus of plants is ranged in the fourth ſection of Tournefort's third claſs, which includes the herbs with a tubulous, anomalous, perſonated flower, of one petal. Dr. Linnæus joins this genus, and alſo the Aſarina of Tournefort to the Antirrhinum, and places that genus in the ſecond ſection of his fourteenth claſs, in which are contained the plants whoſe flowers have two long and two ſhort ſtamina, and the ſeeds are included in a capſule. The plants of this genus agree in their general characters with thoſe of the Antirrhinum, or Calve's Snout, except in one particular, which is in the nectarium of the Linaria, which, from the baſe of the petal, ſtretches out like a heel; whereas the flowers of the Antirrhinum, have their nectarium lodged withinſide the baſe of the petal: this being ſo very obvious, and both genera having many ſpecies, I thought it might be eaſier for ſtudents in botany to range them under different genera, than to join them under one.

The SPECIES are,

1. LINARIA (*Vulgaris*) foliis lanceolato-linearibus confertis caule erecto, ſpicis terminalibus ſeſſilibus. *Toad-flax with ſpear-ſhaped linear leaves growing in cluſters, and an upright ſtalk terminated by ſpikes of flowers, ſitting cloſe to the ſtalk.* Linaria vulgaris lutea, flore majore. C. B. P. 212. *Common yellow Toad-flax with a larger flower.*
2. LINARIA (*Triphylla*) foliis ternis ovatis. *Toad-flax with oval leaves placed by threes.* Linaria triphylla minor lutea. C. B. P. 212. *Smaller three-leaved yellow Toad-flax.*
3. LINARIA (*Luſitanica*) foliis quaternis lanceolatis, caule erecto ramoſo, floribus pedunculatis. *Toad-flax with ſpear-ſhaped leaves placed by fours, an upright branching ſtalk, and flowers upon foot-ſtalks.* Linaria latiſſimo folio Luſitanica. H. R. Par. *Broadeſt-leaved Portugal Toad-flax.*
4. LINARIA (*Alpina*) foliis ſubquaternis linearibus caule diffuſo, floribus racemoſis. *Toad-flax with linear leaves placed by fours on the lower part of the ſtalk, a diffuſed ſtalk and branching flowers.* Linaria quadrifolia ſupina. C. B. P. 213. *Low four-leaved Toad-flax.*
5. LINARIA (*Purpurea*) foliis lanceolato-linearibus ſparſis, caule florifero erecto ſpicato. *Toad-flax with ſpear-ſhaped linear leaves, and the flower-ſtalks erect and ſpiked.* Linaria purpurea major odorata. C. B. P. 213. *Greater ſweet-ſcented purple Toad-flax.*
6. LINARIA (*Repens*) foliis linearibus confertis, caule erecto ramoſo, floribus ſpicatis terminalibus. *Toad-flax with linear leaves in cluſters, an erect branching ſtalk, and flowers in ſpikes terminating the ſtalks.* Linaria cærulea, foliis brevioribus & anguſtioribus. Raii Syn. 3. 282. *Blue Toad-flax with ſhorter and narrower leaves.*
7. LINARIA (*Multicaulis*) foliis inferioribus quinis linearibus. *Toad-flax with linear leaves, placed by fives at the lower part of the ſtalks.* Linaria Sicula multicaulis, folio molluginis. Bocc. Rar. 38. *Sicilian Toad-flax with many ſtalks and a Bedſtraw leaf.*

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8. LINARIA (*Triſtis*) foliis lanceolatis ſparſis, inferioribus oppoſitis, nectariis ſubulatis, floribus ſubſeſſilibus. *Toad-flax with ſpear-ſhaped ſparſed leaves, which on the lower part of the ſtalk are oppoſite, awl-ſhaped nectariums, and flowers ſitting almoſt cloſe.* Linaria Hiſpanica procumbens, foliis uncialibus glaucis, flore flaveſcente pulchrè ſtriato, labiis nigro-purpureis. Act. Phil. N° 412. *Trailing Spaniſh Toad-flax with gray leaves an inch long, yellow flowers beautifully ſtriped, and dark purple lips.*

9. LINARIA (*Monſpeſulana*) foliis linearibus confertis, caule nitido paniculato, pedunculis ſpicatis nudis. *Toad-flax with linear leaves in cluſters, a paniculated ſtalk, and flowers in ſpikes on naked foot-ſtalks.* Linaria capillaceo folio, odora. C. B. P. 213. *Sweet Toad-flax with hair-like leaves.*

10. LINARIA (*Villoſa*) foliis lanceolatis hirtis alternis, floribus ſpicatis, foliolo calycino ſupremo maximo. *Toad-flax with alternate, hairy, ſpear-ſhaped leaves, flowers in ſpikes, and the upper leaf of the empalement very large.* Linaria latifolia villoſa, laciniis calycinis inæqualibus, flore majore pallido ſtriato rictu aureo. Horteg. Icon. *Broad-leaved hairy Toad-flax, whoſe empalement is unequally cut, and a large pale ſtriped flower with a golden ſnout.*

11. LINARIA (*Peliſſeriana*) foliis caulinis linearibus ſparſis, radicalibus rotundis. *Toad-flax with linear leaves placed ſparſedly on the ſtalks, and on the lower leaves round.* Linaria annua purpureo violacea, calcaribus longis, foliis imis rotundioribus. Vaill. Bot. Par. 118. *Annual purple Violet Toad-flax, with long ſpurs and rounder leaves at bottom.*

12. LINARIA (*Chalepenſis*) foliis lineari-lanceolatis alternis, floribus racemoſis, calycibus corollâ longioribus. *Toad-flax with linear ſpear-ſhaped leaves placed alternate, branching flowers, and empalements longer than the petals.* Linaria annua anguſtifolia, floſculis albis, longiùs caudatis. Triump. 87. *Narrow-leaved annual Toad-flax, with white flowers having long tails.*

13. LINARIA (*Dalmatica*) foliis lanceolatis alternis, caule ſuffruticoſo. *Toad-flax with ſpear-ſhaped alternate leaves, and an under ſhrub ſtalk.* Linaria latifolia Dalmatica, magno flore. C. B. P. 212. *Broad-leaved Toad-flax of Dalmatia with a large flower.*

14. LINARIA (*Geniſtifolia*) foliis lanceolatis acuminatis, paniculâ virgatâ. *Toad-flax with ſpear-ſhaped acute-pointed leaves, and a rod-like panicle.* Linaria geniſtæ folio glauco, flore luteo. Par. Bat. App. 9. *Toad-flax with a gray Dyer's Weed leaf and a yellow flower.*

15. LINARIA (*Spuria*) foliis ovatis alternis, caule flaccido procumbente. *Toad-flax with oval leaves placed alternate, and a weak trailing ſtalk.* Elatine folio ſubrotundo. C. B. P. 253. *Fluellin with a roundiſh leaf.*

16. LINARIA (*Elatina*) foliis haſtatis alternis, caule flaccido procumbente. *Toad-flax with arrow-pointed leaves placed alternate, and a weak trailing ſtalk.* Elatine folio acuminato. C. B. P. 253. *Fluellin with an acute-pointed leaf.*

17. LINARIA (*Cymbalaria*) foliis cordatis quinquelobatis alternis glabris. *Toad-flax with heart-ſhaped leaves having five lobes, which are alternate and ſmooth.* Linaria hederaceo folio glabro, ſeu Cymbalaria vulgaris. Tourn. Inſt. R. H. 169. *Toad-flax with a ſmooth Ivy leaf, or common Cymbalaria.*

There are ſeveral other ſpecies of this genus which are well known and deſcribed, which are of leſs note, ſo are very rarely admitted into gardens, for which reaſon I have not enumerated them here.

The firſt of theſe plants grows in great plenty upon the ſides of dry banks in moſt parts of England, and is ſeldom cultivated in gardens; for it is a very troubleſome plant to keep within bounds, the roots being very apt to ſpread under ground, and riſe at a great diſtance from the mother plant, whereby it greatly injures whatever plants ſtand near it. This is one of the plants mentioned in the catalogue of ſimples at the end of the College Diſpenſatory, to be uſed in medicine.

This hath a great number of ſlender white roots, which creep far on every ſide, from which ariſe ſeveral erect branching ſtalks a foot and a half high, garniſhed with narrow gray leaves in cluſters, and terminated by ſpikes of yellow flowers, ſitting cloſe to the ſtalk. The flowers are of one petal, with a long tube, to which is fixed a ſpur or heel, called a nectarium; the fore parts of the flower has the appearance of the mouth of an animal, the under lip is hairy within; the chaps are of a golden colour, but the other parts of the flower are of a pale yellow; theſe are ſucceeded by roundiſh capſules with two cells, filled with flat black ſeeds. It flowers in July and Auguſt, when it makes a pretty appearance, ſo that a few plants might be allowed a place in gardens, were it not for their creeping roots, which ſpread too much, and become troubleſome weeds; therefore the roots ſhould be confined in pots to keep them within bounds.

There is an ointment made of this herb and hog's-lard, which is accounted excellent for the piles, being mixed with the yolk of an egg at the time of uſing it. The plant is reckoned to be aperitive and diuretic, opening obſtructions of the liver and ſpleen, helping the dropſy and jaundice.

The ſecond ſort grows naturally about Valencia and in Sicily; this is an annual plant, which riſes with an upright branching ſtalk near a foot and a half high, garniſhed with oval, ſmooth, gray leaves, placed often by threes, and ſometimes by pairs oppoſite at the joints; the flowers grow in ſhort ſpikes at the top of the ſtalks; they are ſhaped like thoſe of the common ſort, but have not ſo long tubes; they are yellow, with Saffron-coloured chaps. This ſort flowers in July and Auguſt, and the ſeeds ripen in the autumn, and the plants ſoon after decay.

There is a variety of this whoſe flowers have a purple ſtandard and ſpur, which makes a pretty appearance in a garden; but it is generally ſuppoſed to be only an accidental variety which has riſen from ſeeds of the former, for which reaſon I have not enumerated it here; though from many years culture of both ſorts, I have never yet perceived either of them alter. The leaves of this are longer than thoſe of the yellow, but in other reſpects they do not differ.

This ſort may be propagated by ſeeds, or by the roots; the ſeeds ſhould be ſown in the ſpring, on the borders of the flower-garden where they are deſigned to remain; and when the plants come up, they ſhould be thinned where they are too cloſe, and kept clean from weeds, which is all the culture they require. If ſome of the ſeeds are ſown in autumn upon a warm dry border, the plants will live through the winter, unleſs the froſt proves very ſevere; and theſe autumnal plants will grow larger, flower earlier, and from theſe good ſeeds may always be obtained: the firſt ſort is ſeldom admitted into gardens.

The third ſort riſes with upright ſtalks near two feet high, which are garniſhed with ſpear-ſhaped ſmooth leaves, placed ſometimes by fours round the ſtalk, and at others by pairs oppoſite; the ſtalks are terminated by large purple flowers with long ſpurs, ſtanding upon foot-ſtalks. This flowers in July, but ſeldom ripens ſeeds in England; it grows naturally in Portugal and Spain.

This ſort is tenderer than the laſt, ſo ſhould be planted in a dry ſoil and a warm ſituation, otherwiſe the plants are often deſtroyed in winter. This plant is propagated by ſeeds in the ſame manner as the former, as alſo by parting the roots; but it is adviſeable always to keep ſome of theſe plants in pots, that they may be removed into ſhelter in winter, otherwiſe in hard froſts they will be killed.

The fourth ſort grows naturally about Verona, from whence I received the ſeeds. This is a perennial plant, from whoſe roots ariſe ſeveral diffuſed ſtalks about eight inches long, garniſhed with narrow, ſhort, gray leaves, placed by fours round the ſtalks at bottom, but upward they are oppoſite; the ſtalks are terminated by ſhort branching tufts of pale yellow flowers with golden chaps. This ſort flowers in June, and in warm ſeaſons ſometimes the ſeeds will ripen here in the autumn.

The fifth ſort grows naturally in the ſouth of France and Italy; this hath a perennial root, ſending out many ſtalks; thoſe of them which ſupport the flowers are erect, and near three feet high, but the other ſtalks are weaker, and hang looſely on every ſide the plants; theſe are garniſhed with long, narrow, ſpear-ſhaped leaves placed ſparſedly; they are ſmooth, and of a gray colour. The ſtalks are terminated by long looſe ſpikes of blue flowers, which appear in June, July, and Auguſt, and the ſeeds ripen in the autumn, which, if permitted to ſcatter, will produce plenty of young plants without any further care.

The ſixth ſort grows naturally about Henley in Oxfordſhire, and alſo in ſome parts of Hertfordſhire. This hath a perennial root, from which ariſe ſeveral ſtalks near two feet high, which branch out on every ſide, and are garniſhed with narrow leaves growing in cluſters toward the bottom, but upward they are ſometimes by pairs, and at others ſingle. The flowers are produced in looſe ſpikes at the end of the ſtalks; they are of a pale blue colour, which appear in June and July, and the ſeeds ripen in the aurumn; which, if permitted to ſcatter, will produce plenty of plants. When the ſeeds happen to fall upon old walls, the plants will grow there and continue longer than thoſe planted in the ground.

I received a ſpecimen of this ſort from abroad, by the title of Linaria arvenſis cærulea. C. B. P.

The ſeventh ſort grows naturally in Sicily; this is an annual plant, from whoſe root ariſes many ſtalks which are very ſlender and about a foot high, which on their lower part are garniſhed with five very narrow leaves at each joint, but upward they are ſometimes by pairs, and at others they are ſingle: the ſtalks are divided into many ſmall branches, which are garniſhed with ſmall yellow flowers, coming out ſingle at diſtances from each other; theſe are ſhaped like thoſe of the other ſpecies. The flowers appear in July, and the ſeeds ripen in the autumn. There are two varieties of this, one with a deep yellow, and the other a ſulphur-coloured flower.

This is propagated by ſeeds in the ſame manner as the ſecond ſort; if the ſeeds are permitted to ſcatter, the plants will come up without care, and if they are kept clean from weeds, will produce their flowers early in the ſummer.

The eighth ſort grows naturally on the rocks about Gibraltar, from whence the late Sir Charles Wager brought the ſeeds, which were ſown in his curious garden at Parſon's Green near Fulham, where they ſucceeded, and from thence many curious gardens were furniſhed with the plants. This has a perennial root, from which come out many ſlender ſucculent ſtalks about eight or nine inches long, which are weak and hang down on every ſide the root; they are garniſhed with ſhort, narrow, ſpear-ſhaped leaves, of a gray colour, and ſucculent, ſtanding without order; they are about one inch long, and a fifth part of an inch broad. The flowers are produced at the end of the ſtalks in ſmall bunches; they are yellow, marked with purple ſtripes, and the chaps of the flower, as alſo the ſpur, are of a dark purple colour; the flowers ſit cloſe upon the top of the ſtalk. They appear in June and July, but do not produce ſeeds in England.

This plant is eaſily propagated by planting cuttings in any of the ſummer months, which, if watered and ſhaded, will ſoon take root, and may be afterwards planted in pots, filled with freſh, light, undunged earth, in which they will ſucceed much better than in a richer ſoil; for if they are planted in a fine rich earth, it, cauſes them to grow very faſt for a ſhort time, but they ſeldom fail to rot ſoon after. Theſe muſt be removed into ſhelter in winter, where they muſt have as much free air as poſſible in mild weather, and be only protected from ſevere cold; ſo that if the pots are placed under a hot-bed frame, the plants will ſucceed better than in a green-houſe, where they are apt to draw too much, which will cauſe them to decay.

The ninth ſort grows naturally in Wales, particularly near Penryn. This hath a perennial root, from which ariſe many branching ſtalks near two feet high, garniſhed with very narrow leaves growing in cluſters, which are of a grayiſh colour. The flowers are produced in looſe ſpikes at the end of the branches; they are of a pale blue colour, and ſmell ſweet. Theſe appear in June, and there is often a ſucceſſion of flowers on the plants till winter. The ſeeds ripen in the autumn, which, if permitted to ſcatter, will furniſh a ſupply of young plants without any further care. If the ſeeds of this ſort get on a wall, the plants will come up, and continue there a much longer time than when they are planted in the ground.

The tenth ſort grows naturally in Spain; the ſeeds of it were ſent me by Dr. Hortega from Madrid. This is an annual plant, which riſes with a ſingle ſtalk about a foot and a half high, garniſhed with hairy ſpear-ſhaped leaves, ſitting cloſe to the ſtalk, which are placed alternate. The flowers grow on the top of the ſtalks in looſe ſpikes; they are of a pale yellow colour, with a few dark ſtripes, and the chaps are of a gold colour; the upper ſegment of the empalement is much larger than the lower. The flowers of this ſort are as large as thoſe of the common ſort; they appear in July, and the ſeeds will in warm ſeaſons ripen in autumn in England.

The ſeeds of this ſort ſhould be ſown in the ſpring, upon a border of light earth where the plants are deſigned to remain; and when the plants come up, they muſt be treated in the ſame way as thoſe of the ſecond ſort.

The eleventh ſort grows naturally in France; this is an annual plant, having round leaves at the root; the ſtalks are ſlender, branching, and riſe a foot high, garniſhed with very narrow leaves at each joint. The flowers are produced in looſe ſpikes at the end of the branches; they are of a bright blue colour, and appear in July; the ſeeds ripen in the autumn, at which time they ſhould be ſown; for thoſe which are ſown in the ſpring frequently lie in the ground till the ſpring following, before the plants appear. When the plants come up, they muſt be thinned where they are too cloſe, and kept clean from weeds, which is all the culture they require.

The twelfth ſort grows naturally in Sicily; this is an annual plant, which riſes with a branching ſtalk two feet high, garniſhed with very narrow ſpear-ſhaped leaves placed alternately. The flowers are produced ſingly all along the branches the greateſt part of their length; they are ſmall, white, and have very long tails or ſpurs. This flowers in July, and the ſeeds ripen in the autumn. If the ſeeds of this ſort are permitted to ſcatter, the plants will come up and ſucceed better than if ſown with care, and require no other culture but to keep them clean from weeds.

The thirteenth ſort grows naturally in Crete, and alſo in Dalmatia. This riſes with a ſtrong ligneous ſtalk three feet high, garniſhed with ſmooth ſpear-ſhaped leaves placed alternate, ſitting cloſe to the ſtalk. The flowers are produced at the end of the branches in ſhort looſe ſpikes; they are of a deep yellow colour, and much larger than thoſe of the common ſort, ſtanding upon ſhort foot-ſtalks. This ſort flowers in July, but the ſeeds very rarely ripen in England, ſo that the plants are ſeldom ſeen in any gardens here. It is propagated by ſeeds, which ſhould be ſown early in the ſpring upon a border of light earth; and when the plants come up and are fit to remove, ſome of them ſhould be planted in pots filled with light ſandy earth, and placed in the ſhade till they have taken new root; then they may be expoſed with other hardy exotic plants till the end of October, when they ſhould be put into a common hot-bed frame, where they may be protected from hard froſt; but in mild weather they ſhould enjoy the free air, for theſe plants only require to be protected from hard froſt, for in mild winters they will live abroad without ſhelter, if they are upon a dry ſoil; therefore a part of the plants may be planted on a warm border of poor ſandy ſoil, where they will live through our common winters

very

very well; and thoſe plants which grow in rubbiſh and are ſtinted, will endure much more cold than the others.

The fourteenth ſort grows naturally in Siberia; this is a biennial plant, which riſes with an upright branching ſtalk from three to four feet high, garniſhed with ſpear-ſhaped leaves, ending in acute points, of a grayiſh colour; theſe are placed alternate. The flowers are produced at the end of the branches, in looſe panicles; they are of a bright yellow colour, and ſhaped like thoſe of the other ſorts. This flowers in June and July, and the ſeeds ripen in the autumn, which, if permitted to ſcatter, the plants will come up the following ſpring, and require no other care but to thin them where they are too cloſe, and keep them clear from weeds. The plants always decay after they have ripened their ſeeds, therefore there ſhould be a ſupply of young ones annually raiſed.

The fifteenth ſort grows naturally amongſt Wheat and Rye, in ſeveral parts of England. It is an annual plant with weak trailing ſtalks, which ſpread on the ground, and are a foot and a half long; they are hairy, and garniſhed with oval leaves, placed alternately; from the ſetting on of the foot-ſtalks of the leaves; at each joint comes out one flower, ſhaped like thoſe of the other ſpecies. The upper lip is yellow, and the under is purple; theſe appear in June and July, and the ſeeds ripen in autumn, which ſhould be then ſown, or permitted to ſcatter; for if it is ſown in the ſpring, it ſeldom grows the ſame year, for it is rarely ſeen among ſpring-ſown Corn, in thoſe lands where it commonly grows.

This plant is uſed in medicine, and is eſteemed vulnerary, and good for old cancerous ſores and ulcers; it is accounted good for hæmorrhages of all ſorts.

The ſixteenth ſort differs from the fifteenth, in nothing but the ſhape of the leaves, which in this are ſhaped like the point of an arrow, and thoſe of the other are oval; this is more commonly found in England than the other.

The ſeventeenth ſort was brought from Italy to England, where it now grows in as great plenty in the neighbourhood of London, as if it was in its native country, growing from the joints of walls, whereever the ſeeds happen to ſcatter. It is a perenial plant, which will thrive in any ſoil or ſituation, ſo that where it is once eſtabliſhed, it will be difficult to root out, for the ſeeds will get into any joints of walls, or the decayed parts of pales, as alſo in the hollow of trees, where they grow and propagate plentifully; for the ſtalks put out roots at their joints, ſo ſpread themſelves to a great diſtance. It flowers all the ſummer, and the ſeeds ripen in ſucceſſion. It is never cultivated in gardens, but is ſuppoſed to be an excellent wound herb.

LINGUA CERVINA. Hart's Tongue.

Theſe plants commonly grow out from the joints of old walls and buildings, where they are moiſt and ſhady, and alſo upon ſhady moiſt banks, but are ſeldom cultivated in gardens. There is a very great variety of theſe plants, both in the Eaſt and Weſt-Indies, but there are very few ſpecies of them in Europe; all the hardy ſorts may be propagated by parting their roots, and ſhould have a moiſt ſoil and ſhady ſituation.

LINUM. Tourn. Inſt. R. H. 339. tab. 170. Lin. Gen. Plant. 349. Flax; in French, *Lin.*

The CHARACTERS are,

The flower hath a permanent empalement, compoſed of five ſmall, ſpear-ſhaped, acute leaves. It is compoſed of five large oblong petals, which are narrow at their baſe, but broader upward, and ſpread open. It hath five awl-ſhaped erect ſtamina, terminated by arrow-ſhaped ſummits. In the center is ſituated an oval germen, ſupporting five ſlender ſtyles, crowned by reflexed ſtigmas. The germen afterward turns to a globular capſule with ten cells, opening with five valves; in each cell is lodged one oval, plain, ſmooth ſeed, with an acute point.

This genus of plants is ranged in the fifth ſection of Linnæus's fifth claſs, intitled Pentandria Pentagynia, which contains thoſe plants whoſe flowers have five ſtamina and five ſtyles.

The SPECIES are,

1. LINUM (*Uſitatiſſimum*) calycibus capſuliſque mucronatis petalis crenatis, foliis lanceolatis alternis caule ſubſolitario. Lin. Sp. Plant. 277. *Flax with empalements, and capſules ending in acute points, crenated petals to the flower, ſpear-ſhaped alternate leaves, and the ſtalks commonly ſingle.* Linum ſativum. C. B. P. 214. *Manured Flax.*
2. LINUM (*Humile*) calycibus capſuliſque mucronatis, petalis emarginatis, foliis lanceolatis alternis, caule ramoſo. *Flax with ſharp-pointed empalements and capſules, the petals of the flower indented, ſpear-ſhaped alternate leaves, and a branching ſtalk.* Linum ſativum humilius flore majore. Bobart. Boerh. Ind. alt. 1. p. 284. *Low manured Flax with a larger flower.*
3. LINUM (*Narbonenſe*) calycibus acuminatis, foliis lanceolatis ſparſis ſtrictis ſcabris acuminatis, caule tereti baſi ramoſo. Lin. Sp. Plant. 278. *Flax with acute-pointed empalements, rough ſpear-ſhaped leaves placed without order, ending in acute points, and a taper ſtalk branching at the baſe.* Linum ſylveſtre, cæruleum, folio acuto, C. B. P. 107. *Wild blue Flax with an acute leaf.*
4. LINUM (*Tenuifolium*) calycibus acuminatis, foliis ſparſis linearibus ſetaceis retrorſum ſcabris. Lin. Sp. Plant. 278. *Flax with acute-pointed empalements, and narrow briſtly leaves placed without order, which are rough on their outſide.* Linum ſylveſtre anguſtifolium, floribus dilutè purpuraſcentibus vel carneis. C. B. P. 214. *Narrow-leaved wild Flax, with a pale purpliſh or fleſh-coloured flower.*
5. LINUM (*Anglicum*) calycibus capſuliſque acuminatis, caule ſubnudo ſcabro, foliis acuminatis. *Flax with acute-pointed empalements, an almoſt naked rough ſtalk, and acute-pointed leaves.* Linum perenne, majus, cæruleum, capitulo majore. Mor. Hiſt. 2. 573. *Greater blue perennial Flax with larger heads.*
6. LINUM (*Perenne*) calycibus capſuliſque obtuſis, foliis alternis lanceolatis acutis, caulibus ramoſiſſimis. Plat. 166. *Flax with obtuſe empalements and capſules, alternate, ſpear-ſhaped, acute leaves, and very branching ſtalks, commonly called Siberian perennial Flax.*
7. LINUM (*Hiſpanicum*) calycibus acutis, foliis linearilanceolatis ſparſis, caule paniculato procumbente. *Flax with acute empalements, linear ſpear-ſhaped leaves placed without order, and a paniculated ſtalk.*
8. LINUM (*Bienne*) calycibus patulis acuminatis, foliis linearibus alternis, caule ramoſo. *Flax with ſpreading acute-pointed empalements, linear alternate leaves, and a branching ſtalk.*
9. LINUM (*Hirſutum*) calycibus hirſutis acuminatis ſeſſilibus alternis, caule corymboſo. Lin. Sp. Plant. 277. *Flax with hairy acute-pointed empalements, placed alternate cloſe to the ſtalks, whoſe flowers are formed in a corymbus.* Linum ſylveſtre, latifolium, hirſutum cæruleum. C. B. P. 339. *Broad-leaved, hairy, wild Flax, with a blue flower.*
10. LINUM (*Strictum*) calycibus foliiſque lanceolatis ſtrictis mucronatis, margine ſcabris. Lin. Sp. Plant. 279. *Flax with ſpear-ſhaped leaves, and empalements which end in acute points, and have rough edges.* Paſſerina Lobelii. J. B. 3. p. 454.
11. LINUM (*Fruticoſum*) calycibus acutis, petalis integris, foliis inferioribus linearibus faſciculatis, ſuperioribus alternis, caule ſuffruticoſo. *Flax with acute empalements, entire petals to the flower, linear under leaves growing in cluſters, the upper ones alternate, and a ſhrubby ſtalk.* Linum ſylveſtre acutis foliis fruticans. Barrel. Icon. 1008. *Wild Flax with a ſhrubby ſtalk and acute leaves.*
12. LINUM (*Nodiflorum*) foliis lanceolatis alternis, floribus alternis ſeſſilibus caule ſimplici. *Flax with ſpear-ſhaped leaves placed alternate, flowers growing alternate, and cloſe to the ſtalks, which are ſingle.* Linum luteum ad ſingula genicula floridum. C. B. P. 214. *Yellow Flax with ſingle flowers growing from the joints.*

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13. Linum (*Catharticum*) foliis oppoſitis ovato-lanceolatis, caule dichotomo, corollis acutis. Hort. Cliff. 372. *Flax with ſpear-ſhaped leaves placed oppoſite, a ſtalk divided by pairs, and acute petals to the flower.* Linum pratenſe, floſculis exiguis. C. B. P. 214. *Meadow Flax with ſmall flowers, commonly called Mountain Flax.*

14. Linum (*Maritimum*) calycibus ovatis acutis muticis, foliis lanceolatis inferioribus oppoſitis. Lin. Sp. Plant. 280. *Flax with oval, acute, chaffy empalements, and ſpear-ſhaped leaves, the lower of which grow oppoſite.* Linum maritimum luteum. C. B. P. 214. *Yellow maritime Flax.*

The firſt ſort is the Flax which is cultivated in moſt parts of Europe, but particularly in the northern parts; this is an annual plant, which uſually riſes with a ſlender unbranched ſtalk a foot and a half high, garniſhed with narrow ſpear-ſhaped leaves placed alternate, ending in acute points, and are of a gray colour. The flowers are produced on the top of the ſtalks, each ſtalk ſuſtaining four or five blue flowers, compoſed of five petals, which are narrow at their baſe, but broad at the top, where they are ſlightly crenated. The empalement of the flower is cut into five parts, which end in acute points. The flowers appear in June, and are ſucceeded by roundiſh capſules which have ten cells, opening with five valves, which are terminated by acute points; each cell contains one ſmooth flattiſh ſeed, ending in a point, of a browniſh colour. The ſeeds ripen in September, and the plants ſoon after periſh.

When this plant is cultivated in the fields after the uſual method, it ſeldom riſes higher than is before mentioned; nor do the ſtalks branch out, but when they are allowed more room, they will riſe more than two feet high, and put out two or three ſide branches toward the top, eſpecially if the ſoil is pretty good where it is ſown.

The ſecond ſort differs from the firſt, in having ſtronger and ſhorter ſtalks branching out much more. The leaves are broader, the flowers are larger, and the petals are indented at their extremities. The ſeed-veſſels are alſo much larger, and the foot-ſtalks are longer; theſe differences are laſting, for I have cultivated this and the common Flax on the ſame ground upward of thirty years, and have never found either of them alter.

The third ſort grows naturally in the ſouth of France, in Italy, and Spain; this riſes from a foot to eighteen inches high, branching out almoſt to the bottom into many long ſlender branches, which are garniſhed with narrow, ſpear-ſhaped, acute-pointed leaves, placed without order; theſe are rough to the touch. The flowers are produced at the end of the branches, almoſt in form of an umbel; they are ſmaller than thoſe of the manured ſort, and are of a pale blue colour. The ſeed-veſſels are much ſmaller, and not ſo round. It flowers and ſeeds about the ſame time as the former.

The fourth ſort grows naturally about Vienna and in Hungary; this ſort ſeldom riſes more than a foot high, with a ſlender ſtalk, which divides into three or four ſlender naked foot-ſtalks at the top, each ſuſtaining two or three flowers, which are of a pale blue colour. The ſtalks are garniſhed with ſhort, narrow, briſtly leaves, ſtanding erect, which are rough on their outſide. This flowers and ſeeds about the ſame time as the former, and the plant ſoon after decays.

There are two or three varieties of this, which differ in the colour of their flowers, but in other reſpects are the ſame.

The fifth ſort grows naturally in ſome parts of England, particularly in Cambridgeſhire; this hath a perennial root, from which ariſe three or four inclining ſtalks, garniſhed with ſhort narrow leaves toward their baſe, but upward have ſcarce any. The flowers are produced at the end of the ſtalks, ſitting very cloſe; they are of a blue colour, and about the ſize of thoſe of the manured kind, and are ſucceeded by pretty large round ſeed-veſſels, ending in acute points. This flowers about the ſame time as the common Flax, but the roots will continue four or five years.

The ſixth ſort grows naturally in Siberia; it hath a perennial root, from which ariſe ſeveral ſtrong ſtalks, in number proportional to the ſize of the root, and in height according to the goodneſs of the ſoil where it grows; for in rich moiſt ground they will riſe near five feet high, but in middling ground about three feet; theſe divide into ſeveral branches upward, and are garniſhed with narrow ſpear-ſhaped leaves, placed alternate; they are not much more than an inch long, and an eighth of an inch broad, of a deep green, ending in acute points. The flowers are produced at the end of the branches, forming a kind of umbel, the ſtalks riſing nearly of the ſame height. The flowers are large, and of a fine blue colour; theſe appear in June, and are ſucceeded by obtuſe ſeed-veſſels, which ripen in September.

The ſeventh ſort grows naturally in Spain, from whence I received the ſeeds; this hath a perennial root, from whence come out ſeveral trailing ſtalks, which are cloſely garniſhed with leaves; theſe never riſe much from the ground, but between theſe come out upright ſtalks, which riſe upward of two feet high, garniſhed with pretty long, narrow, ſpear-ſhaped leaves, placed without order. The flowers grow in a ſort of panicle toward the upper part of the branches; they are about the ſize of thoſe of the common ſort, and are of the ſame colour. It flowers and ripens its ſeeds about the ſame time, and the roots continue ſeveral years.

The eighth ſort I received from Iſtria; this hath a biennial root, from which ariſe two or three ſtalks, which divide into ſeveral branches, at about ſix inches from the root, which divide again into ſmaller toward the top; they are garniſhed with ſhort, narrow, acute-pointed leaves, placed alternately. The flowers come out from the ſide of the branches, ſtanding upon long foot-ſtalks. The empalement of the flower is compoſed of five broadiſh leaves ending in acute points, which ſpread open; the flowers are of the ſame ſize and colour as the common Flax, and appear at the ſame ſeaſon. The ſeeds ripen in the autumn, and the roots abide ſeveral years.

The ninth ſort grows naturally in Hungary and Auſtria; this hath a perennial root, from which ariſe ſeveral ſtalks near two feet high, which are thick, firm, and hairy, dividing at the top into ſeveral branches, and are garniſhed with broader leaves than the other ſpecies, which are hairy. The flowers grow along the ſtalks alternately; they are large, and of a deep blue colour, appearing at the ſame time with the common ſort, and the ſeeds ripen in the autumn.

The tenth ſort grows naturally in Germany and the ſouth of France, amongſt the Corn. This is an annual plant, riſing with an upright ſtalk near a foot and a half high, garniſhed with ſpear-ſhaped acute-pointed leaves, which are rough on their edges; they are about the ſame length of thoſe of the common Flax, but a little broader, placed alternately. The ſtalks divide toward the top into ſeveral branches, each ſuſtaining two or three yellow flowers, ſitting in ſpear-ſhaped acute-pointed empalements. Theſe appear in July, but unleſs the autumn proves favourable, the ſeeds never ripen in England.

The eleventh ſort grows naturally in Spain; the ſeeds of it were ſent me from Madrid by Dr. Hortega. This hath a ſhrubby ſtalk which riſes a foot high, ſending out ſeveral branches which are garniſhed with very narrow leaves coming out in cluſters; but the flowering branches are garniſhed with broader and longer leaves, placed alternately at every joint. The flowers are produced at the end of the branches, ſtanding erect upon long ſlender foot-ſtalks; they have acute-pointed empalements. The petals of the flower are large, entire, and white, but before the flowers open, they are of a pale yellow colour. Theſe flowers appear in July,

but unleſs the autumn proves favourable, the ſeeds do not ripen in England. The flower-ſtalks of this ſort decay in the autumn, but the lower ſhrubby ſtalk continues with the other branches all the year.

The twelfth ſort grows naturally upon the Alps; this hath a perennial root, from whence ariſe two or three ſlender ſtiff ſtalks, which divide at the top into two or three ſlender branches, garniſhed with ſpear-ſhaped leaves placed alternately. The flowers come out ſingly at the joints, and ſit cloſe to the ſtalks; their empalements are cut into five ſlender ſegments, which are longer than the petals of the flower. The flowers are yellow, and appear about the ſame time with the common ſort, and the ſeeds ripen in the autumn.

The thirteenth ſort grows common in many parts of England, upon dry barren hills. It is commonly called Linum catharticum, purging Flax, and alſo Mountain Flax. This riſes with ſeveral branching ſlender ſtalks about ſeven or eight inches high, garniſhed with ſmall, oval, ſpear-ſhaped leaves placed oppoſite. The flowers are ſmall and white, ſtanding upon pretty long foot-ſtalks, which come out from the ſide of the branches, and alſo where they are divided. They appear in July, and are ſucceeded by ſmall round capſules, containing ſmall flat ſeeds which ripen in the autumn. This is one of thoſe plants which refuſes culture. I have frequently ſown the ſeeds both in autumn and ſpring, but could ſeldom get up any of the plants, and others who have made the trial have found the ſame.

The fourteenth ſort grows naturally about Montpelier, and in ſome parts of Italy near the ſea. This riſes with upright ſtalks near two feet high, the lower part of which are garniſhed with ſpear-ſhaped leaves placed oppoſite, but on the upper part they are alternate. The ſtalks divide upward into ſeveral branches, the tops of which are garniſhed with yellow flowers about the ſize of thoſe of common Flax, which hang downward; theſe are ſucceeded by ſmall oval capſules, containing ſmaller ſeeds than thoſe of the common Flax. The flowers appear in July, and the ſeeds ripen in the autumn.

There are ſeveral other ſpecies of Flax which grow wild in the different parts of Europe, but thoſe here enumerated are all I have ſeen growing in the Engliſh gardens.

The firſt ſort is that which is cultivated for uſe in divers parts of Europe, and is reckoned an excellent commodity; the right tilling and ordering of which, is eſteemed a good piece of huſbandry.

This ſhould be cultivated upon a rich ſoil, that has not been ploughed for ſeveral years, upon which Flax always makes the beſt improvement; but as it draws greatly from the ſoil, it ſhould not be ſown two years together upon the ſame ground, nor in leſs than after five or ſix years interval.

This ground ſhould be as clean from weeds as poſſible; in order to have it ſo, it ſhould be fallowed two winters and one ſummer, obſerving to harrow the ground well between each ploughing, particularly in ſummer, to deſtroy the young weeds ſoon after they appear, that the ſmalleſt of them may not ſtand to ripen their ſeed; this will alſo break the clods, and ſeparate their parts ſo, that they will fall to pieces on being ſtirred. If the land ſhould require dung, that ſhould not be laid on till the laſt ploughing, when it muſt be buried in the ground; but this dung ſhould be ſuch as is clear from the ſeeds of weeds, which it always will be where there is care taken to keep the dunghills clean from weeds, and the places near it; for ſuppoſing there ſhould be any ſeeds at firſt among the dung, yet when it is laid in a heap and well fermented, that will deſtroy the ſeeds; but there are few perſons who are careful to keep their dunghills, and the places near them, clean from weeds; and the ſeeds of theſe falling on the dung, are carried upon the land; from whence ſprung that vulgar error, that dung produces weeds, which it can never do, if there is not the ſeeds mixed with it. Juſt before the ſeaſon for ſowing of the Flax ſeed, the land muſt be well ploughed, laid flat and even, upon which the ſeeds ſhould be ſown about the latter end of March, or the beginning of April, when the weather is mild and warm.

The common way is to ſow the ſeed in broad-caſt, and to allow from two to three buſhels of ſeeds to one acre of land; but from many repeated trials, I have found it is a much better method to ſow the ſeeds in drills, at about ten inches diſtance from each other, by which half the quantity of ſeed which is uſually ſown, will produce a greater crop; and when the Flax is thus ſown, the ground may be eaſily hoed to deſtroy the weeds; which, if twice repeated in dry weather, will keep the ground clean till the Flax is ripe: this may be performed at half the expence which the hand weeding will coſt, and will not tread down the plants nor harden the ground, which by the other method is always done; and it is abſolutely neceſſary to keep the Flax clean from weeds, otherwiſe they will overbear and ſpoil the crop.

There are ſome people who recommend the feeding of ſheep with Flax, when it is a good height; and ſay, they will eat away the weeds and Graſs, and do the Flax good; and if they ſhould lie in it, and beat it down or flatten it, it will riſe again the next rain: but this is a very wrong practice, for if the ſheep gnaw or eat the Flax, the plants will ſhoot up very weak, and never come to half the ſize they would have done, if not cropped: and as to the ſheep deſtroying the weeds, they never are ſo nice diſtinguiſhers, for if they like the crop better than the weeds, they will devour that and leave the weeds untouched.

Toward the latter end of Auguſt or the beginning of September, the Flax will begin to ripen, when you muſt be careful that it does not ſtand to be over ripe; therefore you muſt pull it up as ſoon as the heads begin to change brown and hang downwards, otherwiſe the ſeeds will ſoon ſcatter and be loſt; ſo that the pluckers muſt be nimble, and tie it up in handfuls, ſetting them upright till they be perfectly dry, and then houſe them. If the Flax be pulled when it firſt begins to flower, it will be whiter than if it ſtand till the ſeed is ripe, but then the ſeed will be loſt; but the thread will be ſtronger when Flax is left till the ſeed is ripe, provided it does not ſtand too long, but the colour of it will not beſo good.

The Siberian perennial Flax has been made trial of, and anſwers very well for making of common ſtrong linen, but the thread ſpun from this is not ſo fine or white as that which is produced from the common ſort; but as the roots of this ſort will continue many years, ſo there will be a great ſaving in the culture, as it will require no other care but to keep it conſtantly clean from weeds; which cannot be well done, unleſs the ſeeds are ſown in rows, that the ground may be conſtantly kept hoed to deſtroy the weeds when young; for if they are ſuffered to grow large, it will be difficult to get the ground clean, and they will weaken the roots. This ſort muſt have the ſtalks cut off cloſe to the ground when ripe, and tied up in ſmall bundles, managing them afterward in the ſame way as the common ſort; but this ſeldom produces more than three crops, which will pay for ſtanding.

The eighth ſort I received from Iſtria, which produced the fineſt thread of all the ſorts which I have tried; and this grows taller than the common Flax, and having a biennial root, may be worthy of trial to ſee how it will thrive in the open fields; for in gardens it lives through the winter without receiving the leaſt injury from the froſt, the roots having ſurvived through the winter in the Chelſea garden ſeveral years; and in order to make trial of its goodneſs, I gave a parcel of the ſtalks of this, as alſo of the Spaniſh and Siberian perennial ſorts, to a perſon who is well ſkilled in watering, breaking, and dreſſing of Flax, who prepared them, and aſſured me, that the Iſtrian Flax was by much the fineſt of the three, and was in goodneſs preferable to any he had ſeen.

There is annually great quantities of the ſeed of Flax imported into Scotland and Ireland, from the Eaſt Country, particularly from Riga, to the amount of many thouſand pounds ſterling, per ann. which might be ſaved to the public, by encouraging the growth of Flax in the northern colonies of America, where the ſummers are warmer than in England, ſo that the ſeeds would ripen perfectly there, and the change of ſeeds from thence would be greater than that from Riga, but it ſhould be confined to the moſt northern parts of America; for ſuch ſeeds as are ſaved in the warmer parts will not ſucceed well here, as I have experienced in many other kinds of plants, whoſe ſeeds I have ſent to Carolina, where they have grown two or three years, after which ſome of the ſeeds have been ſent me back, which I have always found to be much longer in growing to perfection than before.

The other ſorts which are here mentioned, are preſerved in gardens for the ſake of variety, but none of them are uſed, except the Mountain Flax, which is eſteemed a good purger in dropſical diſorders, and has of late years been often preſcribed.

They are all of them propagated by ſeeds, which may be ſown in the ſpring, in the places where they are to remain, and will require no other culture but to keep the plants clean from weeds. The annual ſorts will flower and perfect their ſeeds the ſame year, but the roots of the perennial ſorts will continue ſeveral years, putting out freſh ſtalks every ſpring. The ſhrubby ſorts will live through the winter in the open air, provided it is in a dry ſoil and a warm ſituation; but theſe rarely produce ſeeds in England.

The method of watering, piling, braking, &c. being a particular buſineſs, and foreign to my deſign, I ſhall not pretend to give any directions about it in this place.

The common ſort is a plant of the greateſt uſe, in ſeveral of the moſt eſſential parts of life; from the ſeeds an expreſſed oil is drawn, which is of great uſe in medicine, painting, &c. from the bark of the ſtalks is made linen, and from the rags of linen is made paper; ſo that this plant may be eſteemed as one of the moſt valuable, and abſolutely neceſſary in many of the principal conveniencies of life.

LINUM UMBILICATUM. See CYNOGLOSSUM.

LIPPIA. Houſt. Gen. Nov. Lin. Gen. Plant. 699.

This plant was ſo named by the late Dr. William Houſtoun, who diſcovered it at La Vera Cruz, where it grows naturally, in honour of Dr. Auguſtus Lippi, a famous botaniſt, who travelled to Egypt, and diſcovered many new plants.

The CHARACTERS are,

The empalement of the flower is permanent, roundiſh, and compreſſed. The flower hath one petal, which is of the ringent kind; the upper lip is divided into two parts, which are reflexed; the under lip is ſmaller, and cut into two roundiſh ſegments. It hath four ſhort ſtamina, two of which are a little longer than the other, terminated by ſingle ſummits, and an oval germen ſupporting a ſlender ſtyle the length of the ſtamina, crowned by an indented ſtigma. The germen afterward turns to a compreſſed capſule with one cell, opening with two valves, which appear like the ſcales of the empalement, incloſing two ſeeds which are joined.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, intitled Didynamia Angioſpermia, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and the ſeeds are included in capſules.

The SPECIES are,

1. LIPPIA (*Americana*) arboreſcens foliis conjugatis oblongis, capitulis ſquamoſis & rotundis. Houſt. *Tree Lippia with oblong leaves growing by pairs, having round ſcaly heads.* Lippia capitulis pyramidatis. Lin. Sp. 883. *Lippia with pyramidal heads.*
2. LIPPIA (*Hemiſphærica*) capitulis hemiſphæricis. Jacq. Amer. 25. *Lippia with hemiſpherical heads.*

The firſt ſort in the country of its native growth, commonly riſes to the height of ſixteen or eighteen

feet, with a rough bark: the branches come out by pairs oppoſite, as do alſo the leaves, which are oblong, pointed, and a little ſawed on their edges. From the wings of the leaves come out the foot-ſtalks, which ſuſtain many pyramidal ſcaly heads, about the ſize of a large gray Pea, in which are many ſmall yellow flowers appearing between the ſcales, which are ſucceeded by the ſeed-veſſels.

The ſecond ſort grows naturally in Carthagena in New Spain, where it riſes with ſhrubby ſtalks ten or twelve feet high, ſending out ſlender branches toward their top, garniſhed with oval ſpear-ſhaped leaves three inches long, ending in acute points, ſmooth on their upper ſurface, which are placed oppoſite; the foot-ſtalks of the flowers come out oppoſite juſt above the leaves, each ſupporting a pyramidal head of white flowers, which peep out from the ſcales of the head; theſe are ſucceeded by capſules having two cells, including ſmall ſeeds.

The ſeeds of the firſt ſort were ſent by Dr. Houſtoun to ſeveral curious gardens in Europe, where ſome of the plants have been raiſed; but as the country from whence they came is very warm, ſo the plants will not thrive in this climate, unleſs they are preſerved in a warm ſtove. The ſeeds ſhould be ſown on a hot-bed, and the plants may be treated in the ſame manner as other ſhrubby plants which are natives of warm countries: which is, to keep them always in the ſtove, plunged in the bark-bed, obſerving to give them a large ſhare of air in warm weather, and frequently refreſh them with water; but in winter they muſt be watered more ſparingly, and be kept in a moderate degree of warmth, otherwiſe they will not live through the winter, eſpecially while they are young; but when they have acquired ſtrength, they may be preſerved with a leſs ſhare of warmth.

As the plants advance in their growth, they ſhould be ſhifted into larger pots, but this ſhould not be too often repeated; for if they are removed into new pots every ſpring, it will be as often as they will require; ſo that when theſe, and many other exotic plants, are too often removed, they do not thrive ſo well as when they are permitted to fill the pots with their roots. The beſt time to ſhift theſe plants is in April, at which time the tan of the hot-bed ſhould be ſtirred, and freſh tan mixed with it, to increaſe the heat. The earth in which theſe plants are placed, ſhould be freſh and light, but not too rich.

LIQUIDAMBER. Mitch. Gen. 12. Lin. Gen. Plant. 955. Liquidamber, Sweet Gum, or Storax-tree.

The CHARACTERS are,

It hath male and female flowers ſometimes on the ſame plant, at other times upon different plants; the male flowers are numerous, diſpoſed in long, looſe, conical katkins; theſe have four-leaved empalements, but no petals. They have a great number of ſhort ſtamina joined in one body, which are convex on one ſide, but plain on the other, terminated by erect twin ſummits, with four furrows. The female flowers are often ſituated at the baſe of the male ſpike, collected in a globe; theſe have a double empalement like that of the male, and each of them has a bell-ſhaped, angular, diſtinct empalement, with many protuberances. They have no petals, but an oblong germen faſtened to the empalement, ſupporting two awl-ſhaped ſtyles, to which is alſo fixed the recurved ſtigmas, which are hairy and as long as the ſtyles. The empalement afterward turns to a roundiſh capſule of one cell, with two valves at the top, which are acute, and collected in a ligneous globe, containing oblong acute-pointed ſeeds.

This genus of plants is ranged in the eighth ſection of Linnæus's twenty-firſt claſs, which includes thoſe plants with male and female flowers, whoſe male flowers have many ſtamina.

The SPECIES are,

1. LIQUIDAMBER (*Styraciflua*) foliis quinquelobatis ſerratis. *Liquidamber with ſawed leaves having five lobes.* Styrax aceris folio. Raii Hiſt. 1681. *Maple-leaved Storax-tree.*

2. LIQUIDAMBER (*Orientalis*) foliis quinquelobatis, ſinuatis obtuſis. *Liquidamber with leaves having five lobes, which are ſinuated and obtuſe.*

The firſt ſort has by ſome writers been ranged with the Maple, but on no other account, except from the ſimilitude of the leaves; for in flower and fruit it is very different from the Maple, and moſt other genera: nor has it any affinity to the Storax-tree, but the gum which iſſues from this tree being tranſparent, and having a great fragrancy, has by ſome ignorant perſons been taken for that.

It grows plentifully in Virginia and ſeveral other parts of North America, where it riſes with a ſtrait naked ſtem to the height of fifteen or ſixteen feet, and afterward branches out regularly to the height of forty feet or upward, forming a pyramidal head. The leaves are angular, and ſhaped ſomewhat like thoſe of the leſſer Maple, having five lobes, but are of a dark green colour, and their upper ſurfaces ſhining; a ſtrong, ſweet, glutinous ſubſtance exſudes through the pores of the leaves in warm weather, which renders them clammy to the touch.

The flowers are generally produced early in the ſpring of the year, before the leaves are expanded, which are of a Saffron colour, and grow in ſpikes from the extremity of the branches; after theſe are paſt, the fruit ſwells to the ſize of a Walnut, being perfectly round, having many protuberances, each having a ſmall hole and a ſhort tail, which extends half an inch.

The planks of this tree being beautifully veined, are often uſed in America for wainſcotting rooms; but it requires a long time to ſeaſon the boards, otherwiſe they are apt to ſhrink.

In Europe this tree is cultivated in the gardens of the curious, for the ſake of variety; it is hardy enough to endure the ſevereſt cold of this country in the open air, and there are ſome of them upward of twenty feet high, though I have not heard of any of them which has produced fruit.

This is commonly propagated by layers in England, but thoſe plants which are raiſed from ſeeds grow to be much fairer trees.

The ſeeds of this tree, if ſown in the ſpring, commonly remain in the ground a whole year before the plants come up; ſo that the ſureſt way to raiſe them is, to ſow the ſeeds in boxes or pots of light earth; which may be placed in a ſhady ſituation during the firſt ſummer, and in autumn they may be removed where they may have more ſun; but if the winter ſhould prove ſevere, it will be proper to cover them with Peas-haulm, or other light covering, which ſhould be taken off conſtantly in mild weather. In the following ſpring, if theſe boxes or pots are placed upon a moderate hot-bed, it will cauſe the ſeeds to come up early, ſo that the plants will have time to get ſtrength before the winter; but during the firſt and ſecond winters, it will be proper to ſcreen the plants from ſevere froſt, but afterward they will bear the cold very well.

The ſeeds of the ſecond ſort were ſent by Mr. Peyſſonel from the Levant, to the French king's garden at Marli, a few of which were ſent me by Mr. Richard, the king's gardener, which ſucceeded in the Chelſea garden. The leaves of this ſort differ from thoſe of the firſt, in having their lobes ſhorter, and much more ſinuated on their borders; they end in blunt points, and are not ſerrated; but as I have not ſeen the fruit of this, ſo I do not know how it differs from the other.

LIRIODENDRUM. See TULIPIFERA.

LITHOSPERMUM. Tourn. Inſt. R. H. 137. tab. 55. Lin. Gen. Plant. 166. [of Λίθος, a ſtone, and Σπέρμα, ſeed; q. d. Stone-ſeed; becauſe the ſeed of this plant is hard, and good againſt the ſtone.] Gromwell, Gromill, or Graymill; in French, *Gromil.*

The CHARACTERS are,

The flower hath an oblong, erect, acute-pointed, permanent, empalement, which is cut into five parts. It hath one petal with a cylindrical tube the length of the empalement, divided into five obtuſe points at the brim, which are erect; the chaps are perforated. It hath five ſhort ſtamina terminated by oblong ſummits, which are ſhut up in the chaps of the petal. It hath four germen, with a ſlender ſtyle the length of the tube, crowned by a bifid obtuſe ſtigma. The germen afterward turn to ſo many oval, hard, ſmooth, acute-pointed ſeeds, ſitting in the ſpreading empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which includes the plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. LITHOSPERMUM (*Officinale*) ſeminibus lævibus, corollis calycem vix ſuperantibus, foliis lanceolatis. Hort. Cliff. 46. *Gromwell with ſmooth ſeeds, the petal of the flower ſcarce longer than the empalement, and ſpear-ſhaped leaves.* Lithoſpermum majus erectum. C. B. P. 258. *Greater upright Gromwell.*

2. LITHOSPERMUM (*Arvenſe*) ſeminibus rugoſis, corollis vix calycem ſuperantibus. Hort. Cliff. 46. *Gromwell with rough ſeeds, whoſe petals are ſcarce longer than the empalement.* Lithoſpermum arvenſe, radice rubrâ. C. B. P. 258. *Field Gromwell with a red root.*

3. LITHOSPERMUM (*Purpurocæruleum*) ſeminibus lævibus, corollis calycem multoties ſuperantibus. Hort. Cliff. 46. *Gromwell with ſmooth ſeeds, and the petal many times longer than the empalement.* Lithoſpermum minus repens latifolium C. B. P. 258. *Smaller, creeping, broad-leaved Gromwell.*

4. LITHOSPERMUM (*Virginianum*) foliis ſubovalibus nervoſis, corollis acuminatis. Lin. Sp. Plant. 132. *Gromwell with veined leaves which are almoſt oval, and acute-pointed petals.* Lithoſpermum latifolium Virginianum, flore albido longiore. Mor. Hiſt. 3. p. 447. *Broad-leaved Gromwell of Virginia with a longer whitiſh flower.*

5. LITHOSPERMUM (*Fruticoſum*) fruticoſum, foliis linearibus hiſpidis, ſtaminibus corollam ſubæquantibus. Lin. Sp. 190. *Shrubby Gromwell with rough linear leaves, and the ſtamina almoſt equal to the petal.* Buglоſſum ſamium fruteſcens, foliis Roriſmarini obſcure virentibus lucidis & hirſutis. Tourn. Cor. 6.

The firſt ſort grows naturally upon the banks, and in dry fields in many parts of England, ſo is ſeldom admitted into gardens. This hath a biennial root, from which ariſe two or three upright ſtalks two feet high, which branch out toward the top, garniſhed with ſpear-ſhaped, rough, hairy leaves, placed alternate, ſitting cloſe to the ſtalks. The flowers come out ſingly at every joint of the ſmall branches; they are white, of one petal, cut into four parts at the top, and ſtand within the empalement; theſe are ſucceeded by four hard, white, ſhining ſeeds, which ripen in the empalement. It flowers in May, and the ſeeds ripen in Auguſt.

The ſeeds of this plant are accounted a powerful diuretic, and a cleanſer of the reins and urethers, being boiled in wine and water, and are of great ſervice againſt gravel or ſtoppage of urine.

The ſecond ſort is an annual plant, which grows among winter Corn in many parts of England. This riſes with a ſlender branching ſtalk a foot and a half high, garniſhed with narrow, ſpear-ſhaped, rough leaves placed alternately. The flowers are produced ſingly on the upper parts of the ſtalks. They are ſmall and white; theſe are ſucceeded by four rough ſeeds, which ripen in the empalement. It flowers in June, and the ſeeds ripen in Auguſt, ſoon after which the plants decay.

The third ſort grows naturally in woods in many parts of England; this hath a perennial root, from which come out two or three trailing ſtalks ſcarce a foot long, garniſhed with long, narrow, ſpear-ſhaped leaves, placed alternately; theſe are ſmoother than thoſe of the other ſorts. The flowers are produced at the end of the ſtalks from amongſt the leaves; they are white, and the petals are much longer than the empalements. Theſe appear the latter end of May, and each is ſucceeded by four ſmooth ſeeds, which ripen in the empalement.

The

The fourth ſort grows naturally in North America; this hath a perennial root, from which ariſe ſeveral very hairy ſtalks about a foot and a half high, garniſhed with rough, hairy, veined leaves, which are almoſt oval, ſitting cloſe to the ſtalks alternately. The flowers grow in ſhort reflexed ſpikes at the end of the branches: theſe are white, their petals being longer than the empalement, ending in acute points. It flowers in June, and the ſeeds ripen in autumn.

The fifth ſort grows naturally in the ſouth of France, and alſo in the Levant. This hath a perennial root, which runs deep in the ground, from which comes out in the ſpring a ſhrubby erect ſtalk two or three feet high, which is pretty cloſely ſet with hairs, and garniſhed with narrow leaves placed alternately. The flowers are produced in ſhort reflexed ſpikes at the end of the ſtalk, ſtanding in hairy empalements; they are of a reddiſh purple colour, but as they decay change to a deep purple; they are tubulous, but cut at the top into four or five ſegments; the upper two are reflexed. It flowers in June, but the ſeeds rarely ripen in England.

Theſe plants may be cultivated by ſowing their ſeeds in rows ſoon after they are ripe, in a bed of freſh earth, allowing the rows at leaſt a foot diſtance from each other, obſerving to keep them clear from weeds, and they will thrive in almoſt any ſoil or ſituation.

LOAM is a common ſuperficial earth, that is a mixture of ſand and clay, commonly of a yellowiſh colour, though there is ſome Loam that is blackiſh. Some call Loam the moſt common ſuperficial earth met with in England, without any regard to the proportion it bears to ſand or clay; but moſt generally the appellation of Loam is applied to a ſoft fat earth, partaking of clay, but eaſy to work.

It is found by experience, that plants of moſt ſorts will grow in it; and wherever it is found, it appears to be a more beneficial ſoil to plants than any other. A clay uſed in grafting is alſo called Loam.

LOBELIA. Plum. Nov. Gen. 21. tab. 31. Lin. Gen. Plant. 897.

The CHARACTERS are,

The empalement of the flower is ſmall, of one leaf, indented in five parts, and grows about the germen. The flower has but one petal, which is tubulous, and a little ringent, cut into five parts at the brim; two of the upper ſegments are ſmaller than the other, are more reflexed and deeper cut, theſe conſtitute the upper lip; the three lower are ſpread open, and larger. It hath five awl-ſhaped ſtamina the length of the tube, terminated by oblong cylindrical ſummits, divided at their baſe into five parts. It has a pointed germen under the petal, ſupporting a cylindrical ſtyle, crowned by an obtuſe prickly ſtigma. The germen afterward becomes an oval fleſhy berry with two cells, each containing a ſingle ſeed.

This genus of plants is ranged in the fifth ſection of Linnæus's nineteenth claſs, to which he has joined the Rapuntium of Tournefort; but although the form of theflowers, and the number of their ſtamina, agree pretty well, yet as the fruit of this is a pulpy berry, incloſing but two ſeeds, and the Rapuntii have dry capſules including many ſmall ſeeds, I ſhall keep them ſeparate.

We know but one SPECIES of this genus, viz.

LOBELIA (*Fruteſcens*) fruteſcens, foliis ovati-oblongis integerrimis. Flor. Zeyl. 313. *Shrubby Lobelia with oblong, oval, entire leaves.* Lobelia fruteſcens portulacæ folio. Plum. Nov. Gen. 21. *Shrubby Lobelia with a Purſlane leaf.*

This plant riſes with a ſucculent ſtalk five or ſix feet high, garniſhed with oval, oblong, ſucculent leaves, which are placed alternately; theſe ſit cloſe to the ſtalk. The flowers are produced upon long foot-ſtalks, which come out from the ſide of the ſtalk, and ſuſtain two or three white flowers of one petal, cut into five acute ſegments at the brim; theſe are ſucceeded by two oval berries as large as Bullace, containing a ſtone with two cells, in each of which is lodged a ſingle ſeed.

The ſeeds of this plant were ſent to England by Mr. Cateſby, in the year 1724, who gathered them in the Bahama Iſlands, where the plants grow in plenty, near the ſhore of the ſea; and ſince that time the ſeeds have been ſent to England by Dr. William Houſtoun, who gathered them at La Vera Cruz; ſo that I believe the plant is common in moſt of the warm parts of America.

It is propagated by ſeeds, which muſt be procured from the countries of its natural growth, for the plants will not produce them in Europe; theſe ſeeds ſhould be ſown in pots filled with light ſandy earth, and plunged into a hot-bed of tanners bark, where the plants will come up in about a month or five weeks, provided the bed is warm, and the earth often watered. When the plants are up, they ſhould be kept in a temperate hot-bed, and frequently refreſhed with water, but it muſt not be given them in large quantities, for they are very ſucculent, and ſubject to periſh with much moiſture, eſpecially while they are young. When the plants are about two inches high, they ſhould be carefully taken out of the pots in which they were ſown, and each planted in a ſeparate ſmall pot filled with freſh light ſandy earth, and then plunged into the hot-bed again, obſerving to ſhade them in the heat of the day until they have taken new root. In this hot-bed the plants may remain until the middle, or latter end of September, when they muſt be removed into the ſtove, and plunged into the tan-bed, in the warmeſt part of the ſtove, for they are very tender plants while young, therefore muſt be kept very warm, otherwiſe they will not live through the firſt winter in this country. In the ſpring following the plants may be ſhifted into ſomewhat larger pots, and then plunged into a freſh hot-bed to forward their growth; for if they are not puſhed on while they are young, they ſeldom grow to any ſize, nor will they ever flower; ſo that in order to have them in any beauty, they muſt be carefully managed. The leaves of this plant are very ſubject to contract filth, by being conſtantly kept in the ſtove, therefore they ſhould be waſhed with a ſponge frequently, to keep them clean, otherwiſe they will appear unſightly.

LOBUS ECHINATUS. See GUILANDINA.

LOCULAMENTS are little diſtinct cells, or partitions, within the ſeed-veſſels of plants.

LOLIUM. Darnel Graſs.

Of this ſort of Graſs we have two or three ſpecies, which grow naturally in England; ſome in dry Graſs grounds, and one which is an annual Graſs, is frequently found in arable land; but as neither of them are cultivated for uſe, ſo I ſhall not trouble the reader with any farther account of them.

LONCHITIS [ſo called of Λόγχη, a lance or ſpear, becauſe the leaves are ſo ſharp-pointed as to reſemble the point of a ſpear.] Rough Spleenwort.

The CHARACTERS are,

The leaves are like thoſe of the Fern, but the pinnulæ are eared at their baſe; the fruit alſo is like that of the Fern.

The SPECIES are,

1. LONCHITIS aſpera. Ger. *Rough Spleenwort.*
2. LONCHITIS aſpera major. Ger. Emach. *Greater rough Spleenwort.*

The firſt of theſe plants is very common in ſhady woods, by the ſides of ſmall rivulets, in divers parts of England; but the ſecond ſort is not quite ſo common, and has been brought into ſeveral curious botanic gardens from the mountains in Wales. There are alſo great variety of theſe plants in America, which at preſent are ſtrangers in the European gardens; they are ſeldom cultivated but in botanic gardens for the ſake of variety, where they muſt have a moiſt ſoil and ſhady ſituation.

LONGITUDINAL VESSELS, in plants, are ſuch as are extended in length through the woody parts of trees and plants, into which the air is ſuppoſed to enter, and mix with the juices of the plant, and thereby augment its bulk.

LONICERA. Lin. Gen. Plant. Chamæcerasus. Tourn. Inst. R. H. 609. tab. 379. *Upright Honeysuckle.*

The CHARACTERS are,

The flower has a small empalement, cut into five parts, upon which the germen sits. It hath one petal, with an oblong tube, cut into five parts at the brim, and five awl-shaped stamina, almost the length of the petal, terminated by oblong summits. Under the petal is situated a roundish germen, supporting a slender style the length of the petal, crowned by an obtuse stigma. The germen afterward turns to two berries, which join at their base.

This genus of plants is ranged in the first section of Linnæus's fifth class, which includes those plants whose flowers have five stamina and one style; and to this genus he has joined the Caprifolium, Periclymenum, and Xylosteum of Tournefort, and the Symphoricarpos of Dillenius. Tournefort places this genus in the sixth section of his twentieth class, in which he ranges the trees and shrubs with a flower of one petal, whose empalement becomes a berry.

The SPECIES are,

1. LONICERA (*Xylosteum*) pedunculis bifloris, baccis distinctis, foliis integerrimis pubescentibus. Prod. Leyd. 238. *Lonicera with two flowers on each foot-stalk, distinct berries, and entire woolly leaves.* Chamæcerasus dumetorum fructu gemino rubro. C. B. P. 451. *Dwarf Cherry with twin red fruit, commonly called Fly Honeysuckle.*
2. LONICERA (*Alpigena*) pedunculis bifloris, baccis coadunatis didymis. Lin. Sp. Plant. 174. *Lonicera with two flowers upon a foot-stalk, and twin berries which are joined together.* Chamæcerasus Alpina, fructu gemino rubro duobus punctis notato. C. B. P. 451. *Dwarf Alpine Cherry with a red twin fruit, marked with two points, commonly called red-berried upright Honeysuckle.*
3. LONICERA (*Cærulea*) pedunculis bifloris, baccis coadunatis globosis, stylis indivisis. Lin. Sp. Plant. 174. *Lonicera with two flowers on a foot-stalk, globular berries, which are joined, and undivided styles.* Chamæcerasus montana, fructu singulari-cæruleo. C. B. P. 451. *Mountain Dwarf Cherry with a single blue fruit, commonly called single, blue-berried, upright Honeysuckle.*
4. LONICERA (*Nigra*) pedunculis bifloris, baccis distinctis, foliis serratis. Prod. Leyd. 238. *Lonicera with two flowers on a foot-stalk, distinct berries, and sawed leaves.* Chamæcerasus Alpina, fructu nigro gemino. C. B. P. 451. *Alpine Dwarf Cherry with a black twin fruit, called black-berried upright Honeysuckle.*
5. LONICERA (*Tartarica*) pedunculis bifloris, baccis distinctis, foliis cordatis obtusis. Hort. Upsal. 42. *Lonicera with two flowers on a foot-stalk, distinct berries, and blunt heart-shaped leaves.* Chamæcerasus fructu gemino rubro, foliis glabris cordatis. Amm. Ruth. 184. *Dwarf Cherry with a twin red fruit, and smooth heart-shaped leaves.*
6. LONICERA (*Pyrenaica*) pedunculis bifloris, baccis distinctis, foliis oblongis glabris. Lin. Sp. Plant. 174. *Lonicera with two flowers on a foot-stalk, distinct berries, and oblong smooth leaves.* Xylosteum Pyrenaicum. Tourn. Inst. 609. *Pyrenean Dwarf Cherry.*
7. LONICERA (*Symphoricarpos*) capitulis lateralibus pedunculatis, foliis petiolatis. Lin. Sp. Plant. 175. *Lonicera with lateral heads of flowers growing upon foot-stalks, and leaves having foot-stalks.* Symphoricarpos foliis alatis. Dill. Hort. Elth. 371. *commonly called shrubby St. Peterswort.*

The first sort has been many years cultivated in the English gardens under the title of Fly Honeysuckle. It grows naturally upon the Alps, and in other cold parts of Europe. It rises with a strong woody stalk six or eight feet high, covered with a whitish bark, dividing into many branches, which are garnished with oblong oval leaves placed opposite; they are entire, and covered with short hairy down. The flowers come out on each side of the branches opposite, standing upon slender foot-stalks, each sustaining two white flowers standing erect; these have one petal, which is cut into five parts; the three lower being narrow, are reflexed, the two broader stand upright; these appear in June, and are succeeded by two red clammy berries, which are joined at their base, and ripen the beginning of September.

The second sort grows naturally upon the Alps; this has been long cultivated in the English gardens, by the title of red-berried upright Honeysuckle; this hath a short, thick, woody stem, which divides into many strong woody branches growing erect, garnished with spear-shaped leaves placed opposite, standing upon foot-stalks; they are entire, their under side being of a pale green, but their upper of a dark green. The flowers stand upon very long slender foot-stalks, which come out opposite on each side the branches, at the base of the leaves; they are red on their outside, but pale within, shaped like those of the former sort, but are a little larger, standing erect; these appear the latter end of April, and are commonly succeeded by two oval red berries, joined at their base, which have two punctures; they ripen the beginning of August. Sometimes there is but one berry succeeding each flower, which is frequently as large as a Kentish Cherry; this I believe has led some to suppose it was a distinct species, as I thought myself, when I saw all the fruit upon the shrub were single; but the following years, I found they had twin fruit like the others.

The third sort grows naturally upon the Appenines; this is a shrub of humbler growth than either of the former, seldom rising more than four or five feet high. The branches are slender, covered with a smooth purplish bark. The joints are distant, where the leaves come out opposite, and sometimes there are two on each side. The foot-stalks of the flowers are very short, each sustaining two white flowers, shaped like those of the former sorts; these are succeeded by blue berries, which are single and distinct. The flowers appear in May, and the berries ripen in August.

The fourth sort grows naturally on the Alps and Helvetian Mountains; this is a shrub very like the former, but the branches are slenderer. The leaves are a little sawed on their edges. The flowers have two berries succeeding them, in which consists their difference. It flowers at the same time with the former.

The fifth sort grows naturally in Tartary, from whence the seeds were sent to the Imperial Garden at Petersburgh, where they succeeded, and from thence the seeds were sent to me; this is a shrub which grows about the same height with the two former, to which this has a great resemblance in its branches; but the leaves of this are heart-shaped, and the berries are red, growing sometimes single, at others double, and frequently there are three joined together, which are about the same size with the former. It flowers in April, and the fruit is ripe in July.

The sixth sort grows naturally on the Pyrenean Mountains, and also in Canada, from whence the seeds were brought to Duke D'Ayen, which were sown in his curious garden at St. Germain, where they succeeded, and his highness was so good as to furnish me with a plant; this seldom rises more than three or four feet high, dividing into several spreading irregular branches, which are garnished with oblong smooth leaves, placed opposite. The flowers come out from the side of the branches upon slender foot-stalks, each sustaining two white flowers, which are cut into five segments almost to the bottom; these are succeeded by berries as the other sorts. It flowers in April.

The seventh sort grows naturally in North America, but has been many years propagated in the English gardens; this hath a shrubby stalk which rises about four feet high, sending out many slender plain branches, garnished with oval hairy leaves, placed by pairs opposite, having very short foot-stalks. The flowers are produced in whorls round the stalk; they are of an herbaceous colour, and appear in August. The fruit, which is hollow, and shaped like a pottage pot, ripens in the winter. Dr. Dillenius, in his Hortus Elthamensis, has titled this plant, Symphoricarpos foliis alatis, supposing the leaves to be winged;

but as the leaves fall off ſingle, and the branches remain upon which they were fixed, they cannot be called winged leaves.

Theſe ſhrubs are now propagated in the nurſery-gardens near London, for ſale, and are commonly intermixed with other flowering ſhrubs for the ſake of variety; but as there is little beauty in ſome of their flowers, a few of them only ſhould be admitted, to ſet off thoſe which are preferable; they are all of them very hardy plants, ſo will thrive in a cold ſituation better than in a warm one; they love a moiſt ſoil, in which they will thrive, and produce a greater quantity of fruit than in dry ground.

They may be propagated either by ſeeds or cuttings. The ſeeds commonly lie in the ground a year before they vegetate, but require no particular culture; if they are ſown in autumn, many of them will grow the following ſpring. The cuttings ſhould be planted in autumn in a ſhady border, where they will put out roots the following ſpring, and in the following autumn they may be removed into a nurſery, to grow two years to get ſtrength, after which they ſhould be tranſplanted where they are deſigned to remain.

LOPPING. It is very obſervable, that moſt old trees are hollow within, which does not proceed from the nature of the trees, but is the fault of thoſe who have the management of them, who ſuffer the tops to grow large before they lop them, as the Aſh, Elm, Hornbeam, &c. and perſuade themſelves, that they may have the more great wood; but, in the mean time, do not conſider that the cutting off great tops, or branches, endangers the life of a tree, or, at beſt, wounds it ſo, that many trees yearly decay more in their bodies, than the yearly tops come to; and at the ſame time that they furniſh themſelves with more great wood, they do it at the loſs of the owner. And, indeed, though the Hornbeam and Elm will bear great tops when the body is little more than a ſhell, yet the Aſh, if it comes to take wet at the head, very rarely bears more top after the body of the tree decays; therefore, if once theſe trees decay much in the middle, they will be worth little but for the fire, ſo that if you find a timber tree decay, it ſhould be cut down in time, that the timber be not loſt.

The Lopping of young trees, that is, at ten or twelve years old at moſt, will preſerve them much longer, and will occaſion the ſhoots to grow more into wood in one year, than they do in old tops at two or three. But when great boughs are ill taken off, it often ſpoils many a tree, for which reaſon they ſhould always be ſpared, unleſs there is an abſolute neceſſity. When they muſt be cut off, it ſhould be cloſe and ſmooth, and not parallel to the horizon, and cover the wound with loam and horſe-dung mixed, to prevent the wet from entering the body of the tree.

When trees are at their full growth, there are ſeveral ſigns of their decay, as, the withering or dying of many of their top branches; or if the wet enters at any knot, or they are any-wiſe hollow, or diſcoloured, if they make but poor ſhoots, or if woodpeckers make any holes in them.

This Lopping of trees is only to be underſtood for pollard trees, becauſe nothing is more injurious to the growth of timber trees, than that of Lopping or cutting off great branches from them; whoever will be at the trouble of trying the experiment upon two trees of equal age and ſize, growing near each other, to lop or cut off the ſide branches from one of them, and ſuffer all the branches to grow upon the other, will, in a few years, find the latter to exceed the other in growth every way, and this will not decay near ſo ſoon.

All ſorts of reſinous trees, or ſuch as abound with a milky juice, ſhould be lopped very ſparingly, for they are ſubject to decay when often cut. The beſt ſeaſon for Lopping theſe trees, is ſoon after Bartholomew tide, at which time they ſeldom bleed much, and the wound is commonly healed over before the cold weather comes on.

LORANTHUS. Vaill. Act. R. Sc. 1702. Lin. Gen. Plant. 400. Lonicera. Plum. Nov. Gen. 17. tab. 37.

The CHARACTERS are,

The empalement of the flower is entire, concave, and crowns the germen. The flower is tubulous, and cut into five narrow ſegments almoſt to the bottom, which are reflexed. It hath four ſtamina which are longer than the tube of the flower, terminated by globular ſummits. The germen, which is ſituated below the empalement, ſupports a ſingle ſtyle which is longer than the ſtamina, crowned by an oval ſtigma. The germen afterward becomes an oval pulpy fruit with one cell, including ſeveral compreſſed ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, but it ſhould be placed in his fourth claſs, for the flower has but four ſtamina and one ſtyle.

There are ſeveral ſpecies of this genus, which grow naturally upon trees, in ſeveral parts of America; but as the plants cannot be cultivated in gardens, ſo it will be to no purpoſe to enumerate them.

LOTUS. Tourn. Inſt. R. H. 402. Lin. Gen. Plant. 803. Bird's-foot Trefoil; in French, *Lotier*.

The CHARACTERS are,

The empalement of the flower is of one leaf, permanent, and cut at the top into five parts. The flower is of the butterfly kind. The ſtandard is roundiſh, and reflexed backward. The wings are broad, roundiſh, and ſhorter than the ſtandard, cloſing together at the top. The keel is cloſed on the upper ſide, and convex on the under, riſing a little. It hath ten ſtamina, nine joined and one ſeparate, terminated by ſmall ſummits, with an oblong taper germen, ſupporting a ſingle ſtyle, crowned by an inflexed ſtigma. The germen afterward becomes a cloſe cylindrical pod with one cell, opening with two valves, having many tranſverſe partitions, in each of theſe is lodged one roundiſh ſeed.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria, which contains the plants whoſe flowers have ten ſtamina in two houſes.

The SPECIES are,

1. LOTUS (*Corniculatus*) capitulis depreſſis, caulibus decumbentibus, leguminibus cylindricis patentibus. Lin. Sp. Plant. 775. *Bird's-foot Trefoil with depreſſed heads, trailing ſtalks, and cylindrical ſpreading pods.* Lotus corniculata glabra, minor. J. B. 2. 356. *Leſſer, ſmooth, corniculated Bird's-foot Trefoil.*
2. LOTUS (*Anguſtiſſimus*) leguminibus ſubbinatis linearibus ſtrictis erectis, caule erecto, pedunculis alternis. Lin. Sp. Plant. 774. *Bird's-foot Trefoil with erect, linear, ſtrait pods, growing in pairs, an erect ſtalk, and alternate foot-ſtalks.* Lotus pentaphyllos, minor, hirſutus, ſiliquâ anguſtiſſimâ. C. B. P. 332. *Smaller, five-leaved, hairy Bird's-foot Trefoil, with very narrow pods.*
3. LOTUS (*Glabrus*) capitulis depreſſis, caulibus decumbentibus, foliis linearibus glabris, leguminibus linearibus. *Bird's-foot Trefoil with depreſſed heads, trailing ſtalks, ſmooth linear leaves, and very narrow pods.* Lotus pentaphyllos fruteſcens, tenuiſſimis glabris foliis. C. B. P. 332. *Shrubby five-leaved Bird's-foot Trefoil, with very narrow ſmooth leaves.*
4. LOTUS (*Rectus*) capitulis ſubgloboſis, caule erecto, leguminibus rectis glabris. Hort. Upſal. 221. *Bird's-foot Trefoil with globular heads, an erect ſtalk, and ſtrait ſmooth pods.* Lotus villoſus, altiſſimus, flore glomerato. Tourn. Inſt. R. H. 403. *Talleſt hairy Bird's-foot Trefoil with a glomerated flower.*
5. LOTUS (*Cretica*) leguminibus ſubternatis, caule fruticoſo, foliis ſericeis nitidis. Hort. Cliff. 372. *Bird's-foot Trefoil with generally three pods on each foot-ſtalk, a ſhrubby ſtalk, and ſhining leaves.* Lotus argentea Cretica. Pluk. Alm. 226. *Silvery Bird's-foot Trefoil of Crete.*

6. LOTUS

6. Lotus (*Hirſutus*) capitulis hirſutis, caule erecto hirſuto, leguminibus ovatis. Hort. Upſal. 220. *Bird's-foot Trefoil with hairy heads, an erect hairy ſtalk, and oval pods.* Lotus pentaphyllos ſiliquoſus villoſus. C. B. P. 332. *Five-leaved, hairy, podded Bird's-foot Trefoil.*
7. Lotus (*Candidus*) capitulis ſubgloboſis hirſutis, caule erecto ramoſo, hirſuto, foliis tomentoſis. *Bird's-foot Trefoil with globular heads, which are hairy, an upright branching hairy ſtalk, and woolly leaves.* Lotus hæmorrhoidalis humilior & candidior. Tourn. Inſt. 403. *Lower bird's-foot Trefoil, having whiter leaves.*
8. Lotus (*Ornithopodioides*) leguminibus ſubquinatis arcuatis compreſſis, caulibus diffuſis. Hort. Cliff. 372. *Bird's-foot Trefoil with five arched compreſſed pods, and diffuſed ſtalks.* Lotus ſiliquis ornithopodii. C. B. P. 332. *Bird's-foot Trefoil with pods like birds feet.*
9. Lotus (*Peregrinus*) leguminibus ſubbinatis linearibus compreſſis nutantibus. Hort. Cliff. 372. *Bird's-foot Trefoil with two narrow compreſſed nodding pods.* Lotus ſiliquis geminis peregrina. Boerh. Ind. 2. p. 38. *Foreign Bird's-foot Trefoil with twin pods.*
10. Lotus (*Pratenſis*) leguminibus ſolitariis rectis teretibus terminalibus, caule erecto. Sauv. Monſp. 189. *Bird's-foot Trefoil with an erect ſtalk, terminated by a ſingle, taper, erect pod.* Lotus pratenſis ſiliquoſa lutea. C. B. P. 332. *Yellow, meadow, podded Bird's-foot Trefoil.*
11. Lotus (*Edulis*) leguminibus ſubſolitariis gibbis incurvis. Hort. Cliff. 370. *Bird's-foot Trefoil with ſingle, convex, incurved pods.* Lotus pentaphyllos, ſiliquâ cornutâ. C. B. P. 332. *Five-leaved Bird's-foot Trefoil with horned pods.*
12. Lotus (*Maritimus*) leguminibus ſolitariis membranaceo-quadrangulatis, bracteis lanceolatis. It. Oel. 143. Flor. Suec. 610. *Bird's-foot Trefoil with ſingle pods which are quadrangular by a membrane, and a ſpear-ſhaped bracteæ.* Lotus maritima lutea ſiliquoſa, folio pingui glabro. Bot. Monſp. *Podded, yellow, maritime Bird's-foot Trefoil with a ſmooth leaf.*
13. Lotus (*Conjugatus*) leguminibus conjugatis membranaceo quadrangulis, bracteis oblongo-ovatis. Lin. Sp. Plant. 774. *Bird's-foot Trefoil with conjugated pods which are quadrangular by a membrane, and oblong oval bracteæ.* Lotus lutea, ſiliquâ angulosâ. Boerh. Ind. alt. 2. p. 37. *Yellow Bird's-foot Trefoil with angular pods.*
14. Lotus (*Tetragonolobus*) leguminibus ſolitariis membranaceo-quadrangulatis, bracteis ovatis. Hort. Upſal. 220. *Bird's-foot Trefoil with ſingle pods which are quadrangular, with a membrane, and oval bracteæ.* Lotus ruber ſiliquâ angulosâ. C. B. P. 332. *Red Bird's-foot Trefoil with angular pods, commonly called winged Pea.*
15. Lotus (*Cytiſoides*) capitulis dimidiatis, caule diffuſo ramoſiſſimo, foliis tomentoſis. Prod. Leyd. 387. *Bird's-foot Trefoil with heads divided into two equal parts, a very branching diffuſed ſtalk, and woolly leaves.* Lotus ſiliquoſa maritima lutea, Cytiſi facie. Barrel. Icon. 1031. *Podded, yellow, maritime Bird's-foot Trefoil with the appearance of Cytiſus.*
16. Lotus (*Jacobæus*) leguminibus ſubternatis, caule herbaceo erecto, foliis linearibus. Hort. Cliff. 372. *Bird's-foot Trefoil with three pods, an erect herbaceous ſtalk and narrow leaves.* Lotus auguſtifolia, flore luteo purpuraſcente, inſulæ St. Jacobi. Hort. Amſt. 2. p. 165. *Narrow-leaved Bird's-foot Trefoil of St. James's iſland, with a yellow purpliſh flower.*
17. Lotus (*Dorycnium*) capitulis aphyllis, foliis ſeſſilibus quinatis. Lin. Sp. Plant. 776. *Bird's-foot Trefoil with naked heads, and leaves placed by fives ſitting cloſe to the branches.* Dorycnium Monſpelienſium. Lob. Icon. 51. *Dorycnium of Montpelier.*

The firſt, ſecond, and third ſorts grow naturally in many parts of England, ſo are rarely admitted into gardens. When theſe grow in moiſt land and a ſhady ſituation, they ſend out ſtalks near two feet long; but upon dry chalky and gravelly ground, their ſtalks are not more than four or five inches long, and lie flat upon the ground. I have always obſerved in thoſe paſtures where theſe plants have grown, that the cattle of all ſorts have avoided eating them, but the Graſs all round them has been eaten very bare. I have cut the plants when young, and given it to various kinds of animals, but could never get them to eat it; and yet the ſeeds of theſe have been gathered and ſold by ſome quacks in huſbandry, under the title of Lady's Finger Graſs, to be ſown as an improvement to land for paſture.

The roots of theſe are perennial, ſo are difficult to get out when they have had long poſſeſſion of the land; and they produce great quantities of ſeeds, which is caſt about by the elaſticity of the pods when ripe, to a conſiderable diſtance; they flower in June, and the ſeeds ripen in September.

The fourth ſort grows naturally in the ſouth of France, in Italy, and Sicily; this has by ſome been ſuppoſed the Cytiſus of Virgil, but without foundation, for it does not anſwer the deſcription given of that plant. This hath a ſtrong perennial root, from which ariſe many upright ſtrong ſtalks from three to four feet high, covered with a purpliſh bark, and toward the top ſend out a few ſide branches; theſe are garniſhed at every joint by a trifoliate leaf, whoſe lobes are wedge-ſhaped; at the baſe of the foot-ſtalk are placed two heart-ſhaped lobes ſitting cloſe to the branch; the leaves are hairy on their under ſide; the flowers are produced at the end of the branches almoſt in globular heads, ſitting cloſe to the foot-ſtalk: theſe are of a pale fleſh colour and appear in June, and are ſucceeded by ſmooth ſtrait pods almoſt an inch long, which change to a brown colour when ripe, and contain ſeveral roundiſh ſeeds which ripen in September. It is rarely cultivated but in botanic gardens for variety, but if any perſon has an inclination to cultivate this plant for feeding of cattle, it may be done in the ſame way as the Lucern, for which there is full directions in the article Medicago. It riſes eaſily from ſeeds, is very hardy, and will thrive on any light dry poor ground. Cows and horſes will eat this plant when green, but I have not tried if they will feed on it when made into hay.

The fifth ſort grows naturally in Syria and Crete; this riſes with ſlender ſtalks which require ſupport, from three to four feet high, ſending out a few ſide branches; theſe are garniſhed at each joint with neat ſhining ſilvery leaves which are trifoliate, and have two appendages at the baſe of their foot-ſtalks, as the other ſorts; they are in ſhape like the former, but a little ſmaller, and have an acute point at their top. The foot-ſtalks of the flowers, which are from two to three inches long, ariſe from the ſide of the branches, and ſuſtain heads of yellow flowers, which part in the middle, each head containing four or ſix flowers; theſe appear in May, June, and July, and are ſucceeded by long taper pods filled with roundiſh ſeeds which ripen in the autumn.

This ſort has a perennial ſtalk, but is too tender to live through the winter in the open air in England, ſo is kept in pots and removed into the green-houſe in autumn, and treated like other hardy exotic plants which only require protection from froſt, ſo want no artificial heat. It may be propagated by ſeeds, which if ſown on a bed of light earth in April, the plants will come up in about a month after, and in another month will be fit to remove; when they ſhould be each put into a ſeparate ſmall pot filled with freſh light earth, placing them in the ſhade till they have taken new root; then they may be removed to a ſheltered ſituation, where they may remain till autumn.

It may be alſo propagated by cuttings, which may be planted during any of the ſummer months, upon a bed of light earth, covering them cloſe with a bell or hand-glaſs, and ſcreening them from the ſun; in about five or ſix weeks they will have taken root, when they muſt be inured to bear the open air, and ſoon after may be planted in pots, and treated in the ſame way as the ſeedling plants.

The

The ſixth ſort grows naturally in the ſouth of France and Italy; this hath a perennial ſtalk, which riſes three feet high; when the roots are large, they frequently ſend up ſeveral of theſe ſtalks, eſpecially if the old ones are cut down; the ſtalks are hairy, and divide into ſeveral branches, which are cloſely garniſhed with hoary trifoliate leaves, having two appendages at the baſe of the ſtalk; the flowers are collected into heads ſitting upon pretty long foot-ſtalks, which come out of the ſide of the ſtalks. They have very hairy empalements, and are of a dirty white colour with a few marks of pale red. They appear in June and July, and are ſucceeded by ſhort thick pods of a Cheſtnut colour, containing ſeveral roundiſh ſeeds which ripen in the autumn. This is propagated by ſeeds in the ſame way as the laſt ſort; the plants will live through the winter in the open air in moderate winters, but it will be proper to keep one or two plants in pots to be ſheltered in winter, leſt thoſe abroad ſhould be deſtroyed by ſevere froſt.

The ſeventh ſort grows naturally in Sicily; this riſes with an upright woody ſtalk near three feet high, garniſhed with leaves like the ſixth, but they are much whiter, covered with a ſhort woolly down, as are alſo the ſtalks; the flowers grow in cloſe heads like the laſt, and are ſucceeded by ſhort pods, which contain many yellow ſeeds. It flowers in ſummer, and the ſeeds ripen in autumn. This is too tender to live in the open air in England through the winter, ſo the plants muſt be kept in pots and houſed during that ſeaſon. It is propagated in the ſame way as the fifth ſort, and requires the ſame culture.

The eighth ſort grows naturally in Sicily; this is an annual plant, which ſends out from the root many ſtiff ſtalks from one to two feet high, which divide into many branches growing diffuſed without any order, and are garniſhed with trifoliate leaves, having two appendages at their baſe; the foot-ſtalks of the flower riſe from the wings of the ſtalks; they are two or three inches long, terminated by a cluſter of yellow flowers, which are ſucceeded by flat pods two inches long, which are bent like an arch, and have many joints, ſeparating the cells in which the ſeeds are lodged. It flowers in July, and the ſeeds ripen in autumn, and the plants decay ſoon after.

This is propagated by ſeeds, which ſhould be ſown early in April upon an open bed or border expoſed to the ſun, where the plants are to remain: when they come up they muſt be thinned, leaving them near two feet aſunder, and afterwards they muſt be kept clean from weeds, which is all the culture they require.

The ninth ſort grows naturally in Spain and Portugal: this is an annual plant like the former, but doth not branch ſo much; the ſmall leaves are rounder at their ends, and they are ſmoother; the foot-ſtalks are ſhorter, and ſeldom ſuſtain more than two flowers; theſe are ſucceeded by two very narrow pods about two inches long, which hang downward. This requires the ſame culture as the former.

The tenth ſort grows naturally in the ſouth of France; this hath a perennial root, from which is ſent out ſeveral hairy ſtalks near a foot long, garniſhed with trifoliate hairy leaves, ſtanding upon ſhort foot-ſtalks, with two appendages at the baſe of the foot-ſtalk; the flowers ſtand upon pretty long foot-ſtalks ſingly, which riſe from the end of the branches; they have long hairy empalements, with two oblong acute-pointed leaves immediately under them. The flowers are yellow, ſtanding erect, and are ſucceeded by taper erect pods an inch and a half long. It flowers in June and July, and the ſeeds ripen in the autumn. It is propagated by ſeeds, which ſhould be ſown where the plants are to remain, and muſt be treated as the two former ſorts, but the roots of this will continue ſeveral years.

The eleventh ſort grows naturally in Sicily and Crete, where the pods are eaten by the poorer inhabitants when they are young. It alſo grows about Nice, from whence I received the ſeeds. This is an annual plant, from whoſe roots come out ſeveral trailing ſtalks a foot long, garniſhed at each joint with trifoliate roundiſh leaves, having appendages. The flowers ſtand ſingly upon long foot-ſtalks, which ariſe from the ſide of the branches; they are yellow and ſmall, and are ſucceeded by ſingle pods, which are thick, and arched with a deep furrow on the outſide. The flowers appear in June and July, and in warm ſeaſons the ſeeds ripen in the autumn, but in cold ſummers they will not ripen here. This muſt have the ſame culture as the annual ſorts before mentioned.

The twelfth ſort grows near the borders of the ſea in France, Spain, and Italy; this hath a perennial root, ſending out many ſlender ſtalks about a foot and a half long, which trail upon the ground, and are garniſhed with trifoliate leaves at each joint, which are ſmooth, and have two appendages to the baſe of the foot-ſtalk. The flowers ſtand ſingly, upon very long foot-ſtalks ariſing from the wings of the ſtalk; they are yellow, and are ſucceeded by ſingle pods near two inches long, having four leafy membranes running longitudinally at the four corners. This flowers in June and July, and the ſeeds ripen in the autumn. It is propagated by ſeed in the ſame way as the tenth ſort.

The thirteenth ſort grows naturally in the ſouth of France and Italy; this is an annual plant, from whoſe roots are ſent forth ſeveral branching ſtalks a foot long, garniſhed with trifoliate leaves, whoſe lobes are acute-pointed, and have two oblong oval appendages at the baſe of their foot-ſtalks: the foot-ſtalks of the flower ariſe from the wings of the branches, each ſuſtaining two yellow flowers, which are ſucceeded by taper pods near two inches long, having four leafy membranes running longitudinally their length. It flowers in July, and the ſeeds ripen in autumn. It is propagated by the ſeeds in the ſame way as the annual ſorts before mentioned.

The fourteenth ſort grows naturally in Sicily, but has been long cultivated in the Engliſh gardens; it was formerly cultivated as an eſculent plant. The green pods of it were dreſſed and eaten as Peas, which the inhabitants of ſome of the northern counties ſtill continue, but they are very coarſe, ſo not agreeable to the taſte of thoſe who have been accuſtomed to better fare.

It is an annual plant which is cultivated in the flower-gardens near London for ornament. This ſends out from the root ſeveral decumbent ſtalks about a foot long, garniſhed at each joint with trifoliate oval leaves, having oval appendages at the baſe of their foot-ſtalks; from each joint ariſe alternately the foot-ſtalks of the flowers, which are from two to three inches long, each ſuſtaining one large red flower at the top, with three leaves juſt under the flower. After the flower fades, the germen becomes a ſwelling taper pod two inches long, having four leafy membranes or wings running longitudinally. It flowers in June and July, and the ſeeds ripen in autumn.

The ſeeds of this ſort are commonly ſown in patches, five or ſix ſeeds being ſown near each other, in the borders of the pleaſure-garden, where they are deſigned to remain. If the ſeeds all grow, ſome of the plants may be pulled up, leaving only two or three in each patch, and afterward they will require no other care but to keep them clean from weeds.

The fifteenth ſort grows near the borders of the ſea, in the ſouth of France and Spain. This is a perennial plant, ſending out from the root many ſtalks, which branch out their whole length, and are garniſhed with roundiſh trifoliate leaves with two appendages; they are covered with a woolly down: the flowers ſtand upon ſhort foot-ſtalks, four or ſix growing in a divided head; they are yellow, and appear in July, and are ſucceeded by taper pods filled with roundiſh ſeeds, which ripen in autumn. This is propagated by ſeeds, which ſhould be ſown in the ſpring in the place where the plants are to remain, and muſt be

treated in the ſame manner as the hardy perennial ſorts before mentioned.

The ſixteenth ſort grows naturally in the Iſland of St. James, from whence the ſeeds were firſt brought to Europe, but I have ſince received the ſeeds from the Cape of Good Hope. This hath a ſlender ſtalk which is woody, riſing from two to three feet high, ſending out many ſlender herbaceous branches, garniſhed with narrow white leaves, which are ſometimes trifoliate, and at others there are five narrow lobes to each; theſe ſit cloſe to the branches, and are hoary. The flowers are produced from the ſide of the ſtalks towards their upper part, upon very ſlender foot-ſtalks, each ſuſtaining four or five flowers collected in a head, of a yellowiſh deep purple colour, which are ſucceeded by taper ſlender pods little more than an inch long, containing five or ſix ſmall roundiſh ſeeds. This plant flowers all the ſummer and autumn, and many times great part of the winter, eſpecially if the plants are placed in a dry airy glaſs-caſe, where they may be free from damp, for nothing is more prejudicial to them. It is too tender to live abroad in England, ſo the plants muſt be kept in pots; and in the winter placed in a warm airy glaſs-caſe, but in the ſummer they ſhould be placed abroad in a ſheltered ſituation. It may be eaſily propagated by cuttings, during the ſummer ſeaſon, in the ſame way as the fifth ſort, and alſo by ſeeds; but the plants which have been two or three times propagated by cuttings, ſeldom are fruitful.

The ſeventeenth ſort grows naturally about Montpelier; it riſes with weak ſhrubby ſtalks three or four feet high, ſending out many ſlender branches, which are thinly garniſhed with ſmall hoary leaves, growing with five lobes in form of a hand; they ſit cloſe to the branches. The flowers are produced at the extremity of the branches in ſmall heads; they are very ſmall and white, ſo make no great appearance; they appear in June, and are ſucceeded by ſhort pods containing two or three ſmall round ſeeds which ripen in the autumn. This ſhrub will live in the open air, if it be planted in a dry ſoil and a warm ſituation. It is propagated by ſeeds, which will come up in any common border.

LOTUS ARBOR See CELTIS.

LOVE-APPLE. See LYCOPERSICON.

LUDVIGIA. Lin. Gen. Plant. 142.

This title was given to this genus of plants by Dr. Linnæus, in honour of M. Chriſt. Ludwig, of Leipſic, who publiſhed Remarks on Rivinus's Method of claſſing Plants, at Leipſic, in 1737.

The CHARACTERS are,

The empalement of the flower is of one leaf, cut into four ſegments at the top, and ſits upon the germen. The flower conſiſts of four ſpear-ſhaped petals, which are equal, and ſpread open. In the center of the flower is ſituated the four-cornered pointal, attended by four ſtamina: the germen afterward becomes a four-cornered fruit, crowned with the empalement, and has four cells which are full of ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, which includes thoſe plants whoſe flowers have four ſtamina and one ſtyle.

We have but one SPECIES of this genus in the Engliſh gardens at preſent, which is

LUDVIGIA (*Alternifolia*) foliis alternis lanceolatis. Lin. Sp. Plant. 118. *Ludvigia wich alternate ſpear-ſhaped leaves.* Ludvigia capſulis ſubrotundis. Hort. Cliff. 491. *Ludvigia with roundiſh capſules.*

We have no Engliſh name for this plant, but it is very near akin to the Onagra, or Tree Primroſe, from which it differs in the number of ſtamina.

This plant grows naturally in South Carolina, from whence the late Dr. Dale ſent me the ſeeds. It is annual, and riſes with an upright branching ſtalk a foot high, garniſhed with ſpear-ſhaped leaves placed alternate. The flowers come out ſingly at the foot-ſtalks of the leaves; they are compoſed of four ſmall yellow petals, which ſpread open, ſtanding upon ſhort foot-ſtalks, and have four ſtamina; the flowers are ſucceeded by roundiſh ſeed-veſſels with four leafy membranes they open in four cells, including many ſmall ſeeds. It flowers in July, and the ſeeds ripen in the autumn. The plants muſt be raiſed in a hot-bed in the ſpring, and treated in the ſame manner as hath been directed for the Amaranthus; for if they are not brought forward in the ſpring, they ſeldom produce good ſeeds in England.

LUFFA. Tourn. Act. R. S. 1709. Momordica. Lin. Gen. 967. Egyptian Cucumber.

The CHARACTERS are,

It hath a bell-ſhaped flower conſiſting of one leaf, which is divided into five parts to the center; there are male and female flowers on the ſame plant. The male flowers are produced on ſhort foot-ſtalks, having no embryos; but the female flowers reſt on the top of the embryos, which afterward become a fruit like a Cucumber to outward appearance, but is not fleſhy; the inner part conſiſting of many fibres, which are elegantly netted; and there are three cells which are filled with ſeeds, which are almoſt of an oval ſhape.

We have but one SPECIES of this plant, viz.

LUFFA (*Ægyptiaca*) Arabum. Tourn. Act. R. 170. *The Luffa of the Arabians.*

There are two varieties of this plant, one having white, and the other black ſeeds; but theſe are not diſtinct ſpecies.

This plant may be propagated after the ſame manner as Cucumbers and Melons, by ſowing the ſeeds on a hot-bed the beginning of March; and when the plants are come up, they muſt be pricked into a freſh hot-bed to ſtrengthen the plants, obſerving to let them have freſh air every day in warm weather, and to refreſh them frequently with water. When the plants have four or five leaves, they ſhould be planted out upon a hot-bed where they are deſigned to remain, which ſhould be under frames, and but one plant put into each light; for as theſe plants ſend forth a great number of ſide-ſhoots, ſo where they are planted too cloſe, they will entangle one into the other, and become ſo thick, as to cauſe the fruit to drop. In the management of theſe plants, after they are planted out for good, there muſt be the ſame care taken as for Melons and Cucumbers, with this difference only, that theſe require a larger ſhare of air in warm weather; otherwiſe the Vines will grow weak, and will not produce fruit.

When the plants have ſpread, ſo as to fill the frames on every ſide, the frames ſhould be raiſed on bricks, and the ends of the plants drawn out, that they may have room to grow; for when theſe plants are in a vigorous ſtate, they will ſpread eight or ten feet; ſo that if they are confined, they will become ſo thick, as to rot the tender branches which are covered from the air, and there will be no fruit produced.

The fruit, when it is young, is by ſome people eaten, and made into Mangoes, and preſerved in pickle; but it hath a very diſagreeable taſte, and is not accounted very wholeſome: wherefore theſe plants are ſeldom cultivated in Europe, except by ſuch perſons as are curious in botany, for variety.

LUNARIA. Tourn. Inſt. R. H. 218. tab. 105. Gen. Plant. 725. [ſo called of Luna, *Lat.* the moon. becauſe the ſeed-veſſels reſemble the form of the moon.] Moonwort, Sattin Flower, or Honeſty; in French, *Bulbonac.*

The CHARACTERS are,

The empalement of the flower is compoſed of four oblong, oval, ſmall leaves, which are obtuſe and fall off; the flower has four petals in form of a croſs, which are large, obtuſe, and entire: it hath ſix awl-ſhaped ſtamina, four of theſe are the length of the empalement; the other two are ſhorter, terminated by erect ſummits. It has an oblong oval germen ſitting upon a ſmall foot-ſtalk, ſupporting a ſhort ſtyle, crowned by an entire obtuſe ſtigma. The germen afterward becomes an erect, plain, compreſſed, elliptical pod, ſitting upon the ſmall foot-ſtalk, terminated by the ſtyle, having two cells opening with two valves, which are parallel, incloſing ſeveral compreſſed kidney-ſhaped ſeeds, which are bordered, ſitting in the middle of the pod.

This genus of plants is ranged in the ſecond ſection of Linnæus fifteenth claſs, intitled Tetradynamia ſiliculoſa, which includes thoſe plants whoſe flowers have four long and two ſhorter ſtamina, and the ſeeds are included in ſhort pods.

The SPECIES are,

1. LUNARIA (*Rediviva*) ſiliculis oblongis. Lin. Sp. Plant. 653. *Sattin Flower with oblong pods.* Lunaria major, ſiliquâ longiore. J. B. 2. 881. *Greater Moonwort with longer pods, commonly called Honeſty, or White Sattin.*
2. LUNARIA (*Annua*) ſiliculis ſubrotundis. Lin. Sp. Plant. 653. *Sattin Flower with roundiſh pods.* Lunaria major, ſiliquâ rotundiore. J. B. *Greater Moonwort with a rounder pod.*
3. LUNARIA (*Ægyptiaca*) foliis ſuprà decompoſitis, foliolis trifidis, ſiliculis oblongis pendulis. *Moonwort with leaves decompounded whoſe lobes are trifid, and oblong hanging pods.* Cardamine foliis ſuprà decompoſitis, ſiliquis unilocularibus pendulis. Lin. Sp. Plant. 656. *Lady's Smock with leaves decompounded above, and hanging pods containing one cell.*
4. LUNARIA (*Perennis*) perennis, ſiliculis oblongis, foliis lanceolatis incanis. *Perennial Moonwort, with oblong pods and ſpear-ſhaped hoary leaves.* Lunaria perennis, lutea, folio leucoii, ramis expanſis. Vaill. *Yellow perennial Moonwort, with a Stock Gilliflower leaf and expanded branches.*

The firſt ſort grows naturally in Hungary, Iſtria, and Auſtria, but has been long an inhabitant of the Engliſh gardens. It is a biennial plant, which periſhes ſoon after the ſeeds are ripe; it riſes with a branching ſtalk from two to three feet high, covered with a reddiſh hairy bark, ſending out branches on every ſide from the ground upward; theſe are garniſhed with heart-ſhaped leaves placed alternately, ending in acute points indented on their edges, and are a little hairy; the lower ſtanding upon pretty long foot-ſtalks, but the upper ſit cloſe to the branches. The flowers are produced at the top and from the ſide of the branches toward their ends, in cluſters; they are compoſed of four purpliſh heart-ſhaped petals, placed in form of a croſs. Theſe appear in May, and are ſucceeded by large flat roundiſh pods with two cells, incloſing two rows of flat kidney-ſhaped ſeeds, which have a border round them. Theſe pods, when ripe, turn to a clear white or ſattin colour, from whence the title of Sattin Flower has been given to it, and are tranſparent.

The ſeed-veſſels of this plant, when they are full ripe, become very tranſparent, and of the appearance of white ſattin, at which time the branches are cut off and dried; after which they are preſerved to place in the chimneys of halls and large rooms, where they continue a long time in beauty.

This is propagated by ſeeds, which ſhould be ſown in the autumn; for thoſe which are ſown in the ſpring often miſcarry, or lie a long time in the ground before they appear. The plants will grow in almoſt any ſoil, but love a ſhady ſituation; it requires no other culture, but to keep it clean from weeds. If the ſeeds are permitted to ſcatter, the plants will riſe without any farther care; and if they are left unremoved, they will grow much larger than thoſe which are tranſplanted; the roots of this ſort periſh ſoon after the ſeeds are ripe.

The ſecond ſort grows naturally upon the mountains in Italy; this hath ſtalks and leaves very like the firſt, but the flowers are rather larger, and of a lighter purple colour; but the principal difference is in the pods of this being longer and narrower than thoſe of the other. It flowers and ſeeds at the ſame time with the firſt, and requires the ſame culture.

The third ſort is an annual plant, which grows naturally in Egypt. This riſes with a ſmooth branching ſtalk little more than a foot high, garniſhed with winged leaves, compoſed of ſeveral pair of lobes ranged along the midrib, terminated by an odd one; theſe lobes are of unequal ſizes, and vary in their form; ſome of them are almoſt entire, and others are cut at their extremities into three parts; they are

ſmooth, and of a lucid green. The flowers ſtand each upon pretty long ſlender foot-ſtalks, which come out from the ſide, and alſo at the end of the branches, in looſe ſmall cluſters; they are of a purple colour, and are ſucceeded by oblong compreſſed pods, which hang downward. This ſort flowers in June and July, the ſeeds ripen the beginning of September, and the plants decay ſoon after.

This is propagated by ſeeds, which ſhould be ſown upon an open border where the plants are to remain; if they are ſown ſoon after they are ripe, the plants will come up in the autumn, and live through the winter in a ſheltered ſituation; theſe will flower early the following ſummer, whereby ripe ſeeds may be obtained; they may alſo be ſown in the ſpring in like manner. When the plants come up, they will require no other care but to keep them clean from weeds, and thin them where they are too cloſe. If the ſeeds are permitted to ſcatter in the autumn, the plants will riſe without care, and may be treated in the ſame way, which is much preferable to the ſowing the ſeeds in the ſpring.

The fourth ſort grows naturally in the Archipelago; this hath a perennial root, from which ariſe two or three ligneous ſtalks a foot high, covered with a white hairy bark, dividing upward into ſeveral ſmaller branches, garniſhed with ſpear-ſhaped leaves ſitting cloſe to the ſtalks, which are a little hoary. The branches are terminated by looſe ſpikes of yellow flowers which appear in June, and are ſucceeded by oblong flat pods, containing flat kidney-ſhaped ſeeds, which ripen in the autumn.

This ſort is propagated by ſeeds, which, if ſown in the autumn, will ſucceed better than in the ſpring; they ſhould be ſown on a warm border, and on a dry poor ſoil, otherwiſe they will not live through the winter; but in a rubbiſhing ſoil the plants will continue two or three years.

LUPINUS. Tourn. Inſt. R. H. 392. tab. 213. Lin. Gen. Plant. 774. Lupine; in French, *Lupin.*

The CHARACTERS are,

The empalement is bifid and of one leaf; the flower is of the butterfly kind; the ſtandard is roundiſh, heart-ſhaped, indented at the top, and the ſides reflexed and compreſſed. The wings are nearly oval, and almoſt as long as the ſtandard; they are not fixed to the keel, but cloſe at their baſe; the keel is as long as the wings, but is narrow, falcated, and ends in a point. It hath ten ſtamina joined at their baſe in two bodies, but as they riſe are diſtinct above, terminated by five oblong ſummits. In the center is ſituated a hairy, compreſſed, awl-ſhaped germen, ſupporting a riſing ſtyle, terminated by an obtuſe ſtigma. The germen afterward becomes a large, oblong, thick pod with one cell, ending with an acute point, including ſeveral roundiſh compreſſed ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, intitled Diadelphia Decandria, which includes thoſe plants whoſe flowers have ten ſtamina joined in two bodies.

The SPECIES are,

1. LUPINUS (*Varius*) calycibus ſemiverticillatis appendiculatis, labio ſuperiore bifido, inferiore ſubtridentato. Hort. Cliff. 499. *Lupine with empalements half whorled, having appendages, whoſe upper lip is bifid, and the under one almoſt trifid.* Lupinus ſylveſtris, purpureo flore, ſemine rotundo vario. J. B. 2. 291. *Wild Lupine, with a purple flower and a round variegated ſeed, commonly called the leſſer blue Lupine.*
2. LUPINUS (*Anguſtifolius*) calycibus verticillatis appendiculatis, labio ſuperiore bipartito, inferiore integro. Lin. Sp. Plant. 721. *Lupine with empalements having alternate appendages, whoſe upper lip is divided into two, and the under one entire.* Lupinus anguſtifolius cœruleus elatior. Raii Hiſt. 908. *Narrow-leaved taller blue Lupine.*
3. LUPINUS (*Luteus*) calycibus verticillatis appendiculatis, labio ſuperiore bipartito, inferiore tridentato. Hort. Cliff. 499. *Lupine with empalements growing in whorls, having appendages to them, whoſe upper lips are cut into two parts, and the under one into three.* Lupinus ſylveſtris, flore luteo. C. B. P. 348. *The common yellow Lupine.*

4. Lu-

4. Lupinus (*Hirſutis*) calycibus verticillatis appendiculatis, labio ſuperiore inferioreque integris. Hort. Cliff. 499. *Lupine with whorl-ſhaped empalements having appendages, and the upper and under lip entire.* Lupinus peregrinus major, vel villoſus, cœruleus, major. C. B. P. *Foreign, greater, hairy Lupine, with a large blue flower, commonly called the great blue Lupine.*
5. Lupinus (*Albus*) calycibus alternis inappendiculatis, labio ſuperiore integro, inferiore tridentato. Hort. Cliff. 499. *Lupine with alternate empalements having no appendages, and the upper lip entire, but the under cut into three parts.* Lupinus ſativus, flore albo. C. B. P. 347. *Garden or manured Lupine, with a white flower.*
6. Lupinus (*Perennis*) calycibus alternis inappendiculatis, labio ſuperiore emarginato, inferiore integro. Lin. Sp. Plant. 721. *Lupine with alternate empalements having no appendages, the upper lip indented, and the under entire.* Lupinus cœruleus, minor, perennis, Virginianus, repens. Mor. Hiſt. 2. p. 87. *Smaller perennial, creeping, blue Lupine of Virginia.*

The firſt ſort grows naturally among the Corn in the ſouth of France and Italy, and in great abundance in Sicily. This is an annual plant, which riſes with a firm, ſtrait, channelled ſtalk near three feet high, divided toward the top into ſeveral branches, which are garniſhed with hand-ſhaped leaves, compoſed of five, ſix, or ſeven oblong lobes, which join in one center at their baſe, and are hairy. The flowers are produced in ſpikes at the end of the branches, ſtanding half round the ſtalk in ſort of whorls; they are of a light blue colour, ſhaped like thoſe of Peas, and are ſucceeded by ſtrait taper pods with one cell, incloſing a row of roundiſh ſeeds. This ſort flowers in June and July, and the ſeeds ripen in the autumn.

It is propagated in the borders of the pleaſure-garden for ornament, by ſowing the ſeeds in April, in the places where they are to remain; and when the plants come up they ſhould be thinned where they are too cloſe, and kept clean from weeds, which is all the culture they require.

The ſecond ſort has much the appearance of the firſt, but the ſtalks riſe higher; the leaves have more lobes, and ſtand upon longer foot-ſtalks; the lobes are blunt-pointed, and the ſeeds are variegated. This requires the ſame culture as the firſt, and flowers at the ſame time.

The third ſort is the common yellow Lupine, which has been long cultivated in the Engliſh gardens for the ſweetneſs of its flowers. This grows naturally in Sicily; it riſes about a foot high, with a branching ſtalk garniſhed with hand-ſhaped leaves, compoſed of nine narrow hairy lobes, which join at their baſe to the foot-ſtalks; theſe are four or five inches long. The flowers are yellow, and are produced in looſe ſpikes at the end of the branches, ſtanding in whorls round the ſtalks, with ſpaces between them, terminated by three or four flowers, ſitting cloſe at the top; theſe are ſucceeded by flattiſh hairy pods about two inches long, ſtanding erect, incloſing four or five roundiſh ſeeds, a little compreſſed on their ſide, of a yellowiſh white, variegated with dark ſpots. This ſort flowers at the ſame time as the former, but to have a ſucceſſion of the flowers, the ſeeds are ſown at different times, viz. in April, May, and June; but thoſe only, which are firſt ſown, will ripen their ſeeds. It may be cultivated in the ſame manner as the two former, and is equally hardy.

The fourth ſort is ſuppoſed to be a native of India, but has been many years in the Engliſh gardens. It is an annual plant, which riſes with a ſtrong, firm, channelled ſtalk from three to four feet high, covered with a ſoft browniſh down, dividing upward into ſeveral ſtrong branches, garniſhed with hand-ſhaped leaves, compoſed of nine, ten, or eleven wedge-ſhaped hairy lobes, which are narrow at their baſe where they join the foot-ſtalk, but enlarge upward, and are rounded at the top where they are broadeſt; the foot-ſtalks of the leaves are three or four inches long. The flowers are placed in whorls round the ſtalks above each other, forming a looſe ſpike, which proceeds from the end of the branches; they are large, and of a beautiful blue colour, but have no ſcent. Theſe appear in July, and the ſeeds ripen in the autumn. The pods of this ſort are large, almoſt an inch broad, and three inches long, incloſing three large roundiſh ſeeds compreſſed on their ſides, very rough, and of a purpliſh brown colour. There is a variety of this with fleſh-coloured flowers, which is commonly called the Roſe Lupine; it differs from the blue only in the colour of the flower, but this difference is permanent, for neither of the ſorts vary.

This is generally late in ripening the ſeeds, ſo that unleſs the autumn proves warm and dry, they do not ripen; therefore the beſt way to have good ſeeds, is to ſow them in September cloſe to a warm wall on dry ground, where they will live through our ordinary winters; and theſe plants will flower early the following ſummer, ſo there will be time for the ſeeds to ripen before the rains fall in the autumn, which frequently cauſes the ſeeds to rot which are not ripe. If a few of the ſeeds of both theſe varieties are ſown in ſmall pots the beginning of September, and when the froſts begin, the pots are removed into a common hot-bed frame, where they may be protected from hard froſt, but enjoy the free air in mild weather, the plants may be thus ſecured in winter; and in the ſpring they may be ſhaken out of the pots, preſerving the earth to their roots, and planted in a warm border, where they will flower early, and produce very good ſeeds.

The fifth ſort grows naturally in the Levant, but is cultivated in ſome parts of Italy, as other pulſe, for food. This hath a thick upright ſtalk about two feet high, which divides toward the top into ſeveral ſmaller hairy branches, garniſhed with hand-ſhaped leaves, compoſed of ſeven or eight narrow oblong lobes, which are hairy, and join at their baſe, of a dark grayiſh colour, and have a ſilvery down. The flowers are produced in looſe ſpikes at the end of the branches; they are white, and ſit cloſe to the ſtalk; theſe are ſucceeded by hairy ſtrait pods about three inches long, a little compreſſed on the ſides, containing five or ſix flattiſh ſeeds which are white, having a little cavity like a navel, in that part which is fixed to the pod. This ſort flowers in July, and the ſeeds ripen in the autumn. It is an annual plant, which is cultivated for ornament in the pleaſure-garden. The ſeeds muſt be ſown in the places where the plants are to remain, and may be treated in the ſame way as the firſt ſort.

The ſixth ſort grows naturally in Virginia, and other of the northern parts of America. This hath a perennial creeping root, from which ariſe ſeveral erect channelled ſtalks a foot and a half high, ſending out two or three ſmall ſide branches, garniſhed with hand-ſhaped leaves, compoſed of ten or eleven narrow ſpear-ſhaped lobes, which join at their baſe, ſtanding upon very long foot-ſtalks, having a few hairs on their edges. The flowers grow in long looſe ſpikes, which terminate the ſtalks, and are placed without order on each ſide; they are of a pale blue colour, having ſhort foot-ſtalks. Theſe appear in June, and the ſeeds ripen in Auguſt, which are ſoon ſcattered if they are not gathered when ripe; for after a little moiſture, the ſun cauſes the pods to open with an elaſticity, and caſt out the ſeeds to a diſtance all round. This ſort is propagated by ſeeds as the former, which ſhould be ſown where the plants are to remain; for although the root is perennial, yet it runs ſo deep into the ground as that it cannot be taken up entire; and if the root is cut or broken, the plant ſeldom thrives well after. I have traced ſome of the roots of this plant, which have been three feet deep in the ground in one year from ſeed, and ſpread out as far on every ſide, ſo that they muſt have room, therefore the young plants ſhould not be left nearer than three feet aſunder. If this plant is in a light dry ſoil, the roots will continue ſeveral years, and produce many ſpikes of flowers; and although the uſual ſeaſon of flowering is in June and

July, yet when rain happens to fall in Auguſt, there are frequently freſh ſtalks ariſe from the roots, which flower the end of September, or beginning of October.

The ſeeds of the fifth ſort are uſed in medicine; they have a bitter taſte, ſo open, digeſt, diſſolve, and cleanſe; and if they are ſteeped in water for ſome days, till they have loſt their bitterneſs, they may be eaten out of neceſſity, but they are ſuppoſed to breed groſs humours, and are hard of digeſtion. Some women uſe the flower of the ſeed mixed with the juice of Lemons, and a little Alumen ſaccharinum, made into the form of ſoft ointment, to make the face ſmooth, and look more amiable.

The ſmall blue Lupine is frequently ſown in Italy, to dreſs and manure the ground, eſpecially that which is intended for vineyards; where, if they have time, the ground is ſown with Lupines, which grow till they begin to flower; then they cut them down and plough them into the ground, where the ſtalks rot with the winter's rain; but it is doubtful whether this is any real benefit to the ground, for there are few plants which draw and impoveriſh the ground ſo much as Lupines; therefore the dreſſing they yield, is ſcarce an equivalent for what they have drawn from the ground: but when there is not time for this operation, they parboil the ſeeds to prevent their growing, and ſow them upon the ground before it is ploughed, allowing ſixteen buſhels to an acre of land; and this dreſſing is preferable to the former.

All the ſorts of Lupines make a pretty appearance when they are in flower, but the yellow ſort is preferred for its ſweetneſs, though the flowers of this are of ſhort duration, eſpecially in warm weather; therefore the ſeeds of this ſhould be ſown at ſeveral times, that there may be a ſucceſſion of flowers through the ſeaſon, for they will continue flowering till they are ſtopped by hard froſt; and thoſe which come in the autumn to flower, will continue in beauty a longer time than the early ones. If ſome of the ſeeds are ſown in the autumn on a warm border, the plants will often live through the winter, and flower early in the ſpring.

LUPULUS. Tourn. Inſt. R. H. 535. tab. 309. Humulus. Lin. Gen. Plant. 989. [This plant takes its name of Lupus, *Lat.* a wolf, becauſe the antients had a notion, that wolves were wont to hide themſelves under this plant.] The Hop; in French, *Houblon.*

The CHARACTERS are,

The male and female flowers are upon different plants. The empalement of the male flower is compoſed of five ſmall, concave, obtuſe leaves; it hath no petal, but has five ſhort hairy ſtamina, terminated by oblong ſummits. The female flowers have a general, four-pointed, acute peranthium, and a ſeparate oval one of four leaves, including eight flowers; each of theſe have an empalement of one leaf, which is cloſed at the baſe. Theſe have neither petal or ſtamina, but a ſmall germen ſituated in the center, ſupporting two awl-ſhaped ſtyles, crowned by acute, reflexed, ſpreading ſtigmas. The germen afterward turns to a roundiſh ſeed covered with a thin ſkin, incloſed in the baſe of the empalement.

This genus of plants is ranged in the fifth ſection of Linnæus's twenty-ſecond claſs, intitled Diœcia Pentandria, which includes thoſe plants whoſe male and female flowers are upon different plants, and the male flowers have five ſtamina.

We have but one SPECIES of this genus, viz.

LUPULUS (*Humilus*) mas & femina. C. B. P. 298. *Male and female Hop.*

The male Hop grows wild by the ſide of hedges and upon banks, in many parts of England: the young ſhoots of theſe plants are often gathered in the ſpring by the poor people, and boiled as an eſculent herb; but theſe muſt be taken very young, otherwiſe they are tough and ſtringy; it is eaſily diſtinguiſhed by the flowers, which are ſmall, and hang in long looſe bunches from the ſide of the ſtalks, abounding with farina on their ſummits; theſe have no Hops ſucceeding to the flowers.

The female Hop is the ſort which is cultivated for uſe; of this ſort, the people who cultivate them reckon three different varieties: as firſt, the long and ſquare Garlick Hop, the long white Hop, and the oval Hop, all which are indifferently cultivated in England, but of the male Hop there is no different varieties.

There being the greateſt plantation of Hops in Kent that are in any county of England, it is very probable, that their method of planting and ordering them ſhould be the beſt.

As for the choice of their Hop-grounds, they eſteem the richeſt and ſtrongeſt grounds as the moſt proper; they chuſe a warm dry ſoil, that has a good depth of hazel mould; and if it be rocky within two or three feet of the ſurface, the Hops will proſper well; but they will by no means thrive on a ſtiff clay, or ſpongy wet land.

If it may be, chuſe a piece of meadow or lay ground to plant Hops on, ſuch as has not been tilled or ſown with other crops for many years, or an old decayed orchard; for land that is worn out by long bearing of Corn, will require abundance of dung to bring it into any tolerable condition to bear a crop of Hops.

The Kentiſh planters accounting new land beſt for Hops, they plant their Hop-gardens with Apple-trees at a large diſtance, and with Cherry-trees between; and when the land hath done its beſt for Hops, which they reckon it will in about ten years, the trees may begin to bear. The Cherry-trees laſt about thirty years, and by that time the Apple-trees are large, they cut down the Cherry-trees.

The Eſſex planters account a moory land the propereſt for Hops, though there are ſeveral other ſorts of ſoil that are eſteemed very good.

Some account that land which has a roſſelly top, and a brick earth bottom, the beſt; a true roſſel or light ſand, is what they generally plant in, whether it be white or black.

Moory land is of different ſorts, ſome being ſtrong and heavy, ſo as to crack in ſummer; and ſome ſo light, that in dry ſeaſons it will blow away with the wind; and ſome are of a middle conſiſtence, being compoſed of both.

Theſe moors for goodneſs and value, are according to the nature and goodneſs of the ſoil that is underneath them; which being flung up upon the ſurface, will make a very good mixture, it being beſt to fling the under ſoil downward for Hops, becauſe they naturally root downwards, ſometims four or five yards deep, and therefore the deepeſt and richeſt ſoil is beſt for them.

Few are acquainted with the value of moors, becauſe they do not ſearch into the bottom of them, by reaſon of the expenſiveneſs of doing it, and the difficulty of carrying off the water.

If the land be moiſt, it ought to be laid up in high ridges, and to be well drained, and the drains kept clear and open, eſpecially in winter, that the water do not rot or too much chill the roots.

If the land be ſour or cold, it will be very much helped by burning it; and if the haulm and ſtrings of the Hops be burnt every year, and ſome of the paring or ſides of the garden or other earth be laid on them as they burn, and then more haulm be laid over that, and ſo continued layer upon layer, it will make an excellent compoſt to make the hills with.

As to the ſituation of a Hop-ground, one that inclines to the ſouth or weſt is the moſt eligible; but if it be expoſed to the north-eaſt or ſouth-weſt winds, there ſhould be a center of ſome trees at a diſtance; becauſe the north-eaſt are apt to nip the tender ſhoots in the ſpring, and the ſouth-weſt frequently break and blow the poles at the latter end of the ſummer, and very much endanger the Hops.

Hops require to be planted in an open ſituation, that the air may freely paſs round and between them to dry up and diſſipate the moiſture, whereby they will not be

be ſo ſubject to fire blaſts, which often deſtroy the middles of large plantations, while the outſides remain unhurt.

As for the preparation of the ground for planting, it ſhould, the winter before, be ploughed and harrowed even; and then lay upon it in heaps a good quantity of freſh rich earth, or well rotted dung and earth mixed together, ſufficient to put half a buſhel in every hole to plant the Hops in, unleſs the natural ground be very freſh and good.

Then lay a line acroſs it from the hedge, in which knots have been tied, at the diſtance you deſign your Hop-hills to be at, about eight or nine feet diſtance the whole length of the ground, and place a ſharp pointed ſtick at every knot; then lay aſide the line, and with two forked ſticks of about eight or nine feet long, you may from the firſt row ſet out the whole ground, by applying the two forks to two of the ſticks which were firſt ſet up, and placing another row at the ends, where the forked ſticks meet triangularwiſe; then you ſhould dig a hole at every ſtick about a foot and a half wide, and fill it full of the good earth you brought in.

If you plough the ground with horſes between the hills, it will be beſt to plant them in ſquares chequerwiſe; but the quincunx form is the moſt beautiful, and it will alſo be better for the Hop; but if the ground is intended to be cultivated by the breaſt-plough, it will be beſt to plant them in ſquares; but which way ſoever you make uſe of, a ſtake ſhould be ſtuck down at all the places where the hills are to be made.

Perſons ought to be very curious in the choice of the plants and ſets, as to the kind of the Hop; for if the Hop-garden be planted with a mixture of two or three ſorts of Hops that ripen at different times, it will cauſe a great deal of trouble, and be a great detriment to the owner.

The two beſt ſorts are the white and the gray bind; the latter is a large ſquare Hop, more hardy, and is the more plentiful bearer, but ripens later than the former.

There is alſo another ſort of the white bind, which ripens in a week or ten days before the common; but this is tenderer, and a leſs plentiful bearer, but it has this advantage, it comes firſt to market.

But if three grounds, or three diſtant parts of one ground, be planted with theſe three ſorts, there will be this conveniency, that they may be picked ſucceſſively as they become ripe.

The ſets ought to be procured out of grounds that are entirely of the ſame ſort you would have, they ſhould be five or ſix inches long, with three or more joints or buds on them, all the old bind and hollow part of the ſet being cut off.

If there be a ſort of Hop you value, and would increaſe plants and ſets from, the ſuperfluous binds may be laid down when the Hops are tied, cutting off the tops, and burying them in the hill; or when the Hops are dreſſed, all the cuttings may be ſaved, and laid in rows in a bed of good earth; for almoſt every part will grow, and become a good ſet the next ſpring.

Some have tried to raiſe a Hop-ground by ſowing ſeeds, but that turns to no account, becauſe that way is not only tedious, but the Hops ſo produced are commonly of different kinds, and many of them wild and barren.

As to the ſeaſons of planting Hops, the Kentiſh planters beſt approve the months of October and March, both which ſucceed very well; but the common ſets are not to be had in October, unleſs from ſome ground that is to be digged up and deſtroyed; and likewiſe there is ſome danger that the ſets may be rotted, if the winter prove very wet; but the moſt uſual time of procuring them is in March, when the Hops are cut and dreſſed.

As to the manner of planting the ſets, you ſhould put two or three good ſets in every hole with a ſetting ſtick, at about four inches diſtance, placing them ſloping; they muſt ſtand even with the ſurface of the ground; let them be preſſed cloſe with the hand, and covered with fine earth, and a ſtick ſhould be placed on each ſide the hill to ſecure it.

The ground being thus planted, all that is to be done more that ſummer, is to keep the hills clear from weeds, and to horſe-hoe the ground about the month of May, gathering up the ſtones, if more are turned up by ploughing, and to raiſe a ſmall hill round about the plants; and in June you muſt twiſt the young binds or branches together in a bunch or knot, for if they are tied up to ſmall poles the firſt year, in order to have a few Hops from them, it will not countervail the weakening the plants.

A mixture of compoſt or dung being prepared for your Hop-ground, the beſt time for laying it on, if the weather prove dry, is about Michaelmas, that the wheels of the dung-cart may not injure the Hops, nor furrow the ground: if this be not done then, you muſt be obliged to wait till the froſt has hardened the ground, ſo that it will bear the dung-cart; and this is alſo the time to carry on your new poles, to recruit thoſe that are decayed, and to be caſt out every year.

If you have good ſtore of dung, the beſt way will be to ſpread it in the alleys all over the ground, and to dig or plough it in the winter following. The quantity they will require, will be forty loads to an acre, reckoning about thirty buſhels to the load.

If you have not dung enough to cover all the ground in one year, you may lay it on one part one year, and on the reſt in another, or a third; for there is no occaſion to dung the ground after this manner, oftener than once in two or three years.

Thoſe who have but a ſmall quantity of dung, uſually content themſelves with laying on about twenty loads upon an acre every year; this they lay only on the hills, either about November, or in the ſpring; which laſt ſome account the beſt time, when the Hops are dreſſed, to cover them after they are cut; but if it be done at this time, the compoſt or dung ought to be very well rotted and fine.

As to the dreſſing of the Hops, when the Hop-ground is dug or ploughed in January or February, the earth about the hills, and very near them, ought to be taken away with a ſpade, that you may come the more conveniently at the ſtock to cut it.

About the end of February, if the Hops were planted the ſpring before, or if the ground be weak, they ought to be dreſſed in dry weather; but elſe, if the ground be ſtrong and in perfection, the middle of March will be a good time; and the latter end of March, if it be apt to produce over rank binds, or the beginning of April, may be ſoon enough.

Then having with an iron picker cleared away all the earth out of the hills, ſo as to make the ſtock bear to the principal roots, with a ſharp knife you muſt cut off all the ſhoots which grew up with the binds the laſt year; and alſo all the young ſuckers, that none be left to run in the alley and weaken the hill. It will be proper to cut one part of the ſtock lower than the other, and alſo to cut that part low, that was left higheſt the preceding year. By purſuing this method, you may expect to have ſtronger buds, and alſo keep the hill in good order.

In dreſſing thoſe Hops that have been planted the year before, you ought to cut off both the dead tops, and the young ſuckers which have ſprung up from the ſets, and alſo to cover the ſtocks with fine earth a finger's length in thickneſs.

About the middle of April the Hops are to be polled, when the ſhoots begin to ſprout up; the poles muſt be ſet to the hills deep into the ground, with a ſquare iron pitcher or crow, that they may the better endure the wind; three poles are ſufficient for one hill. Theſe ſhould be placed as near the hills as may be, with their bending tops turned outwards from the hill, to prevent the binds from entangling; and a ſpace between two poles ought to be left open to the ſouth, to admit the ſun beams.

The poles ought to be in length ſixteen or twenty feet, more or leſs, according as the ground is in

ſtrength; and great care is to be taken not to over-pole a young or weak ground, for that will draw the ſtock too much, and weaken it. If a ground be over-polled, you are not to expect a good crop from it; for the branches which bear the Hops will grow very little, till the binds have over-reached the poles, which they cannot do when the poles are too long. Two ſmall poles are ſufficient for a ground that is young.

If you wait till the ſprouts or young binds are grown to the length of a foot, you will be able to make a better judgement where to place the largeſt poles; but if you ſtay till they are ſo long as to fall into the alleys, it will be injurious to them, becauſe they will entangle one with another, and will not claſp about the pole ſo readily.

Maple or Aſpen poles are accounted the beſt for Hops, on which they are thought to proſper beſt, becauſe of their warmth; or elſe, becauſe the climbing of the Hop is furthered by means of the roughneſs of the bark. But for laſtingneſs, Aſhen or Willow poles are preferable; but Cheſtnut poles are the moſt durable of all.

If, after the Hops are grown up, you find any of them have been under-polled, taller poles may be placed near thoſe that are too ſhort, to receive the binds from them.

As to the tying of Hops, the buds that do not claſp of themſelves to the neareſt pole when they are grown to three or four feet high, muſt be guided to it by the hand, turning them to the ſun, whoſe courſe they will always follow. They muſt be bound with withered Ruſhes, but not ſo cloſe as to hinder them from climbing up the pole.

This you muſt continue to do till all the poles are furniſhed with binds, of which two or three are enough for a pole; and all the ſprouts and binds that you have no occaſion for, are to be plucked up; but if the ground be young, then none of theſe uſeleſs binds ſhould be plucked up, but ſhould be wrapt up together in the middle of the hill.

When the binds are grown beyond the reach of your hands, if they forſake the poles, you ſhould make uſe of a ſtand ladder in tying them up.

Some adviſe, that if the binds be very ſtrong, and overgrow the poles very much, you ſtrike off their heads with a long ſwitch, to increaſe their branching below.

Towards the latter end of May, when you have made an end of tying them, the ground muſt have the ſummer ploughing or digging, which is done by caſting up with the ſpade ſome fine earth into every hill, and a month after it muſt be again repeated, and the hills made up to a convenient bigneſs.

It is not at all to be doubted, but that a thorough watering would be of very great advantage to Hops in a hot dry ſummer; but it is ſo much charge and trouble to do this, that unleſs you have a ſtream at hand to flow the ground, it is ſcarce practicable.

When the Hops blow, you ſhould obſerve if there be any wild barren hills among them, and mark them, by driving a ſharpened ſtick into every ſuch hill, that they may be digged up and replanted.

Hops as well as other vegetables, are liable to diſtempers and diſaſters, and among the reſt, to the fen. The Rev. Dr. Hales, in his excellent Treatiſe of Vegetable Statics, treating of Hops, gives us the following account of the ſtate of Hops in Kent in the year 1725, that he received from Mr. Auſten of Canterbury, which is as follows:

In mid April not half the ſhoots appeared above ground, ſo that the planters knew not how to pole them to the beſt advantage.

This defect of the ſhoot, upon opening the hills, was found to be owing to the multitude and variety of vermin that lay preying upon the roots; the increaſe of which, was imputed to the long and almoſt uninterrupted ſeries of dry weather for three months before.

Towards the end of April many of the Hop-vines were infeſted with flies.

About the 20th of May there was a very unequal appearance, ſome Vines being run ſeven feet, others not above three or four; ſome juſt tied to the poles, and ſome not viſible; and this diſproportionate inequality in their ſize, continued through the whole time of their growth.

The flies now appeared upon the leaves of the forwardeſt Vines, but not in ſuch numbers here, as they did in moſt other places. About the middle of June the flies increaſed, yet not ſo as to endanger the crop; but in diſtant plantations they were exceedingly multiplied, ſo as to ſwarm towards the end of the month.

June the 27th ſome ſpecks of fen appeared. From this day to the 9th of July was very dry weather. At this time, when it was ſaid, that the Hops in moſt parts of the kingdom looked black and ſickly, and ſeemed paſt recovery, ours held it out pretty well, in the opinion of the moſt ſkilful planters.

The great leaves were indeed diſcoloured, and a little withered, and the fen was ſomewhat increaſed. From the 9th of July to the 23d, the fen increaſed a great deal; but the flies and lice decreaſed, it raining much daily. In a week more the fen, which ſeemed to be almoſt at a ſtand, was conſiderably increaſed, eſpecially in thoſe grounds where it firſt appeared.

About the middle of Auguſt the Vines had done growing both in ſtem and branch, and the forwardeſt began to be in the Hop, the reſt in bloom; the fen continued ſpreading where it was not before perceived, and not only the leaves, but many of the burs were alſo tainted with it.

About the 20th of Auguſt ſome of the Hops were infected with the fen, and whole branches corrupted by it. Half the plantations had pretty well eſcaped hitherto, and from this time the fen increaſed but little; but ſeveral days wind and rain the following week ſo diſtorted them, that many of them began to dwindle, and at laſt came to nothing; and of thoſe that then remained in bloom, ſome never turned to Hops; and of the reſt which did, many of them were ſo ſmall, that they very little exceeded the bigneſs of a good thriving bur.

We did not begin to pick till the 8th of September, which is eighteen days later than we began the year before; the crop was little above two hundred on an acre round, and not good. The beſt Hops ſold this year at Way-hill, for 16 l. the hundred.

The Rev. Dr. Hales, in his aforeſaid Treatiſe, gives us an account of the following experiment that he made on Hop-vines. He tells us, that in July he cut off two thriving Hop-vines near the ground, in a thick ſhady part of the garden, the pole ſtill ſtanding; he ſtripped the leaves off from one of theſe Vines, and ſet their ſtems in known quantities of water in little bottles; that with leaves imbibed in a twelve hours day four ounces, and that without leaves three-fourths of an ounce.

He took another Hop-pole with its Vines on it, and carried it out of the Hop-ground into a free and open expoſure; theſe imbibed and perſpired as much more as the former in the Hop-ground, which is, doubtleſs, the reaſon why the Hop-vines on the outſides of plantations, where they are moſt expoſed to the air, are ſhort and poor, in compariſon of thoſe in the middle of the ground, viz. becauſe being much dried, their fibres harden ſooner, and therefore they cannot grow ſo kindly as thoſe in the middle of the ground, which, by ſhade, are always kept moiſter, and more ductile.

The ſame curious author proceeds as followeth: Now there being 1000 hills in an acre of Hop-ground, and each hill having three poles, and each pole three Vines, the number of Vines will be 9000, each of which perſpiring four ounces, the ſum of all the ounces perſpired by an acre in twelve hours day will be 36000 ounces = 15750000 grains = 62007 cube inches, or 220 gallons, which divided by 6272640, the number of ſquare inches in an acre, it will be found, that the quantity of liquor perſpired by all the Hop-vines will be equal to an area of liquor as broad as an acre, and

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$\frac{1}{101}$ part of an inch deep, beſides what evaporated from the earth.

And this quantity of moiſture, in a kindly ſtate of the air, if daily carrried off, is a ſufficient quantity to keep the Hops in a healthy ſtate; but in a rainy moiſt ſtate of air, without a due mixture of dry weather, too much moiſture hovers about the Hops, ſo as to hinder, in ſome meaſure, the kindly perſpiration of the leaves, whereby the ſtagnating ſap corrupts, and breeds mouldy fen, which often ſpoils vaſt quantities of flouriſhing Hop-grounds.

This was the caſe in the year 1723, when for ten or fourteen days almoſt continual rains fell, about the latter half of July, after four months dry weather, upon which the moſt flouriſhing and promiſing Hops were all infected with mould, or fen, in their leaves and fruit, while the then poor and unpromiſing Hops eſcaped, and produced plenty, becauſe they, being ſmall, did not perſpire ſo great a quantity as others, nor did they confine the perſpired vapour, ſo much as the large thriving Vines did in their ſhady thickets.

This rain on the then warm earth, made the Graſs ſhoot out as faſt as if it were in a hot-bed, and the Apples grew ſo precipitately, that they were of a flaſhy conſtitution, ſo as to rot more remarkably than had ever been remembered.

The planters obſerve, That when a mould, or fen, has once ſeized any part of the ground, it ſoon runs over the whole, and that the Graſs, and other herbs under the Hops, are infected with it, probably, becauſe the ſmall ſeeds of this quick-growing mould, which ſoon come to maturity, are blown over the whole ground; which ſpreading of the ſeed may be the reaſon why ſome grounds are infected with fen for ſeveral years ſucceſſively, viz. from the ſeeds of the laſt year's fen. Might it not then be adviſed to burn the fenny Hop-vines, as ſoon as the Hops are picked, in hopes thereby to deſtroy ſome of the ſeed of the mould?

Mr. Auſten, of Canterbury, obſerves fen to be more fatal to thoſe grounds that are low and ſheltered, than to the high and open grounds, to thoſe that are ſhelving to the north, than to thoſe ſhelving to the ſouth; to the middle of grounds than to the outſides; to the dry and gentle grounds, than to the moiſt and ſtiff grounds.

This was very apparent throughout the plantations where the land had the ſame workmanſhip and help beſtowed upon it, and was wrought at the ſame time. But if in either of theſe caſes there was a difference, it had a different effect, and the low and gentle grounds, that lay neglected, were then ſeen leſs diſtempered than the open and moiſt, which were carefully managed and looked after.

The honey dews are obſerved to come about the 11th of June, which, by the middle of July, turn the leaves black, and make them ſtink.

The ſaid Dr. Hales relates, That in the month of July (the ſeaſon for fire-blaſts, as the planters call them) he has ſeen the Vines in the middle of the Hop-ground ſcorched up almoſt from one end of a large ground to the other, when a hot gleam of ſun-ſhine has come immediately after a ſhower of rain, at which time vapours are all ſeen with the naked eye, but eſpecially with reflecting teleſcopes, to aſcend ſo plentifully as to make a clear and diſtinct object become immediately very dim and tremulous; nor was there any dry gravelly vein in the ground along the courſe of this ſcorch; it was therefore, probably, owing to the much greater quantity of ſcorching vapours in the middle, than the outſides of the ground, and that being a denſer medium, it was much hotter than a more rare medium.

And, perhaps, the great volume of aſcending vapours might make the ſun-beams converge a little towards the middle of the ground, that being a denſer medium, and thereby increaſe the heat conſiderably; for he obſerved, That the courſe of the ſcorched Hops was in lines at right angles to the ſun-beams about eleven o'clock, at which time the hot gleam was.

The Hop-ground was in a valley which ran from ſouth-weſt to north-eaſt, and to the beſt of his remembrance, there was but little wind, and that in the courſe of the ſcorch; but had there been ſome other gentle wind, either north or ſouth, it is not improbable but that the north wind gently blowing the volume of riſing wreak on the ſouth ſide of the ground, that ſide might have been moſt ſcorched, and ſo vice verſa.

As to particular fire-blaſts, which ſcorch here and there a few Hop-vines, or one or two branches of a tree, without damaging the next adjoining, what aſtronomers obſerve, may hint to us no very improbable cauſe of it, viz. They frequently obſerve (eſpecially with reflecting teleſcopes) ſmall ſeparate portions of pellucid vapours floating in the air, which, though not viſible to the naked eye, are yet conſiderably denſer than the circumambient air; and vapours of ſuch a degree of denſity may very probably either acquire ſuch a ſcalding heat from the ſun as will ſcorch what plants they touch, eſpecially the more tender.

(An effect which the gardeners about London have too often found to their coſt, when they have incautiouſly put bell-glaſſes over their Cauliflowers early in a froſty morning, before the dew was evaporated off them; which dew, being raiſed by the ſun's warmth, and confined within the glaſs, did there form a denſe, tranſparent, ſcalding vapour, which burned and killed the plants:)

Or, perhaps, the upper or lower ſurface of theſe tranſparent, ſeparate, flying volumes of vapours, may, among the many forms they revolve into, ſometimes approach ſo near to an hemiſphere, or hemicylinder, as thereby to make the ſun-beams converge, ſo as often to ſcorch the more tender plants they ſhall fall on, and ſometimes alſo parts of the more hardy plants and trees, in proportion to the greater or leſſer convergency of the ſun's rays.

The learned Boerhaave, in his Theory of Chymiſtry, p. 245, Shaw's edition, obſerves, That thoſe white clouds which appear in ſummer time, are, as it were, ſo many mirrours, and occaſion exceſſive heat. Theſe cloudy mirrours are ſometimes round, ſometimes concave, polygonous, &c. When the face of heaven is covered with ſuch white clouds, the ſun ſhining among them, muſt, of neceſſity, produce a vehement heat, ſince many of his rays, which would otherwiſe, perhaps, never touch our earth, are hereby reflected to us. Thus, if the ſun be on one ſide, and the clouds on the oppoſite one, they will be perfect burning-glaſſes, and hence the phænomena of thunder.

I have ſometimes (continues he) obſerved a kind of hollow clouds full of hail and ſnow, during the continuance of which the heat was extreme, ſince, by ſuch condenſation, they were enabled to reflect more ſtrongly. After this came a ſharp cold, and then the clouds diſcharged their hail in great quantity, to which ſucceeded a moderate warmth. Frozen concave clouds, therefore, by their great reflexions, produce a vigorous heat, and the ſame, when reſolved, exceſſive cold.

From which the Rev. Dr. Hales obſerves as follows:

Hence we ſee, that blaſts may be occaſioned by the reflexions of the clouds, as well as by the above-mentioned refraction of denſe tranſparent vapours.

About the middle of July Hops begin to blow, and will be ready to gather about Bartholomew-tide. A judgment may be made of their ripeneſs, by their ſtrong ſcent, their hardneſs, and the browniſh colour of their ſeed.

When by theſe tokens they appear to be ripe, they muſt be picked with all the expedition poſſible; for if at this time a ſtorm of wind ſhould come, it would do them great damage, by breaking the branches, and bruiſing and diſcolouring the Hops; and it is very well known, that Hops, being picked green and bright, will ſell for a third part more than thoſe which are diſcoloured and brown.

The moſt convenient way of picking them is into a long ſquare frame of wood, called a bin, with a cloth hanging on tenter-hooks within it, to receive the Hops as they are picked.

The frame is compoſed of four pieces of wood joined together, ſupported by four legs, with a prop at each end to bear up another long piece of wood, placed at a convenient height over the middle of the bin; this ſerves to lay the poles upon which are to be picked.

This bin is commonly eight feet long, and three feet broad; two poles may be laid on it at a time, and ſix or eight perſons may work at it, three or four on each ſide.

It will be beſt to begin to pick the Hops on the eaſt or north ſide of your ground, if you can do it conveniently; this will prevent the ſouth-weſt wind from breaking into the garden.

Having made choice of a plot of the ground containing eleven hills ſquare, place the bin upon the hill which is in the center, having five hills on each ſide; and when theſe hills are picked, remove the bin into another piece of ground of the ſame extent, and ſo proceed till the whole Hop-ground is finiſhed.

When the poles are drawn up to be picked, you muſt take great care not to cut the binds too near the hills, eſpecially when the Hops are green, becauſe it will make the ſap to flow exceſſively.

And if the poles do not come up without difficulty, they ſhould be raiſed by a piece of wood in the nature of a lever, having a forked piece of iron, with teeth on the inſide, faſtened within two feet of the end.

The Hops muſt be picked very clean, i. e. free from leaves and ſtalks, and, as there ſhall be occaſion, two or three times in a day the bin muſt be emptied into a Hop-bag made of coarſe linen cloth, and carried immediately to the oaſt, or kiln, in order to be dried; for if they ſhould be long in the bin, or bag, they will be apt to heat, and be diſcoloured.

If the weather be hot, there ſhould no more poles be drawn than can be picked in an hour, and they ſhould be gathered in fair weather, if it can be, and when the Hops are dry; this will ſave ſome expence in firing, and preſerve their colour better when they are dried.

The beſt method of drying Hops is with charcoal on an oaſt or kiln, covered with hair-cloth, of the ſame form and faſhion that is uſed for drying malt. There is no need to give any particular directions for the making it, ſince every carpenter, or bricklayer, in thoſe countries where Hops grow, or malt is made, knows how to build them.

The kiln ought to be ſquare, and may be of ten, twelve, fourteen, or ſixteen feet over at the top, where the Hops are laid, as your plantation requires, and your room will allow. There ought to be a due proportion between the height and breadth of the kiln, and the beguels of the ſteddle where the fire is kept, viz. if the kiln be twelve feet ſquare on the top, it ought to be nine feet high from the fire, and the ſteddle ought to be ſix feet and a half ſquare, and ſo proportionable in other dimenſions.

The Hops muſt be ſpread even upon the oaſt a foot thick or more, if the depth of the curb will allow it, but care is to be taken not to overload the oaſt, if the Hops be green or wet.

The oaſt ought to be firſt warmed with a fire before the Hops are laid on, and then an even ſteady fire muſt be kept under them; it muſt not be too fierce at firſt, leſt it ſcorch the Hops; nor muſt it be ſuffered to ſink or ſlacken, but rather be increaſed till the Hops be near dried, leſt the moiſture, or ſweat, which the fire has raiſed, fall back, or diſcolour them. When they have lain about nine hours, they muſt be turned, and in two or three hours more they may be taken off the oaſt. It may be known when they are well dried by the brittleneſs of the ſtalks, and the eaſy falling off of the Hop leaves.

The Dutch and Flemings have another method of drying their Hops: they make a ſquare kiln, or room, about eight or ten feet wide, built of brick or ſtone, having a door at one ſide, and a fire-place in the middle of the room, on the floor, about thirteen inches wide within, and thirteen inches high in length from the mouth of it, almoſt to the back part of the kiln, a paſſage being left juſt enough for a man to go round the end of it; this they call a horſe, ſuch as is commonly made in malt-kilns, the fire paſſing out at the holes at each ſide, and at the end of it.

The bed, or floor, on which the Hops lie to be dried, is placed about five feet high above; about that is a wall near four feet high, to keep the Hops from falling.

A window is made at one ſide of the upper bed, to ſhove off the dry Hops down into a room prepared to receive them. The beds are made of laths, or rails, ſawn very even, lying a quarter of an inch diſtant from one another, with a croſs beam in the middle, to ſupport them; the laths are let in even with the top of the beam, and this keeps them even in the places; this they call an oaſt.

The Hops are laid on this bed by baſkets full, without any oaſt-cloth, beginning at one end, and ſo going on till all is covered, half a yard thick, without treading them; then they even them with a rake, that they may lie of equal thickneſs.

This being done, they kindle the fire below, either of wood or charcoal, but the latter is accounted the better fuel for Hops; this fire is kept as much as may be at an equal or conſtant heat, and only at the mouth of the furnace, for the air will ſufficiently diſperſe it.

They do not ſtir them till they are thoroughly dried, i. e. till the top is as fully dried as the bottom; but if they find any place not to be ſo dry as the reſt, (which may be known by reaching over them with a ſtick or wand, and touching them in ſeveral places,) they obſerve where they do not rattle, and where they do; and where they do not rattle, they abate them there, and diſpoſe of them where the places were firſt dry.

They know when they are thoroughly dry, by the brittleneſs of the inner ſtalk, if it be ſhort when it is rubbed; which when they find, they take out the fire, and ſhove out the Hops at the window that is made for that purpoſe, into the room made to receive them, with a coal-rake made with a board at the end of a pole, and then go in at a door below, and ſweep up the Hops and ſeeds that fall through, and put them to the other Hops; then they lay another bed of green Hops, and renew the fire, and proceed as before.

This method is diſapproved by ſome, becauſe (they ſay) the Hops lying ſo thick, and not being turned, the under part of them muſt needs dry before the upper; and the fire paſſing through the whole bed to dry the uppermoſt, muſt neceſſarily over-dry, and much prejudice the greateſt part of the Hops, both in ſtrength and weight, beſides the unneceſſary expence of firing, which muſt be long continued to dry thoroughly ſo many together.

Therefore ſome have improved on this method, and adviſed to make the kiln much as is before directed as to the Dutch way.

Firſt to make a bed of flat ledges about an inch thick, and two or three inches broad, ſawn, and laid acroſs one another the flat way, chequerwiſe, at about three or four inches diſtance one from the other, the edges being ſo entered one into the other, that the floor may be even and ſmooth; this bed may be made to reſt on two or three joiſts, ſet edgewiſe, to ſupport it from ſinking.

This bed is to be covered with large double tin, ſoldered together at each joint, and the ledges muſt be ſo ordered, before they are laid, that the joints of the tin may always lie over the middle of the ledge, the bed being wholly covered over with tin: boards muſt be fitted about the edges of the kiln, to keep up the Hops, but one ſide muſt be made to remove, that the Hops may be ſhoved off as before.

On this bed, or floor of tin, the Hops may be turned without ſuch hazard or loſs, as upon the hair-cloth: and alſo it will require a leſs expence of fuel, and, beſides, any ſort of fuel will ſerve in this kiln, as well as charcoal, becauſe the ſmoke does not paſs through the Hops as it does the former ways; but then care is to be taken, that there be paſſages made for it at the ſeveral corners and ſides of the kiln.

It is found by experience, that the turning of Hops, though it be after the moſt eaſy and beſt manner, is not only an injury and waſte to the Hops, but alſo an expence of fuel and time, becauſe they require as much fuel, and as long a time, to dry a ſmall quantity, by turning them, as a large one.

Now, this may be prevented, by having a cover (to be let down and raiſed at pleaſure) to the upper bed whereon the Hops lie.

This cover may alſo be tinned, by nailing ſingle tin plates over the face of it, ſo that when the Hops begin to dry, and are ready to burn, i. e. when the greateſt part of their moiſture is evaporated, then the cover may be let down within a foot, or leſs, of the Hops (like a reverbatory) and will reflect the heat upon them, ſo that the top will ſoon be as dry as the lowermoſt, and every Hop be equally dried.

As ſoon as the Hops are taken off the kiln, lay them in a room for three weeks or a month to cool, give, and toughen; for if they are bagged immediately, they will powder, but if they lie a while (and the longer they lie the better, provided they be covered cloſe with blankets to ſecure them from the air,) they may be bagged with more ſafety, as not being liable to be broken to powder in treading, and this will make them bear treading the better, and the harder they are trodden, the better they will keep.

The common method of bagging is as follows; they have a hole made in an upper floor, either round or ſquare, large enough to receive a Hop-bag (which conſiſts of four ells and a half of ell-wide cloth, and alſo contains ordinarily two hundred and a half of Hops) they tie a handful of Hops in each lower corner of the bag, to ſerve as handles to it, and they faſten the mouth of the hole, ſo placed that the hoop may reſt upon the edges of the hole.

Then he that is to tread the Hops down into the bag, treads the Hops on every ſide, another perſon continually putting them in as he treads them, till the bag is full, which being well filled and trodden, they unrip the faſtening of the bag to the hoops, and let it down, and cloſe up the mouth of the bag, tying up a handful of Hops in each corner of the mouth, as was done in the lower part.

Hops being thus packed, if they have been well dried, and laid up in a dry place, they will keep good ſeveral years; but care muſt be taken, that they be neither deſtroyed nor ſpoiled by the mice making their neſts in them.

The crop of Hops being thus beſtowed, you are to provide for another, firſt by taking care of the poles againſt another year, which are beſt to be laid up in a ſhed, having firſt ſtripped off the haulm from them; but if you have not that conveniency, ſet up three poles in the form of a triangle, or ſix poles (as you pleaſe) wide at the bottom, and having ſet them into the ground, with an iron pitcher, and bound them together at top, ſet the reſt of your poles about them; and being thus diſpoſed, none but thoſe on the outſide will be ſubject to the injuries of the weather, for all the inner poles will be kept dry, unleſs at the top; whereas, if they were on the ground, they would receive more damage in a fortnight, than by their ſtanding all the reſt of the year.

In the winter time provide your ſoil and manure for the Hop-ground againſt the following ſpring.

If the dung be rotten, mix it with two or three parts of common earth, and let it incorporate together till you have occaſion to make uſe of it in making your Hop-hills; but if it be new dung, then let it be mixed as before, till the ſpring come twelvemonths, for new dung is very injurious to Hops.

Dung of all ſorts was formerly more commonly made uſe of than now it is, eſpecially when rotted, and turned to mould, and they who have no other manure muſt uſe it; which, if they do, cows or hogs dung, or human ordure mixed with mud, may be a proper compoſt, becauſe Hops delight moſt in a manure that is cool and moiſt.

Some recommend chalk, or lime, as the beſt manure, except in cold lands, and in ſuch, pigeons dung will do beſt; a little of which laid to a hill, and ſo mixed, that it may not be too hot in a place, is of great advantage.

LUTEOLA. See RESEDA.

LYCHNIDEA. See PHLOX.

LYCHNIS. Tourn. Inſt. R. H. 333. tab. 175. Lin. Gen. Plant. 517. [ſo called of Λύχνος, a candle, or light, becauſe the flowers of this plant imitate the flame or rays of light.] Campion.

The CHARACTERS are,

The flower has a permanent ſwollen empalement of one leaf, indented in five parts at the top. It hath five petals, whoſe tails are the length of the empalement, their upper part plain, broad, and frequently cleft in laminæ. It hath ten ſtamina which are longer than the empalement, alternately ranged, and faſtened to the tails of the petals, terminated by proſtrate ſummits. In the center is ſituated an almoſt oval germen, ſupporting five awl-ſhaped ſtyles, crowned by reflexed hairy ſtigmas. The empalement afterward becomes an oval capſule with one cell, opening with five valves, filled with roundiſh ſeeds.

This genus of plants is ranged in the fifth ſection of Linnæus's tenth claſs, intitled Decandria Pentagynia, which includes thoſe plants whoſe flowers have ten ſtamina and five ſtyles.

The SPECIES are,

1. LYCHNIS (*Chalcedonica*) floribus faſciculatis faſtigiatis. Hort. Cliff. 174. *Campion with flowers gathered into a pyramid.* Lychnis hirſuta, flore coccineo, major. C. B. P. 203. *Greater hairy Campion with a ſcarlet flower.*
2. LYCHNIS (*Viſcaria*) petalis integris. Lin. Sp. Plant. 436. *Campion with entire petals.* Lychnis ſylveſtris viſcoſa, rubra, anguſtifolia. C. B. P. 205. *Wild viſcous Lychnis with a red flower and narrow leaves, commonly called the Single Catchfly.*
3. LYCHNIS (*Dioeci*) floribus dicœcis. Hort. Cliff. 171. *Campion with male and female flowers on different plants.* Lychnis ſylveſtris, ſive aquatica purpurea, ſimplex. C. B. P. 204. *Wood or aquatic Lychnis with a ſingle purple flower, frequently called Bachelors Button.*
4. LYCHNIS (*Alba*) floribus dicœcis, calycibus inflatis hirſutis. *Campion with male and female flowers growing on different plants, and ſwollen hairy empalements.* Lychnis ſylveſtris, alba, ſimplex. C. B. P. 204. *Wild campion with a ſingle white flower.*
5. LYCHNIS (*Floſcuculi*) petalis quadrifidis, fructu ſubrotundo. Hort. Cliff. 174. *Campion with quadrifid petals, and a roundiſh fruit.* Lychnis pratenſis flore laciniato ſimplici. Mor. Hiſt. 2. p. 537. *Meadow Campion with a ſingle jagged flower, commonly called Ragged Robin.*
6. LYCHNIS (*Alpina*) petalis bifidis corymboſis. Lin. Sp. Plant. 436. *Campion with bifid petals, and flowers growing in a corymbus.* Silene floribus in capitulum congeſtis. Haller. Helv. 376. *Lychnis with flowers collected in a head.*
7. LYCHNIS (*Siberica*) petalis bifidis, caule dichotomo, foliis ſubhirtis. Lin. Sp. Plant. 437. *Campion with bifid petals, a ſtalk divided by pairs, and leaves which are ſomewhat hairy.*
8. LYCHNIS (*Luſitanica*) caule erecto, calycibus ſtriatis acutis, petalis diſſectis. Plat. 170. *Campion with an erect ſtalk, ſtriped acute empalements, and petals cut into many parts.*
9. LYCHNIS (*Apetala*) calyce inflato, corollâ calyce breviore, caule ſubunifloro. Lin. Sp. Plant. 437. *Campion with a ſwollen empalement, the petals of the flower ſhorter than the cup, and ſtalks having chiefly one flower.* Lychnis ſylveſtris alba, calyce amplo veſi-

cario. Vaill. *Wild white Campion with a large inflated empalement.*

The firſt ſort is commonly known by the title of Scarlet Lychnis; of which there is one with double flowers, which is moſt eſteemed for the ſize of the flowers and multiplicity of the petals; as alſo for the duration of the flowers, which continue much longer in beauty than the ſingle flowers, ſo that the latter is not much cultivated at preſent, though the flowers of this are very beautiful; and as the plants are ſo eaſily propagated by ſeed, they may ſoon be had in greater plenty than thoſe with double flowers, which do not produce ſeeds. Of the ſingle ſort there are three varieties, the deep ſcarlet, the fleſh-colour, and the white, but the firſt is the moſt beautiful.

This is eaſily propagated by ſeeds, which ſhould be ſown on a border expoſed to the eaſt, in the middle of March. The plants will appear in April, when if the ſeaſon is dry, they ſhould be refreſhed with water two or three times a week. By the beginning of June the plants will be fit to remove, when there ſhould be a bed of common earth prepared to receive them; into which they ſhould be planted at about four inches apart, obſerving to water and ſhade them till they have taken root; after which time they will require no other care but to keep them clean from weeds till the following autumn, when they ſhould be tranſplanted into the borders of the pleaſure-garden, where they are to continue. The ſummer following theſe plants will flower and produce ripe ſeeds, but the roots will abide ſeveral years and continue to flower. This ſort flowers in June and July, and the ſeeds ripen in autumn. It may alſo be propagated by offſets, but as the ſeeds ripen ſo freely, few perſons trouble themſelves to propagate the plants any other way. The French call this plant Jeruſalem Croſs.

The ſort with double flowers is a valuable plant, the flowers are very double, and of a beautiful ſcarlet colour. This hath a perennial root, from which ariſe two, three, or four ſtalks, according to the ſtrength of the roots; theſe in rich moiſt land, grow upwards of four feet high; the ſtalks are ſtrong, erect, and hairy. They are garniſhed the whole length with ſpear-ſhaped leaves ſitting cloſe to the ſtalks, placed oppoſite; and juſt above each pair of leaves, there are four ſmaller leaves ſtanding round the ſtalk. The flowers are produced in cloſe cluſters ſitting upon the top of the ſtalk; when the roots are ſtrong, the cluſters of flowers will be very large, ſo they make a fine appearance, the flowers being very double, and of a bright ſcarlet colour. They appear the latter end of June, and in moderate ſeaſons continue near a month in beauty. The ſtalks decay in autumn, and new ones ariſe in the ſpring. This was originally produced from the ſeeds of the ſingle ſort, and is propagated by ſlips taken from the roots in autumn; but as this is a ſlow method of increaſing the plants, the beſt way to have them in plenty, is to cut off the flower-ſtalks in June before the flowers appear, which may be cut into ſmall lengths, each of which ſhould have three or four joints, which ſhould be planted on an eaſt border of ſoft loamy earth, putting three of the joints into the ground, leaving one eye juſt level with the ſurface; theſe muſt be watered, and then covered cloſe with bell or hand-glaſſes, ſo as to exclude the outward air, and ſhaded with mats when the ſun ſhines hot upon them. The cuttings ſo managed will put out roots in five or ſix weeks, when they muſt be expoſed to the open air, and in very dry weather they ſhould be now and then refreſhed with water, but it muſt not be repeated too often, nor given in large quantities, for too much moiſture will cauſe them to rot. Theſe will make good plants by the following autumn, when they may be tranſplanted into the borders of the pleaſure-garden, where they will flower the following ſummer.

Some people who are covetous to have their plants flower, ſuffer the ſtalks to remain till the flowers are decayed, and then cut them off to plant; but by that time the ſtalks are grown hard, ſo but few of them ſucceed, and thoſe which do, will not be near ſo good plants as thoſe which are planted earlier; therefore it will be better to ſacrifice the flowers of ſome roots for this purpoſe. Theſe plants delight in a ſoft, rich, loamy ſoil, not too moiſt or ſtiff, in which they will thrive and flower very ſtrong, but they do not care for much dung, which very often cauſes the roots to canker and rot, ſo that in the rich dunged lands about London, they do not thrive well. As theſe plants grow tall, they ſhould be planted in the middle of large borders, and not crowded with other plants, for their roots extend to a large diſtance; ſo if they are incommoded by other roots, it will ſtint their growth.

I have not ſeen any double flowers of the two other varieties, but have been informed that there are of both the white and the fleſh-colour with double flowers in ſome of the French gardens. Theſe make a variety, but are not ſo beautiful as the ſcarlet, ſo are not much eſteemed.

The ſecond ſort is commonly called Red German Catchfly. This hath been found growing naturally upon the rocks in Edinburgh Park, and in ſome places in Wales. It was formerly cultivated in flower-gardens for ornament, but ſince this ſort with double flowers hath been produced, the ſingle has been almoſt baniſhed out of the gardens. This hath long, narrow, Graſs-like leaves, which come out from the root without order, ſitting cloſe to the ground; between theſe come up ſtrait ſingle ſtalks, which in good ground riſe a foot and half high; at each joint of the ſtalk come out two leaves oppoſite, of the ſame form as the lower, but decreaſe in their ſize upward; under each pair of leaves, for an inch in length, there ſweats out of the ſtalk a glutinous liquor, which is almoſt as clammy as birdlime, ſo that the flies which happen to light upon theſe places, are faſtened to the ſtalk, where they die, from whence it had the title of Catchfly. The ſtalk is terminated by a cluſter of purple flowers, and from the two upper joints come out on each ſide of the ſtalk a cluſter of the ſame flowers, ſo that the whole form a ſort of looſe ſpike. Theſe appear in the beginning of May, and the ſingle flowers are ſucceeded by roundiſh ſeed-veſſels, which are full of ſmall angular ſeeds ripening in July.

It may be propagated in plenty by parting of the roots in autumn, at which time every ſlip will grow; or if the ſeeds are ſown in the ſame manner as is directed for the firſt ſort, the plants with ſingle flowers may be raiſed in plenty. This delights in a light moiſt ſoil and a ſhady ſituation.

The double flowering of this ſort was accidentally obtained from the ſeeds of the ſingle. This hath not been known forty years in the Engliſh gardens, but it is now ſo common as to have excluded that with ſingle flowers; it differs only from that in the doubleneſs of the flowers. As this never produces ſeeds, ſo it can only be propagated by parting and ſlipping of the roots; the beſt time for this is in autumn, at which time every ſlip will grow. If this is performed in September, the ſlips will have taken good root before the froſt, and will flower well the following ſummer; but if they are expected to flower ſtrong, the roots muſt not be divided into ſmall ſlips, though for multiplying the plants, it matters not how ſmall the ſlips are. Theſe ſhould be planted on a border expoſed to the morning ſun, and ſhaded when the ſun is warm till they have taken root. If the ſlips are planted in the beginning of September, they will be rooted ſtrong enough to plant in the borders of the flower-garden by the middle or latter end of October. The roots of this ſort multiply ſo faſt, as to make it neceſſary to tranſplant and part them every year; for when they are let remain longer, they are very apt to rot. This ſort requires the ſame ſoil and ſituation as the former.

The third ſort grows naturally by the ſide of ditches and in moiſt paſtures in many parts of England, ſo is ſeldom admitted into gardens; it hath a perennial root, from which ariſe many branching diffuſed ſtalks from

from two to three feet high, garniſhed with oval acute-pointed leaves, placed by pairs at each joint, and are terminated by cluſters of purple flowers, which appear in April and May. The male flowers grow upon ſeparate plants from the female. The latter produces ſeeds which ripen in July; the ſtalks decay in autumn, but the roots continue ſeveral years.

There is a variety of this with double flowers, which is cultivated in gardens, by the title of Red Bachelor's Button. This is an ornamental plant, and continues long in flower. It is propagated by ſlips, which ſhould be planted the beginning of Auguſt in a ſhady border of loamy earth, where they will take root in about ſix weeks or two months, and may then be tranſplanted into the borders of the flower-garden. Theſe roots ſhould be annually tranſplanted, otherwiſe they frequently rot; and young plants muſt be propagated by ſlips to ſupply the decay of the old roots, which are not of very long duration. This ſort thrives beſt in a ſoft loamy ſoil, and in a ſhady ſituation, where they have only the morning ſun.

The fourth ſort is very common upon dry banks on the ſide of roads in moſt parts of England, ſo is not admitted into gardens; there is a variety of this with purple flowers, which I find is by ſome ſuppoſed to be the ſame as the third, but is very different, for the ſtalks of this are branched out much more; the leaves are longer and more veined, and the flowers of this ſtand ſingly upon pretty long foot-ſtalks, ſo are not produced in cluſters like thoſe of the third. This is alſo very hairy, and the empalement of the flowers is ſwollen like inflated bladders. This flowers near a month after the other, but the male and female flowers grow upon different plants, as in the former.

There is a variety of this with double flowers, which is propagated in gardens by the title of Double white Bachelor's Button, and is an ornamental plant in the flower-garden; though being white it doth not make ſo good an appearance as the other, however it adds to the variety. This is propagated in the ſame way as the double ſort before-mentioned, but the plants will thrive in a drier ſoil, and a more open expoſure than that.

The fifth ſort grows very common in moiſt meadows, and by the ſide of rivers in moſt parts of England, where it is intermixed with the Graſs. This riſes with upright unbranched ſtalks near a foot and a half high, garniſhed with narrow ſpear-ſhaped leaves, placed by pairs oppoſite at each joint. The ſtalks are ſlender, channelled, and are terminated by ſix or ſeven purple flowers upon pretty long foot-ſtalks, which branch out. The empalement of the flower is ſtriped with purple, and the petals of the flowers are deeply jagged in four narrow ſegments, which appear as if torn; from whence the country people have given it the appellation of Ragged Robin. It flowers in May, and the ſeeds ripen in July. This ſort is never kept in gardens, but there is a variety of it with very double flowers, which is propagated by the gardeners for ornament. It only differs from the ſingle in the multiplicity of the petals, and produces no ſeeds, ſo is propagated by ſlips in the ſame manner as the ſecond ſort. It is commonly known by the title of Double Ragged Robin.

The ſixth ſort grows naturally on the Alps, in Lapland, and the other cold parts of Europe. This is a perennial plant which delights in a moiſt ſoil. The ſtalks of this are erect, half a foot high, garniſhed with narrow ſpear-ſhaped leaves placed by pairs oppoſite, like the former ſort, but are a little ſhorter and broader; the bottom leaves are broader than thoſe upon the ſtalks, and ſit cloſe to the ground; they are ſmooth, and of a deep green: the flowers are produced in a corymbus on the top of the ſtalk, ſitting cloſe together; they are of a purple colour, and the petals are cut in the middle. This flowers the beginning of June, and the ſeeds ripen in Auguſt. It is propagated by ſeeds, and alſo by parting of the roots; it muſt have a moiſt ſoil and a ſhady ſituation, otherwiſe the plants will not thrive. The time for tranſplanting the plants, and parting the roots, is the ſame as for the ſecond ſort, and the ſeeds may be ſown upon a ſhady border in March. In dry weather the ground muſt be kept moiſt, otherwiſe the ſeeds will not grow. When the plants come up, and are fit to remove, they ſhould be tranſplanted into a ſhady border, where they may remain to flower.

The ſeventh ſort grows naturally in Siberia: this hath a perennial root, from which ariſe many narrow leaves ſitting cloſe to the ground. The ſtalks riſe a foot high, dividing into branches by pairs. The flowers grow out from the diviſion of the branches, as alſo at the top of the ſtalks. They are compoſed of five white petals, which are divided in the middle; theſe appear in June, and are ſucceeded by roundiſh capſules filled with ſmall angular ſeeds, which ripen in Auguſt. This requires the ſame treatment as the former ſort.

The eighth ſort was brought from Portugal to England, and is probably a variety of one with ſingle flowers, which grows naturally in that country, but is different from any we have in England. This approaches neareſt to the Double Ragged Robin, but is different from that. It hath a perennial root, from which ariſe many oblong narrow leaves ſitting cloſe to the ground. It divides into ſeparate heads like the ſecond ſort, and from each of theſe come out an upright ſtalk about nine inches high, which divides upwards by pairs, and from the middle of each diviſion comes out a ſlender foot-ſtalk two inches long, ſuſtaining one double purple flower at the top, whoſe petals are very much jagged at their points; the empalements of the flowers are marked with deep purple ſtripes. From the ſide of the ſtalks there are alſo foot-ſtalks come out at the wings, which for the moſt part ſuſtain but one flower, though ſometimes they have two; theſe flowers being very double, are never ſucceeded by ſeeds. The uſual time of this plant flowering is in June, but ſometimes it ſends out freſh ſtalks, which have flowers in the autumn. It is propagated by ſlips in the ſame manner as the third and fourth ſorts, but coming from a warm country, it is impatient of much cold, and requires a particular treatment, for it does not thrive well in pots; nor will it live through the winter in open borders, ſo that the only ſituation in which I have ſeen it thrive, was where it was planted as cloſe as poſſible to a ſouth wall in dry undunged earth; for in rich or moiſt ground the roots preſently rot, as they alſo do when they are watered. If they are planted in brick rubbiſh, they will ſtill do better. I was favoured with this plant by John Browning, Eſq; of Lincoln's-inn, who received it from Portugal.

The ninth ſort grows naturally in the northern parts of Europe. It is like the fourth ſort, but the petals of the flowers do not extend beyond the empalement, and the empalements are much larger and more ſwollen.

The other SPECIES of LYCHNIS are now ranged under the following genera, viz.

AGROSTEMMA, CUCUBALUS, SAPONARIA, and SILENE, to which articles the reader is deſired to turn for thoſe which are not here enumerated.

LYCIUM. Lin. Gen. Plant. 232. Jaſminoides. Niſſol. Act. R. Par. 1711. Rhamnus. C. B. P. 477. Boxthorn.

The CHARACTERS are,

The flower hath a ſmall, obtuſe, permanent empalement, which is erect, and divided into five parts at the top; the flower is funnel-ſhaped, of one petal, with an incurved tube, whoſe brim is cut into five obtuſe ſegments, which ſpread open. It has five awl-ſhaped ſtamina, which are a little inclined and ſhorter than the tube, terminated by erect ſummits. In the center is ſituated a roundiſh germen ſupporting a ſingle ſtyle, which is longer than the ſtamina, crowned by a thick biſid ſtigma; the germen afterwards becomes a roundiſh berry with two cells, incloſing kidney-ſhaped ſeeds faſtened to the middle partition.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which

which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. LYCIUM (*Afrum*) foliis lineari-longioribus, tubo florum longiori, ſegmentis obtuſis. *Boxthorn with longer linear leaves, a longer tube to the flower, and obtuſe ſegments.* Lycium foliis linearibus. Hort. Cliff. 57. *Boxthorn with linear leaves.*
2. LYCIUM (*Italicum*) foliis lineari-brevioribus, tubo florum breviori, ſegmentis ovalibus patentiſſimis. *Boxthorn with ſhorter linear leaves, a ſhorter tube to the flower, and oval ſegments ſpreading open.*
3. LYCIUM (*Salicifolium*) foliis cuneiformibus. Vir. Cliff. 14. *Boxthorn with wedge-ſhaped leaves.* Jaſminoides aculeatum, ſalicis folio, flore parvo ex albo purpuraſcente. Mitchel. Gen. 224. *Prickly Baſtard Jaſmine with a Willow leaf, and a ſmall purpliſh white flower.*
4. LYCIUM (*Barbarum*) foliis lanceolatis craſſiuſculis, calycibus trifidis. Lin. Sp. Plant. 192. *Boxthorn with ſpear-ſhaped thick leaves, and trifid empalements.* Jaſminoides aculeatum, polygoni folio, floribus parvis albidis. Shaw. Afr. 349. f. 349. *Prickly Baſtard Jaſmine, with a Knot-graſs leaf, and ſmall whitiſh flowers.*
5. LYCIUM (*Chinenſe*) foliis ovato-lanceolatis, ramis diffuſis, floribus ſolitariis patentibus alaribus, ſtylo longiori. *Boxthorn with oval ſpear-ſhaped leaves, diffuſed branches, and ſingle ſpreading flowers proceeding from the ſides of the branches, with a longer ſtyle.*
6. LYCIUM (*Halimifolium*) foliis lanceolatis acutis. *Boxthorn with ſpear-ſhaped acute leaves.* Jaſminoides Sinenſe halimi folio longiore & anguſtiore. Du Ham. 306. *China Baſtard Jaſmine with a narrower and longer leaf.*
7. LYCIUM (*Capenſe*) foliis oblongo-ovatis, craſſiuſculis, confertis, ſpinis robuſtioribus. *Boxthorn with oblong, oval, thick leaves growing in cluſters, and ſtronger ſpines.*
8. LYCIUM (*Anguſtifolium*) foliis lineari-lanceolatis confertis, calycibus brevibus acutis. *Boxthorn with linear ſpear-ſhaped leaves growing in cluſters, and ſhort acute empalements.*
9. LYCIUM (*Inerme*) inermis, foliis lanceolatis, alternis, perennantibus. *Smooth Boxthorn, with ſpear-ſhaped evergreen leaves placed alternate.*
10. LYCIUM (*Cordatum*) foliis cordato-ovatis, ſeſſilibus, oppoſitis perennantibus, ſpinis craſſis bigeminis, floribus confertis. *Lycium with oval heart-ſhaped leaves placed oppoſite, which are ever-green, and ſit cloſe to the ſtalks, with thick double ſpines, and flowers growing in cluſters.* Arbor Africana ſpinoſa, foliis craſſis cordatis & conjugatis, ſpinis craſſis bigeminis. Herm. Cat. 4. *Prickly African-tree with thick heart-ſhaped leaves growing by pairs, and thick double ſpines.*

The firſt ſort grows naturally in Spain, Portugal, and at the Cape of Good Hope. This riſes with irregular ſhrubby ſtalks ten or twelve feet high, ſending out ſeveral crooked knotty branches, covered with a whitiſh bark, and armed with long ſharp ſpines, upon which grow many cluſters of narrow leaves; theſe thorns often put out one or two ſmaller on their ſides, which have ſome cluſters of ſmaller leaves upon them; the branches are garniſhed with very narrow leaves an inch and a half long, and at the baſe of theſe come out cluſters of ſhorter and narrower leaves. The flowers come out from the ſide of the branches, ſtanding upon ſhort foot-ſtalks; they have a ſhort permanent empalement of one leaf, which is tubulous, and cut into five ſegments at the brim; it is funnel-ſhaped, of one petal, with a long incurved tube, cut into five obtuſe ſegments at the brim; they are of a dull purple colour, and have five ſtamina almoſt as long as the tube, with erect ſummits. In the center is ſituated a roundiſh germen, ſupporting a ſtyle which is longer than the ſtamina, crowned by a bifid ſtigma. The germen afterward turns to a roundiſh fleſhy berry, of a yellowiſh colour when ripe, incloſing ſeveral hard ſeeds. This uſually flowers in June and July, and the ſeeds ripen in the autumn; but there is frequently a few flowers come out in all the ſummer months.

It may be propagated either by ſeeds, cuttings, or layers. If by ſeeds, they ſhould be ſown in the autumn ſoon after they are ripe; for if they are kept out of the ground till ſpring, they ſeldom come up the firſt year. If the ſeeds are ſown in pots, the pots ſhould be plunged into ſome old tan in the winter, and in very ſevere froſt covered with Peas-haulm or ſtraw, but in mild weather ſhould be open to receive the wet; in the ſpring the pots ſhould be plunged into a moderate hot-bed, which will ſoon bring up the plants; theſe muſt be inured to bear the open air as ſoon as the danger of froſt is over, and when they are three inches high, they may be ſhaken out of the pots, and each planted in a ſmall ſeparate pot, filled with loamy earth, and placed in the ſhade till they have taken new root, when they may be removed to a ſheltered ſituation, where they may remain till the autumn; then they ſhould be either removed into the green-houſe, or placed under a hot-bed frame to ſhelter them from hard froſt; for theſe plants are too tender to live in the open air in England, ſo they muſt be kept in pots and treated in the ſame way as Myrtles, and other hardy green-houſe plants; but when the plants are grown ſtrong, there may be a few of them planted in the full ground in a warm ſituation, where they will live in moderate winters, but in hard froſts they are commonly deſtroyed. If the cuttings of theſe plants are planted in a ſhady border in July, and duly watered, they will take root, and may then be treated in the ſame way as the ſeedling plants.

The ſecond ſort was raiſed in the Chelſea garden from ſeeds which came from the Cape of Good Hope. This hath an irregular ſhrubby ſtalk like the former, but ſeldom riſe more than four or five feet high; the large leaves are ſhorter and a little broader than thoſe of the firſt, but the tufts of ſmall leaves are narrower; the tube of the flower is ſhorter, the brim is deeper cut into oval ſegments which ſpread open; the empalement is ſhorter, and cut into acute ſegments; the flowers and fruit are alſo ſmaller. Theſe differences are permanent, in all the plants which I have two or three times raiſed from ſeeds. It flowers about the ſame time as the firſt, and may be propagated in the ſame way; the plants alſo require the ſame culture.

The third ſort grows naturally in the hedges in the ſouth of France, in Spain and Italy. This hath many irregular ſhrubby ſtalks, which riſe eight or nine feet high, ſending out ſeveral irregular branches, covered with a white bark, and armed with pretty ſtrong thorns; the leaves are narrow at bottom, growing broader upward, and are of a pale green colour. The flowers come out from the ſide of the branches; they are of a purpliſh white colour and ſmall, ſo make no great appearance. This ſort flowers in June and July, but rarely produces any ſeeds in this country. The leaves of this remain till winter, when they fall off.

It may be propagated by cuttings or layers, in the ſame manner as the firſt ſort. The plants will live abroad in a ſheltered warm ſituation, but in very hard froſt they ſhould be covered with ſtraw or litter, otherwiſe the branches will be killed, and ſometimes the roots are deſtroyed where they have not ſome cover.

The fourth ſort was brought from Africa by the late Dr. Shaw, where it grows naturally. This hath a ſhrubby ſtalk which riſes ſeven or eight feet high, ſending out ſeveral irregular branches, which are armed with ſtrong ſpines, and garniſhed with ſhort, thick, ſpear-ſhaped, oval leaves, which ſtand without order. The flowers come out from the ſide of the branches; they are ſmall and white, ſo make little appearance. This flowers in July and Auguſt, but does not produce ſeeds in England. It may be propagated by cuttings in the ſame way as the firſt ſort, but is too tender to live in the open air in winter in this country, ſo the plants muſt be kept in pots, and removed into the green-houſe in autumn, and treated in the ſame way as other hardy kinds of green-houſe plants.

The

The fifth ſort grows naturally in China, from whence the ſeeds were brought to England a few years paſt, and the plants were raiſed in ſeveral gardens, and by ſome were thought to be the Thea. This riſes with weak, irregular, diffuſed branches to a great height, but require ſupport, otherwiſe they will trail upon the ground: I have meaſured ſome of theſe branches, which in one year has been upward of twelve feet long: the lower leaves are more than four inches long, and three broad in the middle: they are of a light green and a thin conſiſtence, placed without order on every ſide the branches; as the ſhoots advance in length, ſo the ſize of the leaves diminiſh, and toward the upper part they are not more than an inch long, and a quarter of an inch broad; they ſit cloſe to the ſtalks on every ſide. The flowers come out ſingly at every joint toward the upper part of the branches, ſtanding upon ſhort ſlender foot-ſtalks; they are of a pale colour, with ſhort tubes; the brims are ſpread open broader than either of the former ſorts, and the ſtyle is conſiderably longer than the tube of the flower. This ſort flowers in Auguſt, September, and October; the plant is very hardy, and retains its leaves till November before they decay. It propagates faſt enough by its creeping roots, which ſend out ſuckers at a great diſtance, and the cuttings thruſt into the ground will take root as freely as Willows.

The ſixth ſort grows naturally in China, from whence the ſeeds were brought to the Royal Garden at Paris, and the ſeeds were ſent me by Dr. Bernard de Juſſieu, demonſtrator of the plants in that garden. This riſes with a ſhrubby ſtalk to the height of four or five feet, ſending out many irregular branches, covered with a very white bark, and armed with a few ſhort ſpines; the leaves are about three inches long, and one broad in the middle; they are placed alternately on the branches, and are of a pale green colour. The flowers of this ſort appear in June and July, which are ſucceeded by ſmall round berries that ripen in the autumn, when they are as red as coral. This ſort is propagated by cuttings, which ſhould be planted in the ſpring before they begin to ſhoot, in a border expoſed to the morning ſun, where they will take root very freely; but theſe ſhould not be removed till the autumn, when they may be planted to cover walls, for the branches are too weak to ſupport themſelves; and as the leaves continue green as long as any of the deciduous plants, ſo they are proper plants for ſuch purpoſes.

The ſeventh ſort was raiſed in the Chelſea garden from ſeeds, which were brought me from the Cape of Good Hope. This riſes with ſhrubby branching ſtalks ſeven or eight feet high, which are armed with long ſtrong thorns, that have ſeveral cluſters of leaves upon them; the branches are garniſhed with ſmall, oblong, oval leaves, which are placed without order; ſometimes they come out in ſmall cluſters from one point, at others they are ſingle, ſtanding on every ſide the ſtalk; theſe are of a light green, and a pretty thick conſiſtence, continuing green all the year. Theſe plants have not as yet flowered here, ſo I can give no account of them; but by the fruit which I received entire, I make no doubt of its belonging to this genus.

This ſort is pretty hardy, for it has lived abroad four winters, where it was planted againſt a ſouth-eaſt wall. It may be propagated either by layers or cuttings, in the ſame manner as the firſt; and when the plants have obtained ſtrength, they may be planted in a warm ſituation, where they will live with very little ſhelter in ſevere froſt. The branches of this ſort are ſtronger than thoſe of the former, ſo will not require the ſame ſupport. It will be proper to keep a plant of this in ſhelter to preſerve the kind, leſt thoſe in the open air ſhould be deſtroyed.

The eighth ſort has much the appearance of the firſt, but the branches are not ſo ſtrongly armed with thorns; they have alſo a whiter bark, the leaves are broader and of a lighter green, ſtanding in cluſters at every joint. The flowers are ſmaller, of a deeper purple colour, and have much ſhorter empalements, which are cut into acute ſegments. It flowers at the ſame time with the firſt ſort, but does not produce any ſeeds in this country; it is not ſo hardy as the former ſort, ſo requires protection from very hard froſt; therefore the plants ſhould be kept in pots and houſed in the winter, treating them in the ſame way as other hardy green-houſe plants. It may be propagated by cuttings or layers, in the ſame way as the firſt ſort.

The ninth ſort has been long an inhabitant of the Chelſea garden; it was raiſed from ſeeds which came from China, and was for many years taken for the Tea-tree, till it produced ſome flowers, which diſcovered its true genus. This riſes with a ſtrong woody ſtalk ſix or ſeven feet high, ſending out many ſmooth branches, which are covered with a brown bark having no thorns; they are garniſhed with ſpear-ſhaped leaves about three inches long, and near three quarters of inch broad, placed alternately on the branches, ſtanding upon ſhort foot-ſtalks; they are of a deep green, and continue all the year. The flowers are white, and of the ſame ſhape with the others of this genus, but there has not been any ſeeds of this ſort as yet produced in England.

This plant will live in the open air, if it is planted in a warm ſituation and a dry ſoil; but it is of ſlow growth, ſeldom ſhooting more than three or four inches in a ſeaſon; it is alſo difficult to propagate, for the branches which are laid down will not take root in leſs than two years, and the cuttings are with difficulty made to grow. The beſt time to plant them is in May, in pots filled with light loamy earth, plunging them into an old bed of tanners bark, covering the pots cloſe with bell or hand-glaſſes, to exclude the external air; theſe ſhould be ſhaded every day from the ſun; theſe cuttings ſhould be refreſhed with water once a week, but it muſt not be given to them in too great plenty. Thoſe cuttings which ſucceed, will have put out roots by the beginning of Auguſt, when they may be taken up and planted in ſmall pots, placing them in the ſhade till they have taken new root; and then they may be placed with other hardy exotic plants in a ſheltered ſituation, till the end of October, when they may be put under a common frame to ſhelter them in winter. When the plants have acquired ſtrength, they may be ſhaken out of the pots, and planted in the full ground in a warm ſituation, where, if they are ſheltered in ſevere froſts, they will thrive better than in pots.

The tenth ſort grows naturally at the Cape of Good Hope, from whence the ſeeds were ſent to Holland a few years paſt, where the plants were raiſed. This is a low ſhrubby plant, which ſends out branches from the ground upward, which are covered with a dark green bark, and are armed with ſhort ſtrong thorns, which come out by pairs, and ſometimes there are double pairs upon the ſame foot-ſtalk; theſe are ſituated juſt below the leaves, and where there are four, two of them point upward, and the other two downward. The leaves are heart-ſhaped, not much larger than thoſe of the Box-tree, of the ſame conſiſtence and colour, terminating in acute points; they are placed by pairs oppoſite, upon very ſhort foot-ſtalks, ſtanding pretty cloſe together; theſe continue green all the year. The flowers come out from the ſide of the branches upon ſhort ſlender foot-ſtalks, each ſupporting five or ſix ſmall white flowers, which grow in a cluſter at the top; theſe have very ſhort empalements, and pretty long tubes, divided at the brim into five acute ſegments. Theſe flowers have an agreeable odour; they appear in July and Auguſt, but are ſeldom ſucceeded by ſeeds in England.

This ſort may be propagated by cuttings in the ſame manner as the firſt ſort, which, if planted in July, and ſhaded from the ſun, will take root very freely; then they ſhould be planted into ſeparate ſmall pots, and placed in the ſhade till they have

taken new root, after which they may be treated in the ſame manner as the former ſort. This plant has not as yet been planted in the full ground in England, but it lives through the winter under a common frame.

The other ſpecies which were included in this genus, are now removed to CELASTRUS.

LYCOPERSICON. Tourn. Inſt. R. H. 150. tab. 63. Solanum. Lin. Gen. Plant. 224. [of Λύκος, a wolf, and Perſica, *Lat.* a Peach.] Love Apples, or Wolf's Peach.

The CHARACTERS are,

The flower has a permanent empalement of one leaf, which is cut into five acute ſegments at the top, and is permanent. The flower has one petal, which is wheel-ſhaped, with a very ſhort tube, and a large five-cornered brim, which ſpreads open and is plaited. It hath five ſmall awl-ſhaped ſtamina, terminated by oblong ſummits which cloſe together. It hath a roundiſh germen, ſupporting a ſlender ſtyle the length of the ſtamina, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh fleſhy fruit or berry, divided into ſeveral cells, incloſing many flat ſeeds.

This genus of plants is ranged in the ſeventh ſection of Tournefort's ſecond claſs, which includes the herbs with a wheel-ſhaped flower of one leaf, whoſe pointal becomes a ſoft fruit. Dr. Linnæus has joined this genus, and alſo the Melongena of Tournefort, to the Solanum, which he places in the firſt ſection of his fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle; but as there are numerous ſpecies of Solani, ſo it is much better to keep theſe ſeparate, to avoid confuſion, which if we allow the fruit as a characteriſtic note, ſhould be done; for as the fruit of the Solanum has but two cells, and the fruit of this many, ſo that diſtinction may be allowed to ſeparate the genera.

The SPECIES are,

1. LYCOPERSICON (*Galeni*) caule inermi herbaceo, foliis pinnatis inciſis, fructu rotundo glabro. *Love Apple with an herbaceous unarmed ſtalk, pinnated cut leaves, and a ſmooth round fruit.* Lycoperſicon Galeni. Ang. 217. *The Wolf Peach of Galen.*
2. LYCOPERSICON (*Eſculentum*) caule herbaceo hirſutiſſimo, foliis pinnatis, inciſis, fructu compreſſo ſulcato. *Love Apple with a very hairy herbaceous ſtalk, winged cut leaves, and a compreſſed furrowed fruit.* Solanum pomiferum, fructu rotundo ſtriato molli. C. B. P. 167. *Apple-bearing Nightſhade, with a ſoft, round, ſtriated frnit, commonly called Tomatas by the Spaniards.*
3. LYCOPERSICON (*Æthiopicum*) caule inermi herbaceo, erecto, foliis ovatis dentato angulatis, ſubſpinoſis fructu ſubrotundo ſulcato. *Love Apple with an herbaceous, erect, unarmed ſtalk, oval angular leaves indented, having a few ſpines, with a roundiſh furrowed fruit.* Lycoperſicon fructu ſtriato duro. Tourn. Inſt. R. H. 150. *Wolf's Peach with a hard ſtriated fruit.*
4. LYCOPERSICON (*Pimpinellifolium*) caule inermi herbaceo, foliis inæqualiter pinnatis, foliolis obtuſe-dentatis, racemis ſimplicibus. *Love Apple with an herbaceous unarmed ſtalk, leaves unequally winged, whoſe lobes are bluntly indented, and ſimple branches of flowers.* Licoperſicon inodorum. Juſſ. *Wolf's Peach having no ſcent.*
5. LYCOPERSICON (*Peruvianum*) caule inermi herbaceo, foliis pinnatis tomentoſis inciſis, racemis bipartitis folioſis. *Love Apple with an unarmed herbaceous ſtalk, winged cut leaves, which are downy, and a leafy double ſpike of flowers.* Lycoperſicon pimpinellæ ſanguiſorbæ foliis. Feuill. Obſ. 3. p. 37. *Wolf's Peach with leaves like Burnet.*
6. LYCOPERSICON (*Procumbens*) caule herbaceo, procumbente, foliis pinnatifidis, glabris, floribus ſolitariis alaribus. *Love Apple with an herbaceous trailing ſtalk, wing-pointed ſmooth leaves, and flowers growing ſingly from the wings of the ſtalk.*
7. LYCOPERSICON (*Tuberoſum*) caule inermo herbaceo, foliis pinnatis integerrimis. *Love Apple with an unarmed herbaceous ſtalk, and winged leaves which are entire.* Solanum tuberoſum eſculentum. C. B. P. 167. *Eſculent tuberous Nightſhade, commonly called Potatoe, by the Indians Batatas.*

The firſt ſort here mentioned is ſuppoſed to be the Lycoperſicon of Galen. This is an annual plant, with an herbaceous, branching, hairy ſtalk, which will riſe to the height of ſix or eight feet, if ſupported, otherwiſe the branches will fall to the ground; theſe are garniſhed with winged leaves of a very rank diſagreeable odour, compoſed of four or five pair of lobes terminated by an odd one; theſe are cut on their edges, and end in acute points. The flowers come out from the ſide of the branches upon pretty long foot-ſtalks, each ſuſtaining ſeveral yellow flowers, ranged in a ſingle long bunch or thyrſe, and are ſucceeded by round, ſmooth, pulpy fruit, about the ſize of a large Cherry. There are two varieties of this, one with yellow, and the other with red fruit. The plants flower from June till the froſt ſtops them, and the fruit ripens in ſucceſſion from the end of July, till the froſt kills the plants; this ſort is uſed in medicine.

The ſecond ſort is very like the firſt, excepting the fruit, which differ greatly; for thoſe of the ſecond ſort are very large, compreſſed at both ends, and deeply furrowed all over the ſides. This ſort never varies to the other, ſo that it is undoubtedly a diſtinct ſpecies. This is the ſort which is commonly cultivated to put into ſoups; and the Portugueze, Spaniards, and ſome others, uſe them in many of their ſauces, to which they give an agreeable acid flavour.

The third ſort is alſo annual; this riſes with an erect herbaceous ſtalk a foot and a half high, dividing into ſeveral branches, garniſhed with oval angular leaves, from three to four inches long, and almoſt three inches broad in the middle; they are placed alternately upon pretty long foot-ſtalks, which have one or two ſhort ſpines upon them, as there alſo is upon the midrib of the leaves. The flowers come out ſingly upon foot-ſtalks from the ſide of the branches; they are white, and are ſucceeded by red ſtriated fruit, which are firmer than thoſe of the other ſorts, and about the ſize of Cherries. This fruit ripens in the autumn, and the plants decay ſoon after.

The fourth ſort is ſomewhat like the firſt, but the leaves are unequally winged, having ſome ſmaller lobes placed between the large ones; the lobes of this are ſhorter, broader, and not cut like thoſe of the firſt, but have ſome obtuſe indentures toward their baſe. The leaves of this ſort have not that rank diſagreeable odour which the two firſt have; the fruit of it is not ſo large as thoſe of the firſt, but they are round and ſmooth, and are very late before they ripen here; ſo that unleſs the plants are raiſed early in the ſpring, they will not produce ripe fruit.

The fifth ſort is alſo annual; this hath a very branching herbaceous ſtalk, ſpreading out into many diviſions, and is not ſo hairy as the two firſt; the leaves are compoſed of a greater number of lobes, which are much ſhorter and more indented on their edges, where they are a little waved, and are downy. The flowers ſtand upon very long foot-ſtalks, which branch out and ſupport a large number of flowers at the top; theſe have a longer ſtyle than thoſe of the other ſpecies, which is permanent, remaining on the top of the fruit. This ſort is late in ripening the fruit, ſo that unleſs the plants are raiſed early in the ſpring, the fruit will not ripen in England.

The ſeeds of theſe two ſorts were ſent from Peru by Mr. Joſeph de Juſſieu to the Royal Garden at Paris, part of which was ſent me by his brother Dr. Bernard de Juſſieu, of the Royal Academy of Sciences.

The ſixth ſort was raiſed by Mr. James Gordon, gardener at Mile-end, who gave me ſome of the ſeeds, but from what country it came I could not learn. This hath very weak, trailing, ſmooth ſtalks, not more than a foot long, garniſhed with ſmooth leaves, ſtanding by pairs oppoſite; theſe are regularly cut on the ſides almoſt to the midrib, in form of a winged leaf; and theſe ſegments are alſo indented on their edges, and at their points. The flowers come

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out on the ſide of the ſtalks ſingly; they are of a whitiſh yellow colour, and have a pretty large ſpreading empalement, which is deeply cut at the brim into many acute ſegments which ſpread open. The flowers are ſucceeded by ſmall roundiſh berries a little compreſſed at the top, of an herbaceous yellow colour when ripe.

Theſe plants are all propagated by ſowing their ſeeds on a moderate hot-bed in March, and when the plants are come up two inches high, they ſhould be tranſplanted into another moderate hot-bed, at about four inches diſtance from each other, obſerving to ſhade them until they have taken root; after which they muſt have frequent waterings, and a large ſhare of freſh air; for if they are too much drawn while young, they ſeldom do well afterwards.

In May theſe plants ſhould be tranſplanted either into pots filled with rich light earth, or into borders near walls, pales, or Reed-hedges, to which their branches may be faſtened to ſupport them from trailing on the ground, which they otherwiſe will do, and then the fruit will not ripen; ſo that where theſe plants are cultivated for the ſake of their fruit, they ſhould be planted to a warm aſpect, and the branches regularly faſtened as they extend, that the fruit may have the advantage of the ſun's warmth to forward them, otherwiſe it will be late in the ſeaſon before they are ripe, and they are unfit for uſe before; but when the plants are brought forward in the ſpring, and thus regularly trained to the ſouth ſun, the fruit will ripen by the latter end of July, and there will be a ſucceſſion of it till the froſt kills the plants.

Some perſons cultivate theſe plants for ornament, but their leaves emit ſo ſtrong offenſive an odour on being touched, which renders them very improper for the pleaſure-garden, and their branches extend ſo wide and irregular, as to render them very unſightly in ſuch places; for as their branches cannot be kept within bounds, eſpecially when they are planted in good ground, ſo they will appear very unſightly in ſuch places; therefore the borders in the kitchen-garden, where theſe plants are placed for their fruit, muſt not be too rich, for in a moderate ſoil they will not be ſo luxuriant and more fruitful.

The Italians and Spaniards eat theſe Apples, as we do Cucumbers, with pepper, oil, and ſalt; and ſome eat them ſtewed in ſauces, &c. and in ſoups they are now much uſed in England, eſpecially the ſecond ſort, which is preferred to all the other. This fruit gives an agreeable acid to the ſoup, though there are ſome perſons who think them not wholeſome, from their great moiſture and coldneſs, and that the nouriſhment they afford muſt be bad.

The third ſort is never uſed either in the kitchen or for medicine, but the plants are preſerved for the ſake of variety, eſpecially by thoſe perſons who are lovers of botany. This ſort is propagated by ſeeds, which ſhould be ſown upon a hot-bed in the ſpring, and the plants afterward treated in the ſame manner as hath been directed for the Capſicum, with which this plant will thrive and produce plenty of fruit annually.

The ſeventh ſort is the common Potatoe, which is a plant ſo well known now, as to need no deſcription. Of this there are two varieties, one with a red and the other with a white root; that whoſe roots are red, have purpliſh flowers, but the white root has white flowers; theſe are ſuppoſed to be only accidental variations, and not diſtinct ſpecies.

The common name of Potatoe, ſeem to be only a corruption of the Indian name Batatas. This plant has been much propagated in England within thirty or forty years paſt, for although it was introduced from America about the year 1623, yet it was but little cultivated in England till of late; theſe roots being deſpiſed by the rich, and deemed only proper food for the meaner ſort of perſons; however, they are now generally eſteemed by moſt people, and the quantity of them which are cultivated near London, I believe, exceeds that of any other part of Europe.

This plant was always ranged in the genus of Solanum, or Nightſhade, and is now brought under that title again by Dr. Linnæus; but as Lycoperſicon has been eſtabliſhed as a diſtinct genus, on account of the fruit being divided into ſeveral cells, by intermediate partitions; and as the fruit of this plant exactly agrees with the characters of the other ſpecies of this genus, I have inſerted it here.

This is generally propagated by its roots, which multiply greatly if planted in a proper ſoil. The common way is, either to plant the ſmall roots or offsets entire, or to cut the larger roots into pieces, preſerving a bud or eye to each; but neither of theſe methods is what I would recommend, for when the ſmaller offsets are planted, they generally produce a greater number of roots, but theſe are always ſmall; and the cuttings of the larger roots are apt to rot, eſpecially if wet weather happens ſoon after they are planted; therefore what I would recommend is, to make choice of the faireſt roots for this purpoſe, and to allow them a larger ſpace of ground, both between the rows, as alſo in the rows, plant from plant; by which method I have obſerved, the roots have been in general large the following autumn.

The ſoil in which this plant thrives beſt, is a light ſandy loam, not too dry or over moiſt; this ground ſhould be well ploughed two or three times, in order to break and divide the parts; and the deeper it is ploughed, the better the roots will thrive. In the ſpring, juſt before the laſt ploughing, there ſhould be a good quantity of rotten dung ſpread on the ground, which ſhould be ploughed into the ground the beginning of March, if the ſeaſon proves mild, otherwiſe it had better be deferred till the middle or latter end of that month; for if it ſhould prove hard froſt after the roots are planted, they may be greatly injured, if not deſtroyed thereby: but the ſooner they are planted in the ſpring, after the danger of froſt is over, the better it will be, eſpecially in dry land. In the laſt ploughing, the ground ſhould be laid even, and then the furaows ſhould be drawn at three feet diſtance from each other, about ſeven or eight inches deep. In the bottom of this furrow the roots, ſhould be laid at about one foot and a half aſunder; then the furrow ſhould be filled with the earth which came out, and the ſame continued through the whole field or parcel of land, intended to be planted.

After all is finiſhed, the land may remain in the ſame ſtate till near the time when the ſhoots are expected to appear above ground, when the ground ſhould be well harrowed over both ways, which will break the clods, and make the ſurface very ſmooth; and by doing of it ſo late, it will deſtroy the young weeds, which, by this time, will begin to make their appearance; and this will ſave the expence of the firſt hoeing, and will alſo ſtir the upper ſurface of the ground, which, if much wet has fallen after the planting, is often bound into a hard cruſt, and will retard the appearance of the ſhoots.

As I have allotted the rows of Potatoes at three feet diſtance, it was in order to introduce the hoe-plough between them, which will greatly improve theſe roots; for by twice ſtirring and breaking the ground between theſe plants, it will not only deſtroy the weeds, but alſo looſen the ground, whereby every ſhower of rain will penetrate to the roots, and greatly improve 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, becauſe after that, it will be impoſſible to do it without injuring the ſhoots.

If theſe ploughings are carefully performed between the rows, and the ground between the plants in the rows hand-hoed, it will prevent the growth of weeds, till the haulm of the plants cover the ground; ſo that afterward there will be little danger of weeds growing

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ſo as to injure the crop; but as the plough can only go between the rows, it will be neceſſary to make uſe of a hoe to ſtir the ground, and deſtroy the weeds in the rows; and if this is carefully performed in dry weather, after the two ploughings, it will be ſufficient to keep the ground clean until the Potatoes are fit to take up.

In places where dung is ſcarce, many perſons ſcatter it only in the furrows, where the roots are planted; but this is a very poor method, becauſe when 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. And as moſt of the 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 crop 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 the following ſeaſon, 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 among them; 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 on the ground.

The haulm of theſe Potatoes is generally killed by the firſt froſt in the autumn, when the roots ſhould be taken up ſoon after, and may be laid up in ſand in any ſheltered place, where they may be kept dry, and ſecure from froſt. Indeed the people who cultivate theſe roots near London, do not wait for the decaying of the haulm, but begin to take up part of them as ſoon as their roots are grown to a proper ſize for the market, and ſo keep taking up from time to time, as they have vent for them. There are others likewiſe, who do not take them up ſo ſoon as the haulm decays, but let them remain much longer in the ground; in which there is no hurt done, provided they are taken up before hard froſt ſets in, which would deſtroy them, unleſs where the ground is wanted for other crops; in which caſe, the ſooner they are taken up the better, after the haulm is decayed. When theſe roots are laid up, they ſhould have a good quantity of ſand or dry earth laid between them, to prevent their heating; nor ſhould they be laid in too large heaps, for the ſame reaſon.

The kitchen-gardeners and farmers who live in the neighbourhood of Mancheſter, cultivate great quantities of this root, as the inhabitants of that populous town conſume abundance of them, and are much fonder of them than of any other eſculent plants; which has occaſioned an emulation among the cultivators, of endeavouring to outvie each other, in getting the roots of a proper ſize for the table early in the ſeaſon: in order to obtain this, they have made choice of thoſe roots which produced the firſt flowers, and have left them to ripen their ſeeds, which they have ſowed with great care; and the plants ſo raiſed, have generally been forwarder than the other; and by frequently repeating of this, they have ſo much improved the forwarding of the roots, as to have them fit for uſe in two months after planting; ſo that great improvements may be made by this practice, of many eſculent plants, by perſons who are curious and careful in trying the experiments.

LYCOPUS [Λυκόπους, of Λύκος, a wolf, and Πῆς, a foot; q. d. Wolf's-foot; becauſe the ancients fancied, that the leaves of this plant reſembled the foot of a wolf,] it is commonly called Water Horehound.

This plant grows in great plenty on moiſt ſoils by the ſides of ditches and ponds in moſt parts of England, but is never cultivated in gardens, ſo that it would be needleſs to ſay any thing more of it in this place.

LYSIMACHIA. Tourn. Inſt. R. H. 141. tab. 59. Lin. Gen. Plant. 188. [this plant was ſo called of Lyſimachus, the ſon of a king of Sicily, who is ſaid to have firſt found the virtues of it.] Looſtrife; in French, *Corneille*.

The CHARACTERS are,

The empalement of the flower is permanent, and is cut into five acute ſegments, which are erect. The flower is of one petal, cut into five oblong oval ſegments to the bottom, which ſpread open. It hath five awl-ſhaped ſtamina about half the length of the petal, terminated by acute-pointed ſummits. In the center is ſituated a roundiſh germen, ſupporting a ſlender ſtyle the length of the ſtamina, crowned by an obtuſe ſtigma. The germen afterward turns to a globular capſule with one cell, opening with ten valves, and filled with ſmall angular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which includes the plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. LYSIMACHIA (*Vulgaris*) paniculata, racemis terminalibus. Lin. Sp. Plant. 209. *Paniculated Looſtrife, with bunches of flowers terminating the ſtalks.* Lyſimachia lutea, major, quæ Dioſcoridis. C. B. P. 245. *Greater yellow Looſtrife of Dioſcorides.*
2. LYSIMACHIA (*Thyrſiflora*) racemis lateralibus pedunculatis. Lin. Sp. Plant. 147. *Looſtrife with lateral ſpikes of flowers growing upon foot-ſtalks.* Lyſimachia bifolia flore globoſo, luteo. C. B. P. 242. *Two-leaved Looſtrife with a yellow globular flower.*
3. LYSIMACHIA (*Atropurpurea*) ſpicis terminalibus petalis, lanceolatis, ſtaminibus corolla longioribus. Lin. Sp. Plant. 147. *Looſtrife with ſpear-ſhaped ſpreading ſpikes of flowers terminating the branches, and ſtamina longer than the petals.* Lyſimachia Orientalis anguſtifolia flore purpureo. Tourn. Cor. 7. *Narrow-leaved Eaſtern Looſtrife with a purple flower.*
4. LYSIMACHIA (*Ephemerum*) racemis ſimplicibus terminalibus, petalis obtuſis, ſtaminibus corollâ brevioribus. Lin. Sp. Plant. 146. *Looſtrife with ſpikes of flowers terminating the ſtalks, obtuſe petals to the flower, and ſtamina ſhorter than the petal.* Lyſimachia Orientalis minor, foliis glaucis, annuentibus, flore purpureo. Hort. Piſſ. *Smaller Eaſtern Looſtrife, with nodding grayiſh leaves and a purple ſpike of flowers.*
5. LYSIMACHIA (*Ciliata*) petiolis ciliatis, floribus cernuis. Lin. Sp. Plant. 147. *Looſtrife with hairy foot-ſtalks and nodding flowers.* Lyſimachia Canadenſis Jalappæ foliis. Sarr. Canad. *Canada Looſtrife with a Jalap leaf.*
6. LYSIMACHIA (*Salicifolia*) ſpicâ ſimplici erecto terminali, petalis ovatis, ſtaminibus corollâ longioribus. *Looſtrife with a ſingle erect ſpike terminating the ſtalk, oval petals, and ſtamina longer than the flower.* Lyſimachia ſpicata, flore albo, ſalicis folio. Tourn. Inſt. R. H. 141. *Looſtrife with a ſpike of white flowers and a Willow leaf.*
7. LYSIMACHIA (*Nummularia*) foliis ſubcordatis, floribus ſolitariis, caule repente. Vir. Cliff. 13. *Looſtrife with leaves nearly heart-ſhaped, flowers growing ſingly, and a creeping ſtalk.* Nummularia lutea major. C. B. P. 309. *Greater yellow Moneywort.*
8. LYSIMACHIA (*Tenella*) foliis ovatis acutiuſculis, pedunculis folio longioribus, caule repente. Lin. Sp. Plant. 148. *Looſtrife with oval acute-pointed leaves, foot-ſtalks longer than the leaf, and a creeping ſtalk.* Nummularia minor, purpuraſcente flore. C. B. P. 310. *Smaller Moneywort with a purpliſh flower.*
9. LYSIMACHIA (*Nemorum*) foliis ovatis acutis, floribus ſolitariis, caule procumbente. Hort. Cliff. 52. *Looſtrife with oval acute-pointed leaves, flowers growing ſingly, and a trailing ſtalk.* Anagallis lutea nemorum. C. B. P. 252. *Yellow Pimpernel of the woods.*

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10. LYSIMACHIA (*Quadrifolia*) foliis ſubquaternis, pedunculis verticillatis unifloris. Lin. Sp. Plant. 147. *Looſtrife with leaves generally placed by fours, and foot-ſtalks placed in whorls round the ſtalks, each ſuſtaining a ſingle flower.* Lyſimachia lutea minor, foliis nigris punctatis notatis. C. B. P. 245. *Smaller yellow Looſtrife with leaves marked with black ſpots.*

The firſt ſort grows by the ſide of ditches and rivers in many parts of England, ſo is not often admitted into gardens, becauſe the roots creep far in the ground, and ſend up ſtalks at a great diſtance, whereby it becomes often a troubleſome plant; otherwiſe for the variety of its flowers, it might deſerve a place in large gardens, eſpecially in moiſt places, where better things will not thrive. It riſes with upright ſtalks from two to three feet high, garniſhed with ſmooth ſpear-ſhaped leaves placed ſometimes by pairs oppoſite; at others there are three, and frequently four of theſe leaves placed round the ſtalk at each joint. The upper part of the ſtalk divides into ſeveral foot-ſtalks, which ſuſtain yellow flowers growing in a panicle; theſe have one petal which is deeply cut into five ſegments, ſpreading open. They appear in June and July, and are ſucceeded by roundiſh ſeed-veſſels, filled with ſmall ſeeds which ripen in the autumn. This is placed in the liſt of medicinal plants, but is not often uſed. If the roots of this plant are taken up from the places where it grows naturally in the autumn, and planted in a moiſt ſoil, they will thrive faſt enough without care.

The ſecond ſort grows naturally in the northern parts of England; this hath a perennial creeping root, which ſends up ſeveral erect ſtalks near a foot and a half high, garniſhed at every joint by two pretty long narrow leaves placed oppoſite, whoſe baſe ſits cloſe to the ſtalk; they are about three inches long, and more than half an inch broad toward their baſe, leſſening gradually to the end, which terminates in acute points; the foot-ſtalks of the flowers come out oppoſite on each ſide of the ſtalks; they are an inch long, ſuſtaining at their top a globular or oval thyrſe of yellow flowers, whoſe ſtamina are much longer than the petals. This flowers at the ſame time with the former ſort, but ſeldom produces ſeeds, for the roots creep ſo much as to render it barren. It is but ſeldom kept in gardens, for the ſame reaſon as the former is rejected; but thoſe who are deſirous to have it, may procure the roots and plant them in a moiſt ſoil, where it will ſoon ſpread.

The third ſort is a biennial plant, which was diſcovered by Dr. Tournefort in the Levant, from whence he ſent the ſeeds to the Royal Garden at Paris, where they ſucceeded, and many of the European gardens have from thence been furniſhed with it. This riſes with an upright ſtalk about a foot high, garniſhed with ſpear-ſhaped leaves ending in acute points; theſe are placed by pairs oppoſite; they are ſmooth, and of a lucid green. The flowers grow in a looſe ſpike, terminating the ſtalks; the flowers ſtand horizontally, ſpreading out on each ſide the ſtalk; they have longer tubes than the other ſpecies, and are of a purple colour. Theſe appear in June, and the ſeeds ripen in September, ſoon after which the plants decay.

It is propagated by ſeeds, which ſhould be ſown on a moderate hot-bed in the ſpring, often watering the ground to bring up the plants; and if the ſeaſon ſhould prove warm, the glaſſes of the hot-bed ſhould be ſhaded in the heat of the day; when the plants are up, they ſhould have a large ſhare of freſh air admitted to them in warm weather, to prevent their drawing up weak, and ſhould be frequently refreſhed with water. When they are fit to remove, they ſhould be each planted in a ſeparate pot, plunging them into a moderate hot-bed to forward their taking new root: after which they ſhould be gradually inured to bear the open air, into which they ſhould be removed by the beginning of June, where they may remain till October, when they ſhould be removed into a common frame, where they may be ſheltered from froſt in winter, but ſhould always enjoy the free air in mild weather. The ſpring following ſome of the plants ſhould be ſhaken out of the pots, and planted in borders; but a few of them ſhould be put into larger pots, where they may flower and ſeed: this is called Ephemerum by Linnæus, but is not ſo.

When the plants come up, they muſt have plenty of air admitted to them in warm weather, to prevent their drawing up weak; then they may be planted into the borders of the pleaſure-garden, where they will flower and produce ripe ſeeds the following ſummer.

The fourth ſort is an annual plant, which is too tender to riſe in the open air in this country, therefore the ſeeds ſhould be ſown on a moderate hot-bed in the ſpring, and the plants afterward treated in the ſame manner as hath been directed for the third ſort.

The fifth ſort was firſt brought from Canada, where it grows naturally; this hath a perennial creeping root, ſending up many erect ſtalks about two feet high, garniſhed with oblong, oblique, ſmooth leaves, placed oppoſite; they are veined on their under ſide, and end in acute points. The flowers are produced from the wings of the ſtalks, each ſitting upon a long ſlender foot-ſtalk; there are three or four of theſe ariſing from the ſhort branches, which come out on each ſide the ſtalk, at all the upper joints. The flowers are like thoſe of the firſt ſort, but ſmaller, and hang downward; theſe appear in June and July, but are ſeldom ſucceeded by any ſeeds in England.

This ſort ſpreads and propagates by roots, in as great plenty as the firſt, and is equally hardy, ſo requires no other culture.

The ſixth ſort grows naturally in Spain, and was formerly titled by John Bauhin and others, Ephemerum; this hath a perennial root, from which ariſe ſeveral upright ſtalks upward of three feet high, garniſhed with narrow, ſmooth, ſpear-ſhaped leaves, which ſtand oppoſite, and at the baſe of theſe come out ſhort ſide branches, garniſhed with ſmaller leaves of the ſame ſhape. The flowers are produced in a long, cloſe, upright ſpike, at the top of the ſtalk; they are cut into five oval ſegments, which are white, ſpreading open, and the ſtamina ſtand out longer than the petal. It flowers in June, and the ſeeds ripen in autumn.

This is the fineſt ſpecies of this genus, and as the roots of it do not ſpread like thoſe of the other, ſo deſerves a place in the pleaſure-garden, where it is a very ornamental plant for ſhady borders. It loves a moiſt ſoil and a ſhady ſituation, where it will continue long in beauty. It may be propagated by parting the roots in autumn, but by this method it increaſes ſlowly; ſo that the only way to have it in plenty, is by ſowing the ſeeds: theſe ſhould be ſown upon an eaſt-aſpected border in autumn, ſoon after they are ripe, then the plants will come up the following ſpring; but thoſe which are ſown in the ſpring will not grow the ſame year. When the plants come up they ſhould be kept clean from weeds, and if they are too cloſe, ſome of them may be drawn out and tranſplanted on a ſhady border, which will give the remaining plants room to grow till autumn, when they may be tranſplanted into the borders of the flower-garden where they are deſigned to flower; after which they will require no other culture but to keep them clean from weeds, and dig the ground between them every ſpring.

The ſeventh ſort is commonly called Moneywort, or Herb Two-pence; this is a perennial plant, which grows naturally in moiſt ſhady places in moſt parts of England, ſo is not cultivated in gardens. The ſtalks of this trail upon the ground, and put out roots, by which it ſoon ſpreads to a great diſtance. The leaves are almoſt heart-ſhaped, and placed by pairs. The flowers come out ſingly from the ſide of the ſtalks; they are yellow, appearing in June and July.

The eighth ſort is a ſmall trailing plant, which grows upon bogs in moſſy places in moſt parts of England, but cannot be cultivated on dry ground. The ſtalks ſeldom are more than three or four inches long, and

are terminated by three or four ſmall flowers, of a bright purple colour, growing in a bunch. This flowers in June, but is rarely planted in gardens.

The ninth ſort is a perennial plant with trailing ſtalks, which grow naturally in moiſt woods in moſt parts of England, ſo is not cultivated in gardens. The leaves ſtand oppoſite at each joint; they are ſmooth, oval, and acute-pointed. The flowers come out ſingly from the ſide of the ſtalk, upon long foot-ſtalks; they are yellow, and ſpread open like the flowers of Chickweed. This flowers in May and June, and the ſeeds ripen in autumn.

The tenth ſort grows naturally among Ruſhes and Reeds, by the rivers ſides in Holland; this hath a perennial creeping root like the firſt. The ſtalks riſe a foot high; they are ſlender, and are garniſhed by ſpear-ſhaped leaves an inch and a half long, and a quarter of an inch broad in the middle, placed ſometimes by pairs, at others by threes, and often four at each joint, ſurrounding the ſtalk. The flowers alſo come out at each joint, four of them ſtanding round the ſtalk in whorls, each having a diſtinct ſlender foot-ſtalk an inch long. The flowers are ſmall and yellow; they appear in June, and are ſometimes ſucceeded by ſeeds which ripen in autumn; it may be treated in the ſame manner as the firſt ſort, and is equally hardy.

LYSIMACHIA GALERICULATA. See SCUTELLARIA.

LYSIMACHIA NON PAPPOSA. See ŒNOTHERA.

LYSIMACHIA SILIQUOSA. See EPILOBIUM.

LYTHRUM. Lin. Gen. Plant. 532. Salicaria. Tourn. Inſt. R. H. 253. tab. 129. *Willow Herb, or purple Looſtrife.*

The CHARACTERS are,

The flower hath a cylindrical ſtriated empalement of one leaf, indented at the brim in twelve parts, which are alternately ſmaller. It has ſix oblong blunt petals which ſpread open, whoſe tails are inſerted in the indentures of the empalement, and ten ſlender ſtamina the length of the empalement, the upper being ſhorter than the lower, terminated by ſingle riſing ſummits. In the center is ſituated an oblong germen, ſupporting an awl-ſhaped declining ſtyle, crowned by a riſing orbicular ſtigma. The germen afterward turns to an oblong acute capſule with two cells, filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's eleventh claſs, intitled Dodecandria Monogynia, which includes thoſe plants whoſe flowers have twelve ſtamina and one ſtyle.

The SPECIES are,

1. LYTHRUM (*Salicaria*) foliis oppoſitis cordato-lanceolatis, floribus ſpicatis dodecandris. Lin. Sp. Plant. 446. *Lythrum with heart ſpear-ſhaped leaves placed oppoſite, and flowers growing in ſpikes, having twelve ſtamina.* Salicaria vulgaris, purpurea, folis oblongis. Tourn. Inſt. R. H.. 253. *Common purple Willow Herb with oblong leaves.*
2. LYTHRUM (*Tomentoſum*) foliis cordato-ovatis, floribus verticillato-ſpicatis tomentoſis. *Lythrum with oval heart-ſhaped leaves, and flowers growing in whorlly ſpikes, which are woolly.* Salicaria purpurea, foliis ſubrotundis. Tourn. Inſt. R. H. 253. *Purple Willow Herb with roundiſh leaves.*
3. LYTHRUM (*Hyſſopifolia*) foliis alternis linearibus, floribus hexandris. Hort. Upſal. 118. *Lythrum with linear alternate leaves, and flowers having ſix ſtamina.* Salicaria hyſſopi folio anguſtiore. Tourn. Inſt. R. H. 253. *Willow Herb with a narrow Hyſſop leaf.*
4. LYTHRUM (*Luſitanicum*) foliis lanceolatis ternis glabris, floribus ſpicatis decandris. *Lythrum with ſmooth ſpear-ſhaped leaves placed by threes, and flowers growing in ſpikes, which have ten ſtamina.* Salicaria Luſitanica, anguſtiore folio. Tourn. Inſt. R. H. 253. *Portugal Willow Herb with a narrower leaf.*
5. LYTHRUM (*Hiſpanicum*) foliis oblongo-ovatis inferne oppoſitis ſuperne alternis floribus hexandris. *Lythrum with oblong oval leaves placed oppoſite below, but above alternate, and flowers having ſix ſtamina.* Salicaria Hiſpanica, hyſſopifolia, floribus oblongis ſaturatè cæruleis. Tourn. Inſt. 253. *Spaniſh Willow Herb with a Hyſſop leaf, and oblong, deep, blue flowers.*
6. LYTHRUM (*Verticillatum*) foliis oppoſitis, ſubtus tomentoſis ſubpetiolatis, floribus verticillatis lateralibus. Lin. Sp. Plant. 446. *Willow Herb with oppoſite leaves, which are woolly on their under ſide, and flowers growing in whorls round the ſtalks.*
7. LYTHRUM (*Petiolatum*) foliis oppoſitis linearibus petiolatis, floribus dodecandris. Lin. Sp. Plant. 446. *Willow Herb with linear leaves placed oppoſite, having foot-ſtalks, and flowers with twelve ſtamina.*
8. LYTHRUM (*Lineare*) foliis oppoſitis linearibus, floribus oppoſitis hexandris. Lin. Sp. Plant. 447. *Willow Herb with linear oppoſite leaves, and flowers having ſix ſtamina, which are placed oppoſite.*
9. LYTHRUM (*Americanum*) foliis oblongo-ovatis inferne oppoſitis ſuperne alternis, floribus hexandris, caule erecto. *Willow Herb with oblong leaves placed oppoſite below, and above alternate, with flowers having ſix ſtamina and an erect ſtalk.* Salicaria Americana, hyſſopi folio latiore, floribus minimis. Houſt. MSS. *American Willow Herb with a broader Hyſſop leaf, and very ſmall flowers.*

The firſt ſort grows naturally by the ſide of rivers and ditches in moſt parts of England. It has a perennial root, from which come forth ſeveral upright angular ſtalks, which riſe from three to four feet high; they are of a purple colour, and are garniſhed with oblong leaves, placed ſometimes by pairs oppoſite, at others there are three leaves at each joint, ſtanding round the ſtalk. The flowers are produced in a long ſpike at the top of the ſtalk; they are of a fine purple colour, and make a fine appearance. This flowers in July, and the ſeeds ripen in autumn: although this plant is deſpiſed, becauſe it grows common, yet it merits a place in gardens better than many other which are propagated with care, becauſe they are more rare. It is eaſily cultivated by parting the roots in autumn, and ſhould be planted in a moiſt ſoil, where it will thrive and flower without any other care than the keeping it clean from weeds.

There is a variety of this with an hexangular ſtalk, and generally with three leaves at each joint; but this is only accidental, for the roots of this, when removed into a garden, come to the common ſort.

The ſecond ſort hath perennial roots like the firſt, from which come out upright branching ſtalks three feet high, garniſhed with oval heart-ſhaped leaves about one inch long, and three quarters of an inch broad; they are downy, and placed by threes round the ſtalk. The flowers are produced in long ſpikes at the top of the ſtalks, but they are diſpoſed in thick whorls, with ſpaces between each; they are of a fine purple colour, and appear at the ſame time with the former. This may be propagated in the ſame way as the firſt ſort, and is equally hardy.

The third ſort grows naturally in moiſt bogs in many parts of England, ſo is ſeldom admitted into gardens; this hath a perennial root, ſending up two or three branching ſtalks about a foot high, garniſhed with narrow leaves, placed alternate. The upper part of the ſtalk is garniſhed with flowers, which come out from the ſide ſingly at each joint, ſtanding cloſe to the baſe of the leaves; they are ſmall, and of a light purple colour, appearing in June, and the ſeeds ripen in autumn.

The fourth ſort grows naturally in Spain and Portugal, in moiſt places by the ſide of waters; this has a perennial root and ſtalks like the firſt, which ſeldom grow more than one foot high, garniſhed with narrower and ſhorter leaves than the firſt, which are ſmooth, and placed by threes round the ſtalk. The flowers grow in ſpikes at the top of the ſtalks; they are of a light purple colour, and appear in July. The ſeeds ripen in autumn. This ſort is hardy, and may be propagated in the ſame way as the firſt.

The fifth ſort grows naturally in Spain and Portugal, from both which countries I have received the ſeeds.

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The root of this is perennial. The ſtalks are ſlender, not more than nine or ten inches long, ſpreading out on every ſide. The lower part of the ſtalks are garniſhed with oblong oval leaves, placed oppoſite. On the upper part of the ſtalks the leaves are narrower, and placed alternate. The flowers come out ſingly from the ſide of the ſtalks at each joint; they are larger than thoſe of the common ſort, and of a deeper purple colour, ſo make a fine appearance in July, when they are in beauty.

This ſort has never produced any ſeeds in England, and the ſevere froſt in 1740, killed all the plants here, ſince which time I have not ſeen any of them in the Engliſh gardens.

The ſixth ſort grows naturally in the northern parts of America; this riſes with a ſtiff branching ſtalk a foot and a half high, garniſhed with oblong leaves, which are downy, and placed oppoſite, ſtanding upon very ſhort foot-ſtalks. The flowers are produced in whorls round the ſtalks; they are of a pale purple colour, and appear in July; theſe are ſucceeded by capſules with two cells, filled with ſeeds which ripen in autumn.

The ſeventh ſort grows naturally in Virginia, from whence I received the ſeeds; this riſes with an upright woolly ſtalk near two feet high, garniſhed with linear leaves placed oppoſite, upon ſhort foot-ſtalks. The flowers come out from the wings of the ſtalks ſingly; they are ſmall, tubulous, and of a pale purple colour, ſo make no great appearance; theſe appear in July, and in warm ſeaſons only will perfect ſeeds; but the roots of this ſort will increaſe ſo faſt, as to render the propagating the plants by ſeeds unneceſſary, when once obtained.

The eighth ſort grows naturally in North America. It has a perennial root. The ſtalks are ſlender, about a foot high, garniſhed with linear leaves placed oppoſite, which are entire. The flowers come out ſingly from the wings of the leaves, on the upper part of the ſtalks; they are ſmall, white, and have ſix petals. The empalement is ſtreaked, and cut at the top into ſix parts, and the flower has ſix ſtamina. This flowers in June, and the ſeeds ripen in autumn.

The ninth ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz, growing in ſwamps, where the water had ſtagnated. This hath a ligneous root, from which ariſe two or three ſlender ſtalks upward of two feet high, garniſhed with oblong, oval, ſmooth leaves, which, on the lower part of the ſtalks are oppoſite, but thoſe on the upper part are narrow and alternate. The flowers come out from the wings of the leaves, on the upper part of the ſtalk ſingly; they are ſmall and white, having ſix petals and ſix ſtamina; theſe do not appear till the ſecond year from ſeed, and have not produced any good ſeeds in England.

This ſort is tender, ſo will not live in the open air in England. It is propagated by ſeeds, which ſhould be ſown in pots, and plunged into an old hot-bed the firſt ſeaſon; for the ſeeds never riſe the firſt year, unleſs they are ſown in autumn; the pots ſhould be ſheltered in winter, and the ſpring following placed on a hot-bed to bring up the plants; theſe muſt be treated in the ſame way as other tender plants from the ſame country.

All the other ſorts, when raiſed from ſeeds, ſhould be ſown in autumn, otherwiſe the ſeeds will remain a year in the ground, ſo that thoſe ſeeds which are brought from America, never grow the ſame year they are ſown; for which reaſon the ground ſhould not be diſturbed in which the ſeeds are ſown, but left till the following ſpring, when the plants will come up if the ſeeds were good.

M.

MAG MAG

MACALEB. See CERASUS.

MADDER. See RUBIA TINCTORUM.

MAGNOLIA. Plum. Nov. Gen. 38. tab. 7. Lin. Gen. Plant. 610. The Laurel-leaved Tulip-tree, vulgò.

The CHARACTERS are,

The empalement is compoſed of three oval concave leaves like petals, which ſoon fall away. The flower is compoſed of nine oblong blunt petals, which are concave. It hath a great number of ſhort ſtamina which are compreſſed, and inſerted into the germen, terminated by linear ſummits, adhering to every ſide of the ſtamina. It hath many oblong oval germina faſtened to the receptacle, ſupporting recurved, contorted, ſhort ſtyles, with longitudinal hairy ſtigmas. The germen afterward become oval cones, with roundiſh compreſſed capſules almoſt imbricated, having one cell, opening with two valves, incloſing one kidney-ſhaped ſeed, hanging by a ſlender thread from the ſcale of the cone.

This genus of plants is ranged in the ſeventh ſection of Linnæus's thirteenth claſs, intitled Polyandria Polygynia, which includes thoſe plants whoſe flowers have many ſtamina and ſtyles. If Father Plumier's figure of the ſection of his fruit is exact, his muſt be a different genus from this; for the ſeeds of his are repreſented within the fruit, lying round a column.

The SPECIES are,

1. MAGNOLIA (*Glauca*) foliis ovato-lanceolatis ſubtus glaucis. Lin. Sp. 755. *Magnolia with oval ſpear-ſhaped leaves, which are gray on their under ſide.* Magnolia lauri folio ſubtus albicante. Cateſb. Hiſt. Car. 1. p. 39. *Magnolia with a Bay leaf, which is whitiſh on the under ſide, commonly called Small Magnolia, or Laurel-leaved Tulip-tree.*
2. MAGNOLIA (*Grandiflora*) foliis lanceolatis perſiſtentibus, caule erecto arboreo. Fig. Plant. tab. 172. *Magnolia with ſpear-ſhaped leaves which are evergreen, and an erect tree-like ſtalk.* Magnolia altiſſima, flore ingenti candido. Cateſb. Carol. 2. p. 61. *Talleſt Magnolia, with a very large white flower, commonly called Greater Magnolia, or Tulip-tree, with a Laurel leaf.*
3. MAGNOLIA (*Tripetala*) foliis lanceolatis ampliſſimis annuis, petalis exterioribus dependentibus. *Magnolia with very large ſpear-ſhaped leaves which are annual, and the outer petals of the flower declining.* Magnolia ampliſſimo flore albo, fructu coccineo. Cateſb. Car. 2. p. 80. *Magnolia with a very large white flower and a ſcarlet fruit, commonly called Umbrella-tree.*
4. MAGNOLIA (*Acuminata*) foliis ovato-lanceolatis acuminatis annuis, petalis obtuſis. *Magnolia with oval, ſpear-ſhaped, pointed leaves, which are annual, and obtuſe petals to the flower.* Magnolia flore albo, folio majore acuminato, haud albicante. Cateſb. Car. 3. p. 15. *Magnolia with a white flower, and a larger acute-pointed leaf, not whitiſh.*

The firſt ſort grows pretty common in Virginia, Carolina, and in moſt other parts of North America, where it is found in moiſt places, near brooks; this uſually grows about fifteen or ſixteen feet high, with a ſlender ſtem. The wood is white and ſpongy, the

the bark is ſmooth and white, the branches are garniſhed with thick ſmooth leaves, reſembling thoſe of the Bay, but are of an oval ſhape, and ſmooth on their edges, being white underneath. The flowers are produced in May and June at the extremity of the branches, which are white, compoſed of ſix petals which are concave, and have an agreeable ſweet ſcent. After theſe are paſt, the fruit increaſes in ſize to be as large as a Walnut with its cover, but of a conical ſhape, having many cells round the outſide, in each of which is lodged a flat ſeed, about the ſize of a Kidney-bean. This fruit is at firſt green, afterward red, and, when ripe, of a brown colour. The ſeeds, when ripe, are diſcharged from their cells, and hang by a ſlender thread.

In the natural places of its growth, there is a ſucceſſion of the flowers on the trees for two months or more, during which time the woods are perfumed with them; but all thoſe trees which have produced flowers in England, ſeldom have more than twelve or fourteen flowers upon each, which are of ſhort duration, and are not ſucceeded by others; the leaves of this ſort fall off in winter.

The young plants of this ſort frequently retain their leaves through the greateſt part of winter, and often do not fall off till the young ſhoots thruſt them off, which has occaſioned ſome perſons to believe the plants were evergreen; but when they are three or four years old, they conſtantly caſt their leaves by the beginning of November.

When theſe trees are tranſplanted from the places of their growth into dry ground, they make handſomer trees, and produce a greater number of flowers; this is to be underſtood of America, for in Europe they do not thrive ſo well in a dry ſoil as in a moiſt loamy land. The greateſt number of theſe trees, which are now growing in England, are at his Grace the Duke of Norfolk's, at Workſop Manor, in Nottinghamſhire.

The ſecond ſort grows in Florida and South Carolina, where it riſes to the height of eighty feet or more, with a ſtrait trunk upward of two feet diameter, having a large regular head: the leaves of this tree reſemble thoſe of the common Laurel, but are much larger, and of a ſhining green on their upper ſide, and, in ſome trees, they are of a ruſſet, or buff colour, on their under ſide; theſe leaves continue all the year, ſo that this is one of the moſt beautiful evergreen trees yet known. The flowers are produced at the end of the branches; they are compoſed of eight or ten petals, which are narrow at their baſe, but broad at their extremity, where they are rounded, and a little waved; theſe ſpread open wide, and are of a pure white colour. In the center is ſituated a great number of ſtamina and ſtyles, faſtened to one common receptaculum; theſe flowers are ſucceeded by oblong ſcaly cones in the places where it grows naturally, but the ſummers are not warm enough in England to produce any fruit to perfection, though ſome old plants do often form cones. Theſe trees in their native places of growth begin to produce their flowers in May, and continue a long time in flower, ſo that the woods are perfumed with their odour the greateſt part of ſummer; but thoſe which have flowered in England, ſeldom begin till the middle or latter end of June, and do not continue long in beauty. The largeſt tree of this kind, which I have met with in England, is in the garden of Sir John Colliton, of Exmouth, in Devonſhire, which has produced flowers for ſeveral years; there are alſo many pretty large plants of this ſort in the gardens of his Grace the Duke of Richmond, at Goodwood, in Suſſex, one of which has has produced flowers ſeveral years; and in the nurſery of Mr. Chriſtopher Gray, near Fulham, there is one very handſome plant, which has alſo produced many flowers ſeveral years.

As this ſort is a native of a warm country, it is a little impatient of cold, eſpecially while young, therefore the plants ſhould be kept in pots, and ſheltered in winter for ſome years, until they have acquired ſtrength, when they may be ſhaken out of the pots, and planted in the full ground, but they muſt be planted in a warm ſituation, where they may be defended from the ſtrong winds, and ſcreened from the north and eaſt, otherwiſe they will not live abroad.

There were a great number of young plants in England before the year 1739; but a great part of them were deſtroyed by that ſevere winter, and ſince then, there have been few good ſeeds ſent to England, ſo that there are not many of the plants at preſent to be ſold in the nurſeries; and as almoſt every perſon who is curious in gardening, is deſirous to have ſome of theſe beautiful trees in their gardens, the demand for them of late has greatly increaſed their value. If this tree can be ſo far naturalized as to endure the cold of our ſevereſt winters abroad, it will be one of the greateſt ornaments to our gardens; and this we may hope, will, in time, be effected, by diligent obſervation and care; for the time when theſe plants ſuffer moſt, is in autumn, by the early froſts; for the extremity of the ſhoots being then tender, as they are then generally growing freely, a ſmall froſt will pinch them, and afterward the whole ſhoot frequently decays; ſo that the plants ſhould be guarded againſt theſe early froſts, by covering their tops with mats until the ſhoots are hardened, after which time they will not be in ſo much danger of ſuffering; for I have conſtantly obſerved, that if theſe plants eſcape the early froſts of the autumn, they are ſeldom injured afterward: in the ſevere winter in the year 1739-40, I had a pretty large plant growing in the open air, which was killed down by the froſt, and I ſuppoſed was entirely deſtroyed, as there was not the leaſt appearance of life in the ſtem; ſo that after Midſummer I cut it down to the ground, but left the root remaining, which, to my great ſurprize, ſhot up again the year after. This I mention, to caution people from being too haſty in deſtroying plants after hard froſt, but to have them wait until there can be no hopes of their recovery.

The third ſort grows in Carolina pretty frequent, but in Virginia it is pretty rare; this uſually grows from ſixteen to twenty feet high, with a ſlender trunk; the wood is ſoft and ſpongy; the leaves of this tree are remarkably large, and are produced in horizontal circles, ſomewhat reſembling an umbrella, from whence the inhabitants of thoſe countries have given it the title of Umbrella-tree. The flowers are compoſed of ten or eleven white petals, which hang down without any order; the fruit is very like that of the former ſort; the leaves of this ſort drop off at the beginning of winter.

This tree is as yet very rare in Europe, but as it is propagated from ſeeds, we may hope to have it in greater plenty ſoon, if we can obtain good ſeeds from Carolina, for it is rarely met with in Virginia.

The fourth ſort is alſo very rare in England; there are but few of the plants at preſent here, nor is it very common in any of the habitable parts of America: ſome of theſe trees have been diſcovered by Mr. John Bartram, growing on the north branch of Suſquehannah river. The leaves of this tree are near eight inches long and five broad, ending in a point. The flowers come out early in the ſpring, which are compoſed of twelve white petals, ſhaped like thoſe of the ſecond ſort; the fruit of this tree is longer than thoſe of the other ſpecies, but in other reſpects agrees with them. The wood of this tree is of a fine grain, and an Orange colour.

All theſe ſorts are propagated by ſeeds, which muſt be procured from the places of their natural growth; theſe ſhould be put up in ſand, and ſent over to England as ſoon as poſſible; for if they are kept long out of the ground, they very rarely grow, therefore the ſeeds ſhould be ſown as ſoon as poſſible, when they arrive here.

Some years paſt I received a good quantity of theſe ſeeds from Carolina, which I ſowed in pots as ſoon as I received them, and plunged the pots into an old hot bed of tanners bark; and with this management

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I raiſed a great number of plants, but from the ſeeds which have been lately brought over, there have been but few plants produced; whether the ſeeds were not perfectly ripe when they were gathered, or from what other cauſe this has happened, I cannot ſay, but it is certain the fault muſt be in the ſeeds, becauſe thoſe before-mentioned were differently ſown and managed by the ſeveral perſons who received them, and the ſucceſs was nearly alike every where.

There have been ſeveral plants of the firſt and ſecond ſort raiſed from layers, and ſome from cuttings; but theſe do not thrive ſo well as thoſe which come from ſeeds, nor will they grow to near the ſize of thoſe, ſo that it is much the beſt way to procure their ſeeds from America, and propagate them that way.

The firſt ſort frequently comes up well from ſeeds, but the young plants are very difficult to keep the two firſt years; for if they are expoſed much to the ſun, their leaves change yellow and the plants decay; ſo the beſt way is to keep the pots plunged in a moderate hot-bed, and ſhade them every day from the ſun with mats, giving them air in plenty when the weather is warm, and frequently refreſh them with water; during the winter ſeaſon they muſt be ſcreened from froſt, and in mild weather they muſt enjoy the free air, to prevent their growing mouldy, and they ſhould have but little wet in winter. With this management the plants may be trained up, and when they have acquired ſtrength, they may be planted in the open air, where they will thrive and flower, if they have a warm ſheltered ſituation.

The ſecond ſort is not ſo difficult to train up as the firſt, but in order to get them forward, it will be proper when they are removed out of the ſeed-pots, to plant them each into a ſeparate ſmall pot, filled with ſoft loamy earth, and plunge them into a gentle hot-bed of tanners bark, obſerving to ſhade them from the ſun, and admit proper air to them; but at Midſummer, if they are well rooted, they ſhould be inured to the open air gradually, and then placed in a ſheltered ſituation, where they may remain till autumn; but on the firſt approach of froſt, they ſhould be removed under ſhelter, otherwiſe the early froſts will pinch their tender ſhoots, which often occaſions their dying downward after. When the plants have got ſtrength, ſome of them may be turned out of the pots, and planted in the full ground in a warm ſheltered ſituation, but part of them ſhould be kept in pots, and ſheltered in the winter, to preſerve them, leſt, by ſevere froſt, the other ſhould be killed.

If the plants make good progreſs, they will be ſtrong enough to plant in the full ground in abour ſix or ſeven years from ſeeds. The time for removing or ſhifting theſe plants is in March, before they begin to ſhoot, which may ſometimes happen to be too ſoon to turn them out of the pots into the full ground, eſpecially if the ſeaſon proves late; but as there will be no danger in removing them out of the pots, the ball of earth being preſerved to their roots, ſo it is beſt to defer this till the month of April; but it will be neceſſary to harden thoſe plants which are intended to be planted out, by expoſing them to the air as much as poſſible before, which will keep the plants backward, and prevent their ſhooting; for if they make ſhoots in the green-houſe, thoſe will be too tender to bear the ſun, until they are by degrees hardened to it, and the leaſt froſt will greatly pinch them, and ſuch froſts frequently happen very late in the ſpring.

The two or three winters after theſe are planted out, it will be neceſſary to lay ſome mulch on the ſurface of the ground about their roots, as alſo to throw ſome mats over their heads, eſpecially at the beginning of the morning froſts in autumn, for the reaſons before given; but in doing this, the heads of the plant ſhould never be too cloſely covered up, leſt thereby the ſhoots ſhould grow mouldy, for that will certainly kill the leading buds of every ſhoot, and prove to the full as injurious to them as the froſt.

As the plants get ſtrength, they will be better able to endure the cold of our climate, though it will be proper to lay ſome mulch about their roots every winter; and, in very ſevere froſt, to cover their heads and ſtems.

It is the firſt ſort which requires the moſt care, being much tenderer than any of the other, for they will endure the cold very well, without much care, after they have acquired ſtrength; for as theſe loſe their leaves in the winter, the froſt will not have ſo much force upon them as of the firſt ſort, whoſe leaves are frequently tender toward the end of the ſhoots, eſpecially when they grow freely, or ſhoot late in the autumn.

MAHALEB. See CERASUS.

MAJORANA. See ORIGANUM.

MALABAR NUT. See JUSTICIA.

MALA ÆTHIOPICA. See LYCOPERSICON.

MALA ARMENIACA. See ARMENIACA.

MALACOIDES. See MALOPE.

MALA COTONEA. See CYDONIA.

MALA INSANA. See MELONGENA.

MALLOW. See MALVA.

MALLOW-TREE. See LAVATERA.

MALOPE. Baſtard Mallow.

The CHARACTERS are,

The flower, which is ſhaped like that of the Mallow, hath a double empalement, the outer being compoſed of three heart-ſhaped leaves, and the inner is of one leaf cut into five ſegments; the flower is of one petal, divided into five parts at the bottom, where they are joined, but ſo near the bottom as to have the appearance of five petals. In the center ariſes the pointal, having a great number of ſtamina ſurrounding it, which are joined cloſely, and form a ſort of column. The pointal afterward becomes a fruit compoſed of many cells, which are collected into a head, in each of which is lodged a ſingle ſeed.

We have but one SPECIES of this plant, viz.

MALOPE (*Malacoides*) foliis ovatis crenatis glabris. Lin. Hort. Cliff. 347. *Baſtard Mallow, with oval ſmooth leaves, which are notched.*

This plant was by Dr. Tournefort ſeparated from the Mallow, and made a diſtinct genus, by the title of Malacoides; but Dr. Linnæus has altered the title of this for Malope, being an enemy to all names which are compounded of oides.

The whole plant has greatly the appearance of the Mallow, but differs from it, in having the cells collected into a button, ſomewhat like a Blackberry; the branches ſpread, and lie almoſt flat upon the ground, extending themſelves a foot or more each way. The flowers are produced ſingly upon long foot-ſtalks, which ariſe from the wings of the leaves, which are in ſhape and colour like thoſe of the Mallow.

This is propagated by ſeeds, which ſhould be ſown in the place where they are deſigned to remain, for they do not bear tranſplanting well. If theſe ſeeds are ſown upon a warm border in Auguſt, the plants will frequently ſtand through the winter, and flower early the following ſeaſon, ſo that good ſeeds may be obtained; for thoſe which are ſown in the ſpring, rarely ripen ſeeds the ſame year in England; and theſe plants being large, are often deſtroyed in winter, unleſs they are ſheltered under a frame; it ſeldom continues longer than two or three years, ſo that young plants ſhould be annually raiſed.

MALPIGHIA. Plum. Nov. Gen. 46. tab. 36. Lin. Gen. Plant. 38. Barbadoes Cherry, vulgò.

The CHARACTERS are,

The flower hath a ſmall permanent empalement of five leaves, which are cloſed together. It hath two oval mellous glands, adhering to the ſmall leaves within and without. It has five kidney-ſhaped petals, which are concave, and ſpread open, having long narrow tails, and ten broad awl-ſhaped ſtamina, which are erect, terminated by heart-ſhaped ſummits. It has a ſmall roundiſh germen, ſupporting three ſlender ſtyles, crowned by obtuſe ſtigmas. The germen afterward turns to a large furrowed globular berry with one cell, incloſing three rough ſtony ſeeds, which are angular.

This genus of plants is ranged in the third ſection of Linnæus's tenth claſs, intitled Decandria Trigynia, which includes the plants whoſe flowers have ten ſtamina and three ſtyles.

The SPECIES are,

1. MALPIGHIA (*Glabra*) foliis ovatis integerrimis glabris, pedunculis umbellatis. Hort. Cliff. 169. *Malpighia with ſmooth, oval, entire leaves, and umbellated foot-ſtalks.* Ceraſus Jamaicenſis, fructu tetrapyreno. Hort. Amſt. 1. p. 145. *Jamaica Cherry with a fruit having four ſeeds, commonly called Barbadoes Cherry.*
2. MALPIGHIA (*Punicifolia*) foliis ovato-lanceolatis, acuminatis, glabris, pedunculis umbellatis. *Malpighia with oval, ſpear-ſhaped, ſmooth leaves, ending in acute points, and umbellated foot-ſtalks.* Malpighia mali punici facie. Plum. Nov. Gen. 46. *Malpighia with the appearance of Pomegranate.*
3. MALPIGHIA (*Incana*) foliis lanceolatis ſubtus incanis, pedunculis umbellatis alaribus. *Malpighia with ſpear-ſhaped leaves, hoary on their under ſide, and umbellated foot-ſtalks, proceeding from the wings of the ſtalk.*
4. MALPIGHIA (*Urens*) foliis cordato-lanceolatis, ſetis decumbentibus rigidis, racemis lateralibus. *Malpighia with ſpear heart-ſhaped leaves, having rigid declining briſtles, and bunches of flowers proceeding from the ſides of the ſtalks.* Malpighia latifolia, folio ſubtus ſpinoſo. Plum. Nov. Gen. 46. *Broad-leaved Malpighia, with ſpines growing on the under ſide of the leaf.*
5. MALPIGHIA (*Nitida*) foliis ovatis acutis glabris, pedunculis umbellatis alaribus terminalibuſque. *Malpighia with oval, ſmooth, acute-pointed leaves, and umbellated foot-ſtalks, proceeding from the ſides and at the ends of the branches.*
6. MALPIGHIA (*Paniculata*) foliis oblongo-cordatis acuminatis glabris, pedunculis paniculatis, alaribus terminalibuſque. *Malpighia with oblong, heart-ſhaped, ſmooth leaves, ending in acute points, and paniculated foot-ſtalks proceeding from the ſides and ends of the branches.* Apocynum fruticoſum, folio oblongo acuminato, floribus racemoſis. Sloan. Cat. 89. *Shrubby Dogſbane with an oblong acute-pointed leaf, and flowers growing in cluſters.*
7. MALPIGHIA (*Anguſtifolia*) foliis lineari-lanceolatis, ſetis decumbentibus rigidis, pedunculis unbellatis alaribus. *Malpighia with linear ſpear-ſhaped leaves, rigid declining briſtles, and foot-ſtalks having umbels of flowers proceeding from the ſides of the branches.* Malpighia anguſtifolia, folio ſubtus ſpinoſo. Plum. Nov. Gen. 46. *Narrow-leaved Malpighia with ſpines under the leaves.*
8. MALPIGHIA (*Illicifolia*) foliis lanceolatis dentato-ſpinoſis ſubtus hiſpidis. Lin. Sp. Plant. 426. *Malpighia with ſpear-ſhaped leaves, indented and prickly, whoſe under ſides are ſet with ſpiny hairs.* Malpighia anguſtis & acuminatis aquifolii foliis. Plum. Nov. Gen. 46. *Malpighia with narrow and acute-pointed Holly leaves.*
9. MALPIGHIA (*Lucida*) foliis oblongo-ovatis obtuſis glabris, pedunculis racemoſis alaribus. *Malpighia with oblong oval leaves, which are obtuſe and ſmooth, and branching foot-ſtalks of flowers proceeding from the ſides of the branches.*
10. MALPIGHIA (*Coccigrya*) foliis ſubovatis dentato-ſpinoſis, pedunculis unifloris. *Malpighia with leaves nearly oval, indented, and prickly, and foot-ſtalks with one flower.* Malpighia humilis, ilicis cocci-glandiferæ foliis. Plum. Nov. Gen. 46. *Low Malpighia with leaves like the Kermes Oak.*

The firſt ſort is commonly cultivated in the Weſt-Indies for the ſake of its fruit; this tree uſually grows to the height of ſixteen or eighteen feet, having a ſlender ſtem, covered with a light brown bark. The leaves are produced oppoſite; they are oval, ſmooth, ending in acute poins, and continue all the year. The flowers are produced in bunches upon pretty long foot-ſtalks, which come out from the ſide and at the end of the branches; theſe are compoſed of five roundiſh petals, which are of a Roſe colour, joined at their baſe. The flowers are ſucceeded by red fruit, ſhaped like thoſe of the ſmall wild Cherry, and of the ſame ſize, having ſeveral furrows, each incloſing four angular furrowed ſtones, ſurrounded by a thin pulp, which has an agreeable acid flavour; the fruit of this often ripens in England.

The ſecond ſort grows naturally in Jamaica; this riſes with a ſhrubby ſtalk ten or twelve feet high, dividing into ſeveral ſlender ſpreading branches, covered with a light brown bark, garniſhed with oval, ſpear-ſhaped, ſmooth leaves placed oppoſite, ending in acute points. The flowers are produced in ſmall umbels at the end of the branches, upon ſhort foot-ſtalks; they are of a pale Roſe colour, and compoſed of five obtuſe concave petals which are indented, having long narrow tails, by which they are joined; theſe ſpread open, and in the center is ſituated the roundiſh germen, ſupporting three ſtyles, attended by ten ſtamina which ſpread aſunder. The germen afterward turns to a roundiſh pulpy berry with many furrows, red when ripe, incloſing three or four hard angular ſeeds. The fruit of this ſort is eaten by the inhabitants of the iſles in America.

The third ſort grows naturally at Campeachy, from whence it was ſent me by the late Mr. Robert Millar. This riſes with a ſtrong woody ſtalk eighteen or twenty feet high, dividing into many branches, covered with a brown ſpotted bark, garniſhed with ſpear-ſhaped leaves placed oppoſite, which are hoary on their under ſide. The flowers come out in umbels from the ſide of the branches; they are of a Roſe colour, and are ſucceeded by oval channelled fruit, like thoſe of the former ſort.

The fourth ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent me the ſeeds. This riſes with a woody ſtalk from fifteen to eighteen feet high, dividing into many pretty ſtrong branches, which are furrowed, and covered with a brown bark. The leaves are from three to four inches long, and one broad at their baſe, where they are rounded in form of a heart, leſſening gradually to the point; they are covered on their under ſides with ſtinging briſtly hairs ſo cloſely, as to render it very troubleſome to handle them, for theſe hairs faſten themſelves into the fleſh, and are difficult to get out again. The flowers are produced in umbels from the ſide of the branches; they are of a light purple colour, and ſhaped like thoſe of the other ſpecies; they are ſucceeded by oval furrowed fruit like that of the former ſort. This is called in the Weſt-Indies, Couhage, or Cowitch Cherry.

The fifth ſort grows naturally at Carthagena in New Spain, from whence the late Dr. Houſtoun ſent me the ſeeds. This riſes with a ſhrubby ſtalk about ten feet high, covered with a light brown ſpotted bark, branching out regularly at the top on every ſide; the leaves are oval, ſmooth, and end in acute points, ſtanding oppoſite, of a light green on the upper ſide, but paler on the under. The flowers come out from the ſide of the ſtalks in ſmall umbels, ſtanding erect; the foot-ſtalks of the umbels are ſcarce an inch long. They are of a pale bluſh colour, ſhaped like thoſe of the former ſorts; theſe are ſucceeded by roundiſh furrowed berries with a red ſkin, covering three hard angular ſeeds.

The ſixth ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent the ſeeds to England. This riſes with ſeveral ſlender ſhrubby ſtalks from five to ſix feet high, garniſhed with oblong heart-ſhaped leaves, four inches long and one inch and a quarter broad at the baſe, where they are rounded in two heart-ſhaped lobes, gradually diminiſhing to the point; they are ſmooth, and of a pale yellowiſh green, placed oppoſite. The flowers are produced in looſe panicles from the ſide and at the end of the branches; they are of a light purple colour, ſhaped like thoſe of the other ſpecies, but ſmaller; the fruit is more pointed, and not ſo much furrowed.

The ſeventh ſort was ſent me from the iſland Barbuda: this riſes with a ſhrubby ſtalk ſeven or eight feet high, covered with a bright purpliſh bark which is ſpotted and furrowed, dividing toward the top into

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ſeveral ſmaller branches, garniſhed with narrow ſpear-ſhaped leaves, about two inches long and a quarter of an inch broad, of a lucid green on their upper ſide, but of a ruſſet brown on their under, where they are cloſely armed with ſtinging briſtles, which faſten themſelves into the fleſh or clothes of thoſe who touch them; theſe leaves are placed oppoſite. The flowers are produced from the ſide and at the end of the branches in ſmall umbels; they are of a pale purple colour, of the ſame form of the other ſpecies, but ſmaller; and are ſucceeded by ſmall, oval, furrowed fruit, of a dark purple colour when ripe.

The eighth ſort was ſent me from the iſland Berbuda in the Weſt-Indies, where it grows naturally. This riſes with a ſtrong woody ſtem from fifteen to twenty feet high, dividing into many ſpreading branches, covered with a gray bark, garniſhed with oblong oval leaves of a firm conſiſtence; they are about an inch long, and half an inch broad, rounded at their ends, of a lucid green, and placed oppoſite. The flowers come out from the ſide, and alſo at the end of the branches, upon pretty long foot-ſtalks, which branch in form of a racemus, or long bunch. They are of the ſame form with thoſe of the other ſpecies, but vary in their colour, ſome of them being of a bright red, and others of an Orange colour in the ſame bunch; theſe are ſucceeded by ſmall oval berries, which are leſs furrowed than thoſe of the other ſpecies, and, when ripe, change to a dark purple colour.

The ninth ſort grows naturally in the iſland of Cuba, where the late Dr. Houſtoun found it in plenty. This riſes with a ſhrubby ſtalk to the height of ſeven or eight feet, ſending out branches the whole length, which are covered with a gray bark, garniſhed with narrow prickly leaves like thoſe of the Holly, which have many ſtinging briſtles on their under ſide. The flowers are produced in ſmall cluſters from the ſide of the branches, they are of a pale bluſh colour, and ſhaped like thoſe of the other ſpecies, but ſmaller; the fruit is more pointed than thoſe of the common ſort, and turns to a dark purple colour when ripe.

The tenth ſort grows naturally near the Havanna, from whence the late Dr. Houſtoun ſent the ſeeds. This is a very low ſhrub, ſeldom riſing more than two or three feet high; the ſtalk is thick and woody, as are alſo the branches, which come out on every ſide from the root upward; they are covered with a rough gray bark, garniſhed with lucid leaves half an inch long, and almoſt as much broad; they appear as if cut at their ends, where they are hollowed in, and the two corners riſe like horns ending in a ſharp thorn, as do alſo the indentures on the ſides. The flowers come out from the ſide of the branches, upon foot-ſtalks an inch long, each ſuſtaining one ſmall pale bluſh flower, of the ſame form with thoſe of the other ſpecies; the fruit is ſmall, conical, and furrowed, changing to a purple red colour when ripe.

There are two other ſpecies of this genus, which have been lately introduced from America, but as neither of them have yet flowered here, ſo I have not enumerated them; and if thoſe warm parts of America were ſearched by perſons of ſkill, there might be many more ſpecies diſcovered; for from a large number of imperfect ſpecimens which were ſent me from the Spaniſh Weſt-Indies, I have ſelected many which have the appearance of the other ſpecies of this genus, but as they are without flowers or fruit, they cannot be aſcertained.

The fruit of ſeveral of the ſpecies here mentioned, are promiſcuouſly gathered and eaten by the inhabitants of the countries where they naturally grow; but the firſt ſort is cultivated in ſome of the iſlands for its fruit, though that is but indifferent: the pulp which ſurrounds the ſtones is very thin, but has a pleaſant acid flavour, which renders it agreeable to the inhabitants of thoſe warm countries, where, to ſupply the want of thoſe Cherries which are cultivated in Europe, they are obliged to eat the fruit of theſe ſhrubs.

Theſe plants are preſerved in the gardens of thoſe perſons who are ſo curious in botanical ſtudies, as to erect hot-houſes for maintaining foreign plants: and where there are ſuch conveniencies, theſe plants deſerve a place; becauſe they retain their leaves all the year, and commonly continue flowering from December to the end of March, when they make a fine appearance at a ſeaſon, when there is a ſcarcity of other flowers, and many times they produce ripe fruit here. Thoſe ſorts whoſe leaves are armed with ſtinging briſtles, like the Cowitch, are the leaſt worthy of a place in ſtoves, becauſe they are ſo troubleſome to handle, nor do their flowers make ſo good an appearance as many of the other ſorts. The tenth ſort is the moſt valuable for its flowers, which are produced in larger bunches than thoſe of any of the other, and there being flowers of different colours in the ſame bunches, they make a fine variety; and this ſort grows more like a tree than the others, the leaves are alſo of a ſtronger conſiſtence and of a lucid green.

As theſe plants are natives of the warmeſt parts of America, they will not live through the winter in England, unleſs they are preſerved in a warm ſtove; but when the plants have obtained ſtrength, they may be expoſed in the open air in a warm ſituation, from the middle or latter end of June, till the beginning of October, provided the weather continues ſo long mild; and the plants ſo treated, will flower much better than thoſe which are conſtantly kept in a ſtove.

They are all propagated by ſeeds, which muſt be ſown upon a good hot-bed in the ſpring; and when the plants are fit to tranſplant, they muſt be each put into a ſeparate ſmall pot filled with rich earth, and plunged into a hot-bed of tanners bark, and muſt be treated in the ſame manner as hath been directed for other tender plants of the ſame country; and for the two firſt winters, it will be proper to keep them in the bark-bed in the ſtove; but afterward they may be placed upon ſtands in the dry ſtove in winter, where they may be kept in a temperate warmth, in which they will thrive much better than in a greater heat; theſe muſt be watered two or three times a week, when they are placed in the dry ſtove, but it muſt not be given to them in large quantities.

MALT-DUST is accounted a great enricher of barren ground; it contains in it a natural heat and ſweetneſs, which gives the earth whereon it is laid a proper fermentation, as thoſe who live in malting countries have found by experience.

Some are of opinion, that there is not a greater ſweetener than Malt-duſt, where the grounds are natural clay, and have contracted a ſourneſs and auſterity, whether by reaſon of its having lain long untilled and unexpoſed to the air, or by reaſon of water having ſtood long thereon.

MALVA. Tourn. Inſt. R. H. 94. tab. 23. Lin. Gen. Plant. 751. [ſo called of μαλακίζω, or μαλάσσω, to ſoften, becauſe it is good to ſoften the belly.] Mallows; in French, *Mauve*.

The CHARACTERS are,

The flower has a double empalement; the outer is compoſed of three ſpear-ſhaped leaves, and is permanent; the inner is of one leaf, cut into five broad ſegments at the brim. The flower is, according to Tournefort, Ray, &c. of one petal; but according to Linnæus, it has five; they are joined at the baſe, and ſpread open, and fall off joined. It has a great number of ſtamina which coaleſce at bottom in a cylinder, but ſpread open above, and are inſerted in the petal, terminated by kidney-ſhaped ſummits. In the center is ſituated an orbicular germen ſupporting a ſhort cylindrical ſtyle, with many briſtly ſtigmas the length of the ſtyle. The empalement afterward turns to ſeveral capſules, which are joined in an orbicular depreſſed head faſtened to the column, opening on their inſide, each containing one kidney-ſhaped ſeed.

This

This genus of plants is ranged in the fifth ſection of Linnæus's ſixteenth claſs, intitled Monodelphia Polyandria, which contains thoſe plants whoſe flowers have many ſtamina joined with the ſtyle in one body.

The SPECIES are,

1. MALVA (*Sylveſtris*) caule erecto herbaceo, foliis ſeptem lobatis acutis pedunculis petioliſque piloſis. Lin. Sp. Plant. 969. *Mallow with an erect herbaceous ſtalk, with ſeven acute lobes to the leaves, and hairy foot-ſtalks both to the leaves and flowers.* Malva ſylveſtris, folio ſinuato. C. B. P. 314. *Wild Mallow with a ſinuated leaf.*
2. MALVA (*Rotundifolia*) caule proſtrato, foliis cordato-orbiculatis obſoletè quinquelobis, pedunculis fructiferis declinatis. Lin. Sp. 969. *Mallow with proſtrate ſtalks, roundiſh heart-ſhaped leaves with five obſolete lobes, and the foot-ſtalks of the fruit declining.* Malva vulgaris, flore minore, folio rotundo. J. B. 2. p. 949. *Common Mallow with a ſmall flower and a round leaf.*
3. MALVA (*Orientalis*) annua, caule erecto herbaceo, foliis lobatis obtuſis & crenatis. *Annual Mallow with an erect herbaceous ſtalk, and obtuſe lobed leaves which are crenated.* Malva orientalis erectior, flore magno ſuavè rubente. Tourn. Cor. 3. *Eaſtern Mallow with a more upright ſtalk, and a large, ſoft, red flower.*
4. MALVA (*Criſpa*) caule erecto, foliis angulatis criſpis, floribus axillaribus glomeratis. Lin. Sp. 970. *Mallow with an erect ſtalk, angular curled leaves, and flowers in cluſters on the ſide of the ſtalks.* Malva foliis criſpis. C. B. P. 315. *Furbelowed Mallow.*
5. MALVA (*Verticillata*) caule erecto, foliis angulatis, floribus axillaribus glomeratis ſeſſilibus, calycibus ſcabris. Vir. Cliff. 356. *Mallow with an erect ſtalk, angular leaves, and flowers growing in whorls at the wings of the ſtalks.*
6. MALVA (*Chinenſis*) annua, caule erecto herbaceo, foliis ſuborbiculatis obſoletè quinquelobatis, floribus confertis alaribus ſeſſilibus. *Annual Mallow with an erect, herbaceous, ſingle ſtalk, leaves almoſt round, with five indented lobes, and flowers growing in cluſters, which ſit cloſe to the ſtalks.* Malva Sinenſis erecta, floſculis albis minimis. Boerh. Ind. alt. *Upright annual China Mallow, with very ſmall white flowers.*
7. MALVA (*Cretica*) caule erecto ramoſo hirſuto, foliis angulatis, floribus alaribus pedunculis brevioribus. *Mallow with an erect, branching, hairy ſtalk, angular leaves, and flowers proceeding from the wings of the ſtalks, which grow upon ſhorter foot-ſtalks.* Malva Cretica annua altiſſima, flore parvo ad alas umbellato. Tourn. Cor. 2. *Talleſt annual Mallow of Crete, with ſmall flowers growing in umbels on the ſides of the ſtalk.*
8. MALVA (*Peruviana*) caule erecto herbaceo, foliis lobatis, ſpicis ſecundis axillaribus ſeminibus denticulatis. Lin. Sp. Plant. 968. *Mallow with an erect herbaceous ſtalk, leaves having lobes, and ſpikes of flowers in fruitful cluſters proceeding from the ſides of the ſtalks, and indented ſeeds.*
9. MALVA (*Alcea*) caule erecto, foliis multipartitis ſcabriuſculis. Hort. Cliff. 347. *Mallow with an erect ſtalk, and rough leaves divided into many parts.* Alcea tenuifolia criſpa. J. B. 2. 953. *Narrow-leaved curled Vervain Mallow.*
10. MALVA (*Moſchata*) foliis radicalibus reniformibus inciſis, caulinis quinque partitis pinnato-multifidis. Hort. Upſal. 202. *Mallow with kidney-ſhaped lower leaves which are cut, and thoſe on the ſtalks divided into five parts, ending in winged points.* Alcea folio rotundo laciniato. C. B. P. 316. *Round cut-leaved Vervain Mallow.*
11. MALVA (*Ægyptia*) foliis palmatis dentatis, corollis calyce minoribus. Lin. Sp. Plant. 690. *Mallow with hand-ſhaped indented leaves, and petals leſs than the empalement.* Alcea Ægyptia, geranii folio. Juſſ. *Egyptian Vervain Mallow with a Crane's-bill leaf.*
12. MALVA (*Bryonifolia*) foliis palmatis ſcabris, caule tomentoſo fruticoſo, pedunculis multifloris. Prod. Leyd. 356. *Mallow with rough hand-ſhaped leaves, a ſhrubby woolly ſtalk, and foot-ſtalks with many flowers.* Althæa fruteſcens bryoniæ folio. C. B. P. 316. *Shrubby Vervain Mallow with a Briony leaf.*
13. MALVA (*Tournefortia*) foliis radicalibus quinque partitis, trilobis linearibus, pedunculis folio caulino longioribus, caule procumbente. Amœn. Acad. 4. p. 283. *Mallow with cut leaves having three lobes, which are linear, and a declining ſtalk.* Alcea maritima Galloprovincialis, geranii folio. Tourn. Inſt. 98. *Maritime Vervain Mallow of Provence, with a Crane's-bill leaf.*
14. MALVA (*Capenſis*) foliis ſubcordatis laciniatis hirſutis, caule arboreſcente. *Mallow with hairy cut leaves, almoſt heart-ſhaped, and a tree-like ſtalk.* Malva Africana fruteſcens, flore rubro. Hort. Amſt. 2. p. 171. *African ſhrubby Mallow with a red flower.*
15. MALVA (*Americana*) foliis cordatis crenatis, floribus lateralibus ſolitariis, terminalibus ſpicatis. Prod. Leyd. 359. *Mallow with heart-ſhaped crenated leaves, and flowers growing ſingly from the ſides of the ſtalks, and in ſpikes at the top.* Althæa Americana, pumila, flore luteo ſpicato. Breyn. Cent. 124. *Low American Marſh-mallow, with a yellow ſpiked flower.*

The two firſt ſorts are found wild in moſt parts of England, ſo are rarely cultivated in gardens. The firſt is the ſort commonly uſed in medicine, with which the markets are ſupplied by the herbfolks, who gather it in the fields. Theſe are both ſo well known, as to need no deſcription. There is a variety of the firſt with white flowers, which continues the ſame from ſeeds; but as it only differs in the colour of the flower, ſo it cannot be reckoned a diſtinct ſpecies.

The third ſort was diſcovered by Dr. Tournefort in the Levant, this is an annual plant with an erect ſtalk; the flowers are larger than thoſe of the common ſort, and are of a ſoft red colour. This is preſerved in ſome curious gardens for the ſake of variety.

The fourth ſort is annual; this riſes with an upright ſtalk four or five feet high; the leaves are curled on their edges, for which variety it is preſerved in gardens.

The fifth ſort was diſcovered firſt by Dr. Tournefort, and afterward by Dr. Sherard, in the Levant, who ſent the ſeeds to ſeveral gardens, where the plants have produced flowers and ſeeds; which having ſcattered in thoſe gardens ſo plentifully, as to become as common as our native ſorts.

The ſixth ſort was formerly ſent from China as a pot-herb, and hath been cultivated in ſome curious gardens in England; though it is not likely to obtain here as an eſculent plant, ſince we have many others which are preferable to it for that purpoſe. This is an annual plant, which will propagate itſelf faſt enough, provided it be permitted to ſcatter its ſeeds, when they ſeldom fail to grow, and are often very troubleſome when they have gotten poſſeſſion of the ground.

The ſeventh ſort grows naturally in Crete; this plant is annual, the ſtalks riſes rather higher than that of our common Mallow, and the branches extend farther, and are in greater plenty; the leaves are angular, and the flowers ſtand on ſhort foot-ſtalks. This will be very common, provided the ſeeds are permitted to ſcatter.

The eighth ſort grows naturally in Peru, from whence the ſeeds were ſent to the Royal Garden at Paris, by Mr. Joſeph de Juſſieu. This is an annual plant, riſing with an upright branching ſtalk near two feet high, garniſhed with broad hairy leaves, having three lobes. The flowers grow in ſpikes from the wings of the ſtalks; they are ſmall, of a pale blue, and ſet very cloſely on the ſpikes. Theſe appear in June, and are ſucceeded by ſeeds, which, if permitted to ſcatter, will come up plentifully the following ſpring without care.

The ninth ſort is the common Vervain Mallow, which is found growing naturally near London. It is a biennial plant; the ſtalks riſe higher than thoſe of the former, the leaves are cut into obtuſe lobes which are indented. The flowers are large, appearing in June and July, and the ſeeds ripen in autumn.

The tenth ſort differs from the ninth, in having taller hairy ſtalks, and the leaves being kidney-ſhaped,

and

and finely cut into narrow ſegments. This grows naturally in the middle counties of England, and about Paris.

The eleventh ſort was ſent from Egypt to the Royal Garden at Paris, and hath ſince been communicated to many other gardens. This is an annual plant, whoſe ſtalks are about a foot long; they are ſmooth, and decline toward the ground. The leaves ſtand upon pretty long foot-ſtalks, they are ſhaped like a hand, having five diviſions which join at their baſe to the foot-ſtalk, and are indented on their ſides. The flowers come out ſingle from the wings of the ſtalk, and at the top in cluſters; they have pretty large acute empalements; the flowers are ſmall, and of a pale blue colour. Theſe appear in June, and the ſeeds ripen in autumn.

The twelfth ſort grows naturally in Spain; this riſes with a ſhrubby woolly ſtalk four or five feet high, ſending out branches on every ſide, garniſhed with angular woolly rough leaves; the foot-ſtalks ariſe from the wings of the leaves, each ſupporting four or five flowers of a bright purple colour, ſhaped like thoſe of the common Mallow, which appear in July, and the ſeeds ripen in autumn. This ſort ſeldom continues more than two or three years, but if the ſeeds are permitted to ſcatter, young plants will come up the following ſpring.

The thirteenth ſort grows naturally in the ſouth of France; this is an annual plant, which has ſome reſemblance of the former, but the ſtalks are longer and more branched; the leaves are cut into five obtuſe lobes almoſt to the bottom, and theſe are deeply cut on their ſide. The flowers ſtand upon very long foot-ſtalks; the empalement of the flower is large, prickly and acute-pointed; the flowers are blue, and larger than thoſe of the other ſort. It flowers and ripens its ſeeds about the ſame time.

The fourteenth ſort grows naturally at the Cape of Good Hope; this riſes with a woody ſtalk ten or twelve feet high, ſending out branches from the ſide the whole length; the ſtalks and branches are cloſely covered with hairs, and are garniſhed with hairy leaves, which are indented on the ſides, ſo as to have the appearance of a trilobate leaf; theſe on the young plants are three inches long and two broad at their baſe, but as the plants grow older, they are ſcarce half that ſize. The flowers come out from the ſide of the branches, upon foot-ſtalks an inch long; they are of a deep red colour, and ſhaped like thoſe of the common Mallow, but are ſmaller. This plant continues flowering great part of the year, which renders it valuable.

There are two other varieties of this plant, which have been mentioned by ſome authors as diſtinct ſpecies. The firſt is, Alcea Africana fruteſcens, groſſulariæ folio ampliore, unguibus florum atro-rubentibus. Act. Phil. 1729. *Shrubby African Vervain Mallow, with a larger Gooſeberry leaf, and the bottoms of the flower of a dark red.* The other is, Alcea Africana fruteſcens, folio groſſulariæ flore parvo rubro. Boerh. Ind. alt. 1. 271. *Shrubby African Vervain Mallow, with a Gooſeberry leaf, and a ſmall red flower.* The leaves of the laſt appear very different from either of the other, being deeply divided into three lobes, which are alſo deeply indented, ſo that any perſon upon ſeeing it would ſuppoſe it to be a different ſpecies; but I have frequently raiſed all theſe, with ſome other intermediate varieties, from the ſeeds of one plant.

This plant is eaſily propagated by ſeeds, which, if ſown in a common border in the ſpring, the plants will come up; but as it is too tender to live abroad in the winter, ſo when the plants are three or four inches high, they ſhould be each planted into a ſeparate pot of light freſh earth, placing them in the ſhade till they have taken freſh root; then they may be removed to a ſheltered ſituation, intermixing them with other hardy exotic plants, where they may remain till autumn; when the froſt comes on they ſhould be removed into the green-houſe, and afterward treated in the ſame way as the hardy plants from the ſame country, always allowing them plenty of free air in mild weather.

The fifteenth ſort grows naturally in moſt of the iſlands in the Weſt-Indies. This is an annual plant, which riſes about a foot high, ſending out a few ſhort branches from the ſide, which are woolly, and garniſhed with heart-ſhaped woolly leaves which are crenated on their edges, and are placed alternately upon pretty long foot-ſtalks. The flowers are produced ſingly from the ſide of the ſtalk, and in a cloſe ſpike at the top; they are ſmall, and of a pale yellow colour. They appear in July, and the ſeeds ripen in autumn.

This 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 in a ſeparate ſmall pot filled with light freſh earth, and plunged into a new hot-bed, ſhading them until they have taken freſh root; then they muſt have free air admitted to them in proportion to the warmth of the ſeaſon, and the latter end of June they may be placed in the open air in a ſheltered ſituation, where they will flower and produce ripe ſeeds.

The ſeeds of the other ſpecies ſhould be ſown the end of March, upon a bed of freſh light earth, and when the plants are up three or four inches high, they ſhould be tranſplanted where they are deſigned to be continued, allowing them a good diſtance; for if they are planted too cloſe, they do not appear ſo well; but they are beſt when intermixed with other flowers of the ſame growth, where they afford an agreeable variety.

Theſe ſeeds may alſo be ſown in Auguſt, for the plants will endure the greateſt cold of our climate, if placed on a dry ſoil, and will grow larger, and flower ſooner than thoſe ſown in the ſpring; or if the ſeeds are permitted to ſcatter, they will come up as the former ſorts, and thrive equally well.

MALVA ARBOREA. See LAVATERA.

MALVA ROSEA. See ALCEA.

MALUS. The Apple-tree.

The CHARACTERS are,

The empalement of the flower is of one leaf, cut into five ſegments. The flower conſiſts of five leaves, which expand in form of a Roſe, whoſe tails are inſerted into the empalement. The fruit is hollowed about the foot-ſtalk, is for the moſt part roundiſh, and umbellated at th top; it is fleſhy, and divided into five cells or partitions, in each of which is lodged one oblong ſeed.

Dr. Linnæus has joined the Pear, Apple, and Quince together, making them all of the ſame genus, and has reduced all the varieties of each to one ſpecies. The Apple he diſtinguiſhes by the title of Pyrus foliis ſerratis, pomis baſi concavis. Hort. Cliff. i. e. *Pear with ſawed leaves, and the Apple hollow at the baſe.* But where the fruit is admitted as a diſtinguiſhing character of the genus, the Apple ſhould be ſeparated from the Pear, this diſtinction being founded in nature; for theſe fruits will not take by budding or grafting upon each other, though it be performed with the utmoſt care. Indeed I have ſometimes ſucceeded ſo far, as to have the bud or graft of an Apple ſhoot when grafted on a Pear, but they ſoon decayed, notwithſtanding all poſſible care was taken of them; therefore I ſhall beg leave to continue the ſeparation of the Apple from the Pear, as hath been always practiſed by the botaniſts before his time.

The SPECIES are,

1. MALUS (*Sylveſtris*) foliis ovatis ſerratis, caule arboreo. *Apple with oval ſawed leaves, and a tree-like ſtalk.* Malus ſylveſtris, fructu valde acerbo. Tourn. Inſt. R. H. 635. *Wild Apple with a very ſour fruit, commonly called Crab.*
2. MALUS (*Coronaria*) foliis ſerrato-anguloſis. *Apple with angular ſawed leaves.* Malus ſylveſtris Virginiana, floribus odoratis, Cat. Hort. *Wild Crab of Virginia, with a ſweet-ſcented flower.*
3. MALUS (*Pumila*) foliis ovatis ſerratis, caule fruticoſo. *Apple with oval ſawed leaves and a ſhrubby ſtalk.* Malus

pumila quæ potiùs frutex quam arbor. C. B. P. 433. *Dwarf Apple, which is rather a ſhrub than a tree, commonly called Paradiſe Apple.*

Of the firſt ſort there are two varieties of fruit, one is white, and the other purple toward the ſun, but theſe are accidental variations. There is alſo a variety of this with variegated leaves, which has been propagated in ſome of the nurſeries near London; but when the trees grow vigorous, their leaves ſoon become plain.

The ſecond ſort grows naturally in moſt parts of North America, where the inhabitants plant them for ſtocks to graft other ſorts of Apples upon; the leaves of this are longer and narrower than any of the other ſorts, and are cut into two acute angles on their ſides. The flowers of this have a fragrant odour, which perfumes the American woods at the time they appear.

The third ſort is undoubtedly a diſtinct ſpecies from all the others, for it never riſes to any height; the branches are weak, ſcarce able to ſupport themſelves, and this difference is permanent when raiſed from ſeeds.

I have not diſtinguiſhed the Apples from the Crab, as diſtinct ſpecies, though I have never ſeen any Apples produced from the ſeeds of Crabs. I ſhall next mention a few of thoſe ſorts of Apples which have been introduced from France, which were moſt of them grafted on Paradiſe ſtocks, ſo were for ſome time much eſteemed, and ſhall mention thoſe of our own growth afterward.

There is alſo a ſort of Apple, called the Fig Apple, which is common to England and North America, but the fruit is not greatly eſteemed; however, as ſome perſons are fond of variety, ſo I have mentioned it.

Pomme de Rambour. The Rambour is a very large fruit, of a fine red next the ſun, and ſtriped with a pale or yellowiſh green. This ripens very early, commonly about the end of Auguſt, and ſoon grows mealy, therefore is not eſteemed in England.

Pomme de Courpendu, the hanging body. This is a very large Apple, of an oblong figure, having ſome irregular riſing or angles, which run from the baſe to the crown; it is of a red caſt on the ſide toward the ſun, but pale on the other ſide; the foot-ſtalk is long and ſlender, ſo that the fruit is always hanging downward, which occaſioned the French gardeners to give it this name.

The Rennette-blanche, or White Renette, or French Rennette. This is a large fine fruit, of a roundiſh figure, and of a pale green, changing a little yellowiſh when ripe, having ſome ſmall gray ſpots; the juice is ſugary, and it is good for eating or baking; it will keep till after Chriſtmas ſound.

The Rennette-griſe. This is a middle ſized fruit, ſhaped like the Golden Rennette, but is of a deep gray colour on the ſide next the ſun, but on the other ſide intermixed with yellow; it is a very juicy good Apple, of a quick flavour. It ripens in October, and will not keep long.

Pomme d'Api. This is a ſmall hard fruit, of a bright purple colour on the ſide next the ſun, and of a yellowiſh green on the other ſide; it is a very firm fruit, but hath not much flavour, ſo is only preſerved by ſome perſons by way of curioſity. It keeps a long time ſound, and makes a variety in a diſh of fruit.

Le Calville d'Automne, the Autumn Calville. This is a large fruit of an oblong figure, of a fine red colour toward the ſun. The juice is vinous, and much eſteemed by the French.

Fenouillat ou Pomme d'Anis, the Fennel, or Aniſe Apple. This is a middle ſized fruit, a little longer than a Golden Pippin, of a grayiſh colour. The pulp is tender, and has a ſpicy taſte like Aniſe-ſeed; the wood and the leaves are whitiſh.

Pomme Violette, the Violet Apple. This is a pretty large fruit, of a pale green, ſtriped with deep red to the ſun. The juice is ſugary, and has a flavour of Violets, which occaſioned the name.

The Crab, which is the firſt ſort here mentioned, has been generally eſteemed as the beſt ſtock for grafting Apples upon, being very hardy, and of long duration; but of late years there have been few perſons who have been curious enough to raiſe theſe ſtocks, having commonly ſown the kernels of all ſorts of cyder Apples for ſtocks without diſtinction, as theſe are much eaſier to procure than the other; ſo the gardeners generally call all thoſe Crabs, which are produced from the kernels of any ſort of Apple which has not been grafted; but were the kernels of the Crabs ſown, I ſhould prefer thoſe for ſtocks, becauſe they are never ſo luxuriant in their growth as thoſe from Apple kernels, and they will continue longer ſound; beſide, theſe will preſerve ſome of the beſt ſort of Apples in their true ſize, colour, and flavour; whereas the other free ſtocks produce larger fruit, which are not ſo well taſted, nor will they keep ſo long.

The Paradiſe Apple for ſome years paſt was greatly eſteemed for ſtocks, to graft or bud the other ſorts upon; but theſe are not of long duration, nor will the trees grafted upon them ever grow to any ſize, unleſs they are planted ſo low as that the cion may ſtrike root into the ground, when it will be equal to no ſtock; for as the graft will draw its nouriſhment from the ground, ſo the ſtocks will become uſeleſs after; therefore it is only by way of curioſity, or for very ſmall gardens, that theſe ſtocks are proper, ſince there can never be expected any conſiderable quantity of fruit from ſuch trees.

Theſe trees have been much more eſteemed in France, where they were frequently brought to the table in the pots, growing with their fruit upon them; but this being only a curioſity, it never obtained much in England, ſo that the gardeners do not propagate many of them here at preſent.

There is another Apple, which is called the Dutch Paradiſe Apple, much cultivated in the nurſeries for grafting Apples upon, in order to have them dwarfs; and theſe will not decay or canker as the other, nor do they ſtint the grafts near ſo much, ſo are generally preferred for planting eſpaliers or dwarfs, being eaſily kept within the compaſs uſually allotted to theſe trees.

Some perſons have alſo made uſe of the Codlin ſtocks to graft Apples upon, in order to make them dwarf; but the fruit which are produced on ſuch trees are not ſo firm, nor do they laſt near ſo long as thoſe upon Crab ſtocks; therefore the winter fruits ſhould never be grafted upon them.

The Virginian Crab-tree with ſweet flowers, is often preſerved by ſuch perſons as are curious in collecting great variety of trees; it may be propagated by budding or grafting it upon the common Crab or Apple-tree, but it is ſomewhat tender while young; wherefore it ſhould be planted in a warm ſituation, otherwiſe it will be ſubject to ſuffer by an extreme hard winter. The flowers of this tree are ſaid to be exceeding ſweet in Virginia, where it grows in the woods in great plenty; but I could not obſerve much ſcent in ſome of them which have flowered in England, ſo that I am in doubt whether the ſort at preſent in the gardens is the very ſame with that of Virginia; or perhaps it may have degenerated by ſowing the ſeeds, which is the way it was firſt obtained in England.

The Fig Apple is ſuppoſed by many perſons to be produced without a previous flower. But this opinion is rejected by more curious obſervers, who affirm, there is a ſmall flower precedes the fruit, which is very fugacious, ſeldom continuing above a day or two. Now, which of theſe opinions is the right, I have not, as yet, had an opportunity to determine, not having a tree in my own poſſeſſion which is arrived at maturity to produce fruit; though it might reaſonably be expected, that ſuch who have had trees of this kind ſeveral years, might have determined this point long before this time.

I remember an account of a tree of this kind, mentioned in a letter from New England, written by Paul Dudley, Eſq; to the Royal Society, and publiſhed in the Philoſophical Tranſactions, N° 385. which was exceeding

exceeding large, and produced great quantities of fruit, without any previous flowers; but it grew at ſome diſtance from his habitation, and he having no other opportunity to obſerve it ſtrictly himſelf, but by viſiting the place two or three times about the ſeaſon of flowering, and not being apprized of the ſudden decay of the flowers, they might eaſily be ſuppoſed to have appeared and dropped off, between the times of his viſiting the place.

The other ſorts which are above-mentioned, are what have been introduced from France, but there are not above two or three of them, which are much eſteemed in England, viz. the French Rennette, the Rennette-griſe, and the Violet Apple; the other being early fruit, which do not keep long, and their fleſh is generally meally, ſo they do not deſerve to be propagated, as we have many better fruits in England: but as there may be ſome perſons who are willing to have all the ſorts, I have mentioned them here for their inſtruction; but I ſhall next put down thoſe ſorts of Apples which are beſt eſteemed in England, placing them in the order according to their time of ripening.

The firſt Apple which is brought to the markets, is the Codlin. This fruit is ſo well known in England, that it is needleſs to deſcribe it.

The next is the Margaret Apple: this fruit is not ſo long as the Codlin, of a middling ſize; the ſide next the ſun changes to a faint red, when ripe; the other ſide is of a pale green; the fruit is firm, of a quick pleaſant taſte, but doth not keep long.

The Summer Pearmain is an oblong fruit, ſtriped with red next the ſun; the fleſh is ſoft, and in a ſhort time is meally, ſo that it is not greatly eſteemed.

The Kentiſh Fill Baſket is a ſpecies of Codlin, of a large ſize, and ſomewhat longer ſhaped than the Codlin; this ripens a little later in the ſeaſon, and is generally uſed for baking, &c.

The Tranſparent Apple: this was brought to England a few years ſince, and was eſteemed a curioſity; it came from Peterſburgh, where it is affirmed to be ſo tranſparent, as that the kernels may be perfectly ſeen, when the Apple is held to the light; but, in this country, it is a meally inſipid fruit, ſo not worth propagating.

Loan's Pearmain: this is a beautiful fruit, being of a middling ſize; the ſide next the ſun is of a beautiful red, and ſtriped with the ſame colour on the other; the fleſh is vinous, but as it ſoon grows meally, it is not greatly eſteemed.

The Quince Apple: this is a ſmall fruit, ſeldom larger than the Golden Pippin, but is in ſhape like the Quince, eſpecially toward the ſtalk; the ſide next the ſun is of a ruſſet colour, on the other ſide inclining to yellow: this is an excellent Apple for about three weeks in September, but will not keep much longer.

The Golden Renette is a fruit ſo well known in England, as to need no deſcription; this ripens about Michaelmas, and for about a month is a very good fruit, either for eating raw or baking.

The Aromatic Pippin is alſo a very good Apple: it is about the ſize of a Nonpareil, but not ſo flat, it is a little longer; the ſide next the ſun is of a bright ruſſet colour; the fleſh is breaking, and hath an aromatic flavour. It ripens in October.

The Hertfordſhire Pearmain, by ſome called the Winter Pearmain: this is a good ſized fruit, rather long than round, of a fine red next the ſun, and ſtriped with the ſame colour on the other ſide; the fleſh is juicy, and ſtews well, but is not eſteemed for eating by any nice palates. This is fit for uſe in November and December.

The Kentiſh Pippin is a large handſome fruit, of an oblong figure; the ſkin is of a pale green colour; the fleſh is breaking, and full of juice, which is of a quick acid flavour. This is a very good kitchen fruit, and will keep till February.

The Holland Pippin is larger than the former; the fruit is ſomewhat longer, the ſkin of a darker green, and the fleſh firm and juicy. This is a very good kitchen fruit, and will keep late in the ſeaſon.

The Monſtrous Renette is a very large Apple, of an oblong ſhape, turning red toward the ſun; but of a dark green on the other ſide; the fleſh is apt to be meally, ſo it is not much valued by thoſe who are curious, and only preſerved for the magnitude of the fruit.

The Embroidered Apple is a pretty large fruit, ſomewhat ſhaped like the Pearmain, but the ſtripes of red are very broad, from whence the gardeners have given it this title: it is a middling fruit, and is commonly uſed as a kitchen Apple, though there are many better.

The Royal Ruſſet, by ſome called the Leather Coat Ruſſet, on account of the deep ruſſet colour of the ſkin; this is a large fair fruit, of an oblong figure, broad toward the baſe; the fleſh is inclinable to yellow. This is one of the beſt kitchen Apples we have, and is a very great bearer: the trees grow large and handſome, and the fruit is in uſe from October till April, and is alſo a pleaſant fruit to eat.

Wheeler's Ruſſet is an Apple of a middling ſize, flat, and round; the ſtalk is ſlender, the ſide next the ſun of a light ruſſet colour, and the other ſide inclining to a pale yellow, when ripe; the fleſh is firm, and the juice has a very quick acid flavour, but is an excellent kitchen fruit, and will keep a long time.

Pile's Ruſſet is not quite ſo large as the former, but is of an oval figure, of a ruſſet colour to the ſun, and of a dark green on the other ſide; it is a very firm fruit, of a ſharp acid flavour, but is much eſteemed for baking, and will keep ſound till April, or later, if they are well preſerved.

The Nonpareil is a fruit pretty generally known in England, though there is another Apple which is frequently ſold in the markets for it, which is what the French call Haute-bonne; this is a larger fairer fruit than the Nonpariel, more inclining to the yellow; the ruſſet colour brighter, and it is earlier ripe, and ſooner gone; this is not ſo flat as the true Nonpareil, nor is the juice ſo ſharp, though it is a good Apple in its ſeaſon; but the Nonpareil is ſeldom ripe before Chriſtmas, and where they are well preſerved they will keep till May perfectly ſound; this is juſtly eſteemed one of the beſt Apples that have been yet known.

The Golden Pippin is a fruit almoſt peculiar to England; there are few countries abroad where this ſucceeds well, nor do they produce ſo good fruit in many parts of England as were to be wiſhed; which, in ſome meaſure, is owing to their being grafted on free ſtocks, which enlarges the fruit, but renders it leſs valuable, becauſe the fleſh is not ſo firm, nor the flavour ſo quick, ſo is apt to be dry and meally; therefore this ſhould always be grafted upon the Crab ſtock, which will not canker like the others, and though the fruit will not be ſo fair to the ſight, yet it will be better flavoured and keep longer.

There are yet a great variety of Apples, which, being inferior to thoſe here mentioned, I have omitted, as thoſe which are here enumerated will be ſufficient to furniſh the table and the kitchen, during the whole ſeaſon of theſe fruits; ſo that where theſe ſorts can be had, no perſon of taſte will eat the other.

I ſhall here mention ſome of the Apples which are chiefly preferred for the making of cyder, tho' there are in every cyder country, new ſorts frequently obtained from the kernels; but thoſe hereafter mentioned, have, for ſome years, been in the greateſt eſteem.

The Red-ſtreak.
Devonſhire Royal Wilding.
The Whitſour.
Herefordſhire Under Leaf.
John Apple, or Deux-annes.
Everlaſting Hanger.
Gennet Moyle.

All the ſorts of Apples are propagated by grafting or budding upon the ſtocks of the ſame kind, for they will

will not take upon any other ſort of fruit tree. In the nurſeries there are three ſort of ſtocks generally uſed to graft Apples upon; the firſt are called free ſtocks; theſe are raiſed from the kernels of all ſorts of Apples indifferently, and ſometimes they are alſo termed Crab ſtocks; for all thoſe trees which are produced from the ſeeds before they are grafted, are termed Crabs without any diſtinction; but, as I have before obſerved, I ſhould always prefer ſuch ſtocks as are raiſed from the kernels of Crabs, where they are preſſed for verjuice; and I find ſeveral of the old writers on this ſubject of the ſame mind. Mr. Auſten, who wrote above a hundred years ago, ſays, "The "ſtock which he accounts beſt for Apple grafts is "the Crab, which is better than ſweeter Apple-trees "to graft on, becauſe they are uſually free from "canker, and will become very large trees; and, I "conceive, will laſt longer than ſtocks of ſweeter "Apples, and will make fruits more ſtrong and hardy "to endure froſt;" and it is very certain, that by frequently grafting ſome ſorts of Apples upon free ſtocks, the fruits have been rendered leſs firm and poignant, and of ſhorter duration.

The ſecond ſort of ſtock is the Dutch Creeper, before-mentioned; theſe are deſigned to ſtint the growth of the trees, and keep them within compaſs for dwarfs or eſpaliers.

The third ſort is the Paradiſe Apple, which is a very low ſhrub, ſo only proper for trees which are kept in pots, by way of curioſity, for theſe do not continue long.

Some perſons have made uſe of Codlin ſtocks for grafting of Apples, in order to ſtint their growth; but as theſe are commonly propagated by ſuckers, I would by no means adviſe the uſing of them; nor would I chuſe to raiſe the Codlin-trees from ſuckers, but rather graft them upon Crab ſtocks, which will cauſe the fruit to be firmer, laſt longer, and have a ſharper flavour; and theſe trees will laſt much longer ſound, and never put out ſuckers, as the Codlins always do, which, if not conſtantly taken off, will weaken the trees, and cauſe them to canker: and it is not only from the roots, but from the knots of their ſtems, there are generally a great number of ſtrong ſhoots produced, which fill the trees with uſeleſs ſhoots, and render them unſightly, and the fruit ſmall and crumpled.

The method of raiſing ſtocks from the kernels of Crabs, or Apples, is, to procure them where they are preſſed for verjuice or cyder, and after they are cleared of the pulp, they may be ſown upon a bed of light earth, covering them over about half an inch thick with the ſame light earth; theſe may be ſown in November or December, where the ground is dry, but in wet ground, it will be better to defer it till February; but then the ſeeds ſhould be preſerved in dry ſand, and kept out of the reach of vermin, for if mice or rats can get at them, they will devour the ſeeds; there ſhould alſo be care taken of the ſeeds, when they are ſown, to protect them from theſe vermin, by ſetting traps to take them, &c. In the ſpring, when the plants begin to appear, they muſt be carefully weeded, and if the ſeaſon ſhould prove dry, it will be of great ſervice to water them two or three times a week; and, during the ſummer, they muſt be kept clean from weeds, which, if ſuffered to grow, will ſoon over-top the plants, and ſpoil their growth; if theſe thrive well, they will be fit to tranſplant into the nurſery the October following, at which time the ground ſhould be carefully digged, and cleanſed from the roots of all bad weeds; then the ſtocks ſhould be planted in rows three feet aſunder, and the plants one foot diſtance in the rows, cloſing the earth pretty faſt to their roots; when the ſtocks are tranſplanted out of the ſeed-bed, the firſt autumn after ſowing, they need not be headed, but where they are inclined to ſhoot downward, the tap root muſt be ſhortened, in order to force out horizontal roots; if the ground is pretty good in which theſe ſtocks are planted, and the weeds conſtantly cleared away, the ſtocks will make great progreſs, ſo that thoſe which are intended for dwarfs, may be grafted the ſpring twelve months after they are planted out of the ſeed-bed; but thoſe which are deſigned for ſtandards will require two or three years more growth, before they will be fit to graft, by which time they will be upward of ſix feet high. The other neceſſary work to be obſerved in the culture of theſe trees, while they remain in the nurſery, being exhibited under the article of NURSERY, I ſhall not repeat in this place.

I ſhall next treat of the manner of planting ſuch of theſe trees, as are deſigned for eſpaliers in the kitchen-garden, where, if there is an extent of ground, it will be proper to plant, not only ſuch ſorts as are for the uſe of the table, but alſo a quantity of trees to ſupply the kitchen; but where the kitchen-garden is ſmall, the latter muſt be ſupplied from ſtandard-trees, either from the orchard, or wherever they are planted; but as many of theſe kitchen Apples are large, and hang late in the autumn upon the trees, they will be much more expoſed to the ſtrong winds on ſtandard trees than in eſpaliers, whereby many of the fruit will be blown down before they are ripe, and others bruiſed, ſo as to prevent their keeping; therefore where it can be done, I ſhould always prefer the planting them in eſpaliers.

The diſtance which I ſhould chuſe to allow theſe trees, ſhould not be leſs than thirty feet, for ſuch ſorts as are of moderate growth (if upon Crab or free ſtocks:) but the larger growing ſorts ſhould not be allowed leſs room than thirty-five or forty feet, which will be found full near enough, if the ground is good, and the trees properly trained; for as the branches of theſe trees ſhould not be ſhortened, but trained at their full length, ſo in a few years they will be found to meet. Indeed, at the firſt planting, the diſtance will appear ſo great to thoſe perſons who have not obſerved the vigorous growth of theſe trees, that they will ſuppoſe they never can extend their branches ſo far, as to cover the eſpalier; but if theſe perſons will but obſerve the growth of ſtandard-trees of the ſame kinds, and ſee how wide their branches are extended on every ſide, they may be ſoon convinced, that as theſe eſpalier-trees are allowed to ſpread but on two ſides, they will of courſe make make more progreſs, as the whole nouriſhment of the root will be employed in theſe ſide branches, than where there is a greater number of branches on every ſide of the tree, which are to be ſupplied with the ſame nouriſhment.

The next thing to be obſerved is the making choice of ſuch ſorts of fruits as grow nearly alike, to plant in the ſame eſpalier. This is of great conſequence, becauſe of the diſtance they are to be placed, otherwiſe thoſe ſorts which make the largeſt ſhoots, may be allowed leſs room to ſpread than thoſe of ſmaller growth; beſide, when all the trees in one eſpalier are nearly equal in growth, they will have a better appearance than when ſome are tall, and others ſhort; but for the better inſtruction of thoſe perſons who are not converſant in theſe things, I ſhall divide the ſorts of Apples into three claſſes according to their different growths.

Largeſt growing tree.	Middle growing tree.	Smalleſt growing tree.
All the ſorts of Pearmains.	Margaret Apple.	Quince Apple.
Kentiſh Pippin.	Golden Renette.	Tranſparent Apple.
Holland Pippin.	Aromatic Pippin.	Golden Pippin.
Monſtrous Renette.	Embroidered Apple.	Pomme d'Api.
Royal Ruſſet.	Renette Griſe.	Fenouillet, or Anis Apple.
Wheeler's Ruſſet.	White Renette.	
Pile's Ruſſet.	Codlin.	
Nonpareil.		
Violet Apple.		

N. B. Theſe are all ſuppoſed to be grafted on the ſame ſort of ſtocks.

If theſe Apples are grafted upon Crab ſtocks, I would willingly place them at the following diſtance from each other, eſpecially where the ſoil is good, viz. the largeſt growing trees at forty feet, the middle growing at thirty feet, and the ſmall growing at twenty-five feet, which, from conſtant experience, I find to be full near enough; for in many places, where I have planted theſe trees at twenty-four feet diſtance, they have ſhot ſo ſtrong, as that in ſeven years their branches have met; and in ſome places where every other tree hath been taken up, the branches have almoiſt joined in ſeven years after; therefore it will be much the better way to plant theſe trees at a proper diſtance at firſt, and between theſe to plant ſome Dwarf Cherries, Currants, or other ſorts of fruit, to bear for a few years, which may be cut away when the Apple-trees have extended their branches to them; for when the Apple-trees are planted nearer together, few perſons care to cut down the trees, when they are fruitful, ſo that they are obliged to uſe the knife, ſaw, and chiſel, more than is proper for the future good of the trees; and many times, where perſons are inclinable to take away part of their trees, the diſtances will be often ſo irregular (where there was not this conſideration in their firſt planting,) as to render the eſpalier unſightly.

When the trees are upon the Dutch Dwarf ſtock, the diſtance ſhould be for the larger growing trees thirty feet, for thoſe of middle growth twenty-five, and the ſmalleſt twenty feet, which will be found full near where the trees thrive well.

The next is the choice of the trees, which ſhould not be more than two years growth from the graft, but thoſe of one year ſhould be preferred; you ſhould alſo be careful, that their ſtocks are young, ſound, and ſmooth, free from canker, and which have not been cut down once or twice in the nurſery; when they are taken up, all the ſmall fibres ſhould be entirely cut off from their roots, which, if left on, will turn mouldy and decay, ſo will obſtruct the new fibres, which will ſoon puſh out, in their growth; the extreme part of the roots muſt alſo be ſhortened, and all bruiſed roots cut off; and if there are any miſplaced roots which croſs each other, they ſhould alſo be cut away. As to the pruning of the head of theſe trees, there need be nothing more done than to cut off any branches which are ſo ſituated, as that they cannot be trained to the line of the eſpalier: in the planting, there muſt be care taken not to place their roots too deep in the ground, eſpecially if the ſoil is moiſt, but rather raiſe them on a little hill, which will be neceſſary to allow for the raiſing of the borders afterward. The beſt ſeaſon for planting theſe trees (in all ſoils which are not very moiſt) is, from October, to the middle or latter end of November, according as the ſeaſon continues mild; but ſo ſoon as the leaves fall, they may be removed with great ſafety. After the trees are planted, it will be proper to place down a ſtake to each tree, to which the branches ſhould be faſtened, to prevent the winds from ſhaking or looſening their roots, which will deſtroy the young fibres; for when theſe trees are planted pretty early in autumn, they will very ſoon puſh out a great number of new fibres, which, being very tender, are ſoon broken, by the wind ſhaking of the trees, whereby they are greatly injured. If the winter ſhould prove ſevere, it will be proper to lay ſome rotten dung, tanners bark, or ſome other ſort of mulch about their roots, to prevent the froſt from penetrating of the ground, which might damage theſe tender fibres; but I would not adviſe the laying of this mulch before the froſt begins, for if it is laid over the ſurface of the ground about their roots, ſoon after the trees are planted (as is often practiſed,) it will prevent the moiſture entering the ground, and do much more harm than good to the trees.

The following ſpring, before the trees begin to puſh, there ſhould be two or three ſhort ſtakes put down on each ſide every tree, to which the branches ſhould be faſtened down as horizontally as poſſible, never cutting them down, as is by ſome practiſed, for there will be no danger of their putting out branches enough to furniſh the eſpalier, if the trees are once well eſtabliſhed in their new quarters.

In the pruning of theſe trees, the chief point is, never to ſhorten any of the branches, unleſs there is an abſolute want of ſhoots to fill the ſpaces of the eſpalier; for where the knife is much uſed, it only multiplies uſeleſs ſhoots, and prevents their fruiting; ſo that the beſt method to manage theſe trees is, to go over them three or four times in the growing ſeaſon, and rub off all ſuch ſhoots as are irregularly produced, and train the others down to the ſtakes in the poſition they are to remain: if this is carefully performed in ſummer, there will be little left to be done in the winter, and by bending of their ſhoots from time to time, as they are produced, there will be no occaſion to uſe force to bring them down, nor any danger of breaking the branches. The diſtance which theſe branches ſhould be trained from each other, for the largeſt ſorts of fruits ſhould be about ſeven or eight inches, and for the ſmaller four or five. If theſe plain inſtructions are followed, it will ſave much unneceſſary labour of pruning, and the trees will, at all times, make a handſome appearance; whereas when they are ſuffered to grow rude in ſummer, there will be much greater difficulty to bring down their ſhoots, eſpecially if they are grown ſtubborn, when it may become neceſſary to ſlit the branches to make them pliable. All the ſorts of Apples produce their fruit upon curſons, or ſpurs, ſo that theſe ſhould never be cut off, for they will continue fruitful a great number of years.

The method of making the eſpaliers having been already exhibited under that article, I need not repeat it here, but only obſerve, that it will be beſt to defer making the eſpalier till the trees have had three or four years growth; for before that time, the branches may be ſupported by a few upright ſtakes, ſo that there will be no neceſſity to make the eſpalier, until there are ſufficient branches to furniſh all the lower part.

I ſhall now treat of the method to plant orchards, ſo as to have them produce the greateſt profit. And firſt, in the choice of the ſoil and ſituation for an orchard: the beſt ſituation for an orchard is, on the aſcent of the gentle hills, facing the ſouth, or ſouth-eaſt; but this aſcent muſt not be too ſteep, leſt the earth ſhould be waſhed down by haſty rains. There

are many perſons who preſer low ſituations at the foot of hills, but I am thoroughly convinced from experience, that all bottoms where there are hills on each ſide, are very improper for this purpoſe; for the air is drawn down into theſe vallies in ſtrong currents, which, being pent in renders theſe bottoms much colder than the open ſituations; and during the winter and ſpring, theſe bottoms are very damp and unhealthy to all vegetables; therefore the gentle riſe of a hill, fully expoſed to the ſun and air, is by much the beſt ſituation. As to the ſoil, a gentle hazel loam, which is eaſy to work, and that doth not detain the wet, is the beſt; if this happens to be three feet deep, it will be better for the growth of the trees, for although theſe trees will grow upon very ſtrong land, yet they are ſeldom ſo thriving, nor are their fruit ſo well flavoured, as thoſe which grow on a gentle ſoil; and on the other hand, theſe trees will not do well upon a very dry gravel or ſand, therefore thoſe ſoils ſhould never be made choice of for orchards.

The ground intended to be planted ſhould be well prepared the year before, by ploughing it thoroughly, and if ſome dung is laid upon it the year before, it will be of great ſervice to the trees; if in the preceding ſpring a crop of Peas or Beans is planted on the ground (provided they are ſown or planted in rows, at a proper diſtance, ſo as that the ground between them is horſe-hoed,) it will deſtroy the weeds, and looſen the ground, ſo that it will be a good preparation for the trees, for the earth cannot be too much wrought, or pulveriſed for this purpoſe: theſe crops will be taken off the ground long before the ſeaſon for planting of theſe trees, which ſhould be as ſoon as poſſible performed when the trees begin to ſhed their leaves.

In chuſing of the trees, I would adviſe the taking ſuch as are but of two years growth from the graft, and never to plant old trees, or ſuch as are grafted upon old ſtocks, for it is loſing of time to plant theſe; young trees being always more certain to grow, and make a much greater progreſs than thoſe which are old. As to pruning of the roots, it muſt be done in the ſame manner as hath been already directed for the eſpalier-trees; and in pruning their heads, little more is neceſſary than to cut out ſuch branches as are ill placed, or that croſs each other; for I do not approve the heading of them down, as is by ſome often practiſed to the loſs of many of their trees.

The diſtance which theſe trees ſhould be planted, where the ſoil is good, muſt be fifty or ſixty feet; and where the ſoil is not ſo good, forty feet may be ſufficient; but nothing can be of worſe conſequence, than the crowding trees too cloſe together in orchards. And although there may be ſome who may imagine this diſtance too great, yet I am ſure, when they have thoroughly conſidered the advantages attending this practice, they will agree with me. Nor is it my own opinion in this affair, for in many of the old writers on this ſubject, there is often mention made of the neceſſity for allowing a proper diſtance to the fruit-trees in orchards, particularly Auſten, upon planting before quoted, who ſays, "He ſhould chuſe to "preſcribe the planting theſe trees fourteen or ſix-"teen yards aſunder; for both trees and fruits have "many great advantages, if planted a good diſtance "one from another." One advantage he mentions is, "The ſun refreſhes every tree, the roots, body, "and branches, with the bloſſoms and fruits; where-"by trees bring forth more fruit, and thoſe fairer and "better." Another advantage he mentions is, "That "when trees are planted at a large diſtance, much "profit may be made of the ground under and about "theſe trees, by cultivating garden-ſtuff, commo-"dious as well for ſale as houſekeeping; as alſo "Gooſeberries, Raſpberries, Currants, and Straw-"berries, may be there planted." Again he ſays, "When trees have room to ſpread, they will grow "very large and great; and the conſequences of that "will be, not only multitudes of fruits, but alſo "long laſting, and theſe two are no ſmall advan-"tages." For, ſays he, "Men are miſtaken, when "they ſay, the more trees in an orchard, the more "fruits; for one or two large trees which have room "to ſpread, will bear more fruits than ſix or ten (it "may be) of thoſe that grow near together, and "crowd one another." Again he ſays, "Let men but "obſerve, and take notice of ſome Apple-trees, that "grow a great diſtance from other trees, and have "room enough to ſpread both their roots and "branches, and they ſhall ſee, that one of thoſe trees "(being come to full growth) hath a larger head, "and more boughs and branches, than (it may be) "four, or ſix, or more, of thoſe which grow near "together, although of the ſame age."

And Mr. Lawſon, an ancient planter, adviſes to plant Apple-trees twenty yards aſunder. As the two authors above quoted have written the beſt upon this ſubject, and ſeem to have had more experience than any of the writers I have yet ſeen, I have made uſe of them as authorities to confirm what I have advanced; though the fact is ſo obvious to every perſon who will make the leaſt reflection, that there needs no other proof.

When the trees are planted, they ſhould be ſtaked, to prevent their being ſhaken, or blown out of the ground by ſtrong winds; but in doing of this, there ſhould be particular care taken, to put either ſtraw, haybands, or woollen cloth, between the trees and the ſtakes, to prevent the trees from being rubbed and bruiſed, by the ſhaking againſt the ſtakes, for if their bark ſhould be rubbed off, it will occaſion ſuch great wounds, as not to be healed over in ſeveral years, if they ever recover it.

If the winter ſhould proye very ſevere, it will be proper to cover the ſurface of the ground about their roots with ſome mulch, to prevent the froſt from penetrating the ground, which will deſtroy the young fibres; but this mulch ſhould not be laid on too ſoon, as hath been before mentioned, leſt the moiſture ſhould be prevented from ſoaking down to the roots of the trees, nor ſhould it lie on too long in the ſpring for the ſame reaſon; therefore where perſons will be at the trouble to lay it on in froſty weather, and remove it again after the froſt is over, that the wet in February may have free acceſs to the roots of the trees; and if March ſhould prove dry, with ſharp north or eaſt winds, which often happens, it will be proper to cover the ground again with the mulch, to prevent the winds from penetrating and drying the ground, and will be of ſingular ſervice to the trees. But I am aware, that this will be objected to by many, on account of the trouble, which may appear to be great; but when it is conſidered, how much of this buſineſs may be done by a ſingle perſon in a ſhort time, it can have little force, and the benefit which the trees will receive by this management, will greatly recompenſe the trouble and expence.

As theſe trees muſt be conſtantly fenced from cattle, it will be the beſt way to keep the land in tillage for ſome years, that by conſtant ploughing or digging of the ground, the roots of the trees will be more encouraged, and they will make the more progreſs in their growth; but where this is done, whatever crops are ſown or planted, ſhould not be too near the trees, leſt the nouriſhment ſhould be drawn away from the trees; and as in the ploughing of the ground where it is ſo tilled, there muſt be care taken not to go too near the ſtem of the trees, whereby their roots would be injured, or the bark of their ſtems rubbed off, ſo it will be of great ſervice to dig the ground about the trees where the plough doth not come, every autumn, for five or ſix years after planting, by which time their roots will have extended themſelves to a greater diſtance.

It is a common practice in many parts of England, to lay the ground down for paſture, after the trees are grown pretty large in their orchards; but this is by no means adviſeable, for I have frequently ſeen trees of above twenty years growth, almoſt deſtroyed by horſes,

horſes, in the compaſs of one week; and if ſheep are put into orchards, they will conſtantly rub their bodies againſt the ſtems of the trees, and their greaſe ſticking to the bark, will ſtint their growth, and in time will ſpoil them; therefore wherever orchards are planted, it will be much the better method to keep the ground ploughed or dug annually, and ſuch crops put on the ground as will not draw too much nouriſhment from the trees.

In pruning of orchard-trees, nothing more ſhould be done, but to cut out all thoſe branches which croſs each other, and, if left, would rub and tear off the bark, as alſo decayed branches, but never ſhorten any of their ſhoots. If ſuckers, or ſhoots from their ſtems, ſhould come out, they muſt be entirely taken off annually; and when any branches are broken by the wind, they ſhould be cut off, either down to the diviſion of the branch, or cloſe to the ſtem from whence it was produced; the beſt time for this work is in November, for it ſhould not be done in froſty weather, nor in the ſpring, when the ſap begins to be in motion.

The beſt method to keep Apples for winter uſe is, to let them hang upon the trees until there is danger of froſt, and to gather them in dry weather, laying them in large heaps to ſweat for three weeks or a month; afterward look them over carefully, taking out all ſuch as have appearance of decay, wiping all the ſound fruit dry, and pack them up in large oil-jars, which have been thoroughly ſcalded and dry, ſtopping them down cloſe to exclude the external air: if this is duly obſerved, the fruit will keep ſound a long time, and their fleſh will be plump; for when they are expoſed to the air, their ſkins will ſhrink, and their pulp will be ſoft.

MALUS ARMENIACA. See ARMENIACA.

MALUS AURANTIA. See AURANTIA.

MALUS LIMONIA. See LIMONIA.

MALUS MEDICA. See CITREUM.

MALUS PERSICA. See PERSICA.

MALUS PUNICA. See PUNICA.

MAMMEA. Plum. Nov. Gen. 44. tab. 4. Lin. Gen. Plant. 583. The Mammee-tree.

The CHARACTERS are,

The empalement of the flower is compoſed of two ſmall, oval, concave leaves, which fall off. The flower has four large concave petals, which ſpread open. It hath many awl-ſhaped ſtamina, terminated by roundiſh ſummits, and in the center a roundiſh germen, with a conical ſtyle the length of the ſtamina, crowned by a ſingle permanent ſtigma. The germen afterward turns to a large fleſhy fruit, of a ſpherical figure, incloſing one, two, or three large almoſt oval ſtones.

This genus of plants is ranged in the firſt ſection of Linnæus's thirteenth claſs, intitled Polyandria Monogynia, which includes the plants whoſe flowers have many ſtamina and one ſtyle.

There is but one SPECIES of this tree known in the Engliſh gardens, viz.

MAMMEA ſtaminibus flore brevioribus. *Mammee with the ſtamina ſhorter than the flower.* Mammea magno fructu, perſicæ ſapore. Plum. Nov. Gen. 44. *Mammee with a large fruit, having the taſte of a Peach.*

This tree, in the Weſt-Indies, grows to the height of ſixty or ſeventy feet; the leaves are large and ſtiff, and continue green all the year; the fruit is as large as a man's fiſt; when ripe, it is of a yellowiſh green colour, and is very grateful to the taſte. It grows in great plenty in the Spaniſh Weſt-Indies, where the fruit is generally ſold in their markets, and is eſteemed one of the beſt fruits in the country. It alſo grows on the hills of Jamaica, and has been tranſplanted into moſt of the Caribbee Iſlands, where it thrives exceeding well.

In England there are ſome few of theſe plants, which are preſerved with great care by ſuch as are curious in cultivating exotic plants; but there are none of any conſiderable ſize, ſo that we cannot expect to ſee either fruit or flowers for ſome years. Theſe plants may be propagated by planting the ſtones, which are often brought from the Weſt-Indies, (which ſhould be very freſh, otherwiſe they will not grow,) into pots filled with freſh light earth, and plunged into a hot-bed of tanners bark, obſerving to water the earth whenever it appears dry. In about a month or ſix weeks the plants will appear above ground, after which they muſt be frequently refreſhed with water, and in hot weather the glaſſes of the hot-bed ſhould be raiſed to let in freſh air. In two months the roots of the plants will have filled the pots, when you ſhould provide ſome pots of a little larger ſize, into which you ſhould tranſplant the plants, being careful to preſerve as much earth to their roots as poſſible; then you ſhould fill up the pots with freſh light earth, and plunge them into the bark-bed again, obſerving to water and ſhade them until they have taken root, after which they ſhould be conſtantly refreſhed with water as you ſhall find they want it, and muſt have air in hot weather. In this bed they may remain till Michaelmas, when they muſt be removed into the bark-ſtove, where they muſt be conſtantly kept, obſerving to refreſh them with water, but it muſt be given to them ſparingly at this ſeaſon, as alſo to clean their leaves from the filth they are apt to contract in the ſtove; the ſpring following they ſhould be ſhifted into freſh earth, and if they require it, into larger pots, but by no means over-pot them, for they do not produce many roots, therefore if the pots are too large the plants will not thrive; they muſt be conſtantly kept in the bark-ſtove, and may be treated after the manner directed for the Coffee-tree.

If, when the ſtones of this fruit are brought over, they are put into the tan-bed, under the bottom of any of the pots, they will ſprout ſooner than thoſe which are planted in the earth.

MANCANILLA. See HIPPOMANE.

MANDRAGORA. Tourn. Inſt. R. H. 76. tab. 12. Lin. Sp. Plant. 221. Mandrake; in French, *Mandragore.*

The CHARACTERS are,

The empalement of the flower is large, bell-ſhaped, erect, and permanet; it is of one leaf, cut at the top into five acute ſegments. The flower hath one erect bell-ſhaped petal which ſpreads open, and is a little larger than the empalement. It has five awl-ſhaped ſtamina, which are arched and hairy at their baſe. In the center is ſituated a roundiſh germen, ſupporting an awl-ſhaped ſtyle, crowned by a headed ſtigma. The germen afterward turns to a large round berry with two cells, having a fleſhy receptacle convex on each ſide, filled with kidney-ſhaped ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, which contains thoſe plants whoſe flowers have five ſtamina and one ſtyle.

We have but one SPECIES of this genus in the Engliſh gardens, viz.

MANDRAGORA (*Officinarum.*) Hort. Cliff. 51. *The Mandrake.* Mandragora fructu rotundo. C. B. P. 169. *Mandrake with a round fruit.*

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 Parſnep, which runs three or four feet deep in the ground; it is ſometimes ſingle, and at others divided into two or three branches, almoſt of the colour of Parſnep, 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, growing narrow toward both ends, of a dark green colour, and a fœtid 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; they 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

bular 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.

This plant is propagated by ſeeds, which ſhould be ſown upon a bed of light earth ſoon after they are ripe, for if they are kept until the ſpring, they ſeldom ſucceed well; but thoſe which are ſown in autumn will come up in the ſpring, when they ſhould be carefully cleared from weeds; and in very dry weather they muſt be refreſhed with water, which will greatly promote their growth. In this bed they ſhould remain till the latter end of Auguſt, (obſerving always to keep them clear from weeds) at which time they ſhould be taken up very carefully, and tranſplanted into the places where they are to remain; the ſoil ſhould be light and deep, for their roots always run very deep, ſo that if the ſoil is wet, they are often rotted in winter; and if it be too near the gravel or chalk, they will make but little progreſs; but if the ſoil be good and they are not diſturbed, the plants will grow to a large ſize in a few years, and will produce great quantities of flowers and fruit; the roots will abide a great many years.

I have been informed by ſome perſons of credit, that one of theſe roots will remain ſound above fifty years, and be as vigorous as a young plant. I have known ſome plants myſelf near that age, which are now in great vigour, and may continue ſo many years longer, as there are no ſigns of their decay; but they ſhould never be removed after their roots have arrived to any conſiderable ſize, which would break their lower fibres, and ſo ſtint the plants, as that if they live they will not recover their former ſtrength in two or three years. Theſe plants ſhould have a warm ſituation, otherwiſe in ſevere winters they will be deſtroyed.

As to the feigned reſemblance of a human form, which the roots of this plant are ſaid to carry, it is all impoſture, owing to the cunning of quacks and mountebanks, who deceive the populace and the ignorant with fictitious images, ſhaped from the freſh roots of Briony and other plants: and what is reported as to the manner of rooting of this plant, by tying a dog thereto, to prevent the certain death of the perſon who ſhould care to attempt it, and the groans it emits upon the force offered, &c. is all a ridiculous fable; for I have taken up ſeveral large roots of this plant, ſome of which have been tranſplanted into other places, but could never obſerve any particular difference in this from any other deep rooting plant.

MANGIFERA. Lin. Gen. Plant. 278. The Mango-tree.

The CHARACTERS are,

The empalement of the flower is cut into five ſpear-ſhaped ſegments; the flower hath five ſpear-ſhaped petals longer than the empalement, and five awl-ſhaped ſtamina the length of the corolla, crowned with heart-ſhaped ſummits. It hath a roundiſh germen, ſupporting a ſlender ſtyle the length of the empalement, terminated by a ſingle ſtigma; the germen afterward becomes an oblong kidney-ſhaped Plumb ſomewhat compreſſed, incloſing an oblong woolly nut of the ſame form.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, the flower having five ſtamina and one ſtyle.

We have but one SPECIES of this genus, viz.

MANGIFERA (*Indica.*) Lin. Sp. 290. *The Mango-tree.* Manga Indica fructu magno reniforma. Raii Hiſt. 1550.

This tree grows naturally in moſt parts of India, as alſo in the Brazils, and ſome other parts of the world, where it becomes a large tree; the wood is brittle, and the bark becomes rough by age; the leaves are ſeven or eight inches long, and two or more broad, terminating in points, having ſeveral tranſverſe veins from the middle rib to the ſides, which are oppoſite. The flowers are produced in looſe panicles toward the end of the branches, each conſiſting of five ſpear-ſhaped petals which ſpread open, having five awl-ſhaped ſtamina the length of the petals, which are ſituated between them; the germen at the bottom of the flower afterward becomes a large oblong kidney-ſhaped Plumb, incloſing a rough nut of the ſame form.

This fruit, when fully ripe, is greatly eſteemed by the inhabitants of thoſe countries where they grow naturally, or have been tranſplanted; but in Europe we have only the unripe fruit brought over in pickle, which is little better than ſeveral other fruit when pickled in the ſame way: however, from the account given of the ripe fruit, by moſt people who have eaten it in the country; it has excited the curioſity of many perſons in Europe to endeavour to procure young plants in their gardens, for which purpoſe great quantities of the nuts have been brought to ſeveral parts of Europe, but without effect; for I have not heard of one plant which has been produced in Europe from the nuts. All thoſe which have fallen into my hands have been rotten when received, ſo that I am apt to think the vegetative quality of them cannot be long preſerved; therefore the only method to obtain the plants in England, is to plant a good quantity of the nuts in a tub of earth in the country where they grow naturally; and when the plants are grown a foot high, to ſhip them for England, placing a covering over them to defend them from ſalt water and the ſpray of the ſea, being very careful not to let them have much wet in their paſſage; as alſo when the ſhip arrives in a cold climate, to ſcreen the plants from cold, eſpecially if it is toward the approach of winter. By carefully obſerving theſe rules, the plants may be brought very ſafely over, as has been experienced by a plant of this ſort, with ſeveral other ſorts of plants, which were brought over by Capt. Quick, and are now in good health in the Chelſea garden.

There have been ſome plants brought to England before this, which were deſtroyed by having too much heat, for this plant will not thrive in a hot-bed of tanners bark; ſo that the only way to have them ſucceed, is to plant them in pots filled with light kitchen-garden earth, and place them in a dry ſtove, where in warm weather they ſhould have freſh air daily, and in the winter the air kept up to temperate, as is marked upon the thermometers.

MANIHOT. See JATROPHA.

MANURE.

There are various kinds of Manure, which are now commonly uſed in different parts of England, for enriching of the ſeveral ſoils. Some of theſe have been already mentioned under the article of DUNG, ſo I ſhall not repeat them here, but proceed to take notice of ſome other kinds of Manure, which are at preſent neglected by many people, though they might be uſed with equal ſucceſs, if not better on many lands, as moſt of thoſe now commonly in uſe.

Oak bark, after the tanners have uſed it for tanning of leather, when laid in a heap and rotted, is an excellent Manure, eſpecially for ſtiff cold land; in which one load of this Manure will improve the ground more, and laſt longer, than two loads of the richeſt dungs; and yet it is very common to ſee large heaps of this remaining in the tanners yards for many years, in ſeveral parts of England, where Manure of other kinds is very ſcarce, and often carried to a great diſtance. Of late years this tan has been much uſed for hot-beds in ſeveral parts of England, and is found greatly to exceed horſe dung for that purpoſe, the fermentation being moderate and of long continuance; ſo that a bed of tan, when rightly made, will continue in a moderate temperature of heat for three or four months; and when the heat begins to decay, if it be ſtirred up with a dung fork, and ſome freſh tan added to it, the heat will renew again, and laſt for ſome months, ſo that theſe beds are by far the moſt kindly for exotic plants; and whatever plants are plunged into theſe beds, if they are permitted to root through the bottom of the pots, they will thrive more in one month after, than they did in four months while

they

they are confined to the pots. I have frequently obſerved many kinds of plants, which were rooted through the pot into the tan, and have ſent forth roots upward of twelve feet each way, in leſs than three months, and the plants have advanced in proportion; which is a plain indication, that plants are greatly nouriſhed by the rotten tan. After the tan hath been uſed for a hot-bed, I have ſpread it on the ground for Manure, and found it has greatly enriched the ground; but it is much better for cold ſtrong land, than for light hot ground, becauſe it is of a warm nature, and will looſen and ſeparate the earth; ſo that where this Manure hath been uſed three or four times, it hath made the land very looſe which before was ſtrong, and not eaſy to be wrought. When this Manure is laid upon Graſs, it ſhould be done ſoon after Michaelmas, that the winter rains may waſh it into the ground; for if it is laid on in the ſpring, it will burn the Graſs, and inſtead of improving it, will greatly injure it for that ſeaſon. Where it is uſed in Corn land, it ſhould be ſpread on the ſurface before the laſt ploughing, that it may be turned down for the fibres of the Corn to reach it in the ſpring; for if it lies too near the ſurface, it will forward the growth of the Corn in winter: but in the ſpring, when the nouriſhment is chiefly wanted to encourage the ſtems, it will be nearly conſumed, and the Corn will receive little advantage from it. Nor will it be proper to have this Manure lie too near the roots of any plants, for when this has happened, I have frequently obſerved it prejudicial to moſt plants, but eſpecially to bulbous and tuberoſe-rooted flowers, which are very ſubject to rot where it lies near their roots; yet when it is buried juſt deep enough for the fibres of their roots to reach it in the ſpring, the flowers have been exceedingly improved by it. And in ſome places, where this Manure hath been uſed in kitchen-gardens, it hath greatly improved the vegetables; ſo that it is to be wondered, that this ſhould not be employed on the land in every country where it can be obtained.

Rotten vegetables of moſt ſorts alſo will enrich land, ſo that where other Manure is ſcarce, theſe may be uſed with ſucceſs. The weeds of ponds, lakes, or ditches, being dragged out before they ſeed, and laid in heaps to rot, will make good Manure, as will moſt other ſorts of weeds; but wherever any of theſe are employed, they ſhould be cut down as ſoon as they begin to flower, for if they are ſuffered to ſtand until their ſeeds are ripe, the land will be ſtored with weeds, which cannot be eaſily deſtroyed; nay, ſome kinds of weeds, if they are permitted to ſtand ſo long as to form their ſeed, will perfect them after they are cut down, which may be equally prejudicial to the land: therefore the ſureſt method is, to cut them down juſt as they begin to flower; at which time moſt ſorts of vegetables are in their greateſt vigour, being then ſtronger and fuller of juice, than when their ſeeds are farther advanced; ſo that at that time they abound moſt with ſalts, and therefore are more proper for the intended purpoſe. In rotting of theſe vegetables, it will be proper to mix ſome earth, mud, or any other ſuch like ſubſtance with them, to prevent their taking fire in their fermentation; which they are very ſubject to, where they are laid in large heaps without any other mixture to prevent it; and it will be alſo proper to cover the heaps over with earth, mud, or dung, to detain the ſalts, otherwiſe many of the finer particles will evaporate in fermenting. When theſe vegetables are thoroughly rotted, they will form a ſolid maſs, which will cut like butter, and be very full of oil, which will greatly improve land.

In ſuch places where there are neither ponds, lakes, or ditches, to ſupply theſe weeds, and the ſituation being far from the ſea (from whence alſo may be obtained many ſorts of weeds for this purpoſe) there may be many ſorts of vegetables ſown, in order to plough them into the grounds when they are full grown, to enrich the land; at preſent thoſe chiefly uſed for this purpoſe are Buck Wheat, Vetches, and Spurry. And in ſome countries abroad they commonly ſow Lupines upon ſuch land as they want to improve, and when they are full grown they mow them down, and plough them into the ground, which they eſteem to be good Manure. This is chiefly uſed in the ſouth of France and in Italy, where ſome of the ſorts of Lupines grow naturally; but theſe are not proper for this climate, becauſe, if the ſeaſon ſhould prove cold or wet after the Lupines are ſown, they will rot in the ground, ſo that it is very hazardous to ſow them in this country; and there being many other ſorts of plants which are hardy, and grow to a much larger ſize with us than Lupines, they ſhould be preferred to them for this purpoſe. I have known ſome land ſown pretty thick with Horſe-beans which have been mowed down when they were in bloſſom, and ploughed in for a crop of Wheat, and it hath largely repaid the owner. Almoſt any of the pulſe kind, which grow large, are very proper to be ſown for this purpoſe; and next to theſe may be ſown Muſtard, Cole-ſeed, or any of theſe large growing plants; which, if cut before they form their ſeeds, and ploughed in, will greatly enrich the ground.

The refuſe of kitchen-gardens, when laid in heaps and rotted, will alſo afford a good ſort of Manure for Corn land; but as this is not to be obtained in any quantity, excepting near great cities, ſo, in ſuch places, dung being to be had pretty reaſonable, the other will not be much ſought after.

I have lately been informed of another improvement, which may be of great uſe in ſeveral parts of the kingdom; which is, the mowing down of Fern while it is green and tender, and laying it in heaps to rot, which will make a tolerable Manure for land; and as this is a moſt troubleſome plant in many parts of England, ſo by frequently mowing, it may be deſtroyed; and when rotted, a good quantity of this Manure may be obtained, which will more than defray the charges of cutting it down. In ſome places, where no tan or horſe-dung can be obtained, they have cut down Fern and chopped it pretty ſmall, and laid it in a heap to ferment, then have uſed it for hot-beds, for which purpoſe it has anſwered pretty well. The firſt perſon who informed me of this, was Mr. Samuel Brewer, a very curious gentleman in gardening, who made ſeveral hot-beds of Fern, which, he ſays, continued their heat for ſome months; ſo that he prefers it to dung, where a moderate laſting heat is required.

There are many kinds of weeds which infeſt the lands in many parts of England, which, if cut down at a proper time and laid to rot, might be uſed to great advantage for manuring of land; and hereby the weeds may in time be deſtroyed, and the Manure would more than pay the expence of doing it: but few perſons who are employed in huſbandry care to go out of their old beaten road to try experiments, even where they are attended with little expence and nothing hazarded; otherwiſe there is great room to make improvements of this kind, eſpecially in countries where dung, or other common Manure is very ſcarce; in which places, if ſome experiments were properly made, of rotting whatever vegetables could be procured in the neighbourhood, it might turn to good account.

The aſhes of all kinds of vegetables are an excellent Manure for land, ſo that where the ground is overrun with buſhes, brambles, &c. which are become woody, if they are grubbed up in ſummer, and ſpread abroad to dry for a little time, then gently conſumed to aſhes, and theſe ſpread on the land, it will greatly improve it. The method for doing this is already explained under the article of LAND.

Rotten wood, and ſaw-duſt when rotted, is a very good Manure for ſtrong land, becauſe it looſens the parts of the earth and renders it light.

Bones, horns, and other parts of animals, alſo enrich land greatly, as do decayed fiſh; ſo that in ſome

places where theſe can be eaſily obtained, a great improvement may be made of them.

Sea-ſand and ſhells are in ſeveral parts of England uſed to great advantage, eſpecially in Devonſhire, where they are at the expence of fetching the ſand and ſhells on horſes backs, twelve or fourteen miles. The land on which they lay this Manure, is a ſtrong loam inclining to clay; ſo that this ſeparates the parts, and the ſalts which are contained in the dreſſing are a very great improvement of their land. Coral, and ſuch kinds of ſtony plants which grow on the rocks, are filled with ſalts which are very beneficial to land; but as theſe bodies are hard, the improvement is not the firſt or ſecond year after they are laid on the ground, becauſe they require time to pulverize them before their ſalts can mix with the earth to impregnate it. Therefore dreſſings of this kind are ſeldom uſed by tenants, who want to reap the fruit of their labour as ſoon as poſſible. But theſe Manures are much better for cold ſtrong land, than for that which is light and ſandy. In ſome countries, at a great diſtance from the ſea, have been diſcovered great quantities of foſſil ſhells, which have been dug out of the earth, and uſed as Manure, which have improved the ground a little, eſpecially ſtrong land: as theſe have little ſalts, when compared to thoſe ſhells which are taken from the ſhore, therefore where the latter can be obtained, they other are ſcarce worth uſing.

Where the land lies near the ſea, ſo that either ſand, ſhells, corals, wrecks, or ſea-weeds, can be obtained at an eaſy expence, they are by far the beſt kinds of Manure, becauſe they enrich the land for ſeveral years; for as their ſalts are cloſely locked up, they are communicated by degrees to the land, as the heat and cold cauſes the bodies to pulverize, and fall into ſmall parts; ſo that where ſand and ſmaller kinds of ſea-weeds are uſed, if they are laid on land in proper quantities it will enrich it for ſix or ſeven years; but ſhells, corals, and other hard bodies, will continue many years longer.

In dunging of land, I have frequently obſerved in ſeveral parts of England, but eſpecially in Cambridgeſhire, a very wrong cuſtom continued, by carrying and laying the dung on the land about Midſummer, and ſpread abroad perhaps a month or ſix weeks before the ground is ploughed; in which time the ſun exhales all the goodneſs of the dung, ſo that what remains is of little ſervice to the land. Therefore when dung or any other Manure is uſed, it ſhould not be laid on the ground until the laſt time of ploughing, when it ſhould be buried as ſoon as poſſible, to prevent the evaporation of the ſalts. Indeed, where ſhells, corals, or any other hard ſubſtances, are uſed for Manure, if theſe are ſpread abroad ſome months before the ground is ploughed, the ſun, rain, or froſt will cauſe them to pulverize much ſooner than when they are buried and excluded from the air.

The dreſſing of Graſs ground in ſummer, ſoon after the crop of hay is taken off the land, is equally bad; for before Michaelmas the ſun will have dried and exhaled moſt of the goodneſs, if the dreſſing is of dung or any other ſoft Manure, ſo that the ground will receive ſmall advantage from it; and yet this method is too generally practiſed.

MAPLE. See ACER.

MARACOCK. See PASSIFLORA.

MARANTA. Plum. Nov. Gen. 16. tab. 36. Lin. Gen. Plant. 5. Indian Arrow-root.

The CHARACTERS are,

It hath a ſmall three-leaved empalement ſitting upon the germen; the flower hath one petal, which is of the grinning kind, having an oblong compreſſed tube, which is oblique and turned inward; the rim is cut into ſix ſmall ſegments, repreſenting a lip flower, the two ſide ſegments being the largeſt. It has one membranaceous ſtamina, appearing like a ſegment of the petal, with a linear ſummit faſtened to the border. It hath a roundiſh germen ſituated under the flower, ſupporting a ſimple ſtyle the length of the petal, crowned by a three-cornered ſtigma. The germen afterward turns to a roundiſh three-cornered capſule with three valves, containing one hard rough ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's firſt claſs, intitled Monandria Monogynia, which includes thoſe plants whoſe flowers have but one ſtamina and one ſtyle.

The SPECIES are,

1. MARANTA (*Arundinacea*) culmo ramoſo. Lin. Sp. 2. *Indian Arrow-root with branching ſtalks.* Maranta Arundinacea cannacori folio. Plum. Nov. Gen. 16. *Maranta with a leaf of the Indian flowering Reed.*
2. MARANTA (*Galanga*) culmo ſimplici. Lin. Sp. 3. *Indian Arrow-root with a ſimple ſtalk.* Canna Indica, radice albâ alexipharmica. Sloan. Cat. Jam. 122. *Indian Arrow-root.*

The firſt ſort was diſcovered by Father Plumier in ſome of the French ſettlements in America, who gave it this name, in honour of one Bartholomew Maranta, an ancient botaniſt. The ſeeds of this kind were ſent to Europe by the late Dr. William Houſtoun, who found the plant growing in plenty near La Vera Cruz in New Spain.

This hath a thick, fleſhy, creeping root which is very full of knots, from which ariſe many ſmooth leaves, which are ſix or ſeven inches long, and three broad toward their baſe, leſſening toward each end, terminating in points. They are of the conſiſtence and colour of thoſe of the Reed, and ſtand upon Reed-like foot-ſtalks, which ariſe immediately from the root; between theſe come out the ſtalks, which riſe near two feet high; theſe divide upward into two or three ſmaller, and are garniſhed at each joint with one leaf of the ſame ſhape with the lower, but are ſmaller. The ends of the ſtalks are terminated by a looſe bunch of ſmall white flowers, ſtanding upon foot-ſtalks which are near two inches long. The flowers are cut into ſix narrow ſegments, which are indented on their edges; theſe ſit upon the embryo, which afterward turns to a roundiſh three-cornered capſule, incloſing one hard rough ſeed. It flowers here in June and July.

The other ſort was brought from ſome of the Spaniſh ſettlements in America, into the iſlands of Barbadoes and Jamaica, where it is cultivated in their gardens as a medicinal plant, it being a ſovereign remedy to cure the bite of waſps, and to extract the poiſon of the Manchineel-tree. The Indians apply the root to expel the poiſon of their arrows, which they uſe with great ſucceſs. They take up the roots, and after cleanſing them from dirt, they maſh them, and apply it as a poultice to the wounded part, which draws out the poiſon and heals the wound. It will alſo ſtop a gangrene, if it is applied before it is gone too far, ſo that it is a very valuable plant.

This ſort is very like the firſt, but has a ſingle ſtalk; the flowers are ſmaller, and the ſegments of the petals are entire, in which their principal difference conſiſts; it flowers alſo at the ſame time.

Theſe plants being natives of a warm country, are very tender, and therefore will not live in this climate, unleſs they are preſerved in ſtoves. They may be propagated by their creeping roots, which ſhould be parted in the middle of March, juſt before they begin to puſh out new leaves. Theſe roots ſhould be planted in pots filled with light rich earth, and plunged into a moderate hot-bed of tanners bark, obſerving now and then to refreſh them with water; but it muſt not be given to them in large quantities, for too much moiſture will ſoon rot the roots, when they are in an unactive ſtate. When the green leaves appear above ground, the plants will require more frequently to be watered, and they ſhould have free air admitted to them every day, in proportion to the warmth of the ſeaſon, and the heat of the bed in which they are placed. As the plants advance in ſtrength, they ſhould have a greater ſhare of air, but they muſt conſtantly remain in the ſtove plunged in the tan, otherwiſe they will not thrive; for when the pots are placed on ſhelves in the ſtove, the moiſture paſſes too ſoon from the fibres, which

which generally ſpread on the ſides and bottoms of the pots, ſo that the plants do not receive much nouriſhment from the water. But where they are conſtantly kept in the tanners bark, and have proper air and moiſture, they will thrive, ſo as from a ſmall root to fill the pot in which it was planted, in one ſummer. About Michaelmas the firſt ſort will begin to decay, and in a ſhort time after the leaves will die to the ground, but the pots muſt be continued all the winter in the bark-bed, otherwiſe the roots will periſh; for although they are in an unactive ſtate, yet they will not keep very long from ſhrinking, when taken out of the ground; and if the pots are taken out of the tan, and placed in any dry part of the ſtove, the roots often ſhrivel and decay; but when they are continued in the tan-bed they ſhould have but little water given to them when their leaves are decayed, leſt it rot them. The firſt ſort doth flower conſtantly in July or Auguſt, and will often produce ripe ſeeds in England; but the ſecond ſort doth not flower ſo conſtant, nor do the flowers appear ſo conſpicuous, being very ſmall and of a ſhort duration. This ſort never hath produced any ſeeds in England, nor could I ever obſerve any rudiment of a ſeed-veſſel ſucceeding the flower. The green leaves abide on this ſort moſt part of the winter, ſeldom decaying till February; and ſometimes will continue green until freſh leaves come up, and thruſt the old ones off; in which particular there is a more remarkable difference between the two ſorts, than can be obſerved in the face of plants.

MARJORAM. See ORIGANUM.

MARLE is a kind of clay, which is become fatter, and of a more enriching quality, by a better fermentation, and by its having lain ſo deep in the earth as not to have ſpent or weakened its fertilizing quality by any product.

Marle is ſuppoſed to be much of the nature of chalk, and is believed to be fertile from its ſalt and oily quality; and that it contracts its ſalts from the air, and for that reaſon is the better the longer it is expoſed to it.

Marles are of different qualities in different counties of England. There are reckoned to be four ſorts of Marles in Suſſex, a gray, a blue, a yellow, and a red; of theſe the blue is accounted the beſt, the yellow the next, and the gray the next to that; and as for the red, that is the leaſt valuable.

The Marle in Suſſex is moſt like fullers earth, and therefore muſt certainly be the fatteſt, whereas that in the north country runs much upon the loam.

In Cheſhire they reckon ſix ſorts of Marle:

1. The cowſhut Marle, which is of a browniſh colour, with blue veins in it, and little lumps of chalk or lime ſtone; it is commonly found under clay, or low black land, ſeven or eight feet deep, and is very hard to dig.

2. Stone, ſlate, or flag Marle, which is a kind of ſoft ſtone, or rather ſlate, of a blue or bluiſh colour, that will eaſily diſſolve with froſt or rain. This is found near rivers and the ſides of hills, and is a very laſting ſort of Marle.

In Staffordſhire they eſteem the dice or ſlate Marle better than the clay Marle, and reckon the blue beſt for arable land, and the gray for paſture.

3. Peat Marle, or delving Marle, which is cloſe, ſtrong, and very fat, of a brown colour, and is found on the ſides of hills, and in wet boggy grounds, which have a light ſand in them about two feet or a yard deep. This is accounted the ſtrongeſt of all Marles, and is very good for ſandy land, but the land muſt have a double quantity laid on.

4. Clay Marle; this reſembles clay, and is pretty near akin to it, but is fatter, and ſometimes mixed with chalk ſtones.

5. Steel Marle, which lies commonly in the bottom of pits that are dug, and is of itſelf apt to break into cubical bits; this is ſometimes under ſandy land.

6. Paper Marle, which reſembles leaves or pieces of brown paper, but ſomething of a lighter colour; this lies near coals. This ſort is leſs eſteemed, it being hard to be got.

The properties of any ſorts of Marles, and by which the goodneſs of them may be beſt known, are better judged of by their purity and uncompoundedneſs, than their colour: as if it will break in pieces like dice, or into thin flakes, or is ſmooth like lead ore, and is without a mixture of gravel or ſand; if it will ſhake like ſlate ſtones, and ſhatter after wet, or will turn to duſt when it has been expoſed to the ſun: or will not hang and ſtick together when it is thoroughly dry, like tough clay; but is fat and tender, and will open the land it is laid on, and not bind; it may be taken for granted, that it will be beneficial to it.

Some adviſe to try the goodneſs of Marle, by putting ſome of it in a glaſs of water; and they account it to be good, if it be ſo tender, that the lumps break, and diſſolve as ſoon as it comes to the bottom; they alſo reckon it a good ſign, if it ſparkle in the water, and feel fat between the fingers; but the ſureſt ſign of its goodneſs is, if it diſſolve by wet or froſt. The ſtrength of Marle may alſo be known, by putting a lump of it in a glaſs of good vinegar, where, if the fermentation is great, it is a ſure ſign of the goodneſs of the Marle.

Some approve of marling land ſhallow, becauſe they ſay, it is apt to work downwards; others of laying it in deep at firſt, becauſe the ſun waſtes the fatneſs of it.

Some recommend Marles for the improving of ſandy looſe land, but the ſureſt way to know what lands it will beſt ſuit with, is to try with a little of it on lands ſuppoſed to be of a contrary nature to it.

Marles do not make ſo good an improvement of lands the firſt year as afterwards.

Some adviſe, firſt to burn the Marle before it is laid on the lands; which if it be done, one load will go as far as five.

The quantity of Marle ought to be in proportion to the depth of the earth, for over-marling has often proved of worſe conſequence than under-marling, eſpecially where the land is ſtrong; for by laying it in too great quantities, or often repeating the marling, the land has become ſo ſtrong, and bound ſo cloſely, as to detain the wet like a diſh, ſo that the owners have been obliged to drain the ground at a great expence, and have often been obliged to lower their rents; but in ſandy land there can be no danger in laying on a great quantity, or repeating it often, for it is one of the beſt dreſſings for ſuch land.

MARRUBIASTRUM, Baſtard Horehound. See SIDERITIS.

MARRUBIUM. Tourn. Inſt. R. H. 192. tab. 91. Lin. Gen. Plant. 640. Pſeudodictamnus. Tourn. 188. tab. 89. Lin. Gen. Plant. 640. [ſome derive the name of מרוב, *Heb.* Marrob, i. e. bitter juice; others from the Latin word Marcidum, becauſe the leaves of this plant are ſo wrinkled, that they appear to be withering.] Horehound.

The CHARACTERS are,

The empalement of the flower is funnel-ſhaped, of one leaf, and equal at the brim, which ſpreads open. The flower is of the lip or grinning kind, with a cylindrical tube opening at the brim, where it is divided into two lips, the upper being very narrow and acute, the under broad, reflexed, and cut into three ſegments, the middle one is broad and indented. It has four ſtamina, which are under the upper lip, two of which are a little longer than the other, terminated by ſimple ſummits. It hath a four-pointed germen, ſupporting a ſlender ſtyle of the ſame length, and ſituated with the ſtamina, crowned by a bifid ſtigma. The germen afterward turns to four oblong ſeeds, ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, intitled Didynamia Gymnoſpermia, which includes thoſe plants whoſe flowers have two long and two ſhort ſtamina, which are ſucceeded by naked ſeeds ſitting in the empalement.

The

The Species are,

1. Marrubium (*Vulgare*) dentibus calycinis ſetaceis uncinatis. Hort. Cliff. 312. *Horehound with hooked briſtly indentures to the empalement.* Marrubium album vulgare. C. B. P. 230. *Common white Horehound.*
2. Marrubium (*Peregrinum*) foliis ovato-lanceolatis ſerratis, calycum denticulis ſetaceis. Hort. Cliff. 311. *Horehound with oval, ſpear-ſhaped, ſawed leaves, and briſtly indentures to the empalement.* Marrubium album latifolium peregrinum. C. B. P. 230. *Broad-leaved, foreign, white Horehound.*
3. Marrubium (*Creticum*) foliis lanceolatis dentatis, verticillis minioribus, dentibus calycinis ſetaceis erectis. *Horehound with ſpear-ſhaped indented leaves, ſmaller whorls, and erect briſtly indentures to the empalements.* Marrubium album anguſtifolium peregrinum. C.B. P. 230. *Narrow-leaved, foreign, white Horehound.*
4. Marrubium (*Alyſſon*) foliis cuneiformibus, quinque verticillis involucro deſtitutis. Hort. Cliff. 311. *Horehound with wedge-ſhaped plaited leaves, with five indentures, and the whorls deſtitute of covers.* Marrubium alyſſon dictum, foliis profundè inciſis. H. L. *Horehound, called Madwort, with leaves which are deeply cut on their ſides.*
5. Marrubium (*Supinum*) dentibus calycinis ſetaceis rectis villoſis. Hort. Cliff. 312. *Horehound with hairy, erect, briſtly indentures to the empalement.* Marrubium Hiſpanicum ſupinum, foliis ſericeis argenteis. Tourn. 193. *Low Spaniſh Horehound with ſilken ſilver-coloured leaves.*
6. Marrubium (*Candidiſſimum*) foliis ſubovatis lanatis ſupernè emarginato-crenatis, denticulis calycinis ſubulatis. Hort. Cliff. 312. *Horehound with woolly leaves almoſt oval, the upper parts of which are indented and crenated, with awl-ſhaped indentures to the empalements.* Marrubium album candidiſſimum & villoſum. Tourn. Cor. 1. *Whiteſt and villoſe Horehound.*
7. Marrubium (*Hiſpanicum*) calycum limbis patentibus, denticulis acutis. Hort. Cliff. 312. *Horehound with ſpreading borders to the empalement, and acute indentures.* Marrubium album rotundifolium Hiſpanicum. Par. Bat. 201. *Round-leaved Spaniſh Horehound.*
8. Marrubium (*Criſpum*) calycum limbis planis villoſis, foliis orbiculatis rugoſis, caule herbaceo. *Horehound with a plain hairy border to the empalement, round rough leaves, and an herbaceous ſtalk.* Pſeudodictamnus Hiſpanicus, foliis criſpis & rugoſis. Tourn. Inſt. 188. *Spaniſh Baſtard Dittany, with rough curled leaves.*
9. Marrubium (*Suffruticoſum*) calycum limbis planis villoſis, foliis cordatis rugoſis incanis, caule ſuffruticoſo. *Horehound with the border of the empalement plain and hoary, heart-ſhaped, rough leaves, and a ſhrubby ſtalk.* Pſeudodictamnus Hiſpanicus, ampliſſimo folio candicante & villoſo. Tourn. Inſt. R. H. 118. *Spaniſh Baſtard Dittany, with a very large hoary leaf.*
10. Marrubium (*Pſeudodictamnus*) calycum limbis planis villoſis, foliis cordatis, caule fruticoſo. Hort. Cliff. 312. *Horehound with a plain hairy border to the empalement, heart-ſhaped leaves, and a ſhrubby ſtalk.* Pſeudodictamnus verticillatus inodorus. C.B. P. 232. *Whorled unſavoury Baſtard Dittany.*
11. Marrubium (*Acetabuloſum*) calycum limbis tubo longioribus membranaceis, angulis majoribus rotundatis. Lin. Sp. Plant. 584. *Horehound with a membranaceous rim to the empalement longer than the tube, and larger rounder angles* Pſeudodictamnus acetabulis Moluccæ. C. B. P. 222. *Baſtard Dittany, with a pan or hollow of Molucca Baum.*

The firſt ſort is the Praſium, or white Horehound of the ſhops. This grows naturally in moſt parts of England, ſo is ſeldom propagated in gardens. It hath a ligneous fibrous root, from which come out many ſquare ſtalks a foot or more in length, which branch out upward, and are garniſhed with hoary roundiſh leaves, indented on the edges, placed oppoſite. The flowers grow in very thick whorls round the ſtalks at each joint; they are ſmall, white, and of the lip kind, ſtanding in ſtiff hoary empalements, cut into ten parts at the top, which end in ſtiff briſtles; theſe are ſucceeded by four oblong black ſeeds ſitting in the empalement. It flowers in June, and the ſeeds ripen in autumn.

The ſecond ſort grows naturally in Italy and Sicily; this riſes with ſquare ſtalks near three feet high, which branch much more than the firſt; the leaves are rounder, whiter, and ſtand farther aſunder; the whorls of flowers are not ſo large, but the flowers have longer tubes.

The third ſort grows naturally in Spain and Portugal; this riſes with ſlender hoary ſtalks near three feet high; the leaves are very hoary, much longer and narrower than thoſe of the ſecond; the whorls of flowers are ſmaller, the briſtly indentures of the empalement are longer and erect; the whole plant has an agreeable flavour.

The fourth ſort grows naturally in Spain and Italy; this is a biennial plant, whoſe ſtalks are about the ſame length as thoſe of the firſt; the leaves are wedge-ſhaped, hoary, and obtuſely indented; the whorls of flowers are ſmall, and have no covers. The flowers ſtand looſer in the whorls, and the cuts of the empalement end in very ſtiff prickles, which ſpread open; the flowers are purple, and larger than thoſe of the firſt ſort.

The fifth ſort grows naturally in the iſlands of the Archipelago; the ſtalks of this are ſeldom above eight or nine inches long, covered with a ſoft hoary down; the leaves are ſmall, roundiſh, and very ſoft to the touch; they are hoary, and indented on the edges. The whorls of flowers are ſmall, very downy, and white; the flowers are ſmall and white.

The ſixth ſort grows naturally in Spain; this hath ſtalks about the ſame length as the firſt; the leaves are nearly oval, woolly, and crenated toward the top, and the empalement of the flowers are awl-ſhaped.

The ſeventh ſort grows naturally in Iſtria, from whence I received the ſeeds. The ſtalks of this grow more erect than thoſe of the common ſort: the leaves are rounder and more ſawed on the edges; the empalement of the flowers ſpread open, ending in acute ſegments. The flowers are like thoſe of the common ſort; the whole plant is very hoary.

The eighth ſort grows naturally in Spain and Sicily; this ſends out many ſtiff roundiſh ſtalks, which riſe more than two feet high, covered with a white cottony down; the leaves are almoſt round, rough on their upper ſide, and woolly on their under; the whorls of flowers are large, the borders of the empalement are flat and hairy; the tube of the flower is ſcarce ſo long as the empalement, ſo the two lips are but juſt viſible.

The ninth ſort grows naturally in Spain; the ſtalks of this are ſhrubby, and riſe near three feet high, dividing into ſmall branches; the leaves are heart-ſhaped and rough on their upper ſide, but hoary on their under; the whorls of flowers are large, the borders of the empalements flat and hairy; the tube of the flower is longer, and the flowers are larger than thoſe of the former ſort; they are of a pale purple colour, and their upper lips are erect.

The tenth ſort grows naturally in Sicily, and the Iſlands of the Archipelago. This riſes with a ſhrubby ſtalk two feet high, which divides into many branches, garniſhed with ſmall heart-ſhaped leaves, ſitting pretty cloſe to the ſtalks: the whorls of flowers are not ſo large as thoſe of the two former ſorts. The rim of the empalements are flat. The flowers are white, and the whole plant is very hoary.

The eleventh ſort grows naturally in Crete; this hath very hairy ſtalks which riſe about two feet high, garniſhed with heart-ſhaped leaves, which are rough on their upper ſide, but hoary on their under. The whorls of flowers are large, the border of the empalements flat, and cut into many ſegments, which are membranaceous, angular, and rounded at the top. The flowers are ſmall, of a pale purple colour, but ſcarce appear out of their empalements, and their upper lips are erect.

The firſt ſort is what the College of Phyſicians has directed to be uſed in medicine. The leaves and tops of the plants are eſteemed hot and dry, pectoral, and good to free the lungs from thick viſcid phlegm, and thereby to help old coughs, eſpecially in cold moiſt conſtitutions, the juice being made into a ſyrup with ſugar or honey; they open obſtructions of the liver and ſpleen, and are very ſerviceable againſt the dropſy, jaundice, green ſickneſs, and obſtructions of the catamenia, and ſuppreſſion of the lochia, and other diſtempers of the female ſex, for which few herbs go beyond this. The officinal preparation is the ſyrupus de Praſſio.

The fourth ſort is ſuppoſed to be Galen's Madwort; this was by the antients greatly recommended for its efficacy in curing of madneſs, and ſome few of the moderns have preſcribed it in the ſame diſorder, but at preſent it is ſeldom uſed; it is a biennial plant, which generally periſhes after it hath perfected ſeeds. All theſe plants are preſerved in botanic gardens for the ſake of variety, but there are not above two of the ſorts which are cultivated in other gardens; theſe are the tenth and eleventh ſorts, whoſe ſtalks are ſhrubby; the plants are very hoary, ſo make a variety when intermixed with other plants; theſe very rarely produce ſeeds in England, ſo are propagated by cuttings, which, if planted in a ſhady border the middle of April, will take root pretty freely.

They are ſomewhat tender, ſo in very ſevere winters are killed, unleſs they are ſcreened from the hard froſts, eſpecially thoſe plants which grow in good ground, where they grow luxuriant in ſummer, ſo their branches are more replete with juice, and very liable to ſuffer by cold; but when they are in a poor dry rubbiſh, the roots will be ſhort, firm, and dry, ſo are ſeldom injured by cold, and will continue much longer than thoſe in better ground.

The other ſorts are eaſily propagated by ſeeds, which ſhould be ſown on a bed of poor earth in the ſpring, and when the plants come up they muſt be kept clean from weeds; and where they are too cloſe they ſhould be thinned, leaving them a foot and a half aſunder, that their branches may have room to ſpread; after this they require no other culture; they may alſo be propagated by cuttings, in the ſame manner as the other two ſorts. If theſe plants are upon a dry poor ſoil, they will live ſeveral years, but in rich land they ſeldom laſt above three or four.

MARRUBIUM NIGRUM. See BALLOTE.

MARTAGON. See LILIUM.

MARTYNIA. Houſt. Gen. Nov. Martyn. Dec. 1. 42. [This name was given by the late Dr. William Houſtoun to this genus of plants, which he diſcovered in America, in honour of his friend Mr. John Martyn, who was Profeſſor of Botany at Cambridge.]

The CHARACTERS are,

The empalement of the flower is cut into five parts, three of them are erect, and two reflexed. The flower hath one petal, which is bell-ſhaped, with a large ſwelling tube, at the baſe of which is ſituated a gibbous nectarium. The rim of the petal is cut ſlightly into five obtuſe ſegments, two of which are turned upward, the other three downward, repreſenting a lip flower. It hath four ſlender incurved ſtamina, which are inflexed into each other, terminated by ſummits, which are connected together. It hath an oblong germen ſituated under the flower, ſupporting a ſhort ſtyle, crowned by a plain ſtigma. The empalement afterward turns to an oblong gibbous capſule, which divides into two parts, including a hard nut, ſhaped like the body of a ſtag beetle, with two incurved ſtrong horns at the end, having four cells, two of which are generally barren, the other two have one oblong ſeed in each.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, which includes the plants whoſe flowers have two long and two ſhort ſtamina, and the ſeeds are included in a capſule.

The SPECIES are,

1. MARTYNIA (*Annua*) caule ramoſo, foliis angulatis. Lin. Sp. Plant. 618. *Martynia with a branching ſtalk and angular leaves.* Martynia annua villoſa & viſcoſa, folio ſubrotundo, flore magno rubro. Houſt. *Annual, hairy, viſcous Martynia, with a roundiſh leaf, and a large red flower.*
2. MARTYNIA (*Perennis*) caule ſimplici, foliis ſerratis. Lin. Sp. Plant. 618. *Martynia with a ſingle ſtalk and ſawed leaves.* Martynia foliis ſerratis. Lin. Hort. Cliff. *Martynia with ſawed leaves.*
3. MARTYNIA (*Louiſiana*) caule decumbente ramoſa, foliis integris fructibus longiſſimis. *Martynia with a decumbent branching ſtalk, entire leaves, and very long fruit.*

The firſt of theſe plants was diſcovered by the late Dr. William Houſtoun, near La Vera Cruz, in New Spain, from whence he ſent the ſeeds into England, which ſucceeded very well in the Phyſic Garden at Chelſea; and in the year 1731, ſeveral of theſe plants were raiſed, which produced their beautiful flowers, and perfected their ſeed, from whence ſeveral plants were raiſed the ſucceeding year.

This riſes with a ſtrong, herbaceous, hairy ſtalk near three feet high, which divides upward into three or four large branches, garniſhed with oblong oval leaves, cut into angles on their ſides; they are five inches long, and three inches and a half broad at their baſe, where they are broadeſt, ending in obtuſe points; they are hairy, and very viſcous, ſticking to the fingers if handled. The flowers are produced in ſhort ſpikes from the forks of the branches, and alſo at their tops; they are ſhaped like thoſe of the Foxglove, but are of a paler purple colour; theſe are ſucceeded by oblong oval capſules, which are thick, tough, and clammy; theſe, when ripe, divide into two parts, leaving a large hard nut hanging on the plant, about the ſize, and much of the ſame form, as the ſtag beetle, with two ſtrong crooked horns at the end. The nut has two deep longitudinal furrows on the ſides, and ſeveral ſmaller croſſing each other in the middle. It is ſo hard, that it is with difficulty cut open without injuring of the ſeeds: within are four oblong cells, two of which have generally a ſingle oblong ſeed in each, but the other two are abortive. If the plants are brought forward in the ſpring, they will begin to ſhew their flowers in July, which are firſt produced at the diviſion of the branches, and afterward at the extremity of each branch, ſo there will be a ſucceſſion of flowers on the ſame plant till the end of October, when the plants decay.

The ſecond ſort was diſcovered by Mr. Robert Millar, growing naturally about Carthagena in New Spain, from whence he ſent the ſeeds to Europe; this hath a perennial root and an annual ſtalk, which decays every autumn, and new ones ariſe in the ſpring. The roots of this plant are thick, fleſhy, and divided into knots, which are ſcaly, ſomewhat like thoſe of Toothwort; theſe ſend up ſeveral ſtalks, which grow about a foot high; they are thick, ſucculent, and of a purpliſh colour, garniſhed with oblong thick leaves, whoſe baſe ſits cloſe to the ſtalk; they are ſawed on their edges, rough on their upper ſide, where they are of a dark green, but their under ſide is purpliſh. The ſtalk is terminated by a ſhort ſpike of blue flowers, which are bell-ſhaped, and do not ſpread open at the rim ſo much as the former ſort; theſe uſually appear in July or Auguſt, but are not ſucceeded by ſeeds in England.

The firſt ſort, being an annual plant, is only propagated by ſeed, which ſhould be ſown in pots filled with light rich earth, and plunged into a hot-bed of tanners bark, where (if the earth is duly watered to promote the vegetation of the ſeed) the plants will appear in about three weeks or a month, and will grow pretty faſt if the bed is warm; they ſhould therefore be tranſplanted in a little time after they come up, each into a ſeparate pot filled with light rich earth, and then plunged into the hot-bed again, obſerving to water them well, as alſo to ſhade them from the ſun until they have taken new root; after which time they ſhould have a large ſhare of freſh air admitted to them in warm weather, by raiſing the glaſſes of the hot-bed every day: with this management the plants will make great progreſs, ſo as to

fill the pots with their roots in about a month or ſix weeks time, when they ſhould be ſhifted into pots about a foot diameter at the top, which ſhould be filled with light rich earth, and then plunged into the hot-bed in the bark-ſtove, where they ſhould be allowed room, becauſe they put out many ſide branches, and will grow three feet high or more, according to the warmth of the bed; and the care which is taken to ſupply them conſtantly with water; and ſhould be conſtantly kept in the tan-bed, giving them plenty of free air at all times when the weather is warm, but they will not bear to be expoſed abroad in this country; when theſe plants thrive well they will ſend out many ſide branches, which will all of them produce ſmall ſpikes of flowers; but it is only from the firſt ſpike of flowers that good ſeeds can be expected in this country, ſo that particular care ſhould be taken, that none of theſe are pulled off or deſtroyed, becauſe it is very difficult to obtain good ſeeds here; and I believe few of thoſe that are produced on the ſide branches in the natural country of their growth, are duly ripened; for I have received a great quantity of theſe ſeeds from abroad, which have appeared to be very good, and yet few of them have grown.

The ſeeds of theſe plants have a ſtrong green covering on them, as thick as the outer covering of an Almond, and when the ſeeds are ripe, the covering opens, and lets the ſeeds fall, in the ſame manner as the covering of Almonds, Walnuts, &c. In each covering there is one hard nut, in ſhape ſomewhat like a beetle, having two ſharp crooked horns at one end. This nut contains four embryos, but there are ſeldom more than two ſeeds which are perfect in any of them. However, when they are ſown, the whole nut muſt be planted, for it is ſo hard, that it is almoſt impoſſible to take out the ſeeds without ſpoiling them; ſo where there are two plants produced from the ſame nut, they are eaſily ſeparated, eſpecially if they are tranſplanted while young. Theſe ſeeds will continue good for ſome years, for I ſaved a pretty large quantity of them in the year 1734, part of which I ſowed the following year, but had not one plant produced from them; the remainder of the ſeeds I divided, and ſowed ſome of them every ſucceeding year, without any ſucceſs, until the year 1738, when I ſowed all the ſeeds I had left, from which I had one plant produced; ſo that if the ſeeds are good, it is evident they will grow when they are four years old; therefore, whenever we receive good ſeeds from abroad, or ſave any in this country which are perfectly ripened, it will be proper to preſerve ſome of them for a year or two, leſt a bad ſeaſon ſhould happen, when the plants may not perfect their ſeeds; ſo that if this precaution be not taken, the ſpecies may be loſt in Europe.

The ſecond ſort dies to the root every winter, and riſes again the ſucceeding ſpring; this muſt be conſtantly preſerved in the ſtove, and plunged into the bark-bed, otherwiſe it will not thrive in this country. During the winter ſeaſon, when the plants are decayed, they ſhould have but little water given to them, for at that time it will rot the roots. In the middle of March, juſt before the plants begin to ſhoot, is the proper ſeaſon to tranſplant and part the roots, when they ſhould be planted into pots of a middle ſize, filled with light rich earth, and then plunged into the bark-bed, which ſhould at this time be renewed with ſome freſh tan. When the plants come up, they muſt be frequently refreſhed with water, but it muſt not be given to them in large quantities, leſt it rot their tender roots; and as the warmth of the ſeaſon increaſes, it will be proper to admit a large ſhare of freſh air, which will greatly ſtrengthen the plants; they muſt alſo be placed in the tan-bed, where they are not over-hung, or ſhaded by other plants; nor ſhould they be ſhifted or tranſplanted when they are in leaf, for that will prevent their flowering. As the roots of this plant increaſe very faſt, there is no neceſſity for uſing other methods to propagate it; otherwiſe the ſhoots of the young ſtalks will take root, if they are planted in pots filled with light earth, and plunged into a hot-bed during any of the ſummer months.

The third ſort grows naturally in Louiſiana, from whence the ſeeds were brought to France. This is an annual plant, having a ſucculent viſcous ſtalk, which divides into many branches; theſe thick ſucculent ſtalks become too weighty for the ſtalk to ſupport them, whereby the ſtalk generally is brought to the ground, unleſs it is well ſupported: the leaves are large, viſcous, and hairy; ſome of them are cut into angles, but for the moſt part they are entire, five or ſix inches long, and four broad in the middle. The flowers are produced from the forks of the ſtalk in ſhort ſpikes; they are of a pale red colour, and in ſhape and ſize like thoſe of the firſt ſort; they are ſucceeded by fruit four or five inches long, having a thick green cover, which parts and falls off when ripe, leaving a rough beetle-ſhaped veſſel, having two very long horns at the end, opening in two parts, containing ſeveral oval ſeeds, covered with a black ſkin, which muſt be taken off before the ſeeds are ſown.

This being an annual plant, ſhould be brought forward in the ſpring, by ſowing the ſeeds on a hot-bed the latter end of March; and when the plants come up, they ſhould be treated almoſt in the ſame manner as the firſt, with this difference only, that being more hardy than the firſt, the plants ſhould have more air admitted to them, to prevent their drawing up weak; nor ſhould they have too much water in ſummer, which is apt to rot their ſucculent ſtems before the ſeeds are perfected.

MARVEL OF PERU. See MIRABILIS.

MARUM. See TEUCRIUM.

MARUM VULGARE. See SATUREJA.

MARYGOLD. See CALENDULA.

MARYGOLD (AFRICAN.) See TAGETES.

MARYGOLD (FIG.) See MESEMBRYANTHEMUM.

MARYGOLD (FRENCH.) See TAGETES.

MASTERWORT. See IMPERATORIA.

MASTICHINA. See SATUREJA.

MATRICARIA. Tourn. Inſt. R. H. 493. tab. 281. Lin. Gen. Plant. 867. [ſo called from the matrix, becauſe this plant is very good againſt diſeaſes of the womb; and for the ſame reaſon it is called Parthenium, of Παρθένος, a virgin.] Feverfew; in French, *Matricaire*.

The CHARACTERS are,

It hath a compound flower. The ray, or border, is compoſed of many female half florets, and the diſk, which is hemiſpherical, of hermaphrodite florets; theſe are included in one common hemiſpherical empalement, compoſed of linear ſcales, nearly equal. The female half florets are tongue-ſhaped, and indented in three parts at the end; theſe have a naked germen, ſupporting a ſlender ſtyle, terminated by two twiſted ſtigmas. The hermaphrodite florets are tubulous, funnel-ſhaped, and cut into five parts at the brim, which ſpread open; they have each five hairy ſhort ſtamina, terminated by cylindrical ſummits, and an oblong naked germen, with a ſlender ſtyle, crowned by a bifid ſpreading ſtigma. The germen of both turn to ſingle, oblong, naked ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's nineteenth claſs, which includes the plants with compound flowers, whoſe ſtamina and ſtyles are connected, and the florets are all fruitful.

The SPECIES are,

1. MATRICARIA (*Parthenium*) foliis compoſitis planis, foliolis ovatis inciſis, pedunculis ramoſis. Hort. Cliff. 416. *Feverfew with plain compounded leaves, whoſe lobes are oval and cut, having branching foot-ſtalks.* Matricaria vulgaris, ſeu ſativa. C. B. P. 133. *Common, or Garden Feverfew.*
2. MATRICARIA (*Maritima*) receptaculis hemiſphæricis, foliis bipinnatis ſubcarnoſis, ſuprà convexis, ſubtus carinatis. Lin. Sp. Plant. 891. *Feverfew with hemiſpherical receptacles, doubly winged leaves, which are fleſhy, and convex on their upper ſide, but keel-ſhaped below.* Chamæmelum maritimum perenne humilius, foliis brevoribus

brevioribus craſſis obſcurè virentibus. Raii Syn. Ed. 3. p. 186. *Dwarf, perennial, maritime Chamomile, with ſhort, thick, dark green leaves.*

3. MATRICARIA (*Indica*) foliis ovatis ſinuatis angulis ſerratis acutis. *Feverfew with oval, ſinuated, angular, acutely-ſawed leaves.* Matricaria latiore folio, flore pleno. Mor. Hiſt. 3. p. 33.

4. MATRICARIA (*Argentea*) foliis bipinnatis, pedunculis ſolitariis, Hort. Cliff. 415. *Feverfew with winged leaves, and ſingle foot-ſtalks to the flowers.* Chamæmelum Orientale incanum, Millefolium folio. Tourn. Cor. 37.

5. MATRICARIA (*Americana*) foliis lineari-lanceolatis integerrimis, pedunculis unifloris. *Feverfew with entire ſpear-ſhaped leaves, and foot-ſtalks with one flower.*

The firſt ſort is the common Feverfew, which is directed to be uſed in medicine. It grows naturally in lanes, and upon the ſide of banks in many parts of England, but is frequently cultivated in the phyſic-gardens to ſupply the markets; this is commonly a biennial plant, which decays ſoon after it has perfected ſeeds. The root of this plant is compoſed of a great number of fibres, which ſpread wide on every ſide. The ſtalks riſe upward of two feet high; they are round, ſtiff, and ſtriated, branching out on every ſide. The leaves are compoſed of ſeven lobes, which are cut into many obtuſe ſegments; they are of a yellowiſh green colour. The ſtalks and branches are terminated by the flowers, which are diſpoſed almoſt in the form of looſe umbels, each flower ſtanding upon a ſeparate foot-ſtalk, about two inches long. The flowers are compoſed of ſeveral ſhort rays, which are white, like thoſe of the Chamomile, ſurrounding a yellow diſk, compoſed of hermaphrodite florets, which form a hemiſphere; theſe are incloſed in one common ſcaly empalement, and are ſucceeded by oblong, angular, naked ſeeds. It flowers in June, and the ſeeds ripen in autumn. The whole plant has a ſtrong unpleaſant odour. The leaves and flowers of this are uſed in medicine, and are particularly appropriated to the female ſex, being of great ſervice in all cold flatulent diſorders of the womb, and hyſteric affections, procuring the catamenia, and expelling the birth and ſecundines.

The following varieties of this plant are preſerved in botanic gardens, many of which are pretty conſtant, if care is taken in ſaving the ſeeds; but where the ſeeds of theſe plants has been ſuffered to ſcatter, it will be almoſt impoſſible to preſerve the varieties without mixture; but if the ſeeds are ſown upon a freſh ſpot of ground, where there has not grown any of the plants before, I am inclinable to believe the ſeeds will produre the ſame plants as thoſe they were taken from; however, as they are ſuppoſed to be only varieties, ſo I ſhall only juſt inſert them here, for the uſe of thoſe who are curious in collecting the varieties.

1. Feverfew with very double flowers.
2. Feverfew with double flowers, whoſe borders, or rays are plain, and the diſk fiſtular.
3. Feverfew with very ſmall rays.
4. Feverfew with very ſhort fiſtular florets.
5. Feverfew with naked heads, having no rays or border.
6. Feverfew with naked ſulphur-coloured heads.
7. Feverfew with elegant curled leaves.

Theſe plants are all propagated by their ſeeds, which ſhould be ſown in March upon a bed of light earth, and, when they are come up, they ſhould be tranſplanted out into nurſery-beds, at about eight inches aſunder, where they may remain till the middle of May, when they may be taken up, with a ball of earth to their roots, and planted in the middle of large borders, where they will flower in July and Auguſt; and, if the autumn be favourable, will produce ripe ſeeds the ſame year. But it is not adviſeable to permit them to ſeed, which often weakens and decays the roots; therefore, when their flowers are paſt, you ſhould cut down their ſtems, which will cauſe them to puſh out freſh heads, whereby the roots may be maintained.

When the different varieties of theſe plants are intermixed with other plants of the ſame growth, they make a handſome appearance during the ſeaſon of flowering, which commonly continues a full month, or more, which renders them more valuable. But as their roots ſeldom abide more than two, or at moſt three years, freſh plants would be raiſed from ſeeds to ſupply their places; for although they may be propagated by parting their roots either in ſpring or autumn, yet theſe ſeldom make ſo good plants as thoſe obtained from ſeeds; but the ſecond variety ſeldom produces any good ſeeds, therefore that muſt be propagated in this manner, or by planting cuttings in the ſpring or ſummer months, which will take root, and make good plants.

The ſecond ſort grows naturally near the ſea, in ſeveral parts of England. I have obſerved it upon the Suſſex coaſt in great plenty, from whence I brought the plants, which were of no longer duration in the garden than two years, though in their native ſoil they may continue longer. The ſtalks of this plant branch out pretty much, and ſpread near the ground; they are garniſhed with dark green leaves, which are compoſed of many double wings, or pinnæ, like thoſe of the common Chamomile, but are much thicker in ſubſtance; they have their edges turned backward, ſo are convex on their upper ſurface, and concave on their under. The flowers are white, like thoſe of the common Chamomile, and are diſpoſed almoſt in the form of an umbel; they appear in July, and the ſeeds ripen in autumn.

This plant is ſeldom cultivated but in botanic gardens for variety. It may be propagated by ſeeds, which may be ſown either in autumn, ſoon after they are ripe, or in the ſpring, upon a bed of common earth, in almoſt any ſituation; and 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.

The third ſort grows naturally in many parts of India, I received it from Nimpu, where it grows plentifully; this plant riſes a foot and a half high, dividing into many branches, garniſhed with angular oval leaves, which are acutely ſawed on their edges, and are of a pale colour; the flowers are produced on foot-ſtalks which ariſe from the wings of the leaves, and alſo terminate the branches; theſe are, in all I have yet ſeen, very double, and full as large as thoſe of the double ſort before-mentioned; theſe appear in July, and in favourable ſeaſons are ſucceeded by ſeeds which ripen late in the autumn.

This ſort is propagated by ſeeds, which ſhould be ſown in the ſpring upon a moderate hot-bed, and when the plants come up, they muſt be treated in the manner already directed for the Chryſanthemum Coronarium, with which culture they will thrive and flower very well.

The fourth ſort grows naturally in the eaſt; this ſort riſes a foot high, having winged leaves of a ſilver colour, which are for the moſt part placed oppoſite; the foot-ſtalks of the flowers ariſe ſingle from the ſide of the branches, each ſupporting one white flower. This flowers in July, and in warm ſeaſons will ſometimes perfect ſeeds in autumn.

The ſeeds of this ſort ſhould be ſown in April, on a bed of light earth, in a good expoſure; and when the plants are grown of a proper ſize to remove, they ſhould be planted in the borders of the flower-garden; where, if they are kept clean from weeds, they will flower and perfect their ſeeds.

The fifth ſort grows naturally in North America; this is a perennial plant, whoſe ſtalks and leaves decay in the autumn, and new ones come out again in the ſpring; the ſtalks riſe a foot and a half high, and divide upward into ſeveral forked branches; at each of theſe diviſions is placed one linear ſpear-ſhaped leaf about two inches long, and a quarter of an inch broad, entire on the edges, and of a deep green. The branches are terminated by ſingle foot-ſtalks, each ſupporting one blue flower, very like thoſe of ſome kind of Starwort; but the empalement being ſcaly,

ſcaly, and the ſeeds having no down, occaſions its being here placed. The flowers appear in July and Auguſt, and the ſeeds ripen in the autumn.

This is propagated by ſeeds, which, if ſown in the autumn, ſoon after they are ripe, will more certainly ſucceed than when ſown in the ſpring; they ſhould be ſown in the full ground, and when the plants are fit to remove, if they are planted in the borders of the flower-garden, they will continue ſome years without protection, and annually produce flowers and ſeeds.

MATTED ROOTS are ſuch as are entangled or plaited together.

MAUDLIN. See ACHILLEA.

MAUROCENIA. Lin. Gen. Plant. Edit. 2. 289. Frangula. Hort. Elth. 121. The Hottentot Cherry, vulgo.

The CHARACTERS are,

The empalement of the flower is of one leaf, cut into five ſegments, and is permanent. The flower hath five oval petals, which ſpread open. It hath five ſtamina, which are ſituated betwen the petals, crowned by obtuſe ſummits. In the center is ſituated a roundiſh germen, having no ſtyle, crowned by a trifid ſtigma. The germen afterward turns to an oval berry with one or two cells, each containing a ſingle oval ſeed.

This genus of plants is ranged in the third ſection of Linnæus's fifth claſs, which includes the plants whoſe flowers have five ſtamina and three ſtyles or ſtigmas; and in the laſt edition of his Genera, he has joined it to the Caſſine, making them the ſame; but as the flower of Caſſine has but one petal, and the flower of theſe have five; and the berries of the former three cells, and thoſe of this but one or two, therefore I have ſeparated them.

The SPECIES are,

1. MAUROCENIA (*Frangula*) foliis ſubovatis integerrimis, floribus confertis lateralibus. *Maurocenia with entire leaves which are almoſt oval, and flowers growing in cluſters on the ſides of the branches.* Frangula ſempervirens, folio rigido ſubrotundo. Hort. Elth. 146. tab. 121. *Evergreen berry-bearing Alder with a roundiſh ſtiff leaf, commonly called Hottentot Cherry.*
2. MAUROCENIA (*Phillyrea*) foliis obverſè ovatis ſerratis, floribus corymboſis alaribus & terminalibus. *Maurocenia with obverſe, oval, ſawed leaves, and flowers growing in a corymbus at the ſides and ends of the branches.* Phillyrea capenſis, folio celaſtri. Hort. Elth. 315. tab. 236. *Phillyrea of the Cape with a Staff-tree leaf, by the Dutch called Leplehout.*
3. MAUROCENIA (*Ceraſus*) foliis ovatis nervoſis integerrimis. *Maurocenia with oval veined leaves, which are entire.* Ceraſus Hottentotorum. Pluk. Almag. 94. *The ſmaller Hottentot Cherry.*
4. MAUROCENIA (*Americana*) foliis obverſè ovatis emarginatis, floribus ſolitariis alaribus. *Maurocenia with obverſe oval leaves which are indented at the edges, and flowers growing ſingly from the ſides of the branches.* Frangula folio ſubrotundo rigido ſubtus ferrugineo. Houſt. MSS. *Berry-bearing Alder with a roundiſh ſtiff leaf, which is of an iron colour on the under ſide.*

The firſt ſort grows naturally at the Cape of Good Hope, where it riſes to a conſiderable height, but here they are rarely more than five or ſix feet high. The ſtalk is ſtrong, woody, and covered with a purpliſh bark, ſending out many ſtiff branches, garniſhed with very thick leaves, almoſt oval, ſtanding for the moſt part oppoſite; they are about two inches long, and almoſt as much in breadth, of a dark green colour, and entire. The flowers come out from the ſide of the old branches, in cluſters, three, four, or five, ſtanding upon one common foot-ſtalk, which is ſlender, compoſed of five plain equal petals, ending in acute points; they are firſt of a greeniſh yellow colour, but afterward change to white, ſpreading wide open. In the center is ſituated the oval germen, crowned by the trifid ſtigma, and between each petal is ſituated a ſtamina; theſe ſpread open in the ſame manner as the petals, and are terminated by obtuſe ſummits. The germen afterward turns to an oval pulpy berry, ſome having but one, and others two cells; in each of theſe is lodged one oval ſeed. The berries change to a dark purple when they are ripe. This plant flowers in July and Auguſt, and the berries ripen in winter.

The ſecond ſort is a native of the Cape of Good Hope; this hath a woody ſtalk, which in this country ſeldom riſes more than five or ſix feet high, ſending out many branches, covered with a dark purpliſh bark, and garniſhed with pretty ſtiff leaves, which are obverſely oval, and ſawed on their edges, ſtanding oppoſite; they are about an inch and a half long, and a little more in breadth, of a light green, having ſhort foot-ſtalks. The flowers are produced in roundiſh bunches from the ſide, and at the end of the branches; they are white, and have five ſmall petals which ſpread open; between theſe are ſituated the ſtamina, which ſpread in the ſame manner; theſe are terminated by obtuſe ſummits. In the center is ſituated the roundiſh germen, which is crowned ſometimes by a bifid, and at others by a trifid ſtigma. The flowers appear in July and Auguſt, but are not ſucceeded by berries in England.

The third ſort grows naturally at the Cape of Good Hope; this riſes with a woody ſtalk about the ſame height as the former, dividing into many branches, which are garniſhed with ſtiff oval leaves about two inches long, and nearly as much in breadth, of a lucid green colour, and entire, having three longitudinal veins; theſe are ſometimes placed oppoſite, and at others they are alternate, having a ſtrong margin, or border, ſurrounding them. This ſort hath produced its flowers in England, and I am fully convinced that the characters of the flowers are the ſame with the others.

The fourth ſort was diſcovered by the late Dr. Houſtoun, growing naturally at the Paliſadoes in Jamaica, from whence he ſent the ſeeds to Europe; this riſes with a woody ſtalk from fifteen to twenty feet high, covered with a rough brown bark, and divides into many branches, which are garniſhed with ſtiff leaves, placed alternately; they are about an inch and a half long, and a little more in breadth, indented at the top, with a ſtiff reflexed border, of a gray colour on their upper ſide, but of a ruſty iron colour on their under, ſtanding upon ſhort foot-ſtalks. The flowers come out ſingly along the ſide of the branches; they have five ſmall white petals, which end in acute points, and five ſlender ſtamina, which ſpread open, and are terminated by obtuſe ſummits. In the center is ſituated a roundiſh germen, ſupporting a long bifid ſtigma, which is permanent. The germen afterward turns to a round berry, with one or two cells, each having one oblong ſeed.

The firſt ſort is too tender to live abroad in England, but as it requires no artificial heat, ſo may be preſerved through the winter in a good green-houſe, where it deſerves a place for the beauty of its leaves, which are very thick, of a deep green, and differing in appearance from every other plant; this may be propagated by laying down thoſe ſhoots which are produced near the root, but they are long in putting out roots. The ſhoots ſhould be twiſted in the part which is laid, to facilitate their putting out roots; if theſe are laid down in the autumn, they will put out roots ſufficient to remove by the following autumn; it may alſo be propagated by cuttings, but this is a tedious method, as they are ſeldom rooted enough to tranſplant in leſs than two years. When this is practiſed, the young ſhoots of the former year ſhould be cut off, with a ſmall piece of the old wood at the bottom, in the ſpring, and planted in pots filled with loamy earth, and plunged into a moderate hot-bed, covering the pots with glaſſes, which ſhould be cloſe ſtopped down to exclude the external air; they ſhould be pretty well watered at the time they are planted, but afterward they will require but little wet; the glaſſes over them ſhould be covered every day with mats, to ſcreen the cuttings from the ſun during the heat of the

the day, but in the morning before the ſun is too warm, and in the afternoon, when the ſun is low, they ſhould be uncovered, that the oblique rays of the ſun may raiſe a gentle warmth under the glaſſes. With this care the cuttings will take root, but where it is wanting, they ſeldom ſucceed. When the cuttings or layers are rooted, they ſhould be each planted in a ſeparate ſmall pot, filled with ſoft loamy ſoil, and placed in the ſhade till they have taken new root; then they may be removed to a ſheltered ſituation, where they may remain during the ſummer ſeaſon; and, before the froſts of the autumn come on, they muſt be removed into the green-houſe, and treated in the ſame way as the other plants of that country, giving them but little water in cold weather, and in mild weather admitting the free air. In ſummer they muſt be removed into the open air, and placed in a ſheltered ſituation with other exotic plants, and in very warm weather they muſt be watered three times a week, but it muſt not be given them too freely at any time. When the plants have obtained ſtrength, they will produce flowers and fruit, which, in warm ſeaſons, will ripen perfectly; and if the ſeeds are ſown ſoon after they are ripe, in pots, and plunged into the tan-bed in the ſtove, the plants will come up the ſpring following, and may then be treated in the ſame manner as thoſe which are propagated by cuttings and layers.

The ſecond ſort is not altogether ſo hardy as the firſt, ſo muſt have a warmer place in the green-houſe in winter, and ſhould not be placed abroad quite ſo early in the ſpring, nor ſuffered to remain abroad ſo late in the autumn, but if the green-houſe is warm, the plants will require no additional heat. This may be propagated by layers and cuttings, in the ſame manner as the firſt, and requires the ſame care, for the cuttings are with difficulty made to root; nor will the branches which are laid, put out roots in leſs than a year, and if theſe are not young ſhoots, they will not take root.

As this ſort does not produce ſeeds in England, it can be only propagated by layers and cuttings, which being difficult to root, occaſions its being ſcarce at preſent in Europe.

The third ſort is yet more rare than either of the former, and is with greater difficulty propagated, for the layers and cuttings are commonly two years before they get roots ſufficient to remove, and as it never produces ſeeds here, it can be no other way propagated; this is alſo tenderer than either of the other ſorts, ſo requires a moderate degree of heat in winter, for without ſome artificial warmth, it will ſeldom live through the winters in England. In the middle of ſummer the plants may be placed abroad in a warm ſituation, but they muſt be removed into ſhelter early in the autumn, before the cold nights come on, otherwiſe they will receive a check, which they will not recover in winter; during the ſummer ſeaſon they ſhould be gently watered three times a week in dry weather, but in winter they will require to be ſeldom watered.

The fourth ſort is much more impatient of cold than either of the other, being a native of a warmer country. This is propagated by ſeeds, which muſt be procured from the country where it grows naturally, for it does not produce any here. Theſe do not grow the firſt year, ſo the ſeeds ſhould be ſown in pots filled with light earth, and plunged into a moderate hot-bed of tanners bark, where they may remain all the ſummer; and in the autumn they ſhould be removed into the bark-ſtove, and plunged into the tan-bed between the other pots of plants, in any vacant ſpaces; there they may remain till ſpring, when they ſhould be taken out of the ſtove, and plunged into a freſh hot-bed, which will bring up the plants. When theſe are fit to remove, they ſhould be each tranſplanted into a ſeparate ſmall pot, filled with a ſoft loamy earth, and plunged into a hot-bed again, being careful to ſhade them from the ſun till they have taken new root, after which they muſt be treated in the ſame manner as other tender plants from the ſame country, always keeping them in the tan-bed; and in winter they muſt have a temperate warmth, otherwiſe they will not live here.

All the ſorts delight in a ſoft, gentle, loamy ſoil, not over ſtiff, ſo as to detain the wet; nor ſhould the ſoil be too light, for in ſuch they ſeldom thrive. They retain their leaves all the year, ſo make a good appearance in the winter ſeaſon, their leaves being remarkably ſtiff and of a fine green, eſpecially the firſt ſort, whoſe fruit ripens in winter, which when it is in plenty on the plants, affords an agreeable variety.

MAYS. See ZEA.

MEADIA. Cateſb. Carol. 3. p. 1. Dodecatheon. Lin. Gen. Plant. 183.

The CHARACTERS are,

It hath a ſmall involucrum of many leaves, in which are many flowers. The flower hath a permanent empalement of one leaf, cut into five long ſegments which are reflexed. The flower hath one petal, cut into five parts, whoſe tube is ſhorter than the empalement, and the limb is reflexed backward. It hath five ſhort obtuſe ſtamina ſitting in the tube, terminated by arrow-pointed ſtigmas, which are connected into a beak, with a conical germen, ſupporting a ſlender ſtyle longer than the ſtamina, crowned by an obtuſe ſtigma. The empalement afterward becomes an oblong oval capſule with one cell, opening at the top, and filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle. The title of this genus was given to it by Mr. Mark Cateſby, F. R. S. in honour of the late Dr. Mead, who was a generous encourager of every uſeful branch of ſcience; but being himſelf no great botaniſt, Dr. Linnæus was unwilling any plant ſhould bear his name, ſo he has altered it to that of Dodecatheon, which was a title applied by Pliny to a ſpecies of Primroſe with a yellow root, and leaves like the Garden Lettuce.

We have but one SPECIES of this genus, viz.

MEADIA (*Dodecatheon.*) Cateb. Hiſt. Carol. App. 1. tab. 1. *Meadia.* Auricula urſi Virginiana, floribus boraginis, inſtar roſtratis, cyclaminum more reflexis. Pluk. Alm. 62. tab. 79. fol. 6. *Bear's-ear of Virgina, whoſe flower has a beak like that of Borage, and reflexed petals like thoſe of Sowbread.*

This plant grows naturally in Virginia, and other parts of North America, from whence it was ſent by Mr. Baniſter, many years ſince, to Dr. Compton, Lord Biſhop of London, in whoſe curious garden I firſt ſaw this plant growing in the year 1709; after which the plant was for ſeveral years loſt in England, till within a few years paſt, when it was again obtained from America, and has been propagated in pretty great plenty. It hath a yellow perennial root, from which comes out ſeveral long ſmooth leaves in the ſpring, which are near ſix inches long, and two and a half broad; at firſt ſtanding erect, but afterward they ſpread on the ground, eſpecially if the plants are much expoſed to the ſun; from between theſe leaves ariſe two, three, or four flower-ſtalks, in proportion to the ſtrength of the roots, which riſe eight or nine inches high, they are ſmooth, naked, and are terminated by an umbel of flowers, under which is ſituated the many-leaved involucrum. Each flower is ſuſtained by a pretty long ſlender foot-ſtalk which is recurved, ſo that the flower hangs downward. The flower has but one petal, which is deeply cut into five ſpear-ſhaped ſegments, which are reflexed upward like the flowers of Cyclamen or Sowbread; the ſtamina, which are five in number, are ſhort, and ſit in the tube of the flower, having five arrow-pointed ſummits, which are connected together round the ſtyle, forming a ſort of beak. The flowers are purple, inclining to a Peach bloſſom colour, and have an oblong germen ſituated in the bottom of the tube, which afterward becomes an oval capſule incloſed by the empalement, with the permanent ſtyle on its apex, which, when ripe, opens at the top to let out

the ſeeds, which are faſtened round the ſtyle. This plant flowers the beginning of May, and the ſeeds ripen in July, ſoon after which the ſtalks and leaves decay, ſo that the roots remain inactive till the following ſpring.

This plant is propagated by offsets, which the roots put out pretty freely when they are ina looſe moiſt ſoil and a ſhady ſituation; the beſt time to remove the roots, and take away the offsets, is in Auguſt, after the leaves and ſtalks are decayed, that they may be fixed well in their new ſituation before the froſt comes on. It may alſo be propagated by ſeeds, which the plants generally produce in plenty; theſe ſhould be ſown in the autumn ſoon after they are ripe, either in a ſhady moiſt border, or in pots, which ſhould be placed in the ſhade; in the ſpring the plants will come up, and muſt then be kept clean from weeds, and if the ſeaſon proves dry, they muſt be frequently refreſhed with water; nor ſhould they be expoſed to the ſun, for while the plants are young, they are very impatient of heat, ſo that I have known great numbers of them deſtroyed in two or three days, which were growing to the full ſun. Theſe young plants ſhould not be tranſplanted till their leaves are decayed, then they may be carefully taken up and planted in a ſhady border, where the ſoil is looſe and moiſt, at about eight inches diſtance from each other, which will be room enough for them to grow one year, by which time they will be ſtrong enough to produce flowers, ſo may then be tranſplanted into ſome ſhady borders in the flower-garden, where they will appear very ornamental during the continuance of their flowers.

At the firſt many ſuppoſed this plant to be tender, ſo planted it in warm ſituations and nurſed it too much, whereby the plants were often killed; but by experience it is found to be ſo hardy, as not to be hurt by the ſevereſt cold of this country; but it will not thrive in a very dry ſoil, or where it is greatly expoſed to the ſun.

MEADOW.

Under the general title of Meadow, is commonly comprehended all paſture land, or at leaſt all Graſs land, which is mown for hay; but I chuſe rather to diſtinguiſh ſuch land only by this appellation, which is ſo low, as to be too moiſt for cattle to graze upon them in winter, being generally too wet to admit heavy cattle, without poaching and ſpoiling the ſward; and thoſe Graſs lands which are drier, I ſhall diſtinguiſh by the title of paſture.

There are two ſorts of Meadows in England, one of which is ſtiled Water Meadows, and the other are ſimply called Meadows.

Water Meadows are thoſe which lie contiguous to rivers or brooks, from whence the water can be carried to overflow the Graſs at pleaſure. Of theſe there are large tracts in ſeveral parts of England, which, if ſkilfully managed, would become much more profitable to their owners than they are at preſent, as hath been already mentioned in another place; for nothing can be more abſurd than the common practice of flowing theſe low grounds all the winter, whereby the roots of all the ſweeteſt kinds of Graſs are deſtroyed, and only ſuch Graſſes left as are natives of marſhes, which are coarſe and ſour: and if people were curious to examine the herbage of theſe Water Meadows, they would find the bulk of them compoſed of bad weeds, ſuch as grow by the ſides of rivers, brooks, and ditches, of which the ſeveral ſorts of Docks make no ſmall ſhare; and although many of theſe Meadows produce a great burden of what the country people call hay, yet this is only fit for cows, cart-horſes, and other animals, which by hard labour and hunger, are driven to eat it; for horſes which have been accuſtomed to feed on good hay, will ſtarve before they will touch it: and after the Graſs is mown off theſe Meadows, and cattle turned in to graze upon them, how common is it to ſee the land almoſt covered with theſe rank weeds, which the cattle never will eat! Which muſt always be the condition of ſuch Meadows, where the water is let over them in autumn and winter; for, as the ſides of rivers and brooks do every where abound with theſe rank weeds, whoſe ſeeds ripen in autumn, and falling into the water, they are carried by the ſtream, and depoſited on the flowed land, where they grow and fill the ground in every part; but ſo incurious are the generality of farmers in this reſpect, that if the ground is but well covered, they care not what it is, few of them ever taking any pains to weed or clean their paſtures.

The method which I propoſe for the management of theſe Meadows is, never to flow them till the middle or latter end of March, excepting once or twice in winter, when there may happen floods, which may bring down a great ſhare of ſoil from the upper lands, at which times it will be of great ſervice to let water upon the Meadows, that the ſoil may ſettle there; but the ſooner the wet is drained off when this is lodged, the greater advantage the Meadows will receive by it; but from the end of March to the middle of May, in dry ſeaſons, by frequently letting on the water, the growth of the Graſs will be greatly encouraged, and at this ſeaſon there will be no danger of deſtroying the roots of the Graſs; and after the hay is carried off the ground, if the ſeaſon ſhould prove dry, it will be of great ſervice to the Graſs, if the Meadows are flowed again; but when this is practiſed, no cattle ſhould be turned into the Meadows, till the ſurface of the ground is become firm enough to bear their weight without poaching the land, for otherwiſe the Graſs will ſuffer more from the treading of the cattle, than it will receive benefit by the flowing; but theſe are things which the country people ſeldom regard, ſo that the Meadows are generally very unſightly, and rendered leſs profitable.

I would alſo recommend the weeding of theſe Meadows twice a year; the firſt time in April, and again in October; at which times if the roots of Docks and all bad weeds are cut up with a ſpaddle, the Meadows will ſoon be cleared of this trumpery, and the herbage greatly improved.

Another great improvement of theſe lands might be procured, by rolling them with a heavy roller in ſpring and autumn. This will preſs the ſurface of the ground even, whereby it may be mown much cloſer, and it will alſo ſweeten the Graſs; and this piece of huſbandry is of more ſervice to paſtures than moſt people are aware of.

As to thoſe Meadows which cannot be flowed, there ſhould be the ſame care taken to weed and roll them, as hath been directed for the Water Meadows; as alſo never to let heavy cattle graze upon them in winter when they are wet; for the cattle will then poach them, and greatly injure the Graſs; therefore theſe ſhould be fed down as cloſe as poſſible in the autumn, before the heavy rains fall to render the ground ſoft; and thoſe paſtures which are drier, may be kept to ſupply the want of theſe in winter; and where there are not cattle enough to eat down the Graſs in time, it will be much better to cut off what is left, than to ſuffer it to rot upon the ground, for that will prevent the Graſs from ſhooting early in the ſpring; but where people have not cattle enough of their own to eat down the Graſs in time, they had much better take in ſome of their neighbours, than ſuffer their fog (as it is called) to remain all the winter. When theſe Meadows are fed in the autumn, the greater variety of animals are turned in, the cloſer they will eat the Graſs; and I am fully convinced, the cloſer it is eaten, the better the Graſs will come up the following ſpring; therefore, if during the time while the cattle are feeding, the Meadows are well rolled, the animals will eat the Graſs much cloſer than they otherwiſe would.

Thoſe perſons who are beſt ſkilled in this part of huſbandry, always dreſs their Meadows every other, or at leaſt every third year, without which it is in vain to expect any good crop of hay; but the generality of the farmers are ſo much diſtreſſed for dreſſing to ſupply their Corn land, as not to have any to ſpare

for their Meadows, ſo that they are content with what the land will naturally produce, rather than take any part of their manure from their arable ground; but this is a very imprudent piece of huſbandry; for if land is to be annually mowed far hay, can it be ſuppoſed that it will produce a good crop long, unleſs there are proper dreſſings allowed it? And when ground is once beggared for want of manure, it will be ſome years before it can be recovered again; but I ſhall reſerve what is neceſſary to be farther enlarged on this ſubject, to be fully treated under the article of PASTURE.

MEADOW SAFFRON. See COLCHICUM.

MEDEOLA. Lin. Gen. Plant. 411.

The CHARACTERS are,

The flower has no empalement; it hath ſix oblong oval petals which are equal, ſpread open, and turn backward; and ſix awl-ſhaped ſtamina the length of the petal, terminated by incumbent ſummits, and three corniculated germen terminating the ſtyle, crowned by thick recurved ſtigmas. The germen afterward turns to a roundiſh trifid berry with three cells, each containing one heart-ſhaped ſeed.

This genus of plants is ranged in the third ſection of Linnæus's ſixth claſs, which includes thoſe plants whoſe flowers have ſix ſtamina and three ſtyles.

The SPECIES are,

1. MEDEOLA (*Aſparagoides*) foliis ovato-lanceolatis alternis, caule ſcandente. *Medeola with oval, ſpear-ſhaped, alternate leaves, and a climbing ſtalk.* Aſparagus Africanus, ſcandens, myrti folio. Hort. Piſſ. 17. *Climbing African Aſparagus, with a Myrtle leaf.*
2. MEDEOLA (*Anguſtifolia*) foliis lanceolatis alternis, caule ſcandente. *Medeola with ſpear-ſhaped alternate leaves, and a climbing ſtalk.* Aſparagus Africanus, ſcandens, myrti folio anguſtiore. Hort. Piſſ. 17. *Climbing African Aſparagus, with a narrower Myrtle leaf.*
3. MEDEOLA (*Virginiana*) foliis verticillatis, ramis inermibus. Lin. Sp. Plant. 339. *Medeola with leaves growing in whorls and ſmooth branches.* Lilium ſive martagon puſillum, floribus minutiſſimè herbaceis. Pluk. Alm. 410. tab. 328. fol. 4. *The Lily or little Martagon, with very ſmall herbaceous flowers.*

The firſt ſort grows naturally at the Cape of Good Hope; this hath a root compoſed of ſeveral dugs or oblong knobs, which unite together at the top like that of the Ranunculus, from which ariſe two or three ſtiff winding ſtalks, which divide into branches riſing four or five feet high, if they meet with any neighbouring ſupport to which they can faſten, otherwiſe they will fall to the ground; theſe are garniſhed with oval ſpear-ſhaped leaves, ending in acute points, placed alternately, and ſitting cloſe to the ſtalks; they are of a light green on their under ſide, and dark on their upper. The flowers come out from the ſide of the ſtalks, ſometimes ſingly, and at others there are two upon a ſlender ſhort foot-ſtalk; they have ſix oblong equal petals which ſpread open, and are of a dull white colour; within theſe are ranged ſix ſtamina, which are as long as the petals, terminated by incumbent ſummits. In the center is ſituated a germen with three horns, ſitting upon a ſhort ſtyle, crowned by three thick recurved ſtigmas; the germen afterward turns to a roundiſh berry with three cells, each containing one heart-ſhaped ſeed. It flowers the beginning of winter, and the ſeeds are ripe in the ſpring.

The ſecond ſort is alſo a native of the Cape of Good Hope, from whence I received the ſeeds. This hath a root like the firſt, but the ſtalks are not ſo ſtrong; they climb higher, but do not branch ſo much; the leaves are much longer and narrower, and are of a grayiſh colour. The flowers come from the ſide of the branches, two or three upon each foot-ſtalk; they are of an herbaceous white colour, ſhaped like thoſe of the former ſort, and appear about the ſame time, but this has not produced any fruit here. Theſe are undoubtedly diſtinct ſpecies, for they never vary when they are propagated by ſeeds.

Both theſe ſorts propagate freely by offsets from the roots, ſo that when they are once obtained, there will be no neceſſity of ſowing their ſeeds, which commonly lie a year in the ground, and the plants will not be ſtrong enough to flower in leſs than two years more, whereas the offsets will flower the following ſeaſon. The time for tranſplanting and parting of the roots is in July, when their ſtalks are entirely decayed, for they begin to ſhoot toward the end of Auguſt, and keep growing all the winter, and decay in the ſpring. Theſe roots ſhould be planted in pots filled with good kitchen-garden earth, and may remain in the open air till there is danger of froſt, when they muſt be removed into ſhelter, for they are too tender to live through the winter in the open air; but if they are placed in a warm green-houſe, they will thrive and flower very well, but they do not produce fruit unleſs they have ſome heat in winter; therefore where that is deſired, the plants ſhould be placed in a ſtove kept to a moderate degree of warmth. During the winter, when the plants are in vigour, they ſhould be frequently, but gently watered; but when the ſtalks begin to decay, they muſt have very little wet, for much moiſture will rot them while they are in an inactive ſtate; during which time, if the pots are placed where they have only the morning ſun, they will require little or no water: but when they begin to ſhoot out their ſtalks, they ſhould be removed to a warmer ſituation, and ſhould then be frequently but gently watered.

The flowers of theſe plants make no great appearance, ſo the plants are not preſerved for their beauty; but as their ſtalks are climbing, and their leaves are in full vigour in winter, during that ſeaſon they add to the variety in the green-houſe.

The third ſort is a native of North America; it is by Dr. Linnæus joined to this genus, in which I have followed him; though, if I remember rightly, the characters of this ſort do not exactly agree with thoſe of the other, for the flower is either polypetalous, or is cut into many ſegments, and has but five ſtamina; it being ſome years ſince I ſaw the flowers, I cannot be very certain if I am right. This hath a ſmall ſcaly root, from which ariſes a ſingle ſtalk about eight inches high, garniſhed with one whorl of leaves at a ſmall diſtance from the ground, and at the top there are two leaves ſtanding oppoſite; between theſe come out three ſlender foot-ſtalks which turn downward, each ſuſtaining one pale herbaceous flower with a purple pointal. It flowers in June, but I have not ſeen any fruit upon it.

This plant is hardy enough to live in the open air, but does not propagate faſt here, as it produces no ſeeds, ſo can only be encreaſed by offsets.

MEDICA. Tourn. Inſt. R. H. 410. tab. 231. Medicago. Tourn. Inſt. 412. Lin. Gen. Plant. 805. [This plant takes its name from Media (as Pliny writes) becauſe when Darius Hyſtaſpis carried his army into Greece, he had with him a great many ſacks of this ſeed for provender for his cattle, and ſo the ſeeds came to be ſcattered in Greece.] Medick, or La Lucerne.

The CHARACTERS are,

The flower hath a bell-ſhaped empalement of one leaf, cut into five equal acute points. The flower is of the butterfly kind; the ſtandard is oval, entire, and the border is reflexed; the two wings are oblong, oval, and fixed by an appendix to the keel; the keel is oblong, bifid, obtuſe, and reflexed toward the ſtandard. It has ten ſtamina, nine of which are joined almoſt to their tops, the other is ſingle; they are terminated by ſmall ſummits. It hath an oblong compreſſed germen which is incurved, ſitting on a ſhort ſtyle, terminated by a ſmall ſtigma; this and the ſtamina are involved by the keel and ſtandard. The germen afterward turns to a compreſſed moon-ſhaped pod, incloſing ſeveral kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, which includes the herbs with a butterfly flower, having ten ſtamina in two houſes. He alſo has joined the Medica and Medicago

Medicago of Tournefort together, making them one genus under the title Medicago, but Tournefort makes the diſtinguiſhing character of Medicago to conſiſt in having a falcated compreſſed pod. Therefore I ſhall here ſeparate thoſe plants whoſe pods are of that form, from the others whoſe pods are twiſted like a ſcrew; and as the title of Medica was firſt applied to the Lucern, ſo I ſhall continue it to thoſe ſpecies as have ſuch pods, and refer the others to the genus of Medicago.

The Species are,

1. Medica (*Sativa*) pedunculis racemoſis, leguminibus contortis, caule erecto glabro. Lin. Sp. 1096. *Medick with branching foot-ſtalks, contorted pods, and an erect ſmooth ſtalk.* Medica major, erectior, floribus purpuraſcentibus. J. B. 2. 382. *Greater upright Medick with purpliſh flowers, commonly called La Lucerne, and by the French, Burgundy Hay.*
2. Medica (*Falcata*) pedunculis racemoſis, leguminibus lunatis, caule proſtrato. Flor. Suec. 620. *Medick with branching foot-ſtalks, moon-ſhaped pods, and trailing ſtalks.* Medica ſylveſtris, floribus croceis. J. B. 2. 383. *Wild Medick with Saffron-coloured flowers.*
3. Medica (*Radiata*) leguminibus reniformibus, margine dentatis, foliis ternatis. Hort. Cliff. 377. *Medick with kidney-ſhoped pods indented on the borders, and trifoliate leaves.* Medicago annua, trifolii facie. Tourn. Inſt. R. H.. 412. *Annual Medicago with the appearance of Trefoil.*
4. Medica (*Hiſpanica*) caule herbaceo procumbente, foliis pinnatis, leguminibus ciliato-dentatis. *Medick with a trailing herbaceous ſtalk, winged leaves, and pods having hairy indentures.* Medicago vulnerariæ facie Hiſpanica. Tourn. Inſt. R. H. 412. *Spaniſh Medicago with the appearance of Ladies Finger.*
5. Medica (*Italica*) caule herbaceo proſtrato, foliis ternatis, foliolis cuneiformibus ſuperne ſerratis, leguminibus margine integerrimis. *Medick with a proſtrate herbaceous ſtalk, trifoliate leaves whoſe lobes are wedge-ſhoped and ſawed at the top, and the borders of the pods entire.* Medicago Italica, annua maritima, trifolia, polycarpos, fructu toroſo non ſpinoſo. Mitchel. Hort. Piſſ. *Annual, Italian, maritime Medicago with trifoliate leaves, and bearing much fruit, which is thick and without ſpines.*
6. Medica (*Cretica*) caule herbaceo proſtrato, foliis radicalibus integerrimis, caulinis pinnatis leguminibus dentatis. *Medick with a proſtrate herbaceous ſtalk, the bottom leaves entire, thoſe on the ſtalks winged, and indented pods.* Medicago vulnerariæ facie Cretica. Tourn. Inſt. 412. *Cretan Medicago, with the appearance of Ladies Finger.*
7. Medica (*Arborea*) leguminibus lunatis margine integerrimis caule arboreo. Hort. Cliff. 376. *Medick with moon-ſhaped pods whoſe borders are entire, and a tree-like ſtalk.* Medicago trifolia, fruteſcens, incana. Tourn. Inſt. R. H. 412. *Shrubby, hoary, three-leaved Medica, or the Cytiſus Virgilii.*

The firſt ſort hath a perennial root and annual ſtalks, which riſes near three feet high in good land; theſe are garniſhed with trifoliate leaves at each joint, whoſe lobes are ſpear-ſhaped, about an inch and a half long, and half an inch broad, a little ſawed toward their top, of a deep green, and placed alternately on the ſtalks. The flowers grow in ſpikes, which are from two to near three inches in length, ſtanding upon naked foot-ſtalks which are two inches long, riſing from the wings of the ſtalk; they are of a Pea bloom or butterfly kind, of a fine purple colour, and are ſucceeded by compreſſed moon-ſhaped pods, which contain ſeveral kidney-ſhaped ſeeds. It flowers in June, and the ſeeds ripen in September.

There are the following varieties of this plant:

One with Violet-coloured flowers.

Another with pale blue flowers.

And a third with variegated flowers.

Theſe variations of their flowers have accidentally riſen from ſeed, therefore are not to be ſuppoſed different plants; yet thoſe with the pale blue and variegated flowers are never ſo ſtrong as thoſe with purple, ſo are leſs profitable to the cultivators.

This plant is ſuppoſed to have been brought originally from Media, and from thence had its name Medica; it is by the Spaniards called Alfaſa; by the French, La Lucerne, and Grand Trefle; and by ſeveral botanic writers it is called Fœnum Burgundiacum, i. e. Burgundian Hay. But there is little room to doubt of this being the Medica of Virgil, Columella, Palladius, and other ancient writers of huſbandry, who have not been wanting to extol the goodneſs of this fodder, and have given direction for the cultivation of it in thoſe countries where they lived.

But notwithſtanding it was ſo much commended by the antients, and hath been cultivated to ſo good purpoſe by our neighbours in France and Switzerland for many years, it hath not as yet found ſo good reception in our country as could be wiſhed; nor is it cultivated in conſiderable quantities, though it is evident, it will ſucceed as well in England as in either of the before-mentioned countries, though will not bear cutting ſo often here, yet is extremely hardy, and reſiſts the ſevereſt cold of our climate: as a proof of this, I muſt beg leave to mention, that the ſeeds which have have happened to be ſcattered upon the ground in autumn, have come up, and the plants have endured the cold of a ſevere winter, and made very ſtrong plants the following ſeaſon.

About the year 1650, the ſeeds of this plant were brought over from France, and ſown in England; but whether for want of ſkill in its culture, whereby it did not ſucceed, or that the people were ſo fond of going on in their old beaten road, as not to try the experiment whether it would ſucceed here or not, was the occaſion of its being entirely neglected in England, I cannot ſay, but it is very certain that it was neglected many years, ſo as to be almoſt forgotten. However, I hope, before I quit this article, to give ſuch directions for its culture, as will encourage the people of England to make farther trial of this valuable plant, which grows in the greateſt heat, and alſo in very cold countries, with this difference only, that in very hot countries, ſuch as the Spaniſh Weſt-Indies, &c. where it is the chief fodder for their cattle at this time, they cut it every week; whereas in cold countires, it is ſeldom cut oftener than four or five times in a year. And it is very likely that this plant may be of great ſervice to the inhabitants of Barbadoes, Jamaica, and the other hot iſlands in the Weſt-Indies, where one of the greateſt things they want is fodder for their cattle; ſince by the account given of this plant by Pere Feuillé, it thrives exceedingly in the Spaniſh Weſt-Indies, particularly about Lima, where they cut it every week, and bring it into the market to ſell, and is there the only fodder cultivated.

It is alſo very common in Languedoc, Provence, aad Dauphiné, and all over the banks of the Rhone, where it produces abundantly, and may be mowed five or ſix times in a year. Horſes, mules, oxen, and other domeſtic cattle, love it exceedingly; but above all when it is green, if they are permitted to feed on it, and eſpecially the black cattle, which will feed very kindly upon the dried plant; the exceſs of which is, by many people, thought to be very dangerous; but it is ſaid to be exceeding good for milch cattle, to promote their quantity of milk; and is alſo ſaid to agree with horſes the beſt of all, though ſheep, goats, and moſt other cattle, will feed upon it, eſpecially when young.

The directions given by all thoſe who have written of this plant are very imperfect, and generally ſuch as, if practiſed in this country, will be found entirely wrong; for many of them order the mixing of this ſeed with Oats or Barley, (as is practiſed for Clover) but in this way it ſeldom comes up well, and if it does, it will draw up ſo weak by growing amongſt the Corn, as not to be recovered under a whole year, if ever it can be brought to its uſual ſtrength again. Others have directed it to be ſown upon a low, rich, moiſt ſoil, which is found to be the worſt next to a clay

clay, of any for this plant; in both which the roots will rot in winter, and in a year or two the whole crop will be deſtroyed.

But the ſoil in which this plant is found to ſucceed beſt in this country is, a light, dry, looſe, ſandy land, which ſhould be well ploughed and dreſſed, and the roots of all noxious weeds, ſuch as Couch Graſs, &c. deſtroyed, otherwiſe they will overgrow the plants while young, and prevent their progreſs.

The beſt time to ſow the ſeed is about the middle of April, when the weather is ſettled and fair; for if you ſow it when the ground is very wet, or in a rainy ſeaſon, the ſeeds will burſt and come to little (as is often the caſe with ſeveral ſorts of the leguminous plants;) therefore you ſhould always obſerve to ſow it in a dry ſeaſon, and if there happens rain in about a week or ten days after it is ſown, the plants will ſoon appear above ground.

But the method I would direct for the ſowing theſe ſeeds is as follows: after having well ploughed and harrowed the land very fine, you ſhould make a drill quite acroſs the ground, about half an inch deep, into which the ſeeds ſhould be ſcattered very thin by a hopper fixed to a drill plough; then cover them over half an inch thick, with the earth that came out of the drill; then proceed to make another drill about two feet and a half from the former, ſowing the ſeeds therein in the ſame manner as before, and ſo proceed through the whole ſpot of ground, allowing the ſame diſtance between row and row, and ſcatter the ſeeds very thin in the drills. In this manner, an acre of land will require about ſix pounds of ſeeds; for when it is ſown thicker, if the ſeed grows well, the plants will be ſo cloſe as to ſpoil each other in a year or two, the heads of them growing to a conſiderable ſize, as will alſo the roots, provided they have room. I have meaſured the crown of one root, which was in my poſſeſſion, eighteen inches diameter; from which I cut near four hundred ſhoots at one time, which is an extraordinary increaſe, and this upon a poor, dry, gravelly ſoil, which had not been dunged for many years, but the root was at leaſt fourteen years old; ſo that if this crop be well cultivated, it will continue many years, and be equally good as when it was firſt ſown; for the roots generally run down very deep in the ground, provided the ſoil be dry; and although they ſhould meet a hard gravel a foot below the ſurface, yet their roots would penetrate it, and make their way downward, as I have experienced, having taken up ſome of them which were above four feet in length, and had run above two feet into a rock of gravel, which was ſo hard as not to be looſened without mattocks and crows of iron, and that with much difficulty.

The reaſon for directing this ſeed to be ſown in rows is, that the plants may have room to grow; and for the better ſtirring the ground between them, to deſtroy the weeds, and encourage the growth of the plants, which may be very eaſily effected with a Dutch hoe, juſt after the cutting the crop each time, which will cauſe the plants to ſhoot again in a very little time, and be much ſtronger than in ſuch places where the ground cannot be ſtirred; but when the plants firſt come up, the ground between them ſhould be hoed by hand with a common hoe; and if in doing of this you cut up the plants where they are too cloſe in the rows, it will cauſe the remaining to be much ſtronger. This hoeing ſhould be repeated two or three times while the plants are young, according as the weeds are produced, obſerving always to do it in dry weather, that the weeds may the better be deſtroyed; for if it be done in moiſt weather, they will take root and grow again.

With this management, the plants will grow to the height of two feet, or more, by the beginning of Auguſt, when the flowers will begin to appear, when it ſhould be cut for the firſt time, obſerving to do it in a dry ſeaſon, eſpecially if it is to be made into hay, and keep it often turned, that it may ſoon dry, and be carried off the ground; for if it lie long upon the roots, it will prevent their ſhooting again. After the crop is taken off, you ſhould ſtir the ground between the rows with a hoe, to kill the weeds, and looſen the ſurface, which will cauſe the plants to ſhoot again in a ſhort time, ſo that by the middle of September there will be ſhoots four or five inches high, when you may turn in ſheep upon it to feed it down, for it will not be fit to cut again the ſame ſeaſon; nor ſhould the ſhoots be ſuffered to remain upon the plants, which would decay when the froſty weather comes on, and fall down upon the roots, and prevent their ſhooting early the ſucceeding ſpring; but theſe ſheep ſhould not remain ſo long upon it as to endanger the crowns of the roots.

So that the beſt way is to feed it until November, when it will have done ſhooting for that ſeaſon; but it ſhould not be fed by large cattle the firſt year, becauſe the roots being young, would be in danger of being deſtroyed, either by their trampling upon them, or their pulling them out of the ground; but ſheep will be of ſervice to the roots by dunging the ground, provided they do not eat it too cloſe.

The beginning of February, the ground between the roots ſhould be again ſtirred with the hoe, to encourage them to ſhoot again; but in doing of this you ſhould be careful not to injure the crown of the roots, upon which the buds are at that time very turgid, and ready to puſh. With this management, if the ſoil be warm, by the middle of March the ſhoots will be five or ſix inches high, when, if you are in want of fodder, you may feed it down till a week in April; after which it ſhould be ſuffered to grow for a crop, which will be fit to cut the beginning of June, when you ſhould obſerve to get it off the ground as ſoon as poſſible, and ſtir the ground again with a Dutch hoe, which will forward the plants ſhooting again, ſo that by the middle of July, there will be another crop fit to cut, which muſt be managed as before: after which it ſhould be fed down again in autumn; and as the roots by this time will have taken deep hold in the ground, there will be little danger of hurting them, if you ſhould turn in larger cattle; but you muſt always obſerve not to ſuffer them to remain after the roots have done ſhooting, leſt they ſhould eat down the crown of the roots below the buds, which would conſideraby damage, if not deſtroy them.

In this manner you may continue conſtantly to have two crops to cut, and two feedings upon this plant, and in good ſummers there may be three crops cut, and two feedings; which will be a great improvement, eſpecially as this plant will grow upon dry barren ſoils, where Graſs will produce little, eſpecially in dry ſeaſons, when it will be of great uſe, the Graſs being often burnt up. And as it is an early plant in the ſpring, ſo it will be of great ſervice when fodder falls ſhort at that ſeaſon, when it will be fit to feed at leaſt a month before Graſs or Clover; for I have had this plant eight inches high by the tenth of March, old ſtyle, at which time the Graſs in the ſame place has ſcarcely been one inch high.

That the cold will not injure this plant, I am fully ſatisfied; for in the very cold winter, anno 1729-30, I had ſome roots of this plant which were dug up in October, and laid upon the ground in the open air till the beginning of March, when I planted them again, and they ſhot out very vigorouſly ſoon after; nay, even while they lay upon the ground, they ſtruck out fibres from the under ſide of the roots, and begun to make ſhoots from the crown of the roots. But that wet will deſtroy the roots I am fully convinced, for I ſowed above an acre upon a moiſt ſpot of ground for a trial, which came up very well, and flouriſhed exceedingly during the ſummer ſeaſon, but in winter, when the great rains fell, the roots began to rot at bottom, and before the ſpring moſt of them were deſtroyed. There has been lately ſome perſons who have adviſed the ſowing of Lucern in broad-caſt, and to make uſe of a ſtrong harrow, to tear up and deſtroy the weeds which naturally grow up among the plants; but this advice has been given too prematurely, therefore it is to be hoped will not be followed by any diſcreet perſons, who are deſired to take

a ſurvey of ſome of theſe lands which have been ſo cultivated three or four years, which I am fully perſuaded will convince them of the bad huſbandry, for no perſon who has any regard to neatneſs and utility, will ever practiſe this method.

The beſt places to procure the ſeed from, are Switzerland, and the northern parts of France, for the ſeeds ſaved in thoſe countries ſucceed better with us than that which comes from a more ſouthern climate; but this ſeed may be ſaved full as well in England, and in as great plenty, were people curious enough to let the firſt crop ſtand for that purpoſe; in order to which, a ſmall quantity of the plants ſhould be ſuffered to grow uncut till the ſeeds are ripe, which is commonly about the beginning of September, when it muſt be cut, and laid to dry in an open barn, where the air may freely paſs through, but be defended from the wet; for if it be expoſed thereto, it will ſhoot while it remains in the pod, whereby it will be ſpoiled. When it is quite dry, it muſt be threſhed out, and cleanſed from the huſk, and preſeved in a dry place till the ſeaſon for ſowing it; and this ſeed ſaved in England is much preferable to any brought from abroad, as I have ſeveral times experienced, the plants produced from it having been much ſtronger than thoſe produced from French, Helvetian, and Turkey ſeeds, which were ſown at the ſame time, and on the ſame ſoil and ſituation.

I am inclinable to think, that the reaſon of this plant not ſucceeding, when it has been ſown in England, has either been occaſioned by the ſowing it with Corn, with which it will by no means thrive (for though the plant be very hardy when grown pretty large, yet at its firſt coming up, if it be incommoded by any other plants or weeds, it ſeldom does well; therefore it ſhould always be ſown by itſelf, and carefully cleared from weeds until it has ſtrength, after which it is not eaſily deſtroyed;) or, perhaps, people have ſown it at a wrong ſeaſon, or in wet weather, whereby the ſeeds have rotted, and never come up, which hath diſcouraged their attempting it again: but however the ſucceſs has been, I dare aver, that if the method of ſowing and managing of this plant, which is here laid down, be duly followed, it will be found to thrive as well as any other ſort of plant now cultivated in England, producing a much greater crop than any other ſort of fodder, and will continue much longer; for if the ground be duly ſtirred after the cutting each crop, and the laſt crop fed as hath been directed, the plants will continue in vigour forty years or more, without renewing, provided they are not permitted to ſeed, which will weaken the roots more than four times cutting it would do. The hay of this plant ſhould be kept in cloſe barns, it being too tender to be kept in ricks open to the air as other hay; but it will remain good, if well dried before it be carried in, three years. The people abroad reckon an acre of this fodder ſufficient to keep three horſes all the year round.

And I have been aſſured by perſons of undoubted credit, who have cultivated this plant in England, that three acres of it have fed ten cart-horſes from the end of April to the beginning of October, without any other food, though they have been conſtantly worked. Indeed, the beſt uſe which can be made of this Graſs is, to cut it, and give it green to the cattle; where this hath been daily practiſed, I have obſerved that by the time the field has been cut over, that part which was the firſt cut hath been ready to cut again; ſo that there has been a conſtant ſupply in the ſame field, from the middle of April to the end of October: when the ſeaſon has continued long mild, and when the ſummers have proved ſhowery, I have known ſix crops cut in one ſeaſon, but in the drieſt ſeaſons there will be always three or four. When the plant begins to flower, it ſhould then be cut; for if it ſtands longer, the ſtalks will grow hard, and the under leaves will decay, ſo that the cattle will not ſo greedily devour it. Where there is a quantity of this cultivated, ſome of it ſhould be cut before the flowers appear, otherwiſe there will be too much to cut within a proper time.

When this is made into hay, it will require a great deal of making; for as the ſtalks are very ſucculent, it muſt be often turned, and expoſed a fortnight or longer, before it will be fit to houſe; for this requires a longer time to make than Saint Foin; therefore, when it is cut, it ſhould be carried to make upon ſome Graſs ground, becauſe the earth in the intervals of the rows will waſh up, and mix with the hay in every ſhower of rain, and by carrying it off as ſoon as it is cut, the plants will ſhoot up again ſoon; but it is not ſo profitable for hay, as to cut green for all ſorts of cattle, but eſpecially horſes, which are extremely fond of it; and to them it will anſwer the purpoſe both of hay and Corn, and they may be worked at the ſame time juſt as much as when they are fed with Corn, or dry food.

The ſecond ſort grows naturally in the ſouth of France, in Spain, Italy, and alſo in ſome more northern countries, and has been ſuppoſed only a variety of the firſt, but I have frequently cultivated this by ſeeds, and have never obſerved it to alter. The ſtalks of this are ſmaller, and never riſe ſo high, generally proſtrating on the ground; the leaves are not half ſo broad, the flowers are produced in ſhort roundiſh ſpikes, and are of a Saffron colour. This flowers about the ſame time as the firſt, and the ſeeds ripen the latter part of ſummer. It may be eaſily propagated by ſeeds, and hath a perennial root which will continue many years, but is ſeldom cultivated any where.

The third ſort grows naturally in Italy; this is an annual plant, having ſeveral ſlender branching ſtalks a foot and a half long, which ſpread on the ground, garniſhed with trifoliate leaves, whoſe lobes are oval, ſpear-ſhaped, and entire. The flowers are produced ſingly upon ſlender foot-ſtalks, which proceed from the ſide of the branches; they are ſmall, of a yellow colour, and ſhaped like thoſe of the former ſort; theſe are ſucceeded by broad, flat, moon-ſhaped pods, whoſe borders are indented, and theſe indentures are terminated by fine hairs; in each of theſe pods is lodged four or five kidney-ſhaped ſeeds. It flowers in June and July, and the ſeeds ripen in the autumn.

The fourth ſort grows naturally in Spain; this is alſo an annual plant, whoſe ſtalks grow a foot and a half long, trailing on the ground, and are garniſhed with winged leaves compoſed of two pair of ſmall lobes, terminated by one large, oval, ſpear-ſhaped lobe, which are a little hoary, and placed alternately at the joints. The flowers ſtand upon long ſlender foot-ſtalks, each ſuſtaining four or five gold-coloured flowers at the top, which are ſucceeded by compreſſed moon-ſhaped pods, not half ſo large as thoſe of the third ſort, but have hairy indentures like thoſe. This flowers and perfects its ſeeds about the ſame time as the former.

The fifth ſort grows naturally on the borders of the ſea in ſeveral parts of Italy; it is alſo an annual plant, with proſtrate herbaceous ſtalks about a foot long, garniſhed with trifoliate leaves, whoſe lobes are wedge-ſhaped and ſawed toward the top. The flowers are produced upon ſlender foot-ſtalks ariſing from the joints of the ſtalk; they are about an inch long, each ſuſtaining five or ſix pale yellow flowers, which are ſucceeded by ſmall, thick, moon-ſhaped pods, whoſe borders are entire, containing three or four ſmall kidney-ſhaped ſeeds in each. It flowers and ſeeds about the ſame time with the two former.

The ſixth ſort grows naturally in the Archipelago; this is an annual plant, from whoſe roots come out ſeveral oblong leaves about two inches and a half long, narrow at their baſe, but broad toward the top, where they are rounded; theſe ſpread on the ground, and between them come out the ſtalks which are ſlender, about a foot long, branching out into ſmaller, garniſhed with winged hoary leaves: thoſe on the lower part of the ſtalk are compoſed of two pair of lobes terminated by an odd one; theſe are equal in

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ſize, but thoſe on the upper part of the ſtalks are trifoliate. The flowers are produced at the end of the ſtalks; they are ſmall, yellow, and ſhaped like thoſe of the other ſorts, and are ſucceeded by compreſſed moon-ſhaped pods, which are acutely indented on their borders, and contain three or four kidney-ſhaped ſeeds. This plant flowers and ripens its ſeeds about the ſame time as the other.

Theſe annual ſorts are preſerved in the gardens of thoſe who are curious in botany; the ſeeds of theſe ſhould be ſown upon an open bed of freſh ground, in the places where the plants are to remain, becauſe they do not bear tranſplanting well, unleſs when they are very young. As the plants ſpread their branches on the ground, ſo they ſhould not be ſown nearer than two feet and a half aſunder; when the plants come up, they will require no other care but to keep them clean from weeds. In June they will begin to flower, and as the ſtalks and branches extend, there will be a ſucceſſion of flowers produced till the autumn; but the early flowers are ſuch as will have good ſeeds ſucceed them; for thoſe which come late in ſummer, have not time to ripen before the cold weather comes on.

The ſeventh ſort grows naturally in the iſlands of the Archipelago, in Sicily, and the warmeſt parts of Italy. This riſes with a ſhrubby ſtalk to the height of eight or ten feet, covered with a gray bark, and divides into many branches, which, while young, are covered with a hoary down; theſe are garniſhed at each joint with trifoliate leaves, ſtanding upon foot-ſtalks about an inch long; there are two or three of theſe at each joint, ſo that the branches are cloſely covered with them; the lobes are ſmall, ſpear-ſhaped, and hoary on their under ſide; theſe remain all the year. The flowers are produced on foot-ſtalks which ariſe from the ſide of the branches, they are of a bright yellow, each foot-ſtalk ſuſtaining four or five flowers; theſe are ſucceeded by compreſſed moon-ſhaped pods, each containing three or four kidney-ſhaped ſeeds.

It flowers great part of the year, and when the winters are favourable all the year; or when the plants are ſheltered in winter, they are ſeldom deſtitute of flowers; but thoſe in the open air begin to flower in April, and continue in ſucceſſion till December. Thoſe flowers which appear early in ſummer will have their ſeeds ripe in Auguſt, or the beginning of September, and the others will ripen in ſucceſſion till the cold ſtops them.

This plant may be propagated by ſowing the ſeeds upon a moderate hot-bed, or a warm border of light earth, in the beginning of April; and when the plants come up, they ſhould be carefully cleared from weeds; but they ſhould remain undiſturbed, if ſown in the common ground, till September following; but if on a hot-bed, they ſhould be tranſplanted about Midſummer into pots, placing them in the ſhade until they have taken root; after which they may be removed into a ſituation where they may be ſcreened from ſtrong winds, in which they may abide till the latter end of October, when they muſt be put into a common garden frame, to ſhelter them from hard froſts; for thoſe plants which have been brought up tenderly, will be liable to ſuffer by hard weather, eſpecially while they are young. In April following theſe plants may be ſhaken out of the pots, and placed in the full ground where they are deſigned to remain, which ſhould be in a light ſoil and a warm ſituation, in which they will endure the cold of our ordinary winters extremely well, and continue to produce flowers moſt part of the year, and retaining their leaves all the winter renders them the more valuable.

Thoſe alſo which were ſown in an open border may be tranſplanted in Auguſt following, in the ſame manner; but in doing of this you muſt be careful to take them up with a ball of earth to their roots, if poſſible, as alſo to water and ſhade them until they have taken root; after which they will require little more care than to keep them clean from weeds, and to prune off the luxuriant branches to keep them within due compaſs; but you ſhould never prune them early in the ſpring, nor late in autumn, for if froſt ſhould happen ſoon after they are pruned, it will deſtroy the tender branches, and many times the whole plant is loſt thereby.

Theſe plants have been conſtantly preſerved in the green-houſe, ſuppoſing them too tender to live thro' the winter in the open air; but I have had large plants of this kind, which have remained in a warm ſituation many years without any cover, and have been much ſtronger, and flowered better, than thoſe which were houſed; though, indeed, it will be proper to keep a plant or two in ſhelter, leſt by a very ſevere winter (which ſometimes happens in England) the plants abroad ſhould be deſtroyed.

They may alſo be propagated by cuttings, which ſhould be planted in April, upon a bed of light earth, and watered and ſhaded until they have taken root, after which they may be expoſed to the open air; but they ſhould remain in the ſame bed till July or Auguſt following, before they are tranſplanted, by which time they will have made ſtrong roots, and may be removed with ſafety to the places where they are to remain, obſerving (as was before directed) to water and ſhade them until they have taken root; after which you may train them up with ſtrait ſtems, by faſtening them to ſticks, otherwiſe they are apt to grow crooked and irregular; and when you have got their ſtems to the height you deſign them, they may then be reduced to regular heads, and with pruning their irregular ſhoots every year, they may be kept in very good order.

This plant grows in great plenty in the kingdom of Naples, where the goats feed upon it, with whoſe milk the inhabitants make great quantities of cheeſe; it alſo grows in the iſlands of the Archipelago, where the Turks uſe the wood of theſe ſhrubs to make handles for their ſabres, and the Caliogers of Patmos make their beds of this wood.

This is, as hath been before obſerved, by many people, ſuppoſed to be the Cytiſus of Virgil, Columella, and the old writers in huſbandry, which they mention as an extraordinary plant, and worthy of cultivation for fodder, from whence ſeveral perſons have recommended it as worthy of our care in England. But however uſeful this plant may be in Crete, Sicily, Naples, or thoſe warmer countries, yet I am perſuaded it will never thrive in England, ſo as to be of any real advantage for that purpoſe; for in ſevere froſt it is very ſubject to be deſtroyed, or at leaſt ſo much damaged, as not to recover its former verdure before the middle or latter end of May; and the ſhoots which are produced will not bear cutting above once in a ſummer, and then will not be of any conſiderable length; and the ſtems growing very woody, will render the cutting of it very troubleſome; ſo that, upon the whole, it can never anſwer the trouble and expence in cultivating it, nor is it worth the trial, ſince we have ſo many other plants preferable to it; though in hot, dry, rocky countries, where few other plants will thrive, this may be cultivated to great advantage, ſince in ſuch ſituations this plant will live many years, and thrive very well.

But however unfit this may be for ſuch uſes in England, yet for the beauty of its hoary leaves, which will abide all the year, together with its long continuance in flower, it deſerves a place in every good garden, where, being intermixed with ſhrubs of the ſame growth, it makes a very agreeable variety.

As there are at preſent ſo many perſons inquiſitive to know which is the true Cytiſus mentioned by the antients, I have taken the pains of tranſcribing briefly what they have ſaid as to its deſcription, by which may be judged how uncertain it is to determine in an affair where there is ſo little to be found in authors to aſſiſt us.

Theophraſtus ſays, Cytiſus is ſuch an enemy to other plants, that it will kill them, by robbing them of nouriſhment, and that the medulla of it is ſo hard and thick, that it comes the neareſt of any thing to Ebenum.

The

The ſhrub Cytiſus, by Ariſtomachus, the Atherian, as may be ſeen in Pliny [who ſays much the ſame as Varro and Columella, from whom probably he has taken it,] is highly commended for food for ſheep, and, being dry, for ſwine; the utility [as to health and fattening, Dal.] the ſame as that of Ervum, but the ſatiety is quicker, a four-footed animal growing fat with a little of it, ſo that cattle ſet light by their Barley.

No food makes a greater quantity, nor better milk, and it excels all things as to the diſeaſes of cattle; moreover, being given dry, or in a decoction of water mixed with wine, to nurſes whoſe milk fails, it helps very much, and makes the children ſtronger, and take to their feet ſooner; green, it is alſo good for them, or dry, if it be made moiſt.

Democritus and Ariſtomachus ſay, bees will never want food, if they have Cytiſus enough, nor is any thing cheaper.

If, when the ſeed be ſown, ſhowers are wanting, Columella directs, That it be watered the fifteen following days.

It is ſown [according to the antients] after the equinoxes. It is perfected in three years. It is mown in the vernal equinox [for it flouriſhes all the winter, Dal.] with the cheap labour of a boy, or old woman.

The Cytiſus is hoary in aſpect. If any one would expreſs its likeneſs briefly, it is a ſhrub of a broader ſort of Trefoil.

In winter, being moiſtened, ten pounds will ſatisfy a horſe, and a leſs quantity other animals. Being dry, it has more virtue, and a leſs quantity ſatisfies.

This ſhrub was found in the iſle Cythnus, thence it was tranſlated into all the Cyclades, and afterwards into the cities of Greece, where it occaſioned a great increaſe of cheeſe.

It fears not the injury of heat nor cold, nor hail nor ſnow, and Hyginus adds, nor of enemies, becauſe the wood is of no value.

Alſo Galen, in his book de Antid. writes, "Cytiſus "is a ſhrub. In Myſia, in that part that is neareſt to "our province, there is a tract which they call Brot-"ton, in which there is a place full of Cytiſus, from "the flowers of which, all agree, the bees make very "much honey.

"It is a fruticoſe plant; it riſes to the height of a "Myrtle."

He ſays, ſeven ſimple leaves have the faculty of digeſting, mixed with warm water, as the leaves of Mallows: thus Galen.

Cornarus too ſecurely writes, That Cytiſus either never came among the Germans, or that it periſhed long ago. From what Pliny ſays, That it was very rare in Italy in his time, he cannot perſuade me, that nothing could grow in Germany, that was ſcarce in Italy. Jo. Bauh.

Strabo, contrary to Dioſcorides, Pliny, and Galen, will have the Cytiſus to be a tree, and he likens it to the Balſamum, an odoriferous tree, which probably was the occaſion, that Cornarus thought this tree came neareſt to a ſhrub, becauſe Pliny ſaid the wood was of no value, therefore he perſuades himſelf, that it produces woody branches, not tender and ſoft, as in an herb.

But Virgil ſhews it is neither a tree nor a ſhrub, when he ſays:

"—— Non me paſcente, capellæ,
"Florentem Cytiſum, & ſalices capretis amaras."
[Buc. Eclog. 1.
"Sic Cytiſo paſtæ diſtendunt ubera vaccæ."
Eclog. 9.
"Nec Cytiſo ſaturantur apes, nec fronde capellæ."
Eclog. 10.

Virgil, I ſay, indicates very plainly in theſe verſes, that it is neither a tree nor a ſhrub, for goats do not uſe it; nor can they, if they were wont to eat flowery trees. Neither will what Cornarus ſays avail, when Pliny ſays the wood is of no value, that it muſt of neceſſity produce woody branches; nay, the contrary is rather true, that there is no value in the wood, that it bears viny pliable branches, with which the goats cannot be ſatiated.

Theocritus very plainly expreſſes it, That Cytiſus is a very grateful food to goats:

Ἡ αἶξ τὸν κύτισον, ὁλύκῳ δ' τὴν αἶγα διώκει.

"Capra Cytiſum, lupus capellam ſequitur."

Which is thus imitated by Virgil:

"Torva leæna lupum ſequitur, lupus ipſe capellam:
"Florentem Cytiſum ſequitur laſciva capella."

Amatus, to avoid this difficulty, concludes Cytiſus to be between trees and ſhrubs, by the difference of genus, to be diſtinguiſhed by Pliny, that, as a tree, it may be uſed in the feminine gender, as a ſhrub in the maſculine, which is not worth the minding.

Columella uſes Cytiſus in the feminine gender, and Theocritus and others in the maſculine; as Cob. Conſt. in Lex. who writes that it was called ἀρνόφυλλον, and Theocritus calls this ſhrub κυῖλλὸν, and others, κύτισον; others again τῆλις.

Of Cythnus, or, as others, of Cythiſa, the name of an iſland, as Severius has it.

Among theſe words of Dioſcorides in ſome manuſcripts, there are found, falſely written, in ſome, Telinen Triphyllon, in others Lotum Grandem.

Dioſcorides's deſcription of the Cytiſus is not ſo accurate, that from it the true Cytiſus may be aſcertained.

Although in the ſeveral ſpecies of Cytiſuſes it is hard to judge which is the legitimate Cytiſus ſpecified by the antients; the moſt ſkilful take it to be that which Maranthus has deſcribed, which is our Medica, which has been ranged under the genus of Cytiſus, by moſt of the writers before Dr. Tournefort, who eſtabliſhed the genus of Medicago, on account of the ſeed-veſſel being like that of Medica, or Snail Trefoil.

This plant grows in great plenty at Abruzzo, where the goats feed upon it, and from their milk are made great quantities of cheeſe. I have had both ſeeds and ſpecimens of the plant ſent me from thence, by perſons of the greateſt ſkill in botany, who have aſſured me, that this plant is generally ſuppoſed, by all the people of learning in that country, to be the plant mentioned by Virgil.

Trifolium fruticans, according to Dodonæus, or Polemonium, according to ſome, is improperly called, Cytiſus by many.

Trifolium candidum Dodon. by ſome is ſaid to be the Cytiſus of Columella, concerning which, ſee Lib. Hiſt. n. 9. 17. of Trifolious herbs.

Tragus writes, That their opinion is to be rejected, who interpret the Trifolium pratenſe to be a Cytiſus. Some contend the Trifolium candidum of Dodon. the Rectum Melilotum vulgarem, to be the Cytiſus of the antients, as Dodonæus ſays, but they have not hit on the truth.

Ruellius writes, That he was afraid that Marcellus took Cytiſus for Medica.

MEDICAGO. Lin. Gen. Plant. 805. Medica. Tourn. Inſt. R. H. 410. tab. 231. Snail Trefoil.

The Characters are,

The flower hath a cylindrical erect empalement of one leaf, which is cut at the brim into five equal acute ſegments. The flower is of the butterfly kind, having an oval erect ſtandard, whoſe borders are reflexed. The wings are oblong, oval, and fixed to the keel by an appendix. The keel is oblong, bifid, obtuſe, and reflexed. It hath ten ſtamina, nine of which are joined, and the other is ſingle, terminated by ſmall ſummits, and an oblong germen, which ſits upon a ſhort ſtyle, is involved with the ſtamina by the keel, and crowned by a very ſmall ſtigma. The germen afterward turns to a long compreſſed pod, twiſted into the form of a ſnail, incloſing many kidney-ſhaped ſeeds.

This

This genus of plants is ranged in the ſame ſection and claſs, as the former by Tournefort and Linnæus.

The SPECIES are,

1. MEDICAGO (*Marina*) pedunculis racemoſis, leguminibus cochleatis, ſpinoſis, caule procumbente tomentoſo. Hort. Cliff. 378. *Medicago with branching foot-ſtalks, ſnail-ſhaped prickly pods, and a trailing woolly ſtalk.* Medica Marina. Lob. Icon. 38. *Sea Medick, or Snail Trefoil.*
2. MEDICAGO (*Scutellata*) leguminibus chochleatis, inermibus ſtipulis dentatis caule anguloſo diffuſo, foliolis oblongo ovatis acute dentatis. *Medicago with ſmooth ſnail-ſhaped pods, indented ſtipulæ, an angular diffuſed ſtalk, and oblong, oval, ſmall leaves, which are ſharply indented.* Medica ſcutellata. J. B. 2. 384. *Snail Trefoil, commonly called Snails.*
3. MEDICAGO (*Tornato*) leguminibus tornatis inermibus, ſtipulis acutè dentatis foliolis ſerratis. *Medicago with a turned ſmooth pod, acute indented ſtipulæ, and the ſmall leaves ſawed.* Medica tornata minor lenis. Park. Theat. 1116. *Snail Trefoil with a ſmaller, turned, ſmooth fruit.*
4. MEDICAGO (*Intortexta*) leguminibus cochleatis ſpinoſiſſimis aculeis utrinque tendentibus. *Medicago with very prickly ſnail-ſhaped pods, whoſe ſpines point every way.* Medica magno fructu, aculeis ſurſum & deorſum tendentibus. Tourn. Inſt. R. H. 411. *Snail Trefoil with a large fruit, whoſe ſpines point upward and downward, commonly called Hedgehog.*
5. MEDICAGO (*Laciniata*) leguminibus chochleatis ſpinoſis, foliolis acutè dentatis tricuſpidiſque. *Medicago with prickly ſnail-ſhaped pods, whoſe lobes are acutely indented, and terminate in three points.* Medica cochleata dicarpos capſulâ rotundâ ſpinosâ, foliis eleganter diſſectis. H. L. B. *Snail-ſhaped Trefoil, having a double fruit with a round prickly capſule, and elegant cut leaves.*

There are many other ſpecies of this genus, which grow naturally in the warm parts of Europe, and are frequently preſerved in botanic gardens for the ſake of variety; but theſe are rarely cultivated in other gardens, ſo it would be beſide my purpoſe to enumerate them here.

The firſt ſort grows naturally on the borders of the Mediterranean Sea; this is a perennial plant, with trailing woolly branches about a foot long, which are divided into ſmall branches, garniſhed with ſmall, trifoliate, downy leaves at each joint, ſtanding upon ſhort foot-ſtalks. The flowers are produced from the ſide and at the ends of the branches, in ſmall cluſters; they are of a bright yellow colour, and are ſucceeded by ſmall roundiſh ſnail-ſhaped fruit, which are downy, and armed with a few ſhort ſpines. The flowers appear in June and July, and the ſeeds ripen in September.

This plant is propagated by ſeeds, which ſhould be ſown upon a warm border of dry ſoil in the ſpring, where the plants are deſigned to remain; when the plants are come up, two or three of them may be tranſplanted into ſmall pots to be ſheltered in winter, becauſe in very ſevere froſt, thoſe which are in the open air are frequently deſtroyed; though they will endure the cold of our ordinary winters, if they are growing in a dry ſoil and a ſheltered ſituation. Thoſe plants which are left remaining, will require no other culture but to thin them where they are too cloſe, and keep them clean from weeds. This ſort may be propagated by cuttings, which may be planted in June or July, in a ſhady border, covering them cloſe with a glaſs to exclude the external air; theſe will take root in about ſix weeks time, and may then be either planted in a warm border or in pots, and treated in the ſame way as the ſeedling plants.

The ſecond ſort is an annual plant, which grows naturally in the warm parts of Europe, but in England it is frequently cultivated in gardens for the oddneſs of its fruit, which is twiſted in the form of a ſnail; and as it ripens turns to a dark brown colour, ſo as to have the appearance of ſnails feeding on the plants at a diſtant view. This hath trailing branches; the flowers are of a pale yellow, and come out from the ſide of the branches. Theſe appear in June and July, and the ſeeds ripen in the autumn. It is propagated by ſeeds, which ſhould be ſown in the middle of April, where the plants are to remain; and the plants ſhould be thinned where they are too cloſe, and kept clean from weeds, which is all the culture they require.

The third ſort is alſo an annual plant, which grows in the ſame countries as the former. This hath trailing branches, and yellow flowers like the ſecond ſort, but the fruit is much longer and cloſer twiſted, ſo as to reſemble the figure of a veſſel called a pipe, being leſs at each end than in the middle. This is frequently kept in gardens for the ſake of variety, and may be propagated and treated in the ſame way as the ſecond ſort.

The fourth ſort is an annual plant, which was formerly more cultivated in the Engliſh gardens than at preſent. The ſtalks, leaves, and flowers, are like thoſe of the two former ſorts, but the fruit is much larger, and cloſely armed with long ſpines like a hedgehog, from whence it had the title; theſe ſpines point every way, ſo that it is difficult to handle the fruit without ſmarting for it. This is propagated by ſeeds in the ſame way as the ſecond ſort, and the plants require the ſame treatment. It flowers in June, and the ſeeds ripen in September.

The fifth ſort grows naturally in Syria; it is an annual plant, with trailing ſtalks like the former; the lobes of the trifoliate leaves are wedge-ſhaped, ſharply indented on the edges, and at the top have three acute points. The flowers are of a pale yellow, and the fruit is ſnail-ſhaped, but ſmall, armed with many weak ſpines. It flowers about the ſame time with the former, and may be cultivated in the ſame way.

MEDLAR. See MESPILUS.

MELAMPYRUM. Tourn. Inſt. R. H. 173. tab. 78. Lin. Gen. Plant. 660. Μελάμπυρον, of μέλας, black, and πυρὸς, Wheat.] Cow Wheat.

The CHARACTERS are,

The flower has a permanent empalement of one leaf, which is tubulous, cut into four ſegments at the brim. The flower is of the lip kind, having an oblong recurved tube compreſſed at the brim; the upper lip is formed like a helmet, and is compreſſed and indented at the top; the under lip is plain, erect, and cut into three ſegments at the top, which are equal and obtuſe. It hath four awl-ſhaped ſtamina which are curved under the upper lip, two of which are ſhorter than the other, terminated by oblong ſummits, and in the center is ſituated an acute-pointed germen, ſupporting a ſingle ſtyle crowned by an obtuſe ſtigma. The empalement afterward turns to an oblong acute-pointed capſule with two cells, incloſing two pretty large oval ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, which contains thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and the ſeeds are included in a capnſule.

The SPECIES are,

1. MELAMPYRUM (*Pratenſe*) floribus ſecundis lateralibus, conjugationibus remotis, corollis clauſis. Flor. Suec. 513. *Cow Wheat with fruitful foot-ſtalks of flowers ſtanding at a diſtance, and the petals ſhut.* Melampyrum luteum latifolium. C. B. P. 234. *Broad-leaved yellow Cow Wheat.*
2. MELAMPYRUM (*Criſtatum*) ſpicis quadrangularibus bracteis cordatis compactis denticulis imbricatis. Flor. Suec. 510. *Cow Wheat with quadrangular ſpikes, and heart-ſhaped bracteæ, which are imbricated.* Melampyrum luteum anguſtifolium. C. B. P. 234. *Yellow narrow-leaved Cow Wheat.*
3. MELAMPYRUM (*Arvenſe*) ſpicis conicis laxè bracteis dentato-ſetaceis. Flor. Seuc. 511. *Cow Wheat with looſe conical ſpikes, and briſtly indented bractea.* Melampyrum purpuraſcente comâ. C. B. P. 234. *Cow Wheat with purpliſh tops.*
4. MELAMPYRUM (*Nemoroſum*) floribus ſecundis lateralibus bracteis dentato cordato lanceolatis, ſummis, coloratis ſterilibus, calycibus lanatis. Flor. Suec. 512. *Cow Wheat with fruitful lateral flowers, heart ſpear-ſhaped bracteæ, ſterile coloured tops, and woolly empale-*

ments. Melampyrum comâ cæruleâ. C. B. P. 234. *Cow Wheat with blue tops.*

Theſe plants are ſeldom cultivated in gardens. The firſt ſort grows naturally in woods in many parts of England. The ſecond ſort grows plentifully in Bedfordſhire and Cambridgeſhire. The fourth ſort grows in the northern parts of Europe. The third ſort grows naturally in ſome of the ſandy lands in Norfolk, tho' not in great plenty; but in Weſt Friezland and Flanders, it grows very plentifully among the Corn; and Cluſius ſays, it ſpoils their bread, making it dark; and that thoſe who eat of it uſed to be troubled with heavineſs of the head, in the ſame manner as if they had eaten Darnel or Cockle: but Mr. Ray ſays, He has eaten of this bread very often, but could never perceive that it gave any diſagreeable taſte, or that it was accounted unwholeſome by the country people, who never endeavour to ſeparate it from the Corn: and Tabernæmontanus declares, he has often eaten it without any harm; and ſays, it makes a very pleaſant bread. It is a delicious food for cattle, particularly for fattening of oxen and cows, for which purpoſe it may be cultivated.

The ſeeds of theſe plants ſhould be ſown in the autumn ſoon after they are ripe, otherwiſe it ſeldom grows the firſt year; when the plants come up, they muſt be weeded in the ſpring while young, and as ſoon as they begin to ſhew their flowers, the cattle may be fed upon it; but they ſhould be confined to a certain ſpace, and not permitted to run over the whole field to trample it down, which would deſtroy a great part of it.

The third and fourth ſorts make a pretty appearance, with their purple and blue tops, during the months of July and Auguſt. They are all of them annual plants.

MELANTHIUM, Star-flower.

The CHARACTERS are,

The flower has no empalement (unleſs the corolla is ſo called) it hath ſix oblong, oval, ſpreading petals, which are permanent, and ſix ſlender erect ſtamina inſerted above the tails, with globular ſummits, with a ſtreaked globular germen, ſupporting three curved diſtinct ſtyles, crowned by obtuſe ſtigma; the germen afterward turns to an oval capſule, having three cells, which are united within, containing ſeveral oval compreſſed ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſixth claſs, intitled Hexandria Trigynia, the flower having ſix ſtamina and three ſtyles.

The SPECIES are,

1. MELANTHIUM (*Virginicum*) petalis unguiculatis. Lin. Sp. Plant. 483. *Star-flower with tender nail-ſhaped petals.* Aſphodelo affinis Floridana, ramoſo caule, floribus ornithogali obſoletis. Pluk. tab. 434. f. 8.
2. MELANTHIUM (*Sibericum*) petalis ſeſſilibus. Amœn. Acad. 2. p. 349. *Star-flower with ſeſſile petals.* Ornithogalum ſpicis florum longiſſimis ramoſis. Flor. Siber. p. 45.
3. MELANTHIUM (*Punctatum*) petalis punctatis, foliis cucullatis. Amœn. Acad. 6. *Star-flower with punctuated petals, and hooded leaves.*

The firſt ſort grows naturally in Virginia and in other parts of North America, but being a plant of little beauty, is ſeldom cultivated except in botanic gardens; the flower-ſtalks of this riſes from ſix to eight inches high, branching upward into three or four diviſions, garniſhed below the flower with two or three linear leaves. The flowers are compoſed of ſix ſpreading petals of a duſky worn-out colour, which are rarely ſucceeded by ſeeds in England.

If the roots of this plant are planted in a border of light earth, not too dry, they will thrive and produce their flowers here, but ſeldom increaſe.

The ſecond ſort grows naturally in Siberia, ſo is at preſent a ſtranger in England, but may be propagated here (if once obtained) by planting the bulbous roots in an eaſt border.

The third ſort grows at the Cape of Good Hope, ſo is too tender to thrive in the open air in England. But if the roots are planted in a border, covered in winter with a garden frame, and treated in the ſame way as is directed for the Ixia, they will thrive and flower annually.

MELASTOMA. Lin. Gen. Plant. 481. Groſſularia. Sloan. Hiſt. Jam. Plum. Sp. 18. The American Gooſeberry-tree, vulgò.

The CHARACTERS are,

The flower has a permanent empalement of one leaf, ſwelling like a bladder, and obtuſe. It hath five roundiſh petals, which are inſerted into the border of the empalement, and ten ſhort ſtamina, terminated by long erect ſummits a little curved. Under the flower is ſituated a roundiſh germen, ſupporting a ſlender ſtyle, crowned by an incurved indented ſtigma. The germen afterward turns to a berry with five cells, covered by the empalement which crowns it, and contains many ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

The SPECIES are,

1. MELASTOMA (*Plantaginis folio*) foliis denticulatis ovatis acutis. Lin. Sp. Plant. 389. *Melaſtoma with oval, acute-pointed, indented leaves.* Groſſularia Americana, plantaginis folio ampliſſimo. Plum. Sp. 18.
2. MELASTOMA (*Acinodendron*) foliis denticulatis ſubtrinerviis ovatis acutis. Lin. Sp. Plant. 558. *Melaſtoma with oval indented leaves ending in acute points, having three veins.* Groſſularia alia plantaginis folio, fructu rariore violaceo. Plum. Sp. 18.
3. MELASTOMA (*Hirta*) foliis denticulatis quinquenervibus, ovato-lanceolatis caule hiſpido. Lin. Sp. 390. *Melaſtoma with ſpear-ſhaped indented leaves, with five veins, and a prickly ſtalk.* Groſſularia plantaginis folio anguſtiore hirſuto. Plum. Sp. 18.
4. MELASTOMA (*Holoſericea*) foliis integerrimis trinerviis oblongo-ovatis tomentoſis racemis brachiatis, ſpicis bipartitis. Lin. Sp. 559. *Melaſtoma with very entire oblong oval leaves, which are woolly on their under ſide, and ſpikes of flowers dividing in two parts.* Arbor racemoſa Braſiliana, folio Malabathri. Breyn. Cent. tab. 2 & 3.
5. MELASTOMA (*Groſſularioides*) foliis lanceolatis utrinque glabris nervis tribus ante baſin coëuntibus. Hort. Cliff. 162. *Melaſtoma with ſpear-ſhaped leaves ſmooth on both ſides, and three veins which join before they reach the baſe.* Groſſularia fructu non ſpinoſo, Malabathri foliis oblongis, floribus herbaceis racemoſis, fructu nigro. Sloan. Cat. 165.
6. MELASTOMA (*Bicolor*) foliis lanceolatis, nervis tribus longitudinalibus, ſubtus glabris coloratis. Hort. Cliff. 162. *Melaſtoma with ſpear-ſhaped leaves having three longitudinal veins, ſmooth and coloured on their under ſide.*
7. MELASTOMA (*Malabathrica*) foliis lanceolato-ovatis quinquenervibus ſcabris. Flor. Zeyl. 171. *Melaſtoma with ſpear-ſhaped oval leaves which are rough, and have five veins.* Melaſtoma quinque nervia hirta major, capitulis ſericeis villoſis. Burm. Zeyl. 155. tab. 73.
8. MELASTOMA (*Lævigata*) foliis oblongo-ovatis minutiſſimè dentatis infernè ſericeis quinquenervibus, floribus racemoſis. *Melaſtoma with oblong oval leaves, having very ſmall indentures on the edges, and ſilky on their under ſide, with five veins, and flowers growing in long bunches.* Groſſulariæ fructu, arbor maximo non ſpinoſa, Malabathri folio maximo inodora, flore racemoſo albo. Sloan. Cat. Jam. 165.
9. MELASTOMA (*Petiolatis*) foliis denticulatis ovatis acuminatis, infernè nitidiſſimis, petiolis longiſſimis. *Melaſtoma with oval acute-pointed leaves, which are indented on their edges, very ſhining on their under ſide, and have very long foot-ſtalks.*
10. MELASTOMA (*Umbellata*) foliis cordatis acuminatis integerrimis, infernè incanis, floribus umbellatis. *Melaſtoma with heart-ſhaped, acute-pointed, entire leaves, hoary on their under ſide, and flowers growing in umbels.* Sambucus Barbadenſis dicta, foliis ſubincanis. Pluk. Phyt. tab. 221. fol. 6.
11. MELASTOMA (*Racemoſa*) foliis oblongo-cordatis acuminatis, denticulato-ſerratis, floribus racemoſis ſparſis.

ſis. *Melaſtoma with oblong, heart-ſhaped, acute-pointed leaves, having ſawed indentures, and flowers growing thinly in long bunches.*

12. MELASTOMA (*Verticillata*) foliis ovato-lanceolatis, quinquenervibus, ſubtus aureis, floribus verticillatis, caule tomentoſo. *Melaſtoma with oval ſpear-ſhaped leaves having five veins, which are of a gold colour on their under ſide, and flowers growing in whorls, with a woolly ſtalk.*

13. MELASTOMA (*Acuta*) foliis lanceolatis acutis denticulatis infernè incanis trinervibus, floribus racemoſis. *Melaſtoma with acute ſpear-ſhaped leaves which are indented on their edges, hoary on their under ſide, have three veins, and flowers growing in bunches.*

14. MELASTOMA (*Glabra*) foliis ovato-lanceolatis acuminatis integerrimis, utrinque glabris trinervibus, floribus racemoſis. *Melaſtoma with entire, oval, ſpear-ſhaped leaves ending in acute points, having three veins, and ſmooth on both ſides, with flowers growing in long bunches.* Arbor Syrinamenſis, canellæ folio utrinque glabro. Pluk. Phyt. tab. 249. fol. 5.

15. MELASTOMA (*Quinquenervia*) foliis ovatis quinquenervibus ſcabris, floribus racemoſis alaribus. *Melaſtoma with oval rough leaves having five veins, and flowers growing in bunches from the ſides of the branches.*

16. MELASTOMA (*Octandria*) foliis lanceolatis trinervibus glabris, marginibus hiſpidis. *Melaſtoma with ſmooth ſpear-ſhaped leaves having three veins, and hairy prickles on the border.*

17. MELASTOMA (*Aſpera*) foliis ovatis quinquenervibus glabris, marginibus hiſpidis. *Melaſtoma with oval ſmooth leaves, having five veins, and hairy prickly borders.*

18. MELASTOMA (*Scabroſa*) foliis ovato-lanceolatis ſcabris acuminatis quinquenervibus, floribus racemoſis. *Melaſtoma with oval, ſpear-ſhaped, acute-pointed leaves, having five veins, and flowers growing in long bunches.*

The title of this genus of plants was given to it by Profeſſor Burman, of Amſterdam, in the Theſaurus Zeylanicus; ſome of theſe plants have been titled Sambucus, others Chriſtophoriana, and to ſome of the ſpecies Dr. Plukenet gave the title of Acidendron; but Sir Hans Sloane and Father Plumier, gave them the title of Groſſularia, from whence I have applied the Engliſh name of Gooſeberry to them, which is the name by which ſome of the ſorts are known in America.

The firſt ſort riſes about four or five feet high, the ſtem and branches being covered with long ruſſet hairs; the leaves are placed on the branches oppoſite; they are five inches long and two broad, and are alſo covered with the ſame ruſſet down, having five ribs or veins running through the leaves from end to end, but the three inner join before they reach the baſe, with ſmall tranſverſe ribs; the fruit is produced at the end of the ſhoots, which is a pulpy blue berry, as large as a Nutmeg.

The ſecond ſort grows to be a large tree, having many crooked branches, covered with a brown bark, the leaves placed oppoſite on the branches; theſe are ſmooth, entire, and above five inches long, and two broad in the middle, with three deep veins running through them; both ſides of theſe leaves are of a light green and ſmooth, and are ſharply indented on their edges, ending in acute points. The fruit grows in looſe ſpikes at the end of the branches; they are thinly placed on the ſpikes, and are of a Violet colour.

The third ſort grows to the height of twenty feet, with a large trunk, covered with a ruſſet bark: the leaves of this tree are very large, being above ſeven inches long, and three and a quarter broad, of a dark ruſſet colour on their upper ſide, but of a yellowiſh ruſſet on their under, ſoft to the touch, having a ſoft down over them; the ſtalks are covered with rough hairs, and the leaves are placed by pairs on the branches, which make a beautiful appearance when the trees are viewed at a diſtance.

The fourth ſort ſeldom grows more than eight or ten feet high, the leaves are about four inches long, having three veins, which join before they reach the baſe; they are entire, and are of a ſattin colour on their under ſide, but of a light green on their upper; theſe are placed by pairs on the branches.

The fifth ſort ſeldom grows more than ſeven or eight feet high, ſpreading out into many branches, which are covered with a ſmooth purple bark; they are ſlender, and are garniſhed with ſpear-ſhaped leaves, five inches long and two broad in the middle, where they are broadeſt; they are ſmooth on both ſides, their edges are entire, and they terminate in acute points. The flowers are produced in pretty long hanging bunches, of an herbaceous colour, with long ſtyles which are ſtretched out a good length beyond the petals, and are permanent; the fruit is ſmall, and black when ripe.

The ſixth ſort riſes four or five feet high, dividing into many ſlender branches, which are ſmooth, and garniſhed with ſpear-ſhaped leaves three inches long, and one and a quarter broad, of a lucid green on the upper ſide, but white on the under, having three longitudinal veins which join before they reach the baſe; theſe are entire, and placed alternately on the branches. The flowers are produced in a looſe panicle at the end of the branches; they are ſmall, white, and have pretty long tubes; theſe are ſucceeded by ſmall purple fruit.

The ſeventh ſort riſes with an angular ſtalk ſix or ſeven feet high, ſending out branches oppoſite, which are garniſhed with ſpear-ſhaped, oval, rough leaves, placed by pairs; they are hairy, of a dark green on their upper ſide, but of a pale green on their under. The flowers are produced at the end of the branches, two or three ſtanding together; they are large, and of a Roſe colour, inclining to purple, ſitting in large hairy empalements; theſe are ſucceeded by roundiſh purple fruit crowned by the empalement, which are filled with a purple pulp ſurrounding the ſeeds.

The eighth ſort grows to the height of twenty feet, with a large ſtrait ſtem, covered with a gray bark, and at the top divides into many angular branches; theſe are garniſhed with oblong oval leaves near a foot long, and ſix inches broad in the middle, of a dark green on their upper ſide, but ſilky on their under, with five ſtrong longitudinal veins; they are indented on their edges, and placed oppoſite. The flowers are produced in looſe long bunches at the end of the branches; theſe are white, and are ſucceeded by roundiſh purple fruit, filled with pulp, in which the ſeeds are lodged.

The ninth ſort riſes with a ſtrong erect ſtalk near thirty feet high, covered with a gray bark, dividing at the top into ſeveral angular compreſſed branches, which are garniſhed with oval leaves indented on their edges; they are ſeven inches long and almoſt five broad, ſtanding by pairs oppoſite on very long foot-ſtalks, of a lucid green on their upper ſide, but of a pale gold colour and ſattiny on their under, with five ſtrong longitudinal veins, and a great number of ſmaller tranſverſe ones. The flowers are produced in looſe panicles at the end of the branches; they are white, and are ſucceeded by purple fruit, about the ſame ſize as thoſe of the former.

The tenth ſort riſes with a ſhrubby ſtalk ten or twelve feet high, covered with a hairy bark, and divides into many branches toward the top, which are garniſhed with heart-ſhaped leaves ending in acute points; they are five inches long and three broad toward their baſe, entire in their borders, of a dark green on their upper ſide, but hoary on their under, with five longitudinal veins, and many ſmaller tranſverſe ones; theſe are placed oppoſite, and ſtand upon hairy foot-ſtalks, two inches and a half in length. The flowers are produced at the end of the branches, in a ſort of umbel; they are of a pale Roſe colour and pretty large, ſitting on hairy empalements; theſe are ſucceeded by ſmall black fruit, a little larger than Elder-berries.

The eleventh ſort riſes with a ſhrubby ſtalk about eight or nine feet high, covered with a dark brown bark,

bark, and divides at the top into many ſtraggling branches, which are garniſhed with oblong heart-ſhaped leaves ſix inches long, and three broad toward their baſe, ending in acute points, indented on their edges with ſharp ſerratures; they are ſmooth on both ſides, and of a light green colour. The flowers are produced in very looſe bunches at the end of the branches; they are ſmall, of an herbaceous colour, and are ſucceeded by ſmall fruit, of a dark colour when ripe.

The twelfth ſort riſes with a ſhrubby ſtalk five or ſix feet high, dividing into many ſmaller branches, which are covered with a hairy woolly bark, of a ruſty iron colour; theſe are garniſhed with oval ſpear-ſhaped leaves, one inch and a half long, and three quarters of an inch broad in the middle; they are of a dark green on their upper ſide, and of a ruſty iron colour on their under, having five longitudinal veins; they are placed oppoſite, and ſit cloſe to the branches. The flowers come out in whorls at the joints of the ſtalks; they are ſmall, of a purpliſh colour, and are ſucceeded by ſmall black fruit.

The thirteenth ſort is a low ſhrub, ſeldom riſing more than three feet high, dividing at the bottom into ſlender branches, which are garniſhed with ſpear-ſhaped leaves, ending in acute points; theſe are five inches long, and one and a half broad in the middle, ſawed on their edges, of a dark green on their upper ſide, but of a hoary white on their under, having three longitudinal veins; they are placed oppoſite, upon ſhort foot-ſtalks. The flowers are produced in looſe bunches at the end of the branches; they are white, and ſucceeded by ſmall purple fruit.

The fourteenth ſort hath a ſhrubby ſtalk eight or nine feet high, divided toward the top into many ſlender branches which are ſmooth, garniſhed with oval ſpear-ſhaped leaves, which are ſeven inches long and three broad, ending in acute points; they are entire on their edges, and ſmooth on both ſides, ſtanding oppoſite, and have three longitudinal veins. The flowers are produced in looſe panicles at the end of the branches, and are ſucceeded by very ſmall purple fruit.

The fifteenth ſort riſes with ſeveral ſhrubby ſtalks five or ſix feet high, dividing into ſeveral crooked branches, garniſhed with oval leaves three inches long, and almoſt as much broad, having five longitudinal veins; they are rough, of a dark green on their upper ſide, but of a pale green on their under, indented on their edges, ſtanding upon very hairy foot-ſtalks; they are ſometimes oppoſite, and at others alternate, on the branches. The flowers are produced in very looſe bunches, which come out from the ſide of the ſtalks; they are ſmall, of an herbaceous colour, and are ſucceeded by ſmall purpliſh fruit, filled with very ſmall ſeeds.

The ſixteenth ſort riſes with a ſhrubby ſtalk ſeven or eight feet high, and divides into many ſmooth branches, which are garniſhed with ſpear-ſhaped leaves about four inches long, and one inch and a quarter broad in the middle; they are ſmooth on both ſides, of a dark green colour, and have three longitudinal veins; the edges of theſe leaves are cloſely ſet with briſtly ſtinging hairs. The flowers are produced in looſe bunches at the end of the branches; they are ſmall, of a purpliſh colour, and are ſucceeded by very ſmall black fruit.

The ſeventeenth ſort is in many parts like the former, but the leaves are oval, a little more than two inches long, and oneand a quarter broad; theſe have five longitudinal veins, and are ſmooth on both ſides, of a dark green colour, and ſtand oppoſite on ſhort foot-ſtalks. The flowers grow in looſe bunches at the end of the branches, they are larger than thoſe of the former ſort, but are of the ſame colour. The edges of the leaves of this ſort are cloſely ſet with ſtinging hairs, as thoſe of the other.

The eighteenth ſort riſes with a ſhrubby ſtalk eight or nine feet high, dividing into branches ſtanding oppoſite, as do alſo the leaves, which are ſeven inches long and three broad, rough on their ſurface, entire on their edges, ending in acute points; they are of a light green on both ſides, and ſtand upon ſhort foot-ſtalks. The flowers are produced in pretty large looſe panicles at the end of the branches; they are ſmall, white, and are ſucceeded by ſmall, round, purple fruit.

All the ſorts are natives of the warm parts of America, where there are many more ſpecies than are here enumerated. Moſt of theſe here mentioned, were found by the late Dr. Houſtoun, growing naturally in Jamaica, from whence he ſent many of their ſeeds to Europe, ſome of which ſucceeded; but moſt, if not all the plants which were raiſed from them, were loſt in the ſevere winter in 1740, ſince which time they have not been recovered in Europe.

There is great beauty in the diverſity of the leaves of theſe plants, many of them being very large, and moſt of them are of different colours on the two ſurfaces, their under ſide being either white, gold colour, or ruſſet, and their upper of different ſhades of green, ſo that they make a fine appearance in the hot-houſe all the year; indeed, their flowers have no great beauty to recommend them, but yet for the ſingular beauty of their leaves, theſe plants deſerve a place in all curious collections, as much as moſt other ſorts.

There are very few of theſe plants at preſent in any of the European gardens, which may have been occaſioned by the difficulty of bringing over growing plants from the Weſt-Indies; and the ſeeds being ſmall when they are taken out of the pulp, ſoon become dry, ſo ſeldom ſucceed. The beſt way to obtain theſe plants is, to have the entire fruits put up in dry ſand as ſoon as they are ripe, and forwarded by the ſooneſt conveyance to England; theſe ſhould be immediately taken out when they arrive, and the ſeeds ſown in pots of light earth, and plunged into a moderate hot-bed of tanners bark. When the plants come up, and are fit to remove, they muſt be each planted into a ſmall pot of light earth, and plunged into the tan-bed; and may afterward be treated in the manner directed for the ANNONA, to which I ſhall deſire the reader to turn, to avoid repetition.

MELIA. Lin. Gen. Plant. 473. Azederach. Tourn. Inſt. R. H. 616. tab. 387. The Bead-tree.

The CHARACTERS are,

The empalement of the flower is ſmall, erect, and of one leaf, cut into five points at the top, which are obtuſe. The flower hath five long, narrow, ſpear-ſhaped petals which ſpread open, and a cylindrical nectarium of one leaf, the length of the petals, indented at the brim in ten parts. It has ten ſmall ſtamina inſerted in the top of the nectarium, terminated by ſummits which do not appear above it, with a conical germen ſupporting a cylindrical ſtyle, crowned by an obtuſe indented ſtigma. The germen afterward turns to a ſoft globular fruit, including a roundiſh nut having five rough furrows, and five cells, each containing one oblong ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, intitled Decandria Monogynia, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

The SPECIES are,

1. MELIA (*Azedarach*) foliis bipinnatis. Flor. Zeyl. 162. *Melia with double winged leaves.* Azederach. Dod. Pempt. 848. *The Bead-tree, or Falſe Sycamore.*
2. MELIA (*Azedirachta*) foliis pinnatis. Hort. Cliff. 161. *Melia with winged leaves.* Olea Malabarica, fraxini folio. Pluk. Alm. 269.

The firſt ſort grows naturally in Syria, from whence it was brought to Spain and Portugal, where it is now become as common almoſt, as if it were a native of thoſe countries. This in warm countries grows to a large tree, ſpreading out into many branches, which are garniſhed with winged leaves, compoſed of three ſmaller wings, whoſe lobes are notched and indented on their edges; they are of a deep green on their upper ſide, and paler on their under. The flowers come out from the ſide of the branches in long looſe bunches;

bunches; they are compoſed of five long, narrow, ſpear-ſhaped petals, of a blue colour, and are ſucceeded by oblong fruit as large as a ſmall Cherry, green at firſt, but when ripe changes to a pale yellow, incloſing a nut with five deep furrows, having four or five cells, in each of which is lodged one oblong ſeed. This produces its flowers in England in July, but are not often ſucceeded by ſeeds here; it drops its leaves in the autumn, and puts out freſh in the ſpring. The pulp which ſurrounds the nut, is ſaid to have a deadly quality if eaten; and if mixed with greaſe, and given to dogs, it will kill them. The nuts are bored through, and ſtrung by the Roman Catholics to ſerve as beads.

There has been of late years ſome of theſe plants introduced to the iſlands in the Weſt-Indies, where I am informed they continue flowering, and produce their fruit moſt part of the year. The fruit I have received from thence by the title of Indian Lilac, from which I have raiſed many of the plants, and find them to be the ſame as that from Syria.

This ſort is propagated by ſeeds (which may be obtained from Italy or Spain, where theſe trees annually produce ripe fruits in the gardens where they are planted:) the ſeeds or berries ſhould be ſown in pots filled with good freſh light earth, and plunged into a moderate hot-bed of tanners bark, where (if the ſeeds are freſh) they will come up in about a month or five weeks time. When the plants are come up they ſhould be frequently watered, and ſhould have a large ſhare of free air, by raiſing the glaſſes every day; in June they ſhould be expoſed to the open air, in a well ſheltered ſituation, that they may be hardened before winter. In October the pots ſhould be removed under a hot-bed frame, where they may enjoy free open air when the weather is mild, and be covered in hard froſt. During the winter ſeaſon they muſt be refreſhed gently with water, but by no means repeat this too often, nor give them too much at a time; for their leaves being off, they will not be in a condition to throw off a ſuperfluity of moiſture.

In March following, you may ſhake out the plants from the ſeed-pots and divide them, planting each into a ſeparate ſmall pot, filled with light freſh earth, plunging them into a moderate hot-bed, which will greatly promote their rooting, and increaſe their growth, but they muſt not be drawn too much; and in June you ſhould remove them out into the open air as before, and during the three or four winters, while the plants are young, you muſt ſhelter them, to ſecure them from the cold; but when the plants are grown pretty large and woody, they will endure to be planted in the open air againſt a ſouth wall. The beſt ſeaſon for this is in April, at which time you ſhould ſhake them out of the pots, being careful not to break the earth from the roots, but only pare off with a knife the outſide of the ball of earth; then open your holes and put in the plants, cloſing the earth to their roots, obſerving if the weather is dry, to give them ſome water, which ſhould be repeated twice a week until the plants have taken root; but you muſt obſerve to plant them on a dry ſoil, otherwiſe they will be liable to miſcary in ſevere froſty weather.

The ſecond ſort grows naturally in India, where it becomes a large tree; the ſtem is thick, the wood of a pale yellow, and the bark of a dark purple colour and very bitter. The branches extend wide on every ſide, which are garniſhed with winged leaves, compoſed of five or ſix pair of oblong acute-pointed lobes, terminated by an odd one; theſe are ſawed on their edges, of a light green colour, and a ſtrong diſagreeable odour; they ſtand upon pretty long foot-ſtalks, which come out ſometimes oppoſite, and at others they are alternate. The flowers are produced in long branching panicles which proceed from the ſide of the branches; they are ſmall, white, and ſit in ſmall empalements, which are cut in five acute ſegments; theſe are ſucceeded by oval fruit of the ſize of ſmall Olives, which are green, afterward yellow, and when ripe, they change to a purple colour; the pulp which ſurrounds the nut is oily, acrid, and bitter; the nut is white, and ſhaped like that of the former. It grows in ſandy land, both in India and the iſland of Ceylon, where it is always green, and produces flowers and fruit twice a year.

This ſort is now very rare in England, and alſo in the Dutch gardens, where ſome years paſt it was more common; it is propagated by ſeeds in the ſame way as the other ſort, but being much tenderer, the plants ſhould be kept conſtantly in the tan-bed while young. In the ſummer they may be placed under a frame, but in winter they muſt be removed into the bark-ſtove, and treated in the ſame way with other plants from the ſame countries. When the plants have obtained ſtrength, they may be treated more hardily, by placing them in winter in a dry ſtove, and in the middle of ſummer they may be placed abroad for two or three months in a warm ſheltered ſituation, but they ſhould not remain too long abroad; and during the winter ſeaſon they ſhould be ſparingly watered: with this management the plants will produce flowers annually, and as they retain their leaves all the year, they are ornamental in winter in the ſtove.

The firſt ſort is commonly called, Zizyphus alba, in Portugal and Spain, and in Italy, Pſeudocycamorus. It was by moſt of the modern botaniſts titled, Azederach, but Dr. Linnæus has altered it to this of Melia, which was by Theophraſtus applied to a ſpecies of Aſh.

MELIANTHUS. Tourn. Inſt. R. H. 430. tab. 245. Lin. Gen. Plant. 712. [μελίανθος, of μέλι, honey, and ἄνθος, a flower.] Honey Flower.

The CHARACTERS are,

The flower has a large, coloured, unequal empalement, divided into five ſegments; the two upper are oblong and erect, the lower is ſhort, and ſhaped like a bag. The middle are ſpear-ſhaped and oppoſite. It hath four narrow ſpear-ſhaped petals, reflexed at their points, ſpreading open outward, and ſhaped like the empalement into two lips, connected on their ſides. It has a nectarium of one leaf, ſituated in the lower ſegment of the empalement, and faſtened with it to the receptacle; it is ſhort, compreſſed on the ſides, and cut on the margin. It hath four erect awl-ſhaped ſtamina, the two under being ſomewhat ſhorter than the other, terminated by oblong heart-ſhaped ſummits. In the center is ſituated a four-cornered germen, ſupporting an erect ſtyle, crowned by a quadrifid ſtigma. The germen afterward becomes a quadrangular capſule with diſtended cells, divided by partitions in the center, each containing one almoſt globular ſeed, fixed to the center of the capſule.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and their ſeeds are included in empalemnets.

The SPECIES are,

1. MELIANTHUS (*Major*) ſtipulis ſolitariis petiolo adnatis. Hort. Cliff. 492. *Honey Flower with ſingle ſtipulæ growing cloſe to the foot-ſtalk.* Melianthus Africanus. H. L. B. 414. *Greater African Honey Flower.*
2. MELIANTHUS (*Minor*) ſtipulis geminis diſtinctis. Hort. Cliff. 492. *Smaller Honey Flower with two diſtinct ſtipulæ.* Melianthus Africanus minor fœtidus. Com. Rar. Pl. 4. tab. 4.

The firſt ſort grows naturally at the Cape of Good Hope, from whence it was brought to Holland in the year 1672; this hath a ligneous perennial root, which ſpreads far on every ſide, from which ariſe many ligneous ſtalks which riſe four or five feet high, and are herbaceous toward the top, where they are garniſhed with large winged leaves, which embrace the ſtalks with their baſe, where they have a large ſingle ſtipulæ faſtened on the upper ſide of the foot-ſtalk, with two ears at the baſe, which alſo embrace the ſtalk. The leaves have four or five pair of very large lobes, terminated by an odd one; theſe are deeply jagged on their edges into acute ſegments, and between the lobes runs a double leafy border or wing on the upper ſide of the midrib, ſo as to connect the baſe of the lobes together; theſe are alſo deeply jagged in

the ſame manner as the lobes; they are of a gray colour. The flowers are produced in pretty long ſpikes, which ariſe from between the leaves toward the top of the ſtalks; they are of a brown or chocolate colour, and are formed like the lip flowers, but have four narrow petals, in which it differs from the other plants of this claſs with lip flowers; theſe are ſucceeded by oblong four-cornered capſules, divided by a central partition into four cells, each containing one roundiſh ſeed; this plant flowers in June, but unleſs the ſeaſon proves warm, they are not ſucceeded by ſeeds in England.

This plant was formerly preſerved in green-houſes as a tender exotic, but if planted in a dry ſoil and a warm ſituation, it will endure the cold of our ordinary winters very well; and if in a ſevere froſt the tops of them ſhould be deſtroyed, yet the roots will abide, and put forth again the ſucceeding ſpring, ſo that there is no great danger of loſing it; and the plants which grow in the open air always flower much better than thoſe which are preſerved in the green-houſe, as they are leſs drawn, which always is hurtful to the flowering of plants; for it rarely happens that any of the plants of this ſort, which are placed in the green-houſe do flower, for they are apt to draw up tall and weak, which prevents their flowering, and thoſe branches which produce flowers, generally decay ſoon after; ſo that although the ſtems become woody, yet they are not of long duration, but the roots ſpread where they have room, and ſend out a great number of ſtalks annually; and when the plants grow in the full ground, moſt of thoſe ſtalks which are not injured by froſt, ſeldom fail to flower the ſpring following, ſo that the ſureſt method to have them flower, is to cover the ſhoots of theſe plants in froſty weather with Reeds or mats, to prevent their tops being killed by the cold; therefore it is the beſt way to plant them cloſe to a good aſpected wall, and on a dry rubbiſh, in which they will not ſhoot ſo vigorous as in good ground, ſo will be leſs ſucculent, and therefore not ſo liable to ſuffer by cold; but if the winter proves ſevere, the ſtalks may be faſtened up to the wall, and covered to protect them; for want of this care the ſtalks are frequently killed to the ground in winter, ſo that there is ſeldom any flowers produced.

This plant may be propagated by taking off its ſuckers or ſide ſhoots, any time from March to September, obſerving to chuſe ſuch as are furniſhed with fibres, and after they are planted and taken root, they will require no farther care but to keep them clear from weeds: they may be alſo propagated by planting cuttings, during any of the ſummer months, which, if watered and ſhaded, will take root very well, and may afterwards be tranſplanted where they are deſigned to remain.

The ſecond ſort is alſo a native of the country about the Cape of Good Hope, from whence it was brought to Europe; this riſes with round, ſoft, ligneous ſtalks five or ſix feet high, which ſend out two or three branches from their ſide, garniſhed with winged leaves like thoſe of the former ſort, but not half ſo large; theſe have two diſtinct ſtipulæ adhering to their foot-ſtalks; they are of a deep green on their upper ſide, and whitiſh on their under. The flowers come out from the ſide of the ſtalks in looſe hanging panicles, each ſuſtaining ſix or eight flowers, which are ſhaped like thoſe of the firſt ſort, but ſmaller; the lower part of the petals are green, their upper part are of a Saffron colour, and on the outſide, in the ſwelling part of the petals, is a bluſh of fine red; theſe have two long and two ſhorter ſtamina, which are terminated by yellow ſummits. The flowers are ſucceeded by four-cornered ſeed-veſſels, which are ſhorter than thoſe of the firſt ſort, in which are lodged four oval ſeeds in ſeparate apartments; this flowers at the ſame ſeaſon with the former.

This ſort does not ſpread its roots as the firſt, ſo is not propagated with ſo great facility, but cuttings of this ſort planted upon an old hot-bed, whoſe heat is over, and covered cloſe with bell or hand-glaſſes to exclude the air, will take root pretty freely; theſe may be planted in pots, and ſheltered in the winter under a common frame for a year or two till they have obtained ſtrength, then they may be planted in a warm border, and treated in the ſame way as the former ſort, with which management I have ſeen them flower much better than any of thoſe which have been treated more tenderly, and theſe plants have perfected their ſeeds in good ſeaſons.

MELICOCCA. See SAPINDUS.

MELILOTUS. See TRIGONELLA.

MELISSA. Tourn. Inſt. R. H. 193. tab. 91. Lin. Gen. Plant. 647. [ſo called of μέλι, honey, becauſe the bees procure it from this plant; it is alſo called Meliſſophyllon, μέλι, and φύλλον, a leaf, q. d. Honey Leaf.] Baum.

The CHARACTERS are,

The empalement of the flower is of the open, bell-ſhape, angular kind, ſtreaked with one leaf, whoſe brim is formed into two lips; the upper lip is indented in three parts, which are ſpread open and reflexed; the under lip is ſhort, acute, and indented in two parts. The flower is of the lip kind, having a cylindrical tube; the chaps are gaping, the upper lip is ſhort, erect, forked, and roundiſh, indented at the end. The under lip is trifid, the middle part being the largeſt. It hath four awl-ſhaped ſtamina, two of which are as long as the petal, but the other are but half ſo long; they are terminated by ſmall ſummits, which join by pairs. It hath a quadrifid germen, ſupporting a ſlender ſtyle the length of the petal, which, with the ſtamina, are ſituated under the upper lip, and is crowned by a ſlender, biſid, reflexed ſtigma. The germen afterward turns to four naked ſeeds, ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, which includes the plants whoſe flowers have two long and two ſhort ſtamina, whoſe ſeeds are naked.

The SPECIES are,

1. MELISSA (*Officinalis*) racemis axillaribus verticillatis, pedicellis ſimplicibus. Lin. Sp. Plant. 592. *Baum with whorled bunches of flowers proceeding from the ſides of the ſtalks, having ſingle foot-ſtalks.* Meliſſa hortenſis. C. B. P. 229. *Garden Baum, or common Baum.*
2. MELISSA (*Romana*) floribus verticillatis ſeſſilibus, foliis hirſutis. *Baum with whorls of flowers ſitting cloſe to the ſtalks, and hairy leaves.* Meliſſa Romana, molliter hirſuta & graveolens. H. R. Par. *Roman Baum with ſoft hairy leaves, and a ſtrong ſmell.*
3. MELISSA (*Grandiflora*) pedunculis axillaribus dichotomis longitudine florum. Lin. Sp. Plant. 592. *Baum with foot-ſtalks ariſing from the wings of the ſtalk, which are divided in forks, and are the length of the flowers.* Calamintha magno flore. C. B. P. 229. *Calaminth with a large flower.*
4. MELISSA (*Calamintha*) pedunculis axillaribus dichotomis longitudine foliorum. Lin. Sp. Plant. 593. *Baum with foot-ſtalks ariſing from the wings of the ſtalk, which are forked, and as long as the leaves.* Calamintha vulgaris & officinarum Germaniæ. C. B. P. 228. *Common officinal Calamint of the Germans.*
5. MELISSA (*Nepeta*) pedunculis axillaribus dichotomis folio longioribus, caule decumbente. Lin. Sp. Plant. 593. *Baum with foot-ſtalks ariſing from the wings of the ſtalk, which are forked, and longer than the leaves, with a declining ſtalk.* Calamintha pulegii odore ſive nepeta. C. B. P. 228. *Calamint with the ſcent of Penny Royal, or Cat Mint.*
6. MELISSA (*Cretica*) racemis terminalibus, pedunculis ſolitariis breviſſimis. Lin. Sp. Plant. 593. *Baum with ſpikes of flowers terminating the ſtalks, growing upon very ſhort ſingle foot-ſtalks.* Calamintha incana ocymi foliis. C. B. P. 228. *Hoary Calamint with Baſil leaves.*
7. MELISSA (*Majoranifolia*) foliis ovatis glabris, floribus verticillatis ſeſſilibus, pedunculis ſolitariis breviſſimis. *Baum with oval ſmooth leaves, and flowers growing in whorls, ſitting cloſe to the branches, which have very ſhort ſingle ſtalks.* Calamintha Romana, majoranæ folio,

folio, pulegii odore. Bocc. Muſ. *Roman Calamint with a Marjoram leaf, and the ſcent of Penny Royal.*

8. Melissa (*Fruticoſa*) fruticoſa, ramis attenuatis virgatis, foliis ſubtus tomentoſis. Lin. Sp. Plant. 593. *Shrubby Baum with ſlender twig-like branches, and leaves which are woolly on their under ſide.* Calamintha Hiſpanica fruteſcens, mari folio. Tourn. Inſt. 194. *Shrubby Spaniſh Calamint with a Marum leaf.*

The firſt ſort grows naturally on the mountains near Geneva, and in ſome parts of Italy, but is cultivated here in gardens as a medicinal and culinary herb. It has a perennial root, and an annual ſtalk, which is ſquare, branching, and riſes from two to three feet high, garniſhed with leaves ſet by pairs at each joint, which are two inches and a half long, and almoſt two inches broad at their baſe, growing narrower toward the top, indented about their edges, and the lower ones ſtanding upon pretty long foot-ſtalks. The flowers grow in looſe ſmall bunches at the wings of the ſtalk, in whorls, ſtanding upon ſingle foot-ſtalks; they are of the lip kind, the upper lip ſtanding erect and is forked; the under lip is divided into three parts; the middle one is roundiſh, and indented at the top. The flowers are white, and appear in July. The whole plant has a pleaſant ſcent, ſomewhat like Lemons.

It is reckoned to be cordial, cephalic, and good for all diſorders of the head and nerves; there is a ſimple water of this herb. It is alſo uſed as Tea, and is by ſome greatly eſteemed for that purpoſe; there is a variety of this with ſtriped leaves.

This plant is eaſily propagated by parting of the root; the beſt time for this is in October, that the offſets may have time to get root before the froſts come on. The roots may be divided into ſmall pieces with three or four buds to each, and planted two feet apart in beds of common garden earth, in which they will ſoon ſpread and meet together; the only culture it requires is to keep it clean from weeds, and cut off the decayed ſtalks in autumn, ſtirring the ground between the plants.

The ſecond ſort grows naturally about Rome, and in ſeveral parts of Italy; this hath a perennial root, and an annual ſtalk like the former. The ſtalks are ſlender, the leaves are much ſhorter than thoſe of the former ſort, and the whole plant is hairy, and of a ſtrong diſagreeable odour. The flowers grow in whorls, ſitting pretty cloſe to the branches, and are ſmaller than thoſe of the firſt ſort; it flowers about the ſame time. It is ſeldom preſerved in gardens, but may be cultivated in the ſame way as the former.

The third ſort grows naturally in the mountains of Tuſcany and Auſtria, but is preſerved in many Engliſh gardens for the ſake of variety. It hath a perennial root, and an annual ſtalk, which riſes about a foot high, garniſhed at each joint with two leaves ſtanding oppoſite, which are an inch and a half long, and three quarters of an inch broad, ſawed on their edges, of a lucid green on their upper ſide, and whitiſh on their under: from the wings of the ſtalks come out ſingle foot-ſtalks half an inch long, which divide into two ſmaller, and each of theſe ſuſtain two flowers upon ſhort ſeparate foot-ſtalks. The flowers are large, of a purple colour, and ſhaped like thoſe of the other ſpecies. It flowers in June, and the ſeeds ripen in Auguſt. This may be propagated in the ſame way as the firſt ſort, and the plants may be treated in the ſame manner.

The fourth ſort is the common Calamint of the ſhops, which grows naturally in many parts of England, ſo is ſeldom kept in gardens. It hath a perennial root, from which ariſe ſeveral ſquare ſtalks near a foot long, which are hairy, and garniſhed with two roundiſh leaves at each joint, about the ſize of thoſe of Pot Marjoram, a little indented on their edges, and of a ſtrong penetrating odour. The flowers come out in whorls on the ſide of the ſtalks, upon foot-ſtalks, which divide by pairs, and are as long as the leaves; theſe ſuſtain ſeveral ſmall bluiſh flowers, which appear in July, and are ſucceeded each by four ſmall, roundiſh, black ſeeds. The herb is uſed in medicine, and is hotter, and abounds with more ſubtile and volatile parts than Mint. It provokes urine, brings down the menſes, opens the liver, and is good for coughs. This may be planted in gardens, and treated in the ſame way as the common Baum.

The fifth ſort is found in greater plenty than the fourth, growing wild in England. The ſtalks of this are longer and bend towards the ground. The leaves are larger, and more indented on their edges, and have a very ſtrong ſcent like Penny Royal. The whorls of flowers are ſet cloſer together than thoſe of the fourth ſort, but in other reſpects they agree.

The ſixth ſort grows naturally in the ſouth of France and in Italy; this is not of ſo long duration as the former ſorts, ſeldom continuing more than two or three years. The ſtalks are ſlender, a little ligneous, and are garniſhed with ſmall, roundiſh, hoary leaves, placed oppoſite at each joint. The flowers are produced in whorls toward the upper part of the ſtalks, which are terminated by a looſe ſpike; they are ſmall and white, ſhaped like thoſe of the other ſpecies, and appear in June; theſe are ſucceeded by ſeeds, which ripen in autumn, and if they are permitted to ſcatter, there will be a ſufficient ſupply of young plants.

The ſeventh ſort grows naturally in Italy; this is a biennial plant, whoſe ſtalks are about eight inches long, declining toward the ground, and are garniſhed with roundiſh leaves about the ſize of Marjoram, of a light green colour. The flowers come out in cloſe whorls on the upper part of the ſtalks, each ſtanding upon a ſhort ſeparate foot-ſtalk; they are large, and of a bright purple colour, appearing in July and Auguſt, and the ſeeds ripen in autumn; this is propagated by ſeeds, which ſhould be ſown ſoon after they are ripe, and then the plants will come up in the ſpring; but when the ſeeds are not ſown till the ſpring, they ſeldom grow till the next year. The plants may alſo be propagated by cuttings, which if planted in the ſummer, and ſhaded from the ſun, will take root very freely. If theſe plants are on a warm border, they will live through the winter, but to preſerve the ſpecies, a plant or two ſhould be kept in pots, and ſheltered under a frame in winter.

The eighth ſort grows naturally in Spain; this hath ſlender ſhrubby ſtalks about nine inches long, which put out ſmall ſide branches oppoſite, and are garniſhed with ſmall, hoary, oval-pointed leaves, placed by pairs; theſe have much the appearance of thoſe of the Marum. The flowers grow in whorled ſpikes, at the end of the ſtalks; they are ſmall and white, appearing in July, and the ſeeds ripen in autumn. The whole plant has a ſtrong ſcent of Penny Royal; this plant is of as ſhort a duration as the ſeventh ſort, and may be propagated either by ſeeds or cuttings in the ſame way as the ſeventh, and the plants require the ſame treatment.

MELISSA TURCICA. See Dracocephalon.

MELITTIS. Greater Dead Nettle.

The Characters are,

It hath an erect, taper, bell-ſhaped empalement, having two lips; the upper is tall and indented, the under is ſhort and bifid; the flower is ringent, the tube is longer than the empalement, the chaps are thicker; the upper lip is roundiſh, plain, and erect; the lower is trifid, ſpreading, and obtuſe. It hath four ſtamina, which are awl-ſhaped, ſituated under the upper lip, two being a little longer than the other, terminated by bifid obtuſe ſummits, which are placed a croſs; it hath an obtuſe, quadrifid, hairy germen ſupporting a ſlender ſtyle, crowned by a bifid acute ſtigma. The flower is ſucceeded by four ſeeds which ripen in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, intitled Didynamia Gymnoſpermia, the flowers having two long and two ſhort ſtamina, and are ſucceeded by four naked ſeeds ſitting in the empalement.

We

We know but one SPECIES of this genus, viz.

MELITTIS (*Melyſſophyllum.*) Hort. Cliff. 309. *Greater Dead Nettle.* Meliſſa. Fuchſii.

This plant grows naturally in ſome woods in the Weſt of England and in Wales, Germany and near Montpelier. It hath a perennial root, which in the ſpring ſends up three, four, or more ſtalks, according to the age and ſtrength, which riſe a foot and a half high; theſe are ſquare, and garniſhed with leaves like thoſe of the common Dead Nettle, but are much larger, rougher, and ſtand on longer foot-ſtalks, two being placed oppoſite at each joint. The flowers come out at the joints of the ſtalks, juſt above the foot-ſtalks of the leaves; they are in ſhape like thoſe of the Dead Nettle, but are much larger, of a redder purple colour, and the upper lip grows erect. Theſe appear in May, when the plants make a handſome appearance, and if the ſeaſon does not prove hot, the flowers will continue in beauty upward of three weeks. As the plants do rarely produce good ſeeds in the gardens, ſo they are uſually propagated by parting the roots; but where the plants are intended for ornament, the roots ſhould not be diſturbed oftener than every third year; nor ſhould they then be divided into ſmall parts, leſt thereby they ſhould not flower the firſt year. The beſt time to remove and part the roots is the beginning of October, that they may have time to get root before the froſt comes on. They ſhould have a loamy ſoil and an eaſt expoſure, where the plants will thrive and produce flowers in plenty.

MELO. Tourn. Inſt. R. H. 104. tab. 32. Cucumis. Lin. Gen. Plant. 969. [it takes its name of Μῆλον, an Apple, becauſe the fruit reſembles an Apple.] The Melon.

The CHARACTERS are,

It hath male and female flowers on the ſame plant. The male flowers have a bell-ſhaped empalement of one leaf, whoſe border is terminated by five awl-ſhaped briſtles. The flower is of one petal, which is bell-ſhaped, faſtened to the empalement, and cut into five ſegments at the brim; theſe are veined and rough. It hath three ſhort ſtamina inſerted in the empalement, and are joined together, two of which have bifid points. The ſummits are linear, and run up and down on the outſide of the ſtamina, to which they adhere. The female flowers have no ſtamina or ſummits, but have a large oval germen ſituated below the flower, ſupporting a ſhort cylindrical ſtyle, crowned by three thick gibbous ſtigmas. The germen afterward turns to an oval fruit with ſeveral cells, filled with oval, acute-pointed, compreſſed ſeeds, incloſed in a ſoft pulp.

This genus of plants is by Dr. Linnæus joined with the Colocynthus and Anguria, to the Cucumis, making them only ſpecies of the ſame genus, which, according to his ſyſtem, may be allowable; but whoever will admit the fruit as a characteriſtic note to diſtinguiſh the genera, will find marks to ſeparate them; and however properly theſe may be put together in a ſyſtem of botany, yet in a work of this nature it cannot be admitted.

There is a great variety of this fruit cultivated in the different parts of the world, and in this country there are too many of them propagated, which are of no value, eſpecially by thoſe who ſupply the markets, where their ſize is chiefly regarded; ſo that by endeavouring to augment their bulk, the fruit is rendered of no value; I ſhall therefore only mention a very few of the varieties, which are the moſt deſerving of care, excluding the common Melons, as being unworthy of the trouble and expence in cultivating.

The ſort of Melon which is in the greateſt eſteem among all the curious in every part of Europe, is the Cantaleupe; which is ſo called from a place about fourteen miles from Rome, where the pope has a country ſeat, in which place this fruit has been long cultivated; but it was brought thither from that part of Armenia which borders on Perſia, where this fruit is in ſo great plenty, that a horſe-load is ſold for a French crown. The fleſh of this Melon, when in perfection, is delicious, and does not offend the moſt tender ſtomachs, ſo may be eaten with ſafety. The Dutch are ſo fond of this fruit, as to cultivate very few other ſorts, and by way of pre-eminence, call it only by the appellation of Cantaleupe, and never join the title of Melon to it, which they apply indifferently to all the other ſorts. The outer coat of this is very rough, and full of knobs and protuberances like warts; it is of a middling ſize, rather round than long, and the fleſh is for the moſt part of an Orange colour, though there are ſome with a greeniſh fleſh, but I have never met with any of that colour ſo good as thoſe of the other.

The Romana is by ſome much eſteemed, and when the fruit is well conditioned, the plants in perfect health, and the ſeaſon dry, it is a good Melon, and may be brought forwarder in the ſeaſon than the Cantaleupe; therefore thoſe who are deſirous of early Melons may cultivate this ſort.

The Succado is alſo a good ſort, and may alſo be cultivated for early fruit, but theſe muſt give way to the Cantaleupe, when that is in ſeaſon.

The Zatte is alſo a very good Melon, but very ſmall. The fruit of this is ſeldom bigger than a large Orange; it is a little flatted at the two ends, and the outer coat is warted like the Cantaleupe, but there is ſo little fleſh in one of theſe fruit, that they are ſcarce worthy the trouble of propagating.

The ſmall Portugal Melon, which is by ſome called the Dormer Melon, is a pretty good fruit, and the plants generally produce them in plenty, ſo by many people this is preferred to moſt other, eſpecially thoſe who love a plenty, and are not ſo nice in diſtinguiſhing the quality: this may alſo be cultivated for an early crop.

But the beſt Melon for this purpoſe is the Black Galloway, which was brought from Portugal by Lord Galloway many years ſince, but of late years is rarely to be met with in England, it having been degenerated by growing among other ſorts. The fruit of this ſort will ripen in a ſhorter time from its firſt ſetting, than any other which I have yet ſeen, and when ſuffered to ripen naturally, is not a bad fruit.

The few varieties here mentioned, are ſufficient to ſatisfy the curious, who may be fond of variety, for there are ſcarce any other which deſerve the trouble; and indeed thoſe who have a true taſte for this fruit, ſeldom cultivate any but the Cantaleupe; but as I before obſerved, where this fruit is deſired early in the ſeaſon, the Cantaleupe is not ſo proper as ſome of the other, therefore a few plants of one of the other ſorts ſhould be raiſed earlier in the ſpring, but ſhould be in a different part of the garden from the Cantaleupe Melons; for when two ſorts of Melons grow near, they cannot be preſerved perfectly right; therefore the Dutch and German gardeners are very careful in this reſpect, and in order to keep the ſort in perfection, do not plant any other ſort of Melon, Cucumber or Gourd, near theſe, leſt, by the impregnation of the farina of thoſe other, theſe fruit ſhould be rendered bad; and in this particular, I am convinced, from long experience, they are right; and from the not obſerving this, many perſons who are lovers of this fruit, have gradually diminiſhed their goodneſs, without knowing the cauſe, and have imputed it to the long cultivating from the ſeeds ſaved in the ſame garden, believing it abſolutely neceſſary to procure ſeeds from a diſtant place frequently to preſerve them good: indeed, where a perſon can ſecurely depend on the care and ſkill of thoſe he procures the ſeeds from, it is a very good method to exchange ſeeds now and then; but there are ſo few who are exact in making choice of the fruits from which they ſave the ſeeds, or careful enough to do it themſelves, but often depend on others to clean the ſeed, that I ſhould adviſe every one to do it himſelf, which is the ſure way to have it good; for I have frequently been deceived myſelf, by depending on the fidelity and ſkill of others; nor could I procure any of theſe ſeeds from Cantaleupe which were good, until my much honoured friend, the Chevalier Rathgeb, ſent me plentifully of it from thence; though I had often been

ſupplied

ſupplied with ſeeds by perſons who I thought could not be deceived in their choice, and who lived near the place of their growth.

Before I quit this head, I beg leave to caution all perſons againſt depending upon ſeeds which are brought from abroad, either by thoſe perſons who import them for ſale, or gentlemen who frequently bring or ſend over theſe ſeeds to their friends, for it ſeldom happens that any of theſe prove tolerable. I have been ſo often deceived by theſe myſelf, as to determine never to make trial of any of theſe ſeeds again, unleſs I receive them from a perſon who is ſkilful, and who eat of the fruit himſelf of which he ſaved the ſeeds; for in Italy, Spain, Portugal, and many parts of France, the gardeners are very careleſs in the choice of all their ſeeds, but of the Melons they are remarkably ſo; and as for thoſe which come from Conſtantinople, Aleppo, and other parts of Turkey, I have rarely ſeen one Melon produced from thoſe ſeeds which was tolerable.

The ſeeds of Melons ſhould not be ſown until they are three years old, nor would I chuſe to ſow them when they are more than ſix; for although they will grow at ten or twelve years old, yet the fruit which are produced from thoſe old ſeeds are ſeldom ſo thick fleſhed, as thoſe which come from ſeeds which are freſher: and it is the ſame of light ſeeds, which ſwim upon water, when they are taken out of the pulp, for I have made ſome trials of theſe, and have had them grow at three years old; but not one of the Melons produced on theſe plants was near ſo deep fleſhed, as thoſe which grew upon plants raiſed from heavy ſeeds taken out of the ſame fruit, though they grew in the ſame bed, and were cultivated exactly in the ſame manner; nor was their fleſh ſo firm, but rather inclining to be meally; therefore I would not adviſe the ſowing of theſe light ſeeds, nor thoſe which are very old.

Having thus largely treated of the choice of the ſorts, and of the ſeeds, I ſhall next proceed to the method of cultivating them, in order to obtain plenty of good fruit: the method which I am going to preſcribe being very different from what has been conſtantly practiſed in England, will, I doubt not, be objected to by many; but it is what has been practiſed in all the good gardens in Holland and Germany, where the Cantaleupe Melon is produced in great plenty and perfection; and from ſeveral years experience, I have found this to be the only method in which theſe Melons can be cultivated with ſucceſs; and I am likewiſe convinced of its being the beſt way to obtain plenty of any other ſort of Melon.

It is common to hear many perſons valuing themſelves upon having two or three early Melons, which, when brought to the table are not better than a Pumpkin, and theſe are procured at a great expence and with much trouble; and in order to have them ripe a little earlier than they would naturally come, if ſuffered to grow to their full ſize, the ſtem upon which the fruit grows is commonly twiſted, to prevent the nouriſhment entering the fruit, whereby the growth is checked; then the fruit is cloſely covered with the mowings of Graſs-plats, laid of a ſufficient depth to cauſe a fermentation, by which the fruit becomes coloured: but where this unnatural method is practiſed, the fruit has little fleſh, and that has neither moiſture, firmneſs, or flavour; ſo that after four months attendance, with a great expence of dung, &c. there may, perhaps, be three or four brace of Melons produced, which are fitter for the dunghill than the table. Therefore my advice is, never to attempt to have theſe fruit ripe earlier than the middle or latter end of June, which is generally ſoon enough for this climate; and from that time to the end of September, they may be had in plenty, if they are ſkilfully managed; and when the autumn has continued favourable, I have had them very good in the middle of October.

But in order to continue this fruit ſo long, the ſeeds muſt be ſown at two or three different ſeaſons: the firſt ſhould be ſown about the middle or end of February, if the ſeaſon proves forward; but if it is otherwiſe, it will be better to defer it till the end of that month; the future ſucceſs greatly depends on the raiſing the plants in ſtrength, which cannot be ſo well effected, if the weather ſhould prove ſo bad after the plants are come up, as that a ſufficient quantity of freſh air cannot be admitted to them, therefore it is not adviſeable to be too early in ſowing the ſeeds.

When the ſeaſon is come, theſe ſeeds may be ſown on the upper ſide of a Cucumber-bed, where there are any; and if there are none, a proper quantity of new horſe dung muſt be provided, which muſt be thrown in a heap to ferment, and turned over, that it may acquire an equal heat, in the ſame manner as hath been directed for Cucumbers; and the plants muſt be raiſed and managed in the ſame manner as hath been directed for them, until they are planted where they are to remain for good, to which article the reader is deſired to turn, to avoid repetition.

The ſecond ſeaſon for ſowing of theſe ſeeds is about the middle of March, and both theſe ſowings muſt be underſtood to be planted under frames; for thoſe which are deſigned for bell or hand-glaſſes, or to be covered with oil papers, ſhould not be ſown till about a week in April; for when theſe are ſown earlier, if the plants are properly managed, they will grow ſo long, as to extend their ſhoots to the ſides of the glaſſes, before it will be ſafe to let them run out; for it often happens in this country, that we have ſharp morning froſts in the middle of May; ſo that if the ends of theſe Vines are then without the glaſſes, if they are not covered with mats to guard them againſt the froſt, they will be in danger of ſuffering greatly therefrom; and, on the other hand, if the plants have ſpread ſo much as to fill the glaſſes, and not permitted to run out, they will be in equal danger of ſuffering by their confinement from the heat of the ſun in the day time; therefore it is that I ſhould adviſe the putting of the ſeed rather a little later into the hot-bed for the glaſſes, than thoſe which are to be covered with the oil papers. Nor will the times here mentioned be found too late, for I have put the ſeeds of Cantaleupe Melons into a hot-bed the third of May, which were not tranſplanted, but remained where they were ſown, and covered with oiled paper; and from this bed I cut a large crop of good fruit, which ripened about the latter end of Auguſt, and continued till the end of October. This I only mention, to ſhew what has and may be done, though it muſt not be always depended on.

But we next come to the making and preparing of the beds, or, as the gardeners term it, the ridges, into which the plants are to be put out to remain; theſe ſhould always be placed in a warm ſituation, where they may be defended from all cold and ſtrong winds, for the eaſt and north winds are generally very troubleſome in the ſpring of the year; ſo that if the place be expoſed to thoſe aſpects, it will be difficult to admit a proper ſhare of freſh air to the young plants; and if it is much expoſed to the ſouth-weſt winds, which often are very boiſterous in ſummer and autumn, theſe will turn up and diſplace the Vines, whereby they will ſuffer greatly; therefore the beſt poſition for theſe beds is where they are open to the ſouth, or a little inclined to the eaſt, and ſheltered at a diſtance by trees from the other points: this place ſhould be incloſed with a good Reed fence, which is better for this purpoſe than any other incloſure, becauſe the winds are deadened by the Reeds, and are not reverberated back again, as they are by walls, pales, and other cloſe fences; but in making the incloſure, it ſhould be extended to ſuch diſtance every way from the beds, as not to obſtruct the ſun's rays during any part of the day; this ſhould have a door wide enough to admit of wheelbarrows paſſing, to carry in dung, earth, &c. and it ſhould be kept locked, that no perſons ſhould be allowed to go in but thoſe who have buſineſs; for ignorant perſons, having often curioſity to look into the beds, open the glaſſes

and let the cold air to the plants, and frequently leave the glaſſes in part open; or ſometimes when they are raiſed by the gardener to admit the freſh air, the tilts are thrown down, ſo that the air is excluded; all which are very injurious to the young plants, as is alſo the handling of the fruit after it is ſet; therefore none ſhould be admitted, but when the perſon who is intruſted with the care of them is there.

The next thing is the preparation of the earth for theſe plants, in which the Dutch and German gardeners are very exact: the mixture which they generally prepare is of the following ſorts; of hazel loam, one third part; of the ſcouring of ditches or ponds a third part, and of very rotten dung a third part; theſe are mixed up at leaſt one, and often two years, before they make uſe of it, frequently turning it over, to incorporate their parts and ſweeten it; but the compoſt in which I find theſe plants ſucceed beſt in England, is two thirds of freſh gentle loam, and one third of rotten neats dung; if theſe are mixed together one year before it is wanted, ſo as to have the benefit of a winter's froſt and ſummer's heat, obſerving to turn it over often, and never ſuffer weeds to grow upon it, this will be found equal to any other compoſt whatever.

As theſe plants ſucceed beſt when they are planted young, ſo before the plants appear there ſhould be a quantity of new dung thrown in a heap, proportionable to the number of lights intended, allowing about fifteen good wheelbarrows full to each light; this muſt be two or three times turned over, to prepare it (as hath been directed for Cucumbers) and in a fortnight it will be fit for uſe, at which time the trench muſt be dug to receive the dung, where the bed is intended; this muſt be made wider than the frames, and in length proportional to the number of frames intended. As to the depth, that muſt be according as the ſoil is dry or wet; but in a dry ground it ſhould not be leſs than a foot, or a foot and a half deep; for the lower theſe beds are made the better they will ſucceed, where there is no danger of their ſuffering by wet. In the well laying and mixing of the dung, the ſame care muſt be taken as hath been adviſed already for Cucumbers, which in every reſpect muſt be the ſame for theſe beds. When the bed is made, the frames ſhould be placed over it to keep out wet; but there ſhould be no earth laid upon it till after it has been three or four days made, and is found of a proper temperature of heat; for many times theſe beds will heat ſo violently when they are firſt made, as to burn the earth, if covered with it; and when this happens, it is much the beſt way to take this earth off again, for the plants will never thrive in it. As ſoon as the bed is found to be of a proper warmth, the earth ſhould be laid upon it, which at firſt need not be more than two inches thick, except in the middle of each light, where the plants are to be placed, where there muſt be a hill raiſed fifteen inches high or more, terminating in a flat cone; in two or three days after the earth is put on the bed, it will be of a proper temper to receive the plants; then in the evening you may tranſplant the plants, but always do it when there is little wind ſtirring: in taking up the plants, their roots ſhould be carefully raiſed with a trowel, ſo as to preſerve all their fibres; for if theſe are broken off, the plants do not ſoon recover this; or if they do, they are generally weaker, and ſeldom make ſo good Vines as thoſe which are more carefully removed; for theſe plants are more nice and tender in tranſplanting than thoſe of Cucumber, eſpecially the Cantaleupe Melon; which, if it is not planted out, ſoon after the third, (or what the gardeners call the rough) leaf is put out, they are long recovering their vigour; ſo that when it happens that the beds cannot be ready for them in time, it will be a good method to plant each plant into a ſmall pot while they are young, and theſe may be plunged into the hot-bed where they were raiſed, or into the Cucumber-bed where there is room, ſo that they may be brought forward; and when the bed is ready, theſe may be turned out of the pots, with the whole ball of earth to their roots, whereby they will receive no check in removing: and this latter method is what I ſhould prefer to any other for the Cantaleupe, becauſe there ſhould never be more than one plant left to grow in each light; therefore in this method there will be no neceſſity of planting more, as there will be no danger of their ſucceeding; whereas in the common way, moſt people plant two or more plants in each light, for fear ſome ſhould miſcarry. When the plants are placed on the top of the hills, they ſhould be gently watered, which ſhould be repeated once or twice after till the plants have taken good root, after which they ſeldom require more; for when they receive too much wet, they often canker at the root, and when that happens they never produce good fruit. When the plants have eſtabliſhed themſelves well in the new beds, there ſhould be a greater quantity of earth laid on the bed, beginning round the hills where the plants grow, that their roots may have room to ſtrike out; and as the earth is put in from time to time, it muſt be trodden or preſſed down as cloſe as poſſible; and it ſhould be raiſed at leaſt a foot and a half thick upon the dung all over the bed, obſerving alſo to raiſe the frames, that the glaſſes may not be too near the plants, leſt the ſun ſhould ſcorch them.

When the plants have gotton four leaves, the top of the plants ſhould be pinched off with the finger and thumb, but not bruiſed or cut with a knife, becauſe in either of theſe caſes the wound will not ſo ſoon heal over: this pinching is to cauſe the plants to put out lateral branches, for theſe are what will produce the fruit; therefore, when there are two or more of theſe lateral ſhoots produced, they muſt alſo be pinched, to force out more; and this muſt be practiſed often, that there may be a ſupply of what the gardeners call runners, to cover the bed. The management of theſe beds muſt be nearly the ſame as hath been directed for the Cucumbers, therefore I need not repeat it here; but ſhall only obſerve, that the Melons require a greater ſhare of air than Cucumbers, and very little water; and when it is given to them, it ſhould be at a diſtance from their ſtems.

If the plants have ſucceeded well, they will ſpread over the bed, and reach to the frames, in about five or ſix weeks, at which time the alleys between the beds ſhould be dug out; or where there is but one bed, there ſhould be a trench made on each ſide, of about four feet wide, as low as the bottom of the bed, and hot dung wheeled in, to raiſe a lining to the ſame height as the dung of the bed, which ſhould be trodden down cloſe, and afterward covered with the ſame earth as was laid upon the bed, to the thickneſs of a foot and a half or more, treading it down as cloſe as poſſible; this will add to the width of the bed, ſo much as to make it in the whole twelve feet broad, which is abſolutely neceſſary, for the roots of the plants will extend themſelves quite through it; and it is for want of this precaution, that it is common to ſee the Vines of Melons decay, before the fruit is well grown; for where there is no addition made to the width of the bed, the roots will have reached the ſides of the beds by the time that the fruit appears, and having no more room to extend themſelves, their extremities are dried by the ſun and air, which is ſoon diſcovered by the plants hanging their leaves in the heat of the day, which is ſoon attended with a decay of many of thoſe leaves which are near the ſtem, and the plants from that time gradually languiſh, ſo that the fruit cannot be ſupplied with nouriſhment; but when ripe, will be found to have little fleſh, and that meally and ill flavoured; whereas thoſe plants which have ſufficient breadth for their roots to run, and the earth laid of a proper depth and cloſely trod down, will remain in vigour until the froſt deſtroys them, ſo that I have had a ſecond crop of fruit on them, which have ſometimes ripened well; but all the firſt were excellent, and of a larger ſize

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than theſe ſorts uſually grow: the leaves of theſe plants were very large, and of a ſtrong green, ſo that they were in the utmoſt vigour; whereas, in moſt places where the Cantaleupe Melons have been raiſed in England, the beds have been no wider than they were firſt made, and perhaps not more than three inches thickneſs of earth upon them, ſo that the plants have decayed many times without producing a ſingle fruit; and from thence people have imagined, that this ſort of Melon was too tender for this climate, when their ill ſucceſs was entirely owing to their not underſtanding their culture.

There is alſo another advantage attending this method of widening the beds, as above directed, which is that of adding a freſh warmth to the beds, by the hot dung, which is buried on each ſide, which will cauſe the dung in the bed to renew its heat; and as the plants will by this time ſhew their fruit, this additional heat will be of great ſervice in ſetting the fruit, eſpecially if the ſeaſon ſhould prove cold, as it often happens in this country in the month of May. When the beds are made up in the manner here directed, and the Vines have extended ſo far as to fill the frames, and want more room, the frames ſhould be raiſed up with bricks about three inches high, to admit the ſhoots of the Vines to run from under them; for if the plants are ſtrong, they will run ſix or ſeven feet each way from the ſtems; for which reaſon, I caution every one to allow them room, and to put but one plant in each light; for when the Vines are crowded, the fruit ſeldom will ſet well, but will drop off when they are as large as an egg; therefore the frames which are deſigned for Melons ſhould not be made ſmall, but rather ſix feet wide; for the wider theſe are, the better will the plants thrive, and produce a greater plenty of fruit.

There is no part of gardening, in which the practitioners of this art differ more than in the pruning and managing of theſe plants: nor are there any rules laid down in the ſeveral books in which the culture of Melons have been treated of, by which any perſon can be inſtructed; for there is ſuch inconſiſtency in all their directions, and what is worſe, the greateſt part of them are abſurd, ſo that whoever follows them can never hope to ſucceed; therefore I ſhall, in as few words as poſſible, give ſuch plain directions, as I hope will be ſufficient to inſtruct any perſon, who is the leaſt converſant in theſe things.

I have before adviſed the pinching off the ends of the plants as ſoon as they have a joint, in order to get lateral ſhoots, which are by the gardeners called runners; and when theſe ſhoots have two or three joints, to pinch off their tops to force out more runners, becauſe it is from theſe that the fruit is to be produced; but after a ſufficient number are put out, they ſhould not be ſtopped again, but wait for the appearance of the fruit, which will ſoon come out in plenty; at which time the Vines ſhould be carefully looked over three times a week, to obſerve the fruit, and make choice of one upon each runner, which is ſituated neareſt the ſtem, having the largeſt foot-ſtalk, and that appears to be the ſtrongeſt fruit, and then pinch off all the other fruit which may appear on the ſame runner; alſo pinch off the end of the runner at the third joint above the fruit, and if the runner is gently pinched at the next joint above the fruit, it will ſtop the ſap and ſet the fruit. There is alſo another method practiſed by ſome gardeners to ſet this fruit, which is the taking off ſome of the male flowers, whoſe farina are juſt ripe and fit for the purpoſe, laying them over the female flowers, which are ſituated on the crown of the young fruit, and with their nails gently ſtrike the male flowers to ſhake the farina into the female flowers, whereby they are impregnated, and the fruit ſoon after will ſwell, and ſhew viſible ſigns of their being perfectly ſet; ſo that where the plants are under frames, and the wind excluded from them, which is neceſſary to convey the farina from the male to the female flowers, this practice may be very neceſſary. The taking off all the other fruit

will prevent the nouriſhment being drawn away from the fruit intended to grow, which, if they were all left on the plant, could not be ſupplied with ſufficient nouriſhment; ſo that when they come to be as large as the end of a man's thumb, they frequently drop off, and ſcarce one of them ſets, which will be prevented by the method before directed: but there are ſome perſons, who are ſo covetous of having a number of fruit, as not to ſuffer any to be taken off, whereby they generally fail in their expectation. My allowing but one fruit to be left upon each runner is, becauſe if half theſe ſtand there will be full as many fruit as the plant can nouriſh; for if there are more than eight upon one plant, the fruit will be ſmall and not ſo well nouriſhed: indeed, I have ſometimes ſeen fifteen or twenty Melons upon one plant, but theſe have generally been of the ſmaller kinds, which do not require ſo much nouriſhment as the Cantaleupes, whoſe ſkins are of a thick ſubſtance; ſo that where a greater number are left of them than the plants can well ſupply, their fleſh will be remarkably thin.

As I before adviſed the ſtopping or pinching off the runners three joints above the fruit, ſo by this there will be freſh runners produced a little below the places where the others were pinched; therefore it is, that I adviſe the careful looking over the Vines ſo often, to ſtop theſe new runners ſoon after they come out, as alſo to pull off the young fruit which will appear; and this muſt be repeated as often as is found neceſſary, which will be until thoſe intended to ſtand are grown ſo large as to draw all the nouriſhment which the plants can ſupply, for then the plants will begin to abate of their vigour. Theſe few directions, if properly made uſe of, is all the pruning which is neceſſary to be given them; but at the ſame time when this is practiſed, it may be neceſſary to give ſome water to the plants, but at a diſtance from their ſtems, which will be of ſervice to ſet the fruit and cauſe it to ſwell, but this muſt be done with great caution.

The glaſſes of the hot-bed ſhould alſo be raiſed high, to admit a large ſhare of air to the plants, otherwiſe the fruit will not ſet; and if the ſeaſon ſhould prove very warm, the glaſſes may be frequently drawn off, eſpecially in an evening, to receive the dews, provided there is but little wind ſtirring; but the glaſſes ſhould not remain off the whole night, leſt the cold ſhould prove too great; but in warm weather, the glaſſes may be kept off from ten in the morning till evening.

When the plants have extended themſelves from under the frames, if the weather ſhould alter to cold, it will be neceſſary to cover their extremities every night with mats; for if theſe ſhoots are injured, it will retard the growth of the fruit, and often proves very injurious to the plants: and now what water is given to the plants, ſhould be in the alleys between the beds; for as the roots of the Vines will by this time have extended themſelves through the alleys, ſo when the ground there is well moiſtened, the plants will receive the benefit of it; and by this method, the ſtems of the plants will be preſerved dry, whereby they will continue ſound; but theſe waterings ſhould not be repeated oftener than once a week in very dry warm weather, and be ſure to give as much air as poſſible to the plants when the ſeaſon is warm.

Having given full inſtructions for the management of thoſe Melons which are raiſed under frames, I ſhall next proceed to treat of thoſe which are raiſed under bell or hand-glaſſes. The plants for theſe muſt be raiſed in the ſame manner as hath been already directed, and about the latter end of Aprril, if the ſeaſon proves forward, will be a good time to make the beds; therefore a ſufficient quantity of hot dung ſhould be provided, in proportion to the intended number of glaſſes, allowing ſix or eight good wheelbarrows of dung to each glaſs. Where there is but one bed, which is propoſed to be extended in length, the trench ſhould be dug out four feet and a half wide, and the length according to the number of

glaſſes,

glaſſes, which ſhould not be placed nearer than four feet to each other; for when the plants are too near each other, the Vines will intermix, and fill the bed ſo cloſely as to prevent the fruit from ſetting: in digging the trench, it ſhould be ſo ſituated, as to allow for the widening of the bed three or four feet on each ſide; the depth muſt be according as the ſoil is dry or wet; but, as was before obſerved, if the ſoil is ſo dry as that there is no danger of the beds being hurt by the wet, the lower they are made in the ground the better: in the making of the beds, the ſame regard muſt be had to the well mixing and laying of the dung as was before directed; and after the dung is laid, there ſhould be a hill of earth raiſed, where each plant is to ſtand, one foot and a half high; the other part of the bed need not as yet be covered more than four inches thick, which will be ſufficient to keep the warmth of the dung from evaporating; then the glaſſes ſhould be placed over the hills, and ſet down cloſe, in order to warm the earth of the hills to receive the plants; and if the beds work kindly, they will be in a proper temperature to receive the plants in two or three days after making; then the plants ſhould be removed, in the ſame manner as was before directed; and if they are in pots, ſo that there will be no danger of their growing, there ſhould but one plant be put under each glaſs; and if they are not in pots, there ſhould be two, one of which may be afterward taken away, if they both grow. Theſe plants muſt be watered at firſt planting, to ſettle the earth to their roots, and ſhaded every day until they have taken new root; and if the nights prove cold, it will be proper to cover the glaſſes with mats, to preſerve the warmth of the bed.

Where there are ſeveral of the beds intended, they ſhould be placed at eight feet diſtance from each other, that there may be a proper ſpace left between them, to be afterward filled up, for the root of the Vines to have room for extending themſelves, for the reaſons before given.

When the plants have taken good root in the beds, their tops muſt be pinched off; and their pruning, &c. muſt, from time to time, be the ſame as for thoſe under the frames. In the day time, when the weather is warm, the glaſſes ſhould be raiſed on the oppoſite ſide to the wind, to admit freſh air to the plants; for where this is not obſerved, they will draw up weak and ſickly, therefore all poſſible care ſhould be taken to prevent this; for if the runners have not proper ſtrength, they can never ſupply the fruit with nouriſhment.

When the plants are grown ſo long as to reach the ſides of the glaſſes, if the weather proves favourable, the glaſſes muſt be ſet on three bricks, ſo as to raiſe them about two inches from the ſurface of the beds, to give room for the Vines to run out from under them; but when this is done, the beds ſhould be covered all over with earth to the depth of one foot and a half, and trod down as cloſe as poſſible; and if the nights ſhould prove cold, there ſhould be a covering of mats put over the beds, to prevent the cold from injuring the tender ſhoots of the Vines; but as the Vines of the Contaleupe Melons are impatient of wet, it will be neceſſary to arch the beds over with hoops to ſupport the mats, that they may be ready for covering at all times when they require it; which is the only ſure method to have theſe Melons ſucceed in England, where the weather is ſo very uncertain and variable; for I have had ſome beds of theſe Melons in as fine order under theſe glaſſes as could be deſired, which were totally deſtroyed by one day's heavy rain in June.

After the thickneſs of earth is laid upon the beds, if the weather ſhould prove cold, it will be adviſeable to dig trenches on each ſide of the beds, into which you ſhould lay a ſufficient quantity of hot dung, to make it of the ſame thickneſs with the bed, after the manner before directed for the frames; or if there is a ſufficient quantity of hot dung ready, the whole ſpace between the beds may be dug out and filled up with the dung, laying thereon the earth a foot and a half deep, treading it down cloſe; this new dung will add a freſh warmth to the beds, and cauſe the plants to ſhew fruit ſoon after.

The watering of theſe plants muſt be done with great caution, and not given to their ſtems; the pinching off the runners muſt alſo be duly attended to, as alſo the pulling off all ſuperfluous fruit, to encourage thoſe which are deſigned to remain: and in ſhort, every thing before directed for thoſe under frames, muſt likewiſe be obſerved for theſe; and the further care is, to cover them in all hard rains and cold nights, with mats, which, if performed with care, there will be little danger of their miſcarrying, and theſe Vines will remain vigorous until the cold in autumn deſtroys them.

There have been many perſons, who of late years have raiſed their Melons under oiled paper, and in many places they have ſucceeded well; but where this is practiſed, there muſt be great care taken not to keep theſe coverings too cloſe over them; for where that is done, the Vines will draw very weak, and rarely ſet their fruit in any plenty; therefore where theſe coverings are propoſed to be uſed, I ſhould adviſe the bringing up of the plants under hand or bell-glaſſes, in the manner before directed, until they are grown far enough to be let out from under the glaſſes; and then, inſtead of the covering with mats, to put over the oiled paper; and if this covering is prudently managed, it will be the beſt that can be uſed. The beſt ſort of paper for this purpoſe is that which is ſtrong, and not of too dark a colour; and it ſhould be done over with linſeed oil, which will dry ſoon. There ſhould be a proportionable number of ſheets of this paper paſted together, as will ſpread to the dimenſions of the frame to which it is faſtened; and if this is fixed to the frame, before the oil is rubbed over it, ſo much the better; but this ſhould be done ſo long before they are uſed, as that the oil may be thoroughly dry, and the ſtench gone off, otherwiſe it will deſtroy the plants.

There are ſome perſons who make theſe frames of broad hoops, in imitation of the covers of waggons; but as theſe are cumberſome to move, and there are no conveniencies for admitting air to the plants, but by raiſing the whole frame on one ſide, I prefer thoſe made of pantile laths, framed like the ridge of a houſe; and each ſlope having hinges, may be raiſed at pleaſure to admit the air to the plants; but as deſcriptions of theſe things are not well comprehended by perſons not ſo converſant with them, I ſhall exhibit a figure of one of theſe frames, to be added to the article of STOVES.

The further management of the Melons, after their fruit is ſet, is to keep pulling off all the ſuperfluous fruit, and to pinch off all weak runners, which may draw away part of the nouriſhment from the fruit; as alſo to turn the fruit gently twice a week, that each ſide may have equal benefit of the ſun and air; for when they are ſuffered to lie with the ſame ſide conſtantly to the ground, that ſide will become of a pale or whitiſh colour, as if it were blanched, for want of the advantages of the ſun and air. The plants will require a little water in very dry weather, but this ſhould be given them in the alleys at a diſtance from the ſtems of the plants, and not oftener than once in a week or ten days, at which time the ground ſhould be well ſoaked in the alleys. This will encourage the growth of the fruit, and cauſe the fleſh to be thick; but the great caution which is neceſſary to be obſerved, is not to over-water the plants, which is certain injury to them: alſo be ſure to give as much free air as poſſible, at all times, when the weather will permit, for this is abſolutely neceſſary to render the fruit good.

When the fruit is fully grown, they muſt be duly watched to cut them at a proper time; for if they are left a few hours too long upon the Vines, they will loſe much of their delicacy, therefore they ſhould be looked

looked over at leaſt twice every day; and if thoſe fruit which are intended for the table, are cut early in the morning, before the ſun has warmed them, they will be much better flavoured; but if any ſhould require to be cut afterward, they ſhould be put into cold ſpring water, or ice, to cool them, before they are brought to the table: and thoſe cut in the morning, ſhould be kept in the cooleſt place till they are ſerved up to table. The ſign of this fruit's maturity is, that of its beginning to crack near the foot-ſtalk, and its beginning to ſmell, which never fail; for as theſe Cantaleupe Melons ſeldom change their colour until they are too ripe, that ſhould never be waited for. The directions here given for the management of the Cantaleupe Melons, will be found equally good for all the other ſorts, as I have fully experienced; for in the common method of managing them, where the earth is laid but three or four inches thick, the plants are very apt to decay before the fruit is ripe; for their roots ſoon reach the dung, and are extended to the ſides of the bed, where their tender fibres are expoſed to the air and ſun, which cauſe the leaves of the plants to hang down in the heat of the day, ſo it is neceſſary to ſhade them with mats, to prevent their decay; and this alſo occaſions the watering of the plants often to keep them alive, which is alſo prejudicial to their roots; whereas when the beds are made of a proper width, and earthed of a ſufficient thickneſs, the plants will bear the ſtrongeſt heat of the ſun in this climate, without ſhewing the leaſt want of moiſture, or their leaves drooping, and they will continue in health till the autumn cold deſtroys them.

In ſaving of the ſeeds I need not repeat here, that only ſuch ſhould be regarded, which are taken from the firmeſt fruit, and thoſe which have the higheſt flavour; and if theſe are taken out with the pulp entire, without diſplacing the ſeeds, and ſuffered to remain in the pulp two or three days before it is waſhed out, the better; and then to preſerve only the heavy ſeeds, which ſink in the water.

MELOCACTUS. } See CACTUS.
MELOCARDUUS. }

MELOCHIA, Jews Mallow.

The CHARACTERS are,

It hath a permanent empalement of one leaf, cut half way into five ſegments; the flower hath five large ſpreading petals; the ſtamina are involved in the tube of the germen, and have five ſummits. It has a roundiſh germen with five awl-ſhaped erect ſtyles, which are permanent, crowned by ſingle ſtigmas. The flower is ſucceeded by five-cornered roundiſh capſules, having five cells with two horns, in each cell is lodged one angular compreſſed ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixteenth claſs, intitled Monadelphia Pentandria; the flowers of this claſs have their ſtamina and ſtyles connected in one houſe, and thoſe of this ſection have but five ſtamina.

The SPECIES are,

1. MELOCHIA (*Pyramidata*) floribus umbellatis oppoſitis foliis, capſulis pyramidatis pentagonis, angulis acutis, foliis nudis. Hort. Cliff. 343. *Jews Mallow with umbellated flowers placed oppoſite to the leaves, and five-cornered pyramidal capſules.* Althæa Braſiliana fruteſcens, incarnato flore, fagopyri ſemine. Pluk. Phyt. tab. 131. f. 3.
2. MELOCHIA (*Tomentoſa*) floribus umbellatis axillaribus, capſulis pyramidatis pentagonis, angulis mucronatis, foliis tomentoſis. Lin. Sp. 943. *Jews Mallow with umbellated flowers at the wings of the ſtalk, five-cornered pyramidal capſules, and woolly leaves.* Abutilon herbaceum procumbens, betonicæ folio, flore purpureo. Sloan. Hiſt. Sp. 220.
3. MELOCHIA (*Depreſſa*) floribus ſolitariis capſulis depreſſis pentagonis, anguſtis obtuſis ciliatis. Flor. Leyd. Prod. 348. *Jews Mallow with flowers growing ſingly, and five-cornered depreſſed capſules.* Abutilon Americanum, ribeſii foliis, flore carneo, fructu pentagono aſpero. Houſt. MSS.
4. MELOCHIA (*Concatenata*) racemis confertis terminalibus, capſulis globoſis ſeſſilibus. Flor. Zeyl. 247. *Jews Mallow with cluſtered ſpikes terminating the ſtalks, and globular capſules ſitting cloſe.*
5. MELOCHIA (*Supina*) floribus capititatis, foliis ovatis ſerratis, caulibus procumbentibus. Lin. Sp. 944. *Jews Mallow with flowers in heads, oval ſawed leaves, and trailing ſtalks.* Alcea ſupina puſilla, geranii exigui maritimi folio & facie, maderaſpatenſis, fructu in ſummo caule glomerato, pericarpio duro. Pluk. Phyt. tab. 132. f. 4.

The firſt ſort grows naturally in the Brazils as a common weed, having a ſtalk ſomewhat ſhrubby, which riſes four or five feet high; the flowers are produced in umbels from the ſide of the ſtalk, oppoſite to the leaves; they are of a pale fleſh colour, and are ſucceeded by pyramidal capſules with five corners having five cells, each containing one angular ſeed.

The ſecond ſort grows naturally in Jamaica, and other warm parts of America. This has a trailing herbaceous ſtalk, garniſhed with woolly leaves ſhaped like Betony. The flowers are produced in umbels at the wings of the ſtalk; they are of a purple colour, and are ſucceeded by pyramidal capſules, having five corners.

The third ſort was diſcovered growing naturally at the Havannah, by the late Dr. Houſtoun. This riſes with a ſhrubby ſtalk five or ſix feet high, garniſhed with angular leaves reſembling thoſe of the Currant buſh; the flowers are produced ſingly from the ſide of the ſtalk: they are of a fleſh colour, and in ſhape like thoſe of the ſmall flowering Mallow; theſe are ſucceeded by rough five-cornered capſules, incloſing five Mallow-ſhaped ſeeds.

The fourth ſort grows naturally in both Indies; this hath an herbaceous ſtalk, which is terminated by ſeveral oblong bunches of flowers, which are ſucceeded by globular capſules with five cells, in each of which is lodged a ſingle ſeed.

The fifth ſort grows naturally in India; this is an annual plant with trailing ſtalks which ſpread on the ground, garniſhed with ſmall Betony-ſhaped leaves; the flowers and fruit are produced in cluſters at the end of the branches.

Theſe plants are preſerved in botanic gardens for variety, but having little beauty they are rarely cultivated in other places; they are propagated by ſeeds which muſt be ſown on a hot-bed, and when the plants come up, they ſhould be treated in the ſame way as is directed for SIDA, to which the reader is deſired to turn to avoid repetition. The firſt and third ſorts are ſhrubby, ſo may with care be preſerved thro' the winter in a ſtove, whereby good ſeeds may be obtained; for theſe ſeldom ripen their ſeeds well the firſt year, unleſs the plants are brought forward early in the ſpring, and the ſummer proves warm. The other three ſorts generally ripen their ſeeds the ſame year they are ſown.

MELON. See MELO.

MELONGENA. Tourn. Inſt. R. H. 151. tab. 65. Solanum. Lin. Gen. Plant. 224. Mad Apple, by ſome called Egg Plant; in French, *Mayenne.*

The CHARACTERS are,

The flower has a permanent empalement of one leaf, which is deeply cut into five acute ſegments, which ſpread open. The flower hath but one petal, which is cut into five parts, which ſpread open and are reflexed. It hath five awl-ſhaped ſtamina, terminated by oblong ſummits which converge together. In the center is ſituated an oblong germen ſupporting a ſlender ſtyle, crowned by an obtuſe ſtigma; the germen afterward becomes an oval or oblong fruit with one cell, which hath a fleſhy pulp, filled with compreſſed roundiſh ſeeds.

This genus of plants is ranged in the ſeventh ſection of Tournefort's ſecond claſs, which includes the herbs with a wheel-ſhaped flower of one leaf, whoſe pointal changes to a ſoft fruit. Dr. Linnæus has joined this genus, and the Lycoperſicon of Tournefort, to the Solanum, making them only ſpecies of

that genus; but as the fruit of this genus has but one cell, ſo it ſhould be ſeparated from the Solanum, whoſe fruit have two cells, and of which there are ſo many ſpecies already known, that there need not be any addition of plants which can be ſeparated with propriety added to it; he places it in the firſt ſection of his fifth claſs.

The SPECIES are,

1. MELONGENA (*Ovata*) caulé inermi herbaceo, foliis oblongo-ovatis tomentoſis integris, fructu ovato. *Mad Apple with a ſmooth herbaceous ſtalk, oblong, oval, woolly leaves, which are entire, and an oval fruit.* Melongena fructu oblongo violaceo. Tourn. Inſt. 151. *Mad Apple with an oblong Violet-coloured fruit.*
2. MELONGENA (*Tereta*) caule inermi herbaceo, foliis oblongo-ovatis tomentoſis, fructu tereti. *Mad Apple with herbaceous, ſmooth, oblong, oval, woolly leaves, and a taper fruit.* Melongena fructu tereti violaceo. Tourn. Inſt. 151. *Mad Apple with a taper Violet-coloured fruit.*
3. MELONGENA (*Incurva*) caule inermi herbaceo, foliis oblongis ſinuatis tomentoſis, fructu incurvo. *Mad Apple with a ſmooth herbaceous ſtalk, oblong ſinuated leaves which are woolly, and an incurved fruit.* Melongena fructu incurvo. Tourn. Inſt. R. H. 152. *Mad Apple with an incurved fruit.*
4. MELONGENA (*Spinoſa*) ſpinoſa, foliis ſinuatis-laciniatis, fructu tereti, caule herbaceo. *Mad Apple, with a prickly ſtalk and leaves which are cut into ſinuſes, a taper fruit, and an herbaceous ſtalk.* Solanum pomiferum fructu ſpinoſo. J. B. 3. 619. *Apple-bearing Night-ſhade with a prickly fruit.*

The firſt ſort grows naturally in Aſia, Africa, and America, where the fruit is commonly eaten by the inhabitants; and it is cultivated in the gardens in Spain as an eſculent fruit, by the title of Barenkeena; the Turks who alſo eat the fruit, call it Badinjan, the Italians Melanzana, and the inhabitants of the Britiſh iſlands in America, Brown John, or Brown Jolly. It is an annual plant with an herbaceous ſtalk, which becomes a little ligneous, and riſes near three feet high, ſending out many ſide branches, garniſhed with oblong oval leaves ſeven or eight inches long, and four broad; they are woolly, and their borders are very ſlightly ſinuated, but not indented, ſtanding without order upon very thick foot-ſtalks. The flowers come out ſingly from the ſide of the branches, having a thick fleſhy empalement of one leaf, which is deeply cut into five acute ſegments, which ſpread open, and is armed with ſtrong prickles on the outſide. The flowers have one petal, which is cut at the brim into five ſegments, which expand in form of a ſtar, and are a little reflexed; they are blue, and the ſummits which are connected together in the boſom of the flower are yellow. The flowers are ſucceeded by oval fleſhy fruit, about the ſize and ſhape of a ſwan's egg, of a dark purple on one ſide, and white on the other. The flowers come out in June and July, and the fruit ripens in September.

There are the following varieties of theſe ſpecies; one with white fruit, called by ſome the Egg Plant; one with yellow fruit, and another with pale red fruit; all theſe varieties are generally conſtant, the ſeeds producing the ſame fruit as thoſe from which they were taken, but as they only differ in colour, ſo I chuſe not to enumerate them as diſtinct ſpecies.

The ſecond ſort differs from the firſt in the ſhape of the fruit, which is commonly eight or nine inches long, taper and ſtrait; in other reſpects they are the ſame, but as this never varies when propagated in gardens, ſo there can be no doubt of their being diſtinct ſpecies. There are two varieties of this ſort, one with a purpliſh fruit, and the other white, but the latter is the moſt common in England.

The third ſort differs from the two former in the ſhape of the leaves, which are deeply ſinuated on their borders. The fruit is oblong and incurved, of a yellowiſh colour, and larger at the end than in any other part.

The ſeeds of the fourth ſort were ſent me from India; this differs greatly from either of the former. The ſtalks and leaves are armed with very ſtrong thorns, and the leaves are larger, and deeply jagged on their ſides. The flowers are larger, and of a deeper blue colour. The fruit is long, taper, and white.

Theſe fruit are eaten by moſt of the inhabitants of the warm parts of the globe, and are eſteemed a delicacy, but are ſuppoſed to have a property of provoking luſt.

They are propagated by ſeeds, which muſt be ſown upon a moderate hot-bed in March, and when the plants come up, they muſt be tranſplanted into another hot-bed about four inches aſunder, obſerving to water and ſhade them until they have taken root; after which you muſt give them a great ſhare of air when the weather is warm, otherwiſe they will draw up very weak. They muſt be alſo frequently watered, without which they will make but very indifferent progreſs; but when they are grown ſo ſtrong as to fill the frame (which will be by the middle or end of May,) you muſt tranſplant them out into a rich ſpot of ground, at two feet diſtance, or in the borders of the pleaſure-garden at the ſame diſtance from other plants, obſerving to preſerve as much earth to the roots as poſſible when you take them up, otherwiſe they are ſubject to miſcarry. You muſt obſerve to water them plentifully, and ſhade them until they have taken root, after which they will require but very little care, more than to keep them clear from weeds, and in very dry weather to give them ſome water.

About the middle of July the fruit will appear, at which time, if the weather ſhould be very dry, you muſt often water them, which will cauſe the fruit to grow very large, and increaſe their number: toward the latter end of Auguſt their fruit will ripen, when you muſt preſerve the ſeeds of each kind ſeparate; but thoſe for the table ſhould be gathered before they are quite ripe.

Theſe plants are only preſerved as curioſities in the Engliſh gardens, the fruit being ſeldom eaten in this country, except by ſome Italians or Spaniards, who have been accuſtomed to eat them in their own countries.

MELOPEPO. See CUCURBITA.

MELONRY, or MELON GROUND, is an apartment in the kitchen-garden for the propagation of Melons only.

This ſpot of ground ſhould be open to the ſouth-eaſt ſun, but ſheltered from the weſt, north-weſt, and north-eaſt winds, by walls, pales, or hedges, the latter of theſe is the beſt; it ſhould alſo be upon a dry ſoil, for nothing is more injurious to theſe plants than much wet; for in the ſpring of the year it often proves very wet weather, when, if the ſoil is very wet, there will be no making the ridges until it is very late. This ſhould alſo be contrived as near to the dung as poſſible, which will ſave a great deal of labour in wheeling the dung; and, if there ſhould be a pond of water near it, which, in very dry weather, will be very uſeful to water the Melons when it is neceſſary, though it is not often that water is wanted for this purpoſe in England.

As to the ſize of the ground, that muſt be proportioned to the quantity of ridges intended, which you may eaſily calculate, by allowing twelve feet breadth for every ridge, and the holes placed at about four feet aſunder; but it is the beſt way to allow room enough where you are not ſtreightened to it.

This ground ſhould be incloſed with a Reed fence, and kept conſtantly locked up during the time that the Melons are growing, for if they are expoſed to every perſon that walks in the garden (moſt of whom have a curioſity to handle the Vines, and look after the fruit,) it will be of ill conſequence, nothing being more injurious to theſe plants than frequent tumbling or diſturbing their leaves.

The common practice in moſt gentlemens gardens is, to incloſe a ſpot of ground either with walls or pales, which they conſtantly appropriate to this purpoſe; but

but this is by no means a good method, for it rarely happens that theſe ſucceed well longer than two years in the ſame place, unleſs the ſoil be removed and freſh brought in, which is very expenſive; therefore the beſt way is, to have a ſufficient parcel of Reeds made into pannels, which may be annually moved from place to place, ſo that you need not continue your ridges longer than one year in the ſame place; and if you have a piece of ground which is large enough to divide into three or four ſuch places, the fence may be every year removed till the whole has been occupied, after which you may return to the ſpot where you began, which, by that time, will be as good as freſh earth; and hereby, without much trouble, you may remove them every year, for as one of the ſides will remain unremoved every time the fence is carried forward, the labour will not be ſo great as if it were wholly removed to ſome diſtance, and theſe Reed fences are much preferable to either walls or pales, for this purpoſe.

MELOTHRIA. Lin. Gen. Plant. 48.

The title of this genus was applied to it by Dr. Linnæus in the Hortus Cliffortianus. By ſome authors it hath been placed under the genus of Cucumis, and by others under that of Bryonia; but the Doctor has removed this to a diſtance from either of thoſe genera, on account of its having but three ſtamina; but Dr. Van Royen has brought it next to the genus of Bryonia again, as the plants have male and hermaphrodite flowers.

The CHARACTERS are,

The empalement of the flower is of one leaf, bell-ſhaped, and cut ſlightly at the brim into five parts, and in the hermaphrodite flowers, reſts upon the embryo. The male flower is of one leaf, wheel-ſhaped, having a tube the length of the empalement. In the center of the hermaphrodite flower is ſituated the pointal, ſupporting a cylindrical ſtyle, attended by three conical ſtamina, which are inſerted in the tube of the flower, and are extended to the ſame length; the male flowers have three ſtamina, terminated by blunt ſtyles. The pointal afterward becomes an oval ſmall berry, having three diviſions, in which are lodged ſmall flat ſeeds.

We have but one SPECIES of this plant, viz.

MELOTHRIA (*Pendula.*) Lin. Hort. Cliff. 490. *Small creeping Cucumber.* Cucumis minima fructu ovali nigro lævi. Sloan. Hiſt. 1. p. 227. *Smalleſt Cucumber with a ſmooth, black, oval fruit.*

This plant grows wild in the woods in Carolina, Virginia, and alſo in many of the iſlands in America; it creeps upon the ground with ſlender Vines, having angular leaves, ſomewhat reſembling thoſe of the Melon, but much ſmaller. Theſe Vines ſtrike out roots at every joint, which faſten themſelves into the ground, and thereby a larger ſhare of nouriſhment is drawn to the plants, by which means their ſtalks extend to a great diſtance each way, and cloſely cover the ground. The flowers are very ſmall, in ſhape like thoſe of the Melon, and of a pale ſulphur colour. The fruit, in the Weſt-Indies, grow to the ſize of a Pea, of an oval figure, and changes black when ripe; theſe are by the inhabitants ſometimes pickled when they are green.

In England the fruit are much ſmaller, and are ſo hidden by the leaves, as to render it difficult to find them. The plants will not grow in the open air here, but the ſeeds muſt be ſown upon a hot-bed, and if the plants are permitted, will ſoon ſpread over the ſurface of a large bed; and when the fruit is ripe, if they ſcatter their ſeeds, the plants will come up where the earth happens to be uſed on a hot-bed again, and if they are ſupplied with water, will require no farther care. This plant is in ſome gardens preſerved for the ſake of variety, but is of no uſe.

MENISPERMUM. Tourn. Act. R. Par. 1705. Lin. Gen. Plant. 1131. Moonſeed.

The CHARACTERS are,

It hath male and female flowers on different plants; the male flowers have empalements compoſed of two ſhort linear leaves, and have four oval ſpreading petals without ſide, and eight oval concave petals within, which are ſmaller than thoſe without, ranged in four ſeries, and many cylindrical ſtamina which are longer than the petals, terminated by ſhort obtuſe ſummits having four lobes. The female flowers have the ſame empalement and corolla as the male, and have eight ſtamina with pellucid ſummits, which are fruitful. Theſe have two oval incurved germina, ſupporting a ſolitary recurved ſtyle, crowned by a bifid ſtigma; the germen afterward become two roundiſh kidney-ſhaped berries of one cell, incloſing a large kidney-ſhaped ſeed.

This genus of plants is ranged in the tenth ſection of Linnæus's twenty-ſecond claſs, which includes thoſe plants which have male and female flowers on different plants, and the male flowers have twelve ſtamina.

The SPECIES are,

1. MENISPERMUM (*Canadenſe*) foliis peltatis ſubrotundis angulatis. Hort. Cliff. 140. *Moonſeed with target-ſhaped, roundiſh, angular leaves.* Meniſpermum Canadenſe ſcandens, umbilicatis foliis. Tourn. Act. Par. 1705. *Climbing Moonſeed of Canada, with a navel-ſhaped leaf.*
2. MENISPERMUM (*Virginicum*) foliis cordatis peltatis lobatis. Flor. Virg. 40. *Moonſeed with heart and target-ſhaped leaves, which have lobes.* Meniſpermum folio hederaceo. Hort. Elth. 223. tab. 178. *Moonſeed with an Ivy leaf.*
3. MENISPERMUM (*Carinianum*) foliis cordatis ſubtus villoſis. Lin. Sp. Plant. 340. *Moonſeed with heart-ſhaped leaves, which are hairy on their under ſide.*

The firſt ſort grows naturally in Canada, and moſt parts of North America, in the woods; this hath a thick ligneous root, from which are ſent out many climbing ſtalks, which become ligneous, and riſe to the height of twelve or fourteen feet, twiſting themſelves about the neighbouring plants for ſupport; theſe are garniſhed with large, ſmooth, roundiſh leaves, whoſe foot-ſtalks are placed almoſt in the middle of the back of the leaves; on the upper ſide there is a hollow in that part of the leaf reſembling a navel. The flowers come out in looſe bunches from the ſide of the ſtalks; they are of an herbaceous colour, ſmall, and compoſed of two tiers of oblong oval petals, very ſhort ſtamina, with ten in the male flowers, terminated by ſingle ſummits; the two germen ſituated in the center of the female flowers turn to ſo many channelled berries, each containing one kidney-ſhaped ſeed. It flowers in July, and the ſeeds ripen in autumn.

This ſort may be eaſily propagated by laying down of the branches, which, if performed in autumn, will have made good roots by the following autumn, when they may be ſeparated from the old plant, and tranſplanted where they are deſigned to remain; theſe plants require ſupport, for their branches are ſlender and weak. In the country where it grows naturally, they climb up the trees to a conſiderable height, ſo that if theſe are planted near trees in wilderneſs quarters, where their ſtalks may have ſupport, they will thrive better than in an open ſituation.

The ſecond ſort differs from the firſt in the ſhape of its leaves, which are angular, and ſometimes heart-ſhaped; their foot-ſtalks join to the baſe of the leaves, ſo they have no umbilical mark on their ſurface. The ſtalks of this become ligneous, and riſe nearly as high as thoſe of the firſt ſort, and the flowers and berries do not differ from them. It is alſo propagated after the ſame manner.

The third ſort grows naturally in Carolina, from whence the ſeeds were ſent to England; this has by ſome been ſuppoſed the ſame with the ſecond ſort, from which it differs in its branches, not becoming woody as thoſe do. The ſtalks are herbaceous; the leaves are entire and hairy, and are not more than half ſo large as thoſe of the ſecond, nor is the plant ſo hardy, for in ſevere winters, thoſe which are expoſed to the open air are ſometimes killed, whereas the ſecond ſort is never injured by cold. This ſort does not produce any flowers in England, unleſs the ſeaſon proves very warm.

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This may be propagated by parting of the roots, which ſpread out on the ſide, ſo that part of them may be cut off every other year; the beſt time for doing this is in the ſpring, a little before the plants begin to ſhoot; theſe ſhould be planted in a warm ſituation and have a light ſoil, for in ſtrong land, where the wet is detained in winter, the roots are apt to rot; therefore if they are planted cloſe to a wall expoſed to the ſouth or weſt, their ſtalks may be faſtened againſt the wall, to prevent their trailing upon the ground; and in this ſituation the plants will frequently flower, and by having a little ſhelter in ſevere froſt, their ſtalks may be preſerved from injury.

There is little beauty in theſe plants, but yet they are preſerved in many gardens for the ſake of variety, for which reaſon they are here inſerted.

MENTHA. Tourn. Inſt. R. H. 188. tab. 89. Lin. Gen. Plant. 633. [Μίνθη, according to the ancients, a goddeſs, as alſo according to the poets. The ancients alſo gave it the name of Sweet-ſmelling, and where this word is found, this plant is underſtood. Mentha is likewiſe ſo called of Mens, *Lat.* the mind, becauſe this plant is ſaid to ſtrengthen the mind.] Mint; in French, *Menthe.*

The CHARACTERS are,

It hath a lip flower of one petal, ſitting on a permanent tubulous empalement of one leaf, which is erect, and cut at the brim into five equal ſegments. The tube of the petal is a little longer than the empalement. The chaps are cut into four almoſt equal ſegments, the upper being a little larger and indented. It hath four awl-ſhaped ſtamina, which are erect, ſtanding aſunder, the two neareſt being longeſt; they are terminated by roundiſh ſummits, and in the bottom of the tube is ſituated a four-pointed germen, ſupporting a ſlender erect ſtyle, crowned by a bifid ſpreading ſtigma. The germen afterward turns to four naked ſeeds ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and the ſeeds ripen in the empalement.

The SPECIES are,

1. MENTHA (*Viridis*) floribus ſpicatis, foliis oblongis ſerratis. Hort. Upſal. 168. *Mint with ſpiked flowers, and oblong ſawed leaves.* Mentha anguſtifolia ſpicata. C. B. P. 227. *Narrow-leaved ſpiked Mint, commonly called Spear Mint.*
2. MENTHA (*Glabra*) floribus ſpicatis, foliis longioribus glabris, ſupernè minimè ſerratis. *Mint with ſpiked flowers, and longer ſmooth leaves, which are very ſlightly ſawed toward their points.* Mentha anguſtifolia ſpicata glabra. Rand. *Narrow-leaved, ſmooth, ſpiked Mint.*
3. MENTHA (*Candicans*) foliis lanceolatis ſerratis, ſubtus incanis, floribus ſpicatis hirſutiſſimis. *Mint with ſpear-ſhaped ſawed leaves, which are hoary on their under ſide, and very hairy ſpiked flowers.* Mentha Sylveſtris candicans, odore ſativi. Doody. Raii Syn. App. *Wild Mint of a white colour, ſmelling like that of the garden.*
4. MENTHA (*Sylveſtris*) ſpicis confertis, foliis ſerratis tomentoſis ſeſſilibus. Hort. Cliff. 306. *Mint with ſpikes of flowers growing in cluſters, and woolly ſawed leaves ſitting cloſe to the ſtalks.* Mentha ſylveſtris longiore folio. C. B. P. 227. *Wild Mint with a longer leaf.*
5. MENTHA (*Aquatica*) ſpicis craſſioribus, foliis ovato-lanceolatis ſerratis ſubtus tomentoſis petiolatis. *Mint with thicker ſpikes, and oval, ſpear-ſhaped, ſawed leaves, which are woolly on their under ſide, and have foot-ſtalks.* Mentaſtri aquatici genus hirſutum, ſpicâ latiore. J. B. 3. 222. *Hairy Water Mint with a broader ſpike.*
6. MENTHA (*Piperita*) ſpicis craſſioribus interruptis, foliis lanceolatis acutè ſerratis. *Mint with thicker ſpikes of flowers, which are interrupted, and ſpear-ſhaped leaves which are ſharply ſawed.* Mentha ſervida nigricans, piperis ſapore. Rand. Hort. Chel. Cat. *Blackiſh hot Mint with a taſte like Pepper, commonly called Pepper Mint.*
7. MENTHA (*Criſpa*) floribus ſpicatis, foliis cordatis dentatis undulatis ſeſſilibus. Hort. Cliff. 306. *Mint with ſpiked flowers, and heart-ſhaped indented leaves, which are waved, and ſit cloſe to the ſtalks.* Mentha criſpa Danica ſive Germanica ſpecioſa. Mor. Hiſt. 3. p. 367. *Daniſh or German curled Mint.*
8. MENTHA (*Rotundifolia*) ſpicis confertis, foliis ovatis rugoſis ſeſſilibus. *Mint with ſpikes growing together, and oval rough leaves ſitting cloſe to the ſtalk.* Mentaſtrum folio rugoſo rotundiore ſpontaneum, flore ſpicato, odore gravi. J. B. 3. 217. *Wild Mint with a rounder rough leaf, and a ſpiked flower, having a ſtrong ſcent.*
9. MENTHA (*Rubra*) ſpicis confertis interruptis, foliis oblongo-ovatis acuminatis dentatis ſeſſilibus. *Mint with interrupted ſpikes of flowers growing together, and oblong, oval, acute-pointed, indented leaves, ſitting cloſe to the ſtalk.* Mentha rotundifolia rubra, aurantii odore. Mor. Hiſt. 3. 369. *Round-leaved red Mint, ſmelling like an Orange, commonly called Orange Mint.*
10. MENTHA (*Chalepenſa*) foliis oblongis dentatis, utrinque tomentoſis ſeſſilibus, ſpicis tenuioribus. *Mint with oblong indented leaves, which are woolly on both ſides, ſet cloſe to the ſtalk, and very narrow ſpikes of flowers.* Mentraſtum chalepenſe, anguſtifolium, rarò florens. Boerh. Ind. alt. 1. p. 185. *Narrow-leaved wild Mint of Aleppo, which rarely flowers.*
11. MENTHA (*Paluſtris*) floribus capitatis, foliis ovatis ſerratis petiolatis, ſtaminibus corollâ longioribus. Hort. Cliff. 306. *Mint with flowers growing in heads, oval ſawed leaves having foot-ſtalks, and ſtamina longer than the petals.* Mentha rotundifolia paluſtris ſive aquatica major. C. B. P. 227. *Greater round-leaved Water Mint.*
12. MENTHA (*Nigricans*) floribus capitatis, foliis lanceolatis ſerratis ſubpetiolatis. Lin. Sp. Plant. 576. *Mint with flowers growing in heads, and ſpear-ſhaped ſawed leaves with very ſhort foot-ſtalks.* Mentha ſervida nigricans latifolia. Rand. *Broad-leaved blackiſh Pepper Mint.*
13. MENTHA (*Arvenſis*) floribus verticillatis, foliis ovatis acutis ſerratis, ſtaminibus corollâ brevioribus. Lin. Sp. Plant. 577. *Mint with flowers growing in whorls, oval, acute, ſawed leaves, and ſtamina ſhorter than the petals.* Mentha arvenſis, verticillata hirſuta. J. B. 3. 2. 217. *Whorled hairy field Mint, or Calamint of the ſhops.*
14. MENTHA (*Exigua*) floribus verticillatis, foliis ovatis dentatis, ſtaminibus corollâ longioribus. *Mint with flowers growing in whorls, oval indented leaves, and ſtamina longer than the petals.* Mentha aquatica, exigua. Trag. Lib. 1. c. 6. *Smalleſt Water Mint.*
15. MENTHA (*Gentilis*) floribus verticillatis, foliis ovatis, marginibus ciliatis, ſtaminibus corollam æquantibus. *Mint with whorled flowers, oval leaves whoſe borders are hairy, and ſtamina equalling the petals.* Mentha verticillata, rotundiore folio, odore ocymi. Dale. *Whorled Mint with a rounder leaf, ſmelling like Baſil.*
16. MENTHA (*Hirſuta*) floribus verticillatis, foliis ovatis ſerratis hirſutis, ſtaminibus corollâ longioribus. *Mint with whorled flowers, oval, ſawed, hairy leaves, and ſtamina longer than the petals.* Mentha aquatica ſive ſiſymbrium hirſutus. J. B. 3. 2. 224. *Water Mint, or hairy Siſymbrium.*
17. MENTHA (*Verticillata*) floribus verticillatis, foliis lanceolatis acutis ſerratis, rugoſis, ſtaminibus corollam æquantibus. *Mint with whorled flowers, ſpear-ſhaped, acute-pointed, ſawed, rough leaves, and ſtamina equalling the petals.* Mentha verticillata, longiori acuminato folio, odore aromatico. Rand. Hort. Chel. Cat. *Whorled Mint with a longer acute-pointed leaf, and an aromatic ſcent.*

There are ſeveral other varieties of this genus, which have been found growing naturally in England, of which I have twelve or more in my own collection; but as I ſuſpect ſome of them to be only accidental variations, ariſing from the different ſoils and ſituations where they have been found, I have not enumerated them all here; thoſe which are here mentioned, I take to be diſtinct ſpecies, having cultivated them more than

thirty

thirty years, in which time I have not obſerved them to change from one to another; ſeveral of theſe I have propagated by ſeeds, and have found them keep to the kind from which the ſeeds were ſaved.

The firſt ſort is what the gardeners cultivate to ſupply the markets, and is uſed both as a culinary herb, and for medicine; it is generally called Spear Mint, and by ſome Hart Mint; Parkinſon and Gerard title it Roman Mint; this is a plant ſo well known, as to need no deſcription. There are two varieties of this, one with a curled leaf, and the other has variegated leaves, but both theſe I have had run from the common ſort; theſe are by ſome preſerved in their gardens for the ſake of variety, therefore I have mentioned them here.

This herb is greatly eſteemed for all diſorders of the ſtomach, loſs of appetite, and vomiting; there is a ſimple water, a ſpirit, and compound ſyrup, and a diſtilled oil of it prepared in the ſhops.

The ſecond ſort hath ſmoother leaves than the firſt, and they are rather narrower, in other reſpects it agrees with that, ſo that it is frequently cultivated in the gardens for uſe, without diſtinction.

The third ſort grows naturally in England; the leaves of this are ſhorter, and broader in the middle than either of the former, the ſerratures on their edges are more acute, and their under ſides are woolly, and very white. The ſtalks divide more toward the top, ſo are terminated by a greater number of ſpikes, the lower part of which are interrupted. The ſcent of this ſort is very like that of the Garden Mint.

The fourth ſort hath longer and broader leaves than either of the former, which are woolly and white. The ſerratures on their edges are farther aſunder, and are very ſharp pointed; they ſit cloſe to the ſtalks, which are hairy. The ſpikes of flowers are ſlender, ſeveral of them growing together at the top of the ſtalk, which are hairy. This is the Mentaſtrum, or wild Mint of the ſhops, and is an ingredient in the Trochiſci de Myrrha.

The fifth ſort grows naturally in moiſt places in ſeveral parts of England, it is titled Spiked Horſe Mint, or Water Mint. The ſtalks of this are ſhorter than thoſe of either of the former, and are hairy, as are alſo the leaves, which are oval, ſpear-ſhaped, ſawed on their edges, and of a pale colour. The flowers grow in ſhort thick ſpikes at the top of the ſtalks, their ſtamina being ſhorter than the petal.

The ſixth ſort is found growing naturally in ſome parts of England; I have found it by the ſide of the river between Mitcham and Croydon, in Surry; this hath ſmooth purple ſtalks; the leaves are ſmaller than thoſe of common Mint; they are ſpear-ſhaped, ſawed on their edges, and of a darker green colour than either of the former; their midrib and veins are purple, and a little hairy on their under ſide. The ſpikes of flowers are ſhorter and thicker than thoſe of the common Mint, and are broken or interrupted at the bottom; they are of a dark purple colour, and their ſtamina are longer than the petal. The whole plant has a hot biting taſte like Pepper, and a pleaſant ſcent. There is a diſtilled water of this plant kept in the ſhops, which is by moſt people preferred to that of the common Mint, for all the purpoſes which that is uſually preſcribed, and is eſteemed an excellent remedy againſt the ſtone and gravel.

The ſeventh ſort was originally brought from Denmark, where it was thought to grow naturally, but Dr. Linnæus fixes it as a native of Siberia. The ſtalks of this ſort are hairy, and riſe about the ſame height with the common. The leaves are heart-ſhaped, deeply indented on their edges, waved and curled, and ſit cloſe to the ſtalk, they are of a light green. The flowers are purple, growing in thick interrupted ſpikes at the top of the ſtalks; their empalements are cut almoſt to the bottom, and the ſtyle of the flower is bifid, ſtanding out beyond the petal.

The eighth ſort grows naturally in many parts of England; this riſes with a ſtrong, four-cornered, hairy ſtalk, about the ſame height as the common Mint, branching out toward the top, and garniſhed with oval rough leaves ſitting cloſe to the ſtalks; they are of a dark green, and crenated on their edges. The ſpikes of flowers grow in cluſters at the top of the ſtalks, which are ſhort and cloſe; the flowers are of an herbaceous white colour, and their ſtamina are ſtretched out beyond the petal.

The ninth ſort is commonly called Orange Mint, from its ſcent, which is ſomewhat like that of the rind of Orange. This riſes with an upright ſmooth ſtalk about the ſame height with the common Mint, but does not branch out like that; the leaves are much broader than thoſe of the common ſort; the indentures on their edges are deep, and they end in acute points. The ſpikes of flowers grow in cluſters on the top of the ſtalks, which are interrupted; they are of a pale colour, and their ſtamina are ſhorter than the petal. It is commonly cultivated in gardens for its pleaſant ſcent.

The tenth ſort grows naturally at Aleppo, but is hardy enough to thrive in the open air in England. This hath ſlender four-cornered ſtalks, which are purple at bottom, but woolly upward, ſeldom branching; they are garniſhed with oblong indented leaves, which are downy on both ſides, ſitting cloſe to the ſtalks. The ſpikes of flowers are ſingle, and very ſlender; theſe do not often appear in England, but when they do it is late in the ſummer. It creeps much at the root, ſo the only way to obtain flowers, is to confine their roots in pots.

The eleventh ſort grows naturally in ditches in moſt parts of England, and is commonly known by the name of Water Mint. This hath hairy ſtalks about a foot high, which branch toward the top, and are garniſhed with oval ſawed leaves, ſtanding upon pretty long foot-ſtalks. The flowers grow in roundiſh ſpikes at the end of the branches; they are of a purple colour, and their ſtamina are longer than the petal. The whole plant has a very ſtrong ſcent, ſomewhat like that of Penny Royal. This ſort is ſometimes uſed in medicine, and is reckoned hotter than the Garden Mint: it is carminative, expelling wind out of the ſtomach, and helping the cholick.

The twelfth ſort grows naturally in ditches in ſeveral parts of England; the ſtalks of this are purple, ſmooth, and ſhort, branching out on every ſide; the leaves are ſmall, ſpear-ſhaped, of a dark colour; they are but ſlightly ſawed on their edges, and ſtand upon ſhort foot-ſtalks. The flowers grow in roundiſh heads on the top of the ſtalks, they are purple, and their ſtamina are longer than the petal. This ſort has a warm biting taſte, but not quite ſo hot as the Pepper Mint before deſcribed, but is often uſed for it. There is a variety of this which ſmells like Penny Royal.

The thirteenth ſort grows naturally in arable land in moſt parts of England, and is rarely admitted into gardens. This is the Water Calamint of the ſhops, but is now ſeldom uſed in medicine. The ſtalks of this ſort riſe about a foot high and are hairy, garniſhed with oval leaves ending in acute points, and ſawed on their edges. The flowers grow in very thick whorls round the ſtalks; they are ſmall, of a purple colour, and their ſtamina are ſhorter than the petal. The plant has a ſtrong ſcent like Penny Royal.

The fourteenth ſort grows in watery places in many parts of England; this hath weak trailing ſtalks a foot and a half long, garniſhed with ſmall oval leaves which are indented on their edges, and ſtand upon pretty long foot-ſtalks. The flowers grow in thick whorls round the ſtalks, they are purple, and their ſtamina are longer than the petal.

The fifteenth ſort grows plentifully on the ſide of the road between Bocking and Goſfield in Eſſex; the ſtalks of this are much ſmaller, and not ſo long as thoſe of the former; the leaves are ſhorter and rounder, and

are very little indented on their edges, but have their borders ſet with hairs. The whorls of flowers are ſmaller, and the whole plant has the ſcent of Baſil.

The ſixteenth ſort grows naturally in ditches and on the ſides of rivers, in many parts of England. This hath hairy four-cornered ſtalks, which are a foot or more in height; the leaves are oval, ſawed, and very hairy. The flowers grow in large whorls toward the top of the ſtalks; they are purple, and their ſtamina are longer than the petals. This hath a pleaſanter ſcent than the common Water Mint, ſo is called Sweet Water Mint by way of diſtinction: it ſtands in the liſt of ſimples in moſt diſpenſaries, but is now ſeldom uſed in medicine.

The ſeventeenth grows naturally by the ſide of the river Medway, between Rocheſter and Chatham. This riſes with ſlender hairy ſtalks near two feet high, garniſhed with ſpear-ſhaped leaves, ending in acute points, which are ſawed on their edges; the ſtalks are beſet with whorls of flowers almoſt their whole length, ſo that they have frequently ten or twelve whorls on each. The flowers are purpliſh, and their ſtamina are equal with the petals; this hath a very pleaſant aromatic ſcent.

All the ſorts of Mint are eaſily propagated by parting the roots in the ſpring, or by planting cuttings during any of the ſummer months, but they ſhould have a moiſt ſoil; and after the cuttings are planted, if the ſeaſon ſhould prove dry, they muſt be often watered until they have taken root; after which, they will require no farther care but to keep them clear from weeds: they ſhould be planted in beds about four feet wide, allowing a path about two feet broad between the beds, to water, weed, and cut the plants. The diſtance they ſhould be ſet is four or five inches, or more, becauſe they ſpread very much at their roots; for which reaſon, the beds ſhould not ſtand longer than three years before you plant freſh, for by that time the roots will be matted ſo cloſely, as to rot and decay each other, if permitted to ſtand longer. There are ſome people who are very fond of Mint ſallad in winter and ſpring; in order to obtain which, they take up the roots before Chriſtmas, and plant them upon a moderate hot-bed pretty cloſe, covering them with fine earth about 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 not be 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.

If the ſoil be good in which theſe plants are ſet, they will afford three crops every year, but after July they ſeldom prove good; therefore what ſhoots are produced after that time ſhould be permitted to remain till Michaelmas, when they muſt be cut down cloſe; and after having cleared the beds from weeds, you ſhould ſpread a little fine rich earth all over them, which will greatly encourage the roots againſt the ſucceeding ſpring.

As the diſtilled water of all the ſorts of Mint is eſteemed a very wholeſome cordial dram, ſo I ſhould think it might be ſubſtituted inſtead of thoſe vile ſpirits with which the common people intoxicate themſelves; for the Pepper Mint water is as warm on the ſtomach as any ſort of dram, and more ſo than any of thoſe noxious ſpirits; and if this was mixed with ſome other agreeable aromatic herbs, there might certainly be a diſtilled liquor much more palatable and wholeſome than what is now vended in common; for as the generality of the lower claſs of people are ſo debauched, as not to be contented without drams, ſo the leſs hurtful thoſe are made, the better it will be for the public; and by introducing the diſtilling of herbs, there will be leſs occaſion for uſing of Wheat.

MENTHA CATARIA. See NEPETA.

MENTZELIA. Plum. Nov. Gen. Plant. 40. tab. 6. Lin. Gen. Plant. 595.

The name was given to this plant by Father Plumier, who diſcovered it in the French ſettlements in America, in honour of Dr. Mentzelius, who was phyſician to the Elector of Brandenburgh, and who publiſhed an Index of plants in Latin, Greek, and High Dutch.

The CHARACTERS are,

The flower hath a ſpreading empalement cut into five parts, which ſits upon a long cylindrical germen. It hath five petals which ſpread open, and are a little longer than the empalement, and many erect briſtly ſtamina, terminated by ſingle ſummits. From the long cylindrical-germen which is ſituated under the flower, ariſes a briſtly ſtyle the length of the petals, crowned by a ſingle ſtigma. The germen afterward turns to a cylindrical long capſule with one cell, containing many ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's thirteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

MENTZELIA (*Aſpera.*) Hort. Cliff. 492. Plumier titles it Mentzelia foliis & fructibus aſperis. Nov. Gen. Plant. 41. *Mentzelia with prickly leaves and fruit.*

This plant grows plentifully at La Vera Cruz, from whence the ſeeds were ſent to England by the late Dr. William Houſtoun, which have ſucceeded in the phyſic garden at Chelſea.

This plant is annual; it riſes with a ſlender ſmooth ſtalk, which is ſtiff, and becomes a little woody, riſing more than three feet high, branching out alternately at diſtances; the branches are diſtorted, and run into one another; theſe are garniſhed with leaves ſhaped like the point of an halbert, ſtanding alternately on the branches, upon ſhort foot-ſtalks; they are covered with ſhort hooded prickles, which faſten themſelves into the clothes of thoſe who rub againſt them; and thoſe parts of the branches eaſily ſeparate from the plants, and adhere to the clothes in like manner as the ſeeds of Clivers. The flowers come out ſingly from the joints of the ſtalk, reſting upon a cylindrical germen, which is near an inch in length, narrow at the baſe, but widens upward to the top. Upon the top of it comes out the empalement, which is ſpread open after the ſame manner as thoſe of the Onagra; then the petals of the flower ſpread open upon the empalement; they are of a pale yellow colour, and longer than the empalement. In the middle ariſes a great number of ſtamina which are erect, and are terminated by ſingle ſummits; from the germen ariſes a ſingle ſtyle, which is as long as the petals, crowned by a ſingle ſtigma. The germen afterward turns to a long cylindrical capſule, armed with the like prickles as the leaves, which alſo faſten themſelves to the clothes of thoſe who rub againſt them; theſe have but one cell, which is filled with ſmall ſeeds. As this is an annual plant, which periſhes ſoon after the ſeeds are ripe, therefore the ſeeds muſt be ſown on a hot-bed early in the ſpring, that the plants may be brought forward early in the ſeaſon, otherwiſe they will not produce ripe ſeed in this country. When the plants are come up about an inch high, they ſhould be each tranſplanted into a ſeparate halfpenny pot filled with light rich earth, and plunged into a hot-bed of tanners bark, being careful to ſhade them from the ſun until they have taken new root; after which time they muſt be conſtantly watered every other day in warm weather, and ſhould have freſh air every day admitted to them, in proportion to the warmth of the ſeaſon, and the heat of the bed in which they are plunged. In about ſix weeks or two months after tranſplanting, if the plants have made a good progreſs, they will have filled the pots with their roots, when they ſhould be ſhifted into larger pots, which muſt be filled with light rich earth, and then plunged into the bark-bed in the ſtove, that they may have room

room to grow in height, obſerving, as before, to water them duly, as alſo to admit freſh air to them every day in warm weather: with this management the plants will riſe to the height of three feet, and will produce ripe ſeeds the latter end of Auguſt or the beginning of September.

MENYANTHES, is the Trifolium Paluſtre, or Bog Bean.

This plant is common upon boggy places in divers parts of England, but is never cultivated in gardens; for which reaſon I ſhall not trouble the reader with any farther account of it, except the taking notice, that this plant is at preſent in great eſteem, being thought an excellent remedy for the rheumatiſm, gout, and many other diſorders. It is frequently called Bog Bean, or Marſh Trefoil, in the markets, and grows plentifully on bogs in many parts of England, where it is gathered and brought to ſupply the markets.

MERCURIALIS. Tourn. Inſt. R. H. 534. tab. 308. Lin. Gen. Plant. 998. [This plant takes its name from Mercury, becauſe the ancients had a notion, that the God Mercury brought this plant into uſe.] Mercury; in French, *Mercuriale*.

The CHARACTERS are,

It is male and female in different plants; the male flowers have a ſpreading empalement, which is cut into three concave ſegments; theſe have no petals, but have nine or twelve erect hairy ſtamina, crowned by globular twin ſummits. The female flowers have no petals, but have two awl-ſhaped acute-pointed nectariums; to each of theſe there is a ſingle broad germen, impreſſed with a furrow between them; theſe roundiſh compreſſed germen have a prickly furrow on each ſide, and ſupport two reflexed prickly ſtyles, crowned by acute reflexed ſtigmas. The germen afterward turns to a twin capſule ſhaped like the ſcrotum, having two cells, each containing one roundiſh ſeed.

This genus of plants is ranged in the eighth ſection of Linnæus's twenty-ſecond claſs, which includes thoſe plants whoſe male flowers grow on different plants from the fruit, and have nine ſtamina in each.

The SPECIES are,

1. MERCURIALIS (*Annua*) caule brachiato, foliis glabris. Hort. Cliff. 461. *Mercury with a branching ſtalk and ſmooth leaves.* Mercurialis ſpicata & teſticulata mas & fœmina. C. B. P. 121. *Mercury with ſpiked and teſticulated flowers, which are both male and female, called French Mercury.*
2. MERCURIALIS (*Perennis*) caule ſimpliciſſimo, foliis ſcabris. Hort. Cliff. 461. *Mercury with a ſingle ſtalk and rough leaves.* Mercurialis montana ſpicata & teſticulata. C. B. P. 122. *Mountain Mercury, or Dogs Mercury, with ſpiked and teſticulated flowers.*
3. MERCURIALIS (*Tomentoſa*) caule ſubfruticoſo, foliis tomentoſis. Hort. Cliff. 461. *Mercury with a ſtalk ſomewhat ſhrubby, and woolly leaves.* Mercurialis fruticoſa incana, ſpicata & teſticulata. Tourn. Inſt. R. H. 534. *Shrubby hoary Mercury, having ſpiked and teſticulated flowers.*

The firſt ſort is commonly called French Mercury, from whence it might have been brought into England; for although it is now become a weed in gardens and upon dunghills, yet it is ſeldom found growing at a diſtance from habitations. This is an annual plant, with a branching ſtalk about a foot high, garniſhed with ſpear-ſhaped leaves about an inch and a half long, indented on their edges, of a pale or yellowiſh green colour. The male plants have ſpikes of herbaceous flowers growing on the top of the ſtalks, theſe fall ſoon; but the female plants, which have teſticulated flowers proceeding from the ſide of the ſtalks, are ſucceeded by ſeeds, which, if permitted to ſcatter, will produce plenty of plants of both ſexes. The leaves and ſtalks of this plant are uſed in medicine, and are reckoned aperitive and mollifying.

The ſecond ſort grows under hedges and in woods in moſt parts of England. This hath a perennial root, which creeps in the ground; the ſtalks are ſingle and

without branches, riſing ten or twelve inches high, garniſhed with rough leaves, placed by pairs at each joint; they are of a dark green colour, and indented on their edges; theſe have their male flowers growing in ſpikes upon different plants, from thoſe which produce ſeeds.

This hath a poiſonous quality, there have been many late inſtances of it, where people in the ſpring of the year, when there has been a ſcarcity of greens, have boiled the leaves of this, and have ſuffered greatly by eating them.

The third ſort grows naturally in the ſouth of France, in Spain, and Italy. This riſes with a ſhrubby branching ſtalk a foot and a half high, garniſhed with oval leaves placed by pairs, which are covered with a white down on both ſides. The male flowers grow in ſhort ſpikes from the ſide of the ſtalks, upon different plants from the fruit, which are teſticulated and hoary. If the ſeeds of theſe are permitted to ſcatter, the plants will come up the following ſpring; and if the ſeeds are ſown, it ſhould be performed in the autumn, for thoſe which are ſown in the ſpring ſeldom grow the ſame year. This plant ſhould have a warm ſituation and a dry rubbiſhy ſoil, in which it will live three or four years, but in hard froſt theſe plants are frequently killed.

MESEMBRYANTHEMUM. Dill. Gen. 9. Hort. Elth. 179. Ficoides. Tourn. Act. R. Par. 1705. Fig Marygold.

The CHARACTERS are,

The flower hath a permanent ſpreading empalement of one leaf, which is cut at the top into five acute parts. It hath one petal, which is cut into many linear ſegments almoſt to the bottom, and ranged in ſeveral ſeries, but are joined together at their baſe; within theſe are ranged a great number of hairy ſtamina, terminated by incumbent ſummits. Under the flower is ſituated an obtuſe five-cornered germen, ſupporting ſometimes five, and often ten or more ſtyles, which are reflexed, and crowned by ſingle ſtigmas. The germen afterward becomes a roundiſh fleſhy fruit, having as many cells as there are ſtyles, filled with ſmall ſeeds.

This genus of plants is ranged in the fourth ſection of Linnæus's twelfth claſs, which includes thoſe plants whoſe flowers have from twenty to thirty ſtamina inſerted in the empalement, and five ſtyles.

The SPECIES are,

1. MESEMBRYANTHEMUM (*Nodiflorum*) foliis alternis teretiuſculis obtuſis ciliatis. Hort. Upſal. 129. *Meſembryanthemum with taper, obtuſe, hairy leaves, placed alternately.* Ficoides Neapolitana, flore candido. H. L. *Fig Marygold of Naples with a white flower, or Egyptian Kali.*
2. MESEMBRYANTHEMUM (*Cryſtallinum*) foliis alternis ovatis papuloſis undulatis. Hort. Cliff. 216. *Meſembryanthemum with oval, obtuſe, waved leaves placed alternately.* Ficoides Africana, folio plantaginis undulato, micis argenteis adſperſo. Tourn. Act. R. Par. 1705. *African Fig Marygold, with a waved Plantain leaf, marked with ſilvery ſpots, commonly called the Diamond Ficoides, or Diamond Plant.*
3. MESEMBRYANTHEMUM (*Geniculiflorum*) foliis ſemiteretibus papuloſis diſtinctis floribus ſeſſilibus axillaribus. Lin. Sp. Plant. 481. *Meſembryanthemum with half taper leaves, and flowers ſitting cloſe to the wings of the ſtalks.* Ficoides Capenſe, folio tereti, flore albido. Pet. Gaz. 78. fol. 3. *Fig Marygold of the Cape, with a taper leaf and a whitiſh flower.*
4. MESEMBRYANMTHEMUM (*Noctiflorum*) foliis ſemicylindraceis, impunctatis diſtinctis, floribus pedunculatis calycibus quadrifidis. Lin. Sp. Plant. 481. *Meſembryanthemum with almoſt cylindrical leaves, and quadrifid foot-ſtalks to the flowers.* Ficoides Africana, erecta, arboreſcens, lignoſa, flore radiato, primo purpureo, dein argenteo, interdiu clauſo, noctu aperto. Boerh. Ind. alt. 1. 290. *Upright, ligneous, tree Fig Marygold of Africa, with a radiated flower, which is at firſt purple, afterward ſilvery, ſhut in the day, and open at night.*
5. MESEMBRYANTHEMUM (*Splendens*) foliis ſemiteretibus impunctatis recurvis diſtinctis congeſtis, calycibus terminalibus

terminalibus digitiformibus. Lin. Sp. 689. *Meſembryanthemum with taper, unſpotted, recurved, diſtinct leaves in cluſters, whoſe empalement is finger-ſhaped.*

6. MESEMBRYANTHEMUM (*Umbellatum*) foliis ſubulatis, ſcabrido-punctatis connatis apice patulo, caule erecto, corymbo trichotoma. Lin. Sp. Plant. 481. *Meſembryanthemum with awl-ſhaped leaves which join, having rough ſpots, an erect ſtalk, and a corymbus of flowers at the triple diviſion of the ſtalk.* Ficoides Africana erecta teretifolia, floribus albis umbellatis. Par. Bat. 166. *Upright African Fig Marygold, with a taper leaf, and white flowers growing in umbels.*

7. MESEMBRYANTHEMUM (*Calamiforme*) acaule foliis ſubteretibus adſcendentibus impunctatis connatis, floribus octagynis. Lin. Sp. Plant. 481. *Meſembryanthemum without a ſtalk, almoſt taper leaves which join at their baſe, and flowers having eight ſtyles.* Ficoides Capenſis humilis, cepææ folio, flore ſtamineo. Brad. Suec. p. 10. fol. 19. *Low Fig Marygold of the Cape, with an Onion leaf, and a ſtamineous flower.*

8. MESEMBRYANTHEMUM (*Tripolium*) foliis alternis lanceolatis planis impunctatis caulibus laxis ſimplicibus calycibus pentagonis. Hort. Cliff. 217. *Meſembryanthemum with plain ſpear-ſhaped leaves which are not ſpotted, a ſingle weak ſtalk, and a five-cornered empalement.* Ficoides Africana, procumbens, tripolii folio, flore argenteo. Hort. Chelſ. *Trailing African Fig Marygold, with a Tripolium leaf and a ſilvery flower.*

9. MESEMBRYANTHEMUM (*Bellidiflorum*) acaule, foliis triquetris linearibus impunctatis apice trifariàm dentatis. Hort. Cliff. 218. *Meſembryanthemum without a ſtalk, having narrow, three-cornered, unſpotted leaves, marked with three indentures at their points.* Ficoides Capenſis humilis, folio triangulari in ſummitatem dentato, flore minore purpuraſcente. Brad. Suec. p. 9. tab. 18. *Dwarf Marygold of the Cape, with a triangular leaf indented at the top, and a ſmaller purpliſh flower.*

10. MESEMBRYANTHEMUM (*Subulatum*) acaule foliis ſubulatis triquetris dorſo ſupernè ſerratis. *Meſembryanthemum without a ſtalk, and awl-ſhaped three-cornered leaves, whoſe back part is ſawed toward the top.*

11. MESEMBRYANTHEMUM (*Deltoides*) foliis deltoidibus triquetris dentatis impunctatis diſtinctis. Hort. Cliff. 218. *Meſebryanthemum with three-cornered indented leaves, which are ſhaped like the Greek delta, without ſpots, and diſtinct.* Ficoides Africana, folio triangulari craſſo, brevi, glauco, ad tres margines aculeato. Boerh. Ind. alt. 1. 290. *African Fig Marygold, with a ſhort, thick, gray, triangular leaf, with prickles on the three edges.*

12. MESEMBRYANTHEMUM (*Cauleſcens*) cauleſcens, foliis deltoidibus, lateribus minimè dentatis. *Stalky Meſembryanthemum, with leaves ſhaped like the Greek delta, whoſe ſides are a little indented.* Ficoides Africana, folio triangulari glauco, breviſſimo, craſſiſſimo, margine non ſpinoſo. Boerh. Ind. alt. 1. 290. *African Fig Marygold, with very thick, ſhort, triangular, gray leaves, having no ſpines on their edges.*

13. MESEMBRYANTHEMUM (*Barbatum*) foliis ſubovatis papuloſis diſtinctis apice barbatis. Hort. Cliff. 216. *Meſembryanthemum with almoſt oval leaves, having diſtinct bladders bearded at their points.* Ficoides ſeu ficus aizoides Africana, folio variegato aſpero, ad apicem ſtella ſpinoſa armato. Boerh. Ind. alt. 1. p. 291. *African Fig Marygold, with a rough variegated leaf, whoſe point is armed with ſpines in form of a ſtar.*

14. MESEMBRYANTHEMUM (*Stellatum*) caulibus decumbentibus, foliis teretibus papuloſis apice barbatis. *Meſembryanthemum with decumbent ſtalks and taper bladdered leaves, whoſe points are bearded like a ſtar.* Ficoides Capenſis fruteſcens, folio tumido, extremitate ſtellatâ, flore purpureo. Brad. Suec. Dec. 1. tab. 6. *Shrubby Fig Marygold of the Cape, with a ſtar-pointed tumid leaf, and a purple flower.*

15. MESEMBRYANTHEMUM (*Hiſpidum*) foliis cylindricis papuloſis diſtinctis, caule hiſpido. Lin. Sp. Plant. 482. *Meſembryanthemum with a prickly ſtalk, and deflexed cylindrical leaves with pulpy bladders.* Ficoides Afra, fruticoſa, caule lanugine argenteâ ornato, folio tereti, parvo, longo, guttulis argenteis quaſi ſcabro, flore violaceo. Boerh. Ind. alt. 1. 291. *African ſhrubby Fig Marygold, having ſtalks adorned with ſilvery down, and long, ſmall, taper leaves, ſpotted as it were with ſilvery drops, and a Violet-coloured flower.*

16. MESEMBRYANTHEMUM (*Villoſum*) caule foliiſque pubeſcentibus. Hort. Cliff. 217. *Meſembryanthemum whoſe ſtalks and leaves are garniſhed with downy hairs.*

17. MESEMBRYANTHEMUM (*Scabrum*) foliis ſubulatis diſtinctis ſubtus undique muricatis, calycibus muticis. Hort. Cliff. 219. *Meſembryanthemum with awl-ſhaped leaves, which are diſtinct, every where rough on their under ſide, and chaffy empalements.* Ficoides Afra, folio triangulari viridi longo aſpero, flore violaceo. Boerh. Ind. alt. 290. *African Fig Marygold, with a long, green, rough, triangular leaf, and a Violet-coloured flower.*

18. MESEMBRYANTHEMUM (*Uncinatum*) articulis caulinis terminatis in folia connata acuminata ſubtus dentata. Hort. Cliff. 218. *Meſembryanthemum whoſe joints of the ſtalks are terminated by acute-pointed leaves, which are joined at their baſe, and indented on their under ſide.* Ficoides Afra, folio triangulari glauco, perfoliato, breviſſimo, apice ſpinoſo. Boerh. Ind. alt. 290. *African Fig Marygold, with a ſhort, perfoliated, triangular leaf, whoſe point is prickly, commonly called Buckſhorn Ficoides.*

19. MESEMBRYANTHEMUM (*Perfoliatum*) perfoliatum, foliis majoribus, apicibus triacanthis. Hort. Elth. 251. *Perfoliate Meſembryanthemum with larger leaves, whoſe points have three thorns.* Ficoides Africana fruteſcens perfoliata, folio triangulari glauco punctato, cortice lignoſo candido tenui. Tourn. Act. Par. 1705. *Shrubby, perfoliate, African, Fig Marygold, with a triangular, gray, ſpotted leaf, and a thin, white, ligneous bark, commonly called Stag ſhorn Ficoides.*

20. MESEMBRYANTHEMUM (*Spinoſum*) foliis tereti-triquetris punctatis diſtinctis ſpinis ramoſis. Hort. Cliff. 216. *Meſembryanthemum with taper three-cornered leaves, which have diſtinct ſpots and branching ſpines.* Ficoides Africana, aculeis longiſſimis & foliolis naſcentibus ex foliorum alis. Tourn. Act. R. Par. 1705. *African Fig Marygold with long ſpines, and ſmaller leaves ariſing from the wings of the leaves.*

21. MESEMBRYANTHEMUM (*Tuberoſum*) foliis ſubulatis pappiloſis, diſtinctis apice patulis radice capitatâ. Hort. Cliff. 216. *Meſembryanthemum with awl-ſhaped pimply leaves, and a headed root.* Ficoides Africana, folio triangulari recurvo, floribus umbellatis obſoleti coloris, externè purpureis. Tourn. Act. Par. 1705. *African Fig Marygold with a triangular recurved leaf, and umbellated flowers of a dark colour, which are purple on their outſide.*

22. MESEMBRYANTHEMUM (*Tenuifolium*) foliis ſubulatis ſemiteretibus glabris, diſtinctis internodio longioribus. Hort. Cliff. 216. *Meſembryanthemum with awl-ſhaped, half-taper, ſmooth, diſtinct leaves, whoſe joints are farther diſtant.* Ficoides Capenſis humilis, teretifolia, flore coccineo. Brad. Suec. p. 13. *Low Fig Marygold of the Cape, with a taper leaf and a ſcarlet flower.*

23. MESEMBRYANTHEMUM (*Stipulaceum*) foliis ſubtriquetris compreſſis incurvatis punctatis diſtinctis congeſtis baſi marginatis. Lin. Sp. 693. *Meſembryanthemum with three-cornered, compreſſed, incurved leaves, having diſtinct ſpots, whoſe baſe are bordered and cluſtered.* Meſembryanthemum fruteſcens, flore purpureo rariore. Hort. Elth. tab. 209.

24. MESEMBRYANTHEMUM (*Craſſifolium*) foliis ſemicylindricis impunctatis connatis, apice triquetris caule repente ſemicylindricis. Hort. Cliff. 217. *Meſembryanthemum with a creeping cylindrical ſtalk, cylindrical ſmooth leaves, joining at their baſe, whoſe points are three-cornered.* Ficoides Africana reptans, folio triangulari, flore ſaturatè purpureo. Brad. Suec. p. 16. tab. 38. *Creeping African Fig Marygold with a green triangular leaf, and deep purple-coloured flower.*

25. MESEMBRYANTHEMUM (*Falcatum*) foliiis ſub-acinaciformibus incurvis punctatis diſtinctis ramis teretibus. Hort. Cliff. 219. *Meſembryanthemum with diſtinct, ſmooth, falchion-ſhaped leaves, and taper branches.* Ficoides Afra folio triangulari enſiformi breviſſimo, flore

flore dilutè purpuraſcente filamentoſo. Brad. Suec. Dec. 5. tab. 42. *African Fig Marygold with a triangular, cimeter-ſhaped, ſhort leaf, and a pale purpliſh flower.*

26. MESEMBRYANTHEMUM (*Glomeratum*) foliis teretiuſculis compreſſis punctatis, caule paniculato multifloro. Lin. Sp. 694. *Meſembryanthemum with taper, compreſſed, ſpotted leaves, and a panicled ſtalk with many flowers.* Meſembryanthemum falcatum minus, flore carneo minore. Hort. Elth. tab. 213.

27. MESEMBRYANTHEMUM (*Edule*) foliis æquilateri-triquetris acutis ſtrictis impunctatis connatis carina ſubſerratis, caule ancipiti. Lin. Sp. 695. *Meſembryanthemum with equilateral, acute, unſpotted leaves joined at their baſe, whoſe keel are ſawed.* Ficoides ſeu ficus aizoides Africana major procumbens, triangulari folio, fructu maximo eduli. H. L. 244. *Greater trailing African Fig Marygold, with a triangular leaf and a large eatable fruit.*

28. MESEMBRYANTHEMUM (*Bicolorum*) foliis ſubulatis lævibus punctatis diſtinctis caule fruteſcente corollis bicoloribus. Lin. Sp. Plant. 695. *Meſembryanthemum with awl-ſhaped ſmooth leaves, which have different ſpots, a ſhrubby ſtalk, and the flower of two colours.* Ficoides Capenſis fruteſcens, folio tereti punctato, petalis luteis. Brad. Suec. 1. p. 8. tab. 7. *Shrubby Fig Marygold of the Cape, with a taper leaf having punctures, and yellow petals.*

29. MESEMBRYANTHEMUM (*Acinaciforme*) foliis acinaciformibus impunctatis connatis, angulo carinali ſcabris, petalis lanceolatis. Lin. Sp. 695. *Meſembryanthemum with ſharp, three-cornered, unſpotted leaves, joined at their baſe, whoſe keel are rough, and ſpear-ſhaped petals of the flower.* Ficoides Africana folio longo triangulari incurvo, caule purpureo. Tourn. Act. Par. 1705. *African Fig Marygold with a long triangular leaf, which is incurved, and a purple ſtalk.*

30. MESEMBRYANTHEMUM (*Loreum*) foliis ſemicylindricis recurvis congeſtis baſi interiore gibbis connatis, caule pendulo. Lin. Sp. 694. *Meſembryanthemum with cylindrical recurved leaves, whoſe baſe are cluſtered and join, and a pendulous ſtalk.* Meſembryanthemum loreum. Hort. Elth. tab. 200.

31. MESEMBRYANTHEMUM (*Serratum*) foliis ſubulatis triquetris punctatis diſtinctis angulo carinali retrorſum ſerratis. Lin. Sp. 696. *Meſembryanthemum with awl-ſhaped leaves having diſtinct ſpots, and the angle of the keel ſawed.* Meſembryanthemum ſerratum flore acetabuliformi luteo. Hort. Elth. tab. 192.

32. MESEMBRYANTHEMUM (*Tuberculatum*) acaule foliis ſemicylindricis connatis externè tuberculatis. Hort. Cliff. 219. *Meſembryanthemum without a ſtalk, and cylindrical leaves which have tubercles on their outſides, and are joined at their baſe.* Ficoides Afra, folio triangulari, longo, ſucculento, caulibus rubris. Boerh. Ind. alt. 290. *African Fig Marygold with a long, triangular, ſucculent leaf, and red ſtalks.*

33. MESEMBRYANTHEMUM (*Veruculatum*) foliis triquetro-cylindricis acutis connatis arcuatis impunctatis diſtinctis. Hort. Cliff. 220. *Meſembryanthemum with three-cornered cylindrical leaves which are connected at their baſe, bowed and ſmooth.* Ficoides Afra arboreſcens, folio tereti glauco, apice purpureo craſſo. Boerh. Ind. alt. 291. *African Tree Fig Marygold, with a taper gray leaf, having a thick purple top.*

34. MESEMBRYANTHEMUM (*Glaucum*) foliis triquetris acutis, punctatis diſtinctis calycinis foliolis ovato-cordatis. Lin. Sp. 696. *Meſembryanthemum with acute three-cornered leaves marked with punctures, and oval heart-ſhaped empalements.* Ficoides Afra caule lignoſo, erecta, folio triangulari enſiformi ſcabro, flore luteo magno. Boerh. Ind. alt. 289. *African Fig Marygold with an erect ligneous ſtalk, a triangular, cimeter-ſhaped, rough leaf, and a large yellow flower.*

35. MESEMBRYANTHEMUM (*Corniculatum*) foliis triquetro-ſemicylindricis ſcabrido-punctatis, ſupra baſin linea elevatis connatis. Lin. Sp. 697. *Stalky Meſembryanthemum with three-cornered, ſemicylindrical, rough, ſpotted leaves, which are connected at their baſe.* Ficoides Afra triangulari longiſſimo, marginibus obtuſioribus, flore amplo, intus pallidè luteo, extus lineâ rubrâ longâ picto. Boerh. Ind. alt. 289. *African Fig Marygold with a long triangular leaf, obtuſer borders, and a large flower of a pale yellow within, and marked with a long red ſtreak on the outſide.*

36. MESEMBRYANTHEMUM (*Expanſum*) foliis planiuſculis lanceolatis impunctatis patentibus diſtinctis oppoſitis alternatiſque remotis. Lin. Sp. 697. *Meſembryanthemum with plain, ſpear-ſhaped, unſpotted leaves, which ſpread diſtinctly, and are oppoſite and alternate at a diſtance.* Ficoides Africana humifuſa, folio triangulari longiore glauco, flore flaveſcente. Tourn. Acad. R. Par. 1705. *Trailing African Fig Marygold, with a longer, gray, triangular leaf, and a yellowiſh flower.*

37. MESEMBRYANTHEMUM (*Micans*) foliis ſubulatis triquetris punctatis diſtinctis, caule ſcabro. Lin. Sp. 696. *Meſembryanthemum with three-cornered awl-ſhaped leaves, which are diſtinctly ſpotted, and a rough ſtalk.* Meſembryanthemum micans, flore Phœnicio, filamentis atris. Hort. Elth. tab. 215.

38. MESEMBRYANTHEMUM (*Tortuoſum*) foliis planiuſculis oblongo-ovatis ſubpapilloſis confertis connatis, calycibus tryphyllis bicornibus. Lin. Sp. 697. *Meſembryanthemum with plain, oblong, oval leaves joining at their baſe, and a three-leaved empalement with two horns.* Ficoides Capenſis procumbens aleæ folio, flore albo medio croceo. Brad. Suec. Dec. 2. p. 7. tab. 16. *Trailing Fig Marygold of the Cape, with an Olive leaf, and a white flower of a Saffron colour in the middle.*

39 MESEMBRYANTHEMUM (*Ringens*) ſubacaule, foliis ciliato-dentatis. Lin. Hort. Cliff. 218. *Meſembryanthemum with a ſhort ſtalk, and leaves having hairy indentures.* Ficoides Capenſis humilis, folio triangulari prope ſumitatem dentato, flore luteo. Brad. Suec. Dec. 2. p. 8. tab. 17. *Low Fig Marygold of the Cape, with a triangular leaf indented toward the top, and a yellow flower, commonly called Dogs Chap Ficoides.*

40. MESEMBRYANTHEMUM (*Roſtratum*) acaule, foliis ſemicylindricis connatis externe tuberculatis. Lin. Sp. 696. *Meſembryanthemum without a ſtalk, having cylindrical leaves joined at their baſe, and tubercles on the outſide.* Ficoides Afra folio triangulari, enſiformi craſſo brevi, ad margines laterales multis majoribus ſpinis aculeato. Martyn. Cent. 30. tab. 30. *African Fig Marygold, with a triangular, cimeter-ſhaped, ſhort, thick leaf, whoſe ſide borders have many large ſpines, commonly called Cats Chap Ficoides.*

41. MESEMBRYANTHEMUM (*Dolabriforme*) foliis dolabriformibus punctatis. Hort. Cliff. 219. *Meſembryanthemum with ax-ſhaped ſpotted leaves.* Ficoides Capenſis humilis foliis cornua cervi referentibus, petalis luteis, noctiflora. Brad. Suec. 1. p. 11. tab. 10. *Low Fig Marygold of the Cape, with leaves like a ſtag's horn, yellow petals, and a flower opening at night.*

42. MESEMBRYANTHEMUM (*Difforme*) foliis difformibus punctatis connatis. Prod. Leyd. 287. *Meſembryanthemum with deformed leaves.* Ficoides Afra foliis latiſſimis craſſimis lucidis, difformibus. Boerh. Ind. alt. 292. *African Fig Marygold, with very broad, thick, ſhining, deformed leaves.*

43. MESEMBRYANTHEMUM (*Lucidum*) acaule foliis linguiformibus lucidis imarginatis. *Meſembryanthemum without a ſtalk, and tongue-ſhaped lucid leaves, indented at the top.* Ficoides Afra acaulos, foliis latiſſimis craſſis lucidis conjugatis, flore aureo ampliſſimo. Tourn. Acad. R. Scien. 1705. *African Fig Marygold without a ſtalk, broad, thick, ſhining leaves growing by pairs, and a very large yellow flower.*

44. MESEMBRYANTHEMUM (*Linguiforme*) acaule foliis linguiformibus altero margine craſſioribus impunctatis. Lin. Sp. 699. *Meſembryanthemum without a ſtalk, very broad tongue-ſhaped leaves, one edge being thicker than the other, and without ſpots.* Ficoides Afra acaulos, foliis latiſſimis craſſiſſimis, lucidis conjugatis, flore aureo amplo, pedunculo brevi. Boerh. Ind. alt. 292. *African Fig Marygold having no ſtalk, very broad, thick, ſhining leaves placed by pairs, and a large golden flower with a ſhort foot-ſtalk.*

45. MESEMBRYANTHEMUM (*Albidum*) acaule foliis triquetris. *Meſembryanthemum having no ſtalk, and gray, entire, three-cornered leaves.* Meſembryanthemum foliis robuſtis albicantibus. Hort. Elth. 243. *Meſembryanthemum with ſtrong whitiſh leaves.*

46. MESEMBRYANTHEMUM (*Pugioneforme*) foliis alternis ſubulatis triquetris longiſſimis impunctatis. Hort. Cliff. 216. *Meſembryanthemum with alternate, awl-ſhaped, three-cornered leaves, which are very long, without ſpots.* Ficoides Capenſis, caryophylli folio, flore aureo ſpecioſo. Brad. Suec. Dec. 2. p. 5. tab. 14. *Fig Marygold of the Cape, with a Clove Gilliflower leaf, and a beautiful golden-coloured flower.*

Theſe plants are moſt of them natives of the Cape of Good Hope, from whence their ſeeds were firſt brought to Holland, and the plants raiſed in many of their curious gardens, and have ſince been communicated to moſt parts of Europe; theſe were at firſt titled Chryſanthemum by the old botaniſts, but afterward they were titled Ficoides by Herman and Tournefort, from their capſules being ſhaped like little Figs; afterward they had this title of Meſembryanthemum applied to them, which ſignifies a flower opening in the middle of the day, which is what moſt of the ſpecies do; there are three or four of them which open in the evening, and are cloſed all the day; theſe have been ſeparated from the others by ſome, and have had the title of Nycterianthemum applied to them, from their flowers being expanded in the night; but as they all agree in the characters which diſtinguiſh the genus, they ſhould by no means be ſeparated.

Moſt of the plants of this genus have beautiful flowers, which appear at different ſeaſons of the year; ſome of them flower early in the ſpring, others in ſummer, ſome in the autumn; and there are others which flower in winter; and many of them produce their flowers in ſuch quantity, as that when they are expanded, the plants are entirely covered with them; they have all of them thick ſucculent leaves, but ſome of the ſpecies are much more ſo than others, and the figures of their leaves vary ſo much in the ſeveral ſpecies, that they afford an agreeable variety when they are not in flower.

To deſcribe all the ſpecies which are here mentioned, would ſwell this work too much, and as their titles are ſhort deſcriptions of the ſpecies, I ſhall not enlarge more on that head, but proceed to their culture.

All the ſorts here mentioned are perennial plants except the two firſt, which are annual. The perennial ſorts are eaſily propagated by cuttings during any of the ſummer months; ſuch of them as have ſhrubby ſtalks and branches, very readily take root when planted in a bed of light ſoil, and covered either with mats or glaſſes, but when they are covered with the latter, they muſt be ſhaded every day when the ſun is warm; theſe cuttings of the ſhrubby ſorts need not be cut from the plant more than five or ſix days before they are planted, during which time they ſhould be laid in a dry room, not too much expoſed to the ſun, that the part which was ſeparated from the old plants may heal over and dry before they are planted, otherwiſe they are apt to rot; theſe may be planted at about three inches diſtance from each other, and the earth preſſed cloſe to them, but none of their leaves ſhould be buried in the ground, for as they abound with moiſture, ſo if they are covered with the earth, it will cauſe them to rot, and that often deſtroys the cuttings; therefore when the cuttings are taken from the old plants, they ſhould be diveſted of their lower leaves, ſo far as may be neceſſary, to allow a naked ſtalk of ſufficient length for planting.

When the cuttings are planted, it will be neceſſary to give them a little water, to ſettle the ground about them, but it ſhoold be done with caution, for too much wet will ſpoil them; if theſe are ſhaded every day from nine or ten o'clock till three or four, when the ſun is warm, it will prevent the ground from drying too faſt, ſo that the cuttings need not be watered oftener than once in a week; but if there ſhould happen ſome gentle ſhowers of rain, it will be proper to take off their covers, and let them receive it, but they ſhould be ſcreened from hard rains. The cuttings thus managed will have put out good roots in about ſix weeks, when they ſhould be carefully taken up, and each planted in a ſeparate ſmall pot filled with light ſandy earth, and then placed in a ſhady ſituation, giving them a little water to ſettle the earth to their roots; in this place they may remain about ten days or a fortnight, by which time they will have taken good root, and may be removed to a ſheltered place, where they may have more ſun, in which they may remain till autumn; during the ſummer months, theſe may be watered twice, or in very hot weather, three times a week, but it muſt not be given them in too great plenty; but as the ſun declines in autumn, they ſhould not have it oftener than once a week, for if they are often ſupplied with it, the plants will grow luxuriant; their leaves and branches will be ſo replete with moiſture, that the early froſts in the autumn will deſtroy them; whereas when they are kept dry, their growth will be ſtinted; ſo that they will be hardy enough to reſiſt ſmall froſts, but there muſt be care taken that they do not ſhoot their roots through the holes of the pots into the ground, for when they do, the plants will grow very luxuriant; and when the pots are removed, and thoſe roots are torn off, their leaves and branches will ſhrink, ſo will not recover it in a long time, if ever; to prevent which, the pots ſhould be removed every fortnight, and where the roots are beginning to come through the pots, they ſhould be cut off. The ſorts which grow very freely ſhould be ſhifted three times in the ſummer, to pare off their roots, and keep them within compaſs, and theſe ſhould never be planted in rich earth for the reaſons before given; for if the earth is freſh, there will require no dung or other compoſt, unleſs it is ſtrong, in which caſe ſea ſand, or lime rubbiſh, will be a good mixture; the quantity of either muſt be in proportion to the ſtiffneſs of the ground, always being careful to render it ſo light, as that the wet may eaſily paſs off.

We next proceed to treat of thoſe ſorts, whoſe ſtalks and leaves are very ſucculent. The cuttings of theſe ſhould be taken from the plants ten days or a fortnight before they are planted, that they may have time for their wounded part to heal over and dry; the lower leaves of theſe ſhould alſo be ſtripped off, that their naked ſtalks may be of a ſufficient length for planting. As theſe are moſtly plants of humble growth, ſo if their ſtalks are diveſted of their leaves an inch and a half, it will be ſufficient. The cuttings of theſe ſorts require to be covered with glaſſes, to keep off the wet; they muſt alſo have leſs water than the other, but in other particulars require the ſame treatment. The roots of theſe do not ſpread and extend ſo much as thoſe of the other, ſo will not require to be ſhifted oftener than twice a year at moſt; they muſt alſo be kept in ſmall pots to confine their roots; the earth in which they are planted ſhould be rather light and not rich. During the ſummer ſeaſon they muſt not have too much wet, and in the winter they muſt have but little water. If theſe ſucculent ſorts are placed in an open airy glaſs-caſe in winter, where they may have free air admitted to them in plenty in mild weather, and ſcreened from the froſt, they will thrive much better than when they are more tenderly treated.

The other ſhrubby kinds may be ſheltered in winter under a common frame, where, if they are protected from froſt and wet, it is all they require; for the hardier theſe are treated, the greater quantity of flowers they will produce: and ſome of the ſorts are ſo hardy, as to live abroad when planted cloſe to a good aſpected wall, and in a poor dry ſoil; ſo that where there is room to diſpoſe them againſt a wall, and the border is raiſed with lime rubbiſh to prevent their rooting deep and growing luxuriant, they may be preſerved through the winter with very little ſhelter, and theſe will flower much better than thoſe under cover.

The firſt ſort grows naturally in Egypt, where they cut up the plants, and burn them for pot-aſh; and this is eſteemed as the beſt ſort for making hard ſope, and the beſt ſort of glaſs.

This

This is an annual plant, which does not perfect ſeeds in England; for when it is placed in the ſtove, or kept in the hot-bed, their ſtalks grow long and ſlender, ſo are not productive of flowers; and thoſe which are raiſed in hot-beds, and afterward expoſed in the open air, will flower pretty freely, but do not perfect their ſeeds. As this plant will thrive in South Carolina as well as in its native ſoil, ſo it might turn to the advantage of that colony, and likewiſe become beneficial to the public, if the inhabitants could be prevailed on to cultivate this plant.

The ſecond ſort is annual; this is a native at the Cape of Good Hope. It is propagated for the oddneſs of its leaves and ſtalks, which are cloſely covered over with pellucid pimples full of moiſture, which, when the ſun ſhines on the plants, they reflect the light, and appear like ſmall bubbles of ice; from whence ſome have called it the Ice Plant, and others have named it the Diamond Plant, or Diamond Ficoides.

This ſort is propagated by ſeeds, which muſt be ſown on a hot-bed early in the ſpring; and when the plants come up, they muſt be planted on a freſh hot-bed to bring them forward; after they have taken root in the hot-bed, they ſhould have but little wet, for moiſture will rot them. When they are grown large enough to tranſplant again, they ſhould be each planted into a ſmall pot, filled with light freſh earth, but not rich, and plunged into a hot-bed of tan, obſerving to ſhade them in the heat of the day until they have taken new root; then they ſhould have plenty of freſh air admitted to them every day in warm weather, to prevent their drawing weak. In the latter end of June, ſome of the plants may be inured to bear the open air, and afterward they may be turned out of the pots, and planted into a warm border, where they will thrive, and ſpread their branches to a great diſtance upon the ground; but theſe plants will not be very productive of flowers, therefore ſome of them muſt be continued in the ſmall pots, and may at the ſame time, when the others are planted out, be removed into the ſtove or glaſs-caſe, placing them upon the ſhelves, that the roots may not get out from the bottom of the pots, ſo that they may be confined, which will cauſe them to flower plentifully, and from theſe good ſeeds may every year be obtained.

MESPILUS [Μέσπιλος, *Gr.*] Tourn. Inſt. R. H. 641. tab. 410. Lin. Gen. Plant. 549. *The Medlar.*

The CHARACTERS are,

The empalement of the flower is permanent, of one leaf, cut into five ſpreading concave ſegments. The flower is compoſed of five roundiſh concave petals, which are inſerted in the empalement. The number of ſtamina are different in the ſeveral ſpecies, from ten to twenty or more; theſe are alſo inſerted in the empalement, and are terminated by ſingle ſummits. The germen is ſituated under the flower, and ſupports an uncertain number of ſtyles from three to five, which are crowned by headed ſtigmas. The germen afterward becomes a roundiſh or oval berry, carrying the empalement on its top, and incloſing four or five hard ſeeds.

This genus of plants is ranged in the fourth ſection of Linnæus's twelfth claſs, which includes the plants whoſe flowers have twenty ſtamina inſerted to the empalement, and five ſtyles.

The SPECIES are,

1. MESPILUS (*Sylveſtris*) inermis, foliis lanceolatis dentatis acuminatis, ſubtus tomentoſis, calycibus acuminatis. *Smooth Medlar, with ſpear-ſhaped, acute-pointed, indented leaves, woolly on their under ſide, and acute-pointed empalements.* Meſpilus folio laurino major, fructu minori, rariori ſubſtantiâ. Hort. Cath. *Greater Medlar with a Bay-tree leaf, and a ſmaller leſs ſubſtantial fruit.*
2. MESPILUS (*Germanica*) inermis foliis lanceolatis integerrimis ſubtus tomentoſis, calycibus acuminatis. Hort. Cliff. 189. *Unarmed Medlar with ſpear-ſhaped entire leaves, which are downy on their under ſide, and acute-pointed empalements.* Meſpilus Germanica, folio laurino, non ſerrato, ſive Meſpilus ſylveſtris. C. B. P. 453. *German Medlar with a Bay-tree leaf which is not ſawed, or wild Medlar.*
3. MESPILUS (*Pyracantha*) ſpinoſa, foliis lanceolato-ovatis crenatis, calycibus fructûs obtuſis. Hort. Cliff. 189. *Prickly Medlar, with ſpear-ſhaped, oval, crenated leaves, and obtuſe empalements to the fruit.* Meſpilus aculeata, amygdali folio. Tourn. Inſt. 642. *Prickly Medlar with an Almond leaf, called Pyracantha.*
4. MESPILUS (*Cordato*) foliis cordato-ovatis acuminatis, acutè ſerratis, ramis ſpinoſis. Fig. Plant. tab. 179. *Medlar with heart-ſhaped, oval, acute-pointed leaves, which are ſharply ſawed, and prickly branches.*
5. MESPILUS (*Amelanchier*) inermis, foliis ovalibus ſerratis, cauliculis hirſutis. Lin. Sp. Plant. 478. *Medlar without thorns, having oval ſawed leaves, and hairy ſtalks.* Meſpilus folio rotundiori, fructu nigro ſubdulci. Tourn. Inſt. 642. *Medlar with a rounder leaf and a black ſweetiſh fruit, commonly called Amelanchier.*
6. MESPILUS (*Canadenſis*) foliis ovato-oblongis glabris ſerratis, caule inermi. Lin. Sp. Plant. 478. *Medlar with oval, oblong, ſmooth, ſawed leaves, and branches without thorns.* Meſpilus inermis, foliis ſubtus glabris obversè-ovatis. Flor. Virg. 54. *Medlar without thorns, and obverſe oval leaves, which are ſmooth on their under ſide.*
7. MESPILUS (*Cotoneaſter*) foliis ovatis integerrimis. Hort. Cliff. 189. *Medlar with oval entire leaves.* Meſpilus folio ſubrotundo, fructu rubro. Tourn. Inſt. R. H. 642. *Medlar with a roundiſh leaf and a red fruit, commonly called Dwarf Quince.*
8. MESPILUS (*Chamæmeſpilus*) inermis, foliis ovalibus ſerratis glabris, floribus capitatis, bracteis deciduis linearibus. Lin. Sp. Plant. 479. *Medlar without thorns, having ſmooth, oval, ſawed leaves, headed flowers, and linear bracteæ which fall off.* Cotoneaſter folio oblongo ſerrato. C. B. P. 452. *Baſtard Quince with an oblong ſawed leaf.*
9. MESPILUS (*Orientalis*) foliis ovatis craſſis integerrimis, ſubtus tomentoſis, floribus umbellatis axillaribus. *Medlar with oval, thick, entire leaves, which are woolly on their under ſide, and flowers growing in umbels from the wings of the ſtalk.* Chamæceraſus Idæa. Alp. Exot. 5. *Dwarf Cherry of Mount Ida.*
10. MESPILUS (*Arbutifolia*) inermis, foliis lanceolatis crenatis ſubtus tomentoſis. Hort. Cliff. 189. *Virginia Medlar with an Arbutus leaf.* Meſpilus Virginiana, folio arbuti. H. L. 578.
11. MESPILUS (*Virginiana*) inermis, foliis oblongo-ovatis, ſubtus tomentoſis, fructu ovato, pedunculis longiſſimis. *Smooth Virginia Medlar, with oblong oval leaves, downy on their under ſide, and oval fruit on long foot-ſtalks.*

The firſt ſort grows naturally in Sicily, where it becomes a large tree; this riſes with a ſtraiter ſtem, and the branches grow more upright than thoſe of the Dutch Medlar; the leaves are narrower and not ſawed on their edges; the flowers are ſmaller than thoſe of the Dutch Medlar, and the fruit is ſhaped like a Pear.

The ſecond ſort is generally called the Dutch Medlar; this never riſes with an upright ſtalk, but ſends out crooked deformed branches at a ſmall height from the ground; the leaves of this are very large, entire, and downy on their under ſide. The flowers are very large, as are alſo the fruit, which are rounder, and approach nearer to the ſhape of an Apple. This being the largeſt fruit, is how generally cultivated in the gardens; but there is one with ſmaller fruit, which is called the Nottingham Medlar, of a much quicker and more poignant taſte than this; which is, I ſuppoſe, only a variety, ſo I have not enumerated it as a diſtinct ſpecies.

The fifth ſort grows naturally in Auſtria, Italy, and France, particularly near Fontainbleau; this riſes with many ſlender ſtalks about three or four feet high, which put out ſmall ſide branches, covered with a dark purple bark, having no thorns, cloſely garniſhed with oval leaves, about three quarters of an inch long, and half an inch broad, ſlightly ſawed on their edges; the ſmall ſide branches which ſuſtain the

flowers,

flowers, are very hairy and woolly, as are alſo the foot-ſtalks, and the under ſide of the leaves, but their upper ſides are ſmooth and green. The flowers come out in bunches at the end of the ſhoots, which have five long narrow petals, and about ten ſtamina in each. The flowers are ſucceeded by ſmall fruit, which, when ripe, are black; the gardeners call this New England Quince; there is one of this kind which grows naturally in North America, but the leaves of that are wedge-ſhaped and not ſawed on the edges, ſo I take it to be a different ſpecies.

The ſixth ſort grows naturally in Canada; this is alſo a low ſhrub, ſeldom riſing more than five feet high, dividing into ſeveral ſmooth branches, covered with a purpliſh bark. The leaves grow upon long ſlender foot-ſtalks; they are one inch and a half long, and an inch broad, ſmooth on both ſides, and a little ſawed on their edges. The flowers come out in ſmall bunches at the end of the branches; they are about the ſize of thoſe of the common Hawthorn, and are ſucceeded by ſmall fruit of a purpliſh colour when ripe.

The ſeventh ſort grows naturally on the Pyrenean mountains, and in other cold parts of Europe; this riſes with a ſmooth ſhrubby ſtalk about four feet high, dividing into a few ſmall branches, which are covered with a purple bark, and garniſhed with oval entire leaves, little more than one inch long, and about three quarters of an inch broad, having very ſhort foot-ſtalks. The flowers come out from the ſide of the ſtalks, two or three together; they are ſmall, of a purpliſh colour, and ſit cloſe to the ſtalks; theſe appear in May, and are ſucceeded by ſmall roundiſh fruit, which are of a bright red colour when ripe.

The eighth ſort grows naturally in the northern parts of Europe; this hath a ſmooth ſtalk, riſing about four or five feet high, ſending out ſlender branches, which are covered with a purpliſh bark, and garniſhed with oval ſmooth leaves about two inches long, and one inch and a half broad, ſawed on their edges, but the teeth point upward; they have pretty long ſlender foot-ſtalks, and are of a yellowiſh green on both ſides. The flowers come out from the wings of the ſtalk, four or five joined together in a cloſe head, of a purpliſh colour; between the flowers come out long narrow bractea, which are purpliſh, and fall off as the flowers begin to decay. The fruit is ſmall, and red when ripe.

The ninth ſort grows naturally upon mount Ida, in Crete, where the poor ſhepherds feed upon the fruit when ripe; this hath a ſmooth ſtalk about eight feet high, dividing into many ſmooth branches, garniſhed with oval leaves two inches and a half long, and near two inches broad, of a thick ſubſtance, and a dark green on their upper ſide, but downy on their under, ſtanding upon ſhort foot-ſtalks. The flowers come out from the ſide of the ſtalk upon ſhort ſmall branches, five or ſix growing upon each in a cloſe bunch; they are of a purple colour, the petals being but little longer than the empalement, which is woolly, and cut into five obtuſe ſegments. The fruit is large, roundiſh, and of a fine red colour when ripe.

The tenth ſort grows naturally in North America, where it rarely riſes more than five feet high, ſending out a few upright branches, garniſhed with ſpear-ſhaped leaves whoſe edges are crenated, and their under ſide downy; the flowers are produced in ſmall bunches on the ſide, and at the extremity of the branches, which are ſucceeded by ſmall roundiſh fruit a little compreſſed, of a purple colour when ripe.

The eleventh ſort is an inhabitant of the ſame country with the former; this riſes ſix or eight feet high, ſending out ſide branches, garniſhed with oblong, oval, entire leaves, downy on their under ſide; the flowers are produced in ſmall bunches, ſtanding on long foot-ſtalks, having each five narrow white petals which are contracted at their baſe, and are ſucceeded by oval fruit of a blue colour when ripe, and

are by ſome of the inhabitants of America eaten in a ſcarcity of other ſorts of fruit, but are not very palatable.

All theſe ſorts are hardy enough to thrive in the open air in England, and ſome of them are very ornamental plants for gardens, where, during the ſeaſon of their flowering, they will make a fine appearance; and again, in autumn, when their fruit are ripe, they will afford an agreeable variety, and their fruit will be food for the deer and birds; ſo that if clumps of each ſort are planted in different parts of the garden, nothing can be more ornamental.

The American kinds are uſually propagated in the nurſeries, by grafting or budding them upon the common White Thorn, but the plants ſo propagated will never grow to half the ſize of thoſe which are propagated by ſeeds; ſo that thoſe plants ſhould always be choſen which have not been grafted or budded, but are upon their own roots.

But there are many who object to this method of raiſing the plants from ſeeds, on account of their ſeeds not growing the firſt year, as alſo from the tedioufneſs of the plant's growth after; but where a perſon can furniſh himſelf with the fruit in autumn, and take out their ſeeds ſoon after they are ripe, putting them into the ground immediately, the plants will come up the following ſpring, if they are kept clean from weeds, and in very dry weather ſupplied with water, they will make good progreſs; but if they are planted in the places where they are to remain, after two years growth from ſeeds, they will ſucceed much better than when the plants are of greater age; the ground ſhould be well trenched, and cleanſed from the roots of all bad weeds. The beſt time to tranſplant them is in autumn, when their leaves fall off; theſe ſhould be conſtantly kept clean from weeds, and if the ground between the plants is dug every winter, it will greatly encourage the growth of the plants, ſo that if they are cleaned three or four times in the ſummer, it will be ſufficient.

All the ſorts of Meſpilus and Cratægus will take, by budding or grafting upon each other; they will alſo take upon the Quince, or Pear ſtocks, and both theſe will take upon the Medlars; ſo that theſe have great affinity with each other, and might be with more propriety brought together under the ſame genus, than the Pear and Apple, which will not take upon each other; but although the Pear will take upon the White Thorn, yet it is not adviſeable to make uſe of theſe ſtocks, becauſe they generally cauſe the fruit to be ſmall and often to crack, and renders their fleſh ſtony; ſo unleſs it is the very ſoft melting kinds of Pears which are upon theſe ſtocks, the fruit will not be good.

METHONICA. See Gloriosa.

MEUM. See Athamanta.

MEZEREON. See Thymelæa.

MICROPUS. Lin. Gen. Plant. 892. Gnaphalodes. Tourn. Inſt. R. H. 439. tab. 261. Baſtard Cudweed.

The Characters are,

It hath hermaphrodite and female flowers, which are included in the ſame double empalement; there are ten hermaphrodite flowers which compoſe the diſk; theſe have one petal, are funnel-ſhaped, erect, and cut into five parts at the top, and have five ſhort briſtly ſtamina, terminated by cylindrical ſummits, with an obſolete germen ſupporting a ſhort ſlender ſtyle, crowned by an obſolete ſtigma. In the ſame empalement are five female flowers in the circumference, which have each an oval germen which is compreſſed, hid under the ſcales of the interior empalement, each having a ſtyle by their ſide, which is briſtly, turning toward the hermaphrodite flowers, crowned by ſlender acute-pointed ſtigmas, divided in two parts. The female flowers have each a ſingle oval ſeed ſucceeding them, included in the ſmall leaves of the empalement, but the hermaphrodite flowers are barren.

This genus of plants is ranged in the fourth ſection of Linnæus's nineteenth claſs, which includes thoſe plants whoſe flowers are compoſed of female fruitful flowers

flowers in the border, and barren hermaphrodite flowers in the middle.

We have but one SPECIES of this genus in the Engliſh gardens, viz.

MICROPUS (*Supinus*) caule proſtrato, foliis geminis. Hort. Upſal. 275. Prod. Leyd. 145. *Micropus, or Baſtard Gnaphalium, with a trailing ſtalk.* Gnaphalodes Luſitanica. Tourn. Inſt. R. H. 439. *Portugal Baſtard Cudweed.* This is an annual plant, which grows naturally in Portugal, near the ſea. The roots ſend out ſeveral trailing ſtalks about ſix or eight inches long, garniſhed with ſmall, oval, ſilvery leaves, whoſe baſe embrace the ſtalks. The flowers come out from the wings of the ſtalks in ſmall cluſters; they are very ſmall, white, and ſit in a double empalement, the interior being ſo large, as to almoſt hide the flowers. It flowers in June and July, and the ſeeds ripen in autumn; this is frequently preſerved in gardens for the beauty of its ſilvery leaves: if the ſeeds are ſown in autumn, or are permitted to ſcatter, the plants will come up in the ſpring, and will require no other care but to keep them clean from weeds, and thin them where they are too cloſe. When the ſeeds of this plant are ſown in the ſpring, they ſeldom grow the firſt year.

MICROSCOPE, a dioptrical inſtrument, by means of which very minute or ſmall objects are repreſented very large, and capable of being viewed very diſtinctly, according to the laws of refraction.

This inſtrument may be of ſingular uſe to a curious enquirer into the operation of vegetative nature, by viewing nicely the ſeveral minute veſſels and parts of vegetables, in order to diſcover their various uſes, and how the buſineſs of vegetation is carried on, as alſo to examine the minute parts of flowers, which are not obvious to the naked eye.

MILDEW is a diſeaſe that happens to plants, and is ſuppoſed to be cauſed by a dewy moiſture which falls on them, and continuing, for want of the ſun's heat to draw it up, and by its acrimony corrodes, gnaws, and ſpoils the inmoſt ſubſtance of the plant, and hinders the circulation of the nutritive ſap, upon which the leaves begin to fade, and the bloſſoms and fruit are much prejudiced: but Mildew is rather a concrete ſubſtance, which exſudes through the pores of the leaves.

However, what the gardeners commonly call Mildew, is an inſect, which is frequently found in great plenty, preying upon this exſudation.

Others ſay, That Mildew is a thick clammy vapour, exhaled in the ſpring and ſummer from plants, bloſſoms, and even the earth itſelf, in cloſe ſtill weather, where there is neither ſun enough to draw it upwards to any conſiderable height, nor wind of force ſtrong enough to diſperſe it, and that, hanging in the lower regions, when the cold of the evening comes on, it condenſes, and falls on plants, and with its thick clammy ſubſtance ſtops the pores, and by that means prevents perſpiration, and hinders the ſap from aſcending to nouriſh the flowers, ſhoots, &c.

Some ſay, That Mildew is a corroſive or nipping dew, proceeding from the vapours that are exhaled by the earth, which, being drawn up, and falling down again on the tender opening buds, infects them by its acrimony, and hinders the circulation of the nutritious ſap in the proper veſſels, upon which the leaves begin to fade, and the bloſſoms and fruit receive a very great prejudice.

There are others who make this obſervation, That the places moſt liable to Mildew are incloſed grounds and valleys, eſpecially thoſe that lie tending to the eaſt; and the reaſons that they give why thoſe grounds which lie from the horizon to the eaſt, are moſt ſubject to Mildew and blaſtings, may be by the ſun's attracting thoſe vapours towards it, after the manner that a great fire in a room draws the air to it; ſo the ſun having ſet theſe in motion, and not having ſtrength enough to draw them into the middle region, to form them into a cloud, he does yet draw them till he be below the horizon, and then theſe dews tend to the earth, from whence they were exhaled, and in motion to the weſt, do, as it were, fall upon the ground which lies eaſtward at right angles, and therefore is moſt offenſive to them.

But I take the true cauſe of the Mildew 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, which ſtops the pores of plants, and prevents their perſpiration, whereby the juices of the plants are concreted upon the ſurface of their leaves, which being of a ſweetiſh nature, inſects are incited thereto, where, finding proper nutriment, they depoſit their eggs, and multiply ſo faſt as to cover the whole ſurface of plants, and by their corroding the veſſels, prevent the motions of their ſap; and it is 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, whenever a tree has been greatly affected by this Mildew, it ſeldom recovers it in two or three years, and many times is never entirely clear from it after.

Others ſuppoſe, That the reaſon why valleys afford more moiſture than hills is, becauſe of the dew which is attracted from the earth and herbs as before, and that they afford more moiſture than hills (they ſay) is often ſeen by the miſts, which are more frequent on them than on hills; this being drawn by the ſun in the day time, and wanting wind to aſſiſt its motion, hangs in the lower region, and when the ſun ſets, it falls upon the plants with its thick clammy ſubſtance, and hinders the ſap of the plant or tree from aſcending to nouriſh its flowers or ſhoots, in thoſe whoſe bark is tender and young, and the pores open with the heat of the ſeaſon.

This dew has been obſerved in the great leaved Cherries, ſuch as the Black Heart, the White Heart, &c. to fall upon them at the top, juſt at the beginning of the Midſummer ſhoot, which has ſo ſtopped the ſhoot that it has ſhot forth in other places below, and on the top of theſe ſhoots there have been many ſmall flies feeding on this dew, which may plainly be ſeen and taſted on the leaves of Oak and Maple.

Some are of opinion, that Mildews and blights are the ſame thing; but others again, that Mildew is quite another thing than blaſtings. They ſay Mildews are cauſed from the condenſation of a fat and moiſt exhalation in a hot and dry ſummer, from the bloſſoms and vegetables, and alſo from the earth itſelf, which is condenſed into a fat glutinous matter by the coolneſs and ſerenity of the air, and falls down on the earth again, part of which reſts upon the leaves of the Oak and other trees, whoſe leaves are ſmooth, and for that reaſon do not ſo eaſily admit the moiſture into them, as the Elm, and other rougher leaves do.

Other parts of Mildew reſt upon the ears and ſtalks of Wheat, beſpotting the ſame with a different colour from what is natural, being of a glutinous ſubſtance, by the heat of the ſun, and it binds up ſo cloſe the tender ears of Wheat, that it prevents the growth, and occaſions it to be very light in the harveſt.

Some are of opinion, that Mildews are the principal food of bees, it being ſweet, and eaſily converted into honey.

MILIUM. Tourn. Inſt. R. H. 514. tab. 298. Lin. Gen. Plant. 73. [ſo called of Mille, *Lat.* a thouſand, becauſe of the multitude of its grains.] Millet.

The CHARACTERS are,

It is of the Corn or Graſs tribe, with one flower in each chaff, the chaff opening with two oval acute-pointed valves. The petal of the flower is bivalve, and ſmaller than the empalement. It hath three very ſhort hairy ſtamina, terminated by oblong ſummits, and a roundiſh germen with two hairy ſtyles, crowned by bruſh-ſhaped ſtigmas. The germen afterward turns to a roundiſh ſeed, covered by the petal of the flower.

This genus of plants is ranged in the ſecond ſection of Linnæus's third claſs, which includes thoſe plants whoſe flowers have three ſtamina and two ſtyles.

The SPECIES are,

1. MILIUM (*Panicum*) paniculâ laxâ flaccidâ, foliorum vaginis pubeſcentibus. *Millet with a looſe hanging panicle, and the ſheaths of the leaves hairy.* Milium ſemine luteo. C. B. P. 26. *Millet with a yellow ſeed.* Panicum Miliaceum. Lin. Sp.
2. MILIUM (*Sparſum*) paniculâ ſparsâ erectâ, glumis ariſtatis. *Millet with a looſe erect panicle, and bearded chaff.* Milium paniculâ amplâ erectâ ſparsâ. Houſt. MSS. *Millet with a large, erect, ſparſed panicle.*
3. MILIUM (*Effuſum*) floribus paniculatis diſperſis. Flor. Suec. 55. *Millet with diſperſed flowers.* Gramen ſylvaticum paniculâ miliaceâ ſparsâ. C. B. P. 3. *Wood Graſs with a ſparſed Millet-like panicle.*
4. MILIUM (*Confertum*) floribus paniculatis confertis. Prod. Leyd. 57. *Millet with panicles of flowers growing in cluſters.* Gramen paniculatum Alpinum, latifolium, paniculâ miliaceâ ſparsâ. Scheu. Gr. 34. *Broad-leaved, Alpine, Panicle Graſs, with a ſparſed Millet-like panicle.*

The firſt ſort grows naturally in India, but is now cultivated in many parts of Europe as an eſculent grain; this riſes with a Reed-like ſtalk from three to four feet high, and is channelled; at every joint there is one Reed-like leaf, which is joined on the top of the ſheath, which embraces and covers that joint of the ſtalk below the leaf; this ſheath is cloſely covered with ſoft hairs, but the leaf which is expanded has none; that has ſeveral ſmall longitudinal furrows running parallel to the midrib. The top of the ſtalk is terminated by a large looſe panicle, which hangs on one ſide, having a chaffy flower, which is ſucceeded by a ſmall round ſeed, which is often made into puddings, &c. There are two varieties of this, one with white, and the other hath black ſeeds, but do not differ in any other particular.

This plant is ranged under the title of Panicum, by Linnæus, but as it is more generally known by its former appellation, ſo I chuſe to continue it.

The ſecond ſort was diſcovered growing naturally at La Vera Cruz; this has a ſlenderer ſtalk than the former, which riſes about three feet high. The ſheaths which ſurround it have no hairs, but are channelled. The leaves are ſhorter than thoſe of the former. The panicle ſtands erect, and the chaff has ſhorter awns, or beards.

The other two ſorts grow naturally in woods, and are never cultivated in the fields, ſo do not require any farther deſcription.

The common Millet was originally brought from the Eaſtern 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. but is ſeldom cultivated in England in quantity, but by way of curioſity in ſmall gardens, for feeding of poultry; but the ſeeds generally ripen very well.

They 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.

MILLEFOLIUM. See ACHILLEA.

MILLERIA. Houſt. Gen. Nov. Martyn. Cent. 4. Lin. Gen. Plant. 881.

The CHARACTERS are,

This hath a compound flower, compoſed of ſeveral florets, and one half floret, which are included in one common empalement of one leaf, which is cut into three parts, and is permanent. The hermaphrodite florets have one tubulous petal, which is erect, and indented at the brim in five parts; theſe have five hairy ſtamina, with erect linear ſummits connected in their middle, to the ſide, and are the length of the petal, and an oblong narrow germen, ſupporting a ſlender ſtyle, crowned by two narrow, obtuſe, ſpreading ſtigmas; theſe florets are barren. The female half florets is of one leaf, ſtretched out on one ſide like a tongue, and is indented at the top; this hath a large three-cornered genmen, ſupporting a ſlender ſtyle, crowned by two long briſtly ſtigmas. The germen afterward turns to an oblong, three-cornered, obtuſe ſeed, incloſed in the empalement.

This genus of plants is ranged in the fourth ſection of Linnæus's nineteenth claſs, which includes thoſe plants with compound flowers, whoſe hermaphrodite flowers are barren, and the female flowers are fruitful.

The SPECIES are,

1. MILLERIA (*Quinqueflora*) foliis cordatis, pedunculis dichotomis. Hort. Cliff. 426. *Milleria with heart-ſhaped leaves, and forked ſtalks.* Milleria annua, erecta, major, foliis conjugatis, floribus ſpicatis luteis. Houſt. MSS. *Greater, upright, annual Milleria, with leaves growing by pairs, and yellow ſpiked flowers.*
2. MILLERIA (*Maculata*) foliis infimis cordato-ovatis acutis rugoſis, caulinis lanceolato-ovatis, acuminatis. *Milleria whoſe lower leaves are oval, heart-ſhaped, acute-pointed, and rough, and the upper ones oval, ſpear-ſhaped, and pointed.* Milleria annua erecta ramoſior, foliis maculatis, profundiùs ſerratis. Martyn. Dec. 5. *Upright, annual, branching Milleria, with ſpotted leaves deeply ſawed.*
3. MILLERIA (*Biflora*) foliis ovatis, pedunculis ſimpliciſſimis. Hort. Cliff. 425. *Milleria with oval leaves, and ſingle foot-ſtalks.* Milleria annua erecta minor, foliis parietariæ, floribus ex foliorum alis. Houſt. MSS. *Smaller, upright, annual Milleria, with a Pellitory leaf, and flowers proceeding from the wings of the leaves.*
4. MILLERIA (*Triflora*) foliis ovato-lanceolatis acuminatis trinerviis, pedunculis alaribus trifloris. *Milleria with oval, ſpear-ſhaped, acute-pointed leaves, having three veins, and foot-ſtalks proceeding from the wings of the leaves, with three flowers.* Milleria annua erecta, foliis parietariæ longioribus, floribus ex foliorum alis. Edit. Prior. *Annual erect Milleria, with a longer Pellitory leaf, and flowers proceeding from the wings of the leaves.*

The firſt ſort was diſcovered by the late Dr. William Houſtoun, at Campeachy, in the year 1731, from whence he ſent the ſeeds to Europe; and as the characters which diſtinguiſh the genus, were different from all the other genera of the claſs to which it belongs, ſo he conſtituted a new genus with this title.

This riſes with an herbaceous branching ſtalk from four to five or ſix feet high, garniſhed with heart-ſhaped leaves about four inches long, and three inches broad toward their baſe, drawing to a point at the end, which are ſlightly ſawed on their edges, having two veins on each ſide the midrib, which diverge and join to it near the baſe, meeting again at the point, which generally is oblique to the foot-ſtalk. The leaves are of a light green, and hairy, ſtanding oppoſite; their foot-ſtalks are about an inch long, and have a part of the leaf running on each ſide like wings. The ſtalks divide upward into forks, and the foot-ſtalks of the flowers come out at the diviſions; theſe branch again by pairs, and terminate in looſe ſpikes of yellow flowers, compoſed of four or five hermaphrodite florets, which are barren, and one female half floret, which is ſucceeded by a ſingle, oblong, angular ſeed, wrapped in the empalement of the flower. It flowers in July and Auguſt, and the ſeeds ripen in autumn.

The ſecond ſort was diſcovered by Mr. Robert Millar, at Campeachy, in the year 1734; this approaches near to the firſt ſort, but the ſtalks riſe ſix or ſeven feet high, branching out very wide. The leaves are ſeven inches long, and four inches and a half broad toward their baſe, ending in long acute points; they are deeper ſawed on their edges, and have ſeveral large

M I M

large black ſpots ſcattered over them; their ſurface is rougher, and they are of a darker green than thoſe of the firſt. The upper leaves are long and ſpear-ſhaped; the foot-ſtalks of the flowers branch out wider, and the ſpikes of flowers are ſhorter than thoſe of the firſt.

The third ſort was diſcovered at Campeachy by the late Dr. Houſtoun; this is alſo an annual plant, which riſes with an herbaceous ſtalk upward of two feet high, branching out at a ſmall diſtance from the root into three or four ſlender ſtalks, which are naked almoſt to the top, where they have two oval ſpear-ſhaped leaves placed oppoſite, which are about two inches long, and three quarters of an inch broad near their baſe, ending in points; they are hairy, and ſtand upon naked foot-ſtalks near an inch long, and are rough, having three longitudinal veins, and are ſlightly indented on their edges. The flowers come out at the foot-ſtalks of the leaves, in ſmall cluſters; the common empalement is compoſed of three orbicular leaves, which are compreſſed together; in each of theſe are ſituated two hermaphrodite florets, which are barren, and one female half floret, which is fruitful, being ſucceeded by a roundiſh angular ſeed, incloſed in the empalement. This flowers and perfects ſeeds about the ſame time with the former.

The fourth ſort was diſcovered by the late Mr. Robert Millar, at Campeachy; this is an annual plant, which riſes with an upright ſtalk three or four feet high, garniſhed the whole length with oval ſpear-ſhaped leaves near four inches long, and almoſt two broad near their baſe; they have three longitudinal veins, and toward the top there are two more which diverge from the midrib, but join again at the point. The upper ſide of the leaves are of a dark green and ſmooth, their under ſides are of a pale green, and indented on their edges. The flowers grow from the wings of the leaves in ſmall cluſters, having three hermaphrodite and one female flower in each, ſtanding upon ſhort foot-ſtalks; theſe have empalements like the former, but they are much ſmaller. This flowers and ſeeds later in the year than either of the former, ſo that unleſs the plants are brought forward in the ſpring, they will not ripen their ſeeds in England.

The ſeeds of theſe plants ſhould be ſown early in the ſpring, on a moderate hot-bed; and when the plants are come up about two inches high, they ſhould be each tranſplanted into a ſeparate pot filled with light rich earth, and plunged into a moderate hot-bed of tanners bark, being careful to ſhade them from the ſun until they have taken root, as alſo to water them frequently. After the plants are rooted, they ſhould have a large ſhare of free air admitted to them, by raiſing of the glaſſes of the hot-bed every day when the weather is warm, and in hot weather muſt be duly watered, for they are very thirſty plants. With this management, the plants will, in a month after tranſplanting, riſe to a conſiderable height; therefore they ſhould be ſhifted into larger pots, and placed in the ſtove, plunging them into the bark-bed, where they may have room to grow, eſpecially the firſt and ſecond ſorts, which uſually grow high and branch out where they are well managed. But the other ſorts ſeldom riſe above three or four feet high, and do not ſpread their branches very far, ſo theſe may be allowed leſs room.

In the middle of July theſe plants will begin to flower, and the ſeeds will be ripe about a month or ſix weeks after; therefore they muſt be gathered when they begin to change of a dark brown colour, otherwiſe they will ſoon fall off, eſpecially thoſe of the two large kinds, which will drop on the leaſt touch when they are ripe. Theſe plants will continue flowering till Michaelmas, or later, if the ſeaſon proves favourable; but when the cold of the autumn comes on, they will ſoon decay.

MIMOSA. Tourn. Inſt. R. H. 605. tab. 375. Lin. Gen. Plant. 597. The Senſitive Plant.

The CHARACTERS are,

The empalement of the flower is ſmall, of one leaf, indented in five parts at the top: the flower has one funnel-ſhaped petal, which hath five points. It hath many long hairy ſtamina, terminated by proſtrate ſummits, and an oblong germen ſupporting a ſhort ſlender ſtyle, crowned by a truncated ſtigma. The germen afterward turns to a long jointed pod with ſeveral tranſverſe partitions, incloſing compreſſed ſeeds of various forms, and there are many male, female, and hermaphrodite flowers mixed in ſome of the ſpecies.

This genus of plants Dr. Linnæus has joined to the Acacia of Tournefort, and the Inga of Plumier, and places it in the firſt ſection of his twenty-third claſs, which includes thoſe plants which have male, female, and hermaphrodite flowers on the ſame plant, which have many ſtamina and one ſtyle.

The SPECIES are,

1. MIMOSA (*Punctata*) inermis, foliis bipinnatis, ſpicis decandris, inferioribus caſtratis corollatis caule erecto tereti. Lin. Sp. 1502. *Senſitive Plant without ſpines, double winged leaves, ſpikes having ten ſtamina, and the lower without ſtamina, and an erect taper ſtalk.* Mimoſa Jamaicenſis. Zan. Hiſt. 144. *Senſitive Plant of Jamaica.*
2. MIMOSA (*Plena*) inermis, foliis bipinnatis, ſpicis pentandris, inferioribus plenis. Hort. Upſal. 145. *Smooth Senſitive Plant with double winged leaves, the ſpikes with five ſtamina, and the under one double.* Mimoſa non ſpinoſa, paluſtris & herbacea, procumbens, flore luteo pleno. Houſt. MSS. *Herbaceous, marſh, trailing Senſitive Plant without ſpines, and a double yellow flower.*
3. MIMOSA (*Pernambucana*) inermis decumbens, foliis bipinnatis, ſpicis cernuis, pentandris, inferioribus caſtratis. Hort. Upſal. 145. *Smooth Senſitive Plant with inclining ſtalks, double winged leaves, nodding ſpikes of flowers having five ſtamina, but the under ones without any.* Mimoſa ſpuria de Pernambuque, dicta mimoſa Italica. Zan. Hiſt. 151. *Spurious Senſitive Plant of Pernambuque, called Italian Senſitive Plant.*
4. MIMOSA (*Pudica*) aculeata, foliis pinnatis. *Prickly Senſitive Plant with winged leaves.* Mimoſa herbacea procumbens, & ſpinoſa, caule tereti & villoſo, ſiliquis articulatis. Houſt. MSS. *Trailing herbaceous Senſitive Plant having ſpines, with a taper and hairy ſtalk, and jointed pods.*
5. MIMOSA (*Pudica*) foliis ſubdigitatis pinnatis, caule aculeata, hiſpido. Lin. Sp. 1501. *Senſitive Plant with winged-handed leaves, a prickly declining ſtalk, and ſmall pods growing in cluſters, with prickly coverings.* Mimoſa humilis fruteſcens & ſpinoſa, ſiliquis conglobatis. Plum. Cat. *Low ſhrubby and prickly Senſitive Plant with cluſtered pods, commonly called the Humble Plant.*
6. MIMOSA (*Quadrivalvis*) aculeata, foliis bipinnatis, caule quadrangulo, aculeis recurvis, leguminibus quadrivalvibus. Lin. Sp. Plant. 1508. *Prickly Senſitive Plant with double winged leaves, a four-cornered ſtalk, recurved ſpines, and pods having four valves.* Mimoſa herbacea procumbens, & ſpinoſa, caule quadrangulo, ſiliquis quadrivalvibus. Houſt. MSS. *Trailing and prickly herbaceous Senſitive Plant, with a quadrangular ſtalk, and pods having four valves.*
7. MIMOSA (*Senſitiva*) foliis conjugatis pinnatis, partialibus bijugis, intimis minimis, caule aculeato. Lin. Sp. Plant. 1501. *Senſitive Plant with conjugated winged leaves, whoſe wings have two pair of lobes, the inner of which are the leaſt, and a prickly ſtalk.* Mimoſa ſpinoſa prima, ſive Braſiliana latifolia, ſiliquis, radiatis. Breyn. Cent. 1. 31. *The firſt prickly, or broad-leaved Senſitive Plant of the Brazils, with radiated pods.*
8. MIMOSA (*Aſperata*) caule fruticoſo, foliis bipinnatis, aculeatis, aculeis geminis, ſiliquis radiatis hirſutis. Fig. Plant. tab. 183. fol. 3. *Senſitive Plant with a ſhrubby ſtalk, double winged prickly leaves, whoſe ſpines grow in pairs, and hairy radiated pods.* Æſchynomene ſpinoſa quarta, ſive foliolis Acaciæ anguſtioribus, frondibus validiſſimas ſpinas habentibus. Breyn. Cent. 1. 43. *The fourth prickly Senſitive Plant,*

Plant, with narrow Acacia leaves, armed with ſtrong ſpines.

9. Mimosa (*Viva*) inermis, foliis conjugatis pinnatis, partialibus quadrijugis ſubrotundis, caule inermi herbaceo. Lin. Sp. 1500. *Senſitive Plant with a creeping, herbaceous, unarmed ſtalk, conjugated winged leaves, and globular flowers proceeding from the wings of the ſtalks.* Mimoſa herbacea, non ſpinoſa, minima, repens. Sloan. Hiſt. Jam. 2. p. 58. *The leaſt creeping herbaceous Senſitive Plant, having no ſpines.*

10. Mimosa (*Nilotica*) ſpinis ſtipularibus patentibus, foliis bipinnatis, partialibus extimis glandula interſtinctis, ſpicis globoſis pedunculatis. Haſſelq. It. 475. *Acacia with double winged leaves, and globular ſpikes of flowers having foot-ſtalks.* Acacia Ægyptica. Hern. Mex. 866. *True Egyptian Acacia.*

11. Mimosa (*Farneſiana*) ſpinis ſtipularibus diſtinctis, foliis bipinnatis, partialibus octojugis, ſpicis globoſis ſeſſilibus. Hort. Upſal. 146. Acacia Indica foliis, ſcorpioidis leguminoſæ, ſiliquis fuſcis teretibus reſinoſis. H. L. *Indian Acacia with taper reſinous pods.*

12. Mimosa (*Cornigera*) ſpinis ſtipularibus geminis connatis, foliis bipinnatis. Hort. Cliff. 208. *Acacia with two ſpines joined at their baſe, and doubly winged leaves.* Acacia ſimilis Mexiocana, ſpinis cornu ſimilibus. *The great horned Acacia.*

13. Mimosa (*Unguis cati*) ſpinoſa, foliis bigeminis obtuſis. Hort. Cliff. 207. *Prickly Acacia with four obtuſe leaves.* Acacia quodammodo accedens, ſive Ceratia & Acacia media Jamaicenſis ſpinoſa, bigeminatis foliis, floſculis ſtamineis, atronitente fructu, ſiliquis intortis. Pluk. Phyt. *Acacia with branching leaves and twiſted pods.*

14. Mimosa (*Arborea*) inermis, foliis bipinnatis, pinnis dimidiatis acutis, caule arboreo. Lin. Sp. 1503. *Tree Acacia without thorns, doubly winged leaves, whoſe pinnæ are acute.* Acacia arborea maxima non ſpinoſo, pinnis majoribus flore albo, ſiliqua contorta coccinea verticoſa elegantiſſima. Sloan. Jam. 157.

15. Mimosa (*Purpurea*) inermis, foliis conjugatis pinnatis, foliis intimis minoribus. Lin. Sp. 1500. *Purple Acacia without ſpines, conjugated winged leaves which are ſmalleſt below.* Acacia Americana fruteſcens non aculeata, flore purpuraſcente. Plum. Cat. *Shrubby American Acacia with thorns, and a purpliſh flower.*

16. Mimosa (*Houſtoniana*) inermis, foliis bipinnatis glabris, pinnis tenuiſſimis, ſiliquis latis villoſis. Fig. Pl. 5. *Acacia without thorns, doubly winged ſmooth leaves, whoſe pinnæ are very narrow, and broad hairy pods.* Acacia Americana, non ſpinoſa, flore purpureo, ſtaminibus longiſſimis, ſiliquis planis villoſis, pinnis foliorum tenuiſſimis. Houſt. MSS. *American Acacia without thorns, having purple flowers, with very long filaments, flat hairy pods, and very narrow leaves.*

17. Mimosa (*Lutea*) aculeata, foliis bipinnatis glabris, floribus globoſis pedunculatis, aculeis longiſſimis. *Prickly Acacia with ſmooth doubly winged leaves, globular flowers having foot-ſtalks, and very long ſpines.* Acacia ſpinoſa, foliorum pinnis tenuiſſimis glabris, floribus globoſis lutea, ſpinis longiſſimis. Houſt. MSS. *Prickly Acacia with very narrow ſmooth leaves, round yellow flowers, and very long thorns.*

18. Mimosa (*Glauca*) inermis, foliis bipinnatis, partialibus ſejugis, pinnis plurimis, glandula inter infima. Lin. Sp. Plant. 1502. *Acacia without thorns, doubly winged leaves, whoſe wings are ſeparated, and have ſmall glands between them.* Acacia non ſpinoſa, flore albo, foliorum pinnis latiuſculis glabris, ſiliquis longis planis. Houſt. MSS. *White flowering Acacia without thorns, having broad ſmooth leaves, and long flat pods.*

19. Mimosa (*Anguſtiſſima*) inermis, foliis bipinnatis, pinnis anguſtiſſimis glabris, leguminibus tumidis. *Narrow-leaved unarmed Acacia, with doubly winged ſmooth leaves, and jointed pods.* Acacia non ſpinoſa, floribus globoſis albis foliorum pinnis tenuiſſimis glabris, ſiliquis ad ſingula grana tumidis. Houſt. MSS. *Acacia without thorns, having round white flowers, with very narrow ſmooth leaves, and jointed pods.*

20. Mimosa (*Campeachiana*) ſpinoſa, foliis bipinnatis, pinnis anguſtis, ſpinis ſingulis cornu bovinum per longitudinem fiſſum referentibus. *Acacia with doubly winged leaves having narrow pinnæ, and ſingle ſpines like ox's horns ſplit their length.* Acacia ſpinoſa tenuifolia, ſpinis ſingulis cornu bovinum per longitudinem fiſſum referentibus. Houſt. Cat. *Acacia with ſingle thorns ſhaped like thoſe of an ox's horn, and ſeem as if ſplit thro' their length.*

21. Mimosa (*Cinerea*) ſpinis ſolitariis, foliis bipinnatis, floribus ſpicatis. Flor. Zeyl. 215. *Acacia with ſingle ſpines, doubly winged leaves, and ſpiked flowers.* Acacia ſpinoſa tenuifolia, ſiliquis latis, ſpinis minimis recurvis ſolitariis. Houſt. Cat. *Prickly narrow-leaved Acacia with broad pods, and ſmall recurved ſpines, which come out ſingle.*

22. Mimosa (*Latifolia*) inermis, foliis conjugatis, pinnis terminalibus oppoſitis, lateralibus alternis. Lin. Sp. 1499. *Broad-leaved Acacia without thorns, conjugated leaves whoſe upper pinnæ are oppoſite, but the ſide ones are alternate.* Acacia non ſpinoſa, juglandis folio, flore purpuraſcente. Plum. Sp. 17. *Acacia without thorns, Walnut-tree leaves, and a purple flower.*

23. Mimosa (*Circinalis*) aculeata, foliis conjugatis pinnatis, pinnis æqualibus, ſtipulis ſpinoſis. Lin. Sp. 1499. *Prickly Acacia with conjugated winged leaves, which are equal, and prickly ſtipulæ.* Acacia foliis amplioribus, ſiliquis circinatis. Plum. Sp. 17. *Acacia with broad leaves and twiſted pods.*

24. Mimosa (*Fagifolia*) inermis, foliis pinnatis bijugis petiolo marginato. Lin. Sp. 1498. *Broad-leaved Acacia without ſpines, whoſe wings have four lobes, and running foot-ſtalks.* Arbor ſiliquoſa, faginis foliis, Americana, floribus comoſis. Pluk. Phyt. tab. 141. fol. 2. The firſt ſort grows naturally in moſt of the iſlands in the Weſt-Indies, and it has been found growing in ſome warm moiſt ſpots, as far north as Virginia. This riſes with upright branching ſtalks ſix or ſeven feet high, which become ligneous toward the root, but are not perennial (at leaſt they are not ſo here in any ſituation, the plants always decaying in winter;) theſe are ſmooth, and garniſhed with double winged leaves, compoſed of four or five pair of long winged lobes, which have about twenty pair of ſmall leaves ranged along the midrib; they are ſmooth and rounded at their points, of a full green on their upper ſide, but pale on their under. Theſe ſmall leaves contract themſelves together on their being touched, but the foot-ſtalks do not decline at the ſame time, as thoſe do which are titled Humble Plants, ſo this is called the Senſitive Plant by way of diſtinction. The flowers are produced upon long foot-ſtalks, which come out from the wings of the leaves, and are diſpoſed in globular heads which nod downward; they are yellow, and all thoſe which have petals have ten ſtamina in each, but thoſe ſituated round the border have neither petals or ſtamina; thoſe on the upper part of the ſpike are ſucceeded by pods an inch and a half long, and a quarter of an inch broad, which change to a dark brown when ripe, incloſing three or four compreſſed, ſhining, black ſeeds.

The ſecond ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz, growing in ſtagnant waters, where the ſtalks were very broad and flat, and floated on the ſurface, in the ſame way as the pond weeds do; but in thoſe places where the water was dried up the ſtalks grew upright and were round, which is always the caſe when the plants are cultivated in gardens, ſo that they might eaſily paſs for different plants, to thoſe who never ſaw them growing in both ſituations. When this ſort is cultivated in gardens, it has great reſemblance to the firſt, but the ſtalks of this never grow ſo erect, the wings of the leaves are longer, and ſtand more horizontal; the heads of flowers are much larger, the ſtamina are longer, and the flowers on the under ſide of the ſpike which have no ſtamina are double: the pods of this ſort are ſhorter, and much broader than thoſe of the firſt ſort. This is alſo an annual plant in this country. This ſort was ſince diſcovered by a friend of mine, growing naturally

M I M

naturally in a marſhy ſpot of land in the iſland of Barbuda, from whence he ſent me the ſeeds, with a large branch of the plant, in a glaſs filled with a lixivium, which preſerved it in the ſtate it was gathered, with the flowers and pods upon it.

The third ſort grows naturally in all the iſlands of the Weſt-Indies, where it is titled the ſlothful Senſitive Plant, becauſe the leaves do not contract on their being touched. The ſtalks of this ſort ſeldom riſe more than two feet and a half high, they are ſmooth, and garniſhed with double-winged leaves, compoſed of three or four pair of wings which are ſhorter, and the ſmall leaves are much narrower than thoſe of the two former ſorts; the heads of flowers are ſmaller, and the pods are longer and narrower than thoſe of the other. This ſort will live through the winter in a moderate warm air.

The fourth ſort was diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz. This hath ligneous ſtalks which decline to the ground, ſpreading out two or three feet from the root, and ſend out ſeveral ſide branches, which are armed with ſhort yellowiſh ſpines under the foot-ſtalks of the leaves, and are their whole length cloſely covered with briſtly ſtinging hairs; the foot-ſtalks of the leaves are three inches long, and at the top ſuſtain four ſingle winged leaves, whoſe baſe meet in a point, but ſpread above like the fingers of an open hand. Theſe wings are about three inches long, and are cloſely garniſhed with ſmall narrow lobes, ſet by pairs along the midrib, which is alſo covered on the under ſide with the like briſtly hairs as the ſtalk. The flowers come out from the wings of the leaves upon pretty long foot-ſtalks; they are collected into globular heads, and are of a pale yellowiſh colour; theſe are ſucceeded by ſmall jointed pods, containing two or three ſhining black ſeeds.

The fifth ſort is the moſt common of any in the iſlands of the Weſt-Indies, as alſo in the Engliſh gardens; the ſeeds of this ſort are frequently ſold in the ſeed-ſhops, by the title of Humble Plant. The roots of this are compoſed of a great number of hairy fibres, which mat cloſe together, from which come out ſeveral ligneous ſtalks which naturally decline toward the ground, unleſs they are ſupported; they are armed with ſhort recurved ſpines, and garniſhed with winged leaves, compoſed of four, and ſometimes five wings, whoſe baſe join at a point, where they are inſerted to the foot-ſtalk, ſpreading upward like the fingers of a hand; theſe wings are ſhorter than thoſe of the former ſort, and the ſtalks are not hairy. The flowers come out from the wings of the ſtalks, upon ſhort foot-ſtalks; they are collected in ſmall globular heads, are yellow, and are ſucceeded by ſhort, flat, jointed pods, which have two or three orbicular, bordered, compreſſed ſeeds in each: theſe pods are in cloſe cluſters, almoſt covered with ſtinging hairy covers.

The ſixth ſort grows naturally at La Vera Cruz, from whence the late Dr. Houſtoun ſent the ſeeds. This hath a perennial creeping root, which ſpreads and multiplies greatly in the ſands, where it grows wild; the ſtalks are ſlender, and have four acute angles, armed with ſhort recurved ſpines pretty cloſely; the leaves ſtand upon long prickly foot-ſtalks, which are thinly placed on the branches; they are compoſed of two pair of wings, ſtanding about an inch aſunder; the wings are ſhort, and the ſmall leaves are narrow, and not placed ſo cloſe together, as in many of the other ſpecies. The foot-ſtalks of the flowers come out from the wings of the leaves, ſuſtaining a ſmall globular head of purple flowers; theſe are ſucceeded by four-cornered pods about two inches long, which have four cells, opening with four valves, containing ſeveral angular ſeeds in each.

This ſort ſpreads ſo much at the root, as to render it not ſo productive of flowers and ſeeds as moſt of the others; and the plants which are propagated by parting of the roots, are always weak, ſo that the beſt way is to propagate them by ſeeds, when they can be obtained. This is one of the ſorts, whoſe foot-ſtalks fall on being touched.

The ſeventh ſort grows naturally at La Vera Cruz, from whence the late Dr. Houſtoun ſent the ſeeds. This riſes with a ſlender ligneous ſtalk ſeven or eight feet high, armed with ſhort recurved thorns. The leaves grow upon long foot-ſtalks which are prickly, each ſuſtaining two pair of wings; the exterior pair have two lobes which join at their baſe, and are rounded on their outſide, but ſtrait on their inner edges, very much ſhaped like a pair of thoſe ſhears uſed for ſhearing of ſheep; theſe two outer pair of lobes are much larger than the inner; they are almoſt two inches long, and one broad in the middle. From the place where theſe are inſerted to the ſtalk, come out ſmall branches which have three or four globular heads of pale purple flowers coming out from the ſide, upon ſhort foot-ſtalks, and the principal ſtalk has many of thoſe heads of flowers on the upper part for more than a foot in length; and this, as alſo the branches, are terminated by the like heads of flowers: theſe are ſucceeded by broad, flat, jointed pods, which open with two valves, ſome having but one, others two, and ſome have three orbicular compreſſed ſeeds. The leaves of this ſort move but ſlowly when they are touched, but the foot-ſtalks fall when they are preſſed pretty hard.

The eighth ſort was alſo found by the ſame gentleman, growing naturally at La Vera Cruz. This hath a ſhrubby erect ſtalk about five feet high, which is hairy, and armed with ſhort, broad, ſtrong thorns, which are white, ſtanding on each ſide ſometimes almoſt oppoſite, and at others alternately. The leaves are compoſed of five or ſix pair of wings, which are ranged oppoſite along a ſtrong midrib, and between each pair are placed two ſhort ſtrong ſpines, pointing out each way. The ſmall leaves which compoſe theſe wings are extremely narrow, and ſtand very cloſe to each other. Toward the upper part of the ſtalk, the flowers are produced from the ſides, upon ſhort foot-ſtalks; they are collected into globular heads, and are of a bright purple colour; the ſtalks are alſo terminated by ſmaller heads of the like flowers. Theſe are ſucceeded by flat jointed pods about two inches long, and a quarter of an inch broad, which ſpread open like rays, there being commonly five or ſix of theſe joined together at their baſe to the foot-ſtalk. Theſe pods ſeparate at each articulation, leaving the two ſide membranes or borders ſtanding; and the ſeeds which are compreſſed and ſquare, drop out from the joints of the pods; theſe pods are hairy at firſt, but as they ripen become ſmooth.

This is a perennial plant, which may be preſerved through the winter in a warm ſtove, by which method the ſeeds may be obtained, for they ſeldom flower the firſt year. The foot-ſtalks of this ſort do not fall on being touched, but the ſmall leaves on the wings cloſe up.

The ninth ſort grows naturally in Jamaica; this hath trailing herbaceous ſtalks, which put out roots at every joint, which faſten in the ground and ſpread to a great diſtance, as they will alſo do here, when placed in a bed of tanners bark. I have had a ſingle plant in one ſummer, which has ſpread near three feet ſquare, whoſe branches were cloſely joined, ſo as to cover the ſurface of the bed; but when they are thus permitted to grow, they ſeldom produce flowers. Theſe ſtalks have no thorns, but are garniſhed with winged leaves compoſed of two pair of ſhort wings, whoſe ſmall leaves or lobes are narrow; theſe ſtand upon ſhort foot-ſtalks, which are ſmooth. The leaves of this ſort contract and fall down upon the leaſt touch, ſo that where the plant is extended to a diſtance, a perſon may draw any figure with a ſtick upon the leaves, which will be very viſible till the leaves recover again. The flowers come out from the wings of the leaves, upon naked foot-ſtalks about an inch in length; they are of a pale yellowiſh colour, and are collected into ſmall globular heads; theſe are ſucceeded by ſhort, flat, jointed

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pods, containing three or four compreſſed roundiſh ſeeds.

Theſe plants are all of them propagated by ſeeds, which ſhould be ſown early in the ſpring, upon a good hot-bed. If the ſeeds are good, the plants will appear in a fortnight or three weeks, when they will require to be treated with care, for they muſt not have much wet till they have acquired ſtrength; nor ſhould they be drawn too weak, ſo that freſh air ſhould be admitted to them at all times when the air is temperate. In about a fortnight or three weeks after the plants come up, they will be fit to tranſplant, eſpecially if the bed in which they were ſown, continues in a proper degree of heat; then there ſhould be a freſh hot-bed prepared to receive them, which ſhould be made a week before the plants are removed into it, that the violent heat may be abated before the earth is laid upon the dung, and the earth ſhould have time to warm before the plants are planted into it. Then the plants muſt be carefully raiſed up from the bed to preſerve the roots entire, and immediately planted in the new bed, at about three or four inches diſtance, preſſing the earth gently to their roots; then they ſhould be gently ſprinkled over with water, to ſettle the earth to their roots; after this they muſt be ſhaded from the ſun till they have taken new root, and the glaſſes of the hot-bed ſhould be covered every night to keep up the heat of the bed. When the plants are eſtabliſhed in their new bed, they muſt have frequent, but gentle waterings; and every day they muſt have free air admitted to them, in proportion to the warmth of the ſeaſon, to prevent their being drawn up weak; but they muſt be conſtantly kept in a moderate degree of heat, otherwiſe they will not thrive. In about a month after the plant will be ſtrong enough to remove again, when they ſhould be carefully taken up, preſerving as much earth to their roots as poſſible, and each planted in a ſeparate ſmall pot, filled with good kitchen-garden earth, and plunged into a hot-bed of tan, carefully ſhading them from the ſun till they have taken new root; then they muſt be treated in the ſame manner as other tender exotic plants from very warm countries.

The ſorts which grow upright and tall, will ſoon riſe high enough to reach the glaſſes of the hot-bed, eſpecially if they thrive well; therefore they ſhould be ſhifted into larger pots, and removed into the ſtove, and if they are plunged into the tan-bed there, it will greatly forward them. The firſt ſort will often flower here, if the plants are raiſed early in the ſpring, and brought forward by their removal from one hot-bed to another; and two or three times I have had their ſeeds ripen, but this can only be expected in very warm ſeaſons.

The perennial ſorts will live through the winter, if they are preſerved in a warm ſtove, and the following ſummer they will produce flowers and ripen their ſeeds. Some of theſe may be propagated by laying down their branches, which will put out roots, and then may be ſeparated from the old plants; and I have ſometimes propagated them by cuttings, but the plants which riſe from ſeeds are preferable to either of theſe.

There is no particular management which theſe plants require, different from others of the ſame warm countries; the great care muſt be to keep them in a proper temperature of heat, and not to give them too much water, eſpecially in cool weather; nor ſhould they be kept too dry, for many of the ſorts require frequent waterings, as they naturally grow in moiſt places. There ſhould alſo be care taken that they do not root into the tan-bed, for they ſoon put out their roots through the holes at the bottom of the pots, which, when they ſtrike into the tan, will cauſe the plants to grow very luxuriant; but when they are removed, and theſe roots are cut or broken off, the plants ſeldom ſurvive it; therefore the pots ſhould be frequently drawn out of the tan, and if any of the roots are beginning to get through the holes at the bottom, they ſhould be cut off cloſe; and when the roots are very cloſely matted together, they ſhould be turned out of the pots, and pared round to reduce them, and then potted again, either in pots of the ſame ſize, or if the plants require, in pots one ſize larger; but they muſt not be over-potted, for then the plants will not thrive.

Some of thoſe ſorts whoſe ſtalks ſpread near the ground, may be turned out of the pots in the middle of June, and planted in a very warm border, where, if they are covered with bell or hand-glaſſes, they will live through the ſummer; but theſe will not grow very large, and upon the approach of cold in the autumn, they are ſoon deſtroyed: however, thoſe who have not conveniency of ſtoves or tan-beds, may raiſe the plants on common hot-beds in the ſpring; and when they have acquired ſtrength, they may be treated in this manner, whereby they will have the pleaſure of theſe plants in ſummer, though not in ſo great perfection, as thoſe who have the advantages beforementioned: but theſe plants will not thrive in the open air in this country, nor will they retain their ſenſibility when they are fully expoſed to the air.

It would be to little purpoſe to trouble the reader with the ſeveral idle ſtories related of theſe plants by travellers, nor to inſert what has been ſaid by others, who have attempted to account for the motion of the leaves of theſe plants on their being touched, ſince there has not been any thing wrote on this ſubject, worthy of being noticed, that I have yet ſeen; I ſhall therefore only mention what I have myſelf obſerved in theſe plants, for more than forty years that I have cultivated them.

The firſt is, that they are more or leſs ſuſceptible of the touch or preſſure, according to the warmth of the air in which they grow; for thoſe plants which are kept in a warm ſtove, contract their leaves immediately on being touched, either with the hand, a ſtick, or any other thing, or by the wind blowing upon them: ſome of the ſorts only contract their ſmall leaves, which are placed along the midrib; others not only contract their ſmall leaves, but the foot-ſtalk alſo declines downward on being touched: the firſt are called Senſitive, and the ſecond Humble Plants; but when theſe plants are placed in a cooler ſituation, they do not move ſo ſoon, nor contract ſo cloſely, as thoſe which are in a greater warmth; and thoſe which are entirely expoſed to the open air, have very little motion, but remain in one ſtate, neither expanded nor cloſed, but between both, eſpecially in cool weather; nor do theſe ſhut themſelves at night, as thoſe do which are in a warm temperature of air.

The ſecond is, that it is not the light which cauſes them to expand, as ſome have affirmed, who have had no experience of theſe things; for in the longeſt days of ſummer, they are generally contracted by five or ſix in the evening, when the ſun remains above the horizon two or three hours longer; and although the glaſſes of the ſtove in which they are placed, is covered cloſe with ſhutters to exclude the light in the middle of the day, yet if the air of the ſtove is warm, the leaves of the plants will continue fully expanded, as I have ſeveral times obſerved. Nor do theſe plants continue ſhut till the ſun riſes in the morning, for I have frequently found their leaves fully expanded by the break of day in the morning; ſo that it is plain the light is not the cauſe of their expanſion, nor the want of it that of their contraction.

I have alſo obſerved, that thoſe plants which are placed in the greateſt warmth in winter, continue vigorous, and retain their faculty of contracting on being touched; but thoſe which are in a moderate warmth, have little or no motion.

When any of the upper leaves of theſe plants are touched, if they fall down and touch thoſe which are below them, it will occaſion their contracting and falling, ſo that by one touching another, they will continue falling for ſome time. When the air of the ſtove in which theſe plants ſtand, is in a proper temperature of warmth, the plants will recover themſelves, and their leaves will be fully expanded in about eight

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or ten minutes. I have frequently watched them as they have been recovering, and have always found it has been by a vibratory motion, like the index of a clock.

Some of the ſorts are ſo ſuſceptible of the touch, that the ſmalleſt drop of water falling on their leaves will cauſe them to contract, but others do not move without a much greater preſſure.

The roots of all the ſorts have a very ſtrong diſagreeable odour, almoſt like that of a common ſewer. I have met with ſome accounts of theſe plants, in which it is mentioned, that the leaves and branches have a poiſonous quality, and that the Indians extract a poiſon from them, which kills by ſlow degrees, and that the root of the plant is the only remedy to expel it; but how far this is true I cannot ſay, having never made any experiments on the qualities of theſe plants; but if theſe plants are endowed with ſo deadly a quality as related, this ſenſibility with which they are endued, may be deſigned by providence to caution perſons from being too free with it; and as many of them are ſtrongly armed with thorns, ſo that is a guard againſt their being eaten by animals; for in all the enquiries which I have made of thoſe perſons who have reſided in the countries where they naturally grow, I could never learn that any animal will browſe upon them.

Theſe plants are all of them natives of America, ſo were unknown to the other parts of the world till that was diſcovered, for I have not heard of any of them being found in any other country: and a few years ago I ſent ſome of the ſeeds of theſe plants to China, which ſucceeded, and occaſioned great admiration in all who ſaw the plants.

The Acacias are ſo nearly allied to the Mimoſas in their characters, that Linnæus has joined them in the ſame genus; and as his ſyſtem is now generally followed, ſo in compliance with that I have done the ſame.

The tenth ſort of Acacia is the tree from whence the true Succus Acaciæ is taken, and the Gum Arabic exſudes from the branches of the ſame; which, though mentioned as a native of Egypt, yet it is alſo found in divers parts of America, from whence the ſeed of this tree have been ſent into England, and there raiſed in ſeveral gardens near London.

This tree arrives to a large ſize in the countries where it grows, but in England is rarely ſeen more than eight or ten feet high. It frequently flowers in autumn, but never produces any ſeeds.

The eleventh ſort is the moſt common kind in Jamaica and Barbadoes, and the other warm parts of America; and, for the ſweetneſs of its flowers, has been diſperſed through moſt parts of Europe; and though a native of the warmer parts of the Indies, it hath been made familiar to the Italian gardens, and is cultivated likewiſe in great plenty in Portugal and Spain.

The Italian gardeners, who bring over Orange-trees, &c. every year, generally bring alſo many young plants of this ſort to England, under the title of Gazia; but as they are too tender to live in a common green-houſe in England, ſo few of thoſe which are purchaſed of them ſucceed.

I have had ſome plants of this ſort upwards of ſixteen feet high, which have produced great numbers of flowers in July and Auguſt, but theſe were kept in a ſtove in winter, and in glaſs-caſes in ſummer, to ſcreen them from wet and the cold, for they will not flower in the open air in this country. The flowers are of a bright yellow colour, and ſmell ſweet; in the Weſt-Indies it is called Sponge-tree.

The twelfth ſort is at preſent very rare in England, and only to be found in ſome curious gardens. This tree produces its ſpines by pairs, which are extreme large and crooked, and of a whitiſh colour; but I do not remember ever to have ſeen this flower.

In England, from the dried ſamples, however, which I have received from Campeachy, with many flowers upon them, there appears but little beauty in them; nor do the trees in their native ſoil make a better appearance, their branches always growing deformed, and being but thinly garniſhed with leaves, when in their greateſt vigour; but for ſeveral months they are deſtitute of leaves, ſo that the only thing remarkable in this tree is, the uncommon wreathed ſpines with which the trunk and branches are fully beſet. Theſe have the reſemblance of animal horns, and are variouſly twiſted and contorted.

The twenty-third ſort was brought from the Bahama Iſlands by Mr. Cateſby, anno 1726. The ſeeds of this plant (which are flat, and one half of a beautiful red colour, the other half of a deep black) grow in long twiſted pods, opening when the ſeeds are ripe, on one ſide, and letting them out, which hanging by a ſmall thread for ſome time out of the pods, make a very agreeable appearance; the leaves of this tree branch out and divide into many ramifications: the lobes are roundiſh, and placed in a very regular order. The flowers have not as yet appeared in England, but from a painting done from the plant in the country, they ſeem to be very beautiful.

The thirteenth ſort was brought from Jamaica, and is growing in the phyſic-garden at Chelſea; this hath four large lobes to each leaf; the ſpines are ſhort, ſtiff, and crooked, and the ſeeds grow in twiſted pods like the former. This plant is well deſcribed in Sir Hans Sloane's Natural Hiſtory of Jamaica. By the inhabitants of America it is called Doctor Long, under which name the ſeeds are frequently brought to England.

Moſt of the other ſorts here mentioned, were collected by the late ingenious Dr. William Houſtoun, in Jamaica, at Vera Cruz and Campeachy, who ſent the ſeeds of moſt of them into Europe, many of which are now growing in the phyſic-garden at Chelſea, where ſome of them have produced flowers and plenty of ſeeds.

Theſe being all tender, are to be placed in ſtoves in the winter, and in ſummer muſt be but a ſhort time expoſed to the open air, and have a warm ſituation.

They are propagated by ſowing their ſeeds on a hot-bed in the ſpring of the year, which will in a ſhort time appear above ground, and in about five or ſix weeks after, be fit to tranſplant, when a freſh hot-bed is to be prepared for them, and ſhould be pretty warm; the next thing to be provided is a quantity of ſmall halfpenny pots, which are to be filled with freſh, light, ſandy earth; theſe ſhould be plunged into the hot-bed, but not into dung; for if theſe beds are made with warm horſe dung, they ought to be covered with earth as deep as the pots, whoſe bottoms ſhould reſt upon the dung, for otherwiſe the roots of the plants may ſuffer by too much heat; but beds of tanners bark ſeldom heat ſo violently. As ſoon as the earth in the pots is warm, which will be in two or three days, you ſhould carefully take up the young plants out of the firſt hot-bed, planting four or five plants into each of theſe pots, giving them a gentle watering to ſettle the earth to their roots, and ſcreening them with mats over the glaſſes from the heat of the ſun, until they have taken root; after which time you muſt give them air, by raiſing the glaſſes in proportion to the heat of the weather, or to the conſtitution of the plants.

The tenth, eleventh, and twelfth, ſorts are very tender, eſpecially while young, therefore ſhould have a hot-bed of tanners bark; and as they increaſe in bulk, ſhould be ſhifted into bigger pots. The earth for theſe ſhould be a little lighter, and more inclined to a ſand, than for the other ſorts; but never plant them in pots that are too large, which is full as bad to theſe as to Orange-trees; neither give them too much water, eſpecially in winter. The tenth ſort being the hardieſt of the three, will, when grown to be woody, ſtand in a common ſtove, which ſhould be kept to the point of temperate heat in winter; and in the ſummer time, in warm weather, may enjoy the open free air: but the eleventh and twelfth ſorts muſt have a bark-ſtove in winter; nor ſhould they be expoſed to the open air in ſummer, at leaſt for four

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or five years, until they are grown very woody, for they are very tender, and with great difficulty preſerved in this climate. The ſtove in which theſe ſhould be placed in winter, muſt be kept above the temperate point, as marked in the botanical thermometers. Theſe ſhould have very little water in winter, but in ſummer time will require frequent refreſhings, though at that ſeaſon it ſhould not be given them in great quantities at one time. The eleventh ſort is a very beautiful tree. The twelfth ſheds its leaves juſt before the new ones come on, ſo that it is naked of leaves about a month or ſix weeks in the ſpring of the year, which has occaſioned ſome people to throw them away as dead, when, if they had let them remain, they would have come out freſh again. This I thought proper to mention, in order to caution people not to be too haſty in throwing out trees for dead, but preſerve them through the ſucceeding ſummer, to ſee if they will ſhoot again; for I have known ſeveral plants, which, after having been given over by unſkilful perſons for dead, have the July following ſhot out vigorouſly again; and others, which have died to the ſurface of the earth, have riſen again from the root.

The three ſorts of horned Acacias are very often deſtitute of leaves for two or three months, appearing to have no life; but they will put out freſh leaves towards autumn, which is commonly the ſeaſon when they are moſt vigorous. Theſe ſhould be expoſed in the ſummer ſeaſon for about two months, to clear them from inſects, which greatly infeſt them, in a place defended from ſtrong winds; and in the winter they require a moderate degree of warmth.

All the other ſorts here mentioned are propagated by ſeeds, which, ſeldom ripening in this country, muſt be procured from America, partticularly at Campeachy, where there is great variety of this tree, many ſorts of which have been hitherto unknown to botanical writers. In bringing over the ſeeds of theſe trees, they ſhould be taken out of the pods when gathered, and put up in papers, and ought to have Tobacco, or ſome other noxious herb, put between the papers, to keep off inſects, otherwiſe the ſeeds will be eaten and deſtroyed before they arrive in England. For the inſects depoſit their eggs in ſmall punctures which they make in the pods; and as theſe are ſoon hatched, ſo they immediately attack the ſeeds for food, and eat holes through them, by which they are ſpoiled from growing. This has often happened to ſeeds which have been ſent me from America.

There are ſeveral of theſe Acacias, which are very tender while they are young; but, after two or three years growth, become hardy enough to bear the open air in ſummer, though ſcarce any of them will live through the winter in a green-houſe, unleſs they have ſome warmth in very cold weather.

Acacia Germanorum. See PRUNUS SYLVESTRIS.

Acacia Virginiana. See ROBINIA.

Acacia, the Three-thorned. See GLEDITSIA.

MIMULUS. Lin. Gen. Plant. 761. Cynorrhynchium. Mitch. 3.

The CHARACTERS are,

The flower hath an oblong, priſmatical, permanent empalement of one leaf; it is of the lip or ringent kind, having one petal, whoſe tube is the length of the empalement, and the brim is divided into two lips. The upper lip is erect, divided at the top into two parts, which are reflexed on their ſide; the lower lip is broad and trifid, the middle ſegment is the leaſt; the palate is convex and bifid. It has four ſlender ſtamina, two longer than the other, terminated by bifid kidney-ſhaped ſummits, and a conical germen ſupporting a ſlender ſtyle, crowned by an oval, bifid, compreſſed ſtigma. The germen afterward turns to an oval capſule with two cells, filled with ſmall ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, which includes thoſe plants whoſe flowers have two long and two ſhort ſtamina, and their ſeeds are included in the capſule.

We know but one SPECIES of this genus at preſent in England, viz.

MIMULUS (*Ringens*) erectus, foliis oblongis linearibus ſeſſilibus. Hort. Upſal. 176. tab. 2. *Upright Mimulus with oblong linear leaves ſitting cloſe to the ſtalk.* Digitalis perfoliata glabra, flore violaceo minore. Mor. Hiſt. 2. p. 479. *Smooth perfoliated Foxglove, with a ſmall Violet flower.*

This plant grows naturally in North America in moiſt ground. It has a perennial root and an annual ſtalk, which decays in the autumn; the ſtalk is ſquare, and riſes a foot and a half high, garniſhed at each joint with two oblong ſmooth leaves, which are broadeſt at their baſe, where they almoſt join round the ſtalk, but end in acute points. The lower part of the ſtalk ſends out two or three ſhort branches, and the upper part is adorned with two flowers at each joint, coming from the boſom of the leaves on each ſide the ſtalk; theſe have an oblong curved empalement with five angles, indented at the top into five parts, out of which ariſes the flower, with a long curved tube, ſpreading open at the top into two lips, the upper lip ſtanding erect, which is ſlightly cut into two parts at the top; the under lip turns downward, and is cut into three ſlight ſegments. The flowers are of a Violet colour, but have no ſcent. Theſe appear in July, and are ſucceeded by oblong capſules with two cells, filled with ſmall ſeeds, which in warm ſeaſons ripen in the autumn.

This plant is very hardy in reſpect to cold, but ſhould have a loamy ſoft ſoil, rather moiſt than dry, and not too much expoſed to the ſun. It may be propagated by parting of the roots in the autumn, but the ſlips ſhould not be divided too ſmall; it may alſo be propagated by ſeeds, which ſhould be ſown in autumn, ſoon after they are ripe, for thoſe which are ſown in the ſpring ſeldom grow the ſame year: theſe may be ſown on a border expoſed to the morning ſun, and the plants may be afterward planted in the flower-garden.

MINT. See MENTHA.

MIRABILIS. Lin. Gen. Plant. 215. Jalapa. Tourn. Inſt. R. H. 129. tab. 50. Marvel of Peru, or Four o'Clock Flower.

The CHARACTERS are,

The empalement of the flower has five, oval, ſpear-ſhaped, ſmall leaves, and is erect, ſwelling, and permanent. The flower has one funnel-ſhaped petal, with a ſlender tube ſitting upon the nectarium, which ſpreads open above, and is cut into five obtuſe ſegments. It hath five ſlender ſtamina, which adhere to the petal, which are unequal and inclined, terminated by roundiſh ſummits, with a roundiſh germen within the nectarium, ſupporting a ſlender ſtyle, crowned by a globular ſtigma. The germen afterward becomes an oval five-cornered nut, incloſing one ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. MIRABILIS (*Jalapa*) floribus congeſtis terminalibus erectis. Lin. Sp. Plant. 252. *Marvel of Peru, with bunches of flowers erect, terminating the ſtalk.* Admirabilis Peruviana. Cluſ. Hiſt. 2. p. 87.
2. MIRABILIS (*Dichotoma*) floribus ſeſſilibus axillaribus erectis ſolitariis. Amœn. Acad. 4. p. 267. *Marvel of Peru, with an erect ſingle flower ſitting cloſe to the wings of the branches.* Jalapa officinarum. Mart. Cent. 1. f. 1. *The then ſuppoſed Jalap of the ſhops.*
3. MIRABILIS (*Longiflora*) floribus congeſtis terminalibus longiſſimis nutantibus, foliis ſubvilloſis. Act. Holmenſ. 1756. p. 176. *Long-flowered Marvel of Peru, whoſe flowers are in bunches, terminating the ſtalks and nodding, with hairy leaves.* Mirabilis Mexicana. Hern. Mex. 170. f. 2.

The firſt ſort is the Marvel of Peru, which has been many years cultivated in the Engliſh gardens for ornament; of this there are ſeveral varieties, which differ in the colour of their flowers; two of theſe retain their difference, one of them has purple and white flowers, which are variable, ſome of them are plain purple, others are plain white, but moſt of them are variegated with the two colours; and all theſe varie-

ties

ties are frequently upon the ſame plant, and at others on different plants; the other has red and yellow flowers, which are generally mixed in the ſame flowers, but are often with plain flowers of both colours on the ſame plant, intermixed with thoſe which are variegated; but ſome plants have only plain flowers; and I have never found that the ſeeds of the purple and white ſort, ever produced the yellow and red, nor the latter ever vary to the former, and I have conſtantly cultivated both more than forty years; but although theſe do not change from one to the other, yet as there is no other difference between them than in the colour of their flowers, I have not enumerated them as diſtinct ſpecies.

The ſecond ſort is very common in all the iſlands of the Weſt-Indies, where the inhabitants call it the Four o'Clock Flower, from the flowers opening at that time of the day. Of this ſort I have never ſeen any with variable flowers; they are of a purpliſh red colour, and not much more than half the ſize of the other. The ſtalks of this ſort have thick ſwollen joints; the leaves are ſmaller, and the fruit is very rough, ſo there can be no doubt of their being diſtinct ſpecies, for I have never ſeen any alteration in this from ſeed, and I have cultivated it many years. Tournefort was informed by Father Plumier, that the root of this plant was the officinal Jalap, upon which he conſtituted the genus, and gave that title to it; but the late Dr. Houſtoun was fully informed in the Spaniſh Weſt-Indies of the contrary, and brought over a drawing of the plant which was made by a Spaniard at Halapa, and he carried two or three of the plants to Jamaica, where he planted them in a garden, but after he left the iſland they were deſtroyed by hogs: however, he was fully ſatisfied of its being a Convolvulus, which Mr. Ray had many years before given the Jalap the title of, but upon what authority it does not at preſent appear. Some few years after I received three ſeeds of the Jalap from the Spaniſh Weſt-Indies, one of which grew, and became a large plant, having a bulbous root, as large as thoſe of the Jalap which are imported, but the plant produced no flowers in the three years it lived; and in the winter 1739-40 it died, ſince when I have not been able to procure any ſeeds; however, I am fully ſatisfied that the Jalap is a ſpecies of Convolvulus: indeed the roots of the Marvel of Peru are purgative, and when given in a double quantity for a doſe, will anſwer the purpoſe of Jalap.

The third ſort was ſent from Mexico a few years ſince. The ſeeds of this were firſt ſent me from Paris, by Dr. Monier, of the Royal Academy of Sciences, and afterward I had ſome ſent me from Madrid, by Dr. Hortega. The ſtalks of this ſort fall on the ground, if they are not ſupported; theſe grow about three feet long, and divide into ſeveral branches, which are garniſhed with heart-ſhaped leaves, placed oppoſite; theſe, as alſo the ſtalks, are hairy and viſcous, ſticking to the fingers of thoſe that handle them. The flowers come out at the end of the branches; they are white, and have very long ſlender tubes, and a faint muſky odour; theſe are like the other ſorts, cloſely ſhut all the day, but expand every evening when the ſun declines. The ſeeds of this ſort are larger than thoſe of any other ſpecies, and are as rough as thoſe of the ſecond ſort.

The two varieties of the firſt ſort are very ornamental plants in gardens, during the months of July, Auguſt, and September; and if the ſeaſon continues mild, they often laſt till near the end of October. The flowers do not open till toward the evening, while the weather continues warm, but in moderate cool weather, when the ſun is obſcured, they continue open almoſt the whole day. The flowers are ſo plentifully produced at the ends of the branches, as that when they are open, the plants ſeem entirely covered with them, and there being ſome plain, and others variegated on the ſame plants, they make a fine appearance. The plants are propagated by ſeeds, in the choice of which there ſhould be care taken not to ſave any

from thoſe plants whoſe flowers are plain; and thoſe who are deſirous of having only the variegated kinds, are careful to pull off all the plain flowers from thoſe plants which they intend for ſeeds, to prevent them from bearing any ſeeds; by this method they rarely have any plants with plain flowers.

The ſeeds ſhould be ſown on a moderate hot-bed in March, and when the plants come up, they ſhould have plenty of air admitted to them, when the weather is mild, to prevent their being drawn up weak; and when they are about two inches high, they ſhould be tranſplanted on another very moderate hot-bed; or if they are each planted in a ſmall pot filled with light earth, and plunged into a moderate hot-bed, it will be a more ſecure way, for then there will be no danger in ſhaking them out of the pots, when they are to be planted in the borders, ſo as to preſerve all the earth to their roots; by this method, they will not require to be ſhaded, whereas thoſe that are to be tranſplanted from the ſecond hot-bed to the borders, often riſe with little earth to their roots, ſo muſt be carefully ſhaded, otherwiſe they often miſcarry.

When they are in the ſecond hot-bed, they ſhould be ſhaded till they have taken freſh root, after which they muſt have plenty of free air admitted to them to prevent their being drawn up weak, and in May they muſt be gradually inured to the open air. The beginning of June, if the ſeaſon is favourable, they ſhould be tranſplanted into the borders of the pleaſure-garden, giving them proper room, and after they have taken new root, they will require no further care. If theſe ſeeds are ſown in a warm border the beginning of April, they will grow very well, but the plants will be late in the ſeaſon before they flower.

As the ſeeds of theſe plants ripen very well every year, ſo there are not many who are at the trouble of preſerving their roots; but if theſe are taken out of the ground in autumn, and laid in dry ſand all the winter, ſecured from froſt, and planted again in the ſpring, they will grow much larger, and flower earlier than the ſeedling plants: or if the roots are covered in winter with tanners bark to keep out the froſt, they may remain in the borders, provided the ſoil be dry. If the roots which are taken out of the ground, are planted the following ſpring in large pots, and plunged into a hot-bed, under a deep frame, they may be brought forward, and raiſed to the height of four or five feet, as I have frequently practiſed; and theſe plants have come earlier in the ſeaſon to flower, ſo have been intermixed with other ornamental plants, to decorate halls and ſhady courts, where they have appeared very beautiful.

The other two ſpecies require the ſame treatment, but the ſecond ſort is not quite ſo hardy as the other two, ſo unleſs the plants are brought forward in the ſpring, they will not flower till very late, ſo their ſeeds will not ripen.

MISLETOE. See Viscum.

MITELLA. Tourn. Inſt. R. H. 241. tab. 126. Lin. Gen. Plant. 496. [ſo called of Mitella, *Lat.* a little mitre, becauſe the ſeed-veſſel of this plant reſembles a biſhop's mitre.] Baſtard American Sanicle.

The Characters are,

The flower has a bell-ſhaped empalement of one leaf, cut into five points, which is permanent. It hath five petals, ending in many hairy points, and are inſerted in the empalement, as are alſo the ten awl-ſhaped ſtamina, which are ſhorter than the petals, and terminated by roundiſh ſummits. It hath a roundiſh germen, which is bifid, with ſcarce any ſtyle, crowned by two obtuſe ſtigmas. The empalement afterward becomes an oval capſule with one cell, opening with two valves, filled with ſmall ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's tenth claſs, which contains thoſe plants whoſe flowers have ten ſtamina and two ſtyles or ſtigmas.

The Species are,

1. Mitella (*Diphylla*) ſcapo diphyllo. Lin. Gen. Nov. 29. *Mitella with flower-ſtalks having two leaves.* Mi-

tella Americana, florum petalis fimbriatis. Tourn. Inst. 242. *American Mitella with fringed petals to the flowers.*

2. MITELLA (*Nuda*) scapo nudo. Amœn. Acad. 2. p. 252. *Mitella with a naked stalk.*

The first sort grows naturally in the woods, in most parts of North America. It has a perennial root, from which come out many heart-shaped angular leaves, some of which are obtuse, and others end in acute points; they are indented on their edges, and of a lucid green, a little hairy, and stand upon pretty long foot-stalks. The flower-stalks arise immediately from the root, having two or three angular leaves toward the bottom, and about the middle of the stalk come out two small leaves with acute angles, placed opposite. The stalks rise eight or nine inches high, and are terminated by a loose spike of small whitish flowers, whose petals are fringed on their edges; these appear the beginning of June, and are succeeded by roundish capsules filled with small seeds.

The second sort grows naturally in the northern parts of Asia; this is of a humbler growth than the first, seldom rising more than five or six inches high. The leaves are not so angular as those of the first sort, and the flower-stalks are always naked, having no leaves. The spikes of flowers are shorter, and more compact.

Both these are propagated by parting of their roots; the best time for this is in autumn: they should be planted in a shady situation, and they love a soft loamy soil.

MITELLA MAXIMA. See BIXA.

MOLDAVICA. See DRACOCEPHALUM.

MOLLE. See SCHINUS.

MOLLUGO. Lin. Gen. Plant. 99.

The CHARACTERS are,

The empalement of the flower is composed of five oblong small leaves, which are coloured on their inside, and is permanent. The flower has five oval petals, which are shorter than the empalement, and three bristly stamina, which stand near the style, and are terminated by single summits, with an oval germen having three furrows, supporting three very short styles, crowned by obtuse stigmas. The germen afterward becomes an oval capsule with three cells, filled with small kidney-shaped seeds.

This genus of plants is ranged in the third section of Linnæus's third class, which includes those plants whose flowers have three stamina and three styles.

The SPECIES are,

1. MOLLUGO (*Verticillata*) foliis verticillatis cuneiformibus acutis, caule subdiviso decumbente, pedunculis unifloris. Hort. Upsal. 24. *Mollugo with acute wedge-shaped leaves, growing in whorls, a trailing divided stalk, and foot-stalks bearing a single flower.* Alsine procumbens, galii facie Africana. Hort. Lugd. *Trailing African Chickweed, with the appearance of Ladies Bedstraw.*

2. MOLLUGO (*Quadrifolia*) foliis quaternis obovatis, paniculâ dichotomâ. Hort. Cliff. 28. *Moluggo with four leaves at each joint, which are almost oval, and a panicle arising at the division of the branches.* Herniaria alsines folio. Tourn. Inst. 507. *Rupturewort with a Mouse Ear leaf.*

There are two or three species of this genus, which are rarely admitted into gardens, so I have not enumerated them here.

Both these sorts are annual; the first is a native of warm countries, so is less hardy than the second; they are both trailing plants, whose stalks lie flat on the ground; the first spreads out eight or nine inches every way, and at each joint is garnished with six or seven small leaves spread out in form of a star. The flowers are small, like those of Chickweed, one standing upon each foot-stalk; these are succeeded by oval capsules filled with small seeds, which, if permitted to scatter, the plants will come up the following spring without any care; but when the seeds happen to fall upon earth which is thrown upon a hot-bed, the plants will be forwarder and stronger than those in the open air. This is preserved in some gardens for the sake of variety, but has no great beauty.

MOLUCCELLA. Lin. Gen. Plant. 643. Molucca. Tourn. Inst. R. H. 187. tab. 88. [This plant takes its name from the Molucca Islands, because it was found there.] Molucca Balm.

The CHARACTERS are,

The flower hath a large permanent empalement of one leaf, which is deeply indented at the brim, where it spreads open. The flower is of the lip kind, with a short tube and chaps. The upper lip is erect, concave, and entire. The under lip is trifid, the middle segment being longer than the other. It has four stamina situated under the upper lip, two of which are shorter than the other, crowned by single summits, and a germen with four parts, supporting a style situated with the stamina, crowned by a bifid stigma. The germen afterward turns to four angular convex seeds, sitting in the empalement.

This genus of plants is ranged in the first section of Linnæus's fourteenth class, which includes those plants whose flowers have two long and two short stamina, and are succeeded by naked seeds in the empalement.

The SPECIES are,

1. MOLUCCELLA (*Lævis*) calycibus campaniformibus subquinquedentatis, denticulis æqualibus. Lin. Sp. 821. *Molucca Balm with bell-shaped empalements, indented in five equal parts.* Molucca lævis. Dod. Pempt. 92. *Smooth Molucca Balm.*

2. MOLUCCELLA (*Spinosa*) calycibus ringentibus octodentatis. Lin. Sp. 821. *Molucca Balm whose empalements are ringent, indented in eight parts.* Molucca spinosa. Dod. Pempt. 92. *Prickly Molucca Balm.*

The first sort rises with a square stalk three feet high, spreading out into many branches, which are smooth, and come out by pairs, garnished with roundish leaves, which are deeply notched on their edges, standing upon long foot-stalks placed opposite; they are smooth, of a light green on both sides, and at the base of their foot-stalks the flowers come out in whorls; these have very large spreading empalements, which are indented in five parts, and immediately under them come out two bunches of pretty long spines, one on each side the stalk, each bunch consisting of five or six spines arising from the same point. The flowers are small, and being situated at the bottom of the large empalements, are not visible at a distance; they are white, with a cast of purple, and shaped like those of the other lip flowers, having the upper lip entire, and hollowed like a spoon, and the under lip is cut into three segments, the middle one being the longest. After the flower is past, the germen turn to four club-shaped angular seeds inclosed in the empalement. It flowers in July, but unless the season proves warm and dry, the seeds do not ripen in England. The smell of this plant is to some persons very disagreeable, and to others very pleasant.

The second sort hath square smooth stalks, of a purplish colour, which rise four feet high, and branch out in the same manner. The leaves are smaller, and stand upon shorter foot-stalks; they are deeper, and more acutely indented on their edges. The empalements of the flowers are not so large, and are cut into eight segments, each being terminated by an acute spine. The flowers are like those of the former species, as are also the seeds; this is not so hardy as the first sort.

The first grows naturally in several parts of Syria, and the second is a native of the Molucca Islands, from whence this genus received its title. They are both annual plants, which decay soon after their seeds are ripe, and being natives of warm countries, they seldom perfect their seeds in England, when they are sown in the spring; therefore the best way is to raise the plants in autumn, and plant them in small pots; these should be placed under a hot-bed frame in winter, where they may have free air in mild weather, by taking off the glasses, but covered in frosty weather, observing to keep them pretty dry, otherwise they are very subject to rot, when they are closely covered in frosty weather. In the spring the plants may be turned out of the pots, with all the earth about their roots, and planted in a warm border, defended from

from ſtrong winds, giving them a little water to ſettle the earth to their roots; after this they will require no other care but to keep them clean from weeds, and to ſupport them with ſtakes, to prevent their being broken by the winds. The plants thus preſerved through the winter, will flower the latter end of June, ſo from theſe good ſeeds may be expected.

MOLY. See ALLIUM.

MOMORDICA. Tourn. Inſt. R. H. 103. tab. 29, 30. Lin. Gen. Plant. 1090. Male Balſam Apple; in French, *Pomme de Marveille.*

The CHARACTERS are,

It hath male and female flowers upon the ſame plant. The male flowers have a ſpreading empalement of one leaf. The flower hath one petal, which adheres to the empalement. It has three ſhort awl-ſhaped ſtamina; in two of the ſtamina the ſummits are bifid, and eared on both ſides; the third has a ſingle eared ſummit; theſe are compreſſed in a body. The female flowers have the ſame empalement and petal as the male, but ſit upon the germen; theſe have three ſhort filaments without ſummits. The germen ſupports one taper trifid ſtyle, crowned by three oblong gibbous ſtigmas. The germen afterward turns to an oblong fruit, opening with an elaſticity, having three membranaceous cells, filled with compreſſed ſeeds.

This genus of plants is ranged in the tenth ſection of Linnæus's twenty-firſt claſs, which contains the plants with male and female flowers on the ſame plant, whoſe ſtamina coaleſce together.

The SPECIES are,

1. MOMORDICA (*Balſamina*) pomis angulatis tuberculatis, foliis glabris patenti-palmatis. Hort. Cliff. 451. *Male Balſam Apple with angular warted fruit, and ſmooth open-handed leaves.* Momordica vulgaris. Tourn. Inſt. R. H. 103. *Common male Balſam Apple.*
2. MOMORDICA (*Charantia*) pomis angulatis tuberculatis, foliis villoſis, longitudinaliter palmatis. Hort. Cliff. 451. *Male Balſam Apple with angular warted fruit, and hairy leaves, which are longitudinally hand-ſhaped.* Momordica Zeylanica, pampineâ fronde, fructu longiori. Tourn. Inſt. R. H. 103. *Male Balſam Apple of Ceylon, with a Vine leaf and a longer fruit.*
3. MOMORDICA (*Zeylanica*) pomis ovatis acuminatis tuberculatis, foliis glabris palmatis ſerratis. *Male Balſam Apple with an oval, acute-pointed, warted fruit, and ſmooth hand-ſhaped leaves, which are ſawed.* Momordica Zeylanica, pampineâ fronde, fructu breviori. Tourn. Inſt. 103. *Male Balſam Apple of Ceylon, with a Vine leaf and a ſhorter fruit.*
4. MOMORDICA (*Elaterium*) pomis hiſpidis, cirrhis nullis. Lin. Sp. Plant. 1010. *Male Balſam Apple with a prickly fruit, and no tendrils to the Vines.* Cucumis ſylveſtris aſininus dictus. C. B. P. 314. *Wild Cucumber, called Aſſes Cucumber, and the Elaterium of Boerhaave.*

The firſt ſort grows naturally in Aſia, the ſecond and third in the iſland of Ceylon; they are annual plants, which periſh ſoon after they have ripened their fruit; theſe have trailing ſtalks like thoſe of the Cucumber and Melon, which extend three or four feet in length, ſending out many ſide branches which have tendrils, by which they faſten themſelves to any neighbouring plants, to ſecure themſelves from being toſſed and blown about by the winds, and are garniſhed with leaves ſhaped like thoſe of the Vine. The leaves of the firſt and third ſorts are ſmooth, and deeply cut into ſeveral ſegments, and ſpread open like a hand; but thoſe of the ſecond ſort are extended more in length, and are hairy. The fruit of the firſt ſpecies is oval, ending in acute points, having ſeveral deep angles, which have ſharp tubercles placed on their edges; it changes to a red or purpliſh colour when ripe, opening with an elaſticity, and throwing out its ſeeds.

The fruit of the ſecond ſort is much longer than that of the firſt, and not ſo deeply channelled. The tubercles are ſcattered all over the ſurface, and are not ſharp like thoſe of the other; this fruit is yellow, when ripe, and caſts out its ſeeds with an elaſticity.

The fruit of the third ſort is ſhort and pointed like that of the firſt, but does not ſwell ſo large in the middle. The angles of this are not deep, and the whole ſurface is cloſely ſet with ſharp tubercles; this changes to a deep Orange colour when ripe, and caſts out its ſeeds in the like manner.

The fourth ſort is commonly called Wild or Spurting Cucumber, from its caſting out its ſeeds, together with the viſcid juice in which the ſeeds are lodged, with a violent force, if touched when ripe; and from hence it has ſometimes the appellation of Noli me tangere, or *touch me not.* This plant grows naturally in ſome of the warm parts of Europe, but in England it is cultivated in gardens for the fruit, which is uſed in medicine, or rather the fæcula of the juice of the fruit, which is the Elaterium of the ſhops.

This plant hath a large fleſhy root ſomewhat like that of Briony, from which come forth every ſpring ſeveral thick, rough, trailing ſtalks, which divide into many branches, and extend every way two or three feet; theſe are garniſhed with thick, rough, almoſt heart-ſhaped leaves, of a gray colour, ſtanding upon long foot-ſtalks. The flowers come out from the wings of the ſtalk, theſe are male and female, growing at different places on the ſame plant, like thoſe of the common Cucumber, but they are much leſs, of a pale yellow colour, with a greeniſh bottom: the male flowers ſtand on ſhort thick foot-ſtalks, but the female flowers ſit upon the young fruit, which, after the flower is faded, grows to be an inch and a half long, and ſwelling like a Cucumber, of a gray colour like the leaves, and covered over with ſhort prickles. Theſe do not change their colour when ripe, like moſt of the other fruit of this claſs; but if attempted to be gathered, they quit the foot-ſtalk, and caſt out the ſeeds and juice with great violence; ſo that where any plants are growing, and the fruit permitted to ſtand till it is ripe, the ſeeds will be ſcattered all round to a great diſtance, and there will be plenty of the plants produced the following ſpring.

But when the fruit is deſigned for uſe, it ſhould always be gathered before it is ripe, otherwiſe the greateſt part of the juice will be loſt, which is the only valuable part; for the juice which is expreſſed, with part of the parenchyma of the fruit, is not to be compared with the other for its virtues; for the Elaterium which is made from clear juice of the fruit, is much whiter, and will retain its virtues much longer, than that which is extracted by preſſure.

The three firſt ſorts are annual; their ſeeds muſt be ſown on a hot-bed the beginning of March, and when the plants come up, they ſhould be tranſplanted out into a freſh hot-bed, after the manner of Cucumbers or Melons, putting two plants of the ſame kind under each light, and the plants watered and ſhaded until they have taken root; after which they muſt be treated as Cucumbers, permitting their branches to extend upon the ground in the ſame manner, and obſerve to keep them clear from weeds.

With this management (provided you do not let them have too much wet, or expoſe them too much to the open air) they will produce their fruit in July, and their ſeeds will ripen in Auguſt and September, when you muſt obſerve to gather it as ſoon as you ſee the fruit open, otherwiſe it will be caſt abroad, and with difficulty gathered up again.

Theſe plants are preſerved in curious gardens for the oddneſs of their fruit; but as they take up a great deal of room in the hot-beds, requiring frequent attendance, and being of little beauty or uſe, ſo they are not much cultivated in England, except in botanic gardens for variety.

There are ſome perſons who put theſe plants in pots, and faſten them up to ſtakes, to ſupport the Vines from trailing on the ground, and place the pots in ſtoves; where, when they are ſkilfully managed, they will

will produce their fruit tolerably well; and in this way they make a better appearance, than when the Vines ſpread on the ground like Cucumbers and Melons. But when the plants ſpread on the ground, which is their natural way of growing, they thrive much better, and produce more fruit, than when they are ſupported; for though theſe plants have claſpers, yet theſe are not formed for climbing, but merely to faſten themſelves about any neighbouring ſupport, to ſecure them from being raiſed by the wind and broken; which would often happen, where they grow in the open air and are fully expoſed, were it not for this ſecurity.

The fourth ſort is eaſily propagated by ſeeds, which (as was before mentioned) if permitted to ſcatter, there will be a ſupply of plants come up the following ſpring; or if the ſeeds are ſown upon a bed of light earth, the plants will come up in about a month after, and may be tranſplanted to an open ſpot of ground, in rows at three or four feet diſtance, and almoſt as far aſunder in the rows; if theſe are carefully tranſplanted while young, there will be little hazard of their growing; and after they have taken new root, they will require no further care, but to keep them clear from weeds. If the ground is dry in which they are planted, the roots will continue three or four years, unleſs the winter ſhould prove very ſevere, which will kill them.

MONARDA. Lin. Gen. Plant. 34. Leonurus. Tourn. Inſt. R. H. 187. tab. 87.

The CHARACTERS are,

The flower has a tubulous cylindrical empalement of one leaf, which is channelled, and cut into five equal parts at the brim. The flower hath one petal, and is of the lip kind, having a cylindrical tube longer than the empalement, divided at the top into two lips. The upper lip is narrow, entire, and erect; the under lip is broad, trifid, and reflexed; the middle ſegment being long and narrow, thoſe on the ſide are obtuſe. It hath two briſtly ſtamina the length of the upper lip, in which it is involved, terminated by compreſſed erect ſummits. In the bottom of the tube is ſituated a four-pointed germen, ſupporting a ſlender ſtyle involved with the ſtamina, and crowned by an acute bifid ſtigma. The germen afterward turns to four naked ſeeds, incloſed in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, which includes the plants whoſe flowers have two ſtamina and one ſtyle.

The SPECIES are,

1. MONARDA (*Fiſtuloſa*) capitulis terminalibus, caule obtuſ-angulo. Hort. Upſal. 12. *Monarda with heads of flowers terminating the ſtalks, which have obtuſe angles.* Leonurus Canadenſis, origani folio. Tourn. Inſt. R. H. 187. *Canada Lion's Tail, with an Origanum leaf.*
2. MONARDA (*Didyma*) floribus capitatis, ſub-didynamis, caule acutangulo. Lin. Sp. Plant. 32. *Monarda with headed flowers, whoſe ſtamina are almoſt in two bodies, and an acute angular ſtalk.* Monarda floribus capitatis verticillatiſque, caule acutangulo, foliis lanceolato-ſerratis glabris. Butt. Cun. 226. *Monarda with flowers collected in heads and whorls, an acute-angular ſtalk, and ſmooth, ſawed, ſpear-ſhaped leaves, commonly called Oſwego Tea.*
3. MONARDA (*Punctata*) floribus verticillatis, corollis punctatis. Hort. Upſal. 12. *Monarda with flowers growing in whorls, whoſe petals are ſpotted.* Clinopodium Virginianum, anguſtifolium, floribus amplis luteis, purpurâ maculâ notatis, cujus caulis ſub quovis verticillo decem vel duodecim foliolis rubentibus eſt circumcinctis. Baniſt. Raii Sup. 300. *Narrow-leaved Field Baſil of Virginia, with large yellow flowers ſpotted with purple, whoſe ſtalks have ten or twelve reddiſh leaves under each whorl of flowers.*

The firſt ſort grows naturally in Canada, and many other parts of North America. It hath a perennial root, compoſed of many ſtrong fibres, which ſpread far on every ſide. The ſtalks riſe near three feet high, which are hairy, and have obtuſe angles; theſe ſend out two or four ſmall ſide branches toward the top, garniſhed with oblong leaves, broad at their baſe, but terminate in acute points; they are hairy, a little indented on their edges, ſtanding on ſhort hairy foot-ſtalks, and are placed oppoſite. The ſtalk and branches are terminated by heads of purple flowers, which have a long involucrum, compoſed of five acute-pointed leaves. The flowers have each two ſtamina which are longer than the petal, with a ſtyle of the ſame length, crowned by a bifid ſtigma. The flowers appear in July, and are ſucceeded by ſeeds which ripen in the autumn.

The ſecond ſort grows naturally in North America, where the inhabitants frequently uſe the leaves for tea, ſo it is commonly called Oſwego Tea, by which title it was brought to England. This hath a perennial root and an annual ſtalk, which decays every autumn. The ſtalks of this ſort are ſmooth, having four acute angles; they riſe about two feet high, and are garniſhed with ſmooth, oval, ſpear-ſhaped leaves, which are indented on their edges, and ſtand oppoſite on very ſhort foot-ſtalks; theſe when bruiſed, emit a very grateful refreſhing odour; the ſtalks ſend out toward their top two or four ſmall ſide branches, which are garniſhed with ſmall leaves of the ſame ſhape with the other. The flowers are produced in large heads or whorls at the top of the ſtalk, and there is often a ſmaller whorl of flowers, growing round the ſtalk at a joint below the head; and out of the head ariſes a naked foot-ſtalk, ſuſtaining a ſmall head or whorl of flowers: the flowers are of a bright red colour; they have two lips, the upper lip is long, narrow, and entire, the under lip is cut into three parts; they have each two ſtamina which are longer than the petal, terminated by compreſſed ſummits, and many of them have two ſhorter ſtamina, without ſummits. The plant flowers in July, but in a moiſt ſeaſon, or when the plants are in a moiſt ſoil, they will continue in flower till the middle or latter end of September.

Both theſe ſorts may be propagated by parting of their roots; the firſt does not multiply ſo faſt as the ſecond, but as that produces plenty of ſeeds, ſo it may be eaſily propagated that way. If the ſeeds are ſown in the autumn ſoon after they are ripe, the plants will come up the following ſpring; but if they are not ſown till ſpring, the plants ſeldom riſe till the next year. When the plants are come up and are fit to remove, they ſhould be tranſplanted into a ſhady border about nine inches diſtance, and when they have taken new root, they will require no other care but to keep them clean from weeds till the autumn, when they ſhould be tranſplanted into the borders where they are to remain. The following ſummer they will flower and produce ripe ſeeds, but the roots will continue ſeveral years, and may be parted every other year to increaſe them. This loves a ſoft loamy ſoil, and a ſituation not too much expoſed to the ſun.

The ſecond ſort ſeldom ripens ſeeds in England, but it increaſes faſt enough by its creeping roots, as alſo by ſlips or cuttings, which, if planted in a ſhady border in May, will take root in the ſame manner as Mint or Balm; but as the roots multiply ſo faſt, there is ſeldom occaſion to uſe any other method to propagate them.

This ſort loves a moiſt light ſoil, and in a ſituation where the plants have only the morning ſun, they will continue longer in flower than thoſe which are expoſed to the full ſun. This is a very ornamental plant in gardens, and the ſcent of the leaves is very refreſhing and agreeable to moſt people, and ſome are very fond of the tea made with the young leaves.

The third ſort grows naturally in North America; this is a biennial plant, and probably in its native country may be an annual, for the roots periſh after the plants have perfected their ſeeds. This hath ſquare ſtalks which riſe about two feet high, branching out from the bottom to the top, and are garniſhed with ſpear-ſhaped leaves, which come out in cluſters at each joint, where there are two larger leaves placed

placed oppoſite, and ſeveral ſmaller come out on each ſide the ſtalk; the larger leaves are about two inches and a half long, and three quarters of an inch broad, and are ſlightly indented on their edges. Toward the upper part of their ſtalk the flowers come out in large whorls, having to each whorl an involucrum, compoſed of ten or twelve ſmall ſpear-ſhaped leaves, of a purpliſh red colour on their upper ſide; the flowers are pretty large, of the ſame form with thoſe of the other ſorts, of a dirty yellow colour ſpotted with purple; they have each two long ſtamina ſituated under the upper lip, which are terminated by bifid compreſſed ſummits, and are ſucceeded by four naked ſeeds incloſed in the empalement. It flowers in July, and if the ſummer proves favourable, the ſeeds ſometimes ripen in the autumn.

This plant is propagated by ſeeds, which, if ſown on a border of light earth expoſed to the eaſt, the plants will riſe very freely; when they are fit to remove, they may be tranſplanted into a ſhady border, in the ſame manner as hath been directed for the firſt ſort; and if they ſhould ſhoot up ſtalks to flower, they ſhould be cut down to ſtrengthen the roots, that they may put out lateral buds, for when they are permitted to flower the firſt year, the roots ſeldom live through the winter, therefore they ſhould be prevented: in the autumn the plants may be removed, and planted in the open borders of the pleaſure-garden, where they will flower the following ſummer; and if the ſeaſon ſhould prove dry, they ſhould be duly watered, otherwiſe they will not be near ſo beautiful, nor will the plants produce good ſeeds.

MONBIN. See SPONDIAS.

MONTIA. See HELIOCARPUS.

MORÆA. Lin. Gen. Plant. 60.

The CHARACTERS are,

The ſheath of the flower has two valves; the flower is compoſed of ſix petals, the three upper are erect and bifid, the three under ſpread open; it hath three ſhort ſtamina, terminated by oblong ſummits. The germen is ſituated below the flower, ſupporting a ſingle ſtyle, crowned by a trifid erect ſtigma. The germen afterward becomes a three-cornered capſule, having three furrows, with three cells, containing ſeveral round ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's third claſs, intitled Triandria Monogynia, the flower having three ſtamina and one ſtyle.

The SPECIES are,

1. MORÆA (*Vegeta*) ſpatha uniflora, foliis gladiolatis. *Morea with one flower in each ſheath, and ſword-ſhaped leaves.* Moræa foliis canaliculatis. Lin. Sp. 59. *Morea with channelled leaves.*
2. MORÆA (*Juncea*) ſpatha biflora, foliis ſubulatis. *Morea with two flowers in each ſheath, and awl-ſhaped leaves.* Moræa foliis ſubulatis. Lin. Sp. 59. *Morea with awl-ſhaped leaves:*

Theſe plants are both natives of the Cape of Good Hope, from whence I received their ſeeds, which have ſucceeded in the Chelſea garden, where the plants have ſeveral times produced their flowers, which differing from all the other genera of plants in the ſame claſs, I have taken the liberty of titling it Morea, in honour of Robert More, Eſq; of Shrewſbury, who is well ſkilled in the ſcience of botany, and alſo in other parts of natural hiſtory.

The firſt ſort has fibrous roots like thoſe of the Flag-leaved Iris, from whence ariſes many ſmall ſword-ſhaped leaves, five or ſix inches long, and half an inch broad in the middle, diminiſhing toward both ends, of a deep green colour, lying over each other at their baſe, in the ſame manner as the Iris; the flower-ſtalk ariſes between the leaves from the root, about eight inches high, having one ſmall leaf at each joint, and is terminated by one flower, which is covered with a ſpatha (or ſheath) having two valves; the flower is of a dirty white, each petal having a bluſh of purple toward their upper part, and a pretty broad ſpot of yellow toward their tails; within are three ſlender ſtamina terminated by oblong ſummits, and one ſtyle crowned by a trifid ſtigma. The flowers appear in June, and the ſeeds ripen the end of July.

The ſecond ſort hath a ſmall bulbous root, a little compreſſed on the ſides, with a ſmooth dark-coloured ſkin, from which ariſe three or four awl-ſhaped leaves of a pale green, ſome of which are five inches long, and others are ſeven or eight, and about half an inch broad, terminating with three angles; the foot-ſtalks of the flowers riſe about ſix inches high, and generally bend at their lower joint; theſe are garniſhed with a ſmall leaf at each joint, whoſe baſe almoſt ſurrounds the ſtalk, which is terminated by two flowers, encompaſſed with a withered ſheath; the flowers are of an Orange colour; the petals are pretty broad upward, but are connected at their baſe. Theſe appear in June, and the ſeeds ripen the end of July.

The plants are propagated either by ſeeds, or from offsets of the ſecond ſort, and by parting or dividing the roots of the firſt; the beſt time for tranſplanting of them, and ſeparating the offsets of the ſecond ſort, and parting the roots of the firſt, is in Auguſt, that they may put out new fibres before winter; and that is alſo the right ſeaſon for ſowing of the ſeeds, for when they are ſown at this time of the year in ſmall pots, and plunged into a bed of old tanners bark, under a common frame in winter, there is little danger of theſe ſeeds miſcarrying. The plants will alſo require this ſort of ſhelter in winter, for as they are too tender to thrive in the open air in England, and if they are placed in a green-houſe, they are apt to draw up weak, therefore when they are ſheltered under a frame, ſo as to enjoy the free open air in winter when the weather is warm, and ſecured from froſt and hard rains, they will flower and ripen their ſeeds better than with any other management: in ſummer they ſhould be fully expoſed to the open air till October, when they ſhould be removed into ſhelter.

MORINA. Tourn. Cor. 48. tab. 480. Lin. Gen. Plant. 39. Diototheca. Vaill. Mem. Acad. 1722.

The CHARACTERS are,

It hath a double empalement; that under the fruit is tubulous, cylindrical, of one leaf, indented at the brim, and permanent; that of the flower is tubulous, bifid, of one leaf, and permanent. The flower hath one petal, with a long tube enlarged upward, and a little incurved. The top is divided into two lips; the upper lip is ſmall and bifid, the under lip is cut into three equal obtuſe ſegments, the middle one being extended beyond the other. It hath two briſtly ſtamina ſituated near the ſtyle, terminated by heart-ſhaped erect ſummits. The globular germen is ſituated under the flower, ſupporting a ſlender ſtyle which is longer than the ſtamina, crowned by a target-ſhaped ſtigma; the germen afterward becomes a ſingle ſeed, crowned by the empalement of the flower.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, which contains thoſe plants whoſe flowers have two ſtamina and one ſtyle.

There is but one SPECIES of this genus at preſent known, which is,

MORINA (*Orientalis.*) Hort. Cliff. 14. Morina Orientalis, carlinæ folio. Tourn. Cor. *Eaſtern Morina, with a Carline Thiſtle leaf.*

This plant was diſcovered by Dr. Tournefort, in his travels in the Levant, who gave it this name in honour of Dr. Morin, a phyſician at Paris.

It grows naturally near Erzeron in Perſia, and was in the Engliſh gardens before the ſevere winter in 1740, which killed all the plants that were here, alſo thoſe in the garden at Paris; ſo the only plant remaining was in the garden of Monſieur du Hamel. The root of this plant is taper and thick, running deep into the ground, ſending out ſeveral thick ſtrong fibres as large as a finger; the ſtalk riſes near three feet high; it is ſmooth, of a purpliſh colour toward the bottom, but hairy and green at the top, garniſhed at each joint by three or four prickly leaves like thoſe of the Carline Thiſtle; they are four or five inches long, and an inch and a half broad, of a lucid green on their upper ſide, but of a pale green on their under, and a little hairy, armed on their edges with ſpines. The flowers come

out from the wings of the leaves on each ſide the ſtalk; theſe have very long tubes, which are ſlender at the bottom, but are enlarged upward, and are a little incurved; the brim ſpreads open with two large lips, the upper lip is indented at the top and rounded, the lower lip is cut into three obtuſe ſegments; under the lip are ſituated two briſtly ſtamina which are crooked, and crowned with yellow ſummits. Theſe flowers appear in July, but I never had any ſeeds ſucceed them. Some of the flowers are white, and others of a purpliſh red on the ſame plant.

This plant is propagated by ſeed, which ſhould be ſown ſoon after it is ripe in the autumn, otherwiſe the plants will not come up the following ſummer; for I have ſeveral times obſerved, where the ſeeds have been ſown in the ſpring, they have remained in the ground fourteen or fifteen months before the plants have appeared. Theſe ſeeds ſhould be ſown in the places where the plants are to remain, becauſe they ſend forth tap-roots, which run very deep into the ground; and when theſe are broken or injured in tranſplanting, the plants ſeldom thrive after. They may be ſown in open beds or borders of freſh light earth, being careful to mark the places, that the ground may not be diſturbed; for it frequently happens, that the ſeeds do not come up the firſt year, when they are ſown in autumn; but when they are ſown in the ſpring, they never come up the ſame year. The ground where the ſeeds are ſown muſt be kept clear from weeds, which is all that is neceſſary to be done, until the plants come up; where they are too cloſe together, they ſhould be thinned while young, ſo as to leave them near eighteen inches apart; after which time, they will require no other culture but to keep them conſtantly clear from weeds; and in the ſpring, juſt before the plants put out new leaves, to dig the ground gently between them, and lay a little freſh earth over the ſurface of the bed to encourage them.

In autumn theſe plants decay to the ground, and ſend forth new leaves the following ſpring, but it will be three years from the time of the plants firſt coming up to their flowering, though after that time they will flower every ſeaſon; and the roots will continue many years, provided they are not diſturbed, or killed by very ſevere froſt.

MORUS. Tourn. Inſt. R. H. 589. tab. 363. Lin. Gen. Plant. 936. [of μαυρὸς, black, becauſe its fruit is ordinarily ſo.] The Mulberry-tree; in French, *Murier*.

The CHARACTERS are,

It hath male flowers growing at ſeparate diſtances from the female on the ſame tree. The male flowers are collected in long taper ropes or katkins; theſe have no petals, but have four awl-ſhaped erect ſtamina, which are longer than the empalement, terminated by ſingle ſummits. The female flowers are collected into roundiſh heads; theſe have no petals, but a heart-ſhaped germen, ſupporting two long, rough, reflexed ſtyles, crowned by ſingle ſtigmas. The empalement of theſe afterward become large, fleſhy, ſucculent fruit, compoſed of ſeveral protuberances, in each of which is lodged one oval ſeed.

This genus is ranged in the fourth ſection of Linnæus's twenty-firſt claſs, which contains thoſe plants which have male and female flowers at ſeparate diſtances on the ſame plant, and the male flowers have four ſtamina.

The SPECIES are,

1. MORUS (*Nigra*) foliis cordatis. Hort. Cliff. 441. *Mulberry with rough heart-ſhaped leaves.* Morus fructu nigro. C. B. P. 459. *Mulberry with a black fruit, or the common Mulberry.*
2. MORUS (*Laciniatis*) foliis palmatis hirſutis. *Mulberry with hand-ſhaped hairy leaves.* Morus fructu nigro minori foliis eleganter laciniatis. Tourn. Inſt. R. H. 589. *Smaller black Mulberry with elegant cut leaves.*
3. MORUS (*Rubra*) foliis cordatis ſubtus villoſis, amentis cylindricis. Lin. Sp. Plant. 986. *Mulberry with heart-ſhaped leaves which are hairy on their under ſide, and cylindrical katkins.* Morus Virginienſis arbor, loti arboris inſtar ramoſa, foliis ampliſſimis. Pluk. Phyt. tab. 246. fol. 4. *Virginia Mulberry branching like the Nettle-tree, having very large leaves.*
4. MORUS (*Alba*) foliis obliquè cordatis lævibus. Hort. Cliff. 441. *Mulberry with oblique, ſmooth, heart-ſhaped leaves.* Morus fructu albo. C. B. P. 459. *Mulberry with a white fruit.*
5. MORUS (*Tinctoria*) foliis obliquè cordatis acuminatis hirſutis. *Mulberry with oblique, heart-ſhaped, acute-pointed, hairy leaves.* Morus fructu viridi, ligno ſulphureo tinctorio. Sloan. Hiſt. Jam. 2. p. 3. *Mulberry with a green fruit, whoſe wood dyes a ſulphur colour, or Fuſtick wood.*
6. MORUS (*Papyrifera*) foliis palmatis, fructibus hiſpidis. Lin. Sp. Plant. 986. *Mulberry with hand-ſhaped leaves and prickly fruit.* Morus ſativa, foliis urticæ mortuæ, cortice papyrifera. Kæmp. Amœn. 471. *Cultivated Mulberry with leaves like Dead Nettle, and of whoſe bark paper is made.*
7. MORUS (*Tatarica*) foliis ovato-oblongis utrinque æqualibus, inæqualiter ſerratis. Flor. Zeyl. 337. *Mulberry with oval oblong leaves, which are equal on both ſides, but unequally ſawed.* Tinda-parua. Hort. Mal. 1. p. 87. fol. 49.
8. MORUS (*Zanthoxylum*) foliis ovato-oblongis acuminatis obliquis, ramis aculeatis. *Mulberry with oval, oblong, acute-pointed leaves, which are oblique to the foot-ſtalk, and prickly branches.* Zanthoxylum aculeatum, carpini foliis, Americanum, cortice cinereo. Pluk. Phyt. 239. fol. 3. *Prickly Zanthoxylum of America, with Hornbeam leaves and an Aſh-coloured bark.*

The firſt ſort is the common black Mulberry-tree, which is cultivated for the delicacy of its fruit. This tree 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 very 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 Peach, and other tender fruits are here.

Theſe trees are generally of both ſexes, having male flowers or katkins on the ſame tree with the fruit; but it often happens, that ſome of the trees which are raiſed from ſeeds, have generally male flowers, and produce no fruit; ſo that thoſe who plant theſe trees for their fruit, ſhould never make choice of ſuch as have been propagated by ſeeds, unleſs they have ſeen them produce fruit in the nurſery. It is alſo the ſureſt way to mark ſuch trees as are fruitful in the nurſery, at the time when their fruit is upon them, becauſe thoſe trees which are propagated by layers, are ſometimes of the male ſort; for I have ſeveral times obſerved, that ſome of the large branches of theſe trees have produced only katkins, when the other parts of the trees have been very fruitful; ſo that unleſs care is taken in the choice of the branches for making the layers, there is the ſame hazard as in ſeedling trees: nor ſhould the ſhoots which come out near the roots of old trees be ever laid down, for theſe rarely produce fruit until they have been planted many years, although the trees from which theſe were produced might be very fruitful. I have obſerved ſome trees which produced only katkins for many years after they were planted, and afterward have become fruitful; the ſame I have obſerved in Walnut-trees, and my honoured friend the Chevalier Rathgeb, has informed me, that he has obſerved the ſame in the Lentiſk and Turpentine-trees.

The old Mulberry-trees are not only more fruitful than the young, but their fruit are 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 be layed, unleſs by raiſing of boxes or baſkets of earth upon ſupports for

for this purpoſe, ſo the better way is to propagate them by cuttings, which, if rightly choſen and ſkilfully managed, will take root very well; 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 hard froſt is over; they ſhould be planted in 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, and will ſucceed much better than with having much wet. If the cuttings ſucceed well and make good ſhoots, they may be tranſplanted the following ſpring into a nurſery, where they ſhould be regularly trained to ſtems, by fixing down ſtakes by each, 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. In about four years growth 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, and thereby they 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, ſo will be replete with moiſture, and the early froſts in October frequently kill their tops; and if the following winter proves ſevere, they are often killed to their roots, and ſometimes are entirely deſtroyed. I have two or three times made trial of planting the cuttings of Mulberries on a hot-bed, and have found them ſucceed extremely well. This I was led to 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 where 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 rich light earth, ſuch as is in moſt of the old kitchen-gardens about London, where there is alſo a great depth of earth; 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 thoſe of younger trees. I have 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, but their ſtems and branches are covered with moſs, ſo that the little fruit which they ſometimes produce are ſmall, ill taſted, and late before they ripen.

If theſe trees are planted in a ſituation where they are defended from the ſtrong ſouth and 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 early, they will turn mouldy and rot upon the trees. There is never any occaſion for pruning theſe trees, more than to cut off any of the branches which may grow acroſs others, ſo as to rub and wound their bark, by their motion occaſioned by the wind; for their ſhoots ſhould never be ſhortened, becauſe the fruit is produced on the young wood.

The ſecond ſort grows naturally in Sicily, from whence I received a parcel of the ſeeds, and raiſed a good number of the plants; all theſe were totally different in their leaves from the common Mulberry, ſo that I am certain of its being a diſtinct ſpecies. It is alſo a tree of humbler growth, but the fruit is ſmall and has no flavour, ſo is not worth propagating; ſome of the trees produced fruit two or three years in the Chelſea garden.

The white Mulberry is commonly cultivated for its leaves to feed ſilk-worms in France, Italy, &c. though the Perſians generally make uſe of the common black Mulberry for that purpoſe; and I have been aſſured by a gentleman of honour, who has made trial of both ſorts of leaves, that the worms fed with thoſe of the black ſort produce much better ſilk than thoſe fed with the white; but he obſerves that the leaves of the black ſort ſhould never be given to the worms after they have eaten for ſome time of the white, leſt the worms ſhould burſt, which is often the caſe when they are thus treated.

The trees which are deſigned to feed ſilk-worms, ſhould never be ſuffered to grow tall, but rather kept in a ſort of hedge; and inſtead of pulling off the leaves ſingly, they ſhould be ſheared off together with their young branches, which is much ſooner done, and not ſo injurious to the tree.

This white ſort may be propagated either from ſeeds or layers, as the black Mulberry, and is equally hardy; but the moſt expeditious method of raiſing theſe trees in quantity, is from the ſeeds, which may be procured in plenty from the ſouth of France or Italy: the beſt way to ſow theſe ſeeds in England, is to make a moderate hot-bed, which ſhould be arched over with hoops, and covered with mats; upon this bed the ſeeds ſhould be ſown in the end of March, and covered over with light earth about a quarter of an inch deep: in very dry weather the bed muſt be frequently watered, and in the heat of the day ſhaded with mats, and alſo covered in the nights when they are cold; with this management the plants will come up in five or ſix weeks, and as they are tender when they firſt appear, ſo they muſt be guarded againſt froſty mornings, which often happen in May, and deſtroy ſuch tender plants; during the ſummer they muſt be kept clean from weeds, which is all the culture they require: but there muſt be care taken of them the firſt winter, eſpecially to cover them in autumn, when the firſt froſts come, which will kill the tender plants to the ground, if they are not protected; the following March theſe plants ſhould be tranſplanted into the nurſery to get ſtrength, where they may remain two or three years, and then ſhould be removed where they are to continue.

There are two or three varieties of this tree, which differ in the ſhape of their leaves, ſize, and colour of their fruit; but as they are of no other uſe than for their leaves, the ſtrongeſt ſhooting and the largeſt leaved ſhould be preferred.

The third ſort, which is the large-leaved Virginian Mulberry with black ſhoots, is more uncommon than either of the former; there is a large tree of this growing in the gardens of the Biſhop of London at Fulham, which has been ſeveral years an inhabitant of that garden, but has never produced any fruit that I could learn, but hath ſome years a great number of katkins, much like thoſe of the Hazel-nut, which occaſioned Mr. Ray to give it the name of Corylus; but it may be one of the male trees which do not produce fruit, as it ſometimes happens in the common

ſorts

ſorts of Mulberries; the leaves of this are ſomewhat like thoſe of the common Mulberry-tree, but are rougher.

This tree has not been propagated yet in this country, for though it has been budded and grafted upon both the black and white Mulberries, yet I cannot hear that it hath ſucceeded upon either, ſo that I ſuſpect it is not of this genus; and the tree being pretty tall, cannot be laid down, which is the moſt likely method to propagate it. This is very hardy, and will endure the cold of our climate in the open air very well, and is coveted as a curioſity by ſuch as delight in a variety of trees and ſhrubs.

The fifth ſort is the tree whoſe wood is uſed by the dyers, and is better known by the title of Fuſtick, which is given to the wood, than by its fruit, which is of no eſtimation. This grows naturally in moſt of the iſlands in the Weſt-Indies, but in much greater plenty 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 or upward; it has a light brown bark, which hath ſome ſhallow furrows; the wood is firm, ſolid, and of a bright yellow colour. It ſends out many branches on every ſide, covered with a white bark, and are garniſhed with leaves about four inches long, which are broad at their baſe, 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 katkins of a pale herbaceous colour, and in other parts of the ſame branches the fruit is produced, growing upon ſhort foot-ſtalks; they are as large as nutmegs, of a roundiſh form, full of protuberances like the common Mulberry, green within, and alſo on the outſide, of a luſcious ſweet taſte when ripe.

It 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; then they ſhould 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.

The ſixth ſort grows naturally in China and Japan; it alſo grows naturally in South Carolina, from whence I have received the ſeeds; the inhabitants of Japan 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. There were ſeveral of theſe trees raiſed from ſeeds a few years paſt, in the gardens of his Grace the Duke of Northumberland, who was ſo good as to favour me with one of the plants, which thrives very well in the open air without any ſhelter, as many of the trees and plants of thoſe countries will do, if they grow on the mountains. 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 Peas, ſurrounded with long purple hairs, are compoſed of acini, or protuberances, and when ripe, change to a black purple colour, and are full of ſweet juice.

This tree may be propagated by laying down the branches, in the ſame way as is practiſed for the common Mulberry; or it may be multiplied by planting the cuttings, in the ſame manner as before directed for the common ſort.

The ſeventh ſort grows naturally in India, where it becomes a large tree. It hath ſoft, thick, yellowiſh bark, with a milky juice like the Fig, which is aſtringent. The branches come out on every ſide, which 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. I received the ſeeds of this plant from Bombay, which ſucceeded in the Chelſea garden. The plants are too tender to live out of a ſtove in this country; for as I raiſed a good number of the plants, ſo when they had obtained ſtrength, I placed ſome of them in different ſituations, where they were defended from the froſt, but not any of them ſurvived the winter, but thoſe which were in the bark-ſtove, where they are conſtantly kept, and treated in the ſame manner as other tender plants, giving them but little water in winter, with which management the plants thrive, and retain their leaves all the year.

The eighth ſort grows naturally in Jamaica, and alſo in the Bahama Iſlands, from both which places I have received the ſeeds. The wood of this tree is cut, and ſold for the ſame uſes as the fifth, from which this tree has not been well diſtinguiſhed by the botaniſts: this does not grow to ſo great a ſize as the fifth; the branches are ſlenderer, the leaves are narrower, and are rounded at their baſe, ſawed on their edges, and end in acute points. At the foot-ſtalk of each leaf comes out two ſharp thorns, which, in the older branches grow to the length of two inches. The fruit is ſhaped like that of the fifth ſort, but is ſmaller.

MOSCHATELLINA. See ADOXA.

MOSS. See MUSCUS.

MOTHERWORT. See CARDIACA.

MOULD, or earth, the goodneſs of which may be known by the ſight, ſmell, and touch.

Firſt, by the ſight: thoſe Moulds that are of a bright Cheſtnut, or hazelly 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 cuts like butter, and does not ſtick obſtinately, but is ſhort, tolerably light, breaking into ſmall clods, is ſweet, will be tempered without cruſting or chapping, in dry weather, or turning to mortar in wet.

The next to that, the dark gray and ruſſet Moulds are accounted the beſt, the light and dark Aſh-colour are reckoned the worſt, ſuch as are uſually found on common, or heathy ground; the clear tawny is by no means to be approved, but that of a yellowiſh red colour is accounted the worſt of all; this is commonly found in wild and waſte parts of the country, and for the moſt part produce nothing but Furz and Fern, according as their bottoms are more or leſs of a light and ſandy, or of a ſpewy gravel, or clayey nature.

Secondly, by the ſmell: all lands that are good and wholeſome, will, after rain, or breaking up by the ſpade, emit a good ſmell.

Thirdly, by the touch: by this means we may diſcover whether it conſiſts of ſubſtances entirely arenaceous, or clammy; or, according as it is expreſſed by Mr.

Mr. Evelyn, whether it be tender, fatty, deterſive, or ſlippery, or more harſh, gritty, porous, or friable.

That being always the beſt that is between the two extremes, and does not contain the two different qualities of ſoft and hard mixed, of moiſt and dry, of churliſh and mild, that is neither too unctuous or too lean, but ſuch as will diſſolve, of a juſt conſiſtence, between ſand and clay, and ſuch as will not ſtick to the ſpade or fingers upon every flaſh of rain.

A loam, or brick Mould, is not to be diſapproved, as requiring little help or improvement but the ſpade, and is eſteemed both by the gardener and floriſt.

MUCILAGE is a viſcous clammy ſubſtance about ſeeds, &c.

MUCILAGINOUS ſignifies, endowed with a clammy viſcous matter.

MULBERRY. See MORUS.

MULLEIN. See VERBASCUM.

MULTISILIQUOUS plants are ſuch as have after each flower, many diſtinct, long, ſlender, and, oftentimes, crooked caſes, or ſiliquæ, in which their ſeed is contained, and, which, when they ripen, open of themſelves, and let the ſeeds drop. Of this kind is the Bear's-foot, Columbines, common Houſeleek, Navelwort, Orpine, &c.

MUMMY, a ſort of grafting wax, made of one pound of common black pitch, and a quarter of a pound of common turpentine, put into an earthen pot, and ſet on the fire in the open air; in doing this you ought to hold a cover in your hand, ready to cover it, in order to quench it, by putting it thereon, which is to be done ſeveral times, ſetting it on the fire again, that the nitrous and volatile parts may be evaporated. The way to know when it is enough, is by pouring a little of it on a pewter plate, and if it be ſo, it will coagulate preſently; then this melted pitch is to be poured into another pot, and a little common wax is to be added to it, mixing them well together, and then to be kept for uſe.

Dr. Agricola directs the uſing this Mummy as follows:

When you would dreſs roots with this wax, you muſt melt it, and afterwards let it cool a little; then dip in the ends of the roots you would plant (for he propoſes it for the planting pieces of roots of trees, &c.) one after the other, but not too deep, and afterwards to put them in water, and to plant them in the earth, the ſmall end downwards, ſo that the larger end may appear a little way out thereof, and have the benefit of the air, and then to preſs the earth very hard down about them, that they may not receive too much wet, becauſe that would rot them.

Mummy for exotic plants; the ſame author directs the making it as follows:

Take half a pound of gum copal, beat it very fine, and ſearce it; take three pounds of Venice turpentine, and melt it over a ſlow fire in a ſtrong earthen pot; when the turpentine is melted and liquidated, put the ſifted gum into it, keep it continually ſtirring with a little ſtick, augmenting the fire gradually, and it will all diſſolve inſenſibly; afterwards let the turpentine evaporate well, and it will thicken; and when it is become of a ſufficient conſiſtence, you may make it up into little rolls, like ſealing-wax, and keep it for uſe.

This Mummy, he ſays, is an excellent vulnerary for plants, it being ſubject to no corruption, as other gummy things are; it hinders any rottenneſs between the ſtock and the root, by means of which the callus is formed the ſooner, and ſpreads over all the parts, and the ſtock becomes entirely connected with the root. It alſo gives ſtrength and vigour to the root, and likewiſe facilitates it.

Vegetable Mummy; the ſame author directs the making of this as follows:

Fill a large kettle, or earthen pot, about a third part full of common black pitch, and add to it a little fine reſin, or ſulphurated pitch, and a little yellow wax; melt theſe together till they become liquid, then take them off the fire, and let them ſtand till they have done ſmoking, and, when cool, you may, with a bruſh, plaſter the inciſions which are made for the inoculation, grafting, &c.

Garden or Foreſt Mummy; the ſame author directs the making it as follows:

Take three pounds of common turpentine, and four pounds of common pitch; melt the turpentine over the fire, and, having beaten the pitch to a powder, throw it in; when they are well mixed together, and grown pretty thick, take it off, and keep it for uſe.

This compoſition may be either made up into little ſticks, like thoſe of ſealing-wax, to be made uſe of on little trees, or it may be kept in little pots, and melted over a ſlow fire, when there is occaſion to uſe it, and, dipping a little bruſh in it, you may plaſter the graft.

The Noble Mummy, or grafting wax; to make this the ſame author directs:

Take two pounds of pure pitch, ſuch as is called at Ratiſbon virgin pitch, and add to it half a pound of good turpentine; put them together in an earthen pot, and ſet them over the fire, that the volatile part of the turpentine may evaporate, otherwiſe it would be very prejudicial to trees and roots. Prove it as you did the former, to know when it is enough; then add to it half a pound of virgin wax, and half an ounce of pounded Myrrh and Aloes; when theſe are well mixed, make it up into little rolls or plaſters, or elſe it may be kept in gallipots.

The time he directs when the operation of the roots is to be performed, is in the month of September, October, and November; though it may ſucceed well at any time of the year, yet thoſe months are the moſt proper ſeaſons for it. The only difference he ſays, is, what is planted in the ſpring, will ſhoot out in June or July, and what is planted in autumn comes not forth till the month of April.

The aforeſaid author mentions great performances by uſing theſe Mummies; thoſe who have a mind to be ſatisfied, may peruſe his treatiſe.

MUNTINGIA. Plum. Gen. Nov. 41. tab. 6. Lin. Gen. Plant. 575.

The CHARACTERS are,

The empalement of the flower is cut into five ſegments to the bottom. The flower hath five heart-ſhaped petals, narrow at their baſe, which are inſerted in the empalement, and ſpread open like a Roſe. It has a great number of ſtamina, which are terminated by roundiſh ſummits. In the center is ſituated a roundiſh germen, having no ſtyle, but is crowned by a ſtigma divided into many parts. The germen afterward turns to a ſoft fruit, with one cell, crowned by the ſtigma, like a navel, and filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's thirteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina and one ſtigma. According to Tournefort's ſyſtem, it muſt be ranged in the eighth ſection of his twenty-firſt claſs, which contains the trees and ſhrubs with a Roſe flower, whoſe empalement becomes a fruit, having hard ſeeds.

We know but one SPECIES of this genus, viz.

MUNTINGIA (*Calabura.*) Jacq. Hiſt. tab. 107. Muntingia folio ſericeo molli, fructu majori. Plum. Nov. Gen. 41. *Muntingia with a ſoft ſilky leaf, and a larger fruit.*

The title of this genus was given to it by Father Plumier, in honour of Dr Muntingius, who was profeſſor of botany at Groningen in Holland, who publiſhed a folio book of botany, entitled, Phytographia Curioſa, in which there are many figures of plants exhibited, engraven on copper-plates; he alſo publiſhed two books of plants in quarto, one of which is entitled, Aloidarum, in which the figures of ſeveral ſorts of Aloes are exhibited; the title of the other is, De Herba Britannica Antiquorum.

This plant is figured and deſcribed by Sir Hans Sloane, in his Hiſtory of Jamaica, by the title of Loti arboris folio anguſtiore, rubi flore, fructu polyſpermo umbilicato, 2. p. 80. This riſes to the height of thirty feet or more in its native ſoil, ſending out

many branches toward the top, which are covered with a ſmooth, dark, purple bark, garniſhed with leaves about three inches long, and three quarters broad at their baſe, where they are rounded to a heart-ſhape at the foot-ſtalk, but end in acute points, are very woolly on their under ſide, but ſmooth above, and of a lucid green; they are ſlightly ſawed on their edges, and are placed alternately. The flowers come out from the wings of the ſtalks, ſtanding upon long foot-ſtalks, compoſed of five heart-ſhaped petals, which are white, and ſpread open, reſembling thoſe of the Bramble, having many ſtamina about half the length of the petals, terminated by globular ſummits, and in the center is ſituated a roundiſh germen, crowned by a many-pointed ſtigma. The germen afterward turns to a pulpy umbilicated fruit, as large as the fruit of the Cockſpur Hawthorn, and, when ripe, of a dark purple colour, incloſing many ſmall, hard, angular ſeeds; this ſort has produced flowers and fruit in England.

The ſeeds of this plant were ſent by Mr. Robert Millar from Jamaica, which ſucceeded in ſome of the Engliſh gardens.

The plants are propagated by ſeeds, which ſhould be ſown in pots filled with light rich earth, and plunged into a moderate hot-bed of tanners bark, and in warm weather the glaſſes ſhould be raiſed to admit freſh air. Theſe ſeeds will often remain in the ground a whole year before the plants will appear; in which caſe the pots muſt be kept conſtantly clear from weeds, and ſhould remain in the hot-bed till after Michaelmas, when they may be removed into the ſtove, and plunged into the bark-bed, between other pots of tall plants, where they may remain during the winter ſeaſon. Theſe pots ſhould be now and then watered, when the earth appears dry, and in the beginning of March the pots ſhould be removed out of the ſtove, and placed into a freſh bark-bed under frames, which will bring up the plants ſoon after.

When the plants are come up about two inches high, they ſhould be carefully taken out of the pots, and each planted into a ſeparate ſmall pot filled with light rich earth, and then plunged into the hot-bed again, obſerving to ſhade them from the ſun until they have taken new root, after which time they ſhould be duly watered, and in warm weather they muſt have a large ſhare of freſh air. In this hot-bed the plants may remain until autumn, when the nights begin to be cold; at which time they ſhould be removed into the ſtove, and plunged into the bark-bed. During the winter ſeaſon theſe plants muſt be kept warm, eſpecially while they are young, and frequently refreſhed with water; but it muſt not be given to them in large quantities, leſt it rot the tender fibres of their roots. It will be proper to continue theſe plants in the ſtove all the year, but in warm weather they ſhould have a large ſhare of freſh air; but as the plants grow in ſtrength, they will be more hardy, and may be expoſed in ſummer for two or three months, and in winter will live in a dry ſtove, if kept in a moderate degree of heat.

MURUCUIA. See PASSIFLORA.

MUSA. Plum. Nov. Gen. 24. tab. 34. Lin. Gen. Plant. 1010. The Plantain-tree.

The CHARACTERS are,

It hath male and female flowers upon the ſame foot-ſtalk, ſome of which are hermaphrodite; theſe are produced on a ſingle ſtalk (or ſpadix;) the male flowers are ſituated on the upper part of the ſpike, and the female below; theſe are in bunches, each bunch having a ſheath, or cover, which falls off. The flowers are of the lip kind. The petals conſtitute the upper lip, and the nectarium the under; they have ſix awl-ſhaped ſtamina, five of which are ſituated in the petal, and the ſixth in the nectarium; this is double the length of the other, terminated by a linear ſummit; the others have none. The germen is ſituated under the flower, which is long, having three obtuſe angles, ſupporting an erect cylindrical ſtyle, crowned by a roundiſh ſtigma. The germen afterward turns to an oblong, three-cornered, fleſhy fruit, covered with a thick rind, divided into three parts.

This genus of plants is ranged in the firſt ſection of Linnæus's twenty-third claſs, which includes thoſe plants with male and female flowers, which have hermaphrodite flowers on the ſame ſtalk. Plumier ranges it in Tournefort's claſs, with the anomalous flowers of ſeveral petals; and Garçin places it among the plants with a Lily flower.

The SPECIES are,

1. MUSA (*Paradiſiaca*) ſpadice nutante floribus maſculis perſiſtentibus. Lin. Sp. 1477. *Muſa with a nodding ſpike, and nodding male flowers.* Muſa fructu cucumerino longiorio. Plum. Nov. Gen. 24. *Muſa with a longer Cucumber-ſhaped fruit, commonly called Plantain-tree.*
2. MUSA (*Sapientum*) ſpadice nutante floribus maſculis deciduis. Lin. Sp. 1477. *Muſa with a nodding ſpike, and deciduous male flowers.* Muſa fructu cucumerino, breviore. Plum. Nov. Gen. 24. *Muſa with a ſhorter Cucumber-ſhaped fruit, commonly called Bonana.*

The firſt ſort is cultivated in all the iſlands of the Weſt-Indies, where the fruit generally ſerves the negroes for bread, and ſome of the white people alſo prefer it to moſt other ſorts, eſpecially to the Yams, and Caſſada bread.

This plant riſes with a ſoft herbaceous ſtalk fifteen or twenty feet high, and upward; the lower part of the ſtalk is often as large as a man's thigh, diminiſhing gradually to the top, where the leaves come out on every ſide, which are often more than ſix feet long, and near two feet broad, with a ſtrong fleſhy midrib, and a great number of tranſverſe veins running from the midrib to the borders. The leaves are thin and tender, ſo that where they are expoſed to the open air, they are generally torn by the wind; for as they are large, the wind has great power againſt them: theſe leaves come out from the ſide of the principal ſtalk, incloſing it with their baſe; they are rolled up at their firſt appearance, but when they are advanced above the ſtalk, they expand quite flat, and turn backward; as theſe leaves come up rolled in the manner before mentioned, their advance upward is ſo quick, that their growth may be almoſt diſcerned by the naked eye; and if a line is drawn acroſs, level with the top of the leaf, in an hour's time the leaf will be near an inch above it. When the plant is grown to its full height, the ſpike of flowers will appear from the center of the leaves, which is often near four feet in length, and nods on one ſide. The flowers come out in bunches, thoſe on the lower part of the ſpike being the largeſt; the others diminiſh in their ſize upward; each of theſe bunches is covered with a ſpathæ or ſheath, of a fine purple colour within, which drops off when the flowers open. The upper part of the ſpike is made up of male or barren flowers, which are not ſucceeded by fruit, but thoſe of the ſecond ſort fall off with their covers. The fruit of this is eight or nine inches long, and above an inch diameter, a little incurved, and has three angles; it is at firſt green, but, when ripe, of a pale yellow colour. The ſkin is tough, and within is a ſoft pulp of a luſcious ſweet flavour. The ſpikes of fruit are often ſo large as to weigh upwards of forty pounds.

The fruit of the firſt ſort is generally cut before it is ripe, and roaſted in the embers, then it is eaten inſtead of bread. The leaves are uſed for napkins and table cloths, and are food for hogs.

The ſecond ſort, which is commonly called Bonana, differs from the firſt, in having its ſtalks marked with dark purple ſtripes and ſpots. The fruit is ſhorter, ſtraiter, and rounder, and the male flowers drop off; the pulp is ſofter, and of a more luſcious taſte, ſo is generally eaten by way of deſert, and ſeldom uſed in the ſame way as the Plantain, therefore is not cultivated in ſuch plenty.

Both theſe plants were carried to the Weſt-Indies from the Canary Iſlands, to which place it is believed

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they were carried from Guinea, where they grow naturally: theſe plants are alſo cultivated in Egypt, and in moſt other hot countries, where they grow to perfection in about ten months, from their firſt planting, to the ripening of their fruit; when their ſtalks are cut down, ſeveral ſuckers come up from the root; they will alſo produce fruit in ten months after, ſo that by cutting down the ſtalks at different times, there is a conſtant ſucceſſion of fruit all the year.

In Europe there are ſome of theſe plants preſerved in the gardens of curious perſons, who have hot-houſes capacious enough for their reception, in many of which they have ripened their fruit very well; but as they grow very tall and their leaves are large, they require more room in the ſtove than moſt people care to allow them: they are propagated by ſuckers, which come from the roots of thoſe plants which have fruited; and many times the younger plants, when they are ſtinted in growth, will put out ſuckers; theſe ſhould be carefully taken off, preſerving ſome fibres to their roots, and planted in pots filled with light rich earth, and plunged into the tan-bed in the ſtove: theſe may be taken off any time in ſummer, and it is beſt to take them off when young, becauſe if their roots are grown large, they do not put out new fibres ſo ſoon, and when the thick part of the root is cut in taking off, the plants often rot.

During the ſummer ſeaſon theſe plants muſt be plentifully watered, for the ſurface of their leaves being large, there is a great conſumption of moiſture, by perſpiration in hot weather, but in the winter they muſt be watered more ſparingly; though at that ſeaſon they muſt be often refreſhed, but it muſt not be given them in ſuch quantities.

The pots in which theſe plants are placed, ſhould be large in proportion to the ſize of the plants, for their roots generally extend pretty far, and the earth ſhould be rich and light. The degree of heat with which theſe plants thrive beſt, is much the ſame with the Anana, or Pine Apple, in which I have had many of theſe plants produce their fruit in perfection, and they were near twenty feet high.

The moſt ſure method to have theſe plants fruit in England is, after they have grown for ſome time in pots, ſo as to have made good roots, to ſhake them out of the pots with the ball of earth to their roots, and plant them into the tan-bed in the ſtove, obſerving to lay a little old tan near their roots for their fibres to ſtrike into, and in a few months the roots of theſe plants will extend themſelves many feet each way in the bark; and theſe plants will thrive a great deal faſter than thoſe which are confined in pots, or tubs. When the bark-bed wants to be renewed with freſh tan, there ſhould be great care taken of the roots of theſe plants, not to cut or break them, as alſo to leave a large quantity of the old tan about them, becauſe if the new tan is laid too near them, it will ſcorch their roots, and injure them: theſe plants muſt be plentifully ſupplied with water, otherwiſe they will not thrive; in winter they ſhould be watered twice a week, giving at leaſt two quarts to each plant, but in ſummer they muſt be watered every other day, and double the quantity given to them each time. If the plants puſh out their flower-ſtems in the ſpring, there will be hopes of their perfecting their fruit; but when they come out late in the year, the plants will ſometimes decay before the fruit is ripe. The ſtoves in which theſe plants are placed ſhould be at leaſt twenty feet in height, otherwiſe there will not be room for their leaves to expand; for when the plants are in vigour, the leaves are often eight feet in length, and two feet broad: ſo that if the ſtems grow to be fourteen feet to the diviſion of the leaves, and the houſe is not twenty feet high, the leaves will be cramped, which will retard the growth of the plants; beſides, when the leaves are bent againſt the glaſs, there will be danger of their breaking them, when they are growing vigorouſly; for I have had in one night the ſtems of ſuch bent leaves force through the glaſs, and by the next morning advanced two or three inches above the glaſs.

I have ſeen ſome bunches of fruit of the firſt ſort, which were upwards of forty pounds weight, and perfectly ripe in England; but this is not ſo good a fruit, as to tempt any perſon to be at the expence of raiſing them in England. The ſecond ſort is preferred to the firſt, for the flavour of its fruit, in all thoſe hot countries where theſe plants abound: the bunches of theſe are not near ſo large as thoſe of the firſt ſort, nor are the ſingle fruit near ſo long; theſe change to a deeper yellow colour as they ripen, but their taſte is ſomewhat like that of meally Figs. Some perſons who have reſided in the Weſt-Indies, having eaten ſome of theſe fruit which were produced in England, and thought them little inferior to thoſe which grew in America; and I imagine, that the inhabitants of thoſe countries would not eſteem theſe fruits ſo much, had they variety of other ſorts; but, for want of better, they eat many kinds of fruit, which would not be valued in Europe, could they be obtained in perfection.

MUSCARI. Tourn. Inſt. R. H. 347. tab. 180. Muſk, or Grape Hyacinth, vulgò.

The CHARACTERS are,

The flower has no empalement. It hath one oval pitcher-ſhaped petal, which is reflexed at the brim. It hath three nectariums on the top of the germen, and ſix awl-ſhaped ſtamina which are ſhorter than the petal, whoſe ſummits join together, and in the center is ſituated a roundiſh three-cornered germen, ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward turns to a roundiſh three-cornered capſule, having three cells, filled with roundiſh ſeeds.

Dr. Linnæus has joined this genus to the Hyacinth, which is placed in the firſt ſection of his ſixth claſs, which contains the plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. MUSCARI (*Botryoide*) corollis globoſis uniformibus, foliis canaliculato-cylindricis ſtrictis. *Muſcari with uniform globular petals, and cylindrical gutter-ſhaped leaves.* Muſcari arvenſe, juncifolium, cæruleum, minus. Tourn. Inſt. 348. *Smaller blue Field Muſcary, withRuſh leaves, commonly called Grape Hyacinth.*
2. MUSCARI (*Comoſus*) corollis angulato-cylindricis, ſummis ſterilibus longiùs pedicellatis. *Muſcari with angular cylindrical petals, which on the top of the ſpike are barren, and have longer foot-ſtalks.* Muſcari arvenſe, latifolium, purpuraſcens. Tourn. Inſt. 347. *Broad-leaved, purple, Field Muſcari, commonly called Fair-haired Hyacinth.*
3. MUSCARI (*Racemoſus*) corollis ovatis, ſummis ſeſſilibus foliis laxis. *Muſcari with oval petals.* Muſcari obſoletiore flore. Cluſ. Hiſt. 1. p. 178. *Muſcari with an obſolete flower, commonly called Muſk Hyacinth.*
4. MUSCARI (*Monſtroſus*) corollis ſubovatis. *Muſcari with almoſt oval corolla.* Hyacinthus paniculâ cæruleâ. C. B. P. 42. *Blue paniculated Hyacinth, called Feathered Hyacinth.*
5. MUSCARI (*Orchioide*) corollis ſexpartitis, petalis tribus exterioribus brevioribus. *Muſcari with petals which are cut into ſix parts.* Hyacinthus orchioides Africanus major bifolius maculatus, flore ſulphureo, obſoleto majore. Breyn. Prod. 3. 24. *Greater African Hyacinth, reſembling Orchis, with two ſpotted leaves, and a larger, obſolete, ſulphur-coloured flower.*

The firſt ſort grows naturally in the vineyards and arable fields in France, Italy, and Germany, and where it is once planted in a garden, it is not eaſily rooted out, for the roots multiply greatly, and if they are permitted to ſcatter their ſeeds, the ground will be filled with the roots. There are three varieties of this, one with blue, another with white, and a third with Aſh-coloured flowers: the firſt ſort hath a ſmall, round, bulbous root, from which come out many leaves about ſix inches long, which are narrow, and their edges are incurved, ſo as to be ſhaped like a gutter: between theſe ariſe the flower-ſtalk, which

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is naked, and toward the top garniſhed with a cloſe ſpike of blue flowers, ſhaped like pitchers, ſitting very cloſe to the ſtalk; theſe ſmell like freſh ſtarch, or the ſtones of Plumbs which are freſh. They flower in April, and the ſeeds ripen the latter end of June.

The ſecond ſort grows naturally in Spain and Portugal, from whence I have received both roots and ſeeds; this hath a bulbous root as large as a middling Onion, from which come out five or ſix leaves a foot long, and three quarters of an inch broad at their baſe, diminiſhing gradually to a point. The flower-ſtalk riſes about a foot high, the lower half naked, but the upper is garniſhed with cylindrical, angular, purple flowers, ſtanding upon foot-ſtalks half an inch long; theſe grow horizontally, but the ſtalk is terminated by a tuft of flowers whoſe petals are oval, and have neither germen or ſtyle, ſo are barren. This ſort flowers the latter end of April, or the beginning of May; there is a variety of this with white, and another with blue flowers, but the purple is the moſt common.

The third ſort hath pretty large, oval, bulbous roots, from which ariſe ſeveral leaves, which are about eight or nine inches long, and half an inch broad; they are incurved a little on their ſides, and end in obtuſe points; theſe embrace each other at their baſe; out of the middle of theſe, the ſtalk which ſuſtains the flowers ariſes; they are naked below, but their upper parts are garniſhed with ſmall flowers growing in a ſpike; theſe have oval pitcher-ſhaped petals, which are reflexed at their brim, and are of an Aſh-coloured purple, or obſolete colour, ſeeming as if faded, but have an agreeable muſky ſcent: theſe ſtalks do not riſe more than ſix inches high, ſo the flowers make no great appearance; but where they are in ſome quantity, they will perfume the air to a conſiderable diſtance. This ſort flowers in April, and the ſeeds ripen in July.

Of this there are two varieties, one of which has the ſame coloured flowers with this here enumerated, on the lower part of the ſpike, but they are larger, and have more of the purple caſt, but the flowers on the upper part of the ſpike are yellow, and have a very grateful odour. The Dutch gardeners title it Tibcadi Muſcari. As this is ſuppoſed to be only a ſeminal variety of the third, I have not enumerated it as diſtinct. There is another variety of this with very large yellow flowers, that has been lately raiſed from ſeeds in Holland, which the floriſts there ſell for a guinea a root.

The fourth ſort hath a large bulbous root, from which come out ſeveral plain leaves a foot long, and about half an inch broad at their baſe; they are ſmooth, and end in obtuſe points. The flower-ſtalks riſe near a foot and a half high; they are naked at the bottom for about ſeven or eight inches, above which the panicles of flowers begin, and terminate the ſtalks. The flowers ſtand upon foot-ſtalks which are more than an inch long, each ſuſtaining three, four, or five flowers, whoſe petals are cut into ſlender filaments like hairs; they are of a purpliſh blue colour, and have neither ſtamina or germen, ſo do never produce ſeeds. It flowers in May, and, after the flowers are paſt, the ſtalks and leaves decay to the root, and new ones ariſe the following ſpring.

The fifth ſort grows naturally at the Cape of Good Hope, from whence I received the ſeeds, which ſucceeded in the Chelſea garden, where the plants have flowered for ſeveral years paſt; this hath a ſmall, white, bulbous root, about the ſize of a Hazel nut, from which comes out generally but two, (though ſometimes when the roots are ſtrong) three leaves, which are five or ſix inches long, and one inch and a half broad in the middle, ending in obtuſe points; theſe are of a lucid green, and have many ſpots, or protuberances on their upper ſurface. The flower-ſtalk riſes between them to the height of ſix or ſeven inches; it is round, ſmooth, and naked for three inches high or more, and is terminated by a ſpike of flowers, which are of a pale ſulphur colour; theſe have no foot-ſtalks; they have one petal, which is of an irregular figure, and cut at the top into ſix parts. The ſtamina are almoſt equal with the petal, and ſtand round the ſtyle, which is of the ſame length. The flowers appear in March, but are ſeldom ſucceeded by good ſeeds here.

The four firſt ſorts are very hardy, ſo will thrive in the open air, and require no other culture than any other hardy bulbous-rooted flower; which is, to take up their roots every ſecond or third year to ſeparate their bulbs, for as ſome of the ſorts multiply pretty faſt, ſo when they are become large bunches, they do not flower ſo ſtrong as when they are ſingle: the beſt time to take them out of the ground, is ſoon after their ſtalks and leaves are decayed; then they ſhould be ſpread on a mat, in a dry ſhady room for a fortnight to dry, after which they may be kept in boxes like other bulbous roots, till Michaelmas, when they may be planted again in the borders of the flower-garden, and treated in the ſame way as the common hardy kinds of Hyacinths.

The firſt ſort ſhould not be admitted into the flower-garden, becauſe the roots will propagate ſo faſt, as to become a troubleſome weed there.

The ſecond ſort has but little beauty, ſo a few of theſe only ſhould be allowed a place merely for the ſake of variety; this is ſo hardy, as to thrive in any ſoil or ſituation.

The third ſort merits a place for the extreme ſweetneſs of its flowers, but eſpecially that variety of it with yellow flowers, called Tibcady.

The fourth ſort may alſo be allowed to have place in the common borders of the pleaſure-garden, where they will add to the variety, and are by no means to be deſpiſed.

They are all eaſily propagated by offsets, which moſt of their roots ſend out in pretty great plenty, ſo that there is little occaſion for ſowing of their ſeeds, unleſs it be to gain ſome new varieties.

The fifth ſort is too tender to thrive in the open air in England, ſo the roots muſt be planted in ſmall pots, filled with light rich earth; and in the autumn they ſhould be placed under a hot bed-frame, where they may be protected from froſt, but ſhould have as much free air as poſſible in mild weather; for when theſe are placed in a green-houſe, their leaves are drawn long and narrow, and the flower-ſtalks are generally weak, ſo never flower ſo well as when they have plenty of free air. Theſe flowers will continue a month where they are not drawn, but will decay in half that time in a green-houſe.

Theſe roots ſhould be tranſplanted in July, when their ſtalks and leaves are decayed, and ſhould be placed in the open air during the ſummer ſeaſon, but ſhould have very little water when their leaves are decayed.

MUSCIPULA. See SILENE.

MUSCOSE, MUSCOSUS, Moſſy, or abounding with Moſs.

MUSCOSITY, Moſſineſs.

MUSCUS, Moſs.

Theſe, though formerly ſuppoſed to be only excreſcences produced from the earth, trees, &c. yet are no leſs perfect plants than thoſe of greater magnitude, having roots, branches, flowers, and ſeeds, but yet cannot be propagated from the latter by any art.

The botaniſts diſtinguiſh theſe into ſeveral genera, under each of which are ſeveral ſpecies; but as they are plants of no uſe or beauty, it would be to little purpoſe to enumerate them in this place.

Theſe plants chiefly flouriſh in cold countries, and in the winter ſeaſon, and are many times very injurious to fruit-trees, which grow upon cold barren ſoils, or where they are ſo cloſe planted as to exclude the free acceſs of air. The only remedy in ſuch caſes is to cut down part of the trees, and plough up the ground between thoſe left remaining: and in the

ſpring

ſpring of the year, in moiſt weather, you ſhould, with an iron inſtrument made a little hollow, the better to ſurround the branches of the trees, ſcrape off the Moſs, carrying it off the place; and by two or three times thus cleanſing them, together with carefully ſtirring the ground, it may be entirely deſtroyed from the trees; but if you do not cut down part of the trees, and ſtir the ground well, the rubbing off the Moſs will ſignify little; for the cauſe not being removed, the effect will not ceaſe, but the Moſs will in a ſhort time be as troubleſome as ever.

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, though their flowers and ſeeds have not as yet been perfectly diſcovered. But ſince they may, and are annually propagated by the gardeners near London, and are (the eſculent ſort of them) greatly eſteemed by moſt curious palates, I ſhall briefly ſet down the method practiſed by the gardeners who cultivate them for ſale.

But firſt, it will not be improper to give a ſhort deſcription of the true eatable kind, ſince there are ſeveral unwholſome ſorts, which have been by unſkilful perſons gathered for the table.

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;) then 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 the 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 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 in the bed; for I had a parcel of this ſpawn, which had lain near the oven of a ſtove upward of four months, and was become ſo dry, that I deſpaired of its ſucceſs; but I never have yet ſeen any which produced ſo ſoon, nor in ſo great quantity as this.

The bed being in 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 four or five inches aſunder; then gently cover this with the ſame light earth above 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 theſe produced in beds, are much better for the 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 I have frequently known theſe to have produced great quantities of Muſhrooms afterward, and have continued a long time in perfection.

MUSTARD. See SINAPI.

MYAGRUM. Tourn. Inſt. R. H. 211. tab. 99. Lin. Gen. Plant. 713. Gold of Pleaſure.

The CHARACTERS are,

The empalement of the flower is compoſed of four oblong, oval, coloured leaves, which fall off. The flower hath four roundiſh obtuſe petals, placed in form of a croſs. It hath ſix ſtamina the length of the petals, four of which are a little longer than the other, terminated by ſingle ſum-

mits. In the center is ſituated an oval germen, ſupporting ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a turbinated, heart-ſhaped, ſhort pod, having two valves with a rigid ſtyle on the top, incloſing roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fifteenth claſs, which contains the plants whoſe flowers have four long and two ſhorter ſtamina, and the ſeeds are incloſed in ſhort ſmall pods.

The SPECIES are,

1. MYAGRUM (*Sativum*) ſiliculis ovatis, pedunculatis polyſpermis. Hort. Cliff. 328. *Myagrum with oval pods having foot-ſtalks, incloſing ſeveral ſeeds.* Alyſſon ſegetum foliis auriculatis acutis. Tourn. Inſt. R. H. *Corn Madwort with eared acute-pointed leaves, commonly called Gold of Pleaſure.*
2. MYAGRUM (*Alyſſum*) ſiliculis cordatis pedunculatis polyſpermis, foliis denticulatis obtuſis. *Myagrum with heart-ſhaped pods ſtanding upon foot-ſtalks, having many ſeeds and indented leaves.* Alyſſon ſegetum foliis auriculatis acutis fructu majori. Tourn. Inſt. 217. *Corn Madwort, with acute-eared leaves and a larger fruit.*
3. MYAGRUM (*Rugoſum*) ſiliculis globoſis compreſſis punctato-rugoſis. Hort. Cliff. 328. *Myagrum with globular, compreſſed, ſmall pods, having rough punctures.* Rapiſtrum arvenſe, folio auriculato acuto. Tourn. Inſt. 211. *Field Charlock with an acute-eared leaf.*
4. MYAGRUM (*Perenne*) ſiliculis biarticulatis diſpermis, foliis extrorſum ſinuatis denticulatis. Hort. Upſal. 182. *Myagrum with ſhort pods, having two joints and two ſeeds, and outer leaves which are ſinuated and indented.* Rapiſtrum monoſpermum. C. B. P. 95. *One-ſeeded Charlock.*
5. MYAGRUM (*Perfoliatum*) ſiliculis obcordatis ſubſeſſilibus, foliis amplexicaulibus. Hort. Upſal. 182. *Myagrum with ſmall heart-ſhaped pods ſitting cloſe to the ſtalk, and the leaves embracing it.* Myagrum monoſpermum latifolium. C. B. P. 109. *Broad-leaved Myagrum having one ſeed in a pod.*

The firſt ſort grows naturally in Corn fields in the ſouth of France and Italy; I have alſo found it growing in the Corn in Eaſthamſted-park, the ſeat of William Trumbull, Eſq; but it is not common in this country. It is an annual plant, with an upright ſtalk about a foot and a half high, ſending out two or four ſide branches toward the top, which grow erect; they are ſmooth, and have a fungous pith; the lower leaves are from three to four inches long, of a pale or yellowiſh green, and are eared at their baſe; thoſe upon the ſtalks diminiſh in their ſize all the way up, and are entire, and almoſt embrace the ſtalks with their baſe. The flowers grow in looſe ſpikes at the end of the branches, ſtanding upon foot-ſtalks an inch long; they are compoſed of four ſmall yellowiſh petals, placed in form of a croſs; theſe are ſucceeded by oval capſules, which are bordered, and crowned at the top with the ſtyle of the flower, having two cells, which are filled with red ſeeds.

The ſecond ſort is alſo an annual plant, and differs from the firſt in having a taller ſtalk; the leaves are much longer, narrower, and are regularly indented on their edges, ending in obtuſe points. The flowers are larger, but of the ſame form and colour; the capſules are much larger, and are ſhaped like a heart. Both theſe plants flower in June and July, and their ſeeds ripen in September.

The third ſort grows naturally on the borders of arable fields, in the ſouth of France and Italy. This is an annual plant, whoſe lower leaves are five or ſix inches long; they are hairy and ſucculent; their baſe is eared, and they end in acute points. The ſtalks riſe a foot and a half high, they are brittle and hairy, branching out toward the top like the two former, and are terminated by ſhort looſe ſpikes of ſmall pale flowers, which are ſucceeded by ſmall, rough, roundiſh capſules, compreſſed at the top. It flowers in July, and the ſeeds ripen in autumn.

The fourth ſort grows naturally amongſt the Corn, in France and Germany. This is alſo an annual plant; the lower leaves are large, jagged, and hairy; the ſtalks branch out from the bottom, and are garniſhed with leaves about four inches long and two broad; they are hairy, and unequally jagged. The ſtalks are terminated by very long looſe ſpikes of yellow flowers, which are ſucceeded by ſhort pods with two joints, each including one roundiſh ſeed. It flowers about the ſame time with the former.

The fifth ſort grows naturally in the ſouth of France and Italy; this hath a ſmooth branching ſtalk upward of two feet high; the lower leaves are five or ſix inches long, ſmooth, ſucculent, and a little indented; the upper leaves almoſt embrace the ſtalks with their baſe. The flowers are produced in long looſe ſpikes, which are yellow, and ſit cloſe to the ſtalk; theſe are ſucceeded by heart-ſhaped compreſſed pods, divided into two cells by a longitudinal partition, each containing one roundiſh ſeed. It flowers at the ſame time with the former.

If the ſeeds of all theſe plants are permitted to ſcatter in the autumn, the plants will riſe without any care, and only require to be thinned and kept clean from weeds. Theſe autumnal plants will always ripen their ſeeds, whereas thoſe which are ſown in the ſpring ſometimes fail.

MYOSOTIS. Dill. Gen. 3. Lin. Gen. 180. Mouſe-ear.

The CHARACTERS are,

The flower hath an oblong, erect, permanent empalement, cut into five points; the flower is ſalver-ſhaped, having a ſhort cylindrical tube, cut into five obtuſe ſegments at the brim; the chaps are cloſed by five ſmall ſcales which join, and are prominent. It hath five ſhort ſtamina in the neck of the tube, terminated by ſmall ſummits; and four germen ſupporting a ſlender ſtyle the length of the tube, crowned by an obtuſe ſtigma; the germina afterward become four oval ſeeds incloſed in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, the flower having five ſtamina and one ſtyle.

The SPECIES are,

1. MYOSOTIS (*Virginica*) ſeminibus aculeatis glochidibus, foliis ovato-oblongis, ramis divaricatis. Lin. Sp. 189. *Mouſe-ear with prickly ſeeds, oblong oval leaves, and divaricated branches.* Cynogloſſum Virginianum, flore & fructu minimo. Mor. Hiſt. 3. tab. 30. fol. 9. *Virginian Hound's-tongue, with ſmall flowers and ſeeds.*
2. MYOSOTIS (*Lappula*) ſeminibus aculeis glochidibus, foliis lanceolatis piloſis. Flor. Suec. 150. *Mouſe-ear with prickly ſeeds, and hairy ſpear-ſhaped leaves.* Cynogloſſum minus. C. B. P. 257. *Smaller Hound's-tongue.*
3. MYOSOTIS (*Apula*) ſeminibus nudis, foliis hiſpidis, racemis foliolis. Lin. Sp. 189. *Mouſe-ear with naked ſeeds, ſtinging leaves, and leafy branches.* Echium luteum minimum. C. B. P. 254. *The leaſt yellow Viper's Bugloſs.*

There are one or two other ſpecies of this genus which grow naturally in England, ſo are rarely admitted into gardens, therefore are omitted here: and thoſe here enumerated are ſeldom cultivated except in botanic gardens, being plants of little beauty or uſe. Thoſe perſons who are deſirous of keeping them, ſhould ſow their ſeeds in the autumn, upon an open bed or border of light earth, and in the ſpring thin the plants where they are too cloſe, and keep them clean from weeds, which is all the culture they require; and if their ſeeds are permitted to ſcatter, the plants will riſe withour farther trouble.

MYOSURUS, Mouſe-tail.

This plant is very near a-kin to the Ranunculus, in which genus it is ranged by ſome botaniſts; the flowers are extremely ſmall, and are ſucceeded by long ſlender ſpikes of ſeeds, reſembling the tail of a mouſe, from whence it had the name. It grows wild upon moiſt grounds in divers parts of England, where it flowers the latter end of April; and the ſeeds ripen in a month after, when the plants decay, being annual. It is rarely cultivated in gardens, ſo I ſhall not trouble the reader with any further account of it.

MYRICA. Lin. Gen. Plant. 981. Gale. Tourn. Act. Reg. Scien. 1706. The Candleberry Myrtle, Gale, or Sweet Willow; by ſome Myrtus Brabantica, or Dutch Myrtle; in French, *Piment Royal.*

The CHARACTERS are,

The male flowers are upon different plants from the female; the male flowers are produced in a looſe, oblong, oval katkin, imbricated on every ſide; under each ſcale is ſituated one moon-ſhaped flower, having no petal, but hath four or ſix ſhort ſlender ſtamina, terminated by large twin ſummits, whoſe lobes are bifid. The female flowers have neither petal or ſtamina, but an oval germen ſupporting two ſlender ſtyles, crowned by ſingle ſtigmas. The germen afterward becomes a berry with one cell, incloſing a ſingle ſeed.

This genus of plants is ranged in the fourth ſection of Linnæus's twenty-ſecond claſs, which includes the plants whoſe male flowers have four ſtamina, and are upon different plants from the fruit.

The SPECIES are,

1. MYRICA (*Gale*) foliis lanceolatis ſubſerratis, caule fruticoſo. Lin. Sp. Plant. 1024. *Myrica with ſpear-ſhaped ſawed leaves and a ſhrubby ſtalk.* Gale frutex odoratus ſeptentrionalium. J. B. 1. p. 2. 225. *Northern, ſhrubby, ſweet Gale, ſweet Willow, Dutch Myrtle, or Gale.*
2. MYRICA (*Cerifera*) foliis lanceolatis ſubſerratis, caule arboreſcente. Kalm. *Myrica with ſpear-ſhaped leaves, and a ſhrubby ſtalk.* Myrtus Brabanticæ ſimilis Carolinienſis baccifera, fructu racemoſo ſeſſili monopyreno. Pluk Phyt. tab. 48. fol. 9. *Carolina Myrtle like that of the Dutch, with berries growing in bunches, and ſitting cloſe to the ſtalks, commonly called Candleberry Myrtle.*
3. MYRICA (*Carolinienſis*) foliis lanceolatis ſerratis, caule ſuffruticoſa. *Myrica with ſpear-ſhaped ſawed leaves, and a ſhrubby ſtalk.* Myrtus Brabanticæ ſimilis Carolinienſis humilior, foliis latioribus & magis ſerratis. Cateſb. Car. vol. i. p. 13. *Lower Carolina Myrtle, or Candleberry-tree reſembling that of Brabant, having broader leaves which are more ſawed.*
4. MYRICA (*Aſplenifolia*) foliis oblongis alternatim ſinuatis. Hort. Cliff. 456. *Myrica with oblong oval leaves, which are alternately ſinuated.* Gale Mariana Aſplenii folio. Pet. Muſ. 773. *Maryland Gale with a Spleenwort leaf.*
5. MYRICA (*Quercifolia*) foliis oblongis oppoſitè ſinuatis glabris. *Myrica with oblong ſmooth leaves, which are oppoſitely ſinuated.* Laurus Africana minor, folio quercûs. Hort. Amſt. 2. p. 161. *Smaller African Bay with an Oak leaf.*
6. MYRICA (*Hirſuta*) foliis oblongis oppoſitè ſinuatis hirſutis. *Myrica with oblong hairy leaves, which are oppoſitely ſinuated.*
7. MYRICA (*Cordifolia*) foliis ſubcordatis ſerratis ſeſſilibus. Hort. Cliff. 456. *Myrica with ſawed leaves which are almoſt heart-ſhaped, and ſit cloſe to the ſtalk.* Gale Capenſis, ilicis cocciferæ folio. Pet. Muſ. 774. *Gale from the Cape, with a leaf like the Kermes Oak.*

The firſt ſort grows naturally upon bogs in many parts of England, particularly in the northern and weſtern counties, as alſo in Windſor-park, and near Tunbridge-wells. This riſes with many ſhrubby ſtalks near four feet high, which divide into ſeveral ſlender branches, garniſhed with ſtiff ſpear-ſhaped leaves, about an inch and a half long, and half an inch broad in the middle; they are of a light or yellowiſh green, ſmooth, and a little ſawed at their points, and emit a fragrant odour when bruiſed; they are placed alternately on their branches. The male flowers or katkins are produced from the ſide of the branches, growing upon ſeparate plants from the female, which are ſucceeded by cluſters of ſmall berries, each having a ſingle ſeed. It flowers in July, and the ſeeds ripen in autumn.

The leaves of this ſhrub has been by ſome perſons gathered and uſed for Tea, but it is generally ſuppoſed to be hurtful to the brain; but from this uſe of it, a learned phyſician a few years ſince, wrote a treatiſe to prove this to be the true Tea, in which he has only ſhewn his want of knowledge in theſe things.

It grows naturally in bogs, ſo cannot be made to thrive on dry land, for which reaſon it is ſeldom preſerved in gardens.

The ſecond ſort grows naturally in North America, where the inhabitants get a ſort of green wax from the berries, which they make into candles. The method of collecting and preparing this, is deſcribed by Mr. Cateſby, in his Hiſtory of Carolina.

This grows naturally in bogs and ſwampy lands, where it riſes with many ſtrong ſhrubby ſtalks eight or ten feet high, ſending out ſeveral branches, garniſhed with ſtiff ſpear-ſhaped leaves near three inches long, and one broad in the middle; they are ſmooth and entire, having ſcarce any foot-ſtalks, of a yellowiſh lucid green on their upper ſide, but paler on their under, ſtanding alternately, and pretty cloſe to the branches; theſe have a very grateful odour when bruiſed. The katkins come out upon different plants from the berries; theſe are about an inch long, ſtanding erect. The female flowers come out on the ſide of the branches in longiſh bunches, which are ſucceeded by ſmall roundiſh berries, covered with a ſort of meal. This ſhrub delights in a moiſt ſoft ſoil, in which it thrives extremely well, and lives in the open air without any protection.

The third ſort grows naturally in Carolina; this doth not riſe ſo high as the former, the branches are not ſo ſtrong, and they have a grayiſh bark; the leaves are ſhorter, broader, and are ſawed on their edges, but in other reſpects is like the ſecond ſort; the berries of this are alſo collected for the ſame purpoſe.

Theſe ſorts are propagated by ſeeds, which ſhould be ſown in the autumn, and then the plants will come up the following ſpring; but if the ſeeds are kept out of the ground till the ſpring, they ſeldom grow till the year after. Theſe plants will require water in dry weather, and ſhould be ſcreened from froſts while young, but when they have obtained ſtrength, they will reſiſt the cold of this country very well.

The fourth ſort grows naturally in Philadelphia, from whence many of the plants have been brought to England, and thoſe which have been planted on a moiſt ſoil have thriven very well; ſome of theſe creep at their roots, and ſend up ſuckers plentifully, in the ſame manner as in their native ſoil.

This riſes with ſlender ſhrubby ſtalks near three feet high, which are hairy, and divide into ſeveral ſlender branches, which are garniſhed with leaves from three to four inches long, and half an inch broad; they are alternately indented almoſt to the midrib, and have a great reſemblance to thoſe of Spleenwort; they are of a dark green, hairy on their under ſide, and ſit cloſe to the ſtalks. The male flowers or katkins come out on the ſide of the branches between the leaves; theſe are oval, and ſtand erect. I have not ſeen any of theſe plants in fruit, ſo I can give no deſcription of it.

This ſort may be propagated by ſuckers, which are ſent out from the roots when it is planted in a looſe moiſt ſoil, and will endure the cold full as well as the two former ſorts.

The fifth and ſixth ſorts grow naturally at the Cape of Good Hope; theſe only differ from each other, in one having very ſmooth ſhining leaves, and thoſe of the other hairy. I do not know if they are really different ſpecies, but as I received them from Holland as ſuch, and the plants ſtill retaining their difference, ſo I have enumerated them both.

Theſe riſe with ſhrubby ſlender ſtalks about four feet high, which divide into ſmaller branches, which in one ſort are ſmooth, and in the other they are hairy; theſe are cloſely garniſhed with leaves about an inch and a half long, and almoſt an inch broad; ſome having two, others three, deep indentures on their ſides, which are oppoſite; in one ſort they are ſmooth and ſhining, and in the other they are hairy, and of a darker green; they ſit cloſe to the branches, and end

end in obtuſe points which are indented: between the leaves come out ſome oval katkins, which drop off, ſo that all the plants which I have ſeen have been male, therefore I can give no account of the fruit. Theſe retain their leaves all the year, but are too tender to live through the winter in the open air in England, ſo muſt be placed in the green-houſe in winter. As theſe do not produce ſeeds here, ſo they are propagated by layers, but they do not take root very freely, ſo that the plants are not very common in Europe at preſent; for I do not find that the cuttings of theſe plants will eaſily take root, having made ſeveral trials of them in all the different methods; nor have the Dutch gardeners had better ſucceſs, ſo that the plants are as ſcarce there as in England.

When the layers are laid down, that part of the ſhoot which is laid ſhould be tongued at a joint, as is practiſed in laying of Carnations; and the young ſhoots only ſhould be choſen for this purpoſe, for the old branches will not put out roots. Theſe layers are often two years before they will have taken root enough to tranſplant, for they ſhould not be ſeparated from the old plants till they have made good roots, becauſe they are very ſubject to miſcarry if they are not well rooted.

When they are taken off from the old plants, they ſhould be each put into a ſeparate ſmall pot, filled with ſoft, rich, loamy earth; and if they are placed under a common frame, ſhading them from the ſun in the middle of the day, it will forward their taking new root; then they may be placed in a ſheltered ſituation during the ſummer, and in the autumn removed into the green-houſe, and treated in the ſame way as other plants from the ſame country. The beſt ſeaſon for laying down the branches, I have obſerved to be in July, and by the ſame time the following year they have been fit to remove.

The ſeventh ſort is a native of the Cape of Good Hope; this hath a weak ſhrubby ſtalk which riſes five or ſix feet high, ſending out many long ſlender branches, which are cloſely garniſhed their whole length with ſmall heart-ſhaped leaves, which ſit cloſe to the branches, and are ſlightly indented and waved on their edges. The flowers come out between the leaves in roundiſh bunches; theſe are male in all the the plants I have yet ſeen; they have an uncertain number of ſtamina, and are all included in one common ſcaly involucrum or cover. Theſe flowers appear in July, but make no great appearance; the leaves of this ſort continue all the year green.

This is propagated in the ſame way as the two former ſorts, and is difficult to increaſe, ſo is not common in the European gardens. It requires the ſame treatment as the two former ſorts.

MYRRHIS. See CHÆROPHYLLUM, SCANDIX, SISON.

MYRTUS. Tourn. Inſt. R. H. 640. tab. 409. Lin. Gen. Plant. 543. Myrtle; in French, *Mirte*.

The CHARACTERS are,

The empalement of the flower is of one leaf, cut into five acute points at the top, is permanent, and ſits on the germen. The flower has five large oval petals which are inſerted in the empalement, and a great number of ſmall ſtamina which are alſo inſerted in the empalement, terminated by ſmall ſummits. The germen is ſituated under the flower, ſupporting a ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward turns to an oval berry with three cells, crowned by the empalement, each cell containing one or two kidney-ſhaped ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's twelfth claſs, in which is contained thoſe plants whoſe flowers have about twenty ſtamina and one ſtyle.

The SPECIES are,

1. MYRTUS (*Communis*) foliis ovatis, pedunculis longioribus. *Myrtle with oval leaves, and longer foot-ſtalks to the flowers.* Myrtus latifolia Romana. C. B. P. 468. *Broad-leaved Roman Myrtle, or common broad-leaved Myrtle.*
2. MYRTUS (*Belgica*) foliis lanceolatis acuminatis. *Myrtle with ſpear-ſhaped acute-pointed leaves.* Myrtus latifolia Belgica. C. B. P. 469. *Broad-leaved Dutch Myrtle.*
3. MYRTUS (*Acuta*) lanceolato-ovatis acutis. *Myrtle with ſpear-ſhaped, oval, acute-pointed leaves.* Myrtus ſylveſtris, foliis acutiſſimis. C. B. P. 469. *Wild Myrtle with very acute-pointed leaves.*
4. MYRTUS (*Bætica*) foliis ovato-lanceolatis confertis. *Myrtle with oval ſpear-ſhaped leaves growing in cluſters.* Myrtus latifolia Bœtica 2 vel foliis laurinus, confertim naſcentibus. C. B. P. 469. *Second broad-leaved Spaniſh Myrtle, with Bay leaves growing in cluſters, commonly called Orange-leaved Myrtle.*
5. MYRTUS (*Italica*) foliis ovato-lanceolatis acutis, ramis erectioribus. *Myrtle with oval, acute-pointed, ſpear-ſhaped leaves, and erect branches.* Myrtus communis Italica. C. B. P. 468. *Common Italian Myrtle, called upright Myrtle.*
6. MYRTUS (*Tarentina*) foliis ovatis, baccis rotundioribus. *Myrtle with oval leaves and rounder berries.* Myrtus minor vulgaris. C. B. P. 469. *Common ſmaller Myrtle, called the Box-leaved Myrtle.*
7. MYRTUS (*Minima*) foliis lineari-lanceolatis acuminatis. *Myrtle with linear, ſpear-ſhaped, acute-pointed leaves.* Myrtus foliis minimis & mucronatis. C. B. P. 469. *Myrtle with the ſmalleſt ſharp-pointed leaves, commonly called Roſemary-leaved Myrtle.*
8. MYRTUS (*Zeylanica*) pedunculis multifloris, foliis ovatis ſubpetiolatis. Lin. Sp. Plant. 472. *Myrtle with many flowers on each foot-ſtalk, and oval leaves having ſhort foot-ſtalks.* Myrtus Zeylanica odoratiſſima, baccis niveis monococcis. H. L. 434. *Sweet ſmelling Myrtle of Ceylon, with ſnow white berries containing one ſeed.*

The firſt ſort is the common broad-leaved Myrtle, which is one of the hardieſt kinds we have. The leaves of this are an inch and a half long, and one inch broad, of a lucid green, ſtanding upon ſhort foot-ſtalks. The flowers are larger than thoſe of the other ſorts, and come out from the ſide of the branches, on pretty long foot-ſtalks; theſe are ſucceeded by oval berries of a dark purple colour, incloſing three or four hard kidney-ſhaped ſeeds. It flowers in July and Auguſt, and the berries ripen in winter. This ſort is by ſome called the flowering Myrtle, becauſe it generally has a greater quantity of flowers, and thoſe are larger than of any other ſort.

The ſecond ſort has leaves much leſs than thoſe of the former, and are more pointed, ſtanding cloſer together on the branches; the midrib on the under ſide of the leaves is of a purple colour, they are of a darker green, and ſit cloſer to the branches. The flowers are ſmaller, and have ſhorter foot-ſtalks than thoſe of the firſt ſort; this flowers a little later in the ſummer, and ſeldom ripens its berries here.

The double flowering Myrtle I take to be a variety of this, for the leaves and growth of the plant, the ſize of the flowers, and the time of flowering, agree better with this than any of the other ſorts.

The third ſort grows naturally in the ſouth of France and in Italy; the leaves of this are much ſmaller than thoſe of the ſecond, being leſs than an inch long, and not more than half an inch broad, of an oval ſpear-ſhape, ending in acute points, of a dull green, and ſet pretty cloſe on the branches. The flowers are ſmaller than either of the former, and come out from the wings of the leaves toward the end of the branches; the berries are ſmall and oval.

The fourth ſort hath a ſtronger ſtalk and branches than either of the former ſorts, and riſes to a greater height; the leaves are oval, ſpear-ſhaped, and are placed in cluſters round the branches; theſe are of a dark green. The flowers are of a middling ſize, and come out ſparingly from between the leaves; the berries are oval, and ſmaller than thoſe of the firſt ſort, but ſeldom ripens in England. The gardeners call this the Orange-leaved Myrtle, and by ſome it is ſtiled the Bay-leaved Myrtle. This ſort is not ſo hardy as the former.

The fifth ſort is the common Italian Myrtle; this hath oval ſpear-ſhaped leaves, ending in acute points; the branches of this grow more erect than thoſe of either

ther of the former ſorts, as do alſo the leaves, from whence it is called by the gardeners upright Myrtle. The flowers of this ſort are not large, and the petals are marked with purple at their points, while they remain cloſed; the berries are ſmall, oval, and of a purple colour. There is a variety of this with white berries, in which it only differs from this; and I believe the Nutmeg Myrtle is only a variety of this, for I have raiſed ſeveral of the plants from ſeed, many of which were ſo like the Italian Myrtle, as not to be diſtinguiſhed from it.

The ſixth ſort is commonly called the Box-leaved Myrtle; the leaves of this are oval, ſmall, and ſit cloſe on the branches; they are of a lucid green, ending in obtuſe points; the branches are weak, and frequently hang downward, when they are permitted to grow without ſhortening, and have a grayiſh bark. The flowers are ſmall, and come late in the ſummer, the berries are ſmall and round.

The ſeventh ſort is called the Roſemary-leaved Myrtle, and by ſome it is called the Thyme-leaved Myrtle. The branches of this grow pretty erect; the leaves are placed cloſe on the branches; they are ſmall, narrow, and end in acute points; they are of a lucid green, and have a fragrant odour when bruiſed. The flowers of this are ſmall, and come late in the ſeaſon, and are but ſeldom ſucceeded by berries here.

There are ſome other varieties of theſe Myrtles, which are propagated in the gardens for ſale; but as their difference has been occaſioned by culture, ſo it would be multiplying their titles to little purpoſe. Thoſe which are here enumerated I believe to be really diſtinct, for I have raiſed moſt of them from ſeeds, and have not found them change from one to another, though there has been other ſmall variations among the plants.

The eighth ſort is a native of the Iſland of Ceylon: this is much tenderer than either of the former ſorts, ſo cannot be kept through the winter in England, without ſome artificial heat. This hath a ſtrong upright ſtalk, covered with a ſmooth gray bark, dividing upward into many ſlender ſtiff branches, garniſhed with oval leaves placed oppoſite, which are near two inches long, and an inch and a quarter broad, ending in points; they are of a lucid green, and have very ſhort foot-ſtalks. The flowers come out at the ends of the branches, ſeveral of them being ſuſtained upon one common foot-ſtalk, which branches out, and each flower ſtands on a very ſlender diſtinct foot-ſtalk; they are very like the flowers of Italian Myrtle, but always appear in December and January, and are never ſucceeded by berries here.

I ſhall firſt treat of the method of cultivating and propagating the common ſorts of Myrtle, as they all require nearly the ſame management, and ſhall afterward take notice of that of the laſt mentioned, which require a different treatment; but as the varieties of the common ſorts of Myrtle are cultivated in the gardens for ſale, I ſhall juſt mention the titles by which they are known, that the curious may be informed how many there are.

Two ſorts of Nutmeg Myrtles, one with a broader leaf than the other.

The Bird's Neſt Myrtle, the ſtriped Nutmeg Myrtle, the ſtriped upright Myrtle, the ſtriped Roſemary-leaved Myrtle, the ſtriped Box-leaved Myrtle, and the ſtriped broad-leaved Myrtle.

Theſe plants may be all propagated from cuttings, the beſt ſeaſon for which is in the beginning of July, when you ſhould make choice of ſome of the ſtraiteſt and moſt vigorous young ſhoots, which ſhould be about ſix or eight inches long, and the leaves on the lower part muſt be ſtripped off about two or three inches high, and the part twiſted which is to be placed in the ground; then having filled a parcel of pots (in proportion to the quantity of cuttings deſigned) with light rich earth, you ſhould plant the cuttings therein, at about two inches diſtance from each other, obſerving to cloſe the earth faſt about them, and give them ſome water to ſettle it to the cuttings; then place the pots under a common hot-bed frame, plunging them either into ſome old dung, or tanners bark, which will prevent the earth from drying too faſt; but you muſt carefully ſhade them with mats in the heat of the day, and give them air in proportion to the warmth of the ſeaſon, not forgetting to water them every two or three days, as you ſhall find the earth in the pots require it. With this management, in about ſix weeks, the cuttings will be rooted, and begin to ſhoot, when you muſt inure them to the open air by degrees, into which they ſhould be removed towards the latter end of Auguſt, or the beginning of September, placing them in a ſituation where they may be ſheltered from cold winds, in which place they may remain till the middle or latter end of October, when the pots ſhould be removed into the green-houſe, but ſhould be placed in the cooleſt part thereof, that they may have air given to them whenever the weather is mild, for they require only to be protected from ſevere cold, except the Orange-leaved, and the ſtriped Nutmeg Myrtles, which are ſomewhat tenderer than the reſt, and ſhould have a warmer ſituation.

During the winter ſeaſon, they muſt be frequently, but gently watered; and, if any decayed leaves appear, they ſhould be conſtantly picked off, as alſo the pots kept clear from weeds, which, if permitted to grow, will ſoon overſpread the young plants, and deſtroy them.

If theſe pots are placed under a common hot-bed frame in winter, where they may be ſcreened from froſt, and have the free air in mild weather, the young plants will ſucceed better than in a green-houſe, provided they do not receive too much wet, and are not kept cloſely covered, which will occaſion their growing mouldy, and dropping their leaves.

The ſpring following theſe plants ſhould be taken out of the pots very carefully, preſerving a ball of earth to the roots of each of them, and every one ſhould be placed into a ſeparate ſmall pot filled with rich light earth, obſerving to water them well to ſettle the earth to their roots, and place them under a frame until they have taken root; after which they ſhould be inured to the open air, and in May they muſt be placed abroad for the ſummer, in a ſheltered ſituation, where they may be defended from ſtrong winds.

During the ſummer ſeaſon they will require to be plentifully watered, eſpecially being in ſuch ſmall pots, which in that ſeaſon ſoon dry; therefore you ſhould obſerve to place them where they ſhould receive the morning ſun, for when they are too much expoſed to the ſun in the heat of the day, the moiſture contained in the earth of theſe ſmall pots will ſoon be exhaled, and the plants greatly retarded in their growth thereby.

In Auguſt following you ſhould examine your pots, to ſee if the roots of the plants have not made way out through the hole in the bottom of the pots, which if you obſerve, you muſt then ſhift them into pots a ſize larger, filling them up with the like rich earth, and obſerve to trim the roots which were matted to the ſide of the pots, as alſo to looſen the earth from the outſide of the ball with your hands, ſome of which ſhould be taken off, that the roots may the eaſier find paſſage into the freſh earth; then you muſt water them well, and place the pots in a ſituation where they may be defended from ſtrong winds; and at this time you may trim the plants, in order to reduce them to a regular figure; and if they are inclinable to make crooked ſtems, you ſhould thruſt down a ſlender ſtrait ſtick cloſe by them, to which their ſtems ſhould be faſtened, ſo as to bring them upright.

If care be taken to train them thus while they are young, the ſtems afterward, when they have acquired ſtrength, will continue ſtrait without any ſupport, and their branches may be pruned, ſo as to form either balls or pyramids, which for ſuch plants as are preſerved in the green-houſe, and require to be kept in

ſmall compaſs, is the beſt method to have them handſome; but then theſe ſheered plants will not produce any flowers, for which reaſon that ſort with double flowers ſhould not be clipped, becauſe the chief beauty of that conſiſts in its flowers; but it will be neceſſary to ſuffer a plant or two of each kind to grow rude, for the uſe of their branches in noſegays, &c. for it will greatly deface thoſe which have been conſtantly ſheered to cut off their branches.

As theſe plants advance in ſtature, they ſhould annually be removed into larger pots, acording to the ſize of their roots; but you muſt be careful not to put them into pots too large, which will cauſe them to ſhoot weak, and many times prove the deſtruction of them; therefore when they are taken out of the former pots, the earth about their roots ſhould be pared off, and that within ſide the ball muſt be gently looſened, that the roots may not be too cloſely confined; and then place them into the ſame pots again, provided they are not too ſmall, filling up the ſides and bottom of them with freſh rich earth, and giving them plenty of water to ſettle the earth to their roots; which ſhould be frequently repeated, for they require to be often watered both in winter and ſummer, but in hot weather they muſt have it in plenty.

The beſt ſeaſon for ſhifting theſe plants is either in April or Auguſt, for if it be done much ſooner in the ſpring, the plants are then in a ſlow growing ſtate, and ſo not capable to ſtrike out freſh roots again very ſoon; and if it be done later in autumn, the cold weather coming on will prevent their taking root; nor is it adviſeable to do it in the great heat of ſummer, becauſe they will require to be very often watered, and alſo to be placed in the ſhade, otherwiſe they will be liable to droop for a conſiderable time; and that being the ſeaſon when theſe plants ſhould be placed amongſt other exotics, to adorn the ſeveral parts of the garden, theſe plants, being then removed, ſhould not be expoſed until they have taken root again, which, at that time (if the ſeaſon be hot and dry) will be three weeks or a month.

In October, when the nights begin to be froſty, you ſhould remove the plants into the green-houſe; but if the weather proves favourable in autumn (as it often happens) they may remain abroad until the beginning of November; for if they are carried into the green-houſe too ſoon, and the autumn ſhould prove warm, they will make freſh ſhoots at that ſeaſon, which will be weak, and often grow mouldy in winter, if the weather ſhould be ſo ſevere as to require the windows to be kept cloſely ſhut, whereby they will be greatly defaced; for which reaſon they ſhould always be kept as long abroad as the ſeaſon will permit, and removed out again in the ſpring before they ſhoot out; and during the winter ſeaſon that they are in the green-houſe, they ſhould have as much free air as poſſible when the weather is mild.

The three firſt-mentioned ſorts I have ſeen planted abroad in warm ſituations, and upon a dry ſoil, where they have endured the cold of our winters for ſeveral years very well, with only being covered in very hard froſts with two or three mats, and the ſurface of the ground about their roots covered with a little mulch to prevent the froſt from entering the ground; but in Cornwall and Devonſhire, where the winters are more favourable than in moſt other parts of England, there are large hedges of Myrtle which have been planted ſeveral years, and are very thriving and vigorous, ſome of which are upward of ſix feet high; and I believe, if the double flowering kind were planted abroad, it would endure the cold as well as any of the other ſorts, it being a native of the ſouthern parts of France. This, and the Orange-leaved kind, are the moſt difficult to take root from cuttings; but if they are planted toward the latter end of June, making choice of only ſuch ſhoots as are tender, and the pots are plunged into an old bed of tanners bark which has loſt moſt of its heat, and the glaſſes ſhaded every day, they will take root extremely well, as I have more than once experienced. The Orange-leaved ſort, and thoſe with variegated leaves, are ſomewhat tenderer than the ordinary ſorts, and ſhould be houſed a little ſooner in autumn, and placed farther from the windows of the green-houſe.

The eighth ſort is at preſent rare in Europe, ſo is in very few gardens. This ſort was by Dr. Linnæus ſeparated from the Myrtles in the former editions of his works, and had the title of Myrſine applied to it; but in his Species of Plants, he has joined it to that genus again, to which, according to his ſyſtem, it properly belongs; for the number of petals, ſtamina, and ſtyle, do agree with thoſe of the Myrtle, but it differs in fructification, this having but one ſeed in each fruit, and the Myrtle has four or five.

This plant is with difficulty propagated, which occaſions its preſent ſcarcity, for as it does not produce ripe ſeeds in Europe, it can only be increaſed by layers or cuttings. By the former method the layers are commonly two years before they take root, and the cuttings frequently fail, though the latter is preferred, when performed at a proper ſeaſon and in a right method; the beſt time to plant the cuttings is in May: in the choice of them, it ſhould be the ſhoots of the former year, with a ſmall piece of the two years wood at bottom; theſe ſhould be planted in ſmall pots, filled with ſoft loamy earth, for ſmall pots are to be preferred to large ones for this purpoſe, and they ſhould be plunged into a very moderate hot-bed of tanners bark; and if the pots are each covered with ſmall bell or hand-glaſſes, ſuch as have been uſed for blowing of Carnations to exclude the air, it will be of great ſervice to promote the cuttings putting out roots, though they are covered with the glaſſes of the hot-bed above them; the cuttings ſhould be ſhaded from the ſun in the heat of the day, and gently refreſhed with water, as the earth in the pots is found to dry, but they ſhould by no means have too much wet; thoſe cuttings which ſucceed, will have taken root by July, when they ſhould be gradually inured to bear the open air, into which it will be proper to remove them about the middle of that month, that they may be ſtrengthened before winter, but it will not be proper to tranſplant the cuttings till ſpring; the pots muſt be removed into a temperate ſtove in autumn, and during the winter the cuttings muſt be gently refreſhed with water. In the ſpring they ſhould be carefully taken up, and each planted in a ſmall pot filled with light earth from a kitchen-garden, and plunged into a moderate hot-bed to forward their taking freſh root; then they ſhould be gradually hardened, and in July placed in the open air in a ſheltered ſituation, where they may remain till the end of September, and then be removed into the ſtove.

This plant will not live through the winter in England in a green-houſe, but if it is placed in a moderate degree of warmth, it will flower well in winter; and in July, Auguſt, and September, the plants ſhould be placed abroad in a ſheltered ſituation.

MYRTUS BRABANTICA. See MYRICA.

N.

NAP

NAPELLUS. See ACONITUM.
NAPUS. See BRASSICA and RAPA.
NAPÆA. Lin. Gen. Plant. 748. Malva. H. L.

The CHARACTERS are,

It hath male and hermaphrodite flowers in distinct plants. The male flowers have pitcher-shaped empalements of one leaf, which are permanent, and cut at the top into five segments. The flowers have five oblong petals, which are connected at their base, but spread open, and are divided at the top; they have many hairy stamina, which are joined at the bottom into a sort of a cylindrical column, terminated by roundish compressed summits. The hermaphrodite flowers have the like empalement, petals, and stamina, as the male, and have a conical germen, supporting a cylindrical style, divided at the top into ten parts, crowned by single stigmas. The germen afterward turns to an oval fruit, inclosed in the empalement, divided into ten cells, each containing one kidney-shaped seed.

This genus of plants is ranged in the third section of Linnæus's sixteenth class, which includes the plants whose flowers have many stamina, which are joined at their base to the style, and together form a column. As the plants of this genus have male and hermaphrodite flowers on distinct plants, so they differ from all the tribe of malvaceous plants, to which they properly belong, the flowers being monopetalous, the stamina and styles being joined at their base, forming a column, which are the essential characters of that class.

The SPECIES are,

1. NAPÆA (*Dioica*) pedunculis involucratis angulatis foliis scabris, floribus dioicis. Flor. Virg. 102. *Napæa with angular foot-stalks, rough leaves, and male and hermaphrodite flowers on different plants.* Abutilon folio profundè dissecto, pedunculis multifloris mas & fœmina. Ehret. Pict. 7 & 8. *Abutilon with a deeply divided leaf, and foot-stalks having many flowers, which are both male and female.*
2. NAPÆA (*Hermaphrodita*) pedunculis nudis lævibus, foliis glabris, floribus hermaphroditis. *Napæa with naked foot-stalks, smooth leaves and hermaphrodite flowers.* Althæa Ricini folio Virginiana. H. L. *Virginia Marshmallow with a Ricinus leaf.*

The first sort has perennial roots, which are composed of many thick fleshy fibres, which strike deep into the ground, and are connected at the top into a large head, from which come out a great number of rough hairy leaves, near a foot diameter each way, which are deeply cut into six or seven lobes, which are irregularly indented on their edges, each lobe having a strong midrib, which all meet in a center at the foot-stalk. The foot-stalks are large and long, arising immediately from the root, and spread out on every side. The flower-stalks rise seven or eight feet high, and divide into smaller branches, garnished at each joint with one leaf, of the same form as those below, but diminish in their size toward the top, where they seldom have more than three lobes, which are divided to the foot-stalk; toward the upper part of the stalk come out from the side at each joint a long foot-stalk, which branches out toward the top, sustaining several white flowers, which are tubulous at bottom, where the segments of the petal are connected, but they spread open above, and are divided into five ob-

NAR

tuse segments; in the center arises the column, to which the stamina are joined at their base, but spread open above, and in the hermaphrodite flowers the style is connected to the same column. The hermaphrodite flowers are succeeded by compressed orbicular fruit, inclosed in the empalement, and divided into five cells, each containing a kidney-shaped seed, but the male plants are barren. It flowers in July and the seeds ripen in autumn, soon after which the stalk decays, but the roots will live many years.

The second sort hath also a perennial root, which frequently creeps in the ground; this sends up smooth stalks, which rise about four feet high, garnished with smooth leaves, placed alternately, standing upon pretty long slender foot-stalks; they are deeply cut into three lobes, which end in acute points, and are irregularly sawed on their edges; those on the lower part of the stalk are near four inches long, and almost as much in breadth, but they diminish gradually toward the top of the stalk. At the base of the leaf comes out the foot-stalk of the flower, which is about three inches long, dividing at the top into three smaller, each sustaining one white flower of the same form with those of the first sort, but are smaller, and the column of stamina is longer, their summits standing out beyond the petal.

Both these plants grow naturally in Virginia, and other parts of North America; from the bark of these plants might be procured a sort of hemp, which many of the malvaceous tribe afford; and in some of the sorts which grow naturally in India, the fibres of the bark are so fine, as to spin into very fine threads, of which there might be woven very fine cloth.

These plants are easily propagated by seeds, which if sown on a bed of common earth in the spring, the plants will rise very freely, and will require no other care but to keep them clear from weeds till autumn, when they may be transplanted into the places where they are to remain; they delight in a rich moist soil, in which they will grow very luxuriantly, so they must be allowed room. The second sort may be propagated by its creeping roots, which may be parted in autumn; but as these plants have no great beauty, so one or two of each sort in a garden, for the sake of variety, will be enough.

NARCISSO LEUCOIUM. See GALANTHUS.
NARCISSUS. Lin. Gen. Plant. 364. [takes its name of ναρκὸς, or νάρκη, a torpidness, or deep sleep, because the smell of this flower is said to cause a heaviness of the head, and a stupidity. Plutarch tells us, this plant was sacred to the infernal gods. The poets tell us, that Narcissus was the son of Cephisus, and the nymph Lyriope; a youth of such excellent beauty, that once upon a time coming to a fountain to drink, and seeing his beauteous image in the water, he grew so enamoured with it that he pined away with desire, and was transformed into a flower of his name.] The Daffodil.

The CHARACTERS are,

The flowers are included in an oblong compressed spatha (or sheath) which tears open on the side, and withers. The flowers have a cylindrical funnel-shaped empalement of one leaf, which is spread open at the brim; they have six oval petals on the outside of the nectarium, which are inserted above their base, and six awl-shaped stamina fixed to

to the tube of the nectarium, terminated by oblong ſummits; they have a three-cornered, roundiſh, obtuſe germen, ſituated below the flower, ſupporting a long ſlender ſtyle, crowned by a trifid ſtigma. The germen afterward turns to an obtuſe, roundiſh, three-cornered capſule, with three cells, filled with globular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which contains thoſe plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. NARCISSUS (*Pſeudonarciſſus*) ſpathâ uniflorâ, nectario campanulato erecto, criſpo æquante petala ovata. Lin. Sp. Plant. 414. *Daffodil with one flower in each ſheath, whoſe nectarium is erect, bell-ſhaped, and equal with the petals, which are oval.* Narciſſus ſylveſtris pallidus, calyce luteo. C. B. P. 52. *Pale wild Daffodil with a yellow cup, or common Engliſh Daffodil.*
2. NARCISSUS (*Poëticus*) ſpathâ uniflorâ, nectario rotato breviſſimo, ſcarioſo crenulato. Hort. Upſal. 74. *Daffodil with one flower in a ſheath, having a very ſhort wheel-ſhaped nectarium indented on the edge.* Narciſſus albus, circulo purpureo. C. B. P. 48. *White Daffodil with a purple circle in the middle.*
3. NARCISSUS (*Incomparabilis*) ſpathâ uniflorâ, nectario campanulato erecto, petalo dimidio breviore. *Daffodil with one flower in a ſheath, having an erect bell-ſhaped empalement half the length of the petal.* Narciſſus incomparabilis, flore pleno, partim flavo, partim croceo. H. R. Par. *The Incomparable Daffodil with a double flower, partly yellow, and partly Saffron-coloured.*
4. NARCISSUS (*Medio-luteus*) ſpathâ biflorâ, nectarii campanulato, breviſſimo, floribus nutantibus. *Daffodil with two flowers in a ſheath, a ſhort bell-ſhaped nectarium, and nodding flowers.* Narciſſus medio luteus vulgaris. Park. *Common Daffodil with a yellow middle, called Primroſe Peerleſs.*
5. NARCISSUS (*Albus*) ſpathâ uniflorâ, nectario campanulato breviſſimo, petalis reflexis. *Daffodil with one flower in a ſheath, having a very ſhort bell-ſhaped nectarium, and reflexed petals.* Narciſſus albus, foliis reflexis, calyce brevi aureo. H. R. Par. *Daffodil with white flowers, having reflexed petals, and a ſhort golden cup.*
6. NARCISSUS (*Bulbocodium*) ſpathâ uniflorâ, nectario turbinato petalis majore, genitalibus declinatis. Lin. Sp. Plant. 417. *Ruſh-leaved Daffodil with one flower in each ſheath, a turbinated nectarium larger than the petal, and declining ſtamina.* Pſeudonarciſſus juncifolius flavo flore. Cluſ. Hiſt. 166. *Commonly called Hoop-petticoat Narciſſus.*
7. NARCISSUS (*Serotinus*) ſpathâ uniflorâ, nectario breviſſimo ſex-partito. Lœſl. Lin. Sp. Plant. 290. *Daffodil with one flower in a ſheath, having a very ſhort nectarium, which is cut into ſix parts.* Narciſſus autumnalis minor. Cluſ. Hiſp. 251. *Smaller autumnal Daffodil.*
8. NARCISSUS (*Tazetta*) ſpathâ multiflorâ, nectario campanulato, foliis planis. Hort. Upſal. 74. *Daffodil with many flowers in a ſheath, having a bell-ſhaped nectarium, and plain leaves.* Narciſſus luteus polyanthos Luſitanicus. C. B. P. 50. *Yellow Portugal Daffodil with many flowers, commonly called Polyanthus Narciſſus.*
9. NARCISSUS (*Jonquilla*) ſpathâ multiflorâ, nectario campanulato brevi, foliis ſubulatis. Hort. Upſal. 75. *Daffodil with many flowers in a ſheath, a ſhort bell-ſhaped nectarium, and awl-ſhaped leaves.* Narciſſus juncifolius luteus minor. C. B. P. 51. *Smaller yellow Ruſh-leaved Daffodil, called Jonquil.*

The ſorts here enumerated, are all the real ſpecies which I have met with in the Engliſh gardens, though there is a great variety of each ſpecies, which differ ſo much from one another, as to render it very difficult to aſcertain the ſpecies to which they belong; in order to find out, as well as I could, from what ſpecies many of thoſe varieties have been raiſed, I endeavoured to degenerate as many of the double flowering, and others of the beſt kinds, ſo far as I could, by which I have obſerved their ſeveral changes, and ſhall here mention under each ſpecies, the varieties I have obſerved.

The firſt ſort is the common Engliſh Daffodil, which grows naturally by the borders of woods and fields in many parts of England; this hath a large bulbous root, from which comes out five or ſix flat leaves, about a foot long, and an inch broad, of a grayiſh colour, and a little hollowed in the middle like the keel of a boat. The ſtalk riſes a foot and a half high, having two ſharp longitudinal angles; at the top comes out a ſingle flower, incloſed in a thin ſpatha (or ſheath), which is torn open on one ſide, to make way for the flower to come out, and then withers and remains on the top of the ſtalk. The flower is of one petal or leaf, being connected at the baſe, but is cut into ſix parts almoſt to the bottom, which expand; in the middle of this is ſituated a bell-ſhaped nectarium, called by the gardeners a cup, which is equal in length to the petal, and ſtands erect. The flower nods on the ſide of the ſtalk. The petal is of a pale brimſtone colour, and the nectarium yellow. It flowers the beginning of April, and after the flowers are paſt, the germen turns to a roundiſh capſule, with three cells filled with roundiſh black ſeeds, which ripen in July. This ſort propagates very faſt by offsets from the root.

The varieties of this are,

One with white petals, and a pale yellow cup.

One with yellow petals, and a golden cup.

The common double yellow Daffodil.

Another double Daffodil, with three or four cups within each other.

And, I believe, John Tradeſcant's Daffodil may be referred to this ſpecies.

The ſecond ſort grows naturally in the ſouth of France and in Italy; this hath a ſmaller and rounder bulbous root than the former. The leaves are longer, narrower, and flatter than thoſe of that ſort. The ſtalks do not riſe higher than the leaves, which are of a gray colour: at the top of the ſtalk comes out one flower from the ſheath, which nods on one ſide. The petal of this is cut into ſix ſegments, which are rounded at their points; they are of a ſnow white, and ſpread open flat. In the center is ſituated a very ſhort nectarium or cup, which is fringed on the border with a bright purple circle. The flowers have an agreeable odour. This flowers in May, but ſeldom produces ſeeds, however it increaſes faſt enough by offsets.

The double white Narciſſus is the only variety of this which I have obſerved, though there is mentioned in ſome books ſeveral other.

The third ſort grows naturally in Spain and Portugal, from whence I have received the roots. The bulbs of this ſort are very like thoſe of the firſt. The leaves are longer, of a darker green, and the flower-ſtalks riſe higher. The ſegments of the petal are rounder, and ſpread open, flatter than thoſe of the firſt ſort. The nectarium, or cup, in the middle, is about half the length of the petal, and is edged with a gold-coloured fringe. It flowers in April, but ſeldom produces ſeeds here. This ſort ſports and varies more than any of the other: the following variations I have traced in the ſame roots.

The roots of theſe, the firſt year, produced very double flowers, of the ſort which is commonly called the Incomparable Daffodil. The ſix outer ſegments of the petal were longer than either of the others, and white; the middle was very full of ſhorter petals, ſome of which were white, others yellow, and collected into a globular figure: ſome of theſe roots, the following year, produced flowers leſs double than before, with no white petals in them, but the larger petals were of a ſulphur colour, and the others yellow; from this they afterward degenerated to half double flowers, and at laſt to ſingle flowers, with a cup half the length of the petal, in which manner they have continued to flower many years; ſo that we may conclude, that thoſe varieties were firſt obtained from the ſeeds of this ſingle flower.

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The fourth ſort grows naturally in the ſouth of France and in Italy, and has been found growing in the fields in ſome parts of England, but it is likely to have been from ſome roots which have been thrown out of gardens with rubbiſh. The roots of this ſort are not ſo large as thoſe of the firſt, and are rounder; the leaves are long, of a gray colour, and ſmoother than thoſe of the firſt; the flower-ſtalks are of the ſame length with the leaves, and have commonly but one flower in a ſheath, but ſometimes when the roots are ſtrong, they have two. The flower nods downward, the ſegments of the petal are a little waved on their edges, the nectarium or cup is ſhort, and bordered with yellow; it flowers in May. The ſcent of theſe flowers is not very agreeable, and as they are not very beautiful, ſo they are ſeldom cultivated in gardens, ſince the finer ſorts have been plenty. There is no variety of this ſo far as I have been able to trace, for I could never obſerve any variation in the flowers.

The fifth ſort has ſome reſemblance of the fourth, but the flowers are whiter, the ſegments of the petal are reflexed, and the border of the nectarium or cup is of a gold yellow colour; this has ſome affinity to the ſecond ſort.

The ſixth ſort grows naturally in Portugal, from whence I have received the roots. The bulbs of this kind are ſmall, the leaves are very narrow, having ſome reſemblance to thoſe of the Ruſh, but are a little compreſſed, and have a longitudinal furrow on one ſide; theſe are ſeldom more than eight or nine inches long. The flower-ſtalk is ſlender, taper, and about ſix inches long, ſuſtaining at the top one flower, which is at firſt incloſed in a ſheath; the petal is ſcarce half an inch long, and is cut into ſix acute ſegments; the nectarium or cup is more than two inches long, very broad at the brim, leſſening gradually to the baſe, being ſomewhat formed like the ladies hoop petticoats, from whence the flower is ſo called. It flowers in April, but does not produce ſeeds here. There are no varieties of this ſort.

The ſeventh ſort grows naturally in Spain; this hath a ſmall bulbous root; the leaves are but few in number, and are narrow; the ſtalk is jointed, and riſes about nine inches high, ſuſtaining at the top one flower, which at firſt is incloſed in the ſpatha, or ſheath; the flower is cut into ſix narrow ſegments, which are white; the nectarium, or cup, is yellow. It flowers late in the autumn, and the roots are tender, ſo are often killed by hard froſts in England, which renders it ſcarce here.

The eighth ſort grows naturally in Portugal, and in the iſlands of the Archipelago: of this there are a greater variety than of all the other ſpecies; for as the flowers are very ornamental, and come early in the ſpring, ſo the floriſts in Holland, Flanders, and France, have taken great pains in cultivating and improving them; ſo that at preſent the catalogues printed by the Dutch floriſts, contain more than thirty varieties, the principal of which are theſe hereafter mentioned.

Theſe have yellow petals, with Orange, yellow, or ſulphur-coloured cups, or nectariums.

The Great Algiers.	The Moſt Beautiful.
The Ladies Noſegay.	The Golden Star.
The Greater Bell.	The Mignon.
The Golden Royal.	The Zeylander.
The Golden Scepter.	The Madouſe.
The Triumphant.	The Golden Sun.

The following have white petals, with yellow or ſulphur-coloured cups or nectariums.

The Archdutcheſs.	The Greater Bozelman.
The Triumphant Noſegay.	The Czarina.
The New Dorothy.	The Grand Monarque.
The Paſſe Bozelman.	The Czar of Muſcovy.
The Superb.	The Surpaſſante.

There are ſome with white petals and white cups, but theſe are not ſo much eſteemed as the others, though there are two or three varieties with large bunches of ſmall white flowers, which have a very agreeable odour, ſo are as valuable as any of the other, and are later in flower than moſt of the other ſorts. There is alſo one with very double flowers, whoſe outer petals are white, and thoſe in the middle are ſome white, and others of an Orange-colour, which have a very agreeable ſcent, and is the earlieſt in flowering; it is generally called the Cyprus Narciſſus, and ſeems to be a diſtinct ſpecies from the others. This, like moſt other double flowers, never produces any ſeeds, ſo is only propagated by offsets, and is the moſt beautiful of all the Narciſſus, when blown upon glaſſes of water in a room; but when it is planted in the ground, if the bed in which they are planted is not covered with mats in froſty weather, to prevent their flower-buds from being deſtroyed, they ſeldom flower; for the leaves begin to ſhoot early in the autumn, and the flower-buds appear about Chriſtmas, which are tender, ſo that if hard froſt happen when they are coming out of the ground, it generally kills them; but if they are properly ſcreened from froſt, they will flower in February, and in mild ſeaſons often in January.

The ninth ſort is the Jonquil, a flower ſo well known as to need no deſcription; of this there is the great and ſmall Jonquil with ſingle flowers, and the common ſort with double flowers, which is moſt eſteemed.

I ſhall firſt treat of the method for raiſing the fine ſorts of Polyanthus Narciſſus from ſeeds, which is the way to obtain new varieties.

The not practiſing this has occaſioned our ſending abroad annually for great quantities of flower-roots, which have been kept up to a high price, on account of the great demand for them in England; whereas if we were as induſtrious to propagate them as our neighbours, we might ſoon vie with them, if not outdo them, in moſt ſorts of flowers; as may be ſeen, by the vaſt variety of Carnations, Auriculas, Ranunculas, &c. which have been produced from ſeeds in England, and exceed moſt of thoſe kinds in any part of Europe.

You muſt be very careful in ſaving your ſeeds, to gather none but from ſuch flowers as have good properties, and particularly from ſuch only as have many flowers upon a ſtalk, that flower tall, and have beautiful cups to their flowers; from ſuch you may expect to have good flowers produced; but if you ſow ordinary ſeed, it is only putting yourſelf to trouble and expence to no purpoſe, ſince from ſuch ſeeds there can be no hopes of procuring any valuable flowers.

Having provided yourſelf with good ſeeds, you muſt procure either ſome ſhallow caſes or flat pans, made on purpoſe for the raiſing of ſeedlings, which ſhould have holes in their bottoms, to let the moiſture paſs off; theſe muſt be filled with freſh, light, ſandy earth about the beginning of Auguſt (that being the ſeaſon for ſowing the ſeeds of moſt bulbous-rooted flowers;) the earth in theſe muſt be levelled very even; then ſow the ſeeds thereon pretty thick, covering them over with fine ſifted light earth about half an inch thick, and place the caſes or pans in a ſituation where they may have only the morning ſun till about ten o'clock, where they ſhould remain until the beginning of October, when they muſt be removed into a warmer ſituation, placing them upon bricks, that the air may freely paſs under the caſes, which will preſerve them from being too moiſt.

They ſhould alſo be expoſed to the full ſun, but ſcreened from the north and eaſt winds; and if the froſt ſhould be ſevere, they muſt be covered, otherwiſe there will be danger of their being deſtroyed; in this ſituation they may remain until the beginning of April, by which time the plants will be up, when you muſt carefully clear them from weeds; and if the ſeaſon ſhould prove dry, they muſt be frequently watered: the caſes ſhould alſo now be removed into their former ſhady poſition, or ſhaded in the middle

of the day, for the heat of the noon-day ſun will be too great for the young plants.

The latter end of June, when the leaves of the plants are decayed, you ſhould take off the upper ſurface of the earth in the caſes (which by that time will have contracted a moſſineſs, and, if ſuffered to remain, will greatly injure the young roots) obſerving not to take it ſo deep as to touch the roots; then ſift ſome freſh light earth over the ſurface, about half an inch thick, which will greatly ſtrengthen the roots; the ſame ſhould alſo be repeated in October, when the caſes are moved again into the ſun.

During the ſummer ſeaſon, if the weather ſhould prove very wet, and the earth in the caſe appear very moiſt, you muſt remove them into the ſun till the earth be dry again; for if the roots receive much wet during the time they are inactive, it very often rots them; therefore you muſt never give them any water after their leaves are decayed, but only place them in the ſhade, as was before directed.

Thus you ſhould manage them the two firſt ſeaſons, till their leaves are decayed; but the ſecond ſummer after ſowing, you ſhould carefully take up the roots; which may be done, by ſifting the earth in the caſes through a fine ſieve, whereby the roots will be eaſily ſeparated from the earth; then having prepared a bed or two of good freſh light earth, in proportion to the quantity of your roots, you ſhould plant them therein, at about three inches diſtance every way, and about three inches deep in the ground.

Theſe beds ſhould be raiſed above the level of the ground, in proportion to the moiſture of the ſoil, which if dry, three inches will be enough; but if it be wet, they muſt be raiſed ſix or eight inches high, and laid a little rounding, to ſhoot off the wet.

If theſe beds are made in July, which is the beſt time to tranſplant the roots, the weeds will ſoon appear very thick; therefore you ſhould gently hoe the ſurface of the ground to deſtroy them, being very careful not to cut ſo deep as to touch any of the roots; and this ſhould be repeated as often as may be found neceſſary, by the growth of the weeds, obſerving always to do it in dry weather, that they may be effectually deſtroyed; and toward the latter end of October, after having entirely cleared the beds from weeds, you ſhould ſift a little rich light earth over them, about an inch thick; the goodneſs of which will be waſhed down to the roots by the winter's rain, which will greatly encourage their ſhooting in the ſpring.

If the cold ſhould be very ſevere in winter, you ſhould cover the beds either with old tan or ſea coal aſhes, or in want of theſe with Peaſe-haulm, or ſome ſuch light covering, to prevent the froſt from penetrating the ground to the roots, which might greatly injure them while they are ſo young.

In the ſpring, when the plants begin to appear above ground, you muſt gently ſtir the ſurface of the ground, clearing it from weeds, &c. in doing of which, you ſhould be very careful not to injure the plants; and if the ſeaſon ſhould prove dry, you ſhould now and then gently refreſh them with water, which will ſtrengthen the roots.

When their leaves are decayed, you ſhould clear the beds from weeds, and ſift a little earth over them (as was before directed) which muſt alſo be repeated in October, in like manner; but the roots ſhould not remain longer in theſe beds than two years, by which time they will have grown ſo large as to require more room; therefore they ſhould be taken up as ſoon as their leaves are decayed, and planted into freſh beds, which ſhould be dug deep, and a little very rotten dung buried in the bottom, for the fibres of the roots to ſtrike into. Then the roots ſhould be planted at ſix inches diſtance, and the ſame depth in the ground.

In the autumn, before the froſt comes on, if ſome rotten tan is laid over the beds, it will keep out the froſt, and greatly encourage the roots; and if the winter ſhould prove ſevere, it will be proper to lay a greater thickneſs of tan over the beds, and alſo in the alleys, to keep out froſt, or to cover them over with Straw, or Peaſe-haulm, otherwiſe they may be all deſtroyed by the cold. In the ſpring theſe coverings ſhould be removed, as ſoon as the danger of hard froſts is over, and the beds muſt be kept clean from weeds the following ſummer: at Michaelmas they ſhould have ſome freſh earth laid over the beds, and covered again with tan, and ſo every year continued till the roots flower, which is generally in five years from ſeed, when you ſhould mark all ſuch as promiſe well, which ſhould be taken up as ſoon as their leaves decay, and planted at a greater diſtance in new prepared beds; but thoſe which do not flower, or thoſe you do not greatly eſteem, ſhould be permitted to remain in the ſame bed; therefore, in taking up thoſe roots which you marked, you muſt be careful not to diſturb the roots of thoſe left, and alſo to level the earth again, and ſift ſome freſh earth over the beds (as before) to encourage the roots; for it often happens in the ſeedlings of theſe flowers, that at their firſt time of blowing, their flowers ſeldom appear half ſo beautiful as they do the ſecond year; for which reaſon none of them ſhould be rejected until they have flowered two or three times, that ſo you may be aſſured of their worth.

Thus having laid down directions for the ſowing and managing theſe roots, until they are ſtrong enough to flower, I ſhall proceed to give ſome inſtructions for planting and managing the roots afterwards, ſo as to cauſe them to produce large fair flowers.

All the ſorts of Narciſſus which produce many flowers upon a ſtalk, ſhould have a ſituation defended from cold and ſtrong winds, otherwiſe they will be ſubject to be injured by the cold in winter, and their ſtems broken down when in flower; for notwithſtanding their ſtalks are generally pretty ſtrong, yet the number of flowers upon each renders their heads weighty, eſpecially after rain, which lodges in the flowers, and, if ſucceeded by ſtrong winds, very often deſtroys their beauty, if they are expoſed thereto; ſo that a border under a hedge, which is open to the ſouth-eaſt, is preferable to any other poſition for theſe flowers.

The morning ſun riſing upon them will dry off the moiſture which had lodged upon them the preceding night, and cauſe them to expand fairer than when they are planted in a ſhady ſituation; and if they are too much expoſed to the afternoon ſun, they will be hurried out of their beauty very ſoon; and the ſtrong winds uſually coming from the weſt and ſouth-weſt points, they will be expoſed to the fury of them, which frequently is very injurious to them.

Having made choice of a proper ſituation, you muſt then proceed to prepare the earth neceſſary to plant them in; for if the natural ſoil of the place be very ſtrong or poor, it will be proper to make the border of new earth, removing the former ſoil away about three feet deep. The beſt earth for theſe flowers is a freſh, light, hazel loam, mixed with a little very rotten neats dung: this ſhould be well mixed together, and often turned over, in order to ſweeten it; then having removed away the old earth to the fore-mentioned depth, you ſhould put a layer of rotten dung or tan in the bottom, about four or five inches thick, upon which you muſt lay ſome of the prepared earth about eighteen or twenty inches thick, making it exactly level; then having marked out by line the exact diſtances at which the roots are to be planted (which ſhould not be leſs than ſix or eight inches ſquare) you muſt place the roots accordingly, obſerving to ſet them upright; then you muſt cover them over with the before-mentioned earth about eight inches deep, being very careful in doing it, not to diſplace the roots; when this is done, you muſt make the ſurface of the border even, and make up the ſide ſtrait, which will appear handſome.

The beſt time for planting theſe roots is in the end of Auguſt, or beginning of September; for if they are kept too long out of the ground, it will cauſe their flowers to be weak. You ſhould alſo obſerve the nature of the ſoil where they are planted, and whether

ther the ſituation be wet or dry, according to which you ſhould adapt the freſh earth, and order the beds; for if the ſoil be very ſtrong and the ſituation moiſt, you ſhould then make choice of a light earth, and raiſe the beds ſix or eight inches, or a foot, above the level of the ground, otherwiſe the roots will be in danger of periſhing by too much wet; but if the ſituation be dry and the ſoil naturally light, you ſhould then allow the earth to be a little ſtronger, and the beds ſhould not be raiſed above three or four inches high; for if they are made too high, the roots will ſuffer very much, if the ſpring ſhould prove dry, nor would the flowers be near ſo fair. As alſo in very ſevere winters, thoſe beds which are raiſed much above the level of the ground, will be more expoſed to the cold than thoſe which are lower, unleſs the alleys are filled up with rotten tan or litter.

During the ſummer, the only culture theſe flowers require is, to keep them free from weeds; and when their leaves are entirely decayed, they ſhould be raked off, and the beds made clean: but by no means cut off their leaves till they are quite decayed, as is by ſome practiſed, for that greatly weakens the roots.

Towards the middle of October, if the weeds have grown upon the beds, you ſhould in a dry day gently hoe the ſurface of the ground to deſtroy them, obſerving to rake it over ſmooth again; and before the froſts come on, the beds ſhould be covered over two inches thick with rotten tan, to keep out the froſt; after which they will require no farther care till the ſpring, when their leaves will appear above ground; at which time you ſhould gently ſtir the ſurface of the earth with a ſmall trowel, being very careful not to injure the leaves of the plants, and rake it ſmooth with your hands, clearing off all weeds, &c. which, if ſuffered to remain at that ſeaſon, will ſoon grow ſo faſt as to appear unſightly, and will exhauſt the nouriſhment from the earth. With this management theſe roots will flower very ſtrong, ſome of which will appear in March, and the others in April; which, if ſuffered to remain, will continue in beauty a full month, and are, at that ſeaſon, very great ornaments to a flower-garden.

After the flowers are paſt, and the leaves decayed, you ſhould ſtir the ſurface of the ground, to prevent the weeds from growing; and if at the ſame time you lay a little very rotten dung over the ſurface of the beds, the rain will waſh down the ſalts thereof, which will greatly encourage the roots the ſucceeding year.

During the ſummer ſeaſon they will require no farther care, but to keep them clear from weeds till October, when the ſurface of the beds ſhould be again ſtirred, raking off all weeds, &c. and laying ſome good freſh earth over the beds about an inch deep, which will make good the loſs ſuſtained by weeding, &c. and in the ſpring you muſt manage as was directed for the preceding year.

Theſe roots ſhould not be tranſplanted oftener than every third year, if they are expected to flower ſtrong and make a great increaſe; becauſe the firſt year after removing, they never flower ſo ſtrong as they do the ſecond and third; nor will the roots increaſe ſo faſt, when they are often tranſplanted; but if you let them remain longer than three years unremoved, the number of offsets which by that time will be produced, will weaken the large bulbs, and cauſe them to produce very weak flowers; therefore at the time of tranſplanting them, all the ſmall offsets ſhould be taken off, and planted in a nurſery-bed by themſelves, but the large bulbs may be planted again for flowering. If you plant them in the ſame bed where they grew before, you muſt take out all the earth two feet deep, and fill it up again with freſh, in the manner before directed, which will be equal to removing them into another place: this is the conſtant practice of the gardeners in Holland, who have but little room to change their roots; therefore they every year remove the earth of their beds, and put in freſh, ſo that the ſame place is conſtantly occupied by the like flowers. But thoſe people take up their roots every year, for as they cultivate them for ſale, the rounder their roots are, the more valuable they will be: the way to have them ſo is, to take their offsets from them annually; for when their roots are left two or three years unremoved, the offsets will have grown large, and theſe preſſing againſt each other, will cauſe their ſides to be flatted; ſo that where the roots are propagated for ſale, they ſhould be annually taken up as ſoon as their leaves decay; and the large bulbs may be kept out of the ground till the middle or end of October, but the offsets ſhould be planted the beginning of September or ſooner, that they may get ſtrength, ſo as to become blowing roots the following year: but where they are deſigned for ornament, they ſhould not be removed oftener than every third year, for then the roots will be in large bunches, and a number of ſtalks with flowers coming from each bunch, they will make a much better appearance than where a ſingle ſtalk riſes from each root, which will be the caſe when the roots are annually removed.

The common ſorts of Daffodil are generally planted in large borders of the pleaſure-garden, where, being intermixed with other bulbous-rooted flowers, they afford an agreeable variety in their ſeaſons of flowering. Theſe roots are very hardy, and will thrive in almoſt any ſoil or ſituation, which renders them very proper for rural gardens, where, being planted under the ſhade of trees, they will thrive for ſeveral years without tranſplanting, and produce annually in the ſpring great quantities of flowers, which will make a good appearance before the trees come out in leaf.

The Jonquils ſhould be planted in beds or borders, ſeparate from other roots, becauſe theſe require to be tranſplanted at leaſt every year, otherwiſe their roots are apt to grow long and ſlender, and ſeldom flower well after; which is alſo the caſe, if they are continued many years in the ſame ſoil; wherefore the roots ſhould be often removed from one part of the garden to another, or at leaſt, the earth ſhould be often renewed, which is the moſt probable method to preſerve their flowers in perfection.

The ſoil in which theſe flowers ſucceed beſt, is an hazel loam, neither too light nor over ſtiff; it muſt be freſh, and free from roots of trees or noxious weeds, but ſhould not be dunged; for it is very remarkable, that where the ground is made rich, they ſeldom continue good very long, but are ſubject to ſhoot downwards, and form long ſlender roots.

Theſe flowers are greatly eſteemed by many people for their ſtrong ſweet ſcent, though there be very few ladies that can bear the ſmell of them; ſo powerful is it, that many times it overcomes their ſpirits, eſpecially if confined in a room; for which reaſon, they ſhould never be planted too cloſe to a habitation, leſt they become offenſive; nor ſhould the flowers be placed in ſuch rooms where company is entertained.

NASTURTIUM. See LEPIDIUM.

NASTURTIUM INDICUM. See TROPÆOLUM.

NATURAL is belonging to, or proceeding from nature.

NATURE is a term variouſly uſed; and Mr. Boyle, in a treatiſe of the vulgarly received notion of Nature, gives us eight principal ones.

1. Nature is uſed for the ſyſtem of the world, the machine of the univerſe, or the aſſemblage of all created beings.

In this ſenſe we ſay, the author of Nature, meaning GOD; and ſpeaking of the ſun, call him the father of Nature, becauſe he warms the earth, and makes it fruitful; and the eye of Nature, becauſe he illuminates the univerſe; and of a phœnix, a unicorn, a griffin, a ſatyr, that there are no ſuch things in Nature.

2. Nature, in a more confined ſenſe, comprehends the ſeveral kinds of beings, created and uncreated, corporeal and ſpiritual: thus we ſay, human Nature, i. e. all men who poſſeſs the ſame rational ſouls; angelical Nature, divine Nature.

3. Nature,

3. Nature, in a ſtill more reſtrained ſenſe, is uſed for the eſſence of a thing, or that attribute that makes a thing what it is; as, it is the Nature of the ſoul to think.

4. Nature is particularly uſed for the eſtabliſhed order and courſe of material things, the ſeries of the ſecond cauſes, or the laws that GOD has impoſed on the motions impreſſed by him. In this ſenſe we ſay, the day and night, by Nature, ſucceed one another; phyſic is the ſtudy of Nature; reſpiration is by Nature neceſſary to life.

5. Nature is alſo uſed to ſignify an aggregate of powers, which belong to any body, eſpecially a living one. Thus we ſay, Nature is ſtrong, Nature is weak, Nature is ſpent, &c.

6. Nature is alſo more ſtrictly uſed for the action of providence, the principle of all things, or that ſpiritual being which is diffuſed throughout the creation, and moves and acts in all bodies, and gives them certain properties, and procures certain effects. In this ſenſe, Nature ſignifies the qualities or virtues that GOD has given to his creatures, animal, vegetable, &c. In ſpeaking of the action of Nature, no more is to be underſtood, but that bodies act on one another in a manner agreeable to the general laws of motion which the Creator has eſtabliſhed.

NEBULOSE, or NEBULOUS, ſignifies cloudy, miſty, foggy, hazy.

NECTARINE [properly ſo called of nectar, the poetical drink of the Gods] Nectarine.

This fruit ſhould have been placed under the article of Peaches, to which it properly belongs, differing from them in nothing more than in having a ſmooth rind, and the fleſh being firmer. Theſe the French diſtinguiſh by the name of Brugnon, as they do thoſe Peaches which adhere to the ſtone, by the name of Pavies, retaining the name of Pêſche to only ſuch as part from the ſtone; but ſince the writers in gardening have diſtinguiſhed this fruit by the name of Nectarine from the Peaches, ſo I ſhall follow their example, leſt by endeavouring to rectify their miſtakes, I ſhould render myſelf leſs intelligible to the reader. I ſhall therefore mention the ſeveral varieties of this fruit, which have come to my knowledge:

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.

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 beginning 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, or perhaps of any known fruit in the world.

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. Brugnon 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 September.

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 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, of a yellowiſh green toward 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 a good ſeaſon, tolerably well flavoured; this ripens the middle of October.

There are ſome perſons who pretend to have more varieties than I have here enumerated, but I much doubt whether they are different, 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, I ſhall forbear mentioning any thing on that head in this place, to avoid repetition, but only wiſh thoſe perſons who propagate this fruit, will take their buds from bearing trees, and not from young nurſery trees, as is too often practiſed; however, I ſhall refer the reader to the article PERSICA, where there is an ample account of their planting, pruning, &c.

NEMORAL ſignifies belonging to a wood or grove.

NEPETA. Lin. Gen. Plant. 629. Cataria. Tourn. Inſt. R. H. 202. tab. 95. Catmint, or Nep; in French, *Herbes aux Chats.*

The CHARACTERS are,

The empalement of the flower is tubulous and cylindrical, indented into five acute parts at the top. The flower is of the lip kind, with one petal, having an incurved cylindrical tube, gaping at the top. The upper lip is erect, roundiſh, and indented at the point. The under lip is large, concave, entire, and ſawed on the edge. It hath four awl-ſhaped ſtamina ſituated under the upper lip, two of which are ſhorter than the other, terminated by incumbent ſummits. In the bottom of the tube is ſituated the quadrifid germen, ſupporting a ſlender ſtyle, crowned by a bifid acute ſtigma. The germen afterward turns to four oval ſeeds, ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and are ſucceeded by naked ſeeds ſitting in the empalement.

The SPECIES are,

1. NEPETA (*Cataria*) floribus ſpicatis, verticillis ſubpedicellatis, foliis petiolatis cordatis dentato-ſerratis. Lin. Sp. Plant. 796. *Catmint with ſpiked flowers, whoſe whorls have very ſhort foot-ſtalks, and heart-ſhaped leaves growing on foot-ſtalks, which are indented like the teeth of a ſaw.* Cataria major vulgaris. Tourn. Inſt. R. H. 202. *Common greater Catmint.*

2. NEPETA (*Minor*) floribus ſpicatis, ſpicis interruptis, verticillis pedicellatis, foliis ſubcordatis ſerratis petiolatis. *Catmint with ſpikes of flowers, with interrupted whorls ſtanding on foot-ſtalks, and ſawed leaves, with foot-ſtalks almoſt heart-ſhaped.* Cataria minor vulgaris.

garis. Tourn. Inſt. R. H. 202. *Smaller common Catmint.*

3. NEPETA (*Anguſtifolia*) floribus ſpicatis, verticillis ſubſeſſilibus, foliis cordato-oblongis ſerratis ſeſſilibus. *Catmint with ſpiked flowers, whoſe whorls grow almoſt cloſe to the ſtalks, and oblong, ſawed, heart-ſhaped leaves, ſitting cloſe.* Cataria anguſtifolia major. Tourn. Inſt. R. H. 202. *Greater narrow-leaved Catmint.*

4. NEPETA (*Paniculata*) floribus paniculatis, foliis oblongo-cordatis acutis ſerratis ſeſſilibus. *Catmint with panicled flowers, and oblong, heart-ſhaped, acute, ſawed leaves, ſitting cloſe to the ſtalks.* Cataria quæ nepeta minor, folio meliſſæ Turcicæ. Boerh. Ind. alt. 1. 174. *Smaller Catmint with a Turkey Balm leaf.*

5. NEPETA (*Italica*) floribus ſeſſilibus verticillato-ſpicatis, bracteis lanceolatis longitudine calycis, foliis petiolatis. Lin. Sp. Plant. 798. *Catmint whoſe flowers grow in whorled ſpikes, ſitting cloſe to the ſtalk, having ſpear-ſhaped bracteæ the length of the empalement, with leaves growing upon the foot-ſtalks.* Cataria minor Alpina. Tourn. Inſt. R. H. 202. *Smaller Alpine Catmint.*

6. NEPETA (*Violacea*) verticillis pedunculatis corymboſis, foliis petiolatis cordato-oblongis dentatis. Lin. Sp. Plant. 797. *Catmint with roundiſh whorls ſtanding upon foot-ſtalks, and oblong, heart-ſhaped, indented leaves.* Cataria Hiſpanica, betonicæ folio anguſtiore flore cæruleo. Tourn. Inſt. R. H. 202. *Spaniſh Catmint with a narrow Betony leaf, and a blue flower.*

7. NEPETA (*Tuberoſa*) ſpicis ſeſſilibus, bracteis ovatis coloratis, foliis ſummis ſeſſilibus. Hort. Cliff. 311. *Catmint with ſpiked flowers ſitting cloſe to the ſtalks, oval coloured bractea, and the upper leaves ſitting cloſe to the ſtalks.* Cataria Hiſpanica, ſupina, betonicæ folio, tuberoſâ radice. Tourn. Inſt. R. H. 202. *Spaniſh Catmint with a declining ſtalk, a Betony leaf, and a tuberous root.*

8. NEPETA (*Hirſuta*) floribus ſeſſilibus verticillato-ſpicatis, verticillis tomento obvolutis. Hort. Cliff. 311. *Catmint with flowers growing in whorled ſpikes ſitting cloſe to the ſtalk, and the whorls covered with down.* Horminum ſpicatum lavendulæ flore & odore. Bocc. Plant. Sic. 48. tab. 25. *Spiked Clary with a Lavender ſmell and flower.*

9. NEPETA (*Virginica*) foliis lanceolatis, capitulis terminalibus, ſtaminibus flore longioribus. Lin. Sp. Plant. 571. *Catmint with ſpear-ſhaped leaves, ſtalks terminated by flowers growing in heads, and ſtamina longer than the flower.* Clinopodium amaraci folio, floribus albis. Pluk. Alm. 110. *Field Baſil with a Marjoram leaf, and a white flower.*

10. NEPETA (*Orientalis*) floribus ſpicatis, verticillis craſſioribus, foliis cordatis obtusè dentatis petiolatis. *Catmint with ſpiked flowers, whoſe whorls are very thick, and heart-ſhaped leaves which are obtuſely indented, and ſtand upon foot-ſtalks.* Cataria Orientalis, teucrii folio, lavendulæ odore, verticillis florum craſſiſſimis. Tourn. Cor. Inſt. 13. *Eaſtern Catmint with a Tree Germander leaf ſmelling like Lavender, and very thick whorls to the flowers.*

11. NEPETA (*Procumbens*) floribus verticillatis, bracteis ovatis hirſutis, foliis cordato-ovatis crenatis, caule procumbente. *Catmint with whorled flowers, having oval hairy bracteæ, oval heart-ſhaped leaves, which are crenated, and a trailing ſtalk.*

The firſt ſort is the common Nep, or Catmint, which grows naturally on the ſide of banks and hedges in many parts of England; this has a perennial root, from which ariſe many branching ſtalks, which are four-cornered, about two feet high, garniſhed at each joint by two heart-ſhaped leaves ſtanding oppoſite, upon pretty long foot-ſtalks; they are ſawed on their edges, and are hoary on their under ſide. The flowers grow in ſpikes at the top of the ſtalks, and below the ſpikes are two or three whorls of flowers, which have very ſhort foot-ſtalks. The flowers are white, and have two lips; the upper lip ſtands erect, and the lower is a little reflexed, and indented at the point; theſe are each ſucceeded by four oval black ſeeds, which ripen in the empalement.

The whole plant has a ſtrong ſcent between Mint and Penny Royal; it is called Catmint, becauſe the cats are very fond of it, eſpecially when it is withered, for then they will roll themſelves on it, and tear it to pieces, chewing it in their mouths with great pleaſure. Mr. Ray mentions his having tranſplanted ſome of the plants of this ſort from the fields, into his garden, which were ſoon deſtroyed by the cats, but the plants which came up from ſeeds in his garden eſcaped, which verifies the old proverb, viz. "If "you ſet it the cats will eat it, if you ſow it the cats "will not know it." I have frequently made trial of this, and have always found it true; for I have tranſplanted one of the plants from another part of the garden, within two feet of ſome plants which came up from ſeeds, the latter has remained unhurt, when the former has been torn to pieces and deſtroyed by the cats; but I have always obſerved, where there is a large quantity of the herb growing together, they will not meddle with it. This flowers in June and July, and the ſeeds ripen in autumn. It is uſed in medicine.

The ſecond ſort grows naturally in Italy, and the ſouth of France; the ſtalks of this are ſlendere, their joints farther aſunder, the leaves are narrower, and the whole plant whiter than the firſt. The ſpikes of flowers are divided into whorls; the lower of theſe are two inches apart, others are an inch, and the upper half an inch, and theſe differences are permanent, for I have always found the ſeeds produce the ſame kind.

The ſtalks of the third ſort do not branch ſo much as either of the former; they are ſlenderer, and their joints farther aſunder; the leaves are ſmall, narrow, and almoſt heart-ſhaped, ſawed on their edges, hoary, and ſtand upon ſhort foot-ſtalks. The ſpikes of flowers are more broken, or interrupted than thoſe of the ſecond, and the whorls ſtand upon foot-ſtalks. It grows naturally in Italy.

The fourth ſort grows naturally in Sicily; this riſes with a ſtrong four-cornered ſtalk near three feet high; the lower joints are four or five inches aſunder. The leaves are long, narrow, and heart-ſhaped, deeply ſawed on their edges, and ſet pretty cloſe to the ſtalk. The flowers grow in panicles along the ſtalks, and are of a pale purpliſh colour. It flowers about the ſame time with the other ſorts.

The fifth ſort grows naturally upon the Alps; the ſtalks of this ſeldom riſe more than a foot and a half high, ſending out very few branches. The whorls of flowers which form the ſpike, are diſtant from each other, and ſet cloſe to the ſtalk. The leaves are ſhort, oval, heart-ſhaped, and ſtand upon foot-ſtalks; the plant is hoary, and ſtrong ſcented.

The ſixth ſort grows naturally in Spain; the ſtalks of this riſe about two feet high, and have a few ſlender branches coming out from the ſides. The leaves are heart-ſhaped, and indented on their edges. The flowers grow in roundiſh whorls, upon foot-ſtalks, and are blue; there is alſo a variety of this with white flowers.

The ſeventh ſort grows naturally in Portugal; this has a thick knobbed root, from which comes out one or two ſtalks, which often decline to the ground; they are about two feet and a half long, and ſend out two ſide branches oppoſite. The leaves are oblong, crenated on their edges, and ſit cloſe to the ſtalks, and are of a deep green. The upper part of the ſtalk, for more than a foot in length, is garniſhed with whorls of flowers, the lower being two inches aſunder, but are nearer all the way upward; theſe ſit very cloſe to the ſtalks, and are guarded by oval, ſmall, coloured leaves, or bracteæ. The flowers are blue, and ſhaped like thoſe of the other ſpecies; there is one of this ſort with an erect ſtalk, which is the only difference between them.

The eighth ſort grows naturally in Sicily. The ſtalks of this grow about two feet high; the branches come out toward the bottom; they are heart-ſhaped, obtuſe, and but little indented, ſtanding upon pretty

long foot-ſtalks. The ſtalks are terminated by long ſpikes of whorled flowers, which are ſeparated, and ſit cloſe to them; theſe are wrapped in a hoary down. The flowers are white, and appear in July.

The ninth ſort grows naturally in North America; this hath a perennial root, from which ariſe ſeveral four-cornered ſtalks two feet high, which are garniſhed with hairy leaves, ſomewhat like thoſe of Marjoram, but are larger. The flowers grow in whorls round the ſtalks, and alſo at the extremity of the ſtalk, in a large roundiſh whorl or head; they are of a pale fleſh colour, and their ſtamina is longer than the petal. It flowers in July.

The tenth ſort grows naturally in the Levant, from whence the ſeeds were ſent to Paris, by Dr. Tournefort. The ſtalks of this are ſtrong, and riſe near three feet high. The leaves are heart-ſhaped, and have blunt indentures on their edges, ſtanding upon ſhort foot-ſtalks. The flowers grow in whorled ſpikes at the top of the ſtalks; the whorls are very thick, and ſet cloſe together, terminating in an obtuſe point. The flowers are of a pale fleſh colour; the whole plant is hoary, and has a ſtrong ſcent.

The eleventh ſort grows naturally among the rocks in Candia, where it is uſed as Water Germander by the inhabitants; this hath four-cornered ſtalks a foot long, which trail upon the ground, ſending out ſome ſlender branches from the ſide. The leaves are very like thoſe of the round-leaved Mentaſtrum, ſitting cloſe to the ſtalk. The flowers grow in thick roundiſh whorls, which ſit cloſe to the ſtalk, and are ſurrounded by oval hairy leaves, or bractea. The flowers are white, and juſt peep out of their empalements. The roots of this ſort ſeldom continue longer than two years, but as the ſeeds ripen well, ſo if they are permitted to ſcatter, the plants will come up the following ſpring.

All the ſorts are very hardy, ſo are not injured by froſt: they are eaſily propagated by ſeeds, for if they are permitted to fall, the plants will riſe without trouble; or if the ſeeds are ſown, either in the ſpring or autumn, the plants will come up, and require no other culture but to thin them where they are too cloſe, and keep them clean from weeds. If theſe plants are ſown upon a poor dry ſoil, they will not grow too rank, but will continue much longer, and appear handſomer than in rich ground, where they grow too luxuriant, and have not ſo ſtrong a ſcent.

NERIUM. Lin. Gen. Plant. 262. Nerion. Tourn. Inſt. R. H. 604. tab. 374. The Oleander, or Roſe Bay; in French, *Laurier Roſe*.

The CHARACTERS are,

The empalement of the flower is permanent, and cut into five acute ſegments. The flower has one funnel-ſhaped petal. The tube is cylindrical; the border is large, and cut into five broad obtuſe ſegments, which are oblique. It hath a nectarium terminating the tube, which are torn into hairy ſegments. It hath five ſhort awl-ſhaped ſtamina within the tube, with arrow-pointed ſummits joining together, terminated by a long thread. It hath an oblong germen, which is bifid, with ſcarce any ſtyle, crowned by ſingle ſtigmas. The germen afterward turns to two long, taper, acute-pointed pods, filled with oblong ſeeds, lying over each other like the ſcales of fiſh, and crowned with down.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which contains thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The SPECIES are,

1. NERIUM (*Oleander*) foliis lineari-lanceolatis ternis. Hort. Cliff. 76. *Oleander, or Roſe Bay, with linear ſpear-ſhaped leaves, which are placed by threes round the ſtalk.* Nerion floribus rubeſcentibus. C. B. P. 464. *Oleander with red flowers.*
2. NERIUM (*Indicum*) foliis linearibus rigidis. *Oleander, or Roſe Bay, with linear rigid leaves.* Nerium Indicum, anguſtifolium, floribus odoratis ſimplicibus, H. L. *Narrow-leaved Indian Roſe Bay, with ſingle ſweet-ſcented flowers.*
3. NERIUM (*Latifolium*) foliis lanceolatis longioribus flaccidis. *Roſe Bay with longer, ſpear-ſhaped, flaccid leaves.* Nerium Indicum latifolium, floribus odoratis plenis. H. L. *Broad-leaved Indian Roſe Bay with double ſweet flowers, commonly called the double Oleander.*

The firſt ſort grows naturally in Greece, and in ſeveral countries near the Mediterranean ſea, generally by the ſides of rivers and brooks: there are two varieties of this, one with white, the other with red flowers, but ſeem to have no other difference, ſo may properly be placed together as one ſpecies, though that with white flowers is rarely found growing wild in any place but the iſland of Crete.

Theſe riſe with ſeveral ſtalks to the height of eight or ten feet. The branches come out by threes round the principal ſtalks, and have a ſmooth bark, which in the red flowering is of a purpliſh colour, but the white ſort hath a light green bark. The leaves for the moſt part ſtand by threes round the ſtalks, upon very ſhort foot-ſtalks, and point upward; they are about three or four inches long, and three quarters of an inch broad in the middle, of a dark green, very ſtiff, and end in acute points. The flowers come out at the end of the branches, in large looſe bunches, which are in one of a bright purple, or crimſon colour, and in the other they are of a dirty white; they have ſhort tubes, and ſpread open at the top, where they are deeply cut into five obtuſe ſegments, which are twiſted at bottom, ſo are oblique to the tube. At the mouth of the tube, the torn capillary nectarium is ſituated, and within the tube are the five ſtamina, with the germen at bottom, which afterward turns to a brown, taper, double pod, about four inches long, which opens longitudinally on one ſide, and is filled with oblong ſeeds, crowned with long hairy down, lying over each other like the ſcales of fiſh. This plant flowers in July and Auguſt, and in warm ſeaſons they are ſucceeded by pods, but the ſeeds ſeldom ripen well here.

When the ſummers are warm and dry, theſe plants make a fine appearance, for then they open and flower in great plenty; but, in cold moiſt ſeaſons, the flowers often decay without expanding, and the ſort with white flowers is more tender than the red; ſo that unleſs the weather is warm and dry at the time the flowers appear, they rot, and make no figure, unleſs they are placed under glaſſes to ſcreen them.

The ſecond ſort grows naturally in India; this riſes with ſhrubby ſtalks ſix or ſeven feet high, which are covered with a brown bark, and garniſhed with ſtiff leaves from three to four inches long, and not more than a quarter of an inch broad; they are of a light green, and their edges are reflexed; theſe are placed ſometimes oppoſite, at others they are alternate, and ſometimes by threes round the branches. The flowers are produced in looſe bunches at the end of the branches; they are of a pale red, and have an agreeable muſky ſcent. It flowers at the ſame time with the former, but theſe flowers ſeldom open here in the open air, ſo that unleſs the plants are placed in an airy glaſs-caſe, where they are defended from wet and cold, they ſeldom flower well.

The third ſort grows naturally in both Indies; this plant was firſt introduced to the Britiſh Iſlands in America, from the Spaniſh Main, and is called by the inhabitants of thoſe iſlands South Sea Roſe; the beauty and ſweetneſs of its flowers engaged the inhabitants of the iſlands to cultivate the plants, ſo that in many places they were planted to form hedges; but the cattle browzing upon them, when there was ſcarcity of food, were many of them killed, which has occaſioned their being deſtroyed in places expoſed to cattle; ſo that now they are only preſerved in gardens, where they make a fine appearance great part of the year, for in thoſe warm countries they are ſeldom

dom deſtitute of flowers. This has been by ſome perſons, who have only a ſuperficial knowledge of plants, thought only a variety of the common ſort, but thoſe who have cultivated both, know better; for the firſt will live through the winter in the open air, in a warm ſituation, but this is too tender to thrive in England, unleſs preſerved in a warm green-houſe; nor will the plants flower without the aſſiſtance of a glaſs-caſe in ſummer. The third ſort was not known here till the beginning of laſt century, being a ſtranger in Europe, but the former has been in the Engliſh gardens near two centuries: nor has the ſeeds of the firſt ever produced plants of the third ſort, though this has been poſitively aſſerted by perſons of no ſkill.

The leaves of this ſort are ſix inches long, and one inch broad in the middle, of a much thinner texture than thoſe of the firſt, and their ends are generally reflexed; they are of a light green, and irregularly placed on the branches; ſometimes they are by pairs, at others alternate, and ſometimes by threes round the branches. The flowers are produced in very large bunches at the end of the branches, ſtanding upon long foot-ſtalks; they have three or four ſeries of petals within each other, ſo are more or leſs double. The flowers are much larger than thoſe of the common ſort, and ſmell like the flowers of Hawthorn. The plain flowers are of a ſoft red, or Peach colour; but in moſt they are beautifully variegated with a deeper red, and make a fine appearance. Their uſual time of flowering is in July and Auguſt, but if they are placed in a warm ſtove, they will continue in flower till Michaelmas. As the flowers of this are double, they are not ſucceeded by ſeeds; and at preſent we are unacquainted with the ſingle flowering of this kind, for the ſecond is undoubtedly a diſtinct ſpecies.

All the ſpecies of the Roſe Bay are ſuppoſed to have a poiſonous quality; the young branches, when cut or broken, have a milky ſap or juice, and the larger branches, when burnt, emit a very diſagreeable odour, ſo there is great reaſon to believe the plants have ſome noxious quality; but this genus of plants has been confounded by many of the writers on botany with the Chamærhododendros of Tournefort, and many of the noxious qualities with which the latter abounds, have been applied to the Nerium, but particularly that of the honey, about Trebiſond, which is reckoned very unwholſome, which has been ſuppoſed to be occaſioned by the bees ſucking it from the flowers of the Nerium; whereas it is from the flowers of the Chamærhododendros, as Tournefort has fully informed us; but the affinity of their names in the Greek language has occaſioned theſe two plants to be often confounded.

Theſe plants are generally propagated by layers in this country, for although they will ſometimes take root from cuttings, yet that being an uncertain method, the other is generally purſued; and as the plants are very apt to produce ſuckers, or ſhoots from their roots, thoſe are beſt adapted for laying, for the old branches will not put out roots; when theſe are laid down, they ſhould be ſlit at a joint, in the ſame manner as is practiſed in laying of Carnations, which will greatly facilitate their taking root: if theſe branches are laid down in autumn, and are properly ſupplied with water, they will have taken root by that time twelvemonth, when they ſhould be carefully raiſed up with a trowel; and if they have taken good root, they ſhould be cut off from the old plant, and each planted in a ſeparate ſmall pot, filled with ſoft loamy earth; thoſe of the common ſort will require no other care, but to be placed in a ſhady ſituation, and gently watered as the ſeaſon may require, till they have taken new root; but the two other ſpecies ſhould be plunged into a very moderate hot-bed, to forward their taking root, obſerving to ſhade them from the ſun in the heat of the day; after the common ſort has taken new root, the plants may be placed in a ſheltered ſituation with other hardy exotics, where they may remain till the end of October, when they ſhould either be removed into the green-houſe, or placed under a hot-bed frame, where they may be protected from froſt in winter, but enjoy the free air at all times when the weather is mild.

This ſort is ſo hardy as to live abroad in mild winters, if planted in a warm ſituation; but as they are liable to be deſtroyed in ſevere froſt, the beſt way is to keep the plants in pots, or if they are very large in tubs, that they be ſheltered in winter, and in the ſummer removed abroad, placing them in a warm ſheltered ſituation. In the winter they may be placed with Myrtles, and other of the hardier kinds of exotic plants, in a place where they may have as much free air as poſſible in mild weather, but ſcreened from ſevere froſt; for if theſe are kept too warm in winter, they will not flower ſtrong, and when the air is excluded from them, the ends of their ſhoots will become mouldy; ſo that the hardier they are treated, provided they are not expoſed to hard froſts, the better they will thrive.

The other two ſorts require a different treatment, otherwiſe they will not make any appearance; therefore the young plants when they have taken new root, ſhould be gradually inured to bear the open air, into which they ſhould be removed in July, where they may remain till October, provided the weather continues mild; but during this time, they ſhould be placed in a ſheltered ſituation; and upon the firſt approach of froſt, they ſhould be removed into ſhelter, for if their leaves are injured by froſt, they will change to a pale yellow, and will not recover their uſual colour till the following autumn. Theſe ſorts may be preſerved in a good green-houſe through the winter, and the plants will be ſtronger than thoſe which are more tenderly treated; but in May, when the flower-buds begin to appear, the plants ſhould be placed in an open glaſs-caſe, where they may be defended from the inclemency of the weather; but when it is warm weather, the air ſhould at all times be admitted to them in plenty. With this management the flowers will expand, and continue long in beauty; and during that time, there are few plants which are equal to them, either to the eye or noſe, for their ſcent is very like that of the flowers of the White Thorn; and the bunches of flowers will be very large, if the plants are ſtrong.

NERVES are long tough ſtrings, which run either acroſs, or lengthways, in the leaves of plants.

NICOTIANA. Tourn. Inſt. R. H. 117. tab. 41. Lin. Gen. Plant. 220. [This plant takes its name from James Nicotius, counſellor to Francis II. King of France, who in the year 1560, being ambaſſador to the court of Portugal, bought the ſeeds of this plant of a Dutchman, who brought them from America, and ſent them to Queen Catharine de Medicis in France; where, being ſown, they produced ſeeds: the Indian inhabitants call it Tabac, becauſe it grew in an iſland called Tabaco, or Tobago. The leſſer ſort is by ſome called Hyoſcyamus, becauſe it agrees in ſome of its characters with this plant; it is alſo called Priapeia.] Tobacco; in French, *Nicotiane ou Tabac.*

The CHARACTERS are,

The empalement of the flower is permanent, of one leaf, cut into five acute ſegments. The flower has one funnel-ſhaped petal, with a long tub ſpread open at the brim, and ending in five acute points. It hath five awl-ſhaped ſtamina which are the length of the tube, a little inclined, and terminated by oblong ſummits; and an oval germen ſupporting a ſlender ſtyle, crowned by an indented ſtigma. The germen afterward turns to an oval capſule, with a furrow on each ſide, having two cells which open at the top, and are filled with rough ſeeds faſtened to the partition.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which contains thoſe plants whoſe flowers have five ſtamina and one ſtyle.

The

The Species are,

1. Nicotiana (*Latiſſima*) foliis ovato-lanceolatis rugoſis, ſemiamplexicaulibus. *Tobacco with oval, ſpear-ſhaped, rough leaves, which half embrace the ſtalks.* Hyoſcyamus Peruvianus. Ger. 357. *Tobacco, or Henbane of Peru.*
2. Nicotiana (*Tabacum*) foliis lanceolato-ovatis decurrentibus, floribus acutis. Lin. Sp. Plant. 258. *Tobacco with oval, ſpear-ſhaped, running leaves, ſitting cloſe to the ſtalks.* Nicotiana major latifolia. C. B. P. 169. *Greater broad-leaved Tobacco.*
3. Nicotiana (*Anguſtifolia*) foliis lanceolatis acutis, ſeſſilibus, calycibus acutis, tubo floris longiſſimo. Plat. 185. *Tobacco with acute ſpear-ſhaped leaves ſitting cloſe to the ſtalks, ſharp-pointed empalements, and a very long tube to the flower.* Nicotiana major anguſtifolia. C. B. P. 170. *Greater narrow-leaved Tobacco.*
4. Nicotiana (*Fruticoſa*) foliis lineari-lanceolatis acuminatis ſemiamplexicaulibus, caule fruticoſo. *Tobacco with linear, ſpear-ſhaped, acute-pointed leaves, half embracing the ſtalks, and a ſhrubby ſtalk.* Nicotiana major anguſtiſſimo folio perennis. Juſſ. *Narroweſt-leaved, greater, perennial Tobacco.*
5. Nicotiana (*Alba*) foliis ovatis acuminatis ſemiamplexicaulibus, capſulis ovatis obtuſis. *Tobacco with oval acute-pointed leaves half embracing the ſtalk, and oval obtuſe ſeed-veſſels.* Nicotiana major latifolia, floribus albis, vaſculo brevi. Martyn. Dec. 5. *Greater broad-leaved Tobacco with white flowers, and a ſhort ſeed-veſſel.*
6. Nicotiana (*Ruſtica*) foliis petiolatis ovatis integerrimis, floribus obtuſis. Lin. Sp. 258. *Tobacco with oval entire leaves, and obtuſe flowers.* Nicotiana minor. C. B. P. 170. *Smaller Tobacco, commonly called Engliſh Tobacco.*
7. Nicotiana (*Rugoſa*) foliis ovatis rugoſis petiolatis. *Tobacco with oval rough leaves, having foot-ſtalks.* Nicotiana minor, foliis rugoſioribus amplioribus. Vaill. *Smaller Tobacco with larger and rougher leaves.*
8. Nicotiana (*Paniculata*) foliis petiolatis cordatis integerrimis, floribus paniculatis obtuſis clavatis. Lin. Sp. Plant. 259. *Tobacco with heart-ſhaped leaves, paniculated flowers, and club-ſhaped tubes.* Nicotiana minor, folio cordiformi tubo floris prælongis. Feuill. Obſ. 1. p. 717. tab. 10. *Smaller Tobacco with a heart-ſhaped leaf, and a very long tube to the flower.*
9. Nicotiana (*Glutinoſa*) foliis petiolatis cordatis integerrimis, racemoſis floribus ſecundis ringentibus, calycibus inæqualibus. Lin. Sp. Plant. 259. *Tobacco with heart-ſhaped leaves, having foot-ſtalks, branching ringent petals, and unequal empalements.*
10. Nicotiana (*Humilis*) foliis ovato-lanceolatis obtuſis rugoſis, calycibus breviſſimis. Plat. 185. *Tobacco with oval, ſpear-ſhaped, obtuſe, rough leaves, and a very ſhort empalement.* Nicotiana humilis, primulæ veris folio. Houſt. MSS. *Dwarf Tobacco with a Primroſe leaf.*

The firſt ſort was formerly the moſt common Tobacco which was ſown in England, and which has been generally taken for the common broad-leaved Tobacco of Caſpar Bauhin, and others, but is greatly different from it. The leaves of this ſort are more than a foot and a half long, and a foot broad, their ſurfaces very rough and glutinous: when theſe plants are in a rich moiſt ſoil, they will grow more than ten feet high; the baſe of the leaves half embrace the ſtalks; the upper part of the ſtalk divides into ſmaller branches, which are terminated by looſe bunches of flowers ſtanding erect; they have pretty long tubes, and are of a pale purpliſh colour. It flowers in July and Auguſt, and the ſeeds ripen in the autumn. This is the ſort of Tabacco which is commonly brought to the markets in pots to adorn the ſhops and balconies of London, and by ſome is called Oroonoko Tobacco.

The ſecond ſort is the broad-leaved Tobacco of Caſper Bauhin; the ſtalks of this ſeldom riſe more than five or ſix feet high, and divide into more branches than the firſt. The leaves are about ten inches long, and three and a half broad, ſmooth, and end in acute points, ſitting cloſe to the ſtalks; the flowers of this are rather larger, and of a brighter purple colour than thoſe of the firſt. It flowers and perfects ſeeds at the ſame time; this is by ſome called ſweet-ſcented Tobacco.

The third ſort riſes with an upright branching ſtalk four or five feet high; the lower leaves are a foot long, and three or four inches broad; thoſe on the ſtalks are much narrower, leſſening to the top, and end in very acute points, ſitting cloſe to the ſtalks; they are very glutinous. The flowers grow in looſe bunches at the top of the ſtalks, they have long tubes, and are of a bright purple or red colour. Theſe appear at the ſame time with the former ſorts, and their ſeeds ripen in the autumn.

The fourth ſort riſes with very branching ſtalks about five feet high; the leaves on the lower part of the ſtalks are a foot and a half long, broad at the baſe, where they half embrace the ſtalks, and are about three inches broad in the middle, terminating in long acute points; the ſtalks divide into many ſmaller branches, which are terminated by looſe bunches of flowers, of a bright putple colour, and are ſucceeded by acute-pointed ſeed-veſſels. This flowers about the ſame time with the former, but if the plants are placed in a warm green-houſe, they will live through the winter. The ſeeds of this ſort were ſent me for Brazil Tobacco.

The fifth ſort grows naturally in the woods in the iſland of Tobago, from whence the ſeeds were ſent me by the late Mr. Robert Millar. This riſes about five feet high; the ſtalk does not branch ſo much as thoſe of the former; the leaves are large and oval, about fifteen inches long and two broad in the middle, but diminiſh gradually in their ſize to the top of the ſtalk, and with their baſe half embrace it. The flowers grow in cloſer bunches than thoſe of the former, and are white; theſe are ſucceeded by ſhort, oval, obtuſe ſeed-veſſels. It flowers and perfects ſeeds about the ſame time with the former.

The ſixth ſort is commonly called Engliſh Tobacco, from its having been the firſt which was introduced here, and being much more hardy than the other ſorts. The ſeeds ripen very freely, and ſcattering in the autumn, the plants have come up without care, wherever any of the plants have been ſuffered to run to ſeed, ſo that it has been a weed in many places; but it came originally from America, by the title of Petum. Dodonæus, Tabernemontanus, and others, have titled it Hyoſcyamus luteus, from the affinity there is between this plant and the Henbane; but the flowers of this are tubulous, and not ringent, as are thoſe of the Henbane; nor do the ſeed-veſſels of this open with a lid on the top, as that of Henbane. The ſtalks of this ſeldom riſe more than three feet high; the leaves are placed alternately on the ſtalks, ſtanding upon ſhort foot-ſtalks; they are oval and ſmooth. The flowers grow in ſmall looſe bunches on the top of the ſtalks; they have ſhort tubes, which ſpread open at the top, and are cut into five obtuſe ſegments, of an herbaceous yellow colour, appearing in July, and are ſucceeded by roundiſh capſules, filled with ſmall ſeeds, which ripen in the autumn.

The ſeventh ſort riſes with a ſtrong ſtalk near four feet high; the leaves of this are ſhaped like thoſe of the former, but are greatly furrowed on their ſurface and near twice the ſize, of a darker green, and have longer foot-ſtalks. The flowers are larger than thoſe of the former, and of the ſame ſhape. This is undoubtedly a diſtinct plant from the former, for I have ſown the ſeeds more than thirty years, and have never found any of the plants vary.

The eighth ſort was found growing naturally in the valley of Lima, by Pere Feuille, in the year 1710; and of late years the ſeeds of it were ſent from Peru, by the younger de Juſſieu, to Paris. The ſtalk of this ſort riſes more than three feet high, dividing upward into many ſmaller panicled branches, which are round and a little hairy; the leaves are heart-ſhaped, about four inches long, and three broad, ſtanding

upon

upon pretty long foot-ſtalks. The flowers are produced in looſe panicles at the end of the branches; theſe have tubes about an inch long, ſhaped like a club; the brim is ſlightly cut into nine obtuſe ſegments, which are reflexed; they are of a yellowiſh green colour, and are ſucceeded by roundiſh capſules, filled with very ſmall ſeeds. It flowers about the ſame time with the other ſorts.

The ſeeds of the ninth ſort were ſent from Peru with thoſe of the former, by the younger de Juſſieu; the ſtalk of this is round, and riſes near four feet high, ſending out two or three branches from the lower part; the leaves are large, heart-ſhaped, and a little waved; they are very clammy, ſtanding upon long foot-ſtalks. The flowers grow in looſe ſpikes at the top of the ſtalk, having ſhort open tubes, which are curved almoſt like the lip flowers; they are of a dull purple colour; the empalement is unequally cut, one of the ſegments being twice the ſize of the other.

The tenth ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz, who ſent the ſeeds to England. This hath a pretty thick taper root, which ſtrikes deep in the ground; at the top comes out ſix or ſeven oval ſpear-ſhaped leaves, which ſpread on the ſurface of the ground; they are about the ſize of thoſe of the common Primroſe, but are of a deeper green; the ſtalk riſes about a foot high, branching into three or four diviſions, at each of theſe is placed one ſmall leaf; the branches are terminated by a looſe ſpike of flowers, which are ſmall, tubulous, and of a yellowiſh green colour, having very ſhort empalements, which are cut at the brim into five acute ſegments. The ſeed-veſſel is ſmall, oval, and divided into two cells, which are full of ſmall ſeeds.

All the ſorts except the ſixth, ſeventh, and eighth, require the ſame culture, and are too tender to grow from ſeeds ſown 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 to 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 middle 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 clean 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 the 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.

The three ſmaller ſorts of Tobacco are preſerved in botanic gardens for variety, but are ſeldom propagated for uſe. The firſt ſort is found growing upon dunghills in divers parts of England. The ſixth and ſeventh are very hardy, and may be propagated by ſowing their ſeeds in March, upon a bed of light earth, where they will come up, and may be tranſplanted into any part of the garden, where they will thrive without farther care.

The laſt ſort being ſomewhat tenderer than the other, ſhould be ſown early in the ſpring on a hot-bed; and when the plants come up, they ſhould be tranſplanted on another moderate hot-bed, where they muſt be duly watered, and ſhould have a large ſhare of free air in warm weather; and when the plants have obtained a good ſhare of ſtrength, they ſhould be tranſplanted into ſeparate pots, and plunged into a moderate hot-bed to bring them forward. About the middle of June ſome of the plants may be ſhaken out of the pots, and planted into beds of rich earth; but it will be proper to keep one or two plants in pots, which may be placed in the ſtove (in caſe the ſeaſon ſhould prove bad,) that they may ripen their ſeeds, ſo that the ſpecies may be preſerved.

NIGELLA. Tourn. Inſt. R. H. 258. tab. 134. Lin. Gen. Plant. 606. [ſo called, as though Nigrella, from the colour of its ſeed, becauſe the ſeeds of this plant are, for the moſt part, black. It is alſo called Melianthum, of μέλας, black, and ἄνθος, a flower, q. d. black flower, although the flower is not black: it is alſo called Melaſpermum, of μέλας, black, and σπέρμα, ſeed.] Fennel-flower, or Deyil in a buſh.

The CHARACTERS are,

The flower has no empalement, but a leafy perianthium. It hath five oval, obtuſe, plain petals, which ſpread open, and are contracted at their baſe, and eight very ſhort nectariums ſituated in a circle, each having two lips; the exterior being larger, the inferior bifid, plain, and convex; the interior is ſhorter, narrower, from an oval terminating in a line. It hath a great number of awl-ſhaped ſtamina, which are ſhorter than the petals, terminated by obtuſe, compreſſed, erect ſummits; and in ſome five, in others ten, oblong, convex, erect germen, ending in awl-ſhaped ſtyles, which are long, revolved, and permanent, having ſtigmas faſtened longitudinally to them. The germen afterward become ſo many oblong compreſſed capſules, divided by a furrow, but connected within, filled with rough angular ſeeds.

This genus of plants is ranged in the fifth ſection of Linnæus's thirteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina and five ſtyles.

The SPECIES are,

1. NIGELLA (*Arvenſis*) piſtillis quinis, petalis integris, capſulis turbinatis. Lin. Sp. Plant. 534. *Fennel-flower having five pointals, entire petals, and turbinated ſeed-veſſels.* Nigella arvenſis cornuta. C. B. P. *Field horned Fennel-flower.*
2. NIGELLA (*Damaſcena*) floribus involucro folioſo cinctis. Hort. Cliff. 215. *Fennel-flower whoſe flowers are encompaſſed with a leafy involucrum.* Nigella anguſtifolia, flore majore ſimplici cæruleo. C. B. P. 145. *Narrow-leaved Fennel-flower, having a larger, ſingle, blue flower.*
3. NIGELLA (*Sativa*) piſtillis quinis, capſulis muricatis ſubrotundis, foliis ſubpiloſis. Hort. Upſal. 154. *Fennel-flower with five pointals which are prickly, and leaves ſomewhat hairy.* Nigella flore minore ſimplici candido. C. B. P. 145. *Fennel-flower with a ſmaller, ſingle, white flower.*
4. NIGELLA (*Cretica*) piſtillis quinis, corolla-longioribus, petalis integris. *Fennel-flower with five pointals longer than the petals, which are entire.* Nigella Cretica latifolia odorata. Park. Theat. 1376. *Broad-leaved ſweet-ſmelling Fennel-flower of Crete.*
5. NIGELLA (*Latifolia*) piſtillis denis corollâ brevioribus. *Fennel-flower with ten pointals which are ſhorter than the petals.* Nigella alba ſimplici flore. Alp. Exot. 261. *Fennel-flower with a ſingle white flower.*
6. NIGELLA (*Hiſpanica*) piſtillis denis corollam æquantibus. Hort. Upſal. 154. *Fennel-flower with ten pointals equalling the petal.* Nigella latifolia flore majore ſimplici cæruleo. C. B. P. 145. *Broad-leaved Fennel-flower with a large, ſingle, blue flower.*

7. NIGELLA (*Orientalis*) piſtillis denis corollâ longioribus. Hort. Cliff. 215. *Fennel-flower with ten pointals which are longer than the petals.* Nigella Orientalis, flore flaveſcente, ſemine alato plano. Tourn. Cor. 19. *Fennel-flower of the Eaſt, with a yellowiſh flower, and a plain winged ſeed.*

The firſt ſort grows naturally among the Corn, in France, Italy, and Germany, ſo is ſeldom propagated in gardens; this riſes with ſlender ſtalks near a foot high, which ſometimes branch out at the bottom, and at others they are ſingle, garniſhed with a few very fine cut leaves, ſomewhat like thoſe of Dill; each ſtalk is terminated by one ſtar-pointed flower of five petals, which are of a pale blue-colour, and have no leafy involucrum under them; theſe are ſucceeded by capſules, having five ſhort horns, which incline different ways at the top, and are filled with rough black ſeeds; there is a variety of this with white flowers, and another with double flowers.

The ſecond ſort grows naturally in Spain and Italy, among the Corn; this riſes with an upright branching ſtalk a foot and a half high, garniſhed with leaves much longer and finer than thoſe of the firſt. The flowers are large, of a pale blue, and have a long leafy involucrum under each: theſe are ſucceeded by larger ſwelling ſeed-veſſels, with horns at the top; of this there is one with ſingle white flowers, and another with double flowers, which is ſown in gardens for ornament.

The third ſort grows naturally in Crete; this riſes about the ſame height as the former. The leaves are not ſo finely cut as thoſe of the ſecond, and are a little hairy. At the top of each ſtalk is one flower, compoſed of five white petals, which are ſlightly cut at their end into three points; theſe are ſucceeded by oblong ſwelling ſeed-veſſels, with five horns at the top, filled with ſmall pale-coloured ſeeds.

The fourth ſort grows naturally in Crete; this riſes with branching ſtalks about a foot high, garniſhed with ſhorter and broader leaves than either of the other ſpecies. At the top of each branch is one flower, having no involucrum; they are compoſed of five oval petals, and have five pointals longer than the petals; the ſeed-veſſel is not much ſwollen, and has five ſlender horns at the top; the ſeeds are of a light yellowiſh brown colour.

The fifth ſort is alſo a native of Crete; this riſes with a branching ſtalk a foot high, garniſhed with leaves like thoſe of Larkſpur. The flowers have five large oval petals, which are entire, and ten pointals which are ſhorter than the petals, and a great number of green ſtamina with blue chives; the ſeed-veſſels are like thoſe of the laſt ſort.

The ſixth ſort riſes a foot and a half high; the lower leaves are finely cut, but thoſe on the ſtalks are cut into broader ſegments. The flowers are larger than thoſe of the other ſpecies, and are of a fine blue colour: the pointals of this are of equal length with the petals; the ſeed-veſſel has five horns, and is of a firmer texture than any of the other. This grows naturally in the ſouth of France and Spain; there is a variety of this with double flowers.

The ſeventh ſort grows naturally in the Corn-fields about Aleppo; this riſes with a branching ſtalk a foot and a half high, garniſhed with pretty long leaves, which are finely divided. The flowers are produced at the end of the branches; they are compoſed of five yellowiſh leaves or petals; at the baſe of theſe are placed eight nectariums, between which ariſe a great number of ſtamina, with an unequal number of germen, ſome having but five, others have eight or nine; they are oblong and compreſſed; theſe afterward become ſo many oblong compreſſed ſeed-veſſels, joined together on their inner ſide, terminating with horns, and open longitudinally, containing many thin compreſſed ſeeds, having borders round them.

The varieties of theſe with double flowers, are chiefly propagated in gardens for ornament; but thoſe with ſingle flowers are rarely admitted into any but botanic gardens, where they are preſerved for the ſake of variety.

All theſe plants may be propagated by ſowing their ſeeds upon a bed of light earth, where they are to remain (for they ſeldom ſucceed well if tranſplanted;) therefore, in order to have them intermixed amongſt other annual flowers in the borders of the flower-garden, the ſeeds ſhould be ſown in patches at proper diſtances; and when the plants come up, you muſt pull up thoſe which grow too cloſe, leaving but three or four of them in each patch, obſerving alſo to keep them clear from weeds, which is all the culture they require. In July they will produce their flowers, and their ſeeds will ripen in Auguſt, when they ſhould be gathered and dried; then rub out each ſort ſeparately, and preſerve them in a dry place.

The ſeaſon for ſowing theſe ſeeds is in March; but if you ſow ſome of them in Auguſt, ſoon after they are ripe, upon a dry ſoil and in a warm ſituation, they will abide through the winter, and flower ſtrong the ſucceeding year; ſo by ſowing the ſeeds at different times, they may be continued in beauty moſt part of the ſummer.

They are all annual plants, which periſh ſoon after they have perfected their ſeeds; which, if permitted to ſcatter upon the borders, will come up without any farther care.

NIGELLASTRUM. See AGROSTEMMA.

NIGHTSHADE. See SOLANUM.

NIGHTSHADE, the Deadly. See BELLADONNA.

NIL. See ANIL.

NISSOLIA. See LATHYRUS.

NITRE is a kind of ſalt, impregnated with abundance of ſpirits out of the air, which renders it volatile.

Monſieur Le Clerc gives us the following account of it: In Egypt they make a great quantity of it, but it is not ſo good, for it is duſky, and full of knots and ſtones.

It is made almoſt in the manner that ſalt is made, but only that they uſe ſea-water in their ſalt-works, and the water of Nile about their Nitre.

When the Nile retires, their Nitre-pits ſtand ſoaking for forty days together; but as the Nitre is grown firm, they are in haſte to carry it off, leſt it ſhould melt again in the pits. They pile it up in heaps, and it keeps very well.

The Memphian Nitre grows ſtrong, and there are ſeveral pits of ſtone thereabouts; out of theſe they make veſſels, and ſome they melt down with ſulphur among their coals.

This ſame Nitre they uſe alſo about ſuch things as they would have to laſt a long time.

The proof of the goodneſs of Nitre is, that it be very light, very friable, and very near of a purple colour. There is but very little difference between the natural and artificial Nitre; but that the one refines itſelf, and the other is refined by art, as ſalt; and, indeed, all Nitre is a kind of ſalt, and hardly differs from ſalt, properly ſo called, farther than in theſe reſpects, That well refined Nitre is more acid and light than ſalt, and eaſily takes fire.

The reaſon of which difference, he ſays, ſeems to be;

1. That the angles at both ends of the oblong particles of Nitre are ſhorter than the angles of the ſaline particles.

2. That the particles of Nitre are finer and fuller of pores; which, when the particles of fire get in, they ſoon put the nitrous particles into a hurry, till they break to pieces, and turn to flame.

3. Nitre exceeds ſalt in lightneſs, becauſe the ſaline particles contain more homogeneous matter in the ſame compaſs, than the nitrous do.

Dr. Liſter tells us, he viewed the particles of Nitre through a microſcope, and found them to have ſix angles, parallelogram ſides, and pointed like a pyramid at one end.

Some

Some authors are of opinion, that the nitrous ſalts ſeem to be aſſigned by nature chiefly for the growth of plants.

Others differ from them in opinion, and ſay, that when Nitre is contiguous to plants, it rather deſtroys than nouriſhes them; but yet they allow, that Nitre and other ſalts do certainly looſen the earth, and ſeparate the concreted parts of it, and by that means, fit and diſpoſe them to be aſſumed by water, and carried up into the ſeed or plant, for its formation and augment.

It is obſervable, how all ſalts are wrought upon by moiſture, how eaſily they liquidate and run with it; and when theſe are drawn off, and have deſerted the lumps wherewith they were incorporated, thoſe muſt moulder immediately, and fall aſunder of courſe.

The hardeſt ſtone, if it has any ſalt mixed with the ſand of which it conſiſts, upon being expoſed to a humid air, in a ſhort time diſſolves and crumbles all to pieces; and much more will clodded earth and clay, which is not of near ſo compact and ſolid a conſtitution as ſtone is.

If the earth be never ſo good and fit for the production of vegetables, little will come of it, unleſs the parts of it be ſeparated and looſe; and for this reaſon, is the ground digged, ploughed, and harrowed, and the clods broken; and it is this way that Nitre, ſea-ſalt, and other ſalts, promote vegetation.

A certain gentleman has given a relation, That he dwelling in the country near a petre-houſe, where ſuch ſaltpetre as is brought from abroad, is boiled and refined, to make gunpowder, this being ſo near as to communicate the ſteam of the Nitre to the greateſt part of the orchard and garden; and, though ſome were of opinion that it injured his trees and plants, yet he found, that it had a contrary influence upon his orchard, &c. in that it never failed to bring him a plentiful crop of fruit every year, although thoſe about him had but very little, or ſcarce any; notwithſtanding his orchard, &c. was not leſs expoſed to blighting winds by its natural ſituation, than the other orchards in the ſame town. From whence he judged, that the nitrous vapour which mixes with the air that ſurrounds his orchard, prevents blights, and is noxious to the caterpillars.

The Lord Bacon, in his Natural Hiſtory, commends the uſe of Nitre, for the preſervation of health in human bodies; and many ſkilful huſbandmen have given it no leſs a character for the preſervation of vegetables, if its quantity be rightly proportioned.

That the atmoſphere does abound with ſaline particles, is moſt certain; for being filled continually with effluvia from earth and ſea, it muſt needs have from both a great quantity of ſaline corpuſcles; and the ſalt will be of different kinds, according to the variety of thoſe ſalts from whence they are derived.

NOLANA. Royen. Lin. Gen. Plant. 193.

The CHARACTERS are,

The empalement of the flower is of one leaf, turbinated at the baſe, divided into five acute heart-ſhaped ſegments, and is permanent. The flower is bell-ſhaped, plaited, ſpread open, and is twice as large as the empalement; it hath five awl-ſhaped erect ſtamina, which are terminated by arrow-pointed ſummits, and five roundiſh germen ſurrounding a cylindrical erect ſtyle, crowned by a headed ſtigma. The ſucculent interior baſe of the receptacle becomes four cells, in which the ſeeds are incloſed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, which includes the plants having five ſtamina and one ſtyle.

We know but one SPECIES of this genus at preſent viz.

NOLANA (*Proſtrata.*) Lin. Sp. 202. Dec. 1. tab. 2. *Trailing Nolana.* Atropa foliis geminatis, calycibus polycarpis, caule humifuſa. Gouan. Monſp. 82. *Deadly Nightſhade with two leaves at each joint, flower-cups with ſeveral ſeeds, and a trailing ſtalk.*

This plant grows naturally in Egypt, from whence I received the ſeeds, which were ſent by Mr. Forſchal, one of the perſons who were ſent by the late king of Denmark, to make diſcoveries in the Eaſt.

It is an annual plant, with trailing ſtalks which lie proſtrate on the ground, and divide into ſeveral branches, which are garniſhed with oval, ſpear-ſhaped, ſmooth leaves, having ſhort foot-ſtalks; theſe come out ſingle at ſome joints, by pairs at others, and frequently three or four at the upper joints: the flowers are produced ſingly from the forks of the branches, upon pretty long foot-ſtalks; they are ſhaped like thoſe of the Winter Cherry, having ſhort tubes, which ſpread open above, and are of a fine blue colour; theſe are ſucceeded by four naked ſeeds, ſitting in the empalement of the flower. This plant flowers in July, and the ſeeds ripen in the beginning of September.

The ſeeds of this plant muſt be ſown on a hot-bed in March, and when the plants come up and are fit to remove, they ſhould be each tranſplanted into a ſmall pot filled with light earth, and plunged into a freſh hot-bed to bring the plants forward, otherwiſe they will not ripen their ſeeds in this country; but when their flowers open in July, they ſhould have a large ſhare of air admitted to them when the weather is warm, to prevent their flowers falling away without producing ſeeds: with this management the plants will continue flowering till the early froſt deſtroys them, and their flowers will produce ripe ſeeds the beginning of September.

NOLI ME TANGERE. See IMPATIENS.

NONSUCH, or FLOWER of BRISTOL. See LYCHNIS.

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 wholſome; therefore it is to little purpoſe to plant fruit-trees againſt ſuch walls, except it be thoſe which are intended for baking, &c. where the fire will ripen, and render thoſe juices wholſome, 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.

NUCIFEROUS TREES, are ſuch which produce nuts.

NUMMULARIA, See LYSIMACHIA.

NURSERY, or Nurſery-garden, is a piece of land ſet apart for the raiſing and propagating all ſorts of trees and plants to ſupply the garden, and other plantations. Of this ſort there are a great number in the different parts of this kingdom, but particularly in the neighbourhood of London, which are occupied by the gardeners, whoſe buſineſs it is to raiſe trees, plants, and flowers for ſale; and in many of theſe there is at preſent a much greater variety of trees and plants cultivated, than can be found in any other part of Europe. In France, their Nurſeries, (which are but few, when compared with thoſe in England) are chiefly confined to the propagation of fruit-trees, from whence they have the appellation of Pepinier. For there is ſcarce any of thoſe gardens, where a perſon can be ſupplied either

either with evergreens, flowering-ſhrubs, or foreſt-trees: and in Holland their Nurſeries are principally for flowers; ſome few of them, indeed, propagate tender exotic plants. But thoſe Nurſeries in the neighbourhood of London do, ſeveral of them, include all theſe, and from hence moſt of the curious perſons abroad are ſupplied with furniture for their gardens. But I do not propoſe in this place, to treat of theſe extenſive Nurſeries, or to give a deſcription of them, therefore ſhall confine myſelf to treat of ſuch Nurſeries only as are abſolutely neceſſary for all lovers of planting, to have upon the ſpot where they deſign to make their plantation. For if theſe are large, the expence of carrying a great number of trees, if the diſtance is great, will be no ſmall article, beſide the hazard of their growing; which, when the plants have been trained up in good land, and removed to an indifferent one, is very great. Therefore it is of the utmoſt conſequence to every planter, to begin by making a Nurſery. But in this article I muſt beg leave to obſerve, that a Nurſery ſhould not be fixed to any particular ſpot: I mean by this, that it would be wrong to continue the raiſing of trees any number of years upon the ſame ſpot of ground, becauſe hereby the ground will be ſo much exhauſted by the trees, as to render it unfit for the ſame purpoſe. Therefore all good Nurſery gardeners ſhift and change their land from time to time, for when they have drawn off the trees from a a ſpot of ground, they either plant kitchen herbs, or other things, upon the ground for a year or two, by which time, as alſo by dunging and trenching the land, it is recovered, and made fit to receive other trees. But this they are obliged to from neceſſity, being confined to the ſame land; which is not the caſe with thoſe gentlemen, who have large extent of ground in the country. Therefore all ſuch perſons I would adviſe to make Nurſeries upon the ground which is intended for planting, where a ſufficient number of the trees may be left ſtanding, after the others have been drawn out to plant in other places; which, for all large growing trees, but particularly ſuch as are cultivated for timber, will be found by much the moſt advantageous method; for all thoſe trees which come up from the ſeed, or which are tranſplanted very young into the places where they are deſigned to remain, will make a much greater progreſs, and become larger trees, than any of thoſe which are tranſplanted at a greater age. Therefore the Nurſeries ſhould be thinned early, by removing all thoſe trees which are intended for other plantations while they are young, becauſe hereby the expence and trouble of ſtaking, watering, &c. will be ſaved, and the trees will ſucceed much better. But in expoſed ſituations, where there are Nurſeries made, it will be neceſſary to permit the trees, to ſtand much longer; that, by growing cloſe together, they may ſhelter each other, and draw themſelves up; and theſe ſhould be thinned gradually, as the trees advance; for, by taking away too many at firſt, the cold will check the growth of the remaining trees. But then thoſe trees which are taken out from theſe Nurſeries, after a certain age, ſhould not be depended on for planting; and it will be prudence rather to conſign them for fuel, than by attempting to remove them large, whereby, in endeavouring to get them up with good roots, the roots of the ſtanding trees will be often much injured.

What has been here propoſed, muſt be underſtood for all large plantations in parks, woods, &c. but thoſe Nurſeries which are only intended for the raiſing of evergreens, flowering ſhrubs, or plants which are deſigned to embelliſh gardens, may be confined to one ſpot, becauſe a ſmall compaſs of ground will be ſufficient for this purpoſe. Two or three acres of land employed this way, will be ſufficient for the moſt extenſive deſigns, and one acre will be full enough for thoſe of moderate extent. And ſuch a ſpot of ground may be always employed for ſowing the ſeeds of foreign trees and plants, as alſo for raiſing many ſorts of biennial and perennial flowers, to tranſplant into the borders of the pleaſure-garden, and for raiſing many kinds of bulbous-rooted flowers from ſeeds, whereby a variety of new ſorts may be obtained annually, which will recompenſe for the trouble and expence, and will moreover be an agreeable diverſion to all thoſe perſons who delight in the amuſements of gardening.

Such a Nurſery as this ſhould be conveniently ſituated for water; for where that is wanting, there muſt be an expence attending the carriage of water in dry weather. It ſhould alſo be as near the houſe as it can with conveniency be admitted, in order to render it eaſy to viſit at all times of the year, becauſe it is abſolutely neceſſary that it ſhould be under the inſpection of the maſter, for unleſs he delights in it, there will be little hopes of ſucceſs. The ſoil of this Nurſery ſhould alſo be good, and not too heavy and ſtiff, for ſuch land will be very improper for ſowing moſt ſorts of ſeeds; becauſe as this will detain the moiſture in the ſpring and winter, the ſeeds of moſt tender things, eſpecially of flowers, will rot in the ground, if ſown early; therefore where perſons are confined to ſuch land, there ſhould be a good quantity of ſand, aſhes, and other light manures buried, in order to ſeparate the parts, and pulverize the ground; and if it is thrown up in ridges, to receive the froſt in winter, it will be of great uſe to it, as will alſo the frequent forking, or ſtirring of the ground, both before and after it is planted.

The many advantages which attend the having ſuch a Nurſery, are ſo obvious to every perſon who has turned his thoughts in the leaſt to this ſubject, that it is needleſs for me to mention them here; and therefore I ſhall only beg leave to repeat here what I have ſo frequently recommended, which is, the carefully keeping the ground always clean from weeds; for if theſe are permitted to grow, they will rob the young trees of their nouriſhment. Another principal buſineſs is, to dig the ground between the young plants at leaſt once every year, to looſen it for the roots to ſtrike out; but if the ground is ſtiff, it will be better if it is repeated twice a year, viz. in October and March, which will greatly promote the growth of the plants, and prepare their roots for tranſplanting.

But as there may be ſome perſons who may have the curioſity to raiſe their own fruit-trees, which is what I would recommend to every one who is a lover of good fruit, becauſe the uncertainty in procuring the intended kinds of each fruit is very great, when taken from common Nurſery-gardens, ſo that moſt gentlemen who have planted many, have conſtantly complained of this diſappointment; but beſide this, there is another inconvenience, which, for want of ſkill, is ſcarce taken notice of, which is, the taking the buds or grafts from young trees in the Nurſeries which have not borne fruit; this having been frequently repeated, renders the trees ſo raiſed as luxuriant as Willows, making ſhoots to the top of the walls in two or three years, and are rarely after fruitful with the moſt ſkilful management: I ſhall therefore treat of the proper method to make a Nurſery of theſe trees.

In the doing of which you muſt obſerve the following rules:

1. That the ſoil in which you make the Nurſery be not better than that where the trees are to be planted out for good; the not obſerving this is the reaſon that trees are often at a ſtand, or make but little progreſs for three or four years after they come from the Nurſery, as it commonly happens to ſuch trees as are raiſed near London, and carried into the northern parts of England, where, being planted in a poor ſoil and a much colder ſituation, the trees ſeldom ſucceed well; therefore it is by far the better method (when you have obtained the ſorts you would propagate) to raiſe a Nurſery of the ſeveral ſorts of ſtocks proper for the various kinds of fruit, upon which you may bud or graft them; and thoſe trees which are thus raiſed upon the ſoil, and in the ſame degree of warmth, where they are to be planted, will ſucceed much better than

thoſe brought from a greater diſtance and from a richer ſoil.

2. This ground ought to be freſh, and not ſuch as has been already worn out by trees, or other large growing plants, for in ſuch ſoil your ſtocks will not make any progreſs.

3. It ought not to be too wet, nor over dry, but rather of a middling nature; though of the two extremes, dry is to be preferred, becauſe in ſuch ſoils (though the trees do not make ſo great a progreſs as in moiſt, yet) they are generally ſounder, and more diſpoſed to fruitfulneſs.

4. You muſt alſo obſerve to incloſe it, that cattle and vermin may not come in, for theſe will make ſad havock with young trees, eſpecially in winter, when the ground is covered with ſnow, that they have little other food which they can come at. Some of the moſt miſchievous of theſe animals are hares and rabbets, which are great deſtroyers of young trees at that ſeaſon, by eating off all their bark; therefore you muſt carefully guard your Nurſery againſt theſe enemies.

The ground being incloſed, ſhould be carefully trenched about eighteen inches, or two feet deep, provided it will allow it; this ſhould be done in Auguſt or September, that it may be ready to receive young ſtocks at the ſeaſon for planting, which is commonly in the middle or end of October. In trenching the ground, you muſt be very careful to cleanſe it from the roots of all noxious weeds, ſuch as Couch-graſs, Docks, &c. which, if left in the ground, will get in among the roots of the trees, ſo as not to be gotten out afterwards, and will ſpread and over-run the ground, to the great prejudice of your young ſtocks.

After having dug the ground, and the ſeaſon being come for planting, you muſt level down the trenches as equal as poſſible, and then lay out the ground into quarters, proportionable to the ſize thereof, and thoſe quarters may be laid out in beds, for the ſowing of ſeeds or the ſtones of fruit.

The beſt ſort of ſtocks for Peaches, Nectarines, &c. are ſuch as are raiſed from the ſtones of the Muſcle and white Pear Plumb, but you ſhould never plant ſuckers of theſe (which is what ſome people practiſe) for theſe ſeldom make ſo good ſtocks, nor are ever well-rooted plants; beſides, they are very ſubject to produce great quantities of ſuckers from their roots, which are very troubleſome in the borders, or walks of a garden, and greatly injure the tree; ſo that you ſhould annually, or at leaſt every other year, ſow a few ſtones of each, that you may never be at a loſs for ſtocks.

For Pears, you ſhould have ſuch ſtocks as have been raiſed from the kernels of the fruit where perry hath been made, or elſe preſerve the ſeeds of ſome ſorts of ſummer Pears, which generally ſhoot ſtrong and vigorous, as the Cuiſſe Madame, Windſor, &c. but when this is intended, the fruit ſhould be ſuffered to hang upon the trees till they drop, and afterward permitted to rot; then take out the kernels and put them in ſand, being careful to keep them from vermin, as alſo to place them where they may not be too damp, which will cauſe them to grow mouldy. Theſe you ſhould ſow for ſtocks early in the ſpring, upon a bed of good light freſh earth, where they will come up in about ſix weeks, and, if kept clear from weeds, will be ſtrong enough to tranſplant the October following. But for many ſorts of ſummer and autumn Pears, Quince ſtocks are preferable to free (i. e. Pear) ſtocks; theſe are generally uſed for all the ſorts of ſoft-melting Pears, but they are not ſo good for the breaking Pears, being apt to render thoſe fruits which are grafted upon them ſtony; theſe are very often propagated from ſuckers, which are generally produced in plenty from the roots of old trees; but thoſe are not near ſo good as ſuch as are propagated from cuttings or layers, which have always much better roots, and are not ſo ſubject to produce ſuckers as the other, which is a very deſirable quality, ſince theſe ſuckers do not only rob the trees of part of their nouriſhment, but are very troubleſome in a garden.

Apples are grafted or budded upon ſtocks raiſed from ſeeds which come from the cyder-preſs, or upon Crab ſtocks, the latter of which are eſteemed for their durableneſs, eſpecially for large ſtandard trees; theſe ſhould be raiſed from ſeeds, as the Pear ſtock, and muſt be treated in the ſame manner, for thoſe procured from ſuckers, &c. are not near ſo good; but for ſmall gardens, the Paradiſe ſtock hath been for ſome years paſt greatly eſteemed, it being of very humble growth, cauſeth the fruit-trees grafted or budded thereon to bear very ſoon, and they may be kept in ſmall compaſs; but theſe are only proper for very ſmall gardens, or by way of curioſity, ſince the trees thus raiſed are but of ſhort duration, and ſeldom ariſe to any ſize to produce fruit in quantities, unleſs the graft or bud be buried in planting, ſo that they put forth roots, and then they will be equal to trees grafted upon free ſtocks, ſince they receive but ſmall advantage from the ſtock.

For Cherries, you ſhould make uſe of ſtocks raiſed from the ſtones of the common Black, or the wild Honey Cherry, both of which are ſtrong free growers, and produce the cleaneſt ſtocks.

For Plumbs, you may uſe the ſtones of moſt free-growing ſorts, which will alſo do very well for Apricots, theſe being not ſo difficult to take as Peaches or Nectarines; but (as I ſaid before) theſe ſhould not be raiſed from ſuckers for the reaſon there aſſigned, but rather from ſtones.

There are ſome perſons who recommend the Almond ſtock for ſeveral ſorts of tender Peaches, upon which they will take much better than upon Plumb ſtocks; but theſe being tender in their roots, and apt to ſhoot early in the ſpring, and being of ſhort duration, are by many people rejected; but ſuch tender ſorts of Peaches which will not take upon Plumb ſtocks, ſhould be budded upon Apricots, upon which they will take very well; and all ſorts of Peaches which are planted upon dry ſoils, will continue much longer, and not be ſo ſubject to blight, if they are upon Apricots; for it is obſerved, that upon ſuch ſoils where Peaches ſeldom do well, Apricots will thrive exceedingly, which may be owing to the ſtrength and compactneſs of the veſſels in the Apricots, which render it more capable of aſſimilating, or drawing its nouriſhment from the Plumb ſtock, which in dry ſoils ſeldom afford it in great plenty to the bud; and the Peach-tree being of a looſe ſpongy nature, is not ſo capable to draw its nouriſhment therefrom, which occaſions that weakneſs which is commonly obſerved in thoſe trees, when planted on a dry ſoil; therefore it is the common practice of the Nurſery-gardeners, to bud the Plumb ſtocks either with Apricots, or ſome free growing Peach; and after theſe have grown a year, they bud the tender ſorts of Peaches upon theſe ſhoots, by which method many ſorts ſucceed well, which in the common way will not thrive, or ſcarce keep alive; and theſe the gardeners term double worked Peaches.

There are ſome people who of late have budded and grafted Cherries upon ſtocks of the Corniſh, and others on the Morello Cherry, which, they ſay, will render the trees more fruitful, and leſs luxuriant in growth, ſo that they may be kept in leſs compaſs; theſe ſtocks having the ſame effect upon Cherries, as the Paradiſe ſtock hath on Apples.

Having provided yourſelf with young ſtocks of all theſe different ſorts, which ſhould be raiſed in the ſeminary the preceding year, you ſhould proceed to tranſplanting them in October (as was before directed) into the Nurſery. The diſtance which they ſhould be planted, if deſigned for ſtandards, ſhould be three feet and a half or four feet, row from row, and a foot and a half diſtant in the rows; but if for dwarfs, three feet row from row, and one foot in the rows, will be a ſufficient diſtance.

In taking theſe ſtocks out of the ſeed-beds, you muſt raiſe the ground with a ſpade, in order to preſerve

the roots as entire as poſſible; then with your knife you ſhould prune off all the very ſmall fibres; and if there are any which have a tendency to root downright, ſuch roots ſhould be ſhortened; then having thus prepared the plants, you ſhould draw a line acroſs the ground intended to be planted, and with your ſpade open a trench thereby exactly ſtrait, into which you ſhould place them at the diſtance beforementioned, ſetting them exactly upright; and then put the earth in cloſe to them, filling up the trench, and with your foot preſs the earth gently to the roots of them, obſerving not to diſplace them ſo as to make the rows crooked, which will render them unſightly; theſe plants ſhould by no means be headed, or pruned at top, which will weaken them, and cauſe them to produce lateral branches, and thereby ſpoil them.

If the winter ſhould prove very cold, it will be of great ſervice to your young ſtocks, to lay ſome mulch upon the ſurface of the ground near their roots, which will prevent the froſt from penetrating the ground, ſo as to hurt the tender fibres which were produced after planting; but you ſhould be careful not to let it lie too thick near the ſtems of the plants, nor remain too long, leſt the moiſture ſhould be prevented from penetrating to the roots of the plants, which it often does, where there is not due care taken to remove it away as ſoon as the froſt is over.

In the ſummer ſeaſon you muſt always obſerve to hoe and deſtroy the weeds, which, if permitted to remain in the Nurſery, will greatly weaken and retard the growth of your ſtocks; and, the ſucceeding years, you ſhould obſerve to dig up the ground every ſpring between the rows, which will looſen it ſo, as that the fibres may eaſily ſtrike out on each ſide, and the weeds will thereby be deſtroyed; you ſhould alſo obſerve, where any of the ſtocks have ſhot out lateral branches, to prune them off, that they may be encouraged to grow upright and ſmooth.

The ſecond year after planting, ſuch of the ſtocks as are deſigned for dwarf trees will be fit to bud, but thoſe which are deſigned for ſtandards, ſhould be ſuffered to grow ſix or ſeven feet high before they are budded or grafted. The manner of budding and grafting being fully deſcribed under their reſpective heads, I ſhall not repeat them in this place, nor need I ſay any thing more of treating theſe trees after budding, that being alſo treated of under the ſeveral articles of fruits; I ſhall only add, that thoſe ſtocks which were budded in the ſummer, and have failed, may be grafted the following ſpring, but Peaches and Nectarines never take well from grafts, theſe ſhould therefore be always budded.

The ground you intend for the Flower-nurſery ſhould be well ſituated to the ſun, but defended from ſtrong winds, by plantations of trees or buildings, and the ſoil ſhould be light and dry; which muſt always be obſerved, eſpecially for bulbous-rooted flowers, which are deſigned to be planted therein, the particulars of which are exhibited under the ſeveral articles of flowers.

In this Nurſery ſhould be planted the offsets of all your bulbous-rooted flowers, where they are to remain until they become blowing roots, when they ſhould be removed into the pleaſure-garden, and planted either in beds or borders, according to the goodneſs of the flowers, or the management which they require.

You may alſo in this ground raiſe the ſeveral ſorts of bulbous-rooted flowers from ſeed, by which means new varieties may be obtained; but moſt people are diſcouraged from ſetting about this work, from the length of time before the ſeedlings will come to flower: however, after a perſon hath once begun, and conſtantly continued ſowing every year, after the parcel firſt ſown has flowered, the regular ſucceſſion of them coming annually to flower, will not render this method ſo tedious as it at firſt appeared.

The ſeedling Auriculas, Polyanthuſes, Ranunculuſes, Anemonies, Carnations, &c. ſhould be raiſed in this Nurſery, where they ſhould be preſerved until they have flowered, when you ſhould mark all ſuch as are worthy of being tranſplanted into the flower-garden, which ſhould be done in their proper ſeaſons; for it is not ſo well to have all theſe ſeedling flowers expoſed to public view in the flower-garden, becauſe it always happens, that there are great numbers of ordinary flowers produced amongſt them, which will make but an indifferent appearance in the pleaſure-garden.

NUX AVELLANA. See CORYLUS.

NUX JUGLANS. See JUGLANS.

NUX VESICARIA. See STAPHYLODENDRON.

NYCTANTHES. Lin. Gen. Plant. 16. Jaſminum. Raii Meth. Plant. *Arabian Jaſmine.*

The CHARACTERS are,

The empalement of the flower is cylindrical, permanent, and of one leaf, cut into eight or ten acute ſegments. The flower is of the ſalver-ſhape, of one leaf, with a cylindrical tube longer than the empalement, cut into eight or ten ſegments at the top, which ſpread open. It hath two ſmall awl-ſhaped ſtamina, ſituated at the bottom of the tube, terminated by erect ſummits, and one roundiſh depreſſed germen, ſupporting a ſingle ſtyle the length of the tube, crowned by a bifid erect ſtigma. The germen afterward becomes a roundiſh berry with two cells, each containing a large roundiſh ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, which includes thoſe plants whoſe flowers have two ſtamina and one ſtyle.

The SPECIES are,

1. NYCTANTHES (*Sambac*) caule volubili, foliis ſubovatis acutis. Hort. Upſal. 4. *Nyctanthes with a winding ſtalk and acute leaves.* Jaſminum Arabicum. Cluſ. Cur. 3. *The Arabian Jaſmine.*
2. NYCTANTHES (*Hirſuta*) petiolis pedunculiſque villoſis. Lin. Sp. Plant. 6. *Nyctanthes with the foot-ſtalks of the leaves and flowers hairy.* Jaſminum Indicum bacciferum, flore albo majore, noctu olente. Com. Hort. Mal. *Indian berry-bearing Jaſmine, with a larger white flower, ſmelling by night.*

The firſt ſort grows naturally in India, from whence it has been formerly brought to the iſlands in America, where the plants are cultivated for ornament; this riſes with a winding ſtalk to the height of fifteen or twenty feet, ſending out many ſmall branches, garniſhed with oval ſmooth leaves near three inches long, and almoſt two broad, of a light green, ſtanding oppoſite on ſhort foot-ſtalks, ending in acute points. The flowers are produced at the end of the branches, and alſo upon the ſide ſhoots, upon ſhort foot-ſtalks; each generally ſuſtain three flowers, the two lower being oppoſite, and the middle ones longer: theſe have cylindrical empalements, which are ſhort, and are cut almoſt to the bottom into eight narrow ſegments. The tube of the flower is narrow, about half an inch long, and is cut at the top into eight obtuſe ſegments, which expand quite flat; they are of a pure white, and have a moſt agreeable odour, ſomewhat like the Orange-flower, but ſweeter; theſe flowers, when fully blown, drop out of their cups upon being ſhaken, and frequently fall in the night, ſo that when the plants are in full flower, the place under them is often covered with flowers in the morning, which ſoon change to a purpliſh colour. The plants continue flowering great part of the year, when they are kept in a proper temperature of warmth.

There is a variety of this ſort with very large double flowers, having a moſt agreeable odour, which grows naturally at Malabar, where the women ſtring the flowers to hang round their necks, and by way of ornament. This ſort was, ſome years paſt, growing in the gardens at Hampton-Court, but was afterward loſt, with many other rare plants, by the ignorance of the gardener; and, for ſeveral years paſt, was only known to grow in the gardens of the Duke of Tuſcany in Europe, who kept a conſtant guard over the plants, ſo that neither cuttings or layers might be taken from them, ſo as to be propagated; but I have lately received a plant of this ſort, which was brought from the Malabar coaſt, with ſeveral other

rare

rare plants, by Captain Quick; and this is at preſent in ſo flouriſhing a ſtate of health, that I hope ſoon to increaſe the number of plants, which will be a great acquiſition to the Engliſh gardens.

Linnæus has ſuppoſed that ſort of Jaſmine, to which the title of Gardenia has been given, to be the ſame with this; but as my plant has flowered here, ſo it appears plainly to be an accidental variety of this Nyctanthes, the flowers changing to a purple colour before they drop off, whereas the plant titled Gardenia changes to a buff colour; beſide, this Nyctanthes is a twining plant, whereas the other is of upright growth: he is likewiſe as much miſtaken in ſuppoſing it to be the ſame with Rumpfius's plant, for it differs in many reſpects from that, as alſo from Burman's figure; therefore if he had looked upon the figure, and attended to the deſcription given of this plant in the Piſa Garden, he could not have ſuppoſed theſe two to be the ſame plant.

The ſecond ſort grows naturally in India, where it riſes to the height of a tree, dividing into many branches, garniſhed with large, oval, ſmooth leaves, of a lucid green, with hairy foot-ſtalks; theſe come out on every ſide the branches without order. The flowers are produced on the ſide of the branches from the wings of the leaves, upon long hairy foot-ſtalks, each ſuſtaining ſeven or eight flowers, which are of a pure white, and very fragrant, but have longer tubes than thoſe of the former ſort. The flowers of this plant open in the evening, and drop off in the morning, which has occaſioned ſome to give it the title of Arbor Triſtis, or the Sorrowful-tree, from its caſting the flowers in the morning; this is very rare in Europe at preſent.

The plants of the firſt ſort are frequently brought from Italy by the Italian gardeners, who bring Orange-trees here for ſale; but thoſe plants are always grafted upon ſtocks of the common Jaſmine, which do not keep pace in their growth with the graft, ſo become very unſightly, when the plants are grown to any ſize; beſides, the ſtocks are very ſubject to ſhoot from the bottom, and if theſe ſhoots are not conſtantly rubbed off, they will draw the nouriſhment from the graft and ſtarve it: therefore the beſt method to obtain the plants, is to propagate them by layers or cuttings; the former is the ſureſt method, for unleſs the cuttings are very carefully managed, they will not take root; and as the ſtalks of this ſort are pliable, they may be eaſily brought down, and laid in pots filled with a ſoft loamy ſoil, which ſhould be plunged into a hot-bed of tan: if the branches are laid down in the ſpring and carefully watered, they will put out roots by autumn, when they may be cut from the old plants, and each tranſplanted into a ſeparate ſmall pot, and then plunged into the tan-bed, where they ſhould be ſhaded from the ſun till they have taken new root.

If theſe plants are propagated by cuttings, they ſhould be planted from May to Auguſt, into pots filled with the before-mentioned earth, and plunged into a moderate hot-bed of tanners bark. The pots ſhould be pretty large, and there may be ten or twelve cuttings planted in each; if theſe pots are cloſely covered with bell or hand-glaſſes to exclude the air, it will greatly promote their taking root; they muſt alſo be ſhaded from the ſun in the heat of the day, and gently refreſhed with water when the earth is dry; with this management the cuttings will have taken root by Auguſt, when they may be tranſplanted into ſeparate pots, and treated in the ſame way as the layers.

Theſe plants may be preſerved in a moderate degree of warmth, but if they are plunged into the tan-bed of the bark-ſtove, they will thrive much better, and produce a greater quantity of flowers; and as the leaves continue all the year, the plants will make a fine appearance in the ſtove at all ſeaſons, and produce flowers great part of the year.

The ſecond ſort requires the ſame treatment, but is

much more difficult to propagate, ſo is very rarely found in the European gardens; there were two or three of theſe plants brought from Florence a few years ſince, but they were put into the hands of unſkilful perſons, ſo were loſt.

NYMPHÆA. Tourn. Inſt. R. H. 260. tab. 137, 138. Lin. Gen. Plant. 579. [is ſo called, becauſe it grows in water, which the poets feign to be the reſidence of the nymphs.] The Water Lily; in French, *Nenufar*.

The CHARACTERS are,

The empalement of the flower is compoſed of four or five coloured leaves, and is permanent. The flower hath many petals which are ſmaller than the empalement, ſitting on the ſide of the germen, for the moſt part in a ſingle ſeries. It hath a great number of ſhort, plain, incurved ſtamina, with oblong ſummits, like threads, growing to their borders. It hath a large oval germen, but no ſtyle, with an orbicular, plain, target-ſhaped ſtigma, ſitting cloſe, whoſe border is crenated and is permanent. The germen afterward becomes a hard, oval, fleſhy fruit, with a rude narrow neck, crowned at the top, and divided into ten or fifteen cells full of pulp, with many roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's thirteenth claſs, which contains thoſe plants whoſe flowers have many male parts and but one female.

The SPECIES are,

1. NYMPHÆA (*Lutea*) foliis cordatis integerrimis, calyce petalis majore pentaphyllo. Flor. Lap. 218. *Water Lily with entire heart-ſhaped leaves, whoſe empalement conſiſts of five leaves larger than the petals.* Nymphæa lutea major. C. B. P. 193. *Greater yellow Water Lily.*
2. NYMPHÆA (*Alba*) foliis cordatis integerrimis, calyce quadrifido. Lin. Sp. Plant. 510. *Water Lily with heart-ſhaped entire leaves, and a four-pointed empalement.* Nymphæa alba major. C. B. P. 193. *Greater white Water Lily.*

There are ſome other ſpecies of this genus which are natives of warm countries, but as they cannot without great difficulty be cultivated here, ſo I ſhall not enumerate them; for unleſs there is a contrivance for ſtanding water in the ſtove, in which the plants may be planted, they will not grow; and ſuch a place would be injurious to moſt other plants in the ſtove, by occaſioning damps; ſo that unleſs a ſtove was contrived on purpoſe for ſome of theſe aquatic plants, it would be imprudent to attempt their cultivation.

The two ſorts here mentioned, grow naturally in ſtanding waters in many parts of England; they have large roots, which are faſtened in the ground, from which ariſe the ſtalks to the ſurface of the water, where the leaves expand and float; they are large, roundiſh, and heart-ſhaped. The flowers ariſe between the leaves, and ſwim upon the ſurface of the water. The white ſort has a faint ſweet ſcent; theſe appear in July, and are ſucceeded by large roundiſh ſeed-veſſels, filled with ſhining black ſeeds, which ripen toward the end of Auguſt, when they ſink to the bottom of the water.

The beſt method to propagate theſe plants is, to procure ſome of their ſeed-veſſels juſt as they are ripe and ready to open; theſe ſhould be thrown into canals, or large ditches of ſtanding water, where the ſeeds will ſink to the bottom, and the following ſpring the plants will appear floating upon the ſurface of the water, and in June and July will produce their beautiful large flowers. When they are once fixed to the place, they will multiply exceedingly, ſo as to cover the whole ſurface of the water in a few years.

In ſome ſmall gardens I have ſeen the plants cultivated in large troughs of water, where they have flouriſhed very well, and have annually produced great quantities of flowers; but as the expence of theſe troughs is pretty great (their inſides requiring to be lined with lead, to preſerve them) there are but few people who care to be at that charge.

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OAK. See QUERCUS.

OBELISCOTHECA. See RUDBECKIA.

OCHRUS. See PISUM.

OCULUS CHRISTI. See HORMINUM SYLVESTRE.

OCYMUM. Tourn. Inſt. R. H. 203. tab. 96. Lin. Gen. Plant. 651. Baſil; in French, *Baſilic.*

The CHARACTERS are,

The empalement of the flower is ſhort, permanent, of one leaf, divided into two lips; the upper lip is plain, bifid, and heart-ſhaped; the under is cut into four acute ſegments. The flower is of the lip kind, of one petal inverted. It has a ſhort ſpreading tube; the riſing lip is broad, and cut into four obtuſe equal parts; the reflexed lip is long, narrow, and ſawed. It hath four ſtamina in the lower lip, which are deflexed, two of which are a little longer than the other, terminated by half-moon-ſhaped ſummits. The germen is divided into four parts, ſupporting a ſlender ſtyle, ſituated with the ſtamina, crowned by a bifid ſtigma. The germen afterward become four naked ſeeds incloſed in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, which contains thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and their ſeeds have no covering.

The SPECIES are,

1. OCYMUM (*Baſilicum*) foliis ovatis glabris, calycibus ciliatis. Hort. Cliff. 315. *Baſil with oval ſmooth leaves, and hairy empalements.* Ocymum caryophyllatum majus. C. B. P. 226. *Greater Clove-ſcented, or common Baſil.*
2. OCYMUM (*Minimum*) foliis ovatis integerrimis. Hort. Upſal. 169. *Baſil with oval entire leaves.* Ocymum minimum. C. B. P. 226. *The leaſt Baſil, commonly called Buſh Baſil.*
3. OCYMUM (*Medium*) hirſutum, foliis ovato-lanceolatis acuminatis dentatis. *Hairy Baſil with oval ſpear-ſhaped leaves which are indented, and end in acute points.* Ocymum medium vulgatius & nigrum. J. B. 3. p. 2. 247. *Common middle black Baſil.*
4. OCYMUM (*Americanum*) foliis ovato-oblongis ſerratis, bracteis cordatis reflexis concavis ſpicis filiformibus. Lin. Sp. Plant. 833. *Baſil with oval, oblong, ſawed leaves, and heart-ſhaped, concave, reflexed bractea.*
5. OCYMUM (*Campechianum*) foliis lanceolatis ſubtus incanis, petiolis longiſſimis villoſis floribus pedunculatis. *Baſil with ſpear-ſhaped leaves, which are hoary on their under ſide, and very long hairy foot-ſtalks to the flowers.* Ocymum Campechianum odoratiſſimum. Houſt. MSS. *The ſweeteſt-ſcented Baſil of Campeachy.*
6. OCYMUM (*Fruteſcens*) racemis ſecundis lateralibus, caule erecto. Lin. Sp. Plant. 832. *Baſil with fruitful ſpikes of flowers on the ſide of the ſtalk, which are erect.* Ocymum Zeylanicum, perenne, odoratiſſimum latifolium. Burm. Zeyl. 174. tab. 80. fol 1. *Sweet-ſcented perennial Baſil of Ceylon, with broad leaves.*

The three firſt ſorts grow naturally in India and Perſia; of theſe there are a great variety, which differ in the ſize, ſhape, and colour of their leaves, as alſo in their odour; but as theſe differences are accidental, ſo I have not enumerated them, being convinced from repeated experiments, that the ſeeds of one plant will produce many varieties.

The firſt ſort riſes with a branching ſtalk a foot and a half high; the leaves are large, oval, and ſmooth; the ſtalk is hairy, and four-cornered; the leaves are placed by pairs oppoſite, and the branches alſo come out in the ſame manner; the ſtalk is terminated by a whorled ſpike of flowers, which is five or ſix inches long, and the branches are alſo terminated by ſhort ſpikes of flowers of the ſame ſort; the whole plant has a ſtrong ſcent of Cloves.

Of this there are the following varieties:

1. The fringed-leaved Baſil with purple leaves.
2. The green fringed-leaved Baſil.
3. The green Baſil with ſtudded leaves.
4. The large-leaved Baſil.

The ſecond ſort is a low buſhy plant, which ſeldom riſes more than ſix inches high, ſpreading out into branches from the bottom, forming an orbicular head; the leaves are ſmall, oval, and ſmooth, ſtanding oppoſite on ſhort foot-ſtalks. The flowers are produced in whorls toward the top of the branches; they are ſmaller than thoſe of the former ſort, and are ſeldom ſucceeded by ripe ſeeds in England.

Of this there are ſome varieties, as

1. The ſmalleſt Baſil with black purple leaves.
2. The ſmalleſt Baſil with variable leaves.

The third ſort is the common Baſil which is uſed in medicine, and alſo in the kitchen, particularly by the French cooks, who make great uſe of it in their ſoups and ſauces. This riſes about ten inches high, ſending out branches by pairs oppoſite, from the bottom; the ſtalks and branches are four-cornered; the leaves are oval, ſpear-ſhaped, ending in acute points, and are indented on their edges; the whole plant is hairy, and has a ſtrong ſcent of Cloves, too powerful for moſt perſons, but to ſome it is very agreeable: the whole plant is an ingredient in the compound Briony-water.

There are ſome varieties of this ſpecies, viz.

1. Common Baſil with very dark green leaves, and a Violet-coloured flower.
2. Curled-leaved Baſil with ſhort ſpikes of flowers.
3. Narrow-leaved Baſil ſmelling like Fennel.
4. Middle Baſil with a ſcent of Citron.
5. Baſil with ſtudded leaves.
6. Baſil with leaves of three colours.

The fourth ſort grows naturally in India; this riſes with a branching ſtalk a foot and a half high, which is taper, and of a purpliſh colour; the leaves are ſhort and hairy; they are of an oval oblong figure, ending in obtuſe points, and are ſawed on their edges, ſtanding upon pretty long foot-ſtalks. The ſtalks are terminated by three ſpikes of flowers, that in the middle being longer than the other two; the ſpikes are narrow, and the flower have ſhort foot-ſtalks; under each whorl of flowers are two ſmall leaves (or bractea) placed oppoſite, which are heart-ſhaped, concave, and reflexed. The flowers are ſmall, and in ſome plants are of a purpliſh colour, but in general they are white; their empalements are ſmooth, and cut into five parts at the top; the ſtyle of the flower is longer than the petal, and the whole plant has a ſtrong, ſweet, aromatic odour.

The fifth ſort riſes with an upright ſtalk near two feet high, ſending out ſometimes two, and at others four branches towards the top, oppoſite, garniſhed with ſpear-ſhaped leaves about three inches long, and one broad in the middle, leſſening at both ends to a point; their foot-ſtalks are two inches long, and are hairy.

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The flowers grow in whorled ſpikes at the top of the ſtalks, the flowers ſtanding upon foot-ſtalks, each ſuſtaining three flowers; theſe are about the ſize of thoſe of the common Baſil, and are white; the whole plant has a ſtrong aromatic odour. It grows naturally at Campeachy.

The ſixth ſort grows naturally in the iſland of Ceylon; this riſes with a ſquare ſtalk two feet high, which is hairy, and divides into three branches at the top; the lower leaves are roundiſh, ending in points; they are hairy, and crenated on their edges, ſtanding upon ſlender foot-ſtalks; the leaves on the ſtalks are narrower and ſhorter, and have foot-ſtalks an inch long; the ſtalks are terminated by three ſpikes of flowers in whorls, that in the middle being the longeſt. The flowers are reflexed and hang downward, they are white, and larger than thoſe of the common ſort. This plant has leſs odour than the other ſorts.

Theſe plants being moſt of them annual, are propagated from ſeeds, which ſhould be ſown in March, upon a moderate hot-bed; and when the plants are come up, they ſhould be tranſplanted into another moderate hot-bed, obſerving to water and ſhade them until they have taken root; after which they ſhould have plenty of air in mild weather, otherwiſe they will draw up very weak; you muſt alſo water them frequently, for they love moiſture. In May they ſhould be taken up with a ball of earth to their roots, and tranſplanted either into pots or borders, obſerving to ſhade them until they have taken root; after which they will require no farther care but to clear them from weeds, and refreſh them with water in dry weather. Though theſe plants are only propagated from ſeeds, yet if you have any particular ſort which may ariſe from ſeeds, which you are deſirous to increaſe, you may take off cuttings any time in May, and plant them on a moderate hot-bed, obſerving to water and ſhade them for about ten days; in which time they will take root, and in three weeks time be fit to remove, either into pots or borders, with the ſeedling plants. In September theſe plants will perfect their ſeeds, when thoſe ſorts which appear the moſt diſtinct, ſhould have their ſeeds preſerved ſeparate, for ſowing the following ſpring.

The ſeeds of theſe plants are uſually brought from the ſouth of France or Italy every ſpring, becauſe ſome of them ſeldom ripen their ſeeds in this country in the open air. But whoever is curious to preſerve the ſeeds of any of the varieties, ſhould place them in an airy glaſs-caſe or ſtove in the autumn, when the weather begins to be cold or wet; and by ſupplying them with water, and letting them have free air every day in mild weather, they will perfect their ſeeds very well in this country.

The fifth ſort is more tender than any of the other; this was diſcovered growing wild at Campeachy, by the late Dr. William Houſtoun, who ſent the ſeeds to England. This ſhould be ſown on a hot-bed early in the ſpring, and when the plants are come up, they ſhould be tranſplanted on another very temperate hot-bed to bring them forward; and when they have obtained ſtrength, they ſhould be each tranſplanted into a ſeparate pot, and placed either in the ſtove, or on a moderate hot-bed, where they may have a large ſhare of air in warm weather; but by being ſheltered from the cold and wet, the plants will perfect their ſeeds very well in England.

The ſixth ſort grows to be ſhrubby, and if placed in a moderate warmth in winter, may be preſerved two years; but this will ripen its ſeeds the firſt year, if the plants are brought forward in the ſpring; but if this ſhould fail, the plants may be placed in the ſtove, where they may be kept through the winter, and the following ſeaſon they will perfect their ſeeds. In the ſummer the plants ſhould be placed in the open air in a ſheltered ſituation, and in warm weather they ſhould have plenty of water.

There have been many fictitious ſtories handed down through ſeveral generations, of ſcorpions being bred in the brain of perſons who frequently ſmelled this plant; and others have aſſerted, that ſcorpions commonly breed under the plants, but theſe ſtories are without foundation: but it is certain, that the odour of theſe plants is too ſtrong for moſt perſons, eſpecially in a room, or if near them; for which reaſon they ſhould not be placed too near the habitation, becauſe if they are in any quantity, the odour will extend at times to moſt of the apartments when the windows are open.

ŒNANTHE. Tourn. Inſt. R. H. 312. tab. 166. Lin. Gen. Plant. 314. [Οἰναν θη, of Οἶνη, a Vine, and Ἄνθος, a flower. The ancients called any plant Œnanthe that flowered at the ſame time with the Vine, or whoſe flowers had the ſame odour.] Water Dropwort.

The CHARACTERS are,

It is a plant with an umbelliferous flower; the principal umbel has but few rays, but the particular umbels have many ſhort ones. The principal involucrum is compoſed of many ſingle leaves, which are ſhorter than the umbel; the ſmaller umbels have many ſmall leaves; the rays of the principal umbel are difform. Thoſe flowers in the diſk are hermaphrodite, and are compoſed of five heart-ſhaped inflexed petals, which are almoſt equal; thoſe of the rays are male, and have five large unequal petals which are bifid; they have five ſingle ſtamina terminated by roundiſh ſummits. The germen is ſituated under the flower, ſupporting two awl-ſhaped permanent ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes an oval fruit, divided into two parts, containing two almoſt oval ſeeds, convex on one ſide and plain on the other.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, which contains thoſe plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are;

1. ŒNANTHE (*Crocata*) foliis omnibus multifidis obtuſis ſubæqualibus. Hort. Cliff. 99. *Water Dropwort, whoſe leaves all end in many obtuſe points, and are almoſt equal.* Œnanthe ſucco viroſo, cicutæ facie lobelii. J. B. 3. p. 2. 193. *Hemlock Dropwort.*
2. ŒNANTHE (*Fiſtuloſa*) ſtolonifera, foliis caulinis pinnatis filiformibus fiſtuloſis. Lin. Sp. Plant. 254. *Water Dropwort, with ſlender, fiſtular, winged leaves growing on the ſtalks.* Œnanthe aquatica. C. B. P. 162. *Water Dropwort.*
3. ŒNANTHE (*Pimpinelloides*) foliolis radicalibus cuneatis fiſſis, caulinis integris linearibus longiſſimis canaliculatis. Hort. Cliff. 99. *Water Dropwort whoſe lower leaves are oval and cut, but thoſe on the ſtalks entire, narrow, and channelled.* Œnanthe apii folio. C. B. P. 162. *Water Dropwort with a Smallage leaf.*
4. ŒNANTHE (*Prolifera*) umbellularum pedunculis marginalibus longioribus ramoſis maſculis. Hort. Upſal. 63. *Water Dropwort whoſe foot-ſtalks on the borders of the umbels are longer, branching, and bear male flowers.* Œnanthe prolifera Apula. C. B. P. 163. *Childing Water Dropwort of Apulia.*
5. ŒNANTHE (*Globuloſa*) fructibus globoſis. Hort. Cliff. 99. *Water Dropwort with globular fruit.* Œnanthe Luſitanica, ſemine craſſiore globoſo. Tourn. Inſt. 313. *Portugal Water Dropwort, with a thicker globular ſeed.*

The firſt of thoſe here mentioned, is very common by the ſides of the Thames on each ſide London, as alſo by the ſides of large ditches and rivers in divers parts of England: this plant commonly grows four or five feet high with ſtrong jointed ſtalks, which, being broken, emit a yelloviſh fœtid juice; the leaves are ſomewhat like thoſe of the common Hemlock, but are of a lighter green colour: the roots divide into four or five large taper ones, which, when ſeparated, have ſome reſemblance to Parſneps; for which ſome ignorant perſons have boiled them, whereby themſelves and family have been poiſoned.

This plant is one of the moſt poiſonous we know; the juice which is at firſt like milk, turns afterward to a Saffron colour: if a perſon ſhould ſwallow ever ſo little of this juice, it will ſo contract every part it touches,

touches, that there will immediately follow a terrible inflammation and gangrene: and what is worſe, there has not yet been found an antidote againſt it; for which reaſon, we ought to be very careful to know this plant, in order to avoid it, for fear we ſhould take it for any other like it, which would certainly prove fatal.

The poiſonous quality of this plant, had led ſome perſons to believe it to be the Cicuta of the ancients; but according to Wepfer, the Sium alterum oluſatri facie of Lobel, is what the ancients called Cicuta, as may be ſeen at large in Wepfer's book De Cicuta.

The ſecond ſort is very common in moiſt ſoils, and by the ſides of rivers in divers parts of England: this is not ſuppoſed to be near ſo ſtrong as the firſt, but is of a poiſonous quality.

All the ſorts of theſe plants naturally grow in moiſt places, ſo that whoever hath a mind to cultivate them, ſhould ſow their ſeeds ſoon after they are ripe in autumn, upon a moiſt ſoil, where they will come up, and thrive exceedingly the following ſummer, and require no farther care but to clear them from weeds.

ŒNOTHERA. Lin. Gen. Plant. 424. Onagra. Tourn. Inſt. R. H. 302. tab. 156. Tree Primroſe.

The Characters are,

The empalement of the flower is of one leaf, having a long cylindrical tube, cut into four acute ſegments at the brim, which turn backward. The flower has four heart-ſhaped petals, which are lengthways inſerted in the diviſions of the empalement. It hath eight awl-ſhaped incurved ſtamina, which are inſerted in the tube of the empalement, and are terminated by oblong proſtrate ſummits. The cylindrical germen is ſituated under the tube of the empalement, ſupporting a ſlender ſtyle, crowned by a thick quadrifid, obtuſe, reflexed ſtigma. The germen afterward becomes a four-cornered cylindrical capſule having four cells, which are filled with ſmall angular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's eighth claſs, which includes thoſe plants whoſe flowers have eight ſtamina and one ſtyle.

The Species are,

1. Œnothera (*Biennis*) foliis ovato-lanceolatis planis, caule muricato ſubvilloſo Vir. Cliff. 33. *Tree Primroſe, with plain, oval, ſpear-ſhaped leaves, and a rough hairy ſtalk.* Onagra latifolia. Tourn. Inſt. 302. *Broad-leaved Tree Primroſe.*
2. Œnothera (*Anguſtifolia*) foliis lanceolatis dentatis, caule hiſpido. *Tree Primroſe with ſpear-ſhaped indented leaves, and a prickly ſtalk.* Onagra anguſtifolia, caule rubro, flore minore. Tourn. Inſt. R. H. 302. *Narrow-leaved Tree Primroſe, with a red ſtalk and a ſmaller flower.*
3. Œnothera (*Glabra*) foliis lanceolatis planis, caule glabro. *Tree Primroſe with plain ſpear-ſhaped leaves, and a ſmooth ſtalk.*
4. Œnothera (*Molliſſima*) foliis lanceolatis undulatis. Vir. Cliff. 33. *Tree Primroſe with waved ſpear-ſhaped leaves.* Onagra Bonarienſis villoſa, flore mutabili. Hort. Elth. 297. *Hairy Tree Primroſe of Buenos Ayres, with a changeable flower.*
5. Œnothera (*Pumila*) foliis radicalibus ovatis, caulinis lanceolatis obtuſis, capſulis ovatis ſulcatis. Tab. 188. *Tree Primroſe with oval leaves at the root, thoſe on the ſtalks ſpear-ſhaped, blunt-pointed, and oval furrowed ſeed-veſſels.*

The other ſpecies which have been formerly placed in this genus, are now under Jussiæa and Ludwigia, to which the reader is deſired to turn.

The three firſt ſorts grow naturally in Virginia, and in other parts of North America, from whence their ſeeds were brought to Europe in the beginning of the ſixteenth century; but they are now become ſo common in many parts of Europe, as to be taken for natives. The firſt hath a long, thick, taper root, which runs deep into the ground, from which ariſe many obtuſe leaves which ſpread flat on the ground; between theſe the ſtalks come out, which riſe between three and four feet high, and is of a pale green colour, a little hairy, and about the thickneſs of a finger, full of pith; this is garniſhed with long narrow leaves ſet cloſe to the ſtalk, without order. The flowers are produced all along the ſtalk from the wings of the leaves, the germen ſitting cloſe to the ſtalk, from the top of which ariſes the tube of the flower, which is narrow, more than two inches long; at the top is the empalement, which is cut into four acute ſegments, which are reflexed downward. The petal of the flower is cut into four large obtuſe ſegments, which in the evening are expanded quite flat, but are ſhut in the day; theſe are of a bright yellow colour. From the flower opening in the evening, many perſons call it the Night Primroſe. The plants begin to flower about Midſummer, and as the ſtalks advance in height, ſo other flowers are produced, whereby there is a ſucceſſion of flowers on the ſame plant till autumn.

The ſecond ſort hath red ſtalks, which are ſet with rough protuberances: it does not riſe ſo high as the firſt, the leaves are narrower, and the flowers are ſmaller.

The third ſort differs from the firſt, in having ſhorter ſtalks, narrower leaves, and ſmaller flowers; and from the ſecond, in having ſmooth ſtalks, which are of a pale green colour. Theſe differences are permanent, ſo they are undoubtedly different ſpecies.

The fourth ſort grows naturally at Buenos Ayres; this hath a ſhrubby ſtalk more than two feet high, hairy, garniſhed with narrow ſpear-ſhaped leaves ending in acute points; theſe ſit cloſe to the ſtalks, being a little waved on their edges. The flowers come out from the wings of the leaves along the ſtalks, like the other ſorts; they are firſt of a pale yellow, but as they decay change to an Orange colour; they are ſmaller than thoſe of either of the former ſorts, and expand only in the evening; the ſeed-veſſels are ſlender, taper, and hairy. This flowers at the ſame time with the former.

The fifth ſort grows naturally in Canada, from whence the ſeeds were brought to Paris a few years paſt. This is a perennial plant; the root is fibrous; the lower leaves are oval and ſmall, ſitting cloſe to the ground; the ſtalk is ſlender, near a foot high, and is garniſhed with ſmall ſpear-ſhaped leaves, of a light green, ending in blunt points, ſitting cloſe to the ſtalks. The flowers come out from the wings of the leaves like the other ſpecies; theſe are ſmall, of a bright yellow colour, and appear at the ſame time as the former, and are ſucceeded by ſhort, oval, furrowed ſeed-veſſels, filled with ſmall ſeeds.

The three firſt ſorts are very hardy plants, and if once brought into a garden, and the ſeeds permitted to ſcatter, there will be a ſupply of plants without any care. They are biennial, and periſh after they have perfected their ſeeds. The ſeeds of theſe plants ſhould be ſown in the autumn, for thoſe which are ſown in the ſpring ſeldom riſe the ſame year: when the plants come up, they ſhould be thinned and kept clean from weeds, which is all the care they require till the autumn, when they ſhould be tranſplanted to the places where they are deſigned to flower; but as the roots of theſe plants ſtrike deep in the ground, ſo there ſhould be care taken not to cut or break them in removing. The plants will thrive in almoſt any ſoil or ſituation, and will flower in London in ſmall gardens, better than moſt other plants.

The fourth ſort is now become pretty common in the Engliſh gardens, for if the ſeeds of this are permitted to ſcatter, the plants will come up the following ſpring, and require no other care but to keep them clean from weeds, and thin them where they grow too cloſe. If theſe plants are kept in pots, and placed in a green-houſe in the autumn, they will live through the winter; but as they produce flowers and ſeeds in the open air, the plants are ſeldom preſerved longer.

The fifth ſort is perennial, and may be propagated either by parting of the roots, or by ſeeds: if it is by the former, the beſt time for doing it is in the ſpring;

but

but if they are propagated by ſeeds, theſe ſhould be ſown in the autumn; and the ſureſt way is to ſow the ſeeds in pots, and place them under a hot-bed frame in winter: in the ſpring the plants will appear, and when they are fit to remove, a few of them may be planted in ſmall pots, to be ſheltered under a common frame in the winter; and the others may be planted in a ſheltered border, where they will endure the cold of our ordinary winters very well, and the following ſummer they will produce flowers and ſeeds in plenty; ſo there will be little occaſion for parting of their roots, becauſe the ſeedling plants will be much ſtronger and flower better, than thoſe propagated by offsets.

OLDENLANDIA. Plum. Nov. Gen. 42. tab. 36. Lin. Gen. Plant. 143.

The CHARACTERS are,

The empalement of the flower is permanent, ſitting upon the germen, and is cut into five parts. The flower has four oval petals which ſpread open, and are double the length of the empalement, and four ſtamina terminated by ſmall ſummits. It hath a roundiſh germen ſituated under the flower, ſupporting a ſingle ſtyle, crowned by an indented ſtigma. The germen afterward turns to a globular capſule with two cells, filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's fourth claſs, which includes thoſe plants whoſe flowers have four ſtamina and one ſtyle.

We have but one SPECIES of this genus in the Engliſh gardens, which is,

OLDENLANDIA (*Corymboſa*) pedunculis multifloris, foliis lineari-lanceolatis. Lin. Sp. Plant. 119. *Oldenlandia with many flowers on a foot ſtalk, and linear ſpear-ſhaped leaves.* Oldenlandia humilis hyſſopifolia. Plum. Nov. Gen. *Dwarf Oldenlandia having a Hyſſop leaf.*

This plant was diſcovered in America by Father Plumier, who gave this name to it in honour of Henry Bernard Oldenland, a German, who was diſciple of Dr. Herman at Leyden, and was a very curious botaniſt.

The ſeeds of this plant were ſent into England by Mr. Robert Millar, who gathered them in Jamaica. It is a low annual plant, which ſeldom riſes above three or four inches high, and divides into many branches which ſpread near the ground. Theſe branches are furniſhed with long narrow leaves, which are placed oppoſite. From the wings of the leaves ariſes the flower-ſtalk, which grows about an inch, or a little more in length, and divides into three or four ſmaller foot-ſtalks; on the top of each of theſe, ſtands one ſmall white flower.

The ſeeds of this plant ſhould be ſown early in the ſpring on a hot-bed, and when the plants are come up, they ſhould be tranſplanted on another hot-bed, or into ſmall pots, and plunged into a moderate hot-bed of tanners bark, obſerving to water and ſhade them until they have taken root; after which time they muſt have a large ſhare of free air in warm weather, and ſhould be frequently refreſhed with water. With this management the plants will flower in June, and their ſeeds will ripen in July, ſo that the ſeeds muſt be gathered from time to time as they ripen; for as the branches grow larger, ſo there will be freſh flowers produced until autumn, when the plants will periſh; but if the ſeeds are permitted to ſcatter in the pots, the plants will ſoon after appear, which will live through the winter, provided they are placed in the ſtove, and will flower early the following ſpring.

OLEA. Tourn. Inſt. R. H. 598. tab. 370. Lin. Gen. Plant. 20. [of Ἐλαία,] the Olive; in French, *Olivier*.

The CHARACTERS are,

It has a ſmall tubulous empalement of one leaf, cut into four ſegments at the top. The flower conſiſts of one petal which is tubulous, cut at the brim into four ſegments which ſpread open. It has two ſhort ſtamina terminated by erect ſummits, and a roundiſh germen ſupporting a ſhort ſtyle, crowned by a thick bifid ſtigma. The germen afterward turns to an oval ſmooth fruit (or berry) with one cell, incloſing an oblong oval nut.

This genus of plants is ranged in the firſt ſection of Linnæus's ſecond claſs, which contains thoſe plants whoſe flowers have two ſtamina and one ſtyle.

The SPECIES are,

1. OLEA (*Gallica*) foliis lineari-lanceolatis ſubtus incanis. *Olive with linear ſpear-ſhaped leaves, which are hoary on their under ſide.* Olea fructu oblongo minori. Tourn. Inſt. R. H. 599. *Olive with a ſmaller oblong fruit, commonly called Provence Olive.*
2. OLEA (*Hiſpanica*) foliis lanceolatis, fructu ovato. *Olive with ſpear-ſhaped leaves, and an egg-ſhaped fruit.* Olea fructu maximo. Tourn. Inſt. R. H. 599. *Olive with the largeſt fruit, called the Spaniſh Olive.*
3. OLEA (*Sylveſtris*) foliis lanceolatis obtuſis rigidis, ſubtus incanis. *Olive with ſpear-ſhaped, obtuſe, rigid leaves, which are hoary on their under ſide.* Olea ſylveſtris, folio duro, ſubtus incano. C. B. P. 472. *The wild Olive with a hard leaf, and hoary on its under ſide.*
4. OLEA (*Africana*) foliis lanceolatis lucidis, ramis teretibus. *Olive with ſpear-ſhaped ſhining leaves, and taper branches.* Olea Afra, folio longo, lato, ſupra atroviridi ſplendente, infra pallidè viridi. Boer. Ind. alt. 2. 218. *African Olive, with a long, broad, ſhining leaf, of a greeniſh black above, and pale on its under ſide.*
5. OLEA (*Buxifolia*) foliis ovatis rigidis ſeſſilibus. *Olive with oval ſtiff leaves, ſitting cloſe to the branches.* Olea Afra, folio buxi craſſo atroviridi, lucido, cortice albo ſcabro. Boerh. Ind. alt. 2. 218. *African Olive, with a thick, dark, ſhining Box leaf, and a rough white bark, commonly called Box-leaved Olive.*

The firſt ſort is what the inhabitants of the ſouth of France chiefly cultivate, becauſe from this ſpecies the beſt oil is made, which is a great branch of trade in Provence and Languedoc; and it is the fruit of this ſort which is moſt eſteemed when pickled: of this there are ſome varieties; the firſt is called Olive Picholine; there is another with dark green fruit, one with white fruit, and another with ſmaller and rounder fruit; but as theſe are ſuppoſed to be only accidental varieties which have riſen from the ſame ſeeds, I have not enumerated them.

The Olive ſeldom riſes to be a large tree, and is rarely ſeen with a ſingle ſtem, but frequently two or three ſtems riſe from the ſame root; theſe grow from twenty to thirty feet high, putting out branches from the ſides almoſt their whole length, which are covered with a gray bark, and garniſhed with ſtiff leaves about two inches and a half long, and half an inch broad in the middle, gradually diminiſhing to both ends; they are of a lively green on their upper ſide, and hoary on their under, ſtanding oppoſite. The flowers are produced in ſmall bunches from the wings of the leaves; they are ſmall, white, and have ſhort tubes, ſpreading open at the top; theſe are ſucceeded by oval fruit, which, in warm countries, ripen in the autumn.

The ſecond ſort is chiefly cultivated in Spain, where the trees grow to a much larger ſize than the former ſort; the leaves are much larger, and not ſo white on their under ſide; and the fruit is near twice the ſize of thoſe of the Provence Olive, but are of a ſtrong rank flavour, and the oil made from theſe, is too ſtrong for moſt Engliſh palates.

The third ſort is the wild Olive, which grows naturally in woods, in the ſouth of France, Spain, and Italy, ſo is never cultivated; the leaves of this ſort are much ſhorter and ſtiffer than thoſe of the other; the branches are frequently armed with thorns, and the fruit is ſmall and of no value.

The fourth and fifth ſorts grow naturally at the Cape of Good Hope; the fourth riſes to the height of the firſt, to which it bears ſome reſemblance, but the bark is rougher; the leaves are not ſo long, and are of a lucid green on their upper ſide; but as this does not produce fruit in Europe, I can give no account of it.

The

The fifth ſort is of humbler growth, ſeldom riſing more than four or five feet high, ſending out branches from the root upward, forming a buſhy ſhrub; the branches are taper, and covered with a gray bark; the leaves are oval, very ſtiff, and ſmaller than thoſe of the other ſpecies. This has not produced any fruit in England.

All theſe ſorts are preſerved in the gardens of the curious, but they are rather too tender to thrive in the open air, in the neighbourhood of London, where they are ſometimes planted againſt walls, and with a little protection in very ſevere froſt, they are maintained pretty well; but in Devonſhire there are ſome of theſe trees, which have grown in the open air many years, and are ſeldom injured by the froſt, but the ſummers are not warm enough to bring the fruit to maturity. There were ſeveral of theſe trees planted againſt a warm wall at Cambden-houſe near Kenſington, which ſucceeded very well, till their tops were advanced above the wall; after which they were generally killed in winter, ſo far down as to the top of the wall. Theſe in 1719 produced a good number of fruit, which grew ſo large as to be fit for pickling; but ſince that time, their fruit has ſeldom grown to any ſize.

The Olive was, by the ancients, conſidered as a maritime tree, and they ſuppoſed it would not thrive at any diſtance from the ſea; but by experience, we find they will ſucceed very well in any country, where the air is of a proper temperature of heat, though the trees are found to bear the ſpray of the ſea better than moſt other ſorts.

In Languedoc and Provence, where the Olive-tree is greatly cultivated, they propagate it by truncheons ſplit from the roots of the trees; for as theſe trees are frequently hurt by hard froſts in winter, ſo when their tops are killed, they ſend up ſeveral ſtalks from the root; and when theſe are grown pretty ſtrong, they ſeparate them with an ax from the root, in the doing of which they are careful to preſerve a few roots to the truncheons; theſe are cut off in the ſpring, after the danger of froſt is over, and planted about two feet deep in the ground, covering the ſurface with litter or mulch, to prevent the ſun and wind from penetrating and drying of the ground; when the plants have taken new root, they are careful to ſtir the ground and deſtroy the weeds.

This tree will grow in almoſt any ſoil, but when it is planted in rich moiſt ground, they grow larger and make a finer appearance, than in poor land; but the fruit is of leſs eſteem, becauſe the oil made from it is not ſo good as that which is produced in a leaner ſoil. The chalky ground is eſteemed the beſt for theſe trees, and the oil which is made from the trees growing in that ſort of land is much finer, and will keep longer than the other.

In the countries where the inhabitants are curious in the making of their oil, they are frequently obliged to get truncheons of the ordinary ſorts of Olives to plant; but after they have taken good root, they graft them with the ſort of Olive which they prefer to the others. In Languedoc they chiefly propagate the Cormeau, the Ampoulan, and Moureau, which are three varieties of the firſt ſpecies: but in Spain the ſecond ſort is generally cultivated, where they have more regard to the ſize of the fruit, and the quantity of oil they will produce, than to their quality. If the culture of theſe trees was well underſtood by the inhabitants of Carolina, and properly purſued, it might become a valuable branch of trade to them; for there is no reaſon to doubt of their ſucceeding, the ſummers there being hot enough to ripen the fruit to its utmoſt perfection.

In this country the plants are only preſerved by way of curioſity, and are placed in winter in the green-houſe for variety, ſo I ſhall next give an account of the method by which they are here propagated, with their manner of treatment.

Theſe plants may be propagated by laying down their tender branches (in the manner practiſed for other trees,) which ſhould remain undiſturbed two years; in which time they will have put out roots, and may then be taken off from the old plants, and tranſplanted either into pots filled with freſh light earth, or into the open ground in a warm ſituation. The beſt ſeaſon for tranſplanting is the beginning of April, when you ſhould, if poſſible, take the opportunity of a moiſt ſeaſon; and thoſe which are planted in pots, ſhould be placed in a ſhady part of the green-houſe until they have taken root; but thoſe planted in the ground ſhould have mulch laid about their roots, to prevent the earth from drying too faſt, and now and then refreſhed with water; but you muſt by no means let them have too much moiſture, which will rot the tender fibres of their roots, and deſtroy the trees. When the plants have taken freſh root, thoſe in the pots may be expoſed to the open air, with other hardy exotics, with which they ſhould be houſed in winter, and treated as Myrtles, and other leſs tender trees and ſhrubs; but thoſe in the open air will require no farther care until the winter following, when you ſhould mulch the ground about their roots, to prevent the froſt from penetrating deep into it; and if the froſt ſhould prove very ſevere, you ſhould cover them with mats, which will defend them from being injured thereby; but you muſt be cautious not to let the mats continue over them after the froſt is paſt, leſt by keeping them too cloſe, their leaves and tender branches ſhould turn mouldy for want of free air; which will be of as bad conſequence to the trees, as if they had been expoſed to the froſt, and many times worſe; for it ſeldom happens, if they have taken much of this mould, or have been long covered, ſo that it has entered the bark, that they are ever recoverable again; whereas it often happens, that the froſt only deſtroys the tender ſhoots; but the body and larger branches remaining unhurt, put out again the ſucceeding ſpring.

Theſe trees are generally brought over from Italy every ſpring, by the perſons who import Orange-trees, Jaſmines, &c. from whom they may be procured pretty reaſonable; which is a better method than to raiſe them from layers in this country, that being too tedious; and thoſe which are thus brought over, have many times very large ſtems, to which ſize young plants in this country would not arrive in ten or twelve years. When you firſt procure theſe ſtems, you ſhould (after having ſoaked their roots twenty-four hours in water, and cleaned them from the filth they have contracted in their paſſage) plant them in pots filled with freſh light ſandy earth, and plunge them into a moderate hot-bed, obſerving to ſcreen them from the violence of the ſun in the heat of the day, and alſo to refreſh them with water, as you ſhall find the earth in the pots dry. In this ſituation they will begin to ſhoot in ſix weeks or two months after, when you ſhould let them have air in proportion to the warmth of the ſeaſon; and after they have made pretty good ſhoots, you ſhould inure them to the open air by degrees, into which they ſhould be removed, placing them in a ſituation where they may be defended from ſtrong winds; in this place they ſhould remain till October following, when they muſt be removed into the green-houſe, as was before directed. Having thus managed theſe plants until they have acquired ſtrong roots, and made tolerable good heads, you may draw them out of the pots, preſerving the earth to their roots, and plant them in the open air in a warm ſituation, where you muſt manage them as was before directed for the young ones; and theſe will in two or three years produce flowers, and in very warm ſeaſons ſome fruit, provided they do well. The Lucca and Box-leaved Olives are the hardieſt, for which reaſon they ſhould be preferred to plant in the open air, but the firſt ſort will grow to be the largeſt trees.

OMPHALODES. See CYNOGLOSSUM.
ONAGRA. See ŒNOTHERA.
ONIONS. See CEPA.
ONOBRYCHIS. See HEDYSARUM.
ONONIS. Lin. Gen. Plant. 772. Anonis. Tourn. Inſt. R. H. 408. tab. 229. Reſt-harrow, Cammock, Pettywin; in French, *Arrête-beuf.*

The CHARACTERS are,

The empalement of the flower is cut into five narrow ſegments, which end in acute points, the upper being a little raiſed and arched, the lower bending under the keel. The flower is of the butterfly kind. The ſtandard is heart-ſhaped, depreſſed on the ſides, and larger than the wings. The wings are oval and ſhort; the keel is pointed, and longer than the wings. It hath ten ſtamina joined together, terminated by ſingle ſummits, and an oblong hairy germen, ſupporting a ſingle ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a turgid pod with one cell, incloſing kidney-ſhaped ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, which includes thoſe plants whoſe flowers have ten ſtamina joined in two bodies.

The SPECIES are,

1. ONONIS (*Spinoſa*) floribus ſubſeſſilibus, ſolitariis lateralibus, caule ſpinoſo. Hort. Cliff. 389. *Reſt-harrow with ſingle flowers ſitting cloſe to the ſides of the branches, and a prickly ſtalk.* Anonis ſpinoſa flore purpureo. C. B. P. 389. *Prickly Reſt-harrow with a purple flower, ſometimes called Cammock, or Petty-win, and in ſome countries, French Furze.*
2. ONONIS (*Mitis*) floribus ſubſeſſilibus ſolitariis lateralibus, ramis inermibus. Hort. Cliff. 359. *Reſt-harrow with ſingle flowers ſitting cloſe to the ſtalks, and branches without ſpines.* Anonis ſpinis carens purpurea. C. B. P. 389. *Purple Reſt-harrow having no ſpines.*
3. ONONIS (*Repens*) caulibus diffuſis, ramis erectis, foliis ſuperioribus ſolitariis ſtipulis ovatis. Lin. Sp. 1006. *Reſt-harrow with diffuſed ſtalks, which are erect, the upper leaves ſingle, and oval ſtipulæ.* Anonis maritima procumbens, foliis hirſutis pubeſcentibus. Pluk. Alm. 33. *Trailing maritime Reſt-harrow with hairy leaves.*
4. ONONIS (*Tridentata*) foliis ternatis carnoſis ſublinearibus tridentatis, fruticoſa pedunculis bifloris. Lin. Sp Plant. 718. *Shrubby Reſt-harrow, with trifoliate fleſhy leaves which are narrow, and have three indentures.* Anonis Hiſpanica, fruteſcens, folio tridentato carnoſo. Tourn. Inſt. 408. *Shrubby Spaniſh Reſt-harrow with a fleſhy leaf, having three indentures.*
5. ONONIS (*Fruticoſa*) fruticoſa floribus paniculatis, pedunculis ſubtrifloris, ſtipulis vaginalibus, foliis ternatis lanceolatis ſerratis. Hort. Cliff. 358. *Reſt-harrow with paniculated flowers growing three upon a foot-ſtalk, ſheath-like ſtipulæ, and trifoliate leaves.* Anonis purpurea verna præcox fruteſcens, flore rubro amplo. Mor. Hiſt. 2. p. 170. *Early ſpring, purple, ſhrubby Reſt-harrow, with a large red flower.*
6. ONONIS (*Natrix*) pedunculis unifloris ariſtatis foliis terminatis ovatis, ſtipulis integerrimis. Hort. Cliff. 358. *Reſt-harrow with one flower on a foot-ſtalk terminated by a thread, and oval trifoliate leaves.* Anonis viſcoſa ſpinis carens lutea major. C. B. P. 389. *Glutinous Reſt-harrow without ſpines, having a large yellow flower.*
7. ONONIS (*Viſcoſa*) pedunculis unifloris ariſtatis, foliis ſimplicibus infimis ternatis. Lin. Sp. 1009. *Reſt-harrow with one flower on each foot-ſtalk terminated by a thread, whoſe lower leaves are trifoliate.* Anonis annua erectior, latifolia glutinoſa Luſitanica. Tourn. Inſt. 409. *Annual broad-leaved, glutinous, erect Reſt-harrow of Portugal.*
8. ONONIS (*Minutiſſima*) floribus ſubſeſſilibus lateralibus, foliis ternatis glabris, ſtipulis ſetaceis, calycibus ariſtis corolla longioribus. Lin. Sp. Plant. 1007. *Reſt-harrow with flowers ſitting cloſe to the ſides of the ſtalks, trifoliate leaves, briſtly ſtipulæ, and the beard of the calyx longer than the corolla.* Anonis flore luteo parvo. H. R. Par. *Reſt-harrow with a ſmall yellow flower.*
9. ONONIS (*Criſtata*) pedunculis unifloris prælongis, ramis inermibus, foliis ternatis glabris, vaginis acutè dentatis. *Reſt-harrow with one flower growing on a long foot-ſtalk, branches without ſpines, ſmooth trifoliate leaves, and ſheaths which are ſharply indented.* Anonis glabra inermis, pedunculis unifloris prælongis vaginis criſtatis. Allion. *Smooth Reſt-harrow without ſpines, having one flower on a long foot-ſtalk, with a creſted ſheath.*
10. ONONIS (*Ornithopodoides*) pedunculis bifloris ariſtatis, leguminibus linearibus cernuis. Prod. Leyd. 376. *Reſt-harrow with two flowers on a foot-ſtalk terminated by a thread, and narrow nodding pods.* Anonis ſiliquis ornithopodii. Boerh. Ind. alt. 2. 34. *Reſt-harrow with pods like thoſe of the Bird's-foot.*
11. ONONIS (*Rotundifolia*) fruticoſa pedunculis trifloris, calycibus triphyllo-bractatis foliis ternatis ſubrotundis. Hort. Cliff. 358. *Reſt-harrow with foot-ſtalks proceeding from the ſide of the branches, ſuſtaining three flowers, and trifoliate roundiſh leaves.* Cicer ſylveſtre latifolium triphyllum. C. B. P. 347. *Broad three-leaved wild Chich.*
12. ONONIS (*Mitiſſima*) floribus ſeſſilibus ſpicatis, bracteis ſtipularibus, ovatis ventricoſis ſcarioſis imbricatis. Lin. Sp. 1007. *Reſt-harrow with ſpiked flowers ſitting cloſe, and oval ſtipulæ to the flowers.* Anonis alopecuroïdes, mitis annua purpuraſcens. Hort. Elth. 28. tab. 24. *Smooth, annual, purpliſh, Fox-tail Reſt-harrow.*
13. ONONIS (*Alopecuroïdes*) ſpicis folioſis ſimplicibus ovatis obtuſis ſtipulis dilatis. Lin. Sp. Plant. 1008. *Reſt-harrow with leafy ſpikes, and ſingle obtuſe leaves.* Anonis ſicula alopecuroïdes. Tourn. Inſt. 408. *Fox-tail Reſt-harrow of Sicily.*
14. ONONIS (*Anil*) foliis ternatis ovatis, petiolis longiſſimis, leguminibus hirſutis. *Reſt-harrow with oval trifoliate leaves growing on very long foot-ſtalks, and hairy pods.* Anonis Americana, folio latiori ſubrotundo. Tourn. Inſt. R. H. 409. *American Reſt-harrow with a broader roundiſh leaf.*
15. ONONIS (*Decumbens*) foliis ternatis lineari-lanceolatis, caule decumbente, floribus ſpicatis alaribus, leguminibus glabris. *Reſt-harrow with trifoliate, narrow, ſpear-ſhaped leaves, a trailing ſtalk, flowers growing in ſpikes from the wings of the ſtalk, and ſmooth pods.* Anonis Americana, anguſtifolia, humilior & minus hirſuta. Houſt. MSS. *Lower narrow-leaved American Reſt-harrow, which is leſs hairy.*

The firſt ſort is a common weed in moſt parts of England, ſo is rarely admitted into gardens. It has a ſtrong creeping root, which ſpreads far in the ground, and is with great difficulty eradicated; the ſtalks riſe a foot and a half high, they are ſlender, purple, and hairy, ſending out ſmall branches on their ſide, which are armed with ſharp prickles. The flowers come out ſingly from the ſide of the branches; they are of the butterfly kind, and of a purple colour, which are ſucceeded by ſmall pods, containing one or two kidney-ſhaped ſeeds. It flowers great part of ſummer, and the ſeeds ripen in the autumn. The root of this is one of the five opening roots; the cortical part of it is eſteemed a good medicine for ſtoppage of urine, and to open the obſtructions of the liver and ſpleen; there is a variety of this with white flowers.

The ſecond ſort grows naturally in many parts of England, and has been by ſome ſuppoſed to be only a variety of the firſt; but I have cultivated both by ſeeds, and have always found the plants retain their difference; the ſtalks of this ſort are hairy, and more diffuſed than thoſe of the firſt; the leaves are broader, and ſit cloſer on the branches; the ſtalks do not grow ſo upright, and have no ſpines; the flowers and pods are like thoſe of the firſt. There is alſo a variety of this with white flowers.

The third ſort grows naturally on the borders of the ſea in ſeveral parts of England; this hath a creeping root, from which ariſe many hairy ſtalks which are near two feet long, ſpreading on every ſide upon the ground, garniſhed with trifoliate hairy leaves, thoſe on the lower part of the ſtalks being pretty large and

oval, but the upper are ſmaller and narrower. The flowers are like thoſe of the firſt in ſhape, coming out ſingly from the ſide of the ſtalks, but are of a brighter purple colour; the pods are ſhort, containing two or three ſeeds in each. It flowers in July, and the ſeeds ripen in autumn.

The fourth ſort grows naturally in Spain and Portugal; this riſes with ſhrubby ſtalks a foot and a half high, dividing into ſlender branches very full of joints, garniſhed with narrow, trifoliate, thick, fleſhy leaves, ſtanding upon ſhort foot-ſtalks. The flowers are produced at the end of the branches in looſe panicles, ſome of the foot-ſtalks ſuſtaining two, and others but one flower; they are of a fine purple colour, and appear in June; the ſeeds ripen in September.

The fifth ſort grows naturally on the Alps: this is a very beautiful low ſhrub; it riſes with ſlender ſhrubby ſtalks about two feet high, dividing into many branches, which are garniſhed with narrow trifoliate leaves ſawed on their edges, ſitting cloſe to the branches. The flowers come out in panicles at the end of the branches upon long foot-ſtalks, which for the moſt part ſuſtain three large purple flowers; the ſtipula is a kind of ſheath, embracing the foot-ſtalk of the flower. It flowers the end of May and the beginning of June, and the flowers are ſucceeded by turgid pods about an inch long, which are hairy, incloſing three or four kidney-ſhaped ſeeds, which ripen in Auguſt.

The ſixth ſort grows naturally in the ſouth of France and in Spain; this hath a perennial root and an annual ſtalk, which riſes near two feet high, ſending out ſhort branches from the ſide on the lower part of the plants, garniſhed with trifoliate oblong leaves, which are hairy and clammy. The flowers grow in looſe ſpikes at the end of the ſtalks; they are large, and of a bright yellow colour, ſtanding upon pretty long foot-ſtalks, which are extended beyond the leaves, the flowers hanging downward from the middle of the foot-ſtalk. The flowers appear the latter end of June, which are ſucceeded by turgid pods an inch long, containing three or four brown kidney-ſhaped ſeeds, which ripen in September.

The ſeventh ſort grows naturally in Portugal, from whence the ſeeds were ſent to me. This is an annual plant, with a ſtrong, herbaceous, hairy ſtalk, riſing a foot and a half high, ſending out branches the whole length, cloſely garniſhed with trifoliate leaves; the middle lobe being large and oval, the two ſide lobes long and narrow, rounded at their points and indented on their edges; they are very clammy. The foot-ſtalks of the flowers come out from the wings of the ſtalks ſingly, each ſuſtaining one pale yellow flower, ſtanding erect in the middle of the foot-ſtalk, which is extended beyond the flower. This plant flowers in July, and the ſeeds ripen in autumn.

The eighth ſort grows naturally in the ſouth of France and Italy; this is an annual plant; the ſtalks riſe about nine inches high, ſending out one or two ſide branches toward the bottom; the leaves are ſmall, trifoliate, and oval, ſtanding upon pretty long foot-ſtalks, and are indented on their edges. The flowers come out ſingly at the wings of the ſtalk; they are ſmall, yellow, and ſit very cloſe to the ſtalk, having a ſharp briſtly ſtipula under the empalement; the pods are very ſhort and turgid, containing two or three kidney-ſhaped ſeeds. It flowers in July, and the ſeeds ripen in the autumn.

The ninth ſort grows naturally on the Alps; this hath a perennial root, from which come out ſeveral ſlender trailing ſtalks about ſix inches long, garniſhed with ſmall, trifoliate, oval leaves, indented on their edges, ſtanding upon pretty ſhort foot-ſtalks. The flowers come out ſingly toward the top of the ſtalk, upon pretty long ſlender foot-ſtalks, ariſing from the wings of the leaves, each ſuſtaining one yellow flower; the ſheath embracing the baſe of the foot-ſtalk, is ſharply indented. This flowers in June, and the ſeeds ripen in the autumn.

The tenth ſort grows naturally in Sicily, and is an annual plant; the ſtalks riſe about nine inches high, ſending out one or two ſide branches toward the bottom, garniſhed with ſmall trifoliate leaves, which ſtand on ſhort foot-ſtalks. The flowers come out from the ſide of the branches upon ſhort foot-ſtalks, each ſuſtaining two ſmall yellow flowers, which are ſucceeded by jointed compreſſed pods like thoſe of Bird's-foot, having four or five kidney-ſhaped ſeeds in each. This ſort flowers in July, and the ſeeds ripen in the autumn.

The eleventh ſort grows naturally on the Alps and Helvetian mountains; this riſes with a ſingle jointed ſtalk a foot and a half high, garniſhed with oval, indented, trifoliate leaves, ſtanding on pretty long foot-ſtalks. The foot-ſtalks of the flowers come out from the wings of the leaves; they are long, ſlender, each ſuſtains three pale yellow flowers, which are ſucceeded by ſhort turgid pods, containing two or three ſeeds in each. It flowers in June, and the ſeeds ripen in September.

The twelfth ſort came up in earth which was brought from Barbadoes, but it does not ſeem to be a native of that country, for it riſes eaſily from ſeeds in the open air here, and perfects its ſeeds in the autumn, nor will it thrive in greater warmth. This hath an upright ſtalk a foot and a half high, ſending out ſmall ſide branches, which are garniſhed with roundiſh trifoliate leaves ſawed on their edges, ſtanding upon ſhort foot-ſtalks. The flowers grow in ſhort leafy ſpikes at the end of the branches; they are ſmall, and of a pale purple colour, appearing in July, and are ſucceeded by ſhort turgid pods, containing two or three kidney-ſhaped ſeeds, which ripen in the autumn.

The thirteenth ſort grows naturally in Portugal, Spain, and Italy. This is an annual plant, riſing with upright branching ſtalks a foot high, garniſhed with ſingle leaves ſitting cloſe to the ſtalks; the larger leaves are oval, about one inch long and three quarters of an inch broad; the upper leaves are narrow, ending in obtuſe points, and are ſlightly indented at their ends. The flowers grow in leafy ſpikes at the end of the ſtalks ſet cloſe together, having hairy empalements; they are pretty large, of a purple colour, and appear in July: theſe are ſucceeded by taper pods about an inch long, incloſing four or five kidney-ſhaped ſeeds. This plant has ſeveral titles, in the different books of botany.

The fourteenth ſort grows naturally in the American iſlands; this is an annual plant, riſing with a branching ſtalk two feet high, garniſhed with trifoliate leaves, whoſe lobes are oval, ſtanding upon very long foot-ſtalks, which are hairy. The flowers grow in looſe ſpikes at the end of the branches; they are large, and of a purpliſh yellow colour, and are ſucceeded by very turgid hairy pods, each containing five or ſix large kidney-ſhaped ſeeds. This ſort flowers in July and Auguſt, and the ſeeds ripen in the autumn. From this plant Indigo was formerly made, which, I ſuppoſe, was of leſs value than that which is made of Anil, ſo has not been for many years paſt cultivated in any of the iſlands.

The fifteenth ſort was diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz in New Spain, from whence he ſent the ſeeds to England. This is a perennial plant, from whoſe roots come out ſeveral pretty ſtrong branches, which ſpread and incline toward the ground; theſe are garniſhed with narrow trifoliate leaves, very little hairy. The flowers come out in looſe panicles at the end of the branches; they are yellow, and are ſucceeded by ſmooth turgid pods about half an inch long, each containing two or three kidney-ſhaped ſeeds. This flowers in July, and the ſeeds ſometimes ripen here in the autumn.

The three firſt ſorts are never cultivated in gardens, being very troubleſome weeds whenever they get into the fields; for the roots ſpread and multiply greatly in the ground, and are ſo toũgh and ſtrong, that the plough will ſcarcely cut through them, ſo are with great difficulty eradicated when they have once gotten poſſeſſion.

The

The fourth and fifth ſorts are low ſhrubby plants, which are propagated by ſeeds. The fourth is too tender to thrive in the open air in England, unleſs it is planted in a warm ſituation, and in very ſevere froſt covered to protect it. If the ſeeds of both theſe ſorts are ſown upon a bed of light earth in April, the plants will come up in May, when they muſt be kept clean from weeds; and if they are too cloſe, ſome of them ſhould be carefully drawn up in moiſt weather, and tranſplanted at four or five inches diſtance: thoſe of the fourth ſort upon a warm ſheltered border, but the fifth may be planted in a ſhady border, where they will thrive very well; after theſe have taken root, the plants will thrive very well, but muſt be kept clean from weeds till the following autumn, when they may be tranſplanted to the places where they are to remain; thoſe plants which were left growing in the bed where they were ſown, muſt alſo be treated in the ſame way. Theſe plants will not thrive in pots, therefore ſhould always be planted in the full ground, where the fifth ſort will flouriſh greatly, and frequently ſend up many plants from their roots, but the other is more impatient of cold. Theſe plants will flower the ſecond year, and make a fine appearance during the continuance of their flowers, and the fifth ſort will produce ſeeds in plenty.

The ſixth ſort is propagated by ſeeds, which ſhould be ſown thin in drills upon a bed of light earth; and when the plants come up, they muſt be kept clean from weeds till the autumn, when they ſhould be carefully taken up, and tranſplanted into the borders of the pleaſure-garden, where they are to remain; the ſecond year they will flower and produce ripe ſeeds, but the roots will continue ſeveral years, and are very hardy.

The ſeventh, eighth, and eleventh ſorts are hardy annual plants; theſe are propagated by ſeeds, which ſhould be ſown in the places where the plants are to remain, and will require no other care but to thin them where they are too cloſe, and keep them clean from weeds.

The ninth ſort is a hardy perennial plant, but as it makes but little appearance, ſo it is rarely preſerved, unleſs in botanic gardens for the ſake of variety; it riſes yearly from ſeed, and will thrive in any ſoil or ſituation.

The fourteenth ſort is an annual plant; the ſeeds of this muſt be ſown upon a moderate hot-bed in the ſpring, and, when the plants are fit to remove, they ſhould be tranſplanted to another moderate hot-bed to bring the plants forward, treating them in the ſame way as the African and French Marygold. In June they ſhould be taken up with balls of earth to their roots, and tranſplanted into the open borders, where, if they are ſhaded till they have taken root, they will thrive and flower the following month, and perfect their ſeeds in autumn.

The eighteenth ſort is a tender plant. The ſeeds of this ſhould be ſown upon a good hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be each planted in a ſmall pot filled with light loamy earth, and plunged into a hot-bed of tanners bark, obſerving to ſhade them from the ſun till they have taken new root, after which they muſt be treated in the ſame way as other tender plants from the ſame countries. In autumn they ſhould be removed into the bark-ſtove; the ſummer following they will produce flowers, but they do not often perfect ſeeds in England.

ONOPORDUM. Lin. Gen. Plant. 834. Vaill. Act. Par. 1718. Carduus. Tourn. Inſt. R. H. 440. tab. 253. Woolly Thiſtle; in French, *Chardon.*

The CHARACTERS are,

The common empalement is roundiſh, bellied, and imbricated, compoſed of numerous ſcales terminated by ſpines. The flower is compoſed of many hermaphrodite florets, which are funnel-ſhaped, equal, and uniform, having narrow tubes ſwelling at the brim, cut into five points; they have five ſhort hairy ſtamina, terminated by cylindrical ſummits, and an oval germen crowned with down, ſupporting a ſlender ſtyle terminated by a crowned ſtigma. The germen becomes a ſingle ſeed crowned with down, ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's nineteenth claſs, which includes thoſe plants with compound flowers, whoſe florets are all hermaphrodite and fruitful.

The SPECIES are,

1. ONOPORDUM (*Acanthium*) calycibus ſquarroſis, foliis ovato-oblongis ſinuatis. Lin. Sp. Plant. 827. *Woolly Thiſtle with rough empalements, and oblong, oval, ſinuated leaves.* Carduus tomentoſus, acanthi folio, vulgaris. Tourn. Inſt. R. H. 441. *Common Woolly Thiſtle with a Bearſbreech leaf.*
2. ONOPORDUM (*Illyricum*) calycibus ſquarroſis, ſpinis foliis lanceolatis pinnatifidis. Lin. Sp. Plant. 1158. *Woolly Thiſtle with rough empalements, and narrow leaves ending in many points.* Carduus tomentoſus, acanthi folio anguſtiori. Tourn. Inſt. R. H. 441. *Woolly Thiſtle with a narrower Bearſbreech leaf.*
3. ONOPORDUM (*Arabicum*) calycibus imbricatis. Hort. Upſal. 249. *Woolly Thiſtle with imbricated empalements.* Carduus tomentoſus, acanthi folio altiſſimus, Luſitanicus. Tourn. Inſt. 441. *Talleſt woolly Thiſtle of Portugal, with a Bearſbreech leaf.*
4. ONOPORDUM (*Orientale*) calycibus ſquarroſis, foliis oblongis pinnato-ſinuatis decurrentibus, capite magno. *Woolly Thiſtle with rough empalements, oblong, ſinuated, wing-pointed leaves running along the ſtalk, and a large head.* Carduus tomentoſus, acanthi folio Aleppicus, magno flore. Tourn. Inſt. R. H. 441. *Woolly Thiſtle of Aleppo with a Bearſbreech leaf, and a large flower.*
5. ONOPORDUM (*Acaulon*) ſubacaule. Lin. Sp. 1159. *Woolly Thiſtle with a head ſitting cloſe to the ground.* Onopordon acaulon ferme flore albicante. D. Juſſieu. Vaill. Mem. 1718. *Woolly Thiſtle without a ſtalk, and having a whitiſh flower.*

There are ſome other ſpecies of this genus, which are preſerved in botanic gardens, and alſo ſeveral varieties differing in the colours of their flowers; but as theſe plants are rarely admitted into other gardens, ſo it would be to little purpoſe to enumerate them here.

The firſt ſort grows naturally on uncultivated places in moſt parts of England. It is a biennial plant; the firſt year it puts out many large downy leaves, which are ſinuated on their edges, and are prickly; theſe ſpread on the ground, and continue the following winter, and in the ſpring ariſes the ſtalk in the middle of the leaves, which, upon dunghills, or good ground, grows five or ſix feet high, dividing upward into many branches, which have leafy borders running along them, indented, and each indenture is terminated by a ſpine. The ſtalks are terminated by ſcaly heads of purple flowers, which appear in June, and to theſe ſucceed oblong angular ſeeds crowned with a hairy down, which aſſiſt their ſpreading about to a great diſtance by the wind, ſo that where the plants are permitted to ripen their ſeeds, they often become troubleſome weeds.

The ſecond ſort grows natually in Spain, Portugal, and the Levant; this riſes with a taller ſtalk than the former, the leaves are much longer and narrower, and the indentures on their ſides are regular, ending in ſharp ſpines. The heads of flowers are larger, and the ſpines of the empalement are longer than thoſe of the firſt ſort.

The third ſort grows to the height of nine or ten feet; the ſtalks divide into many branches; the leaves are longer than any of the other ſpecies; the heads of flowers are large and of a purple colour; the empalement hath the ſcales lying over each other like the ſcales of fiſh. This grows naturally in Spain and Portugal.

The fourth ſort grows naturally about Aleppo; this riſes with an upright branching ſtalk ſeven or eight feet high; the leaves are long and are regularly ſinuated on their borders, like wing-pointed leaves; the heads of the flowers are very large, and the empalement is very rough and prickly.

The

The fifth ſort hath ſeveral oblong, oval, woolly leaves, which ſpread on the ground; between theſe comes out the head of flowers ſitting cloſe to the ground; theſe heads are ſmaller than any of the other, and the flowers are white. Some of theſe plants have been formerly cultivated for the table, but it was before the Engliſh gardens were well ſupplied with other eſculent plants, for at preſent they are rarely eaten here. They require no culture, for if the ſeeds are permitted to fall, the plants will come up faſt enough.

ONOSMA. Lin. Gen. 187.

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, which is erect, and cut into five ſegments; the corolla is bell-ſhaped, of one petal, having a ſhort tube, with a ſwelling top, the brim cut into five parts, and naked pervious chaps; it hath five ſhort awl-ſhaped ſtamina, terminated by arrow-ſhaped ſummits, which are the length of the corolla, and a germen of four parts, ſupporting a ſlender ſtyle, crowned by an obtuſe ſtigma; the germen afterward becomes four ſeeds ſitting in the empalement.

This genus of plants is ranged in the firſt ſection of Linnæus's fifth claſs, intitled Pentandria Monogynia, the flowers having five ſtamina and one ſtyle.

The SPECIES are,

1. ONOSMA (*Simpliciſſima*) foliis confertiſſimis lanceolato-linearibus piloſis. Lin. Sp. 196. *Onoſma with hairy, linear, ſpear-ſhaped leaves growing in cluſters.* Echium Creticum. Alp. Exot. 130. *Cretan Viper's Bugloſs.*
2. ONOSMA (*Orientalis*) foliis lanceolatis hiſpidis, fructibus pendulis. Lin. Sp. 196. *Onoſma with hiſpid ſpear-ſhaped leaves, and hanging fruit.* Cerinthe Orientalis. Amœn. Acad. 4. p. 267. *Eaſtern Honeywort.*
3. ONOSMA (*Echioides*) foliis lanceolatis hiſpidis, fructibus erectis. Lin. Sp. 196. *Onoſma with hiſpid ſpear-ſhaped leaves and erect fruit.* Anchuſa lutea minor. C. B. P. 255. *Smaller yellow Bugloſs.*

The firſt and ſecond ſorts are generally biennial plants, which periſh ſoon after they have perfected ſeeds; though ſometimes when they happen to grow out of the joints of walls, or the fiſſures of rocks, they will abide three or four years; for in ſuch ſituations the plants are ſtinted in their growth, ſo are leſs replete with moiſture, and more compact, whereby they are in leſs danger of ſuffering from froſt in winter. Therefore, if all the three ſorts can be cultivated on a wall or in rubbiſh, where their ſeeds may ſcatter, they may be maintained much better than in good ground. In order to have the plants grow in ſuch ſituations, it will be proper to ſow their ſeeds ſoon after they are ripe, either on the joints of old walls, or in rubbiſh, laying the ſtalks of the plants over the places where their ſeeds are ſown, which will ſhade them from the ſun, and thereby greatly forward the vegetation of the ſeeds; and when the plants are well eſtabliſhed in their ſituation, if they are permitted to ſcatter their ſeeds, they will maintain themſelves very well afterwards.

As theſe plants are ſeldom cultivated unleſs in botanic gardens, ſo it will be unneceſſary to enlarge farther about them; they flower early in the ſpring, and their ſeeds ripen in June.

OPHIOGLOSSUM, Adder's-tongue.

This plant grows naturally in moiſt meadows, and is not eaſily brought to thrive long in gardens, ſo is rarely attempted.

OPHRYS. Tourn. Inſt. R. H. 437. tab. 250. Lin. Gen. Plant. 902. Twyblade.

The CHARACTERS are,

It has a ſingle ſtalk with a vague ſpatha (or ſheath.) The flower hath no empalement; it conſiſts of five oblong petals which aſcend, and join ſo as to form a helmet, and the under one is bifid. The nectarium is dependent, and keel-ſhaped behind; it hath two ſhort ſtamina ſitting on the pointal, with erect ſummits faſtened to the interior border of the nectarium, and an oblong contorted germen ſituated under the flower, with a ſtyle adhering to the inner border of the nectarium, crowned by an obſolete ſtigma. The germen afterward turns to an oval, three-cornered, obtuſe capſule, with one cell opening with three valves, and filled with ſmall ſeeds like duſt.

This genus of plants is ranged in the firſt ſection of Linnæus's twentieth claſs, which contains the plants whoſe flowers have two ſtamina, which are joined to the ſtyle; he has joined to this genus ſeveral ſpecies of Orchis.

The SPECIES are,

1. OPHRYS (*Nidas avis*) bulbis fibroſo-faſciculatis caule vaginato, nectarii labio bifido. Lin. Sp. Plant. 1339. *Twyblade with a fibrous root bundled, and a bifid lip to the nectarium.* Ophrys bifolia. C. B. P. 87. *Common Twyblade, or Twayblade.*
2. OPHRYS (*Cordato*) bulbo fibroſo, caule bifolio, foliis cordatis. Lin. Sp. Plant. 946. *Twyblade with a fibrous root, and two heart-ſhaped leaves on the ſtalk.* Ophrys minima. C. B. P. 87. *Smalleſt Twyblade.*
3. OPHRRYS (*Spiralis*) bulbis aggregatis oblongis, caule ſubfolioſo, floribus ſecundis, nectarii labio indiviſo. Act. Upſal. 1740. *Twyblade with oblong cluſtered bulbs, a leafy ſtalk, fruitful flowers, and an undivided lip to the nectarium.* Orchis ſpiralis alba odorata. J. B. 2. 769. *White, ſweet-ſcented, ſpiral Orchis, called Triple Ladies Traces.*
4. OPHRYS (*Monorchis*) bulbo globoſo, caule nudo, nectarii labio trifido. Act. Upſal. 1740. *Twyblade with a globular bulb, a naked ſtalk, and a trifid lip to the nectarium.* Orchis odorata moſchata, ſive monorchis. C. B. P. 84. *Yellow, ſweet, or Muſk Orchis.*
5. OPHRYS (*Anthropophora*) bulbis ſubrotundis, ſcapo folioſo, nectarii labio lineari tripartito, medio elongato bifido. Lin. Sp. Plant. 948. *Twyblade with roundiſh bulbs, a leafy ſtalk, and a narrow three-pointed lip to the nectarium, the middle ſegment of which is ſtretched out and bifid.* Orchis flore nudi hominis effigiem repræſentans fœmina. C. B. P. 82. *Man Orchis.*
6. OPHRYS (*Inſectifera*) bulbis ſubrotundis, ſcapo folioſo, nectarii labio ſubquinquelobo. Lin. Sp. Plant. 948. *Twyblade with roundiſh bulbs, a leafy ſtalk, and the lip of the nectarium divided almoſt into five lobes.* Orchis muſcam referens major. C. B. P. 83. *Greater Fly Orchis.*
7. OPHRYS (*Adrachnites*) bulbis ſubrotundis, caule folioſo, nectarii labio trifido. *Twyblade with roundiſh bulbs, a leafy ſtalk, and a trifid lip to the nectarium.* Orchis fucum referens major, foliolis ſuperioribus candidis, aut purpuraſcentibus. C. B. P. 83. *The common Humble Bee Orchis.*
8. OPHRYS (*Sphegodes*) bulbis ſubrotundis, caule ſubfolioſo, nectarii labio trifido hirſuto. *Twyblade with roundiſh bulbs, a leafy ſtalk, and a hairy trifid lip to the nectarium.* Orchis ſive teſticulus ſphegodes hirſuto flore. J. B. 2. 727. *Humble Bee Satyrion with green wings.*

The firſt ſort grows naturally in woods, and ſometimes in moiſt paſtures in ſeveral parts of England. The root is compoſed of many ſtrong fibres, from which ariſe two oval veined leaves three inches long, and two broad, joined at their baſe; between theſe ariſes a naked ſtalk about eight inches high, terminated by a looſe ſpike of herbaceous flowers, reſembling gnats, compoſed of five petals, with a long bifid lip to the nectarium, with a creſt or ſtandard above, and two wings on the ſide. The flowers ſit upon an angular germen, which afterward ſwells to a capſule, opening when ripe in ſix parts, and filled with ſmall duſty ſeeds. This plant refuſes culture, but may be tranſplanted from the places where it grows naturally, into a ſhady part of the garden, where, if the roots are not diſturbed, they will continue ſeveral years, and flower in May, but they do not increaſe in gardens. The beſt time to remove the roots is in July or Auguſt, when the leaves are decaying, for it will be difficult to find the roots after the leaves are gone.

The ſecond ſort is found in ſome of the northern counties in England, but is ſeldom ſeen growing in the ſouth. This hath a ſmall bulb with many ſtrong fibres to the root, and ſends out two ſmall, ribbed, heart-ſhaped leaves at bottom. The ſtalk riſes about four inches high, and is terminated by a ſpike of ſmall herbaceous flowers ſhaped like thoſe of the firſt ſort.

The

The third ſort grows upon chalky hills in ſeveral parts of England; this hath an oblong, cluſtered, bulbous root, from which ariſes a ſingle ſtalk ſix inches high, having two oblong leaves at bottom, and rarely any above; the flowers are ſmall, of a white colour, growing in a looſe ſpike on the top of the ſtalk; they have a muſky ſcent. This flowers in Auguſt.

This ſort grows naturally in moiſt paſtures in the northern parts of England; I have alſo found it in great plenty on Enfield Chace, not far from the town.

The fourth and fifth ſorts grow upon the chalk-hills near Northfleet in Kent, and alſo upon Cauſham-hills near Reading; they have roundiſh bulbous roots, from which come out a few oblong leaves; the ſtalks riſe a foot and a half high, garniſhed with a few narrower leaves; the flowers grow in a looſe ſpike on the top of the ſtalk; they are in one of a ruſty iron colour, and the other hath herbaceous flowers. The lip of the nectarium is divided into three parts, the middle ſegment being ſtretched out much longer than the other, and is divided into two; the upper part of the flower being hooded, the whole bears ſome reſemblance to a naked man. They flower in June.

The eighth ſort grows naturally in dry paſtures in ſeveral parts of England, and is commonly called the Humble Bee Orchis; of this there are two or three varieties found wild in England, and ſeveral more in Spain and Portugal. This hath a roundiſh bulbous root; the leaves are like thoſe of the narrow-leaved Plantain. The ſtalk riſes ſix or ſeven inches high, having two or three ſheath-ſhaped leaves embracing it, which are erect; at the top of the ſtalk come out two or three flowers without ſpurs, having purpliſh creſts and wings. The nectarium is large, ſhaped like the body of a humble bee, of a dark ſooty colour, with two or three lines running acroſs it of a darker or lighter colour, which appear brighter or duller according to the poſition of the flower to the ſun. It flowers early in June. There are ſome varieties of this ſort, which differ in the colour and ſize of their flowers.

All theſe ſorts may be preſerved in gardens, though not propagated there. The beſt time to remove the roots from the places where they naturally grow, is juſt before the ſtalks fall, for at that time the roots may be eaſily diſcovered, and then they are beginning to reſt, ſo that the bulb will be fully formed for flowering the following year, and will not ſhrink; but when they are removed at a time of the year when they are in action, the bulb deſigned for flowering the following year, not being fully ripened, will ſhrink, and frequently periſh; or if they ſurvive their removal, do not recover their former ſtrength in leſs time than two years.

When theſe are removed into a garden, the ſoil ſhould be adapted to the ſorts. Such of them as grow naturally in moiſt paſtures, ſhould be planted in ſhady moiſt borders; thoſe which are inhabitants of woods may be planted under trees in wilderneſſes, but ſuch as grow upon chalk-hills ſhould have a bed of chalk prepared for them in an open ſituation, and when the plants are fixed in their ſeveral places, they ſhould not be diſturbed after; for if they are kept clean from weeds, the leſs the ground is diſturbed, the better the plants will thrive, and the longer they will continue.

OPUNTIA. Tourn. Inſt. R. H. 239. tab. 122. Tuna. Hort. Elth. 295. Cactus. Lin. Gen. Plant. 539. [This plant is called Opuntia, becauſe Theophraſtus writes, that it grows about Opuntium.] The Indian Fig, or prickly Pear; in French, *Raquette*.

The CHARACTERS are,

The flower is compoſed of ſeveral petals, which are obtuſe, concave, and placed in a circular order, ſitting upon the germen. It has a great number of awl-ſhaped ſtamina, which are inſerted in the germen, are ſhorter than the petals, and terminated by oblong erect ſummits. The germen, which is ſituated under the flower, ſupports a cylindrical ſtyle the length of the ſtamina, crowned by a multifid ſtigma. The germen afterward turns to a fleſhy umbilicated fruit with one cell, incloſing many roundiſh ſeeds.

This genus of plants is ranged in the ſecond ſection of Tournefort's ſixth claſs, which includes the herbs with a Roſe flower, whoſe pointal or empalement becomes a fruit with one capſule. Dr. Linnæus places it in the firſt ſection of his twelfth claſs, in which he ranges thoſe plants whoſe flowers have more than nineteen ſtamina, which are inſerted either into the empalement, or petals of the flower.

The SPECIES are,

1. OPUNTIA (*Vulgaris*) articulis ovatis compreſſis, ſpinis ſetaceis. *Indian Fig with oval compreſſed joints, and briſtly ſpines.* Opuntia vulgò herbariorum. J. B. 1. 154. *The common Opuntia, or Indian Fig.*
2. OPUNTIA (*Ficus Indica*) articulis ovato-oblongis, ſpinis ſetaceis. *Indian Fig with oblong oval joints, and briſtly ſpines.* Opuntia folio oblongo media. Tourn. Inſt. R. H. 239. *Middle Indian Fig with oblong leaves.*
3. OPUNTIA (*Tuna*) articulis ovato-oblongis, ſpinis ſubulatis. *Indian Fig with oblong oval joints, and awl-ſhaped ſpines.* Opuntia major, validiſſimis ſpinis munita. Tourn. Inſt. R. H. 239. *Greater Indian Fig with very ſtrong ſpines.*
4. OPUNTIA (*Elatior*) articulis ovato-oblongis, ſpinis longiſſimis nigricantibus. *Indian Fig with oblong oval joints, and very long black ſpines.* Tuna elatior ſpinis validis nigricantibus. Hort. Elth. tab. 194. *Taller Indian Fig with ſtrong black ſpines.*
5. OPUNTIA (*Maxima*) articulis ovato-oblongis craſſiſſimis, ſpinis inæqualibus. *Indian Fig with oblong, oval, thick joints, and unequal ſpines.* Opuntia maxima, folio ſpinoſo, latiſſimo & longiſſimo. Tourn. Inſt. 240. *Greateſt Indian Fig, with the longeſt and broadeſt prickly branches.*
6. OPUNTIA (*Cochinelifera*) articulis ovato-oblongis ſubinermibus. *Indian Fig with oblong oval joints, almoſt without ſpines.* Opuntia maxima, folio oblongo-rotundo majore, ſpinulis mollibus & innocentibus obſito, floré ſtriis rubris variegato. Sloan. Cat. Jam. 194. *Greateſt Indian Fig, with a larger, oblong, round leaf, armed with ſoft, innocent, ſmall ſpines, and a flower variegated with red ſtripes, commonly called the Cochineal Fig.*
7. OPUNTIA (*Curaſſavica*) articulis cylindrico-ventricoſis, compreſſis, ſpinis ſetaceis. *Indian Fig with compreſſed, cylindrical, bellied joints, and briſtly ſpines.* Ficus Indica, ſeu Opuntia Curaſſavica minima. Hort. Amſt. 1. 107. *Indian Fig, or the leaſt Opuntia of Curaſſoa, frequently titled Pinpillow.*
8. OPUNTIA (*Spinoſiſſima*) articulis longiſſimis tenuibus compreſſis, ſpinis longiſſimis confertiſſimis, gracilibus albicantibus armatis. Houſt. MSS. *Stalky Indian Fig, with large, narrow, compreſſed leaves, armed with the longeſt, narroweſt, white ſpines, growing in cluſters; this is by the gardeners called, Robinſon Cruſoe's Coat.*
9. OPUNTIA (*Phyllanthus*) prolifer enſiformi-compreſſus ſerrato-repandus. *Indian Fig with compreſſed ſword-ſhaped joints, whoſe indentures turn backward.* Cereus ſcolopendri folio brachiato. Hort. Elth. 73. tab. 64. *Torch Thiſtle with a branching Spleenwort leaf.*

Theſe plants are all of them natives of America, though the firſt ſort is found growing wild on the ſides of the roads about Naples, in Sicily, and Spain, but it is probable that the plants may have been brought from America thither at firſt. This ſort has been long in the Engliſh gardens; the joints or branches of this are oval, or roundiſh, compreſſed on their two ſides flat, and have ſmall leaves coming out in knots on their ſurface, as alſo on their upper edges, which fall off in a ſhort time; and at the ſame knots there are three or four ſhort briſtly ſpines, which do not appear unleſs they are cloſely viewed; but on being handled, they enter the fleſh, and ſeparate from the plant, ſo are troubleſome, and often very difficult to get out of the fleſh. The branches of this ſort ſpread near the ground, and frequently trail upon it, putting out new roots, ſo are extended to a conſiderable diſtance, and never riſe in height; theſe are fleſhy and herbaceous while they are young,

but as they grow old become drier, of a tough contexture, and have ligneous fibres. The flowers come out on the upper edges of the branches, generally, though ſometimes they are produced on their ſides; theſe ſit upon the embryo of their fruit, and are compoſed of ſeveral roundiſh concave petals, which ſpread open; they are of a pale yellow colour, and within ariſe a great number of ſtamina, faſtened to the embryo of the fruit, which are terminated by oblong ſummits; and in the center is ſituated the ſtyle, crowned by a many-pointed ſtigma; after the flowers are paſt, the embryo ſwells to an oblong fruit, whoſe ſkin, or cover, is ſet with ſmall ſpines in cluſters, and the inſide is fleſhy, of a purple, or red colour, in which are lodged many black ſeeds. This plant flowers here in July and Auguſt, but unleſs the ſeaſon is very warm, the fruit will not ripen in England.

I received ſome branches of this ſort from Mr. Peter Collinſon, F. R. S. who aſſured me they were ſent him from Newfoundland, where the plants grow naturally, which is much farther to the north than it was before known to grow; and how it endures the cold of that country is inconceivable, for though the plants will live abroad in England, in a warm ſituation and a dry ſoil, yet, in ſevere winters, they are generally deſtroyed, if they are not protected from the froſt.

The ſecond ſort hath oblong, oval, compreſſed branches, which grow more erect than thoſe of the firſt, armed with long briſtly ſpines, which come out in cluſters from a point on each of the compreſſed ſides, ſpreading open like the rays of a ſtar. The flowers grow upon the embryo of the fruit, which come out from the upper edges of the leaves like the firſt, but are larger, and of a brighter yellow colour. The fruit is alſo larger, and of a deeper purple colour, the outer ſkin is alſo armed with longer ſpines; this is the moſt common ſort in Jamaica, and upon the fruit of this the wild ſort of cochineal feeds, which is called Sylveſter. I had ſome of the plants ſent me with the live inſects upon them from Jamaica, by the late Dr. Houſtoun, who was writing a hiſtory of theſe inſects, at the time when he was taken ill and died; theſe inſects kept alive upon the plants here for three or four months, but afterward periſhed. If the fruit of this plant is eaten, it will dye the urine of a bloody colour.

The third ſort hath ſtronger branches than the ſecond, which are armed with larger thorns, of an awl-ſhape; they are whitiſh, and come out in cluſters like thoſe of the other ſort. The flowers are large, of a bright yellow colour, and the fruit is ſhaped like that of the ſecond ſort.

The fourth ſort grows taller than either of the former; the branches are larger, thicker, and of a deeper green, and are armed with ſtrong black ſpines, which come out in cluſters like thoſe of the other ſorts, but the cluſters are farther aſunder. The flowers are produced from the upper edges of the branches; they are ſmaller than thoſe of the other ſorts, and are of a purpliſh colour, as are alſo the ſtamina; the fruit is of the ſame form as thoſe of the firſt, but do do not ripen here.

The fifth ſort is the largeſt of all the ſorts yet known. The joints of theſe are more than a foot long, and eight inches broad; they are very thick, of a deep green colour, and armed with a few ſhort briſtly ſpines; the older branches of this often become almoſt taper, and are very ſtrong. The flowers of this ſort I have never yet ſeen; for although I have had many of the plants more than ten feet high, none of them has produced any flowers.

The ſixth ſort has been always ſuppoſed to be the plant, upon which the cochineal inſects feed; this hath oblong, ſmooth, green branches, which grow erect, and riſe to the height of eight or ten feet, having ſcarce any ſpines on them and thoſe few which are, can ſcarce be diſcerned at a diſtance, and are ſo ſoft as not to be troubleſome when handled. The flowers of this ſort are ſmall, and of a purple colour, ſtanding upon the embryo of the fruit, in the ſame manner as thoſe of the other ſort, but do not expand open like them. The flowers of this appear late in the autumn, and the fruit drop off in winter, without coming to any perfection here; this ſort is cultivated in the fields of New Spain, for the increaſe of the inſects, but it grows naturally in Jamaica, where it is probable the true cochineal might be diſcovered, if perſons of ſkill were to ſearch after the inſects.

The ſeventh ſort is ſaid to grow naturally at Curaſſao; this hath cylindrical ſwelling joints, which are cloſely armed with ſlender white ſpines. The branches ſpread out on every ſide, and where they have no ſupport, fall to the ground, very often ſeparating at the joints from the plants, and as they lie upon the ground, put out roots, ſo form new plants; this ſort very rarely produces flowers in England. In the Weſt-Indies it is called Pinpillow, from the appearance which the branches have to a pin-cuſhion ſtuck full of pins.

The eighth ſort was ſent me from Jamaica by the late Dr. Houſtoun, who found it growing naturally there in great plenty, but could never obſerve either fruit or flower upon any of the plants, nor have any of them produced either in England. The branches of this ſort have much longer joints than any of the other; they are narrower, and more compreſſed. The ſpines of this are very long, ſlender, and of a yellowiſh brown colour, coming out in cluſters all over the ſurface of the branches, croſſing each other, ſo as to render it dangerous to handle; for upon being touched, the ſpines adhere to the hand and quit the branches, and penetrate into the fleſh, ſo become very troubleſome.

The ninth ſort grows naturally in the Braſils; this hath very thin branches, which are indented regularly on their edges, like Spleenwort; they are of a light green, and ſhaped like a broad ſword; theſe are ſmooth, having no ſpines. The flowers come out from the ſide, and at the end of the branches, ſitting on the embryos in the ſame way as the other ſorts; they are of a pale yellow colour. The fruit is ſhaped like thoſe of the firſt ſort, but rarely ripen in England.

All theſe ſorts (except the firſt) are too tender to thrive in the open air in England; nor can many of them be preſerved through the winter here, unleſs they have artificial heat; for when they are placed in a green-houſe, they turn to a pale yellow colour, their branches ſhrink, and frequently rot on the firſt approach of warm weather in the ſpring.

Theſe plants may be all propagated by cutting off their branches at the joints, during any of the ſummer months, which ſhould be laid in a warm dry place for a fortnight, that the wounded part may be healed over, otherwiſe they will rot with the moiſture which they imbibe at that part, as is the caſe with moſt other ſucculent plants. The ſoil in which theſe plants muſt be planted, ſhould be compoſed after the following manner, viz. one third of light freſh earth from a paſture, a third part ſea ſand, and the other part ſhould be one half rotten tan, and the other half lime rubbiſh; theſe ſhould be well mixed, and laid in a heap three or four months before it is uſed, obſerving to turn it over at leaſt once a month, that the ſeveral parts may be well united; then you ſhould paſs it through a rough ſcreen, in order to ſeparate the largeſt ſtones and clods, but by no means ſift it too fine, which is a very common fault; then you ſhould reſerve ſome of the ſmaller ſtones and rubbiſh to lay at the bottom of the pots, in order to keep an open paſſage for the moiſture to drain off; which is what muſt be obſerved for all ſucculent plants, for if the moiſture be detained in the pots, it will rot their roots and deſtroy the plants.

When you plant any of the branches of theſe plants (except the firſt ſort) you ſhould plunge the pots into a moderate hot-bed, which will greatly facilitate their taking root; you ſhould alſo refreſh them now and then with a little water, but be very careful not to let

them

them have too much, or be too often watered, eſpecially before they are rooted. When the plants begin to ſhoot, you muſt give them a large ſhare of air, by raiſing the glaſſes, otherwiſe their ſhoots will draw up ſo weak, as not to be able to ſupport themſelves; and after they have taken ſtrong root, you ſhould inure them to the air by degrees, and then remove them into the ſtove where they ſhould remain, placing them near the glaſſes, which ſhould always be opened in warm weather; ſo that they may have the advantage of a free air, and yet be protected from wet and cold.

During the ſummer ſeaſon theſe plants will require to be often refreſhed with water, but it muſt not be given to them in large quantities leſt it rot them, and in winter this ſhould be proportioned to the warmth of the ſtove; for if the air be kept very warm they will require to be often refreſhed, otherwiſe their branches will ſhrink; but if the houſe be kept in a moderate degree of warmth, they ſhould have but little, for moiſture at that ſeaſon will rot them very ſoon. The heat in which theſe plants thrive beſt, is the temperate point, as marked on botanical thermometers, for if they are kept too warm in winter, it cauſes their ſhoots to be very tender, weak, and unſightly. Thoſe ſorts which are inclinable to grow upright, ſhould have their branches ſupported with ſtakes, otherwiſe their weight is ſo great, that it will break them down.

Theſe plants are by moſt people expoſed to the open air in the ſummer ſeaſon, but they thrive much better if they are continued in the ſtoves, provided the glaſſes be kept open, ſo that they may have free air; for when they are ſet abroad, the great rains which generally fall in ſummer, together with the unſettled temperature of the air in our climate, greatly diminiſh their beauty, by retarding their growth; and ſometimes in wet ſummers they are ſo replete with moiſture, as to rot in the ſucceeding winter; nor will thoſe plants which are ſet abroad (I mean the tender ſorts) produce their flowers and fruit in ſuch plenty, as thoſe which are conſtantly preſerved in the houſe.

ORANGE. See AURANTIUM.

ORCHARD. In planting of an Orchard, great care ſhould be had to the nature of the ſoil; and ſuch ſorts of fruits only ſhould be choſen, as are beſt adapted to the ground deſigned for planting, otherwiſe there can be little hopes of their ſucceeding; and it is for want of rightly obſerving this method, that we ſee in many countries Orchards planted, which never arrive to any tolerable degree of perfection, the trees ſtarving; and their bodies are either covered with Moſs, or the bark cracks and divides, both which are evident ſigns of the weakneſs of the trees; whereas, if inſtead of Apples the Orchard had been planted with Pears, Cherries, or any other ſort of fruit better adapted to the ſoil, the trees might have grown very well, and produced great quantities of fruit.

As to the poſition of the Orchard, (if you are at full liberty to chuſe) a riſing ground, open to the ſouth-eaſt, is to be preferred; but I would by no means adviſe planting upon the ſide of a hill, where the declivity is very great; for in ſuch places the great rains commonly waſh down the better part of the ground, whereby the trees would be deprived of proper nouriſhment; but where the riſe is gentle, it is of great advantage to the trees, by admitting the ſun and air between them, better than it can upon an entire level; which is an exceeding benefit to the fruit, by diſſipating fogs and drying up the damps, which, when detained amongſt the trees, mix with the air and render it rancid: if it be defended from the weſt, north, and eaſt winds, it will alſo render the ſituation ſtill more advantageous, for it is chiefly from thoſe quarters that fruit-trees receive the greateſt injury; therefore, if the place be not naturally defended from theſe by riſing hills (which is always to be preferred,) then you ſhould plant large growing timber-trees at ſome diſtance from the Orchard, to anſwer this purpoſe.

You ſhould alſo have a great regard to the diſtance of planting the trees, which is what few people have rightly conſidered; for if you plant them too cloſe, they will be liable to blights; the air being hereby pent in amongſt them, will alſo cauſe the fruit to be ill taſted, having a great quantity of damp vapours from the perſpiration of the trees, and the exhalations from the earth mixed with it, which will be imbibed by the fruit, and render their juices crude and unwholſome.

Wherefore I cannot but recommend the method which has been lately practiſed by ſome particular gentlemen with very good ſucceſs, and that is, to plant the trees fourſcore feet aſunder, but not in regular rows. The ground between the trees they plough and ſow with Wheat and other crops, in the ſame manner as if it were clear from trees; and they obſerve their crops to be full as good as thoſe quite expoſed, except juſt under each tree, until they are grown large, and afford a great ſhade; and by thus ploughing and tilling the ground, the trees are rendered more vigorous and healthy, ſcarcely ever having any Moſs, or other marks of poverty, and will abide much longer and produce better fruit.

If the ground in which you intend to plant an Orchard has been paſture for ſome years, then you ſhould plough in the green ſward the ſpring before you plant the trees; and if you will permit it to lie a ſummer fallow, it will greatly mend it, provided you ſtir it two or three times, to rot the ſward of Graſs, and prevent weeds growing thereon.

At Michaelmas you ſhould plough it pretty deep, in order to make it looſe for the roots of the trees, which ſhould be planted thereon in October, provided the ſoil is dry; but if it be moiſt, the beginning of March will be a better ſeaſon. The diſtance, if deſigned for a cloſe Orchard, muſt not be leſs than forty feet, but the trees planted twice that diſtance will ſucceed better.

When you have finiſhed planting the trees, you ſhould provide ſome ſtakes to ſupport them, otherwiſe the wind will blow them out of the ground; which will do them much injury, eſpecially after they have been planted ſome time; for the ground in the autumn being warm, and for the moſt part moiſt, the trees will very ſoon puſh out a great number of young fibres; which, if broken off by their being diſplaced, will greatly retard the growth of the trees.

In the ſpring following, if the ſeaſon ſhould prove dry, you ſhould cut a quantity of green ſward, which muſt be laid upon the ſurface of the ground about their roots, turning the Graſs downward, which will prevent the ſun and wind from drying the ground, whereby a great expence of watering will be ſaved; and after the firſt year they will be out of danger, provided they have taken well.

Whenever you plough the ground betwixt theſe trees, you muſt be careful not to go too deep amongſt their roots, leſt you ſhould cut them off, which would greatly damage the trees; but if you do it cautiouſly, the ſtirring the ſurface of the ground will be of great benefit to them; though you ſhould obſerve, never to ſow too near the trees, nor ſuffer any great rooting weeds to grow about them, which would exhauſt the goodneſs of the ſoil, and ſtarve them.

If after the turf which was laid round the trees be rotted, you dig it in gently about the roots, it will greatly encourage them.

There are ſome perſons who plant many ſorts of fruit together in the ſame Orchard, mixing the trees alternately; but this is a method which ſhould always be avoided, for hereby there will be a great difference in the growth of the trees, which will not only render them unſightly, but alſo the fruit upon the lower trees ill taſted, by the tall ones overſhadowing them; ſo that if you are determined to plant ſeveral ſorts of fruit on the ſame ſpot, you ſhould obſerve to place

place the largeſt growing trees backward, and ſo proceed to thoſe of leſs growth, continuing the ſame method quite through the whole plantation; whereby it will appear at a diſtance in a regular ſlope, and the ſun and air will more equally paſs throughout the whole Orchard, that every tree may have an equal benefit therefrom; but this can only be practiſed upon good ground, in which moſt ſorts of fruit-trees will thrive.

The ſoil of your Orchard ſhould alſo be mended once in two or three years with dung, or other manure, which will alſo be abſolutely neceſſary for the crops ſown between; ſo that where perſons are not inclinable to help their Orchards, where the expence of manure is pretty great, yet, as there is a crop expected from the ground beſides the fruit, they will the more readily be at the charge upon that account.

In making choice of trees for an Orchard, you ſhould always obſerve to procure them from a ſoil nearly a-kin to that where they are to be planted, or rather poorer; for if you have them from a very rich ſoil, and that wherein you plant them is but indifferent, they will not thrive well, eſpecially for four or five years after planting; ſo that it is a very wrong practice to make the nurſery where young trees are raiſed very rich, when the trees are deſigned for a middling or poor ſoil. The trees ſhould be alſo young and thriving, for whatever ſome perſons may adviſe to the contrary, yet it has always been obſerved, that though large trees may grow and produce fruit after being removed, they never make ſo good trees, nor are ſo long lived, as thoſe which are planted while young.

Theſe trees, after they are planted out, will require no other pruning, but only to cut out dead branches, or ſuch as croſs each other, which render their heads confuſed and unſightly: the pruning them too often, or ſhortening their branches, is very injurious; eſpecially to Cherries and ſtone-fruit, which will gum prodigiouſly, and decay in ſuch places where they are cut; and the Apples and Pears which are not of ſo nice a nature, will produce a greater quantity of lateral branches, which will fill the heads of the trees with weak ſhoots, whenever their branches are thus ſhortened; and many times the fruit is hereby cut off, which, on many ſorts of fruit-trees, is firſt produced at the extremity of their ſhoots.

It may, perhaps, ſeem ſtrange to ſome perſons, that I ſhould recommend the allowing ſo much diſtance to the trees in an Orchard, becauſe a ſmall piece of ground will admit of very few trees when planted in this method; but if they will pleaſe to obſerve, that when the trees are grown up, they will produce a great deal more fruit, than twice the number when planted cloſe, and will be vaſtly better taſted; the trees when placed at a large diſtance, being never ſo much in danger of blighting as in cloſe plantations, as hath been obſerved in Herefordſhire, the great county for Orchards, where they find, that when Orchards are ſo planted or ſituated, that the air is pent up amongſt the trees, the vapours which ariſe from the damp of the ground, and the perſpiration of the trees, collect the heat of the ſun, and reflect it in ſtreams ſo as to cauſe what they call a fire-blaſt, which is the moſt hurtful to their fruits; and this is moſt frequent where the Orchards are open to the ſouth ſun. But as Orchards ſhould never be planted, unleſs where large quantities of fruit are deſired, ſo it will be the ſame thing to allow twice or three times the quantity of ground; ſince there may be a crop of grain of any ſort upon the ſame place (as was before ſaid,) ſo that there is no loſs of ground; and for a family only it is hardly worth while to plant an Orchard, ſince a kitchen-garden well planted with eſpaliers, will afford more fruit than can be eaten while good, eſpecially if the kitchen-garden be proportioned to the largeneſs of the family; and if cyder be required, there may be a large avenue of Apple-trees extended croſs a neighbouring field, which will render it pleaſant, and produce a great quantity of fruit; or there may be ſome ſingle rows of trees planted to ſurround fields, &c. which will fully anſwer the ſame purpoſe, and be leſs liable to the fire-blaſts before-mentioned.

ORCHIS. Tourn. Inſt. R. H. 431. tab. 248, 249. Lin. Gen. Plant. 900. [of ὄρχις, a teſticle, becauſe the root of this plant reſembles the teſticles of a man; or of ὀρέγω, to have an appetite after, on account of its being a provocative to venery: it is alſo called κυνοσόρχις, of κυνὸς, a dog, and ὄρχις, a teſticle.] Satyrion, or Fool-ſtones.

The CHARACTERS are,

It hath a ſingle ſtalk with a vague ſheath; it has no empalement. The flower hath five petals, three without and two within, which riſe and join in a ſtandard. The nectarium is of one leaf, fixed to the ſide of the receptacle, between the diviſion of the petals. The upper lip is ſhort and erect, the under large, broad, and ſpreading; the tube is pendulous, horn-ſhaped, and prominent behind. It hath two ſhort ſlender ſtamina ſitting upon the pointal, with oval erect ſummits fixed to the upper lip of the nectarium. It hath an oblong contorted germen under the flower, with a ſhort ſtyle faſtened to the upper lip of the nectarium, crowned by an obtuſe compreſſed ſtigma. The germen afterward turns to an oblong capſule with one cell, having three keel-ſhaped valves, opening on the three ſides, but joined at top and bottom, filled with ſmall ſeeds like duſt.

This genus of plants is ranged in the firſt ſection of Linnæus's twentieth claſs, which contains thoſe plants whoſe flowers have two ſtamina, which are connected with, or fixed to the ſtyle.

The SPECIES are,

1. ORCHIS (*Morio*) bulbis indiviſis, nectarii labio quadrifido crenulato, cornu obtuſo. Act. Upſal. 1740. *Orchis with undivided bulbs, the lip of the nectarium cut into four points which are ſlightly indented, and an obtuſe horn.* Orchis morio fœmina. C. B. P. 82. *Common female Orchis.*
2. ORCHIS (*Maſcula*) bulbis indiviſis, nectarii labio quadrilobo crenulato, cornu obtuſo, petalis dorſalibus reflexis. Flor. Suec. 795. *Orchis with undivided bulbs, the lip of the nectarium having four lobes and an obtuſe horn, and the backs of the petals reflexed.* Orchis motio mas, foliis maculatis. C. B. P. 81. *The male Orchis with ſpotted leaves.*
3. ORCHIS (*Bifolia*) bulbis indiviſis, nectarii labio lanceolato integerrimo, cornu longiſſimo, petalis patentibus. Act. Upſal. 1740. *Orchis with undivided bulbs, the lip of the nectarium entire and ſpear-ſhaped, a very long horn, and petals ſpreading very wide.* Orchis alba bifolia minor, calcari oblongo. C. B. P. 83. *Smaller, white two-leaved Orchis, with an oblong ſpur, or Butterfly Orchis.*
4. ORCHIS (*Militaris*) bulbis indiviſis, nectarii labio quinquefido punctis ſcabro, cornu obtuſo, petalis confluentibus. Act. Upſal. 1740. *Orchis with undivided bulbs, a five-pointed lip to the nectarium, having rough ſpots, an obtuſe horn, and petals running together.* Orchis latifolia, hiante cucullo major. Tourn. Inſt. R. H. 432. *The Man Orchis.*
5. ORCHIS (*Pyramidalis*) bulbis indiviſis, nectarii labio trifido æquali integerrimo, cornu longo, petalis ſublanceolatis. Act. Upſal. 1740. *Orchis with undivided bulbs, an equal trifid lip to the nectarium, with a long horn, and ſpear-ſhaped petals.* Orchis militaris, montana, ſpicâ rubente, conglomeratâ. Tourn. Inſt. R. H. 432. *Mountain military Orchis, with a reddiſh conglomerated ſpike.*
6. ORCHIS (*Latifolia*) bulbis ſubpalmatis rectis, nectarii cornu conico, labio trilobo, lateralibus reflexo, bracteis flore longioribus. Act. Upſal. 1740. *Orchis with ſtrait, palmated, bulbous roots, a conical horn to the nectarium, the lip cut into three lobes, which are reflexed on the ſides, and bracteæ longer than the flowers.* Orchis palmata pratenſis, latifolia, longis calcaribus. C. B. P. 85. *Broad-leaved, Meadow, handed Orchis, having a long ſpur.*
7. ORCHIS (*Maculata*) bulbis palmatis patentibus, nectarii cornu germinibus breviore, labio plano petalis dorſalibus patulis. Act. Upſal. 1740. *Orchis with*

handed ſpreading bulbs, the horn of the nectarium ſhorter than the germen, a plain lip, and the hinder part of the petals ſpreading. Orchis palmata pratenſis, maculata. C. B. P. 85. *Meadow handed Orchis, with ſpotted leaves.*

8. Orchis (*Cornopica*) bulbis palmatis, nectarii cornu, ſetaceo germinibus longiore, labio trifido, petalis duobus patentiſſimis. Act. Upſal. 1740. *Orchis with palmated bulbs, a briſtly horn to the nectarium, which is longer than the germen, and a trifid lip.* Orchis palmata minor, calcaribus oblongis. C. B. P. 85. *Smaller palmated Orchis, with an oblong ſpur to the flower.*

9. Orchis (*Abortiva*) bulbis faſciculatis filiformibus, nectarii labio ovato integerrimo. Act. Upſal. 1740. *Orchis with thread-like bulbs growing in bunches, and the lip of the nectarium oval and entire.* Limidorum Auſtriacum. Cluſ. Pan. 241. *Purple Bird's-neſt.*

The firſt ſort grows naturally in paſtures in moſt parts of England. This hath a double bulbous root, with ſome fibres coming out from the top; it has four or ſix oblong leaves lying on the ground, which are reflexed. The ſtalk riſes nine or ten inches high, having four or ſix leaves which embrace it; this is terminated by a ſhort looſe ſpike of flowers, having a four-pointed indented lip to the nectarium, and an obtuſe horn. The flowers are of a pale purple colour, marked with deeper purple ſpots; it flowers in May.

The ſecond ſort grows naturally in woods and ſhady places in many parts of England; this hath a double bulbous root, which is about the ſize and ſhape of middling Olives; it hath ſix or ſeven long broad leaves, ſhaped like thoſe of Lilies, which have ſeveral black ſpots on their upper ſide; the ſtalk is round, and a foot high, having one or two ſmaller leaves embracing it. The flowers are diſpoſed in a long ſpike on the top of the ſtalk; they are of a purple colour, marked with deep purple ſpots, and have an agreeable ſcent. It flowers the latter end of April.

The third ſort grows naturally under the buſhes by the ſide of paſtures, in many parts of England. This hath a root compoſed of two oblong Pear-ſhaped bulbs, from which come out three or four Lily-ſhaped leaves, of a pale green, with a few faint ſpots; the ſtalk riſes near a foot high, it is ſlender, furrowed, and has a very few ſmall leaves which embrace it; this is terminated by a looſe ſpike of white flowers, ſmelling ſweet, which reſemble a butterfly with expanded wings. This flowers in June.

The fourth ſort is found growing naturally on Cawſham-hills, and in other places where the ſoil is chalk. The roots of this ſort are compoſed of two bulbs, from which come out four or five oblong leaves; the ſtalk is about nine inches high, ſuſtaining a looſe ſpike of ſweet-ſmelling flowers, each hanging on a pretty long foot-ſtalk; they have a ſhort obtuſe horn, a creſt and wings, of an Aſh-colour without, reddiſh within, and ſtriped with deeper lines; the lip is oblong, divided into five parts, having rough ſpots. This flowers in June.

The fifth ſort grows naturally on chalk-hills in ſeveral parts of England; the root of this is compoſed of two oblong bulbs, from which ariſe three or four narrow oblong leaves; the ſtalk riſes a foot high, having three or four narrow erect leaves which embrace it. The flowers are produced in a thick roundiſh ſpike at the top; they are of a reddiſh colour, having long ſpurs, and the wings are acute-pointed. It flowers in June.

The ſixth ſort grows naturally in moiſt meadows in many parts of England; the root of this is compoſed of two fleſhy bulbs, which are divided into four or five fingers, ſo as to reſemble an open hand; the ſtalk riſes from nine inches to a foot high, garniſhed with leaves the whole length, which are three or four inches long and one broad, embracing the ſtalk with their baſe; theſe are not ſpotted, and end in acute points. The flowers are diſpoſed in a ſpike on the top of the ſtalk, with ſmall narrow leaves (called bractea) between them, which are longer than the flowers. The ſpur is half an inch long, extended backward; the lip of the nectarium is broad, divided into three lobes, two ſide ones being reflexed; the flowers and bractea are of a purpliſh colour, having deep purple ſpots. It flowers in May. There are two varieties of this, differing in the colour of their flowers, and one with a narrower leaf.

The ſeventh ſort grows naturally in moiſt meadows in ſeveral parts of England; the root of this is compoſed of two broad fleſhy bulbs, both of which are divided into four fingers, which ſpread aſunder. The ſtalk riſes a foot and a half high, and is very ſtrong, inclining to a purple colour; it is garniſhed with leaves the whole length; thoſe on the lower part of the ſtalk are ſix inches long, and an inch and a half broad, embracing it with their baſe. The flowers are collected in a cloſe ſpike at the top of the ſtalk; they are of a pale purple colour; the ſpur is about a third part of an inch long; the beard of the nectarium is plain, and divided into three parts, which is marked with deep purple ſpots; under each foot-ſtalk is placed a narrow leaf (or bractea) of a purpliſh colour. The leaves and ſtalks of the plant have many dark ſpots. It flowers in June. There are two or three varieties of this, which differ in the colour of their flowers.

The eighth ſort grows naturally in moiſt meadows in ſeveral parts of England; this hath a double-handed root, that which ſuſtains the ſtalk being waſting and decaying, but the other is full, ſucculent, and plump; the finger-like bulbs which compoſe the root are long, and ſpread aſunder; the lower leaves are ſix or ſeven inches long, they are narrow, of a pale green, and have no ſpots. The ſtalk riſes a foot high, it is garniſhed with a few narrow ſhort leaves, which embrace it like ſheaths; it is terminated by a beautiful ſpike of red flowers ſix inches long; the flowers are not marked with any ſpots; they have long, ſlender, briſtly ſpurs like birds claws, being crooked; the lip of the nectarium is indented on the edge. It flowers in June.

The ninth ſort grows naturally in ſhady woods in ſeveral parts of England, but particularly in Suſſex and Hampſhire, in both which counties I have ſeveral times found it. The root of this plant is compoſed of many thick, oblique, long fibres, which are fleſhy; the ſtalk riſes near two feet high, wrapped round with leaves like ſheaths; they are of a purple colour. The flowers are diſpoſed in a looſe thyrſe at the top of the ſtalk, and are of a purple colour, having an oval entire lip to the nectarium, the creſt terminating in a horn. It flowers in June.

All theſe ſorts of Orchis grow wild in ſeveral parts of England, but, for the extreme oddneſs and beauty of their flowers, deſerve a place in every good garden; and the reaſon for their not being cultivated in gardens, proceeds from their difficulty to be tranſplanted; though this, I believe, may be eaſily overcome, where a perſon has an opportunity of marking their roots in their time of flowering, and letting them remain until their leaves are decayed, when they may be tranſplanted with ſafety; for it is the ſame with moſt ſorts of bulbous or fleſhy-rooted plants, which, if tranſplanted before their leaves decay, ſeldom live, notwithſtanding you preſerve a large ball of earth about them; for the extreme parts of their fibres extend to a great depth in the ground, from whence they receive their nouriſhment; which, if broken or damaged by taking up their roots, ſeldom thrive after; for though they may ſometimes remain alive a year or two, yet they grow weaker until they quite decay; which is alſo the caſe with Tulips, Fritillarias, and other bulbous roots, when removed, after they have made ſhoots; ſo that whoever would cultivate them, ſhould ſearch them out in their ſeaſon of flowering, and mark them; and when their leaves are decayed, or juſt as they are going off, the roots ſhould be taken up, and planted in a ſoil or ſituation as nearly reſembling that wherein they naturally grow, as poſſible, otherwiſe they will not thrive, ſo that

they cannot be placed all in the ſame bed; for ſome are only found upon chalky hills, others in moiſt meadows, and ſome in ſhady woods, or under trees; but if their ſoil and ſituation be adapted to their various ſorts, they will thrive and continue ſeveral years, and, during their ſeaſon of flowering, will afford as great varieties as any flowers which are at preſent cultivated.

The other ſorts not here enumerated, may be found under the following articles, OPHRYS, SATYRIUM, SERAPIAS.

OREOSELINUM. See ATHAMANTA.

ORIGANUM. Lin. Gen. Plant. 645. Tourn. Inſt. R. H. 198. tab. 94. [of Ὀρίγανον, of ὄρος, a mountain, and γάνυμαι, to rejoice, q. d. a plant that delights to grow upon mountains.] Origany or Pot Marjoram; in French, *Origan.*

The CHARACTERS are,

The flower is of the lip kind, having a cylindrical compreſſed tube; the upper lip is plain, erect, obtuſe, and indented; the under lip is trifid, the ſegments being nearly equal. Theſe are diſpoſed in ſpikes compoſed of oval coloured leaves, placed over each other like the ſcales of fiſh. The flowers have four ſlender ſtamina, two being as long as the petal, the other two are longer, terminated by ſimple ſummits; they have a four-cornered germen, ſupporting a ſlender ſtyle inclining to the upper lip, crowned by a bifid ſtigma. The germen afterward turns to four ſeeds ſhut up in the empalement of the flower.

This genus of plants is ranged in the firſt ſection of Linnæus's fourteenth claſs, which includes the plants whoſe flowers have two long and two ſhorter ſtamina, and are ſucceeded by naked ſeeds. To this genus he has added the Majorana of Tournefort, and the Dictamnus of Boerhaave. The firſt has its flowers diſpoſed in four-cornered ſcaly heads, the other has the flowers diſpoſed in looſe ſcaly heads, coming out from between the leaves.

The SPECIES are,

1. ORIGANUM (*Vulgare*) ſpicis ſubrotundis paniculatis conglomeratis, bracteis calyce longioribus ovatis. Lin. Sp. Plant. 590. *Pot Marjoram with roundiſh paniculated ſpikes gathered in cluſters, and oval bracteæ which are longer than the empalement.* Origanum vulgare ſpontaneum. I. B. 2. 236. *Common Wild Origany.*
2. ORIGANUM (*Heracleoticum*) ſpicis longis pedunculis aggregatis, bracteis longitudine calycum. Lin. Gen. Plant. 589. *Origany with long ſpikes growing in bunches, and bracteæ as long as the empalement.* Origanum heracleoticum, culina Gallinacea Plinii. C. B. P. 223. *Winter Sweet Marjoram.*
3. ORIGANUM (*Latifolium*) ſpicis oblongis paniculatis conglomeratis, foliis ovatis glabris. *Origany with oblong ſpikes of flowers growing in cluſtered panicles, and oval ſmooth leaves.* Origanum humilius latifolium glabrum. Tourn. Inſt. R. H. 199. *Low, broad-leaved, ſmooth Origany.*
4. ORIGANUM (*Humile*) caule repente, ſpicis oblongis conglomeratis, bracteis florum longioribus. *Origany with a creeping ſtalk, and oblong ſpikes of flowers growing in cluſters, with bracteæ longer than the flower.* Origanum ſylveſtre, humile. C. B. P. 223. Prod. 109. *Low wild Origany.*
5. ORIGANUM (*Orientale*) caule erecto ramoſo, foliis ovatis rugoſis, ſpicis ſubrotundis conglomeratis, bracteis calycum brevioribus. *Origany with an erect branching ſtalk, oval rough leaves, roundiſh ſpikes of flowers growing in cluſters, with bracteæ ſhorter than the empalement.* Origanum Orientale prunellæ folio glauco, flore purpureo. Boerh. Ind. alt. 1. 179. *Eaſtern Origany with a gray Self-heal leaf, and a purple flower.*
6. ORIGANUM (*Creticum*) ſpicis aggregatis longis priſmaticis rectis, bracteis membranaceis, calyce duplo longioribus. Lin. Sp. Plant. 589. *Origany with long, upright, priſmatical ſpikes growing in cluſters, and membraneous bracteæ twice the length of the empalement.* Origanum Creticum. C. B. P. 223. *Origany of Crete.*
7. ORIGANUM (*Majorana*) foliis ovalibus obtuſis, ſpicis ſubrotundis compactis pubeſcentibus. Hort. Cliff. 304. *Origany with oval obtuſe leaves, and roundiſh, compact, hairy ſpikes.* Majorana vulgaris. C. B. P. 224. *Common, or Sweet Marjoram.*
8. ORIGANUM (*Ægyptiacum*) foliis carnoſis tomentoſis, ſpicis nudis. Lin. Sp. Plant. 822. *Origany with fleſhy woolly leaves.* Majorana rotundifolia, ſcutellata, exotica. H. R. Par. *Round-leaved foreign Marjoram with a ſpoon-ſhaped leaf.*
9. ORIGANUM (*Smyrnæum*) foliis ovatis acutè ſerratis, ſpicis congeſtis umbellatim faſtigiatis. Hort. Cliff. 304. *Origany with oval leaves acutely ſawed, and ſpikes of flowers diſpoſed in umbellated bunches.* Origanum Smyrnæum. Wheel. Raii Hiſt. 450. *Origany of Smyrna.*
10. ORIGANUM (*Dictamnus*) foliis omnibus tomentoſis, ſpicis nutantibus. *Origany with all the leaves woolly, and nodding ſpikes of flowers.* Dictamnus Creticus. C. B. P. 222. *The Dittany of Crete.*
11. ORIGANUM (*Sipyleum*) foliis omnibus glabris, ſpicis nutantibus. Hort. Cliff. 304. *Origany with all the leaves ſmooth, and nodding ſpikes of flowers.* Dictamnus montis Sipyli origani foliis. Flor. Bat. 2. 72. *Dittany of Mount Sipylus with an Origany leaf.*
12. ORIGANUM (*Hybridinum*) foliis inferioribus tomentoſis, ſpicis nutantibus. Hort. Cliff. 304. *Origany with the under leaves hoary, and nodding ſpikes of flowers.* Origanum Dictamni Cretici facie, folio craſſo, nunc villoſo, nunc glabro. Tourn. Cor. 13. *Origany with the appearance of Dittany of Crete, and thick leaves ſometimes hairy, at others ſmooth.*
13. ORIGANUM (*Onites*) ſpicis oblongis aggregatis hirſutis, foliis cordatis tomentoſis. Lin. Sp. Plant. 590. *Origany with oblong hairy ſpikes growing in bunches, and heart-ſhaped woolly leaves.* Origanum lignoſum Syracuſanum perenne, umbellâ ampliſſimâ brevi, lato & nervoſo folio. Bocc. Muſ. 2. p. 43. tab. 38. *Ligneous perennial Origany of Syracuſe, with a ſhort ample umbel, and a broad-veined leaf.*

The firſt ſort grows naturally in thickets, and among buſhes in ſeveral parts of England; the root is perennial, compoſed of many ſmall ligneous fibres. The ſtalks are ſquare, and riſe near two feet high; they are ligneous, and garniſhed with oval leaves placed by pairs, and from the wings of theſe come out three or four ſmaller leaves on each ſide, which reſemble thoſe of Marjoram, ſitting cloſe to the ſtalk; they have an aromatic ſcent: the flowers are produced in roundiſh ſpikes growing in panicles at the top of the ſtalks, many of the ſpikes being gathered together; the flowers are of a fleſh colour, and peep out of their ſcaly covering. Their upper lip is cut into two, ſtanding erect, and the lower lip or beard is divided into three parts, and hangs downward the ſtamina ſtand out a little beyond the petals, and are of a purpliſh colour. It flowers in June and July, and the ſeeds ripen in the autumn. This ſort is ſometimes cultivated in gardens, and is by ſome called Pot Marjoram; it is generally uſed in ſoups.

It will riſe plentifully from ſcattered ſeeds, or it may be propagated by parting the roots; the beſt time for doing this is in autumn, and the roots may be planted in any ſoil not over moiſt, and will thrive in any ſituation, ſo requires no other care but to keep them clear from weeds. There is a variety of this with white flowers and light green ſtalks, and another with variegated leaves.

The ſecond ſort is now commonly known by the title of Winter Sweet Marjoram, though it was formerly ſtiled Pot Marjoram. This hath a perennial root, from which ariſe many branching four-cornered ſtalks a foot and a half high, which are hairy, and inclining to a purpliſh colour, garniſhed with oval, obtuſe, hairy leaves, reſembling greatly thoſe of Sweet Marjoram, ſtanding by pairs on ſhort foot-ſtalks; the flowers are diſpoſed in ſpikes about two inches long, ſeveral ariſing together from the diviſions of the ſtalk. The flowers are ſmall, white, and peep out of their ſcaly covers; theſe appear in July, and the ſeeds ripen in autumn. It grows naturally in Greece and the warm parts of Europe, but is hardy enough to thrive in the

the open air in England, and is chiefly cultivated for nofegays, as it comes fooner to flower than Sweet Marjoram, fo it is ufed for the fame purpofes, till the other comes to maturity. There is a variety of this with variegated leaves. This is generally propagated by parting the roots in autumn, and fhould have a dry foil, where it will thrive, requiring no other culture than the firft fort.

The third fort grows naturally in France and Italy; this hath a perennial root, from which arife feveral flender bending ftalks near a foot high, garnifhed with oval fmooth leaves ftanding on pretty long footftalks. The flowers are produced in oblong fpikes, which grow in cluftered panicles; they are fmall, of a purplifh colour, peeping out of their fcaly coverings. It flowers in June, and may be propagated by parting the roots in the fame way as the former.

The fourth fort grows plentifully about Orleans; this hath a perennial root, from which arife feveral four-cornered ftalks about fix inches high, which frequently bend to the ground, and put out roots; they are garnifhed with oblong hairy leaves fitting clofe to the ftalk. The flowers grow in oblong cluftered fpikes at the top of the ftalks, having long coloured bracteæ between each; the flowers are fome whitifh, others purple in the fame fpikes; they are fmall, and peep out of their fcaly covers. This flowers in June, and may be propagated in the fame way as the former.

The fifth fort grows naturally in the Levant; it is a perennial plant. The ftalks rife two feet high, and branch out their whole length; they are purple, and garnifhed with oval rough leaves, fomewhat like thofe of Self-heal, but fmaller. The flowers grow in roundifh cluftered fpikes, having fhort bracteæ; they are purple, and appear in June, but are not fucceeded by feeds here. It is propagated by parting of the heads in the fame way as the former, and muft have a dry foil.

The fixth fort is the Origany of Crete, which is directed to be ufed in medicine, but there has been great confufion among botanifts in diftinguifhing the fpecies. This rifes with four-cornered ftalks a foot and half high, garnifhed with oval hoary leaves of a ftrong aromatic fcent. The flowers grow in long, erect, bunched fpikes at the top of the ftalks, having membraneous bracteæ between, which are twice the length of the empalement; the flowers are fmall and white, like thofe of the common Origany. It flowers in July, but feldom perfects feeds in England. It is propagated by parting the roots as the former, but muft have a dry foil and a warm fituation, otherwife it will not live through the winter here.

The feventh fort is the common Sweet Marjoram, which is fo well known as to need no defcription. With us in England it is efteemed an annual plant, though the roots often live through the winter in mild feafons, or if they are fheltered in a green-houfe; but in warm countries, I believe, it is only biennial.

This is propagated by feeds, which are generally imported from the fouth of France or Italy, for they feldom ripen in England. Thefe are fown on a warm border toward the end of March, and when the plants are come about an inch high, they fhould be tranfplanted into beds of rich earth, at fix inches diftance every way, obferving to water them duly till they have taken new root; after which, they will require no other care but to keep them clean from weeds. The plants will fpread and cover the ground; in July they will begin to flower, at which time it is cut for ufe, and is then called Knotted Marjoram, from the flowers being collected into roundifh clofe heads like knots.

The eighth fort grows naturally in Africa; this is a perennial plant with a low fhrubby ftalk, feldom rifing more than a foot and half high, dividing into branches, which are garnifhed with roundifh, thick, woolly leaves, and hollowed like a ladle; they are like thofe of the common Marjoram, but are of a thicker fubftance and woolly, and have much the fame fcent. The flowers are produced in roundifh fpikes, clofely joined together at the top of the ftalks, and, at the end of the fmall fide branches they are of a pale flefh colour, peeping out of their fcaly coverings. This fort flowers in July and Auguft, but does not ripen feeds in England.

It is propagated by flips or cuttings, which if planted in a border of good earth during any of the fummer months, and fhaded from the fun and duly watered, will take root freely; and afterward the plants may be taken up, and planted in fmall pots filled with light kitchen-garden earth, and placed in the fhade till they have taken new root, when they may be removed into an open fituation, where they may remain till the end of October, when they muft be placed under fhelter, for they will not thrive through the winter in the open air here; but if they are put under a hot-bed frame, where they may be protected from hard froft, and have as much free air as poffible in mild weather, they will thrive better than if they are more tenderly treated.

The tenth fort is the Dittany of Crete, which is ufed in medicine; this grows naturally upon Mount Ida, in Candia; it is a perennial plant. The ftalks are hairy, and rife about nine inches high, of a purplifh colour, and fend out fmall branches from their fides by pairs; they are garnifhed with round, thick, woolly leaves, which are very white; the whole plant has a piercing aromatic fcent, and biting tafte: the flowers are collected in loofe leafy heads of a purple colour, which nod downward; they are fmall, and of a purple colour; the ftamina ftands out beyond the petal, two of them being much longer than the other. It flowers in June and July, and in warm feafons the feeds fometimes ripen in autumn.

This is propagated eafily by planting cuttings or flips during any of the fummer months. Thefe fhould be planted either in pots or a fhady border, covering them clofe with a bell or hand-glafs to exclude the air, and now and then refreshing them with water, but they muft not have too much wet. When thefe have taken root, they fhould be carefully taken up, and each planted into a feparate fmall pot filled with light earth, and placed in the fhade till they have taken new root, when they fhould be removed into an open fituation, where they may continue till autumn, and then placed under a hot-bed frame to fcreen them from the froft, but they fhould enjoy the free air at all times in mild weather. The following fpring fome of the plants may be fhaken out of the pots, and planted in a warm border near a good afpected wall, and in a dry foil, where the plants will live through the common winters without any other fhelter; but as they are liable to be killed by fevere froft, it will be proper to keep a few plants in pots, to be fheltered in winter to preferve the kind.

The eleventh fort grows naturally on Mount Sipylus near Magnefia, where it was difcovered by Sir George Wheeler, who fent the feeds to the Oxford Garden, where the plants were raifed; this hath a perennial root, but an annual ftalk. The root is compofed of many flender ligneous fibres; the leaves are oval, fmooth, and of a grayifh colour; the ftalks are flender, of a purplifh colour, four-cornered, and fmooth; they rife near two feet high, fending out flender branches oppofite, which are terminated by flender oblong fpikes of purplifh flowers, which peep out of their fcaly covers; the flowers are fmall, but fhaded like thofe of the tenth fort; their ftamina are extended out of the petal to a confiderable length. The leaves, on the lower part of the ftalk, are almoft as large as the common Origany, but thofe on the upper part of the ftalk and branches are very fmall, and fit clofe to the ftalk. It flowers in June and July, and in warm feafons the feeds ripen here in autumn. It is propagated by cuttings or flips, in the fame way as the Cretan Dittany, and the plants require the fame treatment.

The twelfth fort is undoubtedly a variety, which has been produced from the intermixing of the farina of

of the Cretan Dittany with that of Mount Sipylus; for the plants now in the Chelſea Garden were accidentally produced from the ſeeds of one ſpecies, where both ſorts ſtood near each other in the garden of John Browning, Eſq; of Lincoln's-Inn; the ſeeds were dropped from the plant into the border between the two ſorts, ſo that it is uncertain from which ſpecies; but as the ſtalks and heads of ſuch flowers bear a greater reſemblance to the Dittany of Mount Sipylus, we may ſuppoſe it aroſe from the ſeeds of that, which had been impregnated by the farina of the Cretan Dittany, which grew near it; for the under leaves of this are round, of a thick texture and woolly, ſo nearly reſembling thoſe of the Cretan Dittany, as not to be diſtinguiſhed from it; but the ſtalks riſe full as high as thoſe of the Dittany of Sipylus, but branch out more their whole length; they are of a purple colour and hairy. The lower leaves on the ſtalks are much larger than thoſe of Mount Sipylus, and are hairy, approaching to thoſe of the Cretan Dittany, but are not ſo thick or woolly; the upper leaves are ſmooth, and approach to thoſe of the other ſort, but are larger, as are alſo the ſpikes of flowers, and the ſcaly leaves which cover the flowers are larger and of a deeper purple colour.

I have alſo dried ſamples of another variety, which aroſe from ſeeds in the Leyden Garden; the ſeeds were ſent from Paris, by the title which Tournefort gave to that which he found in the Levant, which I have joined to the variety before-mentioned. The leaves of this are as large as thoſe of the Dittany of Crete, but are not ſo thick or woolly; the ſtalks riſe more like thoſe of the Dittany of Mount Sipylus, but branch out wider at the top; the flowers grow in cloſer cluſters, and do not nod downward; they are ſmall, and ſhaped like thoſe of the former ſort, flowering at the ſame time.

By the title which Dr. Linnæus has given to the Cretan Dittany, it may be ſuppoſed he has not ſeen the true ſort, for his title better ſuits the variety to which I have applied it; for all the leaves of the true Dittany are very thick and woolly, even thoſe which are ſituated immediately below the flowers, whereas the lower leaves only are ſo in this title.

The thirteenth ſort grows at Syracuſe; this hath perennial ligneous ſtalks which riſe a foot and a half high, dividing into many ſmall branches, which are garniſhed with ſmall heart-ſhaped leaves a little larger than thoſe of Marjoram, which are woolly. The flowers grow in oblong tufted ſpikes which are hairy; they are ſmall, white, and peep out of their ſcaly covers; they appear in July, but ſeldom perfect ſeeds in England. This is propagated by cuttings or ſlips, in the ſame way as the tenth ſort, and the plants require the ſame treatment.

The firſt and ſixth ſorts are uſed in medicine, but the firſt being a native of this country, is frequently ſubſtituted for the other, which is pretty rare in England, and is now ſeldom imported here. When the firſt ſort is uſed, thoſe plants which grow upon dry barren ground are to be preferred, as they are much ſtronger and have greater virtue than thoſe which grow on good land, or are cultivated in gardens.

The Dittany of Crete is alſo uſed in medicine, but the dried herb is generally imported into England, which, by being cloſely packed, and the voyage being long, it loſes much of its virtue; ſo that if the plants of Engliſh growth were uſed, they would be found much better.

ORNITHOGALUM. Tourn. Inſt. R. H. 378. tab. 203. Lin. Gen. Plant. 377. [Ὀρνιθόγαλον, of ὄρνις, a bird, and γάλα, milk, i. e. a plant whoſe flowers are as white as the white plumes of feathered animals.] Star of Bethlehem.

The CHARACTERS are,

The flower has no empalement. It is compoſed of ſix petals, whoſe under parts are erect, but ſpread open above, and are permanent. It hath ſix erect ſtamina about half the length of the petals, crowned by ſingle ſummits, with an angular germen, ſupporting an awl-ſhaped ſtyle which is permanent, terminated by an obtuſe ſtigma. The germen afterward turns to a roundiſh angular capſule with three cells, filled with roundiſh ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, in which are contained thoſe plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. ORNITHOGALUM (*Pyrenaicum*) racemo longiſſimo, filamentis lanceolatis, pedunculis floriferis patentibus æqualibus, fructiferis ſcapo approximatis. Lin. Sp. Plant. 440. *Star-flower with a very long ſpike of flowers, ſpear-ſhaped filaments, and foot-ſtalks to the flowers equal, ſpreading, and thoſe of the fruit approaching to the ſtalk.* Ornithogalum anguſtifolium majus, floribus ex albo vireſcentibus. C. B. P. 70. *Greater narrow-leaved Star-flower, with whitiſh green flowers.*
2. ORNITHOGALUM (*Pyramidale*) racemo conico, floribus numeroſis adſcendentibus. Prod. Leyd. 32. *Star-flower with a conical ſpike, having numerous flowers riſing above each other.* Ornithogalum anguſtifolium, ſpicatum, maximum. C. B. P. 70. *Largeſt ſpiked Star-flower with a narrow leaf.*
3. ORNITHOGALUM (*Latifolium*) racemo longiſſimo, foliis lanceolato-enſiformibus. Lin. Sp. Plant. 307. *Star-flower with the longeſt ſpike, and ſpear-ſhaped leaves.* Ornithogalum latifolium & maximum. C. B. P. 70. *Greateſt broad-leaved Star-flower, called the Star-flower of Alexandria.*
4. ORNITHOGALUM (*Nutans*) floribus ſecundis pendulis, nectario ſtamineo campaniformi. Lin. Sp. Plant. 308. *Star-flower with fruitful hanging flowers, and a bell-ſhaped nectarium.* Ornithogalum Neapolitanum. Cluſ. App. 2. p. 9. *Star-flower of Naples.*
5. ORNITHOGALUM (*Luteum*) ſcapo angulato diphyllo, pedunculis umbellatis ſimplicibus. Flor. Suec. 270. *Star-flower with an angular ſtalk having two leaves, and ſingle umbellated foot-ſtalks.* Ornithogalum luteum. C. B. P. 71. *Yellow Star-flower.*
6. ORNITHOGALUM (*Minimum*) ſcapo angulato diphyllo, pedunculis umbellatis ramoſis. Flor. Suec. 271. *Star-flower with an angular ſtalk bearing two leaves, and branching foot-ſtalks having umbels.* Ornithogalum luteum minus. C. B. P. 71. *Smaller yellow Star-flower.*
7. ORNITHOGALUM (*Umbellatum*) floribus corymboſis, pedunculis ſcapo altioribus, filamentis emarginatis. Hort. Cliff. 124. *Star-flower with flowers growing in a corymbus, whoſe foot-ſtalks are taller than the ſtalk, and indented filaments.* Ornithogalum umbellatum medium anguſtifolium. C. B. P. 70. *Middle umbellated Star-flower having narrow leaves.*
8. ORNITHOGALUM (*Arabicum*) floribus corymboſis, pedunculis ſcapo humilioribus, filamentis emarginatis. Prod. Leyd. 32. *Star-flower with flowers growing in a corymbus, foot-ſtalks lower than the ſtalk, and indented filaments.* Ornithogalum Arabicum. Cluſ. Hiſt. 11. p. 186. *Star-flower of Arabia.*
9. ORNITHOGALUM (*Capenſe*) foliis cordatis ovatis. Prod. Leyd. 31. *Star-flower with oval heart-ſhaped leaves.* Ornithogalum Africanum plantaginis roſeæ folio, radice tuberoſâ. Hort. Amſt. 2. p. 175. *African Star-flower, with a Roſe Plantain leaf and a tuberous root.*
10. ORNITHOGALUM (*Tuberoſum*) racemo breviſſimo, foliis teretibus fiſtuloſis. *Star-flower with a very ſhort ſpike, and taper fiſtular leaves.* Ornithogalum Africanum, luteum odoratum, foliis cepaceis, radice tuberoſâ. H. L. *African Star-flower having yellow ſweet flowers, leaves reſembling thoſe of the Onion, and a tuberous root.*

The firſt ſort grows naturally near Briſtol, and alſo near Chicheſter in Suſſex, and ſome other parts of England. This hath a pretty large bulbous root, from which come out ſeveral long keel-ſhaped leaves, which ſpread on the ground; between theſe come out a ſingle naked ſtalk about two feet long, ſuſtaining a long looſe ſpike of flowers of a yellowiſh green colour, ſtanding upon pretty long foot-ſtalks, which ſpread wide from the principal ſtalk; the petals of the flowers are narrow, making but little appearance. The flowers have an agreeable ſcent; they appear in May, and when the ſeed-veſſels are formed, the foot-

ſtalks

ſtalks which ſuſtain them become erect, and approach near the ſtalk. The ſeeds ripen in Auguſt.

The ſecond ſort grows naturally upon the hills in Portugal and Spain, but has been long cultivated in the Engliſh gardens by the title of the Star of Bethlehem. This hath a very large, oval, bulbous root, from which ariſe ſeveral long keel-ſhaped leaves of a dark green colour, in the middle of which come out a naked ſtalk which riſes near three feet high, terminated by a long conical ſpike of white flowers, ſtanding upon pretty long foot-ſtalks, riſing one above another in an upright ſpike. Theſe appear in June, and are ſucceeded by roundiſh ſeed-veſſels, having three cells filled with roundiſh ſeeds, which ripen in Auguſt.

The third ſort grows naturally in Arabia; this hath a very large bulbous root, from which come out ſeveral broad ſword-ſhaped leaves, which ſpread on the ground; the ſtalk is thick and ſtrong, riſing between two and three feet high, bearing a long ſpike of large white flowers, ſtanding upon long foot-ſtalks. They are compoſed of ſix petals which ſpread open in form of a ſtar, and appear in June, but do not ripen their ſeeds in England.

The fourth ſort grows in great abundance naturally in the kingdom of Naples, and is now become almoſt as common in England, for the roots propagate ſo faſt by offsets and ſeeds, as to become troubleſome weeds in gardens; and in many places where the roots have been thrown out of gardens, they have grown upon dunghills and in waſte places as plentifully as weeds. This hath a pretty large, compreſſed, bulbous root, from which come out many long, narrow, keel-ſhaped leaves, of a dark green colour. The ſtalks are very thick and ſucculent, riſing about a foot high, ſuſtaining ten or twelve flowers in a looſe ſpike, each hanging on a foot-ſtalk an inch long; they are compoſed of ſix petals, which are white within, but of a grayiſh green on their outſide, having no ſcent; within the petals is ſituated the bell-ſhaped nectarium, compoſed of ſix leaves, out of which ariſe the ſix ſtamina, terminated by yellow ſummits. The flowers appear in April, and are ſucceeded by large, roundiſh, three-cornered capſules, which are filled with roundiſh ſeeds; as the capſules grow large, they are ſo heavy as to weigh the ſtalk to the ground.

The ſixth ſort hath ſmall bulbous roots not larger than Peas, from which ariſe one or two narrow keel-ſhaped leaves about five inches long, of a grayiſh colour; the ſtalk is angular, and riſes about four inches high, having two narrow keel-ſhaped leaves juſt below the flowers, which are diſpoſed in an umbel upon branching foot-ſtalks; theſe are yellow within, but of a purpliſh green on their outſide. They appear in May, and are ſucceeded by ſmall triangular capſules, filled with reddiſh uneven ſeeds. It grows on the borders of cultivated fields in France and Germany.

The ſeventh ſort grows naturally in moſt parts of Europe, and is ſuppoſed to do ſo in England, though it is ſeldom found here, unleſs in orchards or grounds where the roots may have been planted, or thrown out of gardens with rubbiſh. This hath a bulb as large as a ſmall Onion, to which adhere many ſmall offſets: the leaves are long, narrow, and keel-ſhaped, ſpreading on the ground, and have a longitudinal white line through the hollow. The ſtalk riſes about ſix inches high, ſuſtaining an umbel of flowers which are white within, but have broad green ſtripes on the outſide of the petals; theſe ſtand upon long foot-ſtalks, which riſe above the principal ſtalk. It flowers in April and May, and is ſucceeded by roundiſh three-cornered capſules filled with angular ſeeds, which ripen in July.

The eighth ſort grows naturally in Arabia; this hath a large bulbous root, from which ariſe many long keel-ſhaped leaves, which embrace each other with their baſe; they are of a deep green, and ſtand erect. The flowers of this kind I have never yet ſeen, though I have tried many ways to procure them: the roots multiply exceedingly, and are never injured by froſt, although the leaves are put out before winter. Theſe roots are frequently brought over from Italy for ſale; but I have not heard of any having flowered; and Cluſius ſays, he never ſaw but one root flower, and that came from Conſtantinople.

The ninth ſort grows naturally at the Cape of Good Hope; this hath an irregular tuberous root, varying greatly in form and ſize, covered with a dark brown ſkin, from which ariſe ſeveral oval heart-ſhaped leaves, upon pretty long foot-ſtalks; they have ſeveral longitudinal veins like Ribwort Plantain. The flower-ſtalks are ſlender, naked, and riſe about a foot high, ſuſtaining ſeveral ſmall, greeniſh, white flowers, formed in a looſe ſpike, ſtanding upon long ſlender foot-ſtalks. They come out in November, making but little appearance, and are not ſucceeded by ſeeds in England.

The tenth ſort grows naturally on the dry rocks at the Cape of Good Hope; this hath a large, depreſſed, bulbous root, as big as a man's fiſt, covered with an uneven brown ſkin, putting out ſeveral taper hollow leaves nine or ten inches long, between which comes forth a naked ſtalk near a foot high, terminated by a looſe ſpike of yellow flowers, of an agreeable ſweet ſcent. It flowers in May, but does produce ſeeds in England.

The three ſorts firſt mentioned, are cultivated for ornament in the Engliſh gardens. Theſe are propagated by offsets, which their roots commonly produce in great plenty. The beſt time to tranſplant their roots is in July or Auguſt, when their leaves are decayed; for if they are removed late in autumn, their fibres will be ſhot out, when they will be very apt to ſuffer if diſturbed. They ſhould have a light ſandy ſoil, but it muſt not be over dunged. They may be intermixed with other bulbous-rooted flowers in the borders of the pleaſure-garden, where they will afford an agreeable variety. Their roots need not be tranſplanted oftener than every other year, for if they are taken up every year, they will not increaſe ſo faſt; but when they are ſuffered to remain too long unremoved, they will have ſo many offsets about them as to weaken their blowing roots. Theſe may alſo be propagated from ſeeds, which ſhould be ſown and managed as moſt other bulbous-rooted flowers, and will produce their flowers three or four years after ſowing.

The fourth ſort is ſcarce worthy of a place in gardens, but as it will thrive in any ſituation or under trees, ſo a few plants may be admitted in obſcure places for the ſake of variety.

The fifth ſort has not much beauty, therefore a few roots of it will be enough for variety, as alſo of the ſixth and ſeventh ſorts; the two laſt will thrive in ſhade, but the fifth ſhould have an open ſituation.

The eighth ſort multiplies ſo faſt by offsets from the roots as to become troubleſome weeds in a garden, for every ſmall root will grow, and in two years produce twenty or thirty more; ſo that unleſs the large roots are taken up every year and diveſted of their offsets, the borders will be over-run with them.

The ninth ſort is too tender to thrive in the open air in England, ſo the roots of this ſhould be planted in pots filled with light earth, and in the autumn placed under a hot-bed frame, where they may be ſcreened from froſt, and in mild weather enjoy the free air. The leaves of this appear in the autumn, and continue growing all the winter, ſo muſt not be expoſed to froſt; nor ſhould they be drawn up weak, for then the flowers will be few on a ſtalk, and not large. If the pots do now and then receive a gentle ſhower of rain in winter it will be ſufficient, for they ſhould not have much wet during that ſeaſon. Toward the beginning of July the leaves and ſtalks decay, and then the roots may be taken up, laying them in a dry cool place till the end of Auguſt, when they muſt be planted again.

The other ſpecies which were included in this genus, are now removed to Scilla.

ORNITHOPUS. Lin. Gen. Plant. 790. Ornithopodium. Tourn. Inſt. R. H. 400. tab. 224. Bird's-foot; in French, *Pié-d'oiſeau.*

The CHARACTERS are,

The empalement of the flower is permanent, of one leaf, tubulous, and indented in five equal ſegments at the brim. The flower is of the butterfly kind, the ſtandard is heart-ſhaped and entire; the wings are oval, erect, and almoſt as large as the ſtandard; the keel is ſmall and compreſſed. It hath ten ſtamina, nine of which are joined, and one ſtands ſeparate, terminated by ſingle ſummits. The germen is narrow, ſupporting a briſtly aſcending ſtyle, terminated by a punctured ſtigma. The germen afterward becomes a taper incurved pod, having many joints connected together, but when ripe ſeparate, each containing one oblong ſeed.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, which includes the plants whoſe flowers have ten ſtamina joined in two bodies.

The SPECIES are,

1. ORNITHOPUS (*Perpuſillus*) foliis pinnatis, leguminibus compreſſis ſubarcuatis. Hort. Upſal. 234. *Bird's-foot with winged leaves, and compreſſed pods a little arched.* Ornithopodium majus. C. B. P. 350. *Greater Bird's-foot.*
2. ORNITHOPUS (*Nodoſa*) foliis pinnatis, leguminibus confertis pedunculatis. *Bird's-foot with winged leaves, and pods growing in cluſters upon foot-ſtalks.* Ornithopodium radice tuberculis nodosâ. C. B. P. 350. *Bird's-foot with knobbed tubercular roots.*
3. ORNITHOPUS (*Compreſſus*) foliis pinnatis, pinnis leguminibus compreſſis rugoſus. Hort. Cliff. 364. *Bird's-foot with linear winged leaves, and compreſſed pods growing in pairs.* Ornithopodium Scorpoides, ſiliquâ compreſsâ. Tourn. Inſt. 400. *Bird's-foot with the appearance of Caterpillar, and flat pods.*
4. ORNITHOPUS (*Scorpioides*) foliis ternatis ſubſeſſilibus impari maximo. Hort. Cliff. 364. *Bird's-foot with trifoliate leaves ſitting cloſe to the ſtalk, and the middle lobe very large.* Ornithopodium Portulacæ folio. Tourn. Inſt. 400. *Bird's-foot with a Purſlane leaf.*

The firſt ſort grows naturally in the ſouth of France, in Spain and Italy. It is an annual plant, having many trailing ſtalks a foot and a half long, from which come out a few ſide branches, garniſhed with long winged leaves, compoſed of about eighteen pair of ſmall oval lobes, terminated by an odd one; theſe lobes ſtand ſometimes oppoſite, and at others they are alternate and hairy. The flowers are produced in ſmall cluſters at the top of foot-ſtalks, which ariſe from the wings of the ſtalks, and are near three inches long, having a ſmall winged leaf, part of which is below, and the other part above the flowers, ſo that they ſeem to come from the midrib of the leaf; the flowers are of a deep gold colour, and ſhaped like a butterfly. Theſe appear in July, and are ſucceeded by flat narrow pods about three inches long, which turn inward at the top like a bird's claw. They are jointed, and a little hairy, containing a ſingle ſeed in each joint, which ripens in autumn, when the joints ſeparate and fall aſunder.

The ſecond ſort grows naturally on dry commons and heaths in moſt parts of England. The root of this ſort is compoſed of two or three ſtrong fibres, to which hang ſeveral ſmall tubercles or knobs like grains. There are many ſlender ſtalks come out from the root, and ſpread on the ground, from four to eight inches long, garniſhed with ſmall, winged, hairy leaves, compoſed of ſix or ſeven pair of narrow lobes, terminated by an odd one. The flowers ſtand upon long ſlender foot-ſtalks, which come out at every joint of the ſtalk; they are ſmall, of a yellow colour, and are ſucceeded by cluſters of ſhort pods, which are a little incurved at the top. It flowers and ſeeds about the ſame time as the former.

The third ſort grows plentifully about Meſſina and Naples. The root of this ſort runs deep into the ground, ſending out a few ſmall fibres on the ſide; the ſtalks are about ſix inches long, and do not lie flat on the ground like the other; the leaves are hairy, compoſed of ten or twelve pair of narrow lobes placed along the midrib, terminated by an odd one. The flowers grow in ſmall bunches on the top of the branches; they are yellow, and are generally ſucceeded by two flat pods not much more than an inch long, turned inward like a bird's claw. This flowers and ſeeds about the ſame time with the former.

The fourth ſort grows naturally among the Corn in Spain and Italy; this hath many ſmooth branching ſtalks, which riſe near two feet high, garniſhed toward their top with trifoliate oval leaves ſitting cloſe, having two ſmall appendages. The lower leaves are often ſingle, and of a grayiſh colour, the middle lobe being twice the ſize of the two ſide ones. The flowers ſtand upon ſlender foot-ſtalks, are yellow, and ſucceeded by taper pods, which are two inches long, ſhaped like a bird's claw. This flowers and ſeeds about the ſame time with the former.

Theſe plants are propagated by ſowing their ſeeds in the ſpring upon a bed of light freſh earth, where they are to remain (for they ſeldom do well when they are tranſplanted;) when the plants come up, they muſt be carefully cleared from weeds; and where they are too cloſe, ſome of the plants ſhould be pulled out, ſo as to leave the remaining ones about ten inches aſunder. In June theſe plants will flower, and the ſeeds will ripen in Auguſt. There is no great beauty in them, but for the variety of their jointed pods, they are preſerved by ſome curious perſons in their pleaſure-gardens; where, if their ſeeds are ſown in patches in the borders, each ſort diſtinctly by itſelf, and the plants thinned, leaving only two at each patch, they will require no farther care, and will add to the variety, eſpecially where the Snail and Caterpillar plants are preſerved, which are very proper to intermix with them. They are all annual plants, which periſh ſoon after the ſeeds are ripe.

OROBANCHE, or Broom Rape.

There are ſix or ſeven ſpecies of this genus at preſent known, two of which grow naturally on dry grounds in ſeveral parts of England; but as all the ſorts do not agree with culture, ſo they are not admitted into gardens. They are ranged in the ſecond ſection of Linnæus's fourteenth claſs, intitled Didynamia Angioſpermia, the flowers having two long and two ſhorter ſtamina, and their ſeeds being included in a capſule.

OROBUS. Tourn. Inſt. R. H. 393. tab. 214. Lin. Gen. Plant. 780. [ὄροβος, of ἐρέπτω, to eat, βοῦς, an ox, q. d. an herb with which oxen are fed, becauſe the ancients uſed to fatten their oxen with a like herb.] Bitter Vetch; in French, *Orobe.*

The CHARACTERS are,

The empalement of the flower is tubulous, of one leaf, with an obtuſe baſe; the brim is oblique and indented in five parts, the three lower acute, the two upper ſhorter and obtuſe. The flower is of the butterfly kind; the ſtandard is heart-ſhaped; the two wings are almoſt as long as the ſtandard, and join together; the keel is bifid, acute-pointed, and riſing upwards; the borders are compreſſed, and the body ſwollen. It hath ten ſtamina, nine are joined, and one ſeparate; theſe are riſing, and terminated by roundiſh ſummits. It hath a cylindrical compreſſed germen, ſupporting a crooked riſing ſtyle, crowned by a narrow downy ſtigma, faſtened by the inner edge in the middle to the point of the ſtyle. The germen afterward becomes a long taper pod ending in an acute point, having one cell, containing ſeveral roundiſh ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſeventeenth claſs, which contains thoſe plants whoſe flowers have ten ſtamina joined in two bodies.

The SPECIES are,

1. OROBUS (*Vernus*) foliis pinnatis ovatis, ſtipulis ſemiſagittatis integerrimis, caule ſimplici. Lin. Sp. Plant. 728. *Bitter Vetch with oval winged leaves, entire ſtipulæ half arrow-pointed, and a ſingle ſtalk.* Orobus ſylvaticus purpureus vernus. C. B. P. 351. *Purple, vernal, wood Bitter Vetch.*
2. OROBUS (*Tuberoſus*) foliis pinnatis lanceolatis, ſtipulis ſemiſagittatis, caule ſimplici. Lin. Sp. Plant. 728. *Bitter*

Bitter Vetch with ſpear-ſhaped winged leaves, entire half arrow-pointed ſtipulæ, and a ſingle ſtalk. Orobus ſylvaticus foliis oblongis glabris. Tourn. Inſt. R. H. 393. *Wood Bitter Vetch with oblong ſmooth leaves.*

3. Orobus (*Sylvaticus*) caulibus decumbentibus hirſutis ramoſis. Cent. pl. 67. Flor. Angl. 275. *Bitter Vetch with hairy, branching, decumbent ſtalks.* Orobus ſylvaticus noſtras. Raii Syn. 324. *Wood Bitter Vetch.*

4. Orobus (*Niger*) caule ramoſo, foliis ſexjugis ovato-oblongis. Hort. Cliff. 366. *Bitter Vetch with a branching ſtalk, and leaves compoſed of ſix pair of oblong oval lobes.* Orobus ſylvaticus foliis viciæ. C. B. P. 352. *Wood Bitter Vetch with a Vetch leaf.*

5. Orobus (*Pyrenaicus*) caule ramoſo, foliis bijugis lanceolatis nervoſis, ſtipulis ſubſpinoſis. Lin. Sp. 1029. *Bitter Vetch with a branching ſtalk, and leaves compoſed of two pair of nervous ſpear-ſhaped lobes.* Orobus Pyrenaicus, foliis nervoſis. Tourn. Inſt. 393. *Bitter Vetch of the Pyrenees with nervous leaves.*

6. Orobus (*Lathyroides*) foliis conjugatis ſubſeſſilibus, ſtipulis dentatis. Hort. Upſal. 220. *Bitter Vetch with leaves placed by couples cloſe to the ſtalks, and indented ſtipulæ.* Lathyroides erecta, folio ovato acuminato, cæruleis viciæ floribus & ſiliquis, Sibirica. Amman. Ruth. 151. *Siberian, upright, Baſtard Lathyrus, with an oval acute-pointed leaf, blue flowers, and pods like thoſe of the Vetch.*

7. Orobus (*Luteus*) foliis pinnatis ovato-oblongis, ſtipulis rotundato-lunatis dentatis, caule ſimplici. Lin. Sp. Plant. 728. *Bitter Vetch with oval, oblong, winged leaves, roundiſh, moon-ſhaped, indented ſtipulæ, and a ſingle ſtalk.* Orobus Sibericus perenne. Gmel. *Perennial Siberian Bitter Vetch.*

8. Orobus (*Venetis*) foliis pinnatis ovatis acutis, quatuor-jugatis, caule ſimplici. Tab. 193. fol. 2. *Bitter Vetch with oval, acute-pointed, winged leaves, having four pair of lobes and a ſingle ſtalk.* Orobus Venetus. Cluſ. Hiſt. 232. *Venetian Bitter Vetch.*

9. Orobus (*Americanus*) foliis pinnatis lineari-lanceolatis infernè tomentoſis, caule ramoſiſſimo fruteſcente. *Bitter Vetch with linear, ſpear-ſhaped, winged leaves, which are woolly on their under ſide, and a very branching ſhrubby ſtalk.* Orobus Americanus erectus, foliorum pinnis anguſtoribus & ſubtus incanis, ſiliquis glabris. Houſt. MSS. *Upright American Bitter Vetch, with very narrow lobes to the leaves, hoary on their under ſide, and having ſmooth pods.*

10. Orobus (*Argenteus*) foliis pinnatis oblongo-ovatis infernè ſericeis, caule erecto tomentoſo, floribus ſpicatis terminalibus. *Bitter Vetch with oblong, oval, winged leaves, which are ſilky on their under ſide, and have an upright woolly ſtalk, terminated by a ſpike of flowers.* Orobus Americanus, latifolius, argenteus, flore purpureo. Houſt. MSS. *Broad-leaved, ſilvery, American Bitter Vetch, with a purple flower.*

11. Orobus (*Procumbens*) foliis pinnatis, foliolis exterioribus majoribus tomentoſis, caule procumbente. *Bitter Vetch with winged leaves, whoſe outer lobes are woolly, and a trailing ſtalk.* Orobus Americanus procumbens & hirſutus, flore purpureo. Houſt. MSS. *Trailing, hairy, American Bitter Vetch, with a purple flower.*

12. Orobus (*Coccineus*) foliis pinnatis, foliis linearibus villoſis, caule procumbente floribus alaribus & terminalibus. *Bitter Vetch with winged leaves, having hairy linear lobes, a trailing ſtalk, and flowers growing on the ſides and at the ends of the branches.* Orobus Americanus procumbens minimus, flore coccineo. Houſt. MSS. *The leaſt trailing American Bitter Vetch, having a ſcarlet flower.*

The firſt ſort grows naturally in the foreſts of Germany and Switzerland. The root of this is perennial, compoſed of many ſtrong fibres; the ſtalks riſe a foot high, and are garniſhed with winged leaves, compoſed of two pair of oval acute-pointed lobes, and at the baſe of the foot-ſtalk is ſituated a ſtipula, (or ſmall leaf,) ſhaped like the point of an arrow cut through the middle. This embraces the ſtalk. The lobes of the leaves are about an inch and an half long, and near an inch broad, ending in acute points. The flowers ſtand upon foot-ſtalks, which ariſe from the wings of the ſtalk; they are about three inches long, ſuſtaining ſix or ſeven flowers ranged in a ſpike, which are of the butterfly kind. Theſe are at firſt of a purple colour, but afterward change blue; they appear early in the ſpring, and are ſucceeded by ſlender taper pods an inch and a half long, having one cell, in which are lodged four or five oblong bitter ſeeds, which ripen in June. There is a variety of this with pale flowers, which is preſerved in ſome gardens.

The ſecond ſort grows naturally in woods and ſhady places in moſt parts of England. This hath a perennial creeping root, from which ariſe angular ſtalks nine or ten inches long, garniſhed at each joint by one winged leaf, compoſed of four pair of ſmooth ſpear-ſhaped lobes, and, at the baſe of each, is ſituated a ſtipula like that of the firſt ſort; and from the wings of the ſtalks ariſe the foot-ſtalks of the flowers, which are about four inches long, each ſuſtaining two or three purpliſh red flowers, which turn to a deep purple before they fade. They appear in April, and are ſucceeded by long taper pods, containing ſix or ſeven roundiſh ſeeds, which ripen the beginning of June. Theſe are called Wood or Heath Peas.

The third ſort grows naturally in Cumberland and Wales. The root is perennial and ligneous, from which ariſe ſeveral hairy ſtalks a foot and a half high, garniſhed at each joint with one winged leaf, compoſed of ten or eleven pair of narrow lobes ranged cloſe together along the midrib; at the baſe of which is ſituated an acute ſtipula embracing the ſtalk. The flowers are diſpoſed in a cloſe ſpike, ſtanding upon foot-ſtalks three inches long, which ariſe from the wings of the leaves; they are of a purple colour, and are ſucceeded by ſhort flat pods, containing two or three ſeeds. It flowers the beginning of June, and the ſeeds ripen in July.

The fourth ſort grows naturally on the mountains in Germany and Switzerland. This hath a ſtrong, ligneous, perennial root, from which ariſe many branching ſtalks two feet high, garniſhed at each joint by one winged leaf, compoſed of five or ſix ſmall, oblong, oval lobes ranged along the midrib. The flowers ſtand upon very long foot-ſtalks, which ariſe from the wings of the ſtalk; theſe ſuſtain at their top four, five, or ſix purple flowers, which appear in May, and are ſucceeded by compreſſed pods an inch and a half long, containing four or five oblong ſeeds, which ripen the beginning of July. The ſtalks decay in autumn, and new ones ariſe in the ſpring.

The fifth ſort grows naturally on the Pyrenean mountains; this hath a perennial root, from which ariſe ſeveral ſmooth branching ſtalks a foot and a half high, garniſhed with winged leaves compoſed of four pair of ſpear-ſhaped lobes, which have three longitudinal veins; at the baſe of the leaves is ſituated a ſtipula embracing the ſtalk, in the ſame manner as the firſt. The flowers ſtand upon long foot-ſtalks, ariſing from the wings of the leaves; toward the upper part of the ſtalk they are ranged in a looſe ſpike, are of a purple colour, appearing in May, and are ſucceeded by compreſſed pods about two inches long, containing three or four ſeeds, which ripen in July.

The ſixth ſort grows naturally in Siberia; this hath a perennial root, from which ariſe three or four branching ſtalks about a foot high. The leaves ſtand by pairs oppoſite along the ſtalks, to which they ſit cloſe, having an indented ſtipula at their baſe; the leaves are ſmooth, ſtiff, and of a lucid green. The flowers grow in cloſe ſpikes upon ſhort foot-ſtalks, which riſe from the wings of the leaves at the top of the ſtalks, where are generally three or four of theſe ſpikes ſtanding together. The flowers are of a fine blue colour, ſo make a pretty appearance. Theſe appear in June, and are ſucceeded by ſhort flattiſh pods, containing two or three ſeeds in each, which ripen in Auguſt.

The

The ſeventh ſort grows naturally in Siberia; this hath a perennial root, from which ariſe ſeveral herbaceous ſtalks a foot and a half high, garniſhed with winged leaves, compoſed of four or five pair of oval oblong lobes, having at their baſe a roundiſh moon-ſhaped ſtipula embracing the ſtalk. The flowers come out from the wings of the leaves upon ſhort foot-ſtalks; they are large and of a purple colour, appearing in April, and are ſucceeded by ſwelling pods near two inches long, containing four or five ſeeds, which ripen in June.

The eighth ſort grows naturally in Italy; this hath a perennial root, from which ariſe ſeveral ſtalks about a foot high, garniſhed with winged leaves, compoſed of four pair of oval lobes, ending in acute points; they are ſmooth and of a pale green colour, placed pretty far diſtant on the midrib. The flowers come out upon ſlender foot-ſtalks, which ariſe from the wings of the leaves, four or five ſtanding at the top; they are of a purple colour, and appear in March. Theſe are ſucceeded by ſwelling pods an inch and a half long, each containing three or four roundiſh ſeeds, which ripen in May.

The ninth ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent the ſeeds in 1731. This riſes with a very branching ſtalk about three feet high, which is ligneous; the branches are garniſhed with winged leaves, compoſed of five or ſix pair of narrow ſpear-ſhaped lobes, which are woolly on their under ſide. The flowers grow in looſe ſpikes at the end of the branches, are of a pale purple colour, and are ſucceeded by ſmooth compreſſed pods an inch and a half long, each containing five or ſix roundiſh ſeeds.

The tenth ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz, from whence he ſent the ſeeds to England. This riſes with a ſhrubby ſtalk five or ſix feet high, dividing into many ſlender branches, which are covered with a brown woolly bark, and garniſhed with ſoft, ſatteny, winged leaves; thoſe on the young branches are compoſed of four pair of oval obtuſe lobes, of a browniſh green colour, hairy on their upper ſide, but of a ſilvery ſilky hue on their under. The leaves on the upper branches are compoſed of ſeven or eight pair of oblong oval lobes, of the ſame colour and conſiſtence as the lower. The flowers are produced in long erect ſpikes at the end of the branches; they are of a deep purple colour, and are ſucceeded by long, woolly, compreſſed pods, each conraining four or five ſeeds.

The eleventh ſort was diſcovered by Dr. Houſtoun at La Vera Cruz, who ſent it to England in 1730. This is a low plant, whoſe ſtalks bend to the ground, and are ſeldom more than ſix or eight inches long, from which come out a few ſhort ſide branches; they are garniſhed with winged leaves, compoſed of four or five pair of ſmall, oblong, oval, woolly lobes, terminated by an odd one, the upper lobes being much larger than the lower. The flowers come out in ſmall bunches, ſtanding upon ſhort foot-ſtalks, which ariſe from the wings of the ſtalk; they are ſmall, and of a bright purple colour; theſe are ſucceeded by compreſſed pods near two inches long, each having ſix or ſeven roundiſh compreſſed ſeeds.

The twelfth ſort was diſcovered at the ſame time, growing naturally in the ſame country as the former, by the ſame gentleman. This hath a pretty thick ligneous root, which ſends out many ſlender ſtalks a foot and a half long, trailing upon the ground, garniſhed with winged leaves, compoſed of three or four pair of narrow hoary lobes, about half an inch long. The flowers come out from the ſide and at the end of the ſtalks, three or four ſtanding upon a ſhort foot-ſtalk; they are ſmall and of a ſcarlet colour, and are ſucceeded by ſhort taper pods, each containing three or four ſmall roundiſh ſeeds.

The eight ſorts which are firſt mentioned, have perennial roots but annual ſtalks, which decay every autumn; ſeveral of theſe may be propagated by parting their roots; the beſt time for doing this is in the

autumn, that the plants may be well eſtabliſhed before the ſpring; for as ſeveral of them begin to put out their ſtalks very early in the ſpring, ſo if they are then diſturbed, it will either prevent their flowering, or cauſe their flowers to be very weak. Moſt of theſe plants delight in a ſhady ſituation, and love a loamy ſoil.

They are alſo propagated by ſeeds, but theſe ſhould be ſown in the autumn, for if they are kept out of the ground till ſpring, many of the ſorts will never grow, and thoſe which do, ſeldom vegetate the ſame year; and the fourth ſort I could never raiſe from ſeeds ſown in the ſpring, though I have made the trial in different ſituations many times; but the ſeeds which have ſcattered in the ſummer, have come up well the following ſpring, as have alſo thoſe which were ſown in September. When the plants come up they muſt be kept clean from weeds, and where they are too cloſe together they ſhould be thinned, ſo as they may have room to grow till the autumn, when they ſhould be tranſplanted into the places where they are deſigned to remain. If the roots are ſtrong, they will flower very well the following ſpring, but thoſe which are weak will not flower till the ſecond year; therefore ſuch may be planted in a ſhady border at four or five inches diſtance, where they may grow one year to get ſtrength, and then may be removed to the places where they are to remain. The farther care of them is only to dig the ground between them in winter, and in ſummer to keep them clean from weeds.

The four laſt mentioned ſorts being natives of warm countries are tender, ſo muſt be preſerved in ſtoves, otherwiſe they will not live in England. Theſe are propagated by ſeeds, which ſhould be ſown early in the ſpring, in ſmall pots filled with light rich earth, and plunged into a hot-bed of tanners bark, obſerving frequently to moiſten the earth, otherwiſe the ſeeds will not grow. When the plants come up, they ſhould be carefully taken out of the pots, and each tranſplanted into ſeparate ſmall pots filled with rich earth, and then plunged again into the tan-bed, obſerving to ſhade them until they have taken root; after which time they ſhould have freſh air admitted to them every day in warm weather, and muſt be frequently watered. With this management the plants will make a great progreſs. When any of the plants are grown too tall to remain in the hot-bed, they ſhould be taken out, and plunged into the bark-bed in the ſtove, where they may have room to grow, eſpecially the ninth and tenth ſorts; but the other two being of humbler growth, may be kept in the hot-bed until Michaelmas, when the nights begin to be cold; at which time they ſhould be removed into the ſtove, and plunged into the bark-bed, where they muſt be treated as other tender exotic plants; by which method they may be preſerved through the winter, and the following ſummer they will produce flowers. Theſe plants are perennial, ſo that if they ſhould not perfect their ſeeds, the plants may be maintained for ſeveral years.

ORTEGIA HISPANICA.

This is called by Cluſius, Juncaria Salmantica; it is a low trailing plant, with Ruſh-like ſtalks, producing at the joints a few ſmall almoſt inviſible flowers, therefore the plant is ſeldom cultivated except in botanic gardens for variety.

ORYZA. Tourn. Inſt. R. H. 513. tab. 296. Rice; in French, *Ris*.

The CHARACTERS are,

The chaff is ſmall, acute-pointed, having two valves nearly equal, incloſing a ſingle flower. The petal has two valves, which are hollow, compreſſed, and boat-ſhaped, ending in a beard or awn. It has a two-leaved nectarium, and ſix hairy ſtamina the length of the petal, terminated by ſummits whoſe baſe are bifid, and a turbinated germen, ſupporting two reflexed hairy ſtyles, crowned by feathered ſtigmas. The germen afterward becomes one large, oblong, compreſſed ſeed, having two channels on each ſide, ſitting on the petal of the flower.

This

This genus of plants is ranged in the ſecond ſection of Linnæus's ſixth claſs, which contains thoſe plants whoſe flowers have ſix ſtamina and two ſtyles.

We have but one SPECIES of this plant, viz.

ORYZA (*Sativa.*) Matth. 403. Rice.

This grain is greatly cultivated in moſt of the eaſtern countries, where it is the chief ſupport of the inhabitants; and great quantities of it are brought into England and other European countries every year, where it is in great eſteem for puddings, &c. it being too tender to be produced in theſe northern countries, without the aſſiſtance of artificial heat; but from ſome ſeeds which were formerly ſent to South Carolina, there have been great quantities produced; and it is found to ſucceed as well there as in its native country, which is a very great improvement to our American ſettlements.

This plant grows upon moiſt ſoils, where the ground can be flowed over with water after it is come up; ſo that whoever would cultivate it in England for curioſity, ſhould ſow the ſeeds upon a hot-bed; and when the plants are come up, they ſhould be tranſplanted into pots filled with rich light earth, and placed into pans of water, which ſhould be plunged into a hot-bed; and as the water waſtes, ſo it muſt, from time to time, be renewed again, ſtill preſerving the water in the pans, otherwiſe they will not thrive, and keeping them in a ſtove all the ſummer; and toward the latter end of Auguſt, they will produce their grain, which will ripen tolerably well, provided the autumn proves favourable.

OSIER. See SALIX.

OSMUNDA, the Oſmund Royal, or flowering Fern.

This is one of the kinds of Fern which is diſtinguiſhed from the other ſorts, by its producing flowers on the top of the leaves; whereas the others, for the moſt part, produce them on the back of their leaves.

There is but one kind of this plant, which grows wild in England, but there are ſeveral ſorts of them which grow in America; but as they are ſeldom kept in gardens, I ſhall not enumerate their ſpecies.

The common ſort grows on bogs in ſeveral parts of England, therefore whoever hath an inclination to tranſplant it into gardens, ſhould place it in a moiſt ſhady ſituation, otherwiſe it will not thrive.

OSTEOSPERMUM. Lin. Gen. Plant. 887. Monilifera. Vaill. Act. Par. 1720. Chryſanthemoides. Tourn. Act. Par. 1705. Hard-ſeeded Chryſanthemum.

The CHARACTERS are,

The flower hath an hemiſpherical empalement, which is ſingle, and cut into many ſegments. The flower is compoſed of ſeveral hermaphrodite florets in the diſk, which are tubulous, and cut at the brim into five parts. Theſe are ſurrounded by ſeveral female florets, which are radiated, each having a long narrow tongue, which is cut into three parts at the top. The hermaphrodite florets have each five ſlender ſhort ſtamina, terminated by cylindrical ſummits, with a ſmall germen ſupporting a ſlender ſtyle, crowned by an obſolete ſtigma; theſe are barren. The female florets have each a globular germen ſupporting a ſlender ſtyle, crowned by an indented ſtigma; the germen afterward becomes one ſingle hard ſeed.

This genus of plants is ranged in the fourth ſection of Linnæus's nineteenth claſs, intitled Syngeneſia Polygamia Neceſſaria, the flowers being compoſed of hermaphrodite florets in the diſk, which are barren, and female florets which are fruitful.

The SPECIES are,

1. OSTEOSPERMUM (*Moniliferum*) foliis ovalibus ſerratis petiolatis ſubdecurrentibus. Lin. Hort. Cliff. 424. *Hard-ſeeded Chryſanthemum, with oval ſawed leaves on running foot-ſtalks.* Chryſanthemoides Afrum populi albæ foliis. Hort. Elth. 80. tab. 68. *Hard-ſeeded African Chryſanthemum, with leaves like thoſe of the white Poplar.*

2. OSTEOSPERMUM (*Piſiferum*) foliis lanceolatis acutè dentatis, caule fruticoſo. Tab. 194. fig. 1. *Hard-ſeeded Chryſanthemum, with ſpear-ſhaped leaves which are acutely indented, and a ſhrubby ſtalk.*

3. OSTEOSPERMUM (*Spinoſum*) ſpinis ramoſis. Lin. Hort. Cliff. 424. *Hard-ſeeded Chryſanthemum, with branching ſpines.* Chryſanthemoides Oſteoſpermum Africanum odoratum, ſpinoſum & viſcoſum. Hort. Amſt. 2. p. 85. *Hard-ſeeded Chryſanthemum of Africa, which is prickly, viſcous, and ſweet.*

4. OSTEOSPERMUM (*Polygaloides*) foliis lanceolatis imbricatis ſeſſilibus. Flor. Leyd. Prod. 179. *Hard-ſeeded Chryſanthemum, with ſpear-ſhaped leaves ſitting cloſe to the ſtalks, and lying over each other like the ſcales of a fiſh.* Monilifera poligoni foliis. Vaill. Act. Par. 1720. *Monilifera with Knot Graſs leaves.*

The firſt ſort grows naturally at the Cape of Good Hope, but has been ſeveral years an inhabitant in the Engliſh gardens. This riſes with a ſhrubby ſtalk ſeven or eight feet high, covered with a ſmooth gray bark, and divides into ſeveral branches, garniſhed with oval leaves, which are unequally indented on their edges; they are placed alternately, and are of a thick conſiſtence, covered with a hoary down, which goes off from the older leaves. The flowers are produced in cluſters at the end of the branches, ſix or eight coming out together, upon foot-ſtalks an inch and a half long; theſe are yellow, and ſhaped like thoſe of Ragwort. The border or rays are compoſed of about ten half florets, which ſpread open; the diſk or middle is compoſed of tubulous florets, which are cut into five parts at the brim; theſe are barren, but the half florets round the border, have one hard ſeed ſucceeding each of them. This plant flowers but ſeldom here; the time of its flowering is in July or Auguſt.

The ſecond ſort grows like the firſt, but the leaves are more pointed, of a green colour, and acutely ſawed on the edges; the foot-ſtalks of the leaves are bordered, and the leaves are deeply veined. This produces tufts of yellow flowers at the extremity of the ſhoots from ſpring to autumn, and frequently ripens ſeeds.

The third ſort is a low ſhrubby plant, which ſeldom riſes above three feet high, and divides into many branches; the ends of the ſhoots are beſet with green branching ſpines; the leaves are very clammy, eſpecially in warm weather; theſe are long and narrow, and ſet on without any order. The flowers are produced ſingly at the ends of the ſhoots, which are yellow, and appear in July and Auguſt.

Theſe three ſorts are too tender to live in the open air in England, ſo are placed in the green-houſe in October, and may be treated in the ſame manner as Myrtles, and other hardy green-houſe plants, which require a large ſhare of air in mild weather; and in the beginning of May the plants may be removed into the open air, and placed in a ſheltered ſituation during the ſummer ſeaſon. The ſecond and third ſorts muſt have plenty of water, being very thirſty plants.

Theſe plants are propagated by cuttings, which may be planted in any of the ſummer months, upon a bed of light earth, and ſhould be watered and ſhaded until they have taken root, which they will be in five or ſix weeks, when they muſt be taken up and planted in pots; for if they are ſuffered to ſtand long, they will make ſtrong vigorous ſhoots, and will be difficult to tranſplant afterward, eſpecially the firſt and ſecond ſorts; but there is not ſo much danger of the third, which is not ſo vigorous, nor ſo eaſy in taking root as the other. During the ſummer ſeaſon the pots ſhould be frequently removed, to prevent the plants from rooting through the holes in the bottom of the pots into the ground, which they are very apt to do when they continue long undiſturbed, and then they ſhoot very luxuriantly; and, on their being removed, theſe ſhoots, and ſometimes the whole plants, will decay.

The fourth ſort grows naturally at the Cape of Good Hope; this hath a ſhrubby ſtalk about four feet high, which divides into many ſmall branches, garniſhed with ſmall oblong leaves which ſit cloſe to them, and in ſome of the upper branches they lie over each other like the ſcales of fiſh. The flowers come out

at the end of the branches, ſtanding ſingly upon foot-ſtalks, which are about an inch long; the half florets which compoſe the border or rays, are acute-pointed and ſpread open; the diſk is compoſed of florets which are barren. This ſort is propagated by cuttings, in the ſame manner as the other ſorts, and muſt be treated in the ſame way.

OSYRIS. Lin. Gen. Plant. 978. Caſia. Tourn. Inſt. R. H. 664. tab. 488. Poets Caſia.

The CHARACTERS are,

It is male and female in different plants; the empalement of the flower is of one leaf, which is divided into three acute ſegments. The flower hath no petals, but thoſe on the male plants have three ſhort ſtamina; the female have a germen, which afterward changes to a globular berry, having a ſingle ſeed.

We know but one SPECIES of this plant, viz.

OSYRIS (*Alba*) fruteſcens baccifera. C. B. P. *Shrubby berry-bearing Poets Caſia; and by ſome, red-berried ſhrubby Caſia.*

This is a very low ſhrub, ſeldom riſing above two feet high, having ligneous branches, which are garniſhed with long narrow leaves, of a bright colour. The flowers appear in June, which are of a yellowiſh colour, and are ſucceeded by berries, which at firſt are green, and afterward turn to a bright red colour, ſomewhat like thoſe of Aſparagus.

This plant grows wild in the ſouth of France, in Spain, and ſome parts of Italy, by the ſide of roads, as alſo between the rocks, but is with great difficulty tranſplanted into gardens; nor does it thrive after being removed, ſo that the only method to obtain this plant is, to ſow the berries where they are to remain. Theſe berries commonly remain a year in the ground before the plants appear, and ſometimes they will lie two or three years, ſo that the ground ſhould not be diſturbed under three years, if the plants do not come up ſooner. Theſe ſeeds muſt be procured from the places where the plants naturally grow, for thoſe which have been brought into gardens never produce any, and it is with great difficulty they are preſerved alive.

OTHONNA. Lin. Gen. Plant. 888. Doria. Raii Meth Plant. 33. Jacobæa. Tourn. Inſt. R. H. 485. tab. 276. Ragwort.

The CHARACTERS are,

It hath a radiated flower, compoſed of hermaphrodite florets which form the diſk, and female half florets which form the rays or border; theſe are included in one common ſingle empalement of one leaf, cut into eight or ten ſegments. The hermaphrodite flowers are tubulous, indented at the top in five parts; the female half florets are ſtretched out like a tongue, and the point has three indentures which are reflexed. The hermaphrodite florets have ſhort hairy ſtamina, terminated by cylindrical ſummits, and an oblong germen ſupporting a ſlender ſtyle, crowned by a ſingle ſtigma. The female half florets have oblong germen with a ſlender ſtyle, crowned by a large bifid reflexed ſtigma. The hermaphrodite florets are ſeldom fruitful, but the female half florets have an oblong ſeed, which is ſometimes naked, and at others crowned with down; theſe ſit in the permanent empalement.

This genus of plants is ranged in the fourth ſection of Linnæus's nineteenth claſs, which includes the plants with compound flowers, whoſe female flowers are fruitful and the hermaphrodite barren.

The SPECIES are,

1. OTHONNA (*Coronopifolia*) foliis infimis lanceolatis integerrimis, ſuperioribus ſinuato-dentatis. Hort. Cliff. 419. *Othonna with ſpear-ſhaped lower leaves which are entire, and the upper ones indented in ſinuſes.* Jacobæa Africana fruteſcens coronopi folio. Hort. Amſt. 2. p. 139. *Shrubby African Ragwort, with a Hartſhorn leaf.*
2. OTHONNA (*Calthoides*) foliis cuneiformibus integerrimis ſeſſilibus, caule fruticoſo procumbente, pedunculis longiſſimis. *Othonna with entire wedge-ſhaped leaves ſitting cloſe, a ſhrubby trailing ſtalk, and very long foot-ſtalks to the flowers.* Calthoides Africana, glaſti folio. Juſſ. *African Baſtard Marygold, with a Woad leaf.*
3. OTHONNA (*Pectinata*) foliis pinnatifidis, laciniis linearibus parallelis. Hort. Cliff. 419. *Othonna with wing-pointed leaves, whoſe ſegments are narrow and parallel.* Jacobæa Africana fruteſcens, foliis abſinthii umbelliferi incanis. Hort. Amſt. 2. p. 137. tab. 69. *Shrubby African Ragwort, with hoary leaves like thoſe of the umbelliferous Wormwood.*
4. OTHONNA (*Abrotanifolia*) foliis multifido-pinnatis linearibus. Flor. Leyd. Prod. 380. *Othonna with very narrow leaves, ending in many winged points.* Jacobæa Africana fruteſcens, foliis abrotani, ſc. crithmi major & minor. Volk. Norim. 225. *Shrubby African Ragwort, with a Southernwood or Samphire leaf.*
5. OTHONNA (*Bulboſa*) foliis ovato-cuneiformibus dentatis. Lin. Sp. Plant. 926. *Othonna with oval, wedge-ſhaped, indented leaves.* Solidago foliis oblongis dentatis glabris, floribus magnis umbellatis. Burm Afr. 164. tab. 59. *Woundwort with oblong, indented, ſmooth leaves, and large flowers growing in umbels.*

The firſt ſort grows naturally in Æthiopia. This riſes with a ſhrubby ſtalk four or five feet high, dividing into ſeveral branches, garniſhed with grayiſh leaves placed without order, thoſe on their lower part being narrow and entire, but the others are indented on the edges after the manner of Hartſhorn. The flowers are produced in looſe umbels at the end of the branches; they are yellow, and are ſucceeded by downy ſeeds.

The ſecond ſort was diſcovered by the late Dr. Shaw, growing naturally near Tunis in Africa, from whence he brought the ſeeds. This ſends out many ligneous ſtalks from the root, which ſpreads out on every ſide, declining toward the ground, garniſhed with grayiſh leaves, which are narrow at their baſe, enlarging upward, and are broad at their points, where they are rounded; theſe ſit cloſe to the ſtalks. The flowers are produced upon long, thick, ſucculent foot-ſtalks at the end of the branches; they are yellow; the rays are ſharp-pointed, and not much longer than the empalement; the diſk is large, and the florets are as long as the empalement; the ſeeds are crowned with a long down.

The third ſort grows naturally at the Cape of Good Hope, from whence the ſeeds were brought to Holland, and the plants were raiſed in the Amſterdam Garden in 1699. This riſes with a ſhrubby ſtalk about the thickneſs of a man's thumb, two or three feet high, which divide into many branches, covered with a hoary down, and garniſhed with hoary leaves about three inches long and one broad, cut into many narrow ſegments almoſt to the midrib; theſe ſegments are equal and parallel, and are indented at their ends into two or three points. The flowers are produced on long foot-ſtalks which ariſe from the wings of the ſtalks; toward the end of the branches they have large yellow rays, or borders, with a diſk of florets, and are ſucceeded by oblong purple ſeeds crowned with down.

The fourth ſort grows naturally on the hills near the Cape of Good Hope, and was raiſed from ſeed in the Amſterdam Garden. This hath a low, ſhrubby, branching ſtalk; the leaves are thick like thoſe of Samphire, and are cut into many narrow ſegments. The flowers are produced on ſhort foot-ſtalks at the end of the branches; they are yellow, and ſhaped like the other ſpecies of this genus, and are ſucceeded by brown ſeeds crowned with ſoft down.

The fifth ſort grows naturally at the Cape of Good Hope. This hath a thick ſhrubby ſtalk, dividing into ſeveral branches which riſe five or ſix feet high; the leaves come out in cluſters from one point, ſpread on every ſide; they are ſmooth, narrow at their baſe, enlarging gradually to their points, which are rounded; their edges are acutely indented like thoſe of the Holly. From the center of the leaves ariſe the foot-ſtalks of the flowers, which are five or ſix inches long, branching out into ſeveral ſmaller, each ſuſtaining one yellow radiated flower, ſhaped like the former; theſe are ſucceeded by ſlender ſeeds crowned with down.

The firſt, ſecond, third, fourth and fifth ſorts, are preſerved in green-houſes through the winter, but require

quire no artificial warmth; if theſe are protected from the froſt it is ſufficient, and in mild weather they muſt have a large ſhare of free air. In the ſummer they muſt be placed abroad in a ſheltered ſituation, among other hardy exotic plants, where they will add to the variety, and flower great part of the ſeaſon. Theſe may be all propagated by cuttings during the ſummer months, which ſhould be planted upon an old hot-bed, and covered with glaſſes, ſhading them from the ſun in the heat of the day. When theſe have taken root, they ſhould be planted each into a ſeparate pot filled with ſoft loamy earth, placing them in the ſhade till they have taken new root; then they may be removed to a ſheltered ſituation, where they may remain till autumn, treating them in the ſame way as the old plants.

The ſecond ſort will live in the open air if it is planted in a warm ſituation and a dry ſoil. Some of theſe plants have endured the open air for more than twenty years in the Chelſea Garden, without protection. This is eaſily propagated by cuttings, in the ſame way as the former.

OXALIS. Lin. Gen. Plant. 515. Oxys. Tourn. Inſt. R. H. 88. tab. 19. Wood-ſorrel.

The CHARACTERS are,

The empalement of the flower is ſhort, permanent, and cut into five acute ſegments. The flower is of one petal, cut into five obtuſe indented ſegments almoſt to the bottom; it hath ten erect hairy ſtamina, terminated by roundiſh furrowed ſummits, and a germen with five angles, ſupporting five ſlender ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes a five-cornered capſule with five cells, which open longitudinally at the angles, containing roundiſh ſeeds, which are thrown out with an elaſticity on the touch when ripe.

This genus of plants is ranged in the fifth ſection of Linnæus's tenth claſs, which includes thoſe plants whoſe flowers have ten ſtamina and five ſtyles.

The SPECIES are,

1. OXALIS (*Acetoſella*) ſcapo unifloro, foliis ternatis, radice ſquamoſo-articulata. Hort. Cliff. 175. *Wood-ſorrel with one flower on a foot-ſtalk, trifoliate leaves, and a ſcaly jointed root.* Oxys flore albo. Tourn. Inſt. 88. *Wood-ſorrel with a white flower.*
2. OXALIS (*Corniculata*) caule ramoſo diffuſo, pedunculis umbelliferis. Hort. Cliff. 175. *Wood-ſorrel with a branching diffuſed ſtalk, and umbellated foot-ſtalks.* Oxys lutea. J. B. *Yellow Wood-ſorrel.*
3. OXALIS (*Stricta*) caule ramoſo erecto, pedunculis umbelliferis. Flor. Virg. 161. *Wood-ſorrel with a branching upright ſtalk, and umbellated foot-ſtalks.* Oxys lutea, Americana, erectior. Tourn. Inſt. R. H. 88. *Upright, yellow, American Wood-ſorrel.*
4. OXALIS (*Incarnata*) caule ſubramoſo bulbifero, pedunculis unifloris, foliis paſſim verticillatis foliolis obcordatis. Lin. Sp. 622. *Wood-ſorrel with branching ſtalks bearing bulbs, the leaves generally in whorls, and the ſmall leaves heart-ſhaped.* Oxys bulboſa Æthiopica minor, folio cordato, flore ex albido purpuraſcente. Tourn. Inſt. 89. *Smaller bulbous Ethiopian Wood-ſorrel, with a heart-ſhaped leaf, and a purpliſh white flower.*
5. OXALIS (*Purpurea*) ſcapo unifloro, foliis ternatis, radice bulboſâ. Hort. Cliff. 175. *Wood-ſorrel with a foot-ſtalk ſupporting one flower, trifoliate leaves, and a bulbous root.* Oxys bulboſa Africana, rotundifolia, caulibus & floribus purpureis amplis. Hort. Amſt. 1. p. 41. tab. 21. *African bulbous Wood-ſorrel, having a round leaf, and large purple ſtalks and flowers.*
6. OXALIS (*Peſ-capræ*) ſcapo umbellifero, foliis ternatis bipartitis. Lin. Sp. Plant. 434. *Wood-ſorrel with an umbelliferous ſtalk, and trifoliate leaves divided in two parts.* Oxalis bulboſa pentaphylla & hexaphylla, floribus magnis luteis & copioſis. Burm. Afr. 80. tab. 29. *Bulbous Wood-ſorrel with five or ſix leaves, and large yellow flowers in abundance.*
7. OXALIS (*Fruteſcens*) caule erecto fruticoſo, foliis ternatis, impari maximo. *Wood-ſorrel with an upright ſhrubby ſtalk, and trifoliate leaves, the middle one being very large.* Oxys lutea fruteſcens, trifolii bituminoſi facie. Plum. Cat. 2. *Yellow ſhrubby Wood-ſorrel, with the appearance of bituminous Trefoil.*
8. OXALIS (*Barreleri*) caule ramoſo erecto, pedunculis bifidis racemiferis. Lin. Sp. 624. *Wood-ſorrel with an erect branching ſtalk, and branching bifid foot-ſtalks.* Trifolium acetoſum Americanum, rubro flore. Barrel. Rar. 64. *Three-leaved American Wood-ſorrel, with a red flower.*

The firſt ſort grows naturally in moiſt ſhady woods, and cloſe to hedges in moſt parts of England, ſo is but ſeldom admitted into gardens; though whoever is fond of acid herbs in ſallads, can ſcarce find a more grateful acid in any other plant. The roots of this ſort are compoſed of many ſcaly joints, which propagate in great plenty. The leaves ariſe immediately from the roots upon ſingle long foot-ſtalks, are compoſed of three heart-ſhaped lobes, which meet in a center, where they join the foot-ſtalk; they are of a pale green and hairy; between theſe come out the flowers upon pretty long foot-ſtalks, each ſuſtaining one large white flower of the open bell ſhape. Theſe appear in April and May, and are ſucceeded by five-cornered oblong ſeed-veſſels having five cells, incloſing ſmall browniſh ſeeds; when theſe are ripe, the ſeed-veſſels burſt open at the leaſt touch, and caſt out the ſeeds to a conſiderable diſtance. This is the ſort which is directed for medicinal uſe in the diſpenſaries; but thoſe people who ſupply the market with herbs, generally bring the third ſort, which is now become common in the gardens; but this hath very little acid, ſo is unfit for the purpoſes of the other; but as it riſes with an upright branching ſtalk, ſo it is ſoon gathered and tied up in bunches; whereas the leaves of the firſt grow ſingly from the root, and require more time in gathering. There is a variety of the firſt ſort with a purpliſh flower, which grows naturally in the North of England, but, as it does not differ from it in any other reſpect, I have not enumerated it.

The ſecond ſort is an annual plant, which grows naturally in woods and ſhady places in Italy and Sicily. The root of this is long, ſlender, and fibrous; the ſtalks trail upon the ground, ſpreading out eight or nine inches wide on every ſide, dividing into ſmall branches; the leaves ſtand upon pretty long foot-ſtalks, and are compoſed of three heart-ſhaped lobes, which have deeper indentures at their points than thoſe of the firſt ſort. The flowers are yellow, growing in form of an umbel, upon pretty long ſlender foot-ſtalks, ariſing from the ſide of the branches. Theſe appear in June and July, and are ſucceeded by ſeed-veſſels near an inch long, which open with an elaſticity, and caſt out the ſeeds.

The third ſort grows naturally in Virginia and other parts of North America, from whence the ſeeds were formerly brought to Europe; but wherever this plant has been once introduced and ſuffered to ripen ſeeds, it has become a common weed. This is an annual plant, riſing with a branching herbaceous ſtalk eight or nine inches high; the leaves ſtand upon very long foot-ſtalks, and are ſhaped like thoſe of the ſecond ſort. The flowers are yellow, ſtanding in a ſort of umbel, upon long, ſlender, erect foot-ſtalks; the ſeed-veſſels and ſeeds are like thoſe of the ſecond ſort.

Theſe three ſorts require no particular culture; if the roots of the firſt ſort are taken up and tranſplanted in a ſhady moiſt border, they will thrive and multiply exceedingly; and if they are kept clean from weeds, will require no other care. If the ſeeds of the other two ſorts are ſown in an open border, the plants will riſe freely, and require no care; for if they are permitted to ſcatter their ſeeds, there will be a plentiful ſupply of the plants.

The fourth ſort hath a roundiſh bulbous root, from which come out ſlender ſtalks about ſix inches high, which divide into branches by pairs, and from the diviſions come out the foot-ſtalks of the leaves; theſe are long, ſlender, and ſuſtain a trifoliate leaf compoſed of three ſmall, roundiſh, heart-ſhaped lobes. The foot-ſtalks of the flowers are long, ſlender, and ariſe from the diviſion of the ſtalks, each ſuſtaining one purpliſh flower about the ſame ſize and ſhape as thoſe of the firſt ſort. This flowers in May, June, and July, and ſometimes produces ripe ſeeds in England. It grows naturally at the Cape of Good Hope, ſo is too tender

to

to live through the winter in the open air in England; but if it is ſheltered from hard froſt under a common hot-bed frame in winter, it will require no other protection. It propagates in plenty by offsets from the root, as alſo by bulbs, which come out from the ſide of the ſtalks.

The fifth ſort grows naturally at the Cape of Good Hope in ſuch plenty, that the earth which came from thence, in which ſome plants were brought to England, was full of it. This hath a roundiſh bulbous root, covered with a brown ſkin, ſending out ſtrong fibres which ſtrike deep into the ground; the leaves are trifoliate, compoſed of three roundiſh, large, hairy lobes, which are but little indented at the top; theſe ſtand upon long ſlender foot-ſtalks, which ariſe from a thick ſhort ſtalk, which adheres to the root. The foot-ſtalks of the flowers ariſe between the leaves from the ſtalk, each ſupporting one large purple flower; theſe appear in January and February, but are rarely ſucceeded by ſeeds here, but the roots put out offsets in great plenty, whereby it is propagated. This ſort will not thrive in winter in the open air here, ſo the roots ſhould be planted in pots, which may be ſheltered under a common frame in winter, where it may have as much free air as poſſible in mild weather, otherwiſe the leaves will draw up weak; for the leaves of this plant come out in October, and continue growing till May, when they begin to wither and decay. The roots may be tranſplanted any time after the leaves decay, till they begin to puſh out again.

The ſixth ſort is a native of the ſame country as the fifth; the roots of this are bulbous; the leaves ſtand upon long ſlender foot-ſtalks, which ariſe from a ſhort ſtalk or head; they are compoſed of three lobes, which are for the moſt part divided into two parts almoſt to their baſe. The foot-ſtalks of the flowers are five or ſix inches long, ſuſtaining ſeveral large yellow flowers ranged in form of an umbel. Theſe appear in March, and are ſometimes ſucceeded by ſeeds here. This ſort requires the ſame treatment as the fifth.

The ſeventh ſort was diſcovered by Plumier in ſome of the French colonies in America, and was ſince found growing plentifully at La Vera Cruz by the late Dr. Houſtoun, who ſent it to England. This riſes with a ſhrubby ſtalk a foot and a half high, ſending out ſeveral ſlender branches, which are garniſhed with trifoliate ſmall leaves, compoſed of three oval lobes, the middle one being twice as large as the ſide ones. Theſe are placed by pairs oppoſite, and ſometimes by threes round the ſtalk, ſtanding upon ſhort foot-ſtalks. The foot-ſtalks of the flowers ariſe from the wings of the ſtalks, are near two inches long, each ſuſtaining four or five yellow flowers, whoſe petals are not much longer than the empalement; each of theſe have a ſmaller foot-ſtalk which is crooked, ſo that the flowers hang downward.

This ſort is much tenderer than either of the former, ſo requires to be placed in a ſtove kept to a moderate degree of warmth in winter. It is propagated by ſeeds, which muſt be ſown in pots, and plunged into a moderate hot-bed; and when the plants come up, they ſhould be each planted into a ſeparate pot filled with light ſandy earth, and plunged into a freſh hot-bed, ſhading them from the ſun till they have taken new root; after which they muſt be treated in the ſame manner as other tender plants from the ſame country.

The eighth ſort grows naturally in the Brazils; for in a tub of earth which came from thence, the plants came up in plenty. This ſeldom riſes more than three or four inches high, having upright ſtalks; the leaves arec ompoſed of three pretty large hairy lobes, ſtanding on long foot-ſtalks. The flowers riſe immediately from the root, having foot-ſtalks the ſame length with thoſe of the leaves; they are bifid, ſupporting two pretty large red flowers, which are ſucceeded by oblong capſules filled with brown ſeeds.

This ſort may be propagated by offsets from the root, or by ſeeds, and requires the ſame protection as the ſixth ſort.

OX-EYE. See BUPHTHALMUM.

OXYACANTHA. See BERBERIS.

OXYS. See OXALIS.

P.

PADUS. Lin. Gen. Edit. prior. 476. Edit. 5. Prunus. 546. Ceraſus & Lauroceraſus. Tourn. Inſt. R. H. 625, 627. tab. 401, 403. The Bird-cherry, or Cherry Laurel.

The CHARACTERS are,

The empalement of the flower is bell-ſhaped, of one leaf, indented in five parts at the brim, which ſpread open. The flower hath five large roundiſh petals, which ſpread open, and are inſerted in the empalement. It hath from twenty to thirty awl-ſhaped ſtamina, which are inſerted in the empalement, terminated by roundiſh ſummits, and a roundiſh germen ſupporting a ſlender ſtyle, crowned by an entire obtuſe ſtigma. The germen afterward becomes a roundiſh fruit, incloſing an oval-pointed nut having rough furrows.

This genus of plants was by Dr. Linnæus, in the former editions of his Method, ſeparated from the Cherries, to which they had been before joined, becauſe the furrows of the nuts in this genus were obtuſe, whereas thoſe of the Cherries are acute; but there is a more obvious diſtinction between them, which is, the flowers of the Padus are ranged in a long bunch (or racemus) and thoſe of the Cherry have their foot-ſtalks ariſing from one joint; but in the laſt edition of his Method, he has joined this genus, the Cherry and Apricot, to the Plumb, making them only ſpecies of the ſame genus; in which, I think, he has exceeded the boundaries of nature; for although the Padus and Ceraſus may with propriety be joined in the ſame genus, yet theſe ought by no means to be joined to the Prunus; for it is well known, that the Cherry will not grow by grafting or budding upon the Plumb ſtock, nor the Plumb upon Cherry ſtocks, though there are no inſtances of two trees of the ſame genus, which will not grow upon each other, however different their exterior appearance may be.

It is ranged in the firſt ſection of Linnæus's twelfth claſs, which includes thoſe plants whoſe flowers have from twenty to thirty ſtamina, which are either inſerted in the empalement or petals of the flower, and but one ſtyle.

The SPECIES are,

1. PADUS (*Avium*) glandulis duobus, baſi foliorum ſubjectis. Hort. Cliff. 185. *Bird-cherry with two glands at the baſe of the leaves.* Ceraſus racemoſa, ſylveſtris, fructu non eduli. C. B. P. 451. *Branching wild Cherry with a fruit not eatable.*
2. PADUS (*Rubra*) foliis lanceolato-ovatis deciduus, petiolis biglanduloſis. tab. 196. fol. 2. *Bird-cherry with ſpear-ſhaped, oval, deciduous leaves, whoſe foot-ſtalks have two glands.* Ceraſus racemoſa ſylveſtris, fructu non eduli

eduli rubro. H. R. Par. *Branching wild Bird-cherry with a red fruit, which is not eatable, and commonly called by the gardeners, Corniſh Cherry.*

3. PADUS (*Virginiana*) foliis oblongo-ovatis ſerratis acuminatis deciduis, baſi antice glanduloſis. *Bird-cherry with oblong, oval, ſawed, acute-pointed, deciduous leaves, and glands on the fore part of the foot-ſtalk.* Ceraſi ſimilis arbuſcula Mariana, padi folio, flore albo parvo racemoſo. Pluk. Mant. 43. Cateſb. Car. 1. p. 28. *American Bird-cherry.*

4. PADUS (*Lauroceraſus*) foliis ſempervirentibus lanceolato-ovatis. Hort. Cliff. 42. *Bird-cherry with evergreen, ſpear-ſhaped, oval leaves.* Lauroceraſus. Cluſ. Hiſt. 1. p. 4. *The common Laurel.*

5. PADUS (*Luſitanica*) foliis oblongo-ovatis ſempervirentibus eglanduloſis. *Bird-cherry with oblong, oval, evergreen leaves, having glands.* Lauroceraſus Luſitanica minor. Tourn. Inſt. 628. *Smaller Portugal Laurel, called Aſarero by the Portugueſe.*

6. PADUS (*Caroliniana*) foliis lanceolatis acutè denticulatis ſempervirentibus. *Evergreen Bird-cherry with ſpear-ſhaped leaves, having ſmall acute indentures, called in America Baſtard Mahogany.*

The firſt ſort grows naturally in the hedges in Yorkſhire, and many of the northern counties in England, as alſo in ſome few places near London, but it is propagated as a flowering-ſhrub in the nurſery-gardens for ſale. This riſes with ſeveral woody ſtalks to the height of ten or twelve feet, which will grow to have ſtems nine or ten inches diameter, if they are permitted to ſtand; but as the faſhions of gardens have been frequently altering for fifty or ſixty years paſt, ſo there are few places where any of the ornamental flowering trees have been ſuffered to remain. The branches of this tree grow wide and ſcattering; they are covered with a purpliſh bark, and garniſhed with oval ſpear-ſhaped leaves placed alternate, which are ſlightly ſawed on their edges, and have two ſmall protuberances or glands at their baſe. The flowers are produced in long looſe bunches from the ſide of the branches; they have five roundiſh white petals, which are much ſmaller than thoſe of the Cherry, and are inſerted in the border of the empalement; and within theſe are a great number of ſtamina, which alſo are inſerted in the empalement. The flowers ſtand each upon a ſhort foot-ſtalk, and are ranged alternately along the principal foot-ſtalk; they have a ſtrong ſcent, which is very diſagreeable to moſt perſons. Theſe flowers appear in May, and are ſucceeded by ſmall roundiſh fruit, which are firſt green, afterward turn red, and when ripe, are black, incloſing a roundiſh furrowed ſtone or nut, which ripens in Auguſt.

The ſecond ſort grows naturally in Armenia, from whence I have received the ſeeds; but it has been many years ago propagated in the nurſery-gardens about London, where it is generally called Corniſh-cherry. This ſort has been often confounded with the firſt; many of the late writers in botany have ſuppoſed it was the ſame ſpecies, but I have raiſed both ſorts from ſeeds, and have always found the young plants to retain their difference. This riſes with a ſtrait upright ſtem more than twenty feet high; the branches are ſhorter, and grow cloſer together than thoſe of the firſt, ſo naturally form regular heads; the leaves of this are ſhorter and broader than thoſe of the other, and are not ſo rough; the flowers grow in cloſer ſhorter ſpikes, which ſtand more erect; the fruit is larger, and red when ripe. This flowers a little after the firſt ſort.

The third ſort grows naturally in Virginia, and other parts of North America. This riſes with a thick ſtem from ten to thirty feet high, dividing into many branches, which have a dark purple bark, and are garniſhed with oval leaves placed alternately on ſhort foot-ſtalks; they are of a lucid green, and ſlightly ſawed on their edges, continuing in verdure as late in the autumn as any of the deciduous trees. The flowers come out in bunches like thoſe of the ſecond ſort, and are ſucceeded by larger fruit, which is black when ripe, and is ſoon devoured by the birds. The wood of this tree is beautifully veined with black and white, and will poliſh very ſmooth, ſo is frequently uſed for cabinet work; as is alſo the wood of the firſt ſort, which is much uſed in France, where it is called, *Bois de Sainte-Lucie.*

The fourth ſort is the common Laurel, which is now ſo well known as to need no deſcription. This grows naturally about Trebiſond, near the Black Sea, and was brought to Europe about the year 1576, but is now become very common, eſpecially in the warmer parts of Europe.

The fifth ſort was brought to England from Portugal, but whether it is a native of that country, or was introduced there from ſome other country, is hard to determine. The Portugueze call it Aſeraro, or Azerero. This was ſuppoſed to have been but a low evergreen ſhrub, but by experience we find, that when it is in a proper ſoil, it will grow to a large ſize. There are at preſent ſome of the trees whoſe trunks are more than a foot diameter, and twelve or ſixteen feet high, which are not of many years ſtanding, and are well furniſhed with branches, which when young have a reddiſh bark; the leaves are ſhorter than thoſe of the common Laurel, approaching nearer to an oval form; they are of the ſame conſiſtence, and of a lucid green, which mixing with the red branches, make a beautiful appearance. The flowers are produced in long looſe ſpikes from the ſide of the branches; they are white, and ſhaped like thoſe of the common Laurel, appearing in June, and are ſucceeded by oval berries ſmaller than thoſe of the common Laurel; they are firſt green, afterward red, and when ripe are black, incloſing a ſtone like the Cherry.

The ſeeds of the ſixth ſort were ſent from Carolina, by the title of Baſtard Mahogany, from the colour of the wood, which is ſomewhat like Mahogony. This ſeems to be little more than a ſhrub, if we may judge from its growth here; the ſtalk does not riſe more than three feet high, but ſends out lateral branches, which ſpreaon every ſide, covered with a brown bark, and garniſhed with ſpear-ſhaped leaves near two inches long, and three quarters of an inch broad, with ſmall acute indentures on the edges; they ſtand alternately upon very ſhort foot-ſtalks, and are of a lucid green, continuing their verdure all the year. This has not as yet flowered in England, ſo I can give no account of it; but by the ſeeds and deſcription which I received of its flowers, it belongs to this genus.

This plant will live in the open air here, if it is planted in a warm ſituation, and ſheltered in ſevere froſt, to which, if they are expoſed, often deſtroys them, eſpecially while the plants are young; but when they have acquired ſtrength, there is no doubt of their thriving very well in the open ground in ſheltered ſituations. It may be propagated in the ſame manner as the Portugal Laurel from the berries; and if the branches are laid down they will take root, but the cuttings will not grow, ſo far as I have experienced.

The three firſt ſorts are eaſily propagated, either by the ſeeds or layers; when they are propagated by the ſeeds they ſhould be ſown in the autumn, for if they are kept out of the ground till ſpring, they ſeldom grow till the ſecond year. Theſe may be ſown upon a bed or border of good ground, in the ſame way as the Cherry-ſtones which are deſigned for ſtocks; and the young plants may be treated in the ſame manner, planting them out in a nurſery, where they may ſtand two years to get ſtrength, and then they may be tranſplanted to the places where they are to remain. They are uſually intermixed with other flowering ſhrubs, in wilderneſs work, where they add to the variety.

If they are propagated by layers, the young ſhoots ſhould be laid down in the autumn, which will have good roots by that time twelvemonth, when they may be ſeparated from the old plants, and tranſplanted into a nurſery for a year or two to get ſtrength, and may then be removed to the places where they are to grow.

The third ſort will grow to be a very large tree when it is planted in a moiſt ſoil, but in dry ground it rarely riſes to be more than twenty feet high. There have been ſome plants of late years raiſed from ſeeds which came from Carolina, which have all the appearance of the third ſort, but are of much humbler growth; whether this may proceed from their being brought from a warmer climate, ſo do not agree with the cold of our winters ſo well as that, or whether they are a different ſpecies from that, I cannot yet determine, as they have not produced fruit here.

The Laurel may be eaſily propagated by planting of the cuttings; the beſt time for doing this is in September, as ſoon as the autumnal rains fall to moiſten the ground; the cuttings muſt be the ſame year's ſhoots, and if they have a ſmall part of the former year's wood to their bottom, they will more certainly ſucceed, and form better roots. Theſe ſhould be planted in a ſoft loamy ſoil about ſix inches deep, preſſing the earth cloſe to them. If theſe are properly planted, and the ground is good, there will few of the cuttings fail; and if they are kept clean from weeds the following ſummer, they will have made good ſhoots by the following autumn, when they may be tranſplanted into a nurſery, where they may grow two years to get ſtrength, and then ſhould be removed to the places where they are to remain. Theſe plants were formerly kept in pots and tubs, and preſerved in green-houſes in winter; but afterward they were planted againſt warm walls, to preſerve them, being frequently injured by ſevere froſt. After this the plants were trained into pyramids and globes, and conſtantly kept ſheered; by which the broad leaves were generally cut in the middle, which rendered the plants very unſightly. Of late years they have been more properly diſpoſed in gardens, by planting them to border woods, and the ſides of wilderneſs quarters; for which purpoſe we have but few plants ſo well adapted, for it will grow under the drip of trees, in ſhade or ſun; and the branches will ſpread to the ground, ſo as to form a thicket; and the leaves being large, and having a fine gloſſy green colour, they ſet off the woods and other plantations in winter, when the other trees have caſt their leaves; and in ſummer they make a good contraſt with the green of the other trees. Theſe trees are ſometimes injured in very ſevere winters, eſpecially where they ſtand ſingle and are much expoſed; but where they grow in thickets, and are ſcreened by other trees, they are ſeldom much hurt; for in thoſe places it is only the young tender ſhoots which are injured, and there will be new ſhoots produced immediately below theſe to ſupply their place, ſo that in one year the damage will be repaired. But whenever ſuch ſevere winters happen, theſe trees ſhould not be cut or pruned till after the following Midſummer; by which time it will appear what branches are dead, which may then be cut away, to the places where the new ſhoots are produced; for by haſtily cutting theſe trees in the ſpring, the drying winds have free ingreſs to the branches, whereby the ſhoots ſuffer as much, if not more, than they had done by the froſt.

Theſe trees are alſo very ornamental, when they are mixed with other evergreen trees, in forming of thickets, or to ſhut out the appearance of diſagreeable objects; for the leaves being very large, make a very good blind, and are equally uſeful for ſcreening from winds; ſo that when they are planted between flowering-ſhrubs, they may be trained ſo as to fill up the vacancies in the middle of ſuch plantations; and will anſwer the purpoſe of ſcreening in the winter, and ſhutting out the view through the ſhrubs in all ſeaſons: there are alſo many other purpoſes to which this tree may be applied, ſo as to render it very ornamental.

In warmer countries this tree will grow to a large ſize, ſo that in ſome parts of Italy there are large woods of them; but we cannot hope to have them grow to ſo large ſtems in England; for ſhould theſe trees be pruned up, in order to form them into ſtems, the froſt would then become much more hurtful to them than in the manner they uſually grow, with their branches to the ground: however, if the trees are planted pretty cloſe together in large thickets, and permitted to grow rude, they will defend each other from the froſt, and they will grow to a conſiderable height: an inſtance of which is now in that noble plantation of evergreen trees, made by his Grace the Duke of Bedford at Wooburn-abbey, where there is a conſiderable hill covered entirely with Laurels; and in the other parts of the ſame plantation, there are great numbers of theſe intermixed with the other evergreen trees, where they are already grown to a conſiderable ſize, and make a noble appearance.

There are ſome perſons who propagate theſe trees from their berries, which is certainly the beſt way to obtain good plants; for thoſe which come from ſeeds have a diſpoſition to an upright growth, whereas almoſt all thoſe which are raiſed from cuttings or layers, incline more to an horizontal growth, and produce a greater number of lateral branches. When any perſon is deſirous to propagate this tree by ſeeds, the berries muſt be guarded from the birds, otherwiſe they will devour them before they are perfectly ripe, which is ſeldom earlier than the latter end of September, or the beginning of October, for they ſhould hang until the outer pulp is quite black. When theſe berries are gathered, they ſhould be ſown ſoon after; for when they are kept out of the ground till ſpring, they frequently miſcarry; and there will be no hazard in ſowing them in the autumn, provided they are put in a dry ſoil; and if the winter ſhould prove ſevere, the bed in which they are ſown ſhould be covered with rotten tan, ſtraw, Peas-haulm, or any light covering, to prevent the froſt from penetrating of the ground. The beſt way will be to ſow the berries in rows at about ſix inches diſtance, and one inch aſunder in the rows; if drills are made about three inches deep, and the berries ſcattered in them, and the earth drawn over them, it will be a very good method. The following ſpring the plants will appear, when they ſhould be kept clean from weeds; and if the ſeaſon ſhould prove dry, if they are duly watered, the plants will make ſo good progreſs as to be fit for tranſplanting the following autumn, when they ſhould be carefully taken up, and planted in a nurſery, placing them in rows at three feet aſunder, and the plants one foot diſtance in the rows. In this nurſery they may remain two years, by which time they will be fit to tranſplant where they are deſigned to remain.

The beſt ſeaſon for tranſplanting theſe plants is in the autumn, as ſoon as the rain has prepared the ground for planting; for although they often grow when removed in the ſpring, yet thoſe do not take ſo well, nor make ſo good progreſs as thoſe which are removed in the autumn, eſpecially if the plants are taken from a light ſoil, which generally falls away from their roots; but if they are taken up with balls of earth to their roots, and removed but a ſmall diſtance, there will be no danger of tranſplanting them in the ſpring, provided it is done before they begin to ſhoot; for as the plants will ſhoot very early in the ſpring, ſo if they are removed after thay have ſhot, the ſhoots will decay, and many times the plants entirely fail.

There are ſome perſons who, of late, have baniſhed theſe plants from their gardens, as ſuppoſing them poſſeſſed of a poiſonous quality, becauſe the diſtilled water has proved ſo in many inſtances; but however the diſtilled water may have been found deſtructive to animals, yet from numberleſs experiments which have been made both of the leaves and fruit, it hath not appeared that there is the leaſt hurtful quality in either; ſo that the whole muſt be owing to the oil, which may be carried over in diſtillation.

The berries have been long uſed to put into brandy, to make a ſort of ratafia, and the leaves have alſo been put into cuſtards, to give them an agreeable flavour; and although theſe have been for many years much uſed, yet there hath been no one inſtance of

their having done the leaſt injury; and as to the berries, I have known them eaten in great quantities without prejudice.

There are ſome perſons who have grafted the Laurel upon Cherry ſtocks, with deſign to enlarge the trees, but although they will take very well upon each other, yet they ſeldom make much progreſs when either the Laurel is grafted on the Cherry, or the Cherry upon the Laurel; ſo that it is only a thing of curioſity, attended with no real uſe: and I would recommend to perſons who have this curioſity, to graft the Laurel upon the Corniſh Cherry, rather than any other ſort of ſtock, becauſe the graft will unite better with this; and as it is a regular tree and grows large, ſo it will better anſwer the purpoſe of producing large trees.

The Portugal Laurel may be propagated in the ſame way as the common Laurel, either by cuttings, layers, or ſeeds. If the cuttings are planted at the ſame ſeaſon, and in the ſame way as hath been directed for the common Laurel, they will take root very freely; or if the young branches are laid in the autumn, they will take root in one year, and may then be removed into a nurſery, where they may grow a year or two get ſtrength, and then tranſplanted where they are to remain.

But although both theſe methods are very expeditious for the propagating theſe plants, yet I would recommend the raiſing them from the berries, eſpecially where they are deſigned for tall ſtandards; for the plants which are propagated by cuttings and layers, put out more lateral branches and become buſhy, but are not ſo well inclined to grow upright, as thoſe which come from ſeeds: and as there are now many trees in the Engliſh gardens which produce plenty of berries every year, ſo if they are guarded from birds till they are ripe, there may be a ſupply of them ſufficient to raiſe plants enough without propagating them any other way. Theſe berries muſt be ſown in the autumn, and treated in the ſame way as the common Laurel.

This tree delights in a gentle loamy ſoil, which is not too wet nor over dry, though it will grow upon almoſt any ſoil: but the plants do not make ſo great progreſs, nor appear ſo beautiful, when planted in a very dry ſoil, or in ground that is too wet. The time of tranſplanting this, is the ſame as for the common Laurel.

This tree is much hardier than the common Laurel, for in the ſevere froſt of the year 1740, when great numbers of Laurels were entirely killed, and moſt of them loſt their verdure, this remained unhurt in perfect verdure, which renders it more valuable; and as by the appearance of ſome trees now growing in the gardens, they ſeem as if they will grow to a large ſize, ſo it is likely to be one of the moſt ornamental evergreens we have.

PÆONIA. Tourn. Inſt. R. H. 273. tab. 146. Lin. Gen. Plant. 600. [ſo called from Pæon the phyſician, becauſe he is ſaid to have cured Pluto, when wounded by Hercules, with this herb.] The Peony; in French, *Pivoine*.

The CHARACTERS are,

The flower has a permanent empalement, compoſed of five concave reflexed leaves, unequal in ſize and poſition. The flower hath five large, roundiſh, concave petals which ſpread open, and a great number of ſhort hairy ſtamina, terminated by large, oblong, four-cornered ſummits, with two, three, or four oval, erect, hairy germen in the center, having no ſtyles, but have oblong, compreſſed, obtuſe, coloured ſtigmas. The germen afterward become ſo many oval, oblong, reflexed, hairy capſules, having one cell, open longitudinally, containing ſeveral oval, ſhining, coloured ſeeds, fixed to the furrow.

This genus of plants is ranged in the ſecond ſection of Linnæus's thirteenth claſs, which contains thoſe plants whoſe flowers have many ſtamina and two germen or ſtyles.

The SPECIES are,

1. PÆONIA (*Maſcula*) foliis lobatis ex ovato-lanceolatis. Haller. Helv. 311. *Peony with lobated leaves which are oval and ſpear-ſhaped.* Pæonia folio nigricante ſplendido, quæ mas. C. B. P. 323. *Peony with dark ſhining leaves, otherwiſe male Peony.*
2. PÆONIA (*Fœminea*) foliis difformiter lobatis. Haller. Helvet. 311. *Peony with difformed lobated leaves.* Pæonia communis, vel fœmina. C. B. P. 323. *Common or female Peony.*
3. PÆONIA (*Peregrina*) foliis difformiter lobatis, lobis inciſis, petalis florum rotundioribus. *Peony with difformed lobated leaves which are cut, and rounder petals to the flower.* Pæonia peregrina, flore ſaturatè rubente. C. B. P. 324. *Foreign Peony with a deep red flower.*
4. PÆONIA (*Hirſuta*) foliis lobatis, lobis lanceolatis integerrimis. *Peony with lobated leaves, whoſe lobes are ſpear-ſhaped and entire.* Pæonia fœmina flore pleno rubro majore. C. B. P. 324. *Female Peony with a larger double red flower.*
5. PÆONIA (*Tartarica*) foliis difformiter lobatis pubeſcentibus. Tab. 199. *Peony with difformed lobated leaves, which are downy.*
6. PÆONIA (*Luſitanica*) foliis lobatis, lobis ovatis infernè incanis. *Peony with lobated leaves, whoſe lobes are oval and hoary on their under ſide.* Pæonia Luſitanica, flore ſimplici odoro. Juſſ. *Peony of Portugal with a ſingle ſweet flower.*

The firſt ſort here enumerated, is the common male Peony, which grows naturally in the woods on the Helvetian mountains. The root of this is compoſed of ſeveral oblong knobs, ſhaped like the dugs of a cow, which hang by ſtrings, faſtened to the main head; the ſtalks riſe about two feet and a half high, which are garniſhed with leaves compoſed of ſeveral oval lobes, ſome of which are cut into two or three ſegments; they are of a lucid green on their upper ſide, but are hoary on their under. The ſtalks are terminated by large ſingle flowers, compoſed of five or ſix large roundiſh red petals, incloſing a great number of ſtamina, terminated by oblong yellow ſummits. In the center is ſituated two, three, or ſometimes five germen, which join together at their baſe; they are covered with a whitiſh hairy down; theſe afterward ſpread aſunder, and open longitudinally, expoſing the roundiſh ſeeds, which are firſt red, then purple, and when perfectly ripe turn black. The flowers appear in May, and the ſeeds ripen in the autumn.

There is one variety of this with pale, and another with white flowers, as alſo one whoſe leaves have larger lobes; but as theſe are generally ſuppoſed to be only ſeminal variations, ſo I have not enumerated them here.

The ſecond ſort is called the female Peony; the roots of this are compoſed of ſeveral roundiſh thick knobs or tubers, which hang below each other, faſtened with ſtrings; the ſtalks are green, and riſe about the ſame height as the former; theſe are garniſhed with leaves, compoſed of ſeveral unequal lobes, which are variouſly cut into many ſegments; they are of a paler green than thoſe of the firſt, and are hairy on their under ſide; the flowers are ſmaller, and of a deeper purple colour. It flowers at the ſame time as the firſt.

There are ſeveral varieties of this ſort with double flowers, which are cultivated in the Engliſh gardens; theſe differ in the ſize and colour of their flowers, but are ſuppoſed to have been accidentally obtained from ſeeds.

The third ſort grows naturally in the Levant; the roots of this are compoſed of roundiſh knobs like thoſe of the ſecond ſort, as are alſo the leaves, but are of a thicker ſubſtance; the ſtalks do not riſe ſo high, and the flowers have a greater number of petals. This flowers a little after the other. The large double purple Peony, I ſuſpect is a variety of this ſort.

The fourth ſort hath roots like the ſecond; the ſtalks are taller, and of a purpliſh colour; the leaves are much longer, the lobes are ſpear-ſhaped and entire; the flowers are large, and of a deep red colour. This flowers at the ſame time as the two firſt ſorts.

The

The ſeeds of the fifth ſort were brought from the Levant, and from them there were plants raiſed, which produced ſingle, and others with double flowers, of the ſame ſhape, ſize, and colour. The roots of theſe are compoſed of oblong fleſhy tubers or knobs; they are of a pale colour, and hang by ſtrings like the other ſpecies. The ſtalks riſe about two feet high, which are of a pale green, and are garniſhed with leaves compoſed of ſeveral lobes, which are irregular in ſhape and ſize, ſome of them having but ſix, and others have eight or ten ſpear-ſhaped lobes; theſe are ſome cut into two, ſome three ſegments, and others are entire; they are of a pale green, and are downy on their under ſide. The ſtalks are terminated by one flower of a bright red colour, a little leſs than that of the female Peony, and have fewer petals; they have a great number of ſtamina, and ſometimes two, at others three germen, like thoſe of the female Peony, but ſhorter and whiter. This flowers a little later than the common Peony.

The ſeeds of the ſixth ſort were ſent to the Chelſea Garden by Dr. de Juſſieu, who brought them from Portugal, where the plants grow naturally. The root of this ſort is not compoſed of roundiſh tubers or knobs, but hath two or three long, taper, forked fangs like fingers. The ſtalk riſes little more than a foot high, and is garniſhed with leaves compoſed of three or four oval lobes, of a pale colour on their upper ſide, and hoary on their under; the ſtalk is terminated by a ſingle flower, which is of a bright red colour, ſmaller than either of the former, and an agreeable ſweet ſcent. This flowers about the ſame time with the common ſort.

The firſt of theſe ſorts is chiefly propagated for the roots, which are uſed in medicine; for the flowers being ſingle, do not afford near ſo much pleaſure as thoſe with double flowers, nor will they abide near ſo long in beauty.

All the ſorts with double flowers are preſerved in curious gardens for the beauty of their flowers, which, when intermixed with other large growing plants in the borders of large gardens, will add to the variety; and the flowers are very ornamental in baſons or flower-pots, when placed in rooms.

They are all extremely hardy, and will grow in almoſt any ſoil or ſituation, which renders them more valuable; for they will thrive under the ſhade of trees, and in ſuch places they will continue much longer in beauty.

They are propagated by parting their roots, which multiply very faſt. The beſt ſeaſon for tranſplanting them is toward the latter end of Auguſt, or the beginning of September; for if they are removed after their roots have ſhot out new fibres, they ſeldom flower ſtrong the ſucceeding ſummer.

In parting theſe roots, you ſhould always obſerve to preſerve a bud upon the crown of each offset, otherwiſe they will come to nothing; nor ſhould you divide the roots too ſmall (eſpecially if you have regard to their blowing the following year) for when their offsets are weak, they many times do not flower the ſucceeding ſummer, or at leaſt produce but one flower upon each root: but where you would multiply them in quantities, you may divide them as ſmall as you pleaſe, provided there be a bud to each offset; but then they ſhould be planted in a nurſery-bed for a ſeaſon or two to get ſtrength, before they are placed in the flower-garden.

The ſingle ſorts may be propagated from ſeeds (which they generally produce in large quantities, where the flowers are permitted to remain) which ſhould be ſown in the autumn ſoon after they are ripe, upon a bed of light freſh earth, covering them over about half an inch thick with the ſame light earth. The ſpring following the plants will come up, when they ſhould be carefully cleared from weeds, and in very dry weather refreſhed with water, which will greatly forward their growth. In this bed they ſhould remain two years before they are tranſplanted, obſerving in autumn, when the leaves are decayed, to ſpread ſome freſh rich earth over the beds about an inch thick, and conſtantly to keep them clear from weeds. When you tranſplant them, (which ſhould be done in September) you muſt prepare ſome beds of freſh light earth, which ſhould be dug, and well cleaned from the roots of all noxious weeds; then plant the roots therein ſix inches aſunder, and about three inches deep. In theſe beds they may remain until they flower, after which they may be tranſplanted where you deſign they ſhould grow. It is very probable there may be ſome varieties obtained from the ſeeds of theſe plants, as is common in moſt other flowers; ſo that thoſe which produce beautiful flowers, may be placed in the flower-garden, but ſuch as continue ſingle or ill coloured, may be planted in beds to propagate for medicinal uſe.

The Portugal Peony may alſo be propagated either by ſeeds, or parting the roots, in the ſame manner as the other ſorts, but ſhould have a lighter ſoil and a warmer ſituation. The flowers of this kind are ſingle, but ſmell very ſweet, which renders it worthy of a place in every good garden.

PALIURUS. Tourn. Inſt. R. H. 616. tab. 387. Rhamnus. Lin. Gen. Plant. 235. Chriſt's Thorn.

The CHARACTERS are,

The flower has no empalement. It hath five petals which are ranged circularly, and end in acute points. It hath five ſtamina, which are inſerted in the ſcales under the petals, terminated by ſmall ſummits, and a roundiſh trifid germen, ſupporting three ſhort ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes a buckler-ſhaped nut divided into three cells, each containing one ſeed.

This genus of plants is by Dr. Linnæus joined to the Rhamnus, which is ranged in the firſt ſection of his fifth claſs, in which are placed thoſe plants whoſe flowers have five ſtamina and one ſtyle; but as the flowers of this have three ſtyles, ſo it ſhould be ranged in his third ſection.

We know but one SPECIES of this genus, viz.

PALIURUS (*Spina Chriſti.*) Dod. Pempt. 848. *Chriſt's Thorn.* Rhamnus aculeis geminatis, inferiore reflexo, floribus trigynis. Hort. Cliff. 69. *Prickly Buckthorn with double thorns, the under ones of which are reflexed, and flowers containing three germina.*

This plant grows naturally in the hedges in Paleſtine; it riſes with a pliant ſhrubby ſtalk to the height of eight or ten feet, ſending out many weak ſlender branches, garniſhed with oval leaves placed alternately, ſtanding upon foot-ſtalks near one inch long; theſe have three longitudinal veins, and are of a pale green. The flowers come out at the wings of the ſtalk in cluſters, almoſt the length of the young branches; they are of a greeniſh yellow colour, and appear in June, and are ſucceeded by broad, roundiſh, buckler-ſhaped ſeed-veſſels, which have borders like the brims of a hat, the foot-ſtalks being faſtened to the middle; theſe have three cells, each containing one ſeed.

This is by many perſons ſuppoſed to be the plant, from which the crown of thorns which was put upon the head of our Saviour, was compoſed; the truth of which is ſupported by many travellers of credit, who affirm that this is one of the moſt common ſhrubs in the country of Judæa; and from the pliableneſs of its branches, which may eaſily be wrought into any figure, it may afford a probability.

This ſhrub grows wild in moſt parts of the Levant, as alſo in Italy, Spain, Portugal, and the ſouth of France, eſpecially near Montpelier, from whence their ſeeds may be procured, for they do not ripen in England. Theſe ſeeds ſhould be ſown as ſoon as poſſible after they arrive, on a bed of light earth, and the plants will come up the following ſpring; but when the ſeeds are kept out of the ground till ſpring, they will not come up till the next year, and very often fail; therefore it is much the beſt way to ſow them in the autumn. Theſe ſeedling plants may be tranſplanted the following ſeaſon into a nurſery to get ſtrength, before they are planted out for good.

It may alſo be propagated by laying down its tender branches in the ſpring of the year, which if carefully ſupplied with water in dry weather, will take root in a year's time, and may then be taken off from the old plant, and tranſplanted where they are to remain.

The beſt time for tranſplanting this plant is in autumn, ſoon after the leaves decay, or the beginning of April, juſt before it begins to ſhoot, obſerving to lay ſome mulch upon the ground about their roots to prevent them from drying, as alſo to refreſh them now and then with a little water until they have taken freſh root, after which they will require but very little care. They are very hardy, and will grow to be ten or twelve feet high, if planted in a dry ſoil and a warm ſituation. There is little beauty in this plant, but it is kept in gardens as a curioſity.

PALMA. Plum. Gen. 1. Raii Meth. Plant. 135. The Palm-tree.

The CHARACTERS are,

It hath male and female flowers in ſome ſpecies on the ſame plant, and in others on different plants; the empalement of the male flowers are divided into three parts. The flowers of ſome ſpecies have three petals, and ſix ſtamina terminated by oblong ſummits, with an obſolete germen, ſupporting three ſhort ſtyles, crowned by acute ſtigmas; theſe are barren. The female flowers have a common ſheath, but no empalement; they have ſix ſhort petals, and an oval germen ſitting upon an awl-ſhaped ſtyle, crowned by a trifid ſtigma. The germen afterward becomes a fruit of various forms and ſizes in different ſpecies.

Mr. Ray ranges this genus in the front of his trees and ſhrubs, which have male flowers at remote diſtances from the fruit, ſometimes on the ſame, and at others on different trees. Dr. Linnæus has ſeparated the ſpecies under the following genera, Chamærops, Boraſſus, Corypha, Cocos, Phœnix, Areca, and Elate, ranging them in his Appendix.

The SPECIES are,

1. PALMA (*Dactylifera*) frondibus pinnatis, foliolis anguſtioribus aculeis terminalibus. *Palm-tree with winged leaves, whoſe lobes are narrow, terminated by ſpines.* Palma major. C. B. P. 506. *The greater Palm or Date-tree.*
2. PALMA (*Cocos*) frondibus pinnatis, foliolis replicatis, ſpadicibus alaribus, fructu maximo anguloſo. *Palm-tree with winged leaves, whoſe lobes are folded back, foot-ſtalks proceeding from the ſides of the branches, and a large angular fruit.* Palma Indica, coccifera, anguloſa. C. B. P. 502. *Indian Palm-tree having an angular fruit, commonly called Cocoa-nut.*
3. PALMA (*Spinoſa*) frondibus pinnatis, ubique aculeatis, aculeis nigricantibus fructu majore. *Palm-tree with winged leaves, which are every where armed with black ſpines, and bearing a larger fruit.* Palma tota ſpinoſa major, fructu pruniformi. Sloan. Cat. Jam. 177. *Greater Palm-tree which is all over prickly, and a Plum-ſhaped fruit, commonly called great Macaw-tree.*
4. PALMA (*Altiſſima*) frondibus pinnatis, caudice æquali, fructu minore. *Palm-tree with winged leaves, an equal trunk, and a ſmaller fruit.* Palma altiſſima non ſpinoſa, fructu pruniformi minore racemoſo ſparſo. Sloan. Cat. Jam. 176. *The talleſt Palm-tree having no ſpines, and a ſmaller Plum-ſhaped fruit, growing in long bunches ſcatteringly, commonly called the Cabbage-tree.*
5. PALMA (*Gracili*) frondibus pinnatis, caudice tereti aculeato, fructu minore. *Palm-tree with winged leaves, a taper prickly ſtalk, and a ſmaller fruit.* Palma ſpinoſa minor, caudice gracili, fructu pruniformi, minimo rubro. Sloan. Cat. Jam. 178. *Smaller prickly Palm-tree with a ſlender ſtalk, and the leaſt, red, Plum-ſhaped fruit, called Prickly Pole.*
6. PALMA (*Oleoſa*) frondibus pinnatis, foliolis linearibus planis, ſtipitibus ſpinoſis. *Palm-tree with winged leaves, having narrow plain lobes, and prickly midribs.* Palma foliorum pediculis ſpinoſis, fructu pruniformi luteo oleoſo. Sloan. Cat. Jam. 175. *Palm-tree with prickly foot-ſtalks to the leaves, and a yellow, Plum-ſhaped, oily fruit, commonly called oily Palm-tree.*
7. PALMA (*Prunifera*) frondibus pinnato-palmatis plicatis, caudice ſquamato. *Palm-tree with hand-ſhaped winged leaves which are plaited, and a ſcaly ſtalk.* Palma Braſilienſis prunifera, folio plicatili ſeu flabelliformi, caudici ſquamato. Raii Hiſt. 1368. *Plum-bearing Palm-tree of the Braſils, with a plaited or fan-ſhaped leaf, and a ſcaly ſtalk, called Palmetto or Thatch.*
8. PALMA (*Polypodifolia*) frondibus pinnatis, foliolis lineari-lanceolatis, petiolis ſpinoſis. Hort. Cliff. 482. *Palm-tree with winged leaves, whoſe lobes are linearly ſpear-ſhaped, and prickly foot-ſtalks.* Palma Japonica, ſpinoſis pediculis, polypodii folio. Boerh. Ind. alt. 2. 170. *Palm-tree of Japan with prickly foot-ſtalks, and a Polypody leaf, or the Sago-tree.*
9. PALMA (*Pumila*) fructu clavato polypyreno. Trew. Dec. tab. 26. *Palm-tree with a club-ſhaped fruit containing many ſeeds.* Palma Americana foliis polygonati brevioribus, læviter ſerratis, & nonnihil ſpinoſis, trunco craſſo. Pluk. Phyt. tab. 103. fig. 2. & tab. 309. fig. 5. *American Palm-tree, with ſhorter Solomon's Seal leaves which are lightly ſawed and ſomewhat prickly, with a thick trunk.*
10. PALMA (*Americana*) frondibus pinnatis, foliolis lanceolatis plicatis geminatis ſparſis. *Palm-tree with winged leaves, whoſe lobes are ſpear-ſhaped, plaited, and come out by pairs from one point, ſtanding thinly along the midrib.* Palma altiſſima, non ſpinoſa, fructu oblongo. Houſt. MSS. *Talleſt Palm-tree having no prickles, and bearing an oblong fruit.*
11. PALMA (*Draco*) foliis ſimplicibus enſiformibus integerrimis flaccidis. *Palm-tree with ſingle, ſword-ſhaped, entire flaccid leaves.* Palma prunifera foliis yuccæ, fructu in racemis congeſtis ceraſi formi, duro, cinereo, piſi magnitudine, cujus lacryma ſanguis draconis eſt dicta. Com. Cat. Amſt. *Plum-bearing Palm-tree, with leaves like thoſe of the Yucca, and fruit gathered in long bunches, which are Cherry-ſhaped, Aſh-coloured, hard, and the ſize of Peas, whoſe tears are called Dragons Blood, commonly called Dragon-tree.*

The firſt ſort here mentioned is the common Date-tree, which grows plentifully in Africa, and ſome of the eaſtern countries, from whence the fruit is brought to England. This riſes to a great height in the warm countries; the ſtalks are generally full of rugged knots, which are the veſtiges of the decayed leaves, for the trunks of theſe trees are not ſolid like other trees, but the center is filled with pith, round which is a tough bark full of ſtrong fibres while young, but as the trees grow old, ſo this bark hardens and becomes ligneous; to this bark the leaves are cloſely joined, which in the center riſe erect, being cloſely folded or plaited together, but after they are advanced above the vagina which ſurrounds them, they expand very wide on every ſide the ſtem, and, as the older leaves decay, the ſtalk advances in height. The leaves of theſe trees, when grown to a ſize for bearing fruit, are ſix or eight feet long, and may be termed branches; (for the trees have no other) theſe have narrow long leaves (or pinnæ) ſet on alternately their whole length. The ſmall leaves or lobes are toward the baſe three feet long, and little more than one inch broad; they are cloſely folded together when they firſt appear, and are wrapped round by brown fibres or threads, which fall off as the leaves advance, making way for them to expand; theſe never open flat, but are hollow like the keel of a boat, with a ſharp ridge on their backſide; they are very ſtiff, and, when young, of a bright green, ending with a ſharp black ſpine. Theſe trees have male flowers on different plants from thoſe which produce the fruit, and there is a neceſſity for ſome of the male trees to grow near the female trees to render them fruitful; or, at leaſt, to impregnate the ovary of the ſeed, without which the ſtones, which are taken out of the fruit, will not grow. Moſt of the old authors, who have mentioned theſe trees, affirm, that unleſs the female or fruit-bearing Palm-trees have the aſſiſtance

of the male, they are barren; therefore in ſuch places where there are no male trees near the female, the inhabitants cut off the bunches of male flowers when they are juſt opened, and carry them to the female trees, placing them on the branches near the female flowers to impregnate them; which, they all agree, has the deſired effect, rendering the trees fruitful, which would otherwiſe have been barren. Pere Labat in his account of America, mentions a ſingle tree of this kind, growing near a convent in the iſland of Martinico, which produced a great quantity of fruit, which came to maturity enough for eating; but, as there was no other tree of this kind in the iſland they were deſirous to propagate it, and accordinly planted great numbers of the ſtones for ſeveral years, but not one of them grew; therefore after having made ſeveral trials without ſucceſs, they were obliged to ſend to Africa, where theſe plants grew in plenty, for ſome of the fruit; the ſtones of which they planted, and raiſed many of the plants. He then conjectures, that the ſingle tree before-mentioned, might be probably ſo far impregnated by ſome neighbouring Palm-trees of other ſpecies, as to render it capable of ripening the fruit, but not ſufficient to make the ſeeds prolific, as is the caſe when animals of different kinds copulate.

The flowers of both ſexes come out in very long bunches from the trunk between the leaves, and are covered with a ſpatha, (or ſheath) which opens and withers; thoſe of the male have ſix ſhort ſtamina, with narrow four-cornered ſummits filled with farina. The female flowers have no ſtamina, but have a roundiſh germen, which afterward becomes an oval berry, with a thick pulp incloſing a hard oblong ſtone, with a deep furrow running longitudinally. The bunches of fruit are ſometimes very large.

This ſpecies of Palm is by Dr. Linnæus titled Phœnix, which is the Greek name of it, and he makes it a diſtinct genus. There are ſome varieties, if not different ſpecies of this tree, in the warm countries; but as we cannot expect to ſee the trees in perfection in our country, it is not likely we ſhall come to any certainty how they differ from each other.

Theſe plants may be eaſily produced from the ſeeds taken out of the fruit, (provided they are freſh) which ſhould be ſown in pots filled with light rich earth, and plunged into a moderate hot-bed of tanners bark, which ſhould be kept in a moderate temperature of heat, and the earth frequently refreſhed with water.

When the plants are come up, they ſhould be each planted into a ſeparate ſmall pot filled with the ſame light rich earth, and plunged into a hot-bed again, obſerving to refreſh them with water, as alſo to let them have air in proportion to the warmth of the ſeaſon, and the bed in which they are placed. During the ſummer time they ſhould remain in the ſame hot-bed, but in the beginning of Auguſt you ſhould let them have a great ſhare of air to harden them againſt the approach of winter; for if they are too much forced, they will be ſo tender as not to be preſerved through the winter without much difficulty, eſpecially if you have not the conveniency of a bark-ſtove to keep them in.

The beginning of October you muſt remove the plants into the ſtove, placing them where they may have a moderate ſhare of heat (theſe being ſomewhat tenderer, while young, than after they have acquired ſome ſtrength;) though indeed they may be ſometimes preſerved alive in a cooler ſituation, yet their progreſs would be ſo much retarded, as not to recover their vigour the ſucceeding ſummer. Nor is it worth the trouble of raiſing theſe plants from ſeeds, where a perſon has not the conveniency of a ſtove to forward their growth; for where this is wanting, they will not grow to any tolerable ſize in twenty years.

Whenever theſe plants are removed, (which ſhould be done once a year) you muſt be very careful not to cut or injure their large roots, which is very hurtful to them; but you ſhould clear off all the ſmall fibres which are inclinable to mouldineſs, for if theſe are left on, they will in time decay, and hinder the freſh fibres from coming out, which will greatly retard the growth of the plants.

The ſoil in which theſe plants ſhould be placed, muſt be compoſed in the following manner, viz. half of light freſh earth taken from a paſture ground, the other half ſea-ſand, and rotten dung or tanners bark, in equal proportion; theſe ſhould be carefully mixed, and laid in a heap three or four months at leaſt before it is uſed, but ſhould be often turned over to prevent the growth of weeds and to ſweeten the earth.

You ſhould alſo obſerve to allow them pots proportionable to the ſizes of the plants; but you muſt never let them be too large, which is of worſe conſequence than if they are too ſmall. During the ſummer ſeaſon they ſhould be frequently refreſhed with water, but you muſt be careful not to give it in too great quantities; and in winter they muſt be now and then refreſhed, eſpecially if they are placed in a warm ſtove, otherwiſe they will require very little water at that ſeaſon.

Theſe plants are very ſlow growers, even in their native countries, notwithſtanding they arrive to a great magnitude; for it has been often obſerved by ſeveral of the old inhabitants of thoſe countries, that the plants of ſome of theſe kinds have not advanced two feet in height in ten years; ſo that when they are brought into theſe countries, it cannot be expected they ſhould advance very faſt, eſpecially where there is not due care taken to preſerve them warm in winter. But however ſlow of growth theſe plants are in their native countries, yet they may be with us greatly forwarded, by placing the pots into a hot-bed of tanners bark, which ſhould be renewed as often as is neceſſary, and the plants always preſerved therein both winter and ſummer, obſerving to ſhift them into larger pots as they advance in growth, as alſo to ſupply them with water properly, with which management I have had ſeveral of them come on very faſt; for I obſerve the roots of theſe plants are very apt to root into the bark, if their pots remain a conſiderable time without ſhifting, where they meet with a gentle warmth, and the moiſture ariſing from the fermentation of the bark doth preſerve their fibres plump and vigorous; but although the leaves grow tall in a few years with this management, yet it is long before the plants come to have any ſtems. There are plants now in the Chelſea Garden, whoſe leaves are ſeven feet long, which were raiſed from ſeeds more than twenty years ago, and their ſtems are not two feet high, ſome of which have produced ſmall bunches of male flowers.

The ſecond ſort here mentioned, is the Cocoa-nut, whoſe fruit are frequently brought to England, ſome of which are of a large ſize. The branches of this tree are winged like thoſe of the former, but the ſmall leaves or lobes are three times as broad; they open flat, their borders fold backward, and are of a lighter green than thoſe of the firſt ſort. The whole leaf (or branch) is often twelve or fourteen feet long; the male flowers grow in different parts of the ſame tree with the fruit, proceeding from the trunk between the leaves; they are diſpoſed in long bunches, as are alſo the female, the nuts growing in very large cluſters, which are covered with a thick fibrous coat adhering cloſely to them. The nuts are large, oval, and have three holes in the ſhell at the top; the kernel is firm, white within, and the ſhell contains a quantity of pale juice, which is called the milk.

The Cocoa-nut is cultivated in moſt of the inhabited parts of the Eaſt and Weſt-Indies, but is ſuppoſed a native of the Maldives, and the deſert iſlands of the Eaſt-Indies, from whence it is ſuppoſed it hath been tranſported to all the warm parts of America; for it is not found in any of the inland parts, nor any where far diſtant from ſettlements. It is one of the moſt uſeful trees to the inhabitants of America, who have many of the common neceſſaries of life from it. The bark of the tree is made into cordage, the ſhell of the

nut into drinking bowls, the kernel of the nut affords them a wholſome food, and the milk contained in the ſhell a cooling liquor. The leaves of the trees are uſed for thatching their houſes, and are alſo wrought into baſkets, and moſt other things which are made of Oſiers in Europe.

This tree is propagated by planting of the nuts, which in ſix weeks or two months after planting will come up, provided they are freſh and thoroughly ripe, which is what few of them are which are brought to England; for they always gather them before they are ripe, that they may keep during their paſſage; ſo that the beſt way to bring nuts into England for planting, would be to take ſuch of them as are fully ripe, and put them in dry ſand in a tub, where the vermin may not come to them; and theſe will often ſprout in their paſſage, which will be an advantage, becauſe then they may be immediately planted into pots of earth, and plunged into the bark-bed.

Theſe plants, in the hot iſlands of America, make conſiderable progreſs in their growth, in which places there are ſome trees of very great magnitude; but in Europe it is of much ſlower growth, being many years before it advances to any conſiderable height; but as the young leaves of this plant are pretty large, they make a good appearance amongſt other tender exotic plants in two or three years time. This plant is preſerved in ſome curious gardens in England for variety, where it muſt be placed in the bark-ſtove, and managed as hath been directed for the other kind of Palm; obſerving, as often as they are tranſplanted, not to cut their ſtrong roots, which is generally death to moſt of the Palm kind. Theſe plants muſt not be too much confined in their roots, for if they are, they will make but little progreſs; therefore, when the young plants have filled the pots with their roots, they ſhould be ſhifted into tubs of a moderate ſize, that their roots may have room to extend; but theſe tubs muſt be kept conſtantly plunged into the bark-bed, otherwiſe the plants will not thrive. The method of raiſing theſe plants from the nuts, when they are planted before they have ſprouted, is fully deſcribed under the article of raiſing exotic ſeeds; to which the reader is deſired to turn, to avoid repetition.

The third ſort is commonly called Macaw-tree by the inhabitants of the Britiſh Iſlands in America; this riſes to the height of thirty or forty feet. The ſtem is generally larger toward the top than at bottom; the branches (or rather the leaves) are winged; the ſmall leaves or lobes are long and very broad; the ſtalk and leaves are ſtrongly armed with black ſpines of various ſizes in every part; the male and female flowers are on the ſame tree, coming out in the ſame manner as the Cocoa-nut. The fruit is about the ſize of a middling Apple, and is incloſed in a very hard ſhell.

The Macaw-tree is very common in the Caribbee Iſlands, where the negroes pierce the tender fruit, from whence flows out a pleaſant liquor, of which they are very fond; and the body of the tree affords a ſolid timber, with which they make javelins, arrows, &c. and is by ſome ſuppoſed to be a ſort of Ebony. This tree grows very ſlow, and requires to be kept warm in winter.

The fourth ſort is commonly called Cabbage-tree in the Weſt-Indies; this riſes to a very great height in the countries where it grows naturally. Ligon in his Hiſtory of Barbadoes ſays, there were then ſome of theſe growing there, which were more than two hundred feet high, and that he was informed they were a hundred years growing to maturity, ſo as to produce ſeeds. The ſtalks of theſe trees are ſeldom larger than a man's thigh; they are ſmoother than thoſe of moſt other ſorts, for the leaves naturally fall off entire from them, and only leave the veſtigia or marks where they have grown. Theſe leaves (or branches) are twelve or fourteen feet long; the ſmall leaves or lobes are about a foot long, and half an inch broad, with ſeveral longitudinal plaits or furrows ending in ſoft acute points; theſe are not ſo ſtiff as thoſe of the firſt ſort, and are placed alternately. The flowers come out in long looſe bunches below the leaves; theſe branch out into many looſe ſtrings, and are near four feet long, upon which the flowers are thinly placed. The female flowers are ſucceeded by fruit about the ſize of a Hazel nut, having a yellowiſh ſkin, ſitting cloſe to the ſtrings of the principal foot-ſtalk.

As the inner leaves of this encompaſs the future buds more remarkably than moſt of the other ſpecies, ſo it is diſtinguiſhed by this appellation of Cabbage-tree; for the center ſhoots, before they are expoſed to the air, are white and very tender, like moſt other plants which are blanched; and this is the part which is cut out and eaten by the inhabitants, and is frequently pickled and ſent to England by the title of Cabbage; but whenever theſe ſhoots are cut out, the plants decay, and never after thrive; ſo that it deſtroys the plants, which is the reaſon that few of the trees are now to be found in any of the iſlands near ſettlements, and thoſe are left for ornament.

The fifth ſort is commonly called Prickly Pole in Jamaica, where it naturally grows. Theſe trees are commonly found in thickets, where a great number of them are cloſe together. Their ſtalks are ſlender, ſeldom more than five or ſix inches diameter, but riſe to the height of forty feet, and are cloſely armed with long thorns. The leaves are placed circularly on the top, (as in moſt of the ſpecies.) Theſe are winged, but the lobes are ſhorter and greener than thoſe of the other ſorts, and are cloſely armed with thorns. The flowers come out in the ſame manner as thoſe of the Cocoa-nut, upon long branching foot-ſtalks; they are larger than the largeſt gray Peas, flatted at the top, and are covered with a red ſkin. The inhabitants of Jamaica make rammers and rods for ſcowering of guns, of the ſtems of theſe trees, which are very tough and pliable; but there is no uſe made of any other part, ſo far as I can learn.

The ſixth ſort is called in the Weſt-Indies the Oily Palm, and by ſome Negroes Oil, for the fruit of this tree was firſt carried from Africa to America by the negroes. It grows in great plenty on the coaſt of Guinea, and alſo in the Cape de Verd Iſlands, but was not in any of our American colonies till it was carried there; but now the trees are in plenty in moſt of the iſlands, where the negroes are careful to propagate them.

The branches, (or rather the leaves) of this tree, are winged; the ſmall leaves or lobes, are long, narrow, and not ſo ſtiff as moſt of the other ſorts; the foot-ſtalks of the leaves are broad at their baſe, where they embrace the ſtem, diminiſhing gradually upward, and are armed with ſtrong, blunt, yellowiſh thorns, which are largeſt at their baſe. The flowers come out at the top of the ſtem between the leaves; ſome bunches have only male flowers, others have female; the latter are ſucceeded by oval berries, bigger than thoſe of the largeſt Spaniſh Olives, but of the ſame ſhape; theſe grow in very large bunches, and when ripe are of a yellowiſh colour.

From the fruit the inhabitants draw an oil, in the ſame way as the oil is drawn from Olives; from the body of the tree they extract a liquor, which, when fermented, has a vinous quality, and will inebriate. The leaves of the tree are wrought into mats by the negroes, on which they lie.

The ſeventh ſort is called Palmetto-tree, or Thatch, by the inhabitants of Jamaica, where this tree grows upon all the honey-comb rocks in great plenty. It riſes with a ſlender ſtalk ten or twelve feet high, which is naked and ſmooth, and at the top garniſhed with many fan-ſhaped leaves placed circularly; theſe have foot-ſtalks two or three feet long, which are armed with a few ſtrong, green, crooked ſpines; the pinnæ, or lobes, do all meet in one center, where they join the foot-ſtalk, and are joined together a third part of their length from their baſe; they are at firſt cloſely folded into plaits, but afterward ſpread out like a fan; their ends being pliant often hang downward,

downward, and between theſe pinnæ hang down long threads. The flowers and fruit come out from between the leaves; the fruit is of the ſhape and ſize of the ſmall Lucca Olives. The leaves of this tree are uſed for thatch all over the Weſt-Indies.

The eighth ſort grows naturally in Japan, and alſo upon rocky dry mountains at Malabar. This in time riſes with a ſtrait trunk about forty feet high, which has many circles round it the whole length, which are occaſioned by the veſtigia of the leaves, which are placed circularly round the ſtem; ſo as theſe ſeparate entirely and fall off, the circles remain where their baſe embraced the ſtalk. The ſtalks are terminated by an obtuſe cone, juſt below which the leaves are placed; theſe on the large trees are eight or nine feet long, but thoſe of the ſmall plants are much leſs; the largeſt I have ſeen were not more than two feet long. The baſe of the foot-ſtalk, which partly embraces the trunk, is broad and three-cornered, and is armed on each ſide with ſhort ſpines to the place where the lobes, or ſmall leaves, begin. Theſe pinnæ or lobes, are long, narrow, and entire, of a lucid green on their upper ſide, ſtanding by pairs oppoſite along the midrib, very cloſe together. The flowers and fruit are produced in large bunches at the foot-ſtalks of the leaves; the fruit is oval, about the ſize of a large Plum, and nearly of the ſame ſhape; the ſkin, or covering, changes firſt yellow, and afterward red when ripe, of a ſweet taſte, under which is a hard brown ſhell, incloſing a white nut, which is in taſte like the Cheſtnut.

From the pith of the trunk of this tree is made the ſago; this is firſt pulverized, then it is made into a paſte, and afterward granulated.

The ninth ſort was diſcovered by the late Dr. Houſtoun, growing naturally in the ſands near Old Vera Cruz in America. This hath a thick ſtem, which ſeldom riſes more than two feet high. The leaves come out round the upper part of the ſtem, ſtanding upon foot-ſtalks which are a foot and a half long; they are winged; the lobes or ſmall leaves are about five inches long, and one and a half broad in the middle, drawing to a point at both ends; they are ſtiff, ſmooth, and entire, having a few ſmall indentures at their points, and are placed alternate, of a pale green colour; there are fourteen or fifteen of theſe lobes ranged along the midrib, or ſtalk. The fruit riſes up from the ſide of the ſtem, upon a ſhort thick foot-ſtalk, ſtanding upright, and ſhaped like a club, having many red ſeeds about the ſize of large Peas, ſtanding in ſeparate cells round the central foot-ſtalk, to which they adhere. Theſe plants have their male flowers on ſeparate plants from the fruit, for all thoſe plants which have flowered in England are of the male kind. Theſe plants loſe their leaves before the fruit is ripe annually. The firſt time when Dr. Houſtoun ſaw theſe plants growing at La Vera Cruz, they were in full leaf, but on his return to the ſame place three months after, the fruit was then ripe, and all the leaves were fallen off; and this he afterwards obſerved the following ſeaſon.

The tenth ſort was diſcovered by the late Dr. Houſtoun in the Spaniſh Weſt-Indies. This riſes with a very tall naked trunk, garniſhed at the top with long winged branches or leaves, whoſe lobes are ſpear-ſhaped and plaited; they are of a ſofter texture than any of the other ſorts, and for the moſt part come out two from the ſame point, ſo ſtand by pairs on the ſame ſide of the midrib; they have two lobes on a ſide a little above each other, but there is a great ſpace between every four lobes. The flowers come out in long bunches from between the leaves, the male flowers hanging on long tender ſtrings; but the fruit, which is about the ſize of a middling Plum, is collected into large bunches.

The eleventh ſort grows naturally in the Cape Verd Iſlands, from whence I had one of the plants brought me, as alſo in the Madeira, from whence I have received the ſeeds. This is called Dragon-tree, becauſe the inſpiſſated juice of the plants becomes a red powder, very like the eaſtern Dragons Blood, and is frequently uſed inſtead of it in the ſhops; but the tree, from whence the true Dragons Blood is taken, is of a very different genus from this. Dr. Van Royen, in the Prodromus of the Leyden Garden, has ranged this among the Yuccas, I ſuppoſe, from the ſimilitude of the plant to thoſe of that genus; for, as the fruit of this is a berry not unlike thoſe of the Bay-tree, and the ſeeds of the Yucca grow in capſules with three cells, they cannot be of the ſame genus; nor have we any good account of the real characters of this plant, ſo as abſolutely to determine the genus. Dr. Linnæus has, upon the information of his pupil Loefling, ranged it in his genus of Aſparagus, to which it ſeems to have little affinity; therefore, as it has by ſeveral modern authors been ranged under this title, I have continued it there. This riſes with a thick trunk nearly equal in ſize the whole length, the inner part of which is pithy; next to this is a circle of ſtrong fibres, and the outſide is ſoft. The ſtalk or trunk riſes twelve or fourteen feet high, and is nearly of the ſame diameter the whole length, which is rarely more than eight or ten inches; there are the circular marks or rings left the whole length, where the leaves are fallen off; for as theſe half embrace the ſtalk with their baſe, ſo when they fall away, the veſtigia where they grew remain. The top of the ſtalk ſuſtains a large head of leaves, which come out ſingly all round it; they are ſhaped like thoſe of the common Iris, but are much longer, being often four or five feet long, and an inch and a half broad at their baſe, where they embrace the ſtalk, and leſſen gradually to the end, where they terminate in a point. Theſe leaves are pliable, and hang down all round the ſtem; they are entire, and of a deep green, ſmooth on both ſurfaces, and greatly reſemble thoſe of the common yellow Iris. As this plant has not flowered in England, I can give no account of its flowers; but ſo far as I can judge from the berries which I have received, it may properly enough be ranged in this genus.

All theſe ſorts of Palms are propagated by ſeeds, which ſhould be ſown in the ſame way as hath been directed for the firſt ſort, and the plants ſhould afterward be treated in the ſame manner; with this difference, that ſuch of them as are natives of very warm countries, will require to be kept in a warmer air. The ſecond, third, fourth, fifth, ſixth, ſeventh, eighth, and ninth ſorts ſhould be conſtantly kept in the bark-bed in the ſtove, otherwiſe they will not make great progreſs in England; and when they do thrive, they grow in about twenty years too tall for moſt of the ſtoves which are at preſent built here, nor can we hope to ſee many of them produce their fruit in England; ſo the plants are preſerved by the curious for their foliage, which being ſo ſingular and different from that of the European trees, renders them worthy of care.

The other ſorts may be kept in a dry ſtove in winter in a moderate temperature of air, and in the heat of ſummer they may be expoſed to the open air in a warm ſheltered ſituation for about three months, but they ſhould be removed into the ſtove before the morning froſts come on in the autumn. When theſe plants are kept in a moderate degree of warmth, they ſhould have but little water during the winter ſeaſon; and in the ſummer, when they are expoſed in the open air, they muſt not be often watered, unleſs the ſeaſon is remarkably dry and warm, for too much moiſture will ſoon deſtroy them. The other management of them is nearly the ſame as for the Date Palms, which is not to cut their principal roots when they are ſhifted from one pot to another, nor to confine their roots too much; but as the plants grow in ſize, they ſhould annually be removed into pots a ſize larger than thoſe they were in the former year. The earth in which they are planted, ſhould be light, ſo as to let the moiſture eaſily paſs off; for if it is ſtrong, and detains the moiſture, the tender fibres of the roots will rot.

PANAX. Lin. Gen. Plant. 1031. Panacea. Mitch. Gen. 26. Araliaſtrum. Vaill. 6. Ginſeng or Ninſeng.

The CHARACTERS are,

It hath male and hermaphrodite flowers on diſtinct plants; the male have ſimple globular umbels, compoſed of ſeveral coloured rays which are equal. The involucrum on the outſide, conſiſts of the ſame number of ſmall ſpear-ſhaped leaves. The flower has five narrow, oblong, blunt petals, which are reflexed, ſitting on the empalement, and five oblong ſlender ſtamina inſerted in the empalement, terminated by ſingle ſummits. The hermaphrodite umbels are ſimple, equal, and cluſtered; the involucrum is ſmall, permanent, and compoſed of ſeveral awl-ſhaped leaves; the empalement is ſmall and permanent. The flowers have five oblong equal petals, which are recurved, and five ſhort ſtamina terminated by ſingle ſummits which fall off, with a roundiſh germen under the empalement, ſupporting two ſmall erect ſtyles, crowned by ſingle ſtigmas. The germen afterward becomes an umbillicated berry with two cells, each containing a ſingle, heart-ſhaped, convex, plain ſeed.

This genus of plants is ranged in the ſecond ſection of Linnæus's twenty-third claſs, which includes the plants whoſe male flowers are upon diſtinct plants from the female or hermaphrodite flowers.

The SPECIES are,

1. PANAX (*Quinquefolium*) foliis ternis quinatis. Flor. Virg. 147. *Panax with trifoliate Cinquefoil leaves.* Araliaſtrum quinquefolii folio, majus, Ninzin vocatum. D. Sarraſin. Vaill. Gen. 43. *Greater five-leaved Baſtard Aralia, called Ninzin.*
2. PANAX (*Trifolium*) foliis ternis ternatis. Flor. Virg. 35. *Panax with three trifoliate leaves.* Araliaſtrum fragariæ folio minus. Vaill. Gen. 43. *Smaller Baſtard Aralia with a Strawberry leaf.*

Both theſe plants grow naturally in North America; the firſt is generally believed to be the ſame as the Tartarian Ginſeng, the figures and deſcriptions of that plant, which have been ſent to Europe by the miſſionaries, agreeing perfectly with the American plant.

This hath a fleſhy taper root as large as a man's finger, which is jointed, and frequently divided into two ſmaller fibres downward. The ſtalk riſes near a foot and a half high, naked at the top, where it generally divides into three ſmaller foot-ſtalks, each ſuſtaining a leaf compoſed of five ſpear-ſhaped lobes, which are ſawed on their edges; they are of a pale green, and a little hairy. The flowers grow on a ſlender foot-ſtalk, juſt at the diviſion of the foot-ſtalks, which ſuſtain the leaves, and are formed into a ſmall umbel at the top; they are of an herbaceous yellow colour, compoſed of five ſmall petals which are recurved. Theſe appear the beginning of June, and are ſucceeded by compreſſed heart-ſhaped berries, which are firſt green, but afterward turn red, incloſing two hard, compreſſed, heart-ſhaped ſeeds, which ripen the beginning of Auguſt.

The Chineſe hold this plant in great eſteem, according to the accounts which have been tranſmitted to Europe by the miſſionaries. Father Jartoux in his Letters ſays, that the moſt eminent phyſicians in China have written whole volumes upon the virtues of this plant, and make it an ingredient in almoſt all remedies which they give to their nobility, for it is of too high price for the common people. They affirm, that it is a ſovereign remedy for all weakneſs occaſioned by exceſſive fatigues either of body or mind; that it cures weakneſs of the lungs, and the pleuriſy; that it ſtops vomitings; that it ſtrengthens the ſtomach, and helps the appetite; that it ſtrengthens the vital ſpirits, and increaſes lymph in the blood; in ſhort, that it is good againſt dizzineſs of the head and dimneſs of ſight, and that it prolongs life in old age.

This father alſo ſays, he has made trials of the root of this plant himſelf, and has, in an hour after taking half one of the roots, found himſelf greatly recovered from wearineſs and fatigue, and much more vigorous, and could bear labour with greater eaſe than before.

He likewiſe mentions the emperor's having employed ten thouſand Tartars in the year 1709, to gather this plant in the deſarts, where it naturally grows; theſe were attended by a guard of mandarines, who encamp with their tents in ſuch places as are proper for the ſubſiſtence of their horſes, and from time to time ſend their orders to the reſpective troops under their care; and when they have completed their collection of roots, they return with their cargo to the city. The roots of this plant which have been gathered in America and brought to England, have been ſent to China, where, at the beginning, there was a good market for them; but the quantities which were afterward ſent, did not anſwer ſo well, the market being overſtocked with that commodity.

This plant has been introduced to the Engliſh gardens from America, and where it has been planted in a ſhady ſituation and a light ſoil, the plants have thriven and produced flowers, and ripened their ſeeds annually, but not one of theſe ſeeds have grown; for I have ſeveral years ſown them ſoon after they were ripe, without any ſucceſs; I have alſo ſown of the ſeeds which were ſent me from America ſeveral times in various ſituations, and have not raiſed a ſingle plant from either; and by the accounts which the miſſionaries have ſent from China, it appears, they have had no better ſucceſs with the ſeeds of this plant, which they ſay they have frequently ſown in the gardens in China, but could not raiſe one plant; ſo that I believe there is a neceſſity for the hermaphrodite plants to have ſome male plants ſtand near them, to render the ſeeds prolific; for all thoſe plants which I have ſeen, or ſaved the ſeeds from, were ſuch as had hermaphrodite flowers; and though the ſeeds ſeemed to ripen perfectly, yet their not growing, though I have waited three years without diſturbing of the ground, confirms me in this opinion.

The ſecond ſort grows naturally in the ſame countries, but whether it is poſſeſſed of the ſame qualities as the firſt I cannot ſay; I have ſeen but one plant of this ſort in England, which was ſent me a few years ago from Maryland, and did not live over the firſt ſummer, which was remarkably dry, and being planted in a dry ſoil, was the occaſion of its death; the ſtalk of this was ſingle, and did not riſe more than five inches high, dividing into three foot-ſtalks, each ſuſtaining a trifoliate leaf, whoſe lobes were longer, narrower, and deeper indented on their edges, than thoſe of the former. The flower-ſtalk roſe from the diviſions of the foot-ſtalk of the leaves, but before the flowers opened, the plant decayed, ſo I can give no farther account of it.

PANCRATIUM. Dill. Hort. Elth. 221. fol. 289. Lin. Gen. Plant. 365. Narciſſus. Tourn. Inſt. R. H. 353. tab. 185. Sea Daffodil.

The CHARACTERS are,

The flowers are incloſed in an oblong ſpatha or ſheath, which tears open on the ſide and withers. The flowers have a funnel-ſhaped cylindrical nectarium of one leaf, ſpreading open at the top, and ſix ſpear-ſhaped petals, which are inſerted on the outſide of the nectarium above its baſe, with ſix long ſtamina inſerted in the brim of the nectarium, terminated by oblong proſtrate ſummits. They have a three-cornered obtuſe germen ſituated under the flower, ſupporting a long ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh three-cornered capſule with three cells, filled with globular ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's ſixth claſs, which includes thoſe plants whoſe flowers have ſix ſtamina and one ſtyle.

The SPECIES are,

1. PANCRATIUM (*Maritimum*) ſpathâ multiflorâ, petalis planis, foliis lingulatis. Lin. Sp. Plant. 291. *Pancratium with a ſheath containing many flowers, having plain petals, and tongue-ſhaped leaves.* Narciſſus maritimus. C. B. P. 540. *The Sea Daffodil.*
2. PANCRATIUM (*Illyricum*) ſpathâ multiflorâ, foliis enſiformibus, ſtaminibus nectario longioribus. Flor. Leyd. Prod. 34. *Pancratium with many flowers in a*

ſheath, ſword-ſhaped leaves, and ſtamina longer than the nectarium. Narciſſus Illyricus liliaceus. C. B. P. 55. *Lily Daffodil of Sclavonia.*

3. PANCRATIUM (*Zeylanicum*) ſpathâ uniflorâ, petalis reflexis. Flor. Zeyl. 126. *Pancratium with one flower in a ſheath, whoſe petals are reflexed.* Narciſſus Zeylanicus, flore albo hexagono odorato. H. L. 691. *Daffodil of Ceylon, with a white hexagonal ſweet flower.*
4. PANCRATIUM (*Carribæum*) ſpathâ biflorâ. Hort. Cliff. 133. *Pancratium with two flowers in a ſheath.* Pancratium Mexicanum, flore gemello candido. Hort. Elth. 299. tab. 222. *Mexican Pancratium, with two white flowers.*
5. PANCRATIUM (*Amboinenſe*) ſpathâ multiflorâ, foliis ovatis nervoſis. Lin. Sp. Plant. 291. *Pancratium with many flowers in a ſheath, and oval veined leaves.* Narciſſus Amboinenſis, folio latiſſimo ſubrotundo. Hort. Amſt. 1. p. 77. tab. 39. *Narciſſus of Amboyna, with the broadeſt roundiſh leaf.*
6. PANCRATIUM (*Carolinianum*) ſpathâ multiflorâ, foliis linearibus, ſtaminibus nectarii longitudine. Lin. Sp. Plant. 291. *Pancratium with many flowers in a ſheath, narrow leaves, and ſtamina the length of the nectarium.* Lilio-Narciſſus polyanthos, flore albo. Cateſb. Car. 3. p. 5. *The Lily Narciſſus bearing many white flowers.*
7. PANCRATIUM (*Americanum*) ſpathâ multiflorâ, foliis carinatis anguſtioribus. *Pancratium with many flowers in a ſheath, and narrow keel-ſhaped leaves.* Narciſſus Americanus, flore multiplici, albo, odore balſami Peruviani. Tourn. Inſt. R. H. 358. *American Narciſſus with many white flowers, ſmelling like Balſam of Peru.*
8. PANCRATIUM (*Latifolium*) ſpathâ multiflorâ, foliis carinatis latioribus. *Pancratium with many flowers in a ſheath, and broader keel-ſhaped leaves.* Narciſſus totus albus, latifolius, polianthos, major odoratus, ſtaminibus ſex è tubi ampli margine extantibus. Sloan. Cat. Jam. 115. *Broad-leaved Daffodil, with many larger ſweet flowers which are very white, and a large tube, out of whoſe border proceed ſix ſtamina.*

The firſt ſort grows naturally on the ſea-coaſt in Spain, and the ſouth of France. This hath a large, coated, bulbous root, of an oblong form, covered with a dark ſkin; the leaves are ſhaped like a tongue; they are more than a foot long, and one inch broad, of a deep green, ſix or ſeven of them riſing together from the ſame root, encompaſſed at bottom with a vagina or ſheath; between theſe ariſe the ſtalk, which is a foot and a half long, naked, ſuſtaining at the top ſix or eight white flowers, incloſed in a ſheath, which withers and opens on the ſide, to make way for the flowers to come out. The germen are ſituated cloſe to the top of the ſtalk, from theſe ariſe the tube of the flowers, which are three inches long; they are very narrow, ſwelling at the top, where the cup or nectarium is ſituated, on the outſide of which is faſtened the ſix ſegments or petals of the flower; theſe are narrow, and extend a great length beyond the nectarium; from the border of the nectarium ariſe ſix long ſlender ſtamina, terminated by oblong ſummits which are proſtrate, and in the center ariſes a ſtyle the length of the ſtamina, terminated by an obtuſe ſtigma. The flowers of this ſort do not appear in England till the latter end of Auguſt, ſo are not ſucceeded by ſeeds here. The leaves of this ſort are green all the winter, and decay in the ſpring, ſo the roots ſhould be tranſplanted in June, after the leaves are decayed. This muſt be planted in a very warm border, and ſcreened from ſevere froſt, otherwiſe it will not live through the winter in England.

The ſecond ſort grows naturally in Sclavonia, and alſo in Sicily; this hath a large, coated, bulbous root, covered with a dark ſkin, ſending out many thick ſtrong fibres, which ſtrike deep in the ground; the leaves are ſword-ſhaped, a foot and a half long and two inches broad, of a grayiſh colour. The ſtalks are thick, ſucculent, and riſe near two feet high, ſuſtaining at the top ſix or ſeven white flowers ſhaped like thoſe of the firſt ſort, but the tube is ſhorter and the ſtamina are much longer. This flowers in June, and frequently produces ſeeds which ripen in September.

This ſort is hardy, and will live through the winter in the full ground, being never injured but in very ſevere winters; and if, in ſuch ſeaſons, the ſurface of the ground is covered with tanners bark, ſea-coal aſhes, ſtraw, or Peas-haulm, to keep out the froſt, there will be no danger of the roots ſuffering. It is propagated either by offsets from the roots, or from ſeeds; the former is the more expeditious method, for the offsets will flower very ſtrong the ſecond year; whereas thoſe which are raiſed from ſeeds, ſeldom flower in leſs than five years.

The roots of this plant ſhould not be removed oftener than every third year, if they are expected to flower ſtrong; the beſt time to tranſpant them is in the beginning of October, ſoon after their leaves decay: they ſhould not be kept long out of the ground, for as they do not loſe their fibres every year, ſo if theſe are dried by long keeping out of the ground, it greatly weakens the roots. It loves a light ſandy ſoil, and a ſheltered ſituation; the roots ſhould be planted nine inches or a foot aſunder every way, and five inches deep in the ground.

If the plants are propagated by ſeeds, they ſhould be ſown in pots filled with light earth ſoon after they are ripe; theſe pots ſhould be placed under a hot-bed frame in winter to ſcreen them from froſt, but the glaſſes muſt be taken off every day in mild weather. The other management being the ſame as for the Narciſſus, I need not repeat it here; ſo ſhall only mention, that the young roots will require a little protection in winter, till they have obtained ſtrength.

The third ſort grows naturally at Ceylon; this hath a pretty large bulbous root, the leaves are long and narrow, of a grayiſh colour, and pretty thick, ſtanding upright; the ſtalk riſes between them a foot and a half high, naked, ſuſtaining one flower at the top, whoſe petals are reflexed backward; the nectarium is large, and cut at the brim into many acute ſegments; the ſtamina are long, and turn toward each other at their points, in which it differs from the other ſpecies. The flower has a very agreeable ſcent, but is of ſhort duration; this is very rare in the gardens at preſent.

The fourth ſort grows naturally at La Vera Cruz, from whence the late Dr. Houſtoun brought ſome of the roots. The leaves of this ſort are about a foot long and two inches broad, having three longitudinal furrows. The ſtalk riſes about a foot high, then divides like a fork into two ſmall foot-ſtalks, or rather tubes, which are narrow, green, and at firſt are encompaſſed by a thin ſpatha (or ſheath) which withers, and opens to give way to the flowers, which are white, and ſhaped like thoſe of the other ſpecies, but have no ſcent.

The fifth ſort grows naturally at Amboyna, and alſo in the American iſlands. The root of this ſort is oblong, white, and ſends out ſeveral thick fleſhy fibres, which ſtrike downward; the leaves ſtand upon very long foot-ſtalks, ſome of them are oval, and others heart-ſhaped, about ſeven inches long, and five broad, ending in points, having many deep longitudinal furrows; they are of a light green, and their borders turn inward. The ſtalk is thick, round, and ſucculent, riſing near two feet high, ſuſtaining at the top ſeveral white flowers, ſhaped like the other ſpecies, but the petals are broader, the tube is ſhorter, and the ſtamina are not ſo long as the petals. Theſe flowers have a thin ſheath or covering, which ſplits open longitudinally, to make way for the flowers.

The ſixth ſort grows naturally in moiſt boggy ſoils in Georgia, where Mr. Cateſby diſcovered it. This hath a roundiſh bulbous root, covered with a light brown ſkin, from which ariſe ſeveral narrow dark green leaves, about a foot long; between theſe come out a thick ſtalk about nine inches high, ſuſtaining ſix or ſeven white flowers, with very narrow petals, having large bell-ſhaped nectariums or cups, which are deeply indented on their brims; the ſtamina do not riſe far

above

above the nectarium, and are terminated by yellow ſummits.

The ſeventh ſort grows naturally in the iſlands of the Weſt-Indies, where it is called white Lily. This hath a pretty large bulbous root, a little flatted at the top, covered with a brown ſkin; the leaves are near a foot and a half long, and little more than one inch broad, of a dark green, and hollowed in the middle like the keel of a boat. The ſtalks riſe near two feet high, which are thick, ſucculent, and naked, ſuſtaining at the top eight or ten white flowers, ſhaped like thoſe of the firſt ſort, but are of a purer white, and have a ſtrong ſweet odour, like that of Balſam of Peru. The ſtamina of this are very long, ſpreading out wide each way; the pointal is of the ſame length, ſtanding in the middle of the nectarium. Theſe flowers are of ſhort duration, ſeldom continuing longer in beauty than three or four days, and in very hot weather not ſo long; when theſe fade, the germen, which are ſituated at the bottom of the tubes, turn to ſo many oblong bulbs, which are irregular in form, and when ripe, drop off in the ground, where they put out fibres and become plants.

Theſe foreign ſpecies are moſt, if not all of them, of this kind, bearing bulbs; whereas the two firſt have ſeed-veſſels with three cells, incloſing many roundiſh black ſeeds, ſo that though they agree in the characters of their flowers, yet in this particular they differ greatly.

The eighth ſort grows naturally in the Weſt-Indies, where it is not diſtinguiſhed from the former; but as I have frequently propagated both by their bulbs which ſucceed the flowers, and have always found the plants ſo raiſed continue their difference, I make no doubt of their being diſtinct ſpecies. This differs from the former, in the leaves being much longer and broader than that; for theſe are near two feet long, and more than three inches broad, and are hollowed like the keel of a boat. The flowers are larger, the petals longer, and the ſcent is not ſo ſtrong as that of the former, and the roots flower in every ſeaſon of the year. This ſeems to be the ſort figured by Dr. Trew, in the twenty-ſeventh table of his Decades of Rare Plants, but if it is, the leaves in his figure are too flat.

Theſe ſix ſorts laſt mentioned are tender, ſo will not thrive in England, unleſs they are placed in a warm ſtove. The beſt way to have theſe plants in perfection, is to plunge the pots into the bark-bed in the ſtove, where they will thrive and flower exceeding well; for though they may be preſerved in a dry ſtove, yet thoſe will not thrive ſo well, nor will their flowers be ſo ſtrong, as when they are plunged in the tan-bed, nor will they flower oftener than once a year; whereas when they are in the tan-bed, the ſame roots will often flower two or three times in a year. I have had ſeveral of the ſpecies in flower at all ſeaſons of the year, ſo there has not been a month when ſome of them were not in flower.

They are propagated by offsets from the roots, as alſo by the bulbs which ſucceed the flowers; if the latter are planted in ſmall pots filled with light earth from a kitchen-garden, and plunged into a moderate hot-bed, they will ſoon put out roots and leaves, and with proper management, will become blowing roots in one year, ſo that they may be eaſily propagated; and if they are conſtantly kept in the tan-bed in the ſtove, they will put out offsets from their roots, and thrive as well as in their native countries.

PANICLE. A Panicle is a ſtalk diffuſed into ſeveral pedicles or foot-ſtalks, ſuſtaining the flowers or fruits, as in Oats, &c.

PANICUM. Tourn. Inſt. R. H. 515. tab. 298. Lin. Gen. Plant. 70. Panic; in French, *Panis*.

The CHARACTERS are,

There is one flower in each chaff; the chaff opens with three valves which are oval, ending in acute points. The petals open with two oval acute-pointed valves. The flowers have three ſhort hair-like ſtamina, terminated by oblong ſummits, and a roundiſh germen ſupporting two hair-like ſtyles, crowned by feathered ſtigmas. The germen afterward becomes a roundiſh ſeed, faſtened to the withered petals.

This genus of plants is ranged in the ſecond ſection of Linnæus's third claſs, which includes the plants whoſe flowers have three ſtamina and two ſtyles.

The SPECIES are,

1. PANICUM (*Germanicum*) ſpicâ ſimplici cernuâ, ſetis brevioribus pedunculo hirſuto. *Panic with a ſingle nodding ſpike, ſhort awns, and a hairy foot-ſtalk.* Panicum Germanicum, ſive panicula minore. C. B. P. 27. *German Panic with a ſmaller panicle.*
2. PANICUM (*Italicum*) ſpicâ compoſitâ, ſpiculis glomeratis, ſetis immixtis, pedunculo hirſuto. Lin. Sp. Plant. 56. *Panic with a compounded ſpike, whoſe ſmaller ſpikes grow in cluſters intermixed with awns, and a hairy foot-ſtalk.* Panicum Italicum ſive paniculâ majore. C. B. P. 27. *Italian Panic with a larger ſpike.*
3. PANICUM (*Indicum*) ſpicâ ſimplici longiſſimâ, ſetis hiſpidis, pedunculo hirſuto. *Panic with the longeſt ſingle ſpike, prickly awns, and a hairy foot-ſtalk.* Panicum Indicum, ſpicâ longiſſimâ. C. B. P. 27. *Indian Panic with the longeſt ſpike.*
4. PANICUM (*Alopecurodem*) ſpicâ tereti, involucellis bifloris faſciculato-piloſis. Flor. Zeyl. 44. *Panic with a taper ſpike having two flowers in each cover, and hairs growing in cluſters.* Panicum Indicum altiſſimum, ſpicâ ſimplicibus mollibus, in foliorum alis longiſſimis pediculis inſidentibus. Tourn. Inſt. 515. *Talleſt Indian Panic, with the ſoft ſingle ſpikes proceeding from the wings of the leaves, and ſitting upon very long foot-ſtalks.*
5. PANICUM (*Cæruleum*) ſpicâ ſimplici æquali, pedunculis bifloris. Prod. Leyd. 54. *Panic with an equal ſingle ſpike, and two flowers growing on each foot-ſtalk.* Panicum Indicum, ſpicâ obtuſâ cæruleâ. C. B. P. 7. *Indian Panic, with an obtuſe blue ſpike.*

There are ſeveral other ſpecies of this genus than are here enumerated, ſome of which grow naturally in England; but as they are not cultivated, ſo it would be ſwelling this work too much if they were inſerted here.

The firſt ſort grows naturally in Germany and Hungary; of this there are three varieties, one with yellow grain, another with white, and the third has purple grains. This hath been formerly cultivated for bread, in ſome of the northern countries. It riſes with a jointed Reed-like ſtalk about three feet high, and about the ſize of the common Reed, garniſhed at each joint with one Graſs-like leaf a foot and a half long, and about an inch broad at the baſe where broadeſt, ending in acute points; they are rough to the touch, embracing the ſtalk at their baſe, and turn downward about half their length. The ſtalks are terminated by compact ſpikes, which are about the thickneſs of a man's finger at their baſe, growing taper toward their points, and are eight or nine inches long, cloſely ſet with ſmall roundiſh grain like that of Millet. This is an annual plant, which periſhes ſoon after the ſeeds are ripe.

The ſecond ſort is frequently cultivated in Italy, and other warm countries. This riſes with a Reed-like ſtalk near four feet high, which is much thicker than that of the former; the leaves are alſo broader, but of the ſame ſhape. The ſpikes are a foot long, and twice the thickneſs of thoſe of the former, but not ſo compact, being compoſed of ſeveral roundiſh cluſtered ſpikes; the grain is alſo larger, but of the ſame form. There are two or three varieties of this, which differ only in the colour of their grain; this is alſo annual.

The third ſort grows naturally in both Indies; this hath a Reed-like ſtalk as large as a man's thumb, riſing upward of five feet high; the leaves are two inches broad, and more than two feet long, of the ſame form with thoſe of the former ſort; the ſpikes at the top are a foot and a half long, very compact, and thicker than a man's thumb at the baſe, growing taper toward the top. The ſeeds are much larger than thoſe of the other ſorts, and are in ſome white and in others yellow.

The fourth ſort grows naturally in both Indies; this hath a ſtrong Reed-like ſtalk, which riſes ſix or ſeven feet high, garniſhed with leaves more than three feet long; they are near three inches broad at their baſe, leſſening to a point at the end, having a ſmooth ſurface; the ſpikes ariſe at the wings of the ſtalk; they are ſingle, but not ſo compact as thoſe of the former, having ſoft awns or beards; they are about ſix inches long, and ſtand upon very long foot-ſtalks; the grain of this is pretty large.

The fifth ſort grows naturally in Peru; this riſes with a Reed-like ſtalk ſix feet high, which ſends out two or three branches from the ſides, and is garniſhed with long leaves two inches broad at their baſe; the ſtalks are of a purple colour, the leaves are alſo inclining to the ſame. The ſpikes come out from the wings of the ſtalks, and at the end of the branches; they are about four or five inches long, thicker than a man's thumb, and almoſt equal at the point with the baſe. They are of a pale blue colour, having pretty long awns or beards of the ſame colour, as are alſo the ſeeds, which are larger and rounder than thoſe of the other ſorts.

The two firſt ſorts are ſown in ſeveral parts of Europe in the fields, as Corn, for the ſuſtenance of the inhabitants, but it is reckoned not to afford ſo good nouriſhment as Millet; however, it is frequently uſed in ſome parts of Germany and Italy, to make cakes and bread, but the German is not ſo much eſteemed as the Italian ſort; but as it will ripen better in cold countries than that, it is generally cultivated where a better ſort of grain will not ſucceed.

The ſeeds of this ſort may be ſown in the ſpring, at the ſame time as Barley is ſown, and may be managed exactly in the ſame way; but this ſhould not be ſown too thick, for theſe ſeeds are very ſmall, and the plants grow ſtronger, therefore require more room. The German ſort doth not grow above three feet high, unleſs it is ſown on very rich land, in which caſe it will riſe to be four feet high; but the leaves and ſtems of this Corn are very large, ſo require to ſtand four or five inches apart, otherwiſe they will grow up weak and come to little. Theſe large growing Corns ſhould be ſown in drills at about eighteen inches apart, ſo that the ground may be hoed between the rows of Corn, to keep them clear from weeds, and the ſtirring of the ground will greatly improve the Corn. In Auguſt the Corn will ripen, when it may be cut down and dried, and then ſhould be houſed.

The Italian Panic grows much larger than the German, and produces much larger ſpikes; ſo this ſhould be allowed more room to grow, otherwiſe it will come to little. This is alſo later before it ripens, ſo it is not very proper for cold countries.

The other ſorts are natives of very warm countries, where they are uſed by the inhabitants to make bread. Theſe grow very large, and require a good ſummer, otherwiſe they will not ripen in this country. The ſeeds of this kind ſhould be ſown the latter end of March or the beginning of April, on a moderate hot-bed, and the plants ſhould be planted out when grown to a proper ſize, upon a bed of light rich earth, in a warm ſituation. They ſhould be planted in rows about three feet aſunder, and the plants muſt be kept clear from weeds. When the plants are grown pretty tall, they ſhould be ſupported by ſtakes, otherwiſe the winds will break them down; and when the Corn begins to ripen, the birds muſt be kept from it, otherwiſe they will ſoon deſtroy it. Theſe ſorts are preſerved in ſome curious gardens for the ſake of variety, but they are not worth cultivating for uſe in England. The two laſt ſorts ſeldom ripen here.

PANSIES. See VIOLA TRICOLOR.

PAPAVER. Tourn. Inſt. R. H. 2. tab. 119. Lin. Gen. Plant. 573. Poppy; in French, *Pavot*.

The CHARACTERS are,

The empalement of the flower is oval, indented, and compoſed of two almoſt oval, concave, obtuſe leaves, which fall off. The flower has four large roundiſh petals which ſpread open, with a great number of hair-like ſtamina, terminated by oblong, compreſſed, erect ſummits. In the center is placed a large roundiſh germen having no ſtyle, but is crowned by a plain, radiated, target-ſhaped ſtigma. The germen afterward becomes a large capſule, crowned by the plain ſtigma, having one cell, opening in many places at the top under the crown, and is filled with ſmall ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's thirteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina and one germen.

The SPECIES are,

1. PAPAVER (*Rhæas*) capſulis glabris globoſis, caule piloſo multifloro, foliis pinnatifidis inciſis. Lin. Sp. Plant. 507. *Poppy with ſmooth globular heads, a hairy ſtalk with many flowers, and wing-pointed cut leaves.* Papaver erraticum, rubrum, campeſtre. J. B. 3. 395. *Common red field Poppy.*
2. PAPAVER (*Hybridum*) capſulis ſubgloboſis toroſis hiſpidis, caule folioſo multifloro. Lin. Sp. Plant. 506. *Poppy with globular capſules which are furrowed and prickly, and a leafy ſtalk bearing many flowers.* Argemone capitulo breviore hiſpido. J. B. 3. 396. *Argemone with a ſhorter prickly head.*
3. PAPAVER (*Argemone*) capſulis clavatis hiſpidis, caule folioſo multifloro. Lin. Sp. Plant. 506. *Poppy with nail-ſhaped prickly heads, and a leafy ſtalk bearing many flowers.* Papaver erraticum, capite longiore hiſpido. Tourn. Inſt. 238. *Field Poppy with a longer prickly head.*
4. PAPAVER (*Alpinum*) capſulâ hiſpidâ, ſcapo unifloro nudo hiſpido, foliis bipinnatis. Lin. Sp. Plant. 507. *Poppy with prickly heads, and a naked prickly ſtalk bearing one flower, and double winged leaves.* Argemone Alpina coriandri folio. C. B. P. 172. *Alpine Argemone with a Coriander leaf.*
5. PAPAVER (*Cambricum*) capſulis glabris oblongis, caule multifloro lævi, foliis pinnatis inciſis. Lin. Sp. Plant. 508. *Poppy with oblong ſmooth heads, a ſmooth ſtalk bearing many flowers, and cut winged leaves.* Papaver luteum perenne, laciniato folio, Cambrobritannicum. Raii Syn. Ed. 3. p. 309. *Yellow, Welch, perennial Poppy, with a cut leaf.*
6. PAPAVER (*Nudicaule*) capſulis hiſpidis, ſcapo unifloro nudo hiſpido, foliis ſimplicibus pinnato-ſinuatis. Hort. Upſal. 136. *Poppy with prickly heads, a naked rough ſtalk having one flower, and ſingle leaves which are wingedly ſinuated.* Papaver erraticum, luteo flore, capite oblongo hiſpido. Amman. Ruth. 61. *Field Poppy with a yellow flower, and an oblong prickly head.*
7. PAPAVER (*Orientale*) capſulis glabris, caulibus unifloris, ſcabris, foliis pinnatis ſerratis. Hort. Upſal. 136. *Poppy with ſmooth heads, rough leafy ſtalks having one flower, and ſawed winged leaves.* Papaver Orientale hirſutiſſimum flore magno. Tourn. Cor. 17. *Moſt hairy eaſtern Poppy with a large flower.*
8. PAPAVER (*Somniferum*) calycibus capſuliſque glabris, foliis amplexicaulibus inciſis. Lin. Sp. Plant. 508. *Poppy with ſmooth capſules and empalements, and cut leaves embracing the ſtalks.* Papaver hortenſe nigro ſemine, ſylveſtre Dioſcoridis, nigrum Plinii. C. B. P. 170. *Garden Poppy with black ſeeds.*
9. PAPAVER (*Album*) capſulis ovatis glabris, foliis latioribus amplexicaulibus marginibus inciſo-ſerratis. *Poppy with oval ſmooth heads, and broader leaves embracing the ſtalks, which are cut on their edges like the teeth of a ſaw.* Papaver hortenſe, ſemine albo, ſativum Dioſcoridis, album Plinii. C. B. P. 170. *Garden Poppy with white ſeeds, commonly called white Poppy.*

The firſt ſort is the common red Poppy, which grows naturally on arable land in moſt parts of England; from the flowers of this ſort is drawn a ſimple water, a tincture, a ſyrup and conſerve for medicinal uſe. It is an annual plant; from the roots riſe ſeveral rough branching ſtalks a foot and a half high, garniſhed with hairy leaves five or ſix inches long, deeply jagged almoſt to the midrib, thoſe on the lower part of the leaves being the deepeſt; theſe jags are oppoſite and regular, like thoſe of the winged leaves. At the top of each ſtalk ſtand the flowers, which have oval hairy empalements, opening with

two

two valves, and ſoon fall away. The flowers are compoſed of four large roundiſh petals, which are narrow at their baſe, but ſpread out into a circular order; they are of a beautiful ſcarlet colour, and ſoon fall off. Theſe appear in June, and are ſucceeded by oblong ſmooth heads, crowned by the flat target-ſhaped ſtigma, and perforated in ſeveral places at the top, filled with ſmall purpliſh-coloured ſeeds. There are ſeveral varieties of this with double flowers, cultivated in gardens; ſome of them have white flowers, others have red flowers bordered with white, and ſome have variegated flowers; but as theſe varieties have been produced by culture from the ſeeds of the common ſort, they ſhould be included in that ſpecies.

The ſecond ſort grows naturally among the Corn in many parts of England; the leaves of this ſort are much ſmaller than thoſe of the firſt, and are cut into much finer ſegments; the ſtalks are ſlender, a little more than a foot high, not ſo branching as the former. The flowers are not ſo large, and of a deep purple colour, very ſoon falling away, ſeldom laſting more than a whole day; theſe are ſucceeded by oblong prickly heads, filled with ſmall black ſeeds. It flowers in June.

The third ſort grows naturally among Corn in ſome parts of England, but not in ſo great plenty as either of the former. The leaves of this are finer cut and ſmaller than thoſe of the firſt ſort, but are not ſo fine as thoſe of the ſecond; the ſtalks do not riſe ſo high as either of the former, and ſeldom have many branches. The flowers are not half ſo large as either of the former, and are of a copper colour, falling away in a few hours. Theſe appear in May, and are ſucceeded by long, ſlender, prickly heads, which are channelled, filled with ſmall, black, ſhrivelled ſeeds.

The fourth ſort grows naturally on the Alps, among the rocks. The leaves of this are ſmooth and doubly winged, the ſegments are finely cut; the ſtalks riſe about a foot high, ſuſtaining one ſmall yellow, or copper-coloured flower, which is ſucceeded by roundiſh prickly heads, filled with ſmall ſeeds. This flowers abour the ſame time as the former ſort.

The fifth ſort has a perennial root; it grows naturally in Wales, and alſo in ſome of the northern counties in England. I found it growing plentifully near Kirby-Lonſdale in Weſtmoreland. Tournefort alſo found this plant upon the Pyrenean mountains. The leaves of this ſort are winged; the lobes are deeply cut on their edges. The ſtalks riſe a foot high; they are ſmooth, and are garniſhed with a few ſmall leaves of the ſame ſhape as the lower. The upper part of the ſtalk is naked, ſuſtaining one large yellow flower. Theſe appear in June, and are ſucceeded by oblong ſmooth capſules, filled with ſmall purpliſh ſeeds.

The ſixth ſort grows naturally on the confines of Ruſſia, near Tartary. The leaves of this ſort are ſingle, and ſinuated almoſt to the midrib in form of a winged leaf; they are rough and hairy. The ſtalk riſes near two feet high; it is ſlender, naked, ſuſtaining one flower at the top, which is compoſed of four roundiſh petals of a pale yellow colour, each having a dark bottom or tail. The flowers have an agreeable ſcent, but are of ſhort duration. They come out in June, and are ſucceeded by long rough capſules, filled with ſmall ſeeds.

The ſeventh ſort grows naturally in Armenia, from whence Dr. Tournefort ſent the ſeeds to the royal gardens at Paris, where they ſucceeded, and were afterward communicated to the curious gardens in England and Holland. The root of this plant is compoſed of two or three ſtrong fibres as thick as a man's little finger, which are a foot and a half long, of a dark brown on their outſide, and full of a milky juice, which is very bitter and acrid. The leaves are winged, and ſawed on their edges; they are a foot long, cloſely covered with briſtly white hairs. The ſtalks riſe two feet and a half high; they are very rough and hairy, garniſhed below with leaves like thoſe at bottom, but ſmaller; the upper part is naked, ſuſtaining at the top one very large flower, of the ſame colour with the common red Poppy. Theſe appear in May, and are ſucceeded by oval ſmooth capſules, filled with purpliſh ſeeds.

There are two or three varieties of this which differ only in the colour of their flowers; and I have been informed, there is a double flower of this kind, but I have not ſeen it. Tournefort ſays, the Turks eat the green heads of this Poppy, although they are very bitter and acrid.

The eighth ſort is the common black Poppy, the ſeeds of which are ſold in the ſhops by the title of Maw-ſeed. The ſort with ſingle flowers grows in the warm parts of Europe naturally; this is annual; the ſtalks riſe three feet high; they are ſmooth, and divide into ſeveral branches, and are garniſhed with large leaves, which are ſmooth, and deeply cut or jagged on their edges, embracing the ſtalks with their baſe. The flowers grow on the top of the ſtalks; they are compoſed of four large roundiſh petals of a purpliſh colour, with dark bottoms, and are ſucceeded by oval ſmooth capſules filled with black ſeeds. It flowers in June, and the ſeeds ripen the latter end of Auguſt.

There are great varieties in the flowers of this ſort, ſome having very large double flowers, which are variegated of ſeveral colours; ſome are red and white, others purple and white, and ſome are finely ſpotted like Carnations; ſo that during their ſhort continuance in flower, there are few plants whoſe flowers appear ſo beautiful; but having an offenſive ſcent, and being of ſhort duration, they are not much regarded. The leaves of this ſort are uſed as an ingredient in cooling ointments; and the heads of this were an ingredient in the ſyrupus e Melonio, but in the late Diſpenſaries they have been left out.

The ninth ſort is the common white Poppy; this is cultivated in gardens for the heads, which are uſed in medicine. The ſtalks of this are large, ſmooth, and riſe to the height of five or ſix feet; they branch out into ſeveral ſmaller, garniſhed with large grayiſh leaves, whoſe baſe embraces the ſtalks; they are jagged irregularly on their ſides. The flowers terminate the ſtalks; theſe, when incloſed in the empalement, nod downward, but before the flowers open they are erect. The empalement of the flower is compoſed of two large oval leaves, of the ſame grayiſh colour as the other; theſe ſeparate and ſoon drop off. The flower is compoſed of four large, roundiſh, white petals, which are of ſhort duration, and are ſucceeded by large roundiſh heads as big as Oranges, flatted at both ends, having indented crowns, and are filled with ſmall white ſeeds. This flowers in June, and the ſeeds ripen in Auguſt.

There are ſeveral varieties of this ſort, which differ in the colour of their flowers and multiplicity of petals; thoſe with beautiful flowers are preſerved in gardens for ornament, but that with the ſingle flowers only is cultivated for uſe. The ſeeds of this ſort are uſed in emulſions, being cooling, and good in fevers and inflammatory diſtempers, as alſo for the ſtrangury and heat of the urine. Of the dry heads infuſed and boiled in water, is made the diacodium of the ſhops.

It has been generally ſuppoſed, that from the heads of this ſort of Poppy the opium is extracted; but one of the heads which I have by me, from which opium had been extracted in Turkey, is of a different ſhape from thoſe of this ſort.

All the ſorts of Poppy are propagated by ſeeds, but the fifth and ſeventh ſorts, which have perennial roots, may be alſo propagated by offsets. The beſt time for ſowing the ſeeds is in September, when they will more certainly grow than thoſe which are ſown in the ſpring; and thoſe ſorts which are annual will make larger plants, and flower better than when they are ſown in the ſpring. The beſt way is to ſow the ſeeds of the annual kinds in the places where they are to remain, and to thin the plants where they are too cloſe; thoſe of the large kinds ſhould not be left nearer to each other than a foot and a half, and the ſmaller

ſorts may be allowed about half that ſpace. The culture they will require after this, is only to keep them clean from weeds.

Thoſe who are curious to have fine Poppies in their gardens, carefully look over their plants when they begin to flower, and cut up all thoſe plants whoſe flowers are not very double and well marked, before they open their flowers, to prevent their farina mixing with their finer flowers, which would degenerate them; and it is the not being careful of this, that cauſes the flowers to degenerate ſo frequently in many places, which is often ſuppoſed to be occaſioned by the ground.

The yellow Welſh Poppy requires a cool ſhady ſituation, where the plants will thrive, and produce plenty of ſeeds annually. If theſe ſeeds are permitted to ſcatter, the plants will come up better than when ſown by hand; but if they are ſown, it ſhould be always in the autumn; for the ſeeds of this, which are ſown in the ſpring, rarely ſucceed.

The beſt time to tranſplant and part the roots of this ſort is in the autumn, that the plants may be well eſtabliſhed in their new quarters, before the dry weather comes on in the ſpring.

The eaſtern Poppy will thrive either in ſun or ſhade, for I have ſeveral of theſe plants growing under trees, where they have thriven many years, and flower full as well as thoſe in an open ſituation, but came later in the ſeaſon. This will propagate very faſt by its roots, ſo there is no neceſſity for ſowing the ſeeds, unleſs to procure new varieties. This ſort ſhould be tranſplanted at the ſame ſeaſon as the former; and if the ſeeds are ſown, it ſhould be at the ſame time, for the reaſons before given.

PAPAVER CORNICULATUM. See GLAUCIUM.

PAPAVER SPINOSUM. See AGREMONE.

PAPAYA. See CARICA.

PAPILIONACEOUS. A papilionaceous (or Pea-bloom) flower is ſo called, becauſe in ſome meaſure it reſembles a butterfly with its wings expanded. It always conſiſts of theſe parts; the vexillum or ſtandard, which is a large erect ſegment or petal; the alæ, or two wings, which compoſe the ſides, and the carina, or keel, which is a concave petal or ſegment, reſembling the lower part of a boat: this keel is ſometimes entire, and ſometimes it conſiſts of two petals or ſegments adhering pretty cloſe together. Of this tribe are Peas, Beans, Kidney-beans, Vetches, and other leguminous plants.

PAPPOSE PLANTS are ſuch as have their ſeeds covered with a down, which adheres to the upper part of the ſeed, and are of uſe to ſpread them when ripe, by ſuſtaining them in the air, ſo that they may be conveyed to a great diſtance. Of this kind are the Sow-thiſtles, Hawkweeds, Dandelion, Starworts, &c.

PARASITICAL PLANTS are ſuch as are produced out of the trunk or branches of other plants, from whence they receive their nouriſhment, and will not grow upon the ground, as the Miſleto, &c.

PARIETARIA. Tourn. Inſt. R. H. 509. tab. 289. Lin. Gen. Plant. 1020. ſo called from Paries, *Lat.* a wall, becauſe it grows on old walls.] Pellitory; in French, *Parietaire.*

The CHARACTERS are,

It hath hermaphrodite and female flowers upon the ſame plant. There are two hermaphrodite flowers contained in a ſix-leaved involucrum; theſe have a quadrifid plain empalement of one leaf, half the ſize of the involucrum. They have no petals, but four permanent awl-ſhaped ſtamina longer than the empalement, terminated by twin ſummits, with an oval germen ſupporting a ſlender coloured ſtyle, crowned by a pencil-ſhaped ſtigma. The germen afterward turns to an oval ſeed wrapped up in the empalement. The female flowers have no ſtamina, but in other reſpects are the ſame as the hermaphrodite.

This genus of plants is ranged in the firſt ſection of Linnæus's twenty-third claſs, which contains thoſe plants which have hermaphrodite and female flowers on the ſame plant.

The SPECIES are,

1. PARIETARIA (*Officinalis*) foliis lanceolato-ovatis alternis. Hort. Upſal. 38. *Pellitory with oval ſpear-ſhaped leaves, placed alternately.* Parietaria officinarum & Dioſcoridis. C. B. P. 121. *The officinal Pellitory of Dioſcorides.*

2. PARIETARIA (*Judiaca*) foliis ovatis caulibus erectiuſculis, calycibus trifloris, corollis hermaphroditis, defloratis elongato-cylindricis. Lin. Sp. 1492. *Pellitory with oval leaves, an erect ſtalk, and three flowers in each cup, which are hermaphrodite.* Parietaria minor Ocimi folio. C. B. P. 121. *Smaller Pellitory with a Baſil leaf.*

The firſt ſort grows naturally in Germany and Holland, but was not in England till the year 1727, when I brought it here. This is ſuppoſed to be the true ſort which is recommended by the ancients to be uſed in medicine; it hath a thick perennial root, compoſed of fleſhy reddiſh fibres, from which ariſe many ſtalks a foot and a half high, garniſhed with hairy, oval, ſpear-ſhaped leaves, about two inches long, and one broad in the middle, having ſeveral veins. The flowers come out in ſmall cluſters on the ſide of the ſtalks; they are ſmall, of an herbaceous colour, ſo make no figure. Theſe appear in ſucceſſion all the ſummer months, and the ſeeds ripen accordingly, which are caſt out to a diſtance with an elaſticity when ripe.

The ſecond ſort grows plentifully on old walls, and the ſides of dry banks in moſt parts of England; this differs from the former in having ſhorter ſtalks, and ſmaller oval leaves. The flowers are alſo leſs, and are in ſmaller cluſters; in other reſpects they are the ſame.

They may be propagated in plenty from a ſingle plant, which, if permitted to ſcatter its ſeeds, will fill the ground about it with young plants, for the ſeeds are very difficult to collect, as they are thrown out of their covers as ſoon as they are ripe.

There are three or four other ſpecies of this genus, but as they have little beauty and are of no uſe, ſo are not cultivated in gardens.

PARIS. Lin. Gen. Plant. 449. Herba Paris. Tourn. Inſt. R. H. 233. tab. 117. True-love, or One-berry.

The CHARACTERS are,

The empalement of the flower is permanent, and compoſed of four leaves, which expand in form of a croſs. The flower alſo hath four leaves, which ſpread open in the ſame manner, and are permanent. In the center of the flower is ſituated a roundiſh four-cornered germen, ſupporting four ſpreading ſtyles, crowned by ſingle ſummits. This is attended by eight ſtamina, each having an oblong ſummit, faſtened by threads on each ſide to the ſtamina. The germen afterward changes to a roundiſh berry, having four cells which are filled with ſeeds.

This genus of plants is ranged in the fourth ſection of Linnæus's eighth claſs, which includes the plants whoſe flowers have eight ſtamina and four ſtyles.

We know but one SPECIES of this genus, viz.

PARIS (*Quadrifolia*) foliis quaternis. Flor. Lapp. 155. *Herb Paris, True-love, or One-berry.*

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.

PARKINSONIA. Plum. Nov. Gen. 25. tab. 3. Lin. Gen. Plant. 460.

The CHARACTERS are,

The empalement of the flower ſpreads open; it is of one leaf, indented in five parts at the top. The flower has five almoſt equal petals placed circularly; the four upper are oval, the under is kidney-ſhaped. It has ten declining ſtamina terminated by oblong ſummits, and a long taper germen with ſcarce any ſtyle, crowned by an obtuſe ſtigma.

The

The germen afterward becomes a long taper pod with ſwelling joints, in each of which is lodged one oblong ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's tenth claſs, which includes thoſe plants whoſe flowers have ten ſtamina and one ſtyle.

We know but one SPECIES of this genus, viz.

PARKINSONIA (*Aculeata.*) Parkinſonia. Hort. Cliff. 57. Parkinſonia aculeata, foliis minutis, uni coſtæ adnexis. Plum. Nov. Gen. 25. *Prickly Parkinſonia with very ſmall leaves, which are faſtened to one middle rib.*

This plant was diſcovered by Father Plumier in America, who gave it this name in honour of Mr. John Parkinſon, who publiſhed an Univerſal Hiſtory of Plants in Engliſh, in the year 1640.

It is very common in the Spaniſh Weſt-Indies, but of late years it has been introduced into the Engliſh ſettlements in America, for the beauty and ſweetneſs of its flowers. This, in the countries where it grows naturally, riſes to be a tree of twenty feet high or more, and bears long ſlender bunches of yellow flowers, which hang down after the ſame manner as the Laburnum. Theſe flowers have a moſt agreeable ſweet ſcent, ſo as to perfume the air to a conſiderable diſtance round about the trees; for which reaſon, the inhabitants of the Weſt-Indies plant them near their habitations. And though this plant has not been introduced many years into the Engliſh ſettlements, yet it is now become ſo common in all the iſlands, that but few houſes are without ſome of the trees near it; for it produces flowers and ſeeds in plenty in about two years from ſeed, ſo that it may ſoon be made common in all hot countries; but in Europe it requires a ſtove, otherwiſe it will not live through the winter.

This plant is propagated by ſeeds, which ſhould be ſown in ſmall pots filled with light freſh earth early in the ſpring, and the pots muſt be plunged into a hot-bed of tanners bark, where, in about three weeks or a month's time, the plants will come up, when they ſhould be kept clear from weeds, and frequently refreſhed with a little water. In a little time theſe plants will be fit to tranſplant, which ſhould be done very carefully, ſo as not to injure their roots. They muſt be each planted into a ſeparate halfpenny pot filled with light freſh earth, and then plunged into the hot-bed again, obſerving to ſtir up the tan; and if it hath loſt its heat, there ſhould be ſome freſh tan added to renew it again. Then ſhade the plants from the heat of the ſun, until they have taken new root; after which time they ſhould have freſh air admitted to them every day, in proportion to the warmth of the ſeaſon. With this management the plants will grow ſo faſt, as to fill the pots with their roots by the beginning of July, at which time they ſhould be ſhifted into pots a little larger than the former, and plunged again into the bark-bed to forward their taking new root; after which it will be the beſt way to inure the plants by degrees to bear the open air, that they may be hardened before winter; for if they are kept too warm in winter, the plants will decay before the next ſpring. The only method by which I have ſucceeded in keeping this plant through the winter, was by hardening them in July and Auguſt to bear the open air; and in September I placed them on ſhelves in the dry ſtove, at the greateſt diſtance from the fire, ſo that they were in a very temperate warmth; and there they retained their leaves all the winter, and continued in health, when thoſe which were placed in a warmer ſituation, as alſo thoſe in the green-houſe, were entirely deſtroyed, but theſe ſeldom ſurvived the ſecond winter.

PARNASSIA. Tourn. Inſt. R. H. 246. tab. 127. Lin. Gen. Plant. 345. Graſs of Parnaſſus.

The CHARACTERS are,

The flower hath a permanent ſpreading empalement, cut into five parts. The flower has five roundiſh, concave, ſpreading petals, which have five heart-ſhaped concave nectariums, and five ſtamina terminated by depreſſed ſummits, with a large oval germen having no ſtyle, but four obtuſe permanent ſtigmas in their place. The germen afterward turns to an oval four-cornered capſule with one cell, containing ſeveral oblong ſeeds.

This genus of plants is ranged in the fourth ſection of Linnæus's fifth claſs, which includes the plants whoſe flowers have five ſtamina and four ſtyles.

The SPECIES are,

1. PARNASSIA (*Paluſtris.*) *Parnaſſus Graſs.* Parnaſſia paluſtris & vulgaris. Inſt. R. H. *Common Marſh Graſs of Parnaſſus.*
2. PARNASSIA (*Pleno flore*) vulgaris flore pleno. *Common Graſs of Parnaſſus, with a double flower.*

The former of theſe ſorts grows wild in moiſt meadows in ſeveral parts of England, but particularly in the north; but it doth not grow in the neighbourhood of London, any nearer than on the other ſide of Watford, in the low meadows by Caſſioberry, where it is in pretty great plenty.

The other ſort is an accidental variety of the former, which has been diſcovered wild, and tranſplanted into gardens. This is but rarely to be found, being in very few gardens at preſent.

Theſe plants may be taken up from the natural places of their growth, with balls of earth to their roots, and planted into pots filled with pretty ſtrong, freſh, undunged earth, and placed in a ſhady ſituation, where, if they are conſtantly watered in dry weather, they will thrive very well, and flower every ſummer; but if the plants are planted in the full ground, it ſhould be in a very moiſt ſhady border, otherwiſe they will not live; and theſe ſhould be as duly watered as thoſe in the pots in dry weather, to make them produce ſtrong flowers.

They may be propagated by parting their roots, which ſhould be done in March, before they put out new leaves; but the roots ſhould not be divided too ſmall, for that will prevent their flowering the following ſummer. Theſe roots ſhould always be planted in pretty ſtrong freſh earth, for they will not thrive in a light rich ſoil. In the ſpring they muſt be conſtantly watered, if the ſeaſon ſhould prove dry, otherwiſe they will not flower; nor ſhould they be parted oftener than every third year, to have them ſtrong. Theſe plants flower in July, and their ſeeds are ripe the latter end of Auguſt.

It is called Parnaſſus, from Mount Parnaſſus, on which it was ſuppoſed to grow; and from the cattle feeding on it, it was called a Graſs, though the plant has no reſemblance to any of the Graſs kind, but is more like the Ranunculus in flower, and the leaves are pretty broad, oblong, and ſmooth.

PARONYCHIA. See ILLECEBRUM.

PARSLEY. See APIUM.

PARSNEP. See PASTINACA.

PARTERRE is a level diviſion of ground, which, for the moſt part, faces the ſouth and beſt front of a houſe, and is generally furniſhed with greens, flowers, &c.

There are ſeveral ſorts of Parterres, as plain Graſs with borders, and Parterres of embroidery, &c.

Plain Parterres are more beautiful in England than in any other countries, by reaſon of the excellency of our turf, and that decency and unaffected ſimplicity that it affords to the eye of the ſpectator.

Others are cut into ſhell and ſcroll-work, with ſand-alleys between them, which are the fineſt Parterre works eſteemed in France.

As to the general proportion of Parterres, an oblong or long ſquare is accounted the moſt proper figure for a Parterre; becauſe by the rules of perſpective, or the natural declenſion of the viſual rays in optics, a long ſquare ſinks almoſt to a ſquare, and an exact ſquare appears much leſs than it really is, therefore a Parterre ſhould not be leſs than twice as long as it is broad; twice and a half is accounted a very good proportion, and it is very rare that three times is exceeded.

As to the breadth of a Parterre, it is to take its dimenſions from the breadth of the front of the houſe. If the front of the houſe is one hundred feet long, the breadth of the Parterre ſhould be one hundred and fifty

fifty feet; and if the front of the houſe be two hundred feet, the Parterre ſhould be fifty feet broader; but where the front of the houſe exceeds the breadth of the Parterre, it will be a good proportion to make the Parterre of the ſame dimenſions with the front.

Some do not approve of making Parterres very broad, becauſe it makes them appear too ſhort; when nothing is more pleaſing to the eye, than a contracted regular conduct and view, as ſoon as the perſon goes out of a houſe or building; and a forward direct view is the beſt, whether it be either Parterre or lawn, or any other open ſpace, either two, three, or fourfold in the width; and for that reaſon, thoſe deſigns may juſtly be diſapproved, by which the nobleneſs of the view is marred at the immediate entrance into the garden, the angle of light being broken and confuſed.

The making of Parterres too large cauſes a great expence, and at the ſame time occaſions a diminution of wood, which is the moſt valuable part of a garden.

As to the adorning and furniſhing theſe Parterres, whether it be plain or with embroidery, that depends much upon the form of them, and therefore muſt be left to the judgment and fancy of the deſigner.

PARTHENIUM. Lin. Gen. Plant. 939. Partheniaſtrum. Niſſol. Act. Par. 1711. Dill. Gen. 13. Baſtard Feverfew.

The CHARACTERS are,

It hath a flower compoſed of hermaphrodite florets and female half florets, which are incloſed in a common five-leaved ſpreading empalement. The hermaphrodite flowers which form the diſk, have one tubulous petal cut into five parts at the brim; they have five hair-like ſtamina the length of the tube, terminated by thick ſummits. The germen is ſituated below the floret, and is ſcarce viſible, ſupporting a ſlender ſtyle having no ſtigma; theſe florets are barren. The female florets which compoſe the rays or border, are ſtretched out on one ſide like a tongue; theſe have a large, heart-ſhaped, compreſſed germen, with a ſlender ſtyle crowned by two long ſpreading ſtigmas. Theſe are ſucceeded by one heart-ſhaped compreſſed ſeed.

This genus of plants is ranged in the fifth ſection of Linnæus's twenty-firſt claſs, which includes thoſe plants which have male and female, or hermaphrodite flowers in the ſame plants, whoſe male or hermaphrodite flowers have five ſtamina.

The SPECIES are,

1. PARTHENIUM (*Hyſterophorus*) foliis compoſito-multifidis. Lin. Hort. Cliff. 442. *Parthenium with many-pointed compound leaves.* Partheniaſtrum artemiſiæ folio, flore albo. Hort. Chelſ. 152. *Baſtard Feverfew, with a Mugwort leaf.*
2. PARTHENIUM (*Integrifolium*) foliis ovatis crenatis. Lin. Hort. Cliff. 442. *Parthenium with oval crenated leaves.* Partheniaſtrum helenii folio. Hort. Elth. 302. tab. 225. *Baſtard Feverfew with an Elecampane leaf.*

The firſt ſort grows wild in great plenty in the iſland of Jamaica, and in ſome other of the Engliſh ſettlements in the Weſt-Indies, where it is called wild Wormwood, and is uſed by the inhabitants as a vulnerary herb.

The ſecond ſort grows plentifully in ſeveral parts of the Spaniſh Weſt-Indies, from whence the ſeeds have been brought to Europe.

The firſt is an annual plant, which may be propapagated by ſowing the ſeeds on a hot-bed early in the ſpring; and when the plants come up, they ſhould be tranſplanted on another hot-bed, at about five or ſix inches diſtance, obſerving to water and ſhade them until they have taken new root; after which time they muſt have a pretty large ſhare of freſh air in warm weather, by raiſing the glaſſes of the hot-bed every day, and they muſt be duly watered every other day at leaſt. When the plants have grown ſo as to meet each other, they ſhould be carefully taken up, preſerving a ball of earth to their roots, and each planted into a ſeparate pot filled with light rich earth; and if they are plunged into a moderate hot-bed, it will greatly facilitate their taking freſh root; but where this conveniency is wanting, the plants ſhould be removed to a warm ſheltered ſituation, where they muſt be ſhaded from the ſun until they have taken new root; after which time they may be expoſed, with other hardy annual plants in a warm ſituation, where they will flower in July, and their ſeeds will ripen in September. But if the ſeaſon ſhould prove cold and wet, it will be proper to have a plant or two in ſhelter, either in the ſtove, or under tall frames, in order to have good ſeeds, if thoſe plants which are expoſed ſhould fail, whereby the ſpecies may be preſerved.

The ſecond ſort is a perennial plant, which dies to the ground every autumn, and ſhoots up again the following ſpring. The ſeeds of this ſort were ſent me by my good friend Dr. Thomas Dale, from South Carolina, where the plants grow wild. This may be propagated by parting the roots in autumn, and may be planted in the full ground, where it will abide the cold of our ordinary winters very well. This ſort flowers in July, but ſeldom produces good ſeeds in England.

Theſe plants make no great appearance, ſo are ſeldom cultivated but for the ſake of variety.

PASQUE-FLOWER. See PULSATILLA.

PASSERINA. Lin. Gen. Plant. 440. Thymelæa. Tourn. Inſt. R. H. 594. Pluk. Sanamunda. Cluſ. Sparrow-wort.

The CHARACTERS are,

The flower has no empalement; it has one withered petal, having a ſlender cylindrical tube ſwelling below the middle, and divided into four parts at the top, which ſpread open. It hath eight briſtly ſtamina ſitting on the top of the tube, terminated by erect ſummits almoſt oval. It has an oval germen under the tube, having a ſlender ſtyle riſing on one ſide of the top of the germen, crowned by a headed ſtigma, ſet with prickly hairs on every ſide. The germen afterward turns to an oval ſeed pointed at both ends, incloſed in a thick oval capſule of one cell.

This genus of plants is ranged in the firſt ſection of Linnæus's eighth claſs, which includes thoſe plants whoſe flowers have eight ſtamina and one ſtyle.

The SPECIES are,

1. PASSERNIA (*Filiformis*) foliis linearibus convexis quadrifariàm imbricatis, ramis tomentoſis. Lin. Sp. Plant. 559. *Sparrow-wort with linear convex leaves imbricated four ways, and downy branches.* Thymelæa Ethiopica, paſſerinæ foliis. Breyn. Cent. 10. fig. 6. *Ethiopian Spurge Laurel, with Sparrow-wort leaves.*
2. PASSERINA (*Hirſuta*) foliis carnoſis extus glabris, caulibus tomentoſis. Lin. Sp. Plant. 559. *Sparrow-wort with fleſhy leaves, which are ſmooth on their outſide, and downy ſtalks.* Sanamunda 3. Cluſ. Hiſt. 1. p. 89. *The third Sanamunda of Cluſius.*
3. PASSERNIA (*Ciliata*) foliis lanceolatis ſubciliatis erectis, ramis nudis. Lin. Sp. Plant. 559. *Sparrow-wort with ſpear-ſhaped erect leaves having ſmall hairs and naked branches.* Sanamunda 1. Cluſ. Hiſt. 88. *The firſt Sanamunda of Cluſius.*
4. PASSERNIA (*Uniflora*) foliis linearibus oppoſitis, floribus terminalibus ſolitariis, ramis glabris. Lin. Sp. Plant. 560. *Sparrow-wort with linear leaves placed oppoſite, ſingle flowers terminating the branches, and ſmooth ſtalks.* Thymelæa ramoſa, linearibus foliis anguſtis, flore ſolitario. Burm. Afr. 131. tab. 48. fig. 1. *Branching Spurge Laurel, with narrow linear leaves and a ſingle flower.*

The firſt ſort grows naturally at the Cape of Good Hope, from whence it was firſt brought to the gardens in Holland. This riſes with a ſhrubby ſtalk five or ſix feet high, ſending out branches the whole length, which, when young, grow erect, but as they advance in length, they incline toward an horizontal poſition; but more ſo, when the ſmall ſhoots toward the end are full of flowers and ſeed-veſſels, which weigh down the weak branches from their upright poſition. The branches are covered with a white down like meal, and are cloſely garniſhed with very narrow leaves which are convex, and lie over each other in four rows like the ſcales of fiſh, ſo as that the young branches ſeem as if they were four-cornered.

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The flowers come out at the extremity of the young branches, from between the leaves on every ſide; they are ſmall and white, ſo make but little appearance, and are ſucceeded by ſmall ſeed-veſſels, which ſeem withered and dry. The flowers come out in June and July, and the ſeeds ripen in the autumn.

This plant may be propagated by cuttings during the ſummer months, which ſhould be planted in a bed of loamy earth, and cloſely covered with a bell or hand-glaſs to exclude the air, ſhading them every day from the ſun, and refreſhing them now and then with water. With this treatment the cuttings will have taken root in about two months, when they may be taken up, and each planted in a ſmall pot filled with ſoft loamy earth, placing them in the ſhade till they have taken new root; then they may be removed into a ſheltered ſituation, where they may remain till October, when they muſt be placed in the green-houſe, for they will not live in the open air through the winter in England; but they require no other treatment, than Myrtles and other hardy green-houſe plants, which is to ſcreen them from froſt. As this plant retains its verdure all the year, ſo it makes a pretty variety in the green-houſe in winter.

It may alſo be propagated by ſeeds, which if ſown in the autumn ſoon after they are ripe, will more certainly ſucceed, than at any other ſeaſon of the year. The ſeeds ſhould be ſown in ſmall pots filled with light earth, and if they are plunged into an old bed of tanners bark, under a common frame in winter, the plants will come up in the ſpring, and ſhould then be treated in the ſame manner as thoſe raiſed from cuttings; but the ſeedling plants will grow more erect, and appear handſomer than thoſe propagated by cuttings.

The ſecond ſort grows naturally in Spain and Portugal; this hath ſhrubby ſtalks, which riſe to a greater height than the former; the branches grow more diffuſed, and are covered with a meally down, garniſhed with ſhort, thick, ſucculent leaves, lying over each other like the ſcales of fiſh; they are ſmooth and green on their outſide, but downy on their inner. The flowers are ſmall and white, like thoſe of the former, and appear about the ſame time. This plant will live abroad in ordinary winters, if it is planted in a dry ſoil and a warm ſituation; but in hard froſts the plants are frequently deſtroyed, therefore one or two plants ſhould be kept in pots, and ſheltered in winter to preſerve the ſpecies. This may be propagated by cuttings, in the ſame way as the former ſort.

The third ſort grows naturally in Spain and Portugal, as alſo at the Cape of Good Hope. This hath a ſhrubby ſtalk riſing five or ſix feet high, ſending out many branches which are naked to their ends, where they are garniſhed with oblong leaves ſtanding erect, which have hairy points. The flowers are ſmall, white, and come out between the leaves at the end of the branches; they appear in June, but are not ſucceeded by ſeeds in England. This may be propagated by cuttings as the two former, and requires the ſame treatment.

The fourth ſort grows naturally at the Cape of Good Hope; it hath a low ſhrubby ſtalk, which ſeldom riſes more than a foot high, dividing into many ſlender branches, which are ſmooth, and ſpread out on every ſide, garniſhed with very narrow leaves placed oppoſite; they are of a dark green, and have the appearance of thoſe of the Fir-tree, but are narrower. The flowers come out ſingly at the end of the branches, which are larger than thoſe of the former, and the upper part of the petals is ſpread open almoſt flat; they are of a purple colour, and appear about the ſame time as the former. This may be propagated by cuttings as the other ſorts, and the plants muſt be treated as the firſt ſort.

PASSIFLORA. Lin. Gen. Plant. 910. Granadilla. Tourn. Inſt. R. H. 240. tab. 124. Paſſion-flower; in French, *Fleur de la Paſſion.*

The CHARACTERS are,

The flower has a plain coloured empalement of five leaves, and five half ſpear-ſhaped petals, which are large, plain and obtuſe. The nectarium hath a triple crown; the outer, which is longer, is faſtened to the inſide of the petal, but is larger and compreſſed above. It has five awl-ſhaped ſtamina, faſtened at their baſe to the column of the ſtyle annexed to the germen, ſpreading out horizontally, and terminated by oblong, obtuſe, incumbent ſummits. The ſtyle is an erect cylindrical column, upon whoſe top ſits an oval germen, with three ſmaller ſtyles which ſpread out, crowned by headed ſtigmas. The germen afterward becomes an oval fleſhy fruit with one cell, ſitting at the end of the ſtyle, filled with oval ſeeds, faſtened longitudinally to the ſkin or ſhell.

This genus of plants is ranged in the fourth ſection of Linnæus's twentieth claſs, which includes thoſe plants whoſe male and female parts are joined together, and their flowers have five ſtamina.

The SPECIES are,

1. PASSIFLORA (*Incarnata*) foliis trilobis ſerratis. Amœn. Acad. vol. i. p. 230. *Paſſion-flower with leaves having three ſawed lobes.* Granadilla Hiſpanis, flos paſſionis Italis. Hern. Mex. 888. *The Granadilla of the Spaniards, and the Paſſion-flower of the Italians, commonly called three-leaved Paſſion-flower.*
2. PASSIFLORA (*Cærulea*) foliis palmatis integerrimis. Amœn. Acad. vol. i. p. 231. *Paſſion-flower with hand-ſhaped entire leaves.* Granadilla pentaphyllos, flore cæruleo magno. Boerh. Ind. alt. 2. p. 81. *Five-leaved Paſſion-flower, with a large blue flower, or the moſt common Paſſion-flower.*
3. PASSIFLORA (*Lutea*) foliis trilobis cordatis æqualibus obtuſis glabris integerrimis. Amœn. Acad. vol. i. p. 224. *Paſſion-flower with heart-ſhaped leaves having three equal lobes, which are ſmooth, obtuſe, and entire.* Granadilla folio tricuſpidi, flore parvo flaveſcente. Tourn. Inſt. R. H. 240. *Paſſion-flower with a three-pointed leaf, and a ſmall yellowiſh flower.*
4. PASSIFLORA (*Glabra*) foliis trilobis integerrimis, lobis ſublanceolatis, intermedio productiore. Amœn. Acad. vol. i. p. 229. *Paſſion-flower with leaves having three entire lobes, which are ſomewhat ſpear-ſhaped, and have the middle one longer than the others.* Flos paſſionis minor, folio in tres lacinias non ſerratis profundius diviſo, flore luteo. Sloan. Cat. Jam. 104. *Smaller Paſſion-flower, with a leaf deeply divided into three ſegments which are not ſawed, and a yellow flower.*
5. PASSIFLORA (*Suberoſa*) foliis trilobis integerrimis glabris, cortice ſuberoſo. Amœn. Acad. 1. 226. *Paſſion-flower with leaves having three entire ſmooth lobes, and a Cork-like bark.* Flos paſſionis Curaſſavicus, folio glabro, trilobato, & anguſto, flore flaveſcente omnium minimo. Par. Bat. Pluk. Alm. 282. *Paſſion-flower of Curaſſao, with a ſmooth leaf having three lobes, and the leaſt yellow flower.*
6. PASSIFLORA (*Olivæforma*) foliis haſtatis glabris, petalis florum anguſtioribus. *Paſſion-flower with halbert-pointed ſmooth leaves, and narrow petals to the flowers.* Granadilla folio amplo tricuſpidi, fructu olivæforma. Tourn. Inſt. R. H. 240. *Paſſion-flower with a large three-pointed leaf, and an Olive-ſhaped fruit.*
7. PASSIFLORA (*Fœtida*) foliis trilobis cordatis piloſis, involucris multifido-capillaribus. Amœn. Acad. 1. p. 228. *Paſſion-flower with leaves having three hairy lobes, and the involucrum of the flower compoſed of many pointed hairs.* Granadilla fœtida, folio tricuſpidi villoſo, flore albo. Tourn. Inſt. R. H. 240. *Stinking Paſſion-flower with a hairy three-pointed leaf, and a white flower.*
8. PASSIFLORA (*Variegata*) foliis haſtatis piloſis ampliori-bus, involucris multifido capillaribus. *Paſſion-flower with the largeſt halbert-pointed hairy leaves, and empalements compoſed of many-pointed hairs.* Granadilla fœtida, folio tricuſpidi villoſo, flore purpureo variegato. Tourn. Inſt. R. H. 241. *Stinking Paſſion-flower with a hairy three-pointed leaf, and a flower variegated with purple.*
9. PASSIFLORA (*Holoſericea*) foliis trilobis, baſi utrinque denticulo reflexo. Amœn. Acad. 1. p. 229. *Paſſion-flower with leaves having three lobes, a little indented on each ſide the baſe, which is reflexed.* Granadilla folio haſtato holoſerico, petalis candicantibus, fimbriis ex purpureo & luteo variis. Martyn. Dec. 51. *Paſſion-flower with a ſilky halbert-pointed leaf, and flowers having white*

white petals, which are variegated with a purple and yellow colour.

10. PASSIFLORA (*Capſularis*) foliis bilobis cordatis oblongis petiolatis. Lin. Sp. Plant. 957. *Paſſion-flower with oblong heart-ſhaped leaves, having two lobes ſtanding upon foot-ſtalks.* Granadilla flore ſuaverubente folio bicorni. Tourn. Inſt. R. H. 241. *Paſſion-flower with a ſoft red flower, and a leaf ending with two horns.*

11. PASSIFLORA (*Veſpertillio*) foliis bilobis, baſi rotundatis biglanduloſis, lobis acutis divaricatis, ſubtus punctatis. Amœn. Acad. 1. 223. *Paſſion-flower having two lobes, and two glands at the baſe of their leaves, whoſe lobes are acute, ſpread from each other, and ſpotted on their under ſide.* Granadilla bicornis, flore candido, filamentis intortis. Hort. Elth. 164. tab. 137. *Paſſion-flower with a two-horned leaf, a white flower, and intorted filaments.*

12. PASSIFLORA (*Normalia*) foliis bilobis, baſi emarginatis, lobis linearibus obtuſis divaricatis, intermedio obſoleto mucronato. Amœn. Acad. 5. 248. *Paſſion-flower with leaves having two linear obtuſe lobes, which are indented at the baſe, and have foot-ſtalks.* Granadilla quæ Coanenepilli ſeu Contrayerva. Hernand. *Paſſion-flower, called Coanenepilli or Contrayerva, by Hernandes.*

13. PASSIFLORA (*Bicorna*) foliis bilobis glabris rigidis, baſi indiviſis. *Paſſion-flower with ſtiff ſmooth leaves having two lobes, which are undivided at their baſe.* Granadilla folio bicorni, glabro rigido, flore albo. Houſt. MSS. *Paſſion-flower with a ſmooth two-horned leaf, and a white flower.*

14. PASSIFLORA (*Murucuia*) foliis bilobis tranſverſis amplexicaulibus. Amœn. Acad. 1. p. 222. *Paſſion-flower with tranſverſe leaves, having two lobes embracing the ſtalk.* Murucuia folio lunato. Tourn. Inſt. R. H. 251. *Murucuia with a moon-ſhaped leaf.*

15. PASSIFLORA (*Maliformis*) foliis indiviſis cordato-oblongis integerrimis, petiolis biglanduloſis involucris integerrimis. Amœn. Acad. 1. p. 220. *Paſſion-flower with undivided, heart-ſhaped, oblong, entire leaves, foot-ſtalks with two glands, and entire covers to the flowers.* Granadilla latifolia, fructu maliformi. Tourn. Inſt. R. H. 241. *Broad-leaved Paſſion-flower with an Apple-ſhaped fruit, commonly called Granadilla in the Weſt-Indies.*

16. PASSIFLORA (*Laurifolia*) foliis indiviſis ovatis, integerrimis, petiolis biglanduloſis involucris dentatis. Amœn. Acad. 1. p. 220. *Paſſion-flower with oval entire leaves, foot-ſtalks with two glands, and the covers of the flowers indented.* Granadilla fructu citriformi, foliis oblongis. Tourn. Inſt. R. H. 241. *Paſſion-flower with a Citron-ſhaped fruit, and oblong leaves, commonly called Water Lemon in the Weſt-Indies.*

17. PASSIFLORA (*Cupræa*) foliis indiviſis ovatis integerrimis, petiolis æqualibus. Amœn. Acad. vol. i. p. 219. *Paſſion-flower with undivided, oval, entire leaves, and equal foot-ſtalks.* Granadilla Americana, fructu ſubrotundo, corollâ floris erectâ, petalis amœne fulvis, foliis integris. Martyn. Cent. 1. 37. *American Paſſion-flower with a roundiſh fruit, an erect corolla to the flower, the petals of a fine copper colour, and entire leaves.*

18. PASSIFLORA (*Serratifolia*) foliis indiviſis ſerratis. Amœn. Acad. 1. p. 217. *Paſſion-flower with undivided ſawed leaves.* Granadilla Americana, folio oblongo læviter ſerrato, petalis ex viridi rubeſcentibus. Mart. Cent. 1. p. 36. *American Paſſion-flower, with oblong leaves which are ſlightly ſawed, and petals to the flower of a greeniſh red colour.*

19. PASSIFLORA (*Multiflora*) foliis indiviſis oblongis integerrimis, floribus confertis. Amœn. Acad. 1. p. 221. *Paſſion-flower with undivided, oblong, entire leaves, and flowers growing in cluſters.* Clematis Indica, polyanthos odoratiſſima. Plum. Pl. Amer. 75. tab. 90. *Indian Climber having many ſweet flowers.*

20. PASSIFLORA (*Quadrangularis*) foliis indiviſis ſubcordatis integerrimis, petiolis ſexglanduloſis, caule membranaceo tetragono. Lin. Sp. Plant. 1356. *Paſſion-flower with heart-ſhaped entire leaves, whoſe foot-ſtalks have ſix glands, and a four-cornered membranaceous ſtalk.* Paſſiflora foliis amplioribus cordatis, petiolis glandulis ſex, caule quadrangulo alato. Brown. Jam. 327. *Paſſion-flower with ample heart-ſhaped leaves, whoſe foot-ſtalks have ſix glands, and a ſquare winged ſtalk.*

The firſt ſort grows naturally in Virginia and other parts of North America; this was the firſt known in Europe of all the ſpecies, but was not very common in the Engliſh gardens till of late years. The root of this plant is perennial, but the ſtalk is annual in North America, dying to the ground every winter, as it alſo does in England, unleſs it is placed in a ſtove. The ſtalks of this are ſlender, riſing about four or five feet high, having tendrils or claſpers at each joint, which faſten themſelves about whatever plant ſtand near them, whereby the ſtalk is ſupported. At each joint comes out one leaf upon a ſhort foot-ſtalk; theſe have for the moſt part three oblong lobes, which join at their baſe, but the two ſide lobes are ſometimes divided part of their length into two narrow ſegments, ſo as to reſemble a five-lobed leaf; they are thin, of a light green, and ſlightly ſawed on their edges. The flowers are produced from the joints of the ſtalk at the foot-ſtalks of the leaves; theſe have long ſlender foot-ſtalks ſucceeding each other, as the ſtalks advance in height, during the ſummer months. The involucrum of the flower is compoſed of five oblong blunt-pointed leaves, of a pale green; theſe open and diſcloſe five more leaves or petals, which are white, having a fringe or circle of rays of a double order round the ſtyle, of a purple colour, the lower row being the longeſt. In the center of this ariſes the pillar-like ſtyle, with the roundiſh germen at the top, ſurrounded at the bottom, where it adheres to the ſtyle, with five flattiſh ſtamina which ſpread out every way, and ſuſtain each of them an oblong ſummit which hang downward, and on their under ſide are covered with a yellow farina. The flowers have an agreeable ſcent, but are of ſhort duration, opening in the morning, and fade away in the evening, never opening again, but are ſucceeded by freſh flowers, which come out at the joints of the ſtalk above them. When the flowers fade, the roundiſh germen ſwells to a fruit as large as a middling Apple, which changes to a pale Orange colour when ripe, incloſing many oblong rough ſeeds incloſed in a ſweetiſh pulp. This ſort is uſually propagated by ſeeds which are brought from America, for the ſeeds do not often ripen in England; though I have ſometimes had ſeveral fruit perfectly ripe on plants, which were plunged in a tan-bed under a deep frame; but thoſe plants which are expoſed to the open air, do not produce fruit here. The ſeeds ſhould be ſown upon a moderate hot-bed, which will bring up the plants much ſooner than when they are ſown in the open air, ſo they will have more time to get ſtrength before winter. When the plants are come up two or three inches high, they ſhould be carefully taken up, and each planted in a ſeparate ſmall pot filled with good kitchen-garden earth, and plunged into a moderate hot-bed to forward their taking new root; after which they ſhould be gradually inured to bear the open air, to which they ſhould be expoſed in ſummer, but in the autumn they muſt be placed under a garden-frame to ſcreen them from the froſt; but they ſhould have the free air at all times in mild weather. The ſpring following ſome of theſe plants may be turned out of the pots, and planted in a warm border, where, if they are covered with tanners bark every winter to keep out the froſt, they will live ſeveral years, their ſtalks decaying in the autumn, and new ones ariſe in the ſpring, which in warm ſeaſons will flower very well. If thoſe plants which are continued in pots, are plunged into a tan-bed, ſome of them may produce fruit; and, if the ſtalks of theſe are laid down in the beginning of June, into pots of earth plunged near them, they will take root by the end of Auguſt, ſo that the plants may be eaſily propagated this way.

The ſecond ſort has not been many years in England, but is now the moſt common. This grows naturally in the Braſils, yet is hardy enough to thrive in the open air here, and is ſeldom injured except in very ſevere winters, which commonly kills the branches to the ground, and ſometimes deſtroys the roots; this riſes

riſes in a few years to a great height, if they have proper ſupport. I have ſeen ſome of theſe plants, whoſe branches were trained up more than forty feet high. The ſtalks will grow almoſt as large as a man's arm, and are covered with a purpliſh bark, but do not become very woody. The ſhoots from theſe ſtalks are often twelve or fifteen feet long in one ſummer; they are very ſlender, ſo muſt be ſupported, otherwiſe they will hang to the ground, intermix with each other, and appear very unſightly. Theſe are garniſhed at each joint with one hand-ſhaped leaf, compoſed of five ſmooth entire lobes, the middle one, which is the longeſt, being almoſt four inches long, and one broad in the middle, the other are gradually ſhorter, and the two outer lobes are frequently divided on their outer ſide into two ſmaller lobes or ſegments. Their foot-ſtalks are near two inches long, and have two ſmall leaves or ears embracing the ſtalks at their baſe, and from the ſame point comes out a long claſper, which twiſts round the neighbouring plants, whereby the ſtalks are ſupported. The flowers come out at the ſame joint as the leaves; theſe have foot-ſtalks almoſt three inches long. The flowers have an outer cover, compoſed of three concave oval leaves, of a paler green than the leaves of the plant, which are little more than half the length of the empalement, which is compoſed of five oblong blunt leaves, of a very pale green; within theſe are five petals, nearly of the ſame ſhape and ſize with the empalement, ſtanding alternately between them. In the center of the flower ariſes a thick club-like column about an inch long, on the top of which ſits an oval germen, from whoſe baſe ſpreads out five awl-ſhaped horizontal ſtamina, which are terminated by oblong broad ſummits faſtened in the middle of the ſtamina, hanging downward; theſe may be moved round without ſeparating from the ſtamina, and their under ſurface is charged with yellow farina; on the ſide of the germen ariſe three ſlender purpliſh ſtyles near an inch long, ſpreading from each other, terminated by obtuſe ſtigmas. Round the bottom of the column are two orders of rays; the inner, which is the ſhorteſt, inclines toward the column the outer, which is near half the length of the petals, ſpread open flat upon them; theſe rays are compoſed of a great number of thread-like filaments, of a purple colour at bottom, but are blue on the outſide. The flowers have a faint ſcent, and continue but one day; after they fade, the germen on the top of the column ſwells to a large oval fruit about the ſize and ſhape of the Mogul Plum, and when ripe is of the ſame pale yellow colour, incloſing a ſweetiſh diſagreeable pulp, in which are lodged oblong ſeeds. This plant begins to flower early in July, and there is a ſucceſſion of flowers daily, till the froſt in autumn puts a ſtop to them.

It may be propagated by ſeeds, which ſhould be ſown in the ſame manner as thoſe of the firſt ſort, and the plants treated in the ſame way till the following ſpring, when they ſhould be turned out of the pots, and planted againſt a good aſpected wall, where they may have height for their ſhoots to extend, otherwiſe they will hang about and entangle with each other, ſo make but an indifferent appearance; but where buildings are to be covered, this plant is very proper for the purpoſe. After they have taken good root in their new quarters, the only care they will require, is to train their ſhoots up againſt the wall, as they extend in length, to prevent their hanging about, and if the winter proves ſevere, the ſurface of the ground about their roots ſhould be covered with mulch to keep the froſt from penetrating of the ground; and if the ſtalks and branches are covered with mats, Peas-haulm, ſtraw, or any ſuch light covering, it will protect them in winter againſt ſevere froſts; but this covering muſt be taken off in mild weather, otherwiſe it will cauſe the branches to grow mouldy, which will be more injurious to them than the cold. In the ſpring the plants ſhould be trimmed, when all the ſmall weak ſhoots ſhould be entirely 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 year.

This plant is alſo propagated by laying down the branches, which in one year will be well rooted, ſo may be taken off from the old plants, and tranſplanted, where they are deſigned to remain. The cuttings of this will alſo take root, if they are planted in a loamy ſoil not too ſtiff, in the ſpring, before they begin to ſhoot. If theſe are covered with bell or hand-glaſſes to exclude the air, they will ſucceed much better than when they are otherwiſe treated; but when the cuttings put out ſhoots, the air ſhould be admitted to them, otherwiſe they will draw up weak and ſpoil, and they muſt be afterwards treated as the layers. Thoſe plants which are propagated by layers or cuttings, do not produce fruit ſo plentifully as the ſeedling plants; and I have found the plants which have been propagated two or three times, either by layers or cuttings, ſeldom produce fruit, which is common to many other plants.

If in very ſevere winters the ſtalks of theſe plants are killed to the ground, the roots often put out new ſtalks the following ſummer, therefore they ſhould not be diſturbed; and where there is mulch laid on the ground about their roots, there will be little danger of their being killed, although all the ſtalks ſhould be deſtroyed.

There is a variety of this; the lobes of the leaves are much narrower, and are divided almoſt to the bottom. The flowers come later in the ſummer; the petals of the flowers are narrower, and of a purer white, but I believe it is only a ſeminal variation of the other, ſo not worthy of being enumerated.

The third ſort grows naturally in Virginia, and alſo in Jamaica; this hath a perennial creeping root, ſending up many weak ſtalks about three or four feet high, which are garniſhed with leaves ſhaped very like thoſe of Ivy, and are almoſt as large, but of a pale green and very thin conſiſtence. The flowers come out from the wings of the ſtalk upon ſlender foot-ſtalks an inch and a half long, and at their baſe ariſe very ſlender tendrils, which claſp round any neighbouring ſupport. The flowers are of a dirty yellow colour, and not larger than a ſix-pence when expanded, ſo make no great appearance. This may be propagated by its creeping roots, which may be parted in April, and planted where they are to remain. This ſort will live in a warm border, if treated in the ſame way as is directed for the firſt ſort. Some of theſe plants lived many years in the Chelſea Garden in a border to a ſouth-weſt aſpect, but in the year 1740 they were killed by the froſt.

The fourth ſort grows naturally in Jamaica; this hath a perennial root, from which ariſe ſeveral ſlender ſtalks four or five feet high, which have joints four or five inches aſunder; at each of theſe come out one leaf, a tendril, and a flower. The leaves have three lobes; the middle one is three inches long, and almoſt an inch broad in the middle; the two ſide lobes are about two inches long, and three quarters of an inch broad, of a light green colour, and thin. The flowers are ſmaller than thoſe of the laſt mentioned, and are of a greeniſh colour; theſe are ſucceeded by oval fruit, about the ſize of ſmall Olives, which turn purple when they are ripe.

The fifth ſort grows naturally in moſt of the Weſt-India iſlands; this riſes with a weak ſtalk to the height of twenty feet. As the ſtalks grow old, they have a thick fungous bark like that of the Cork-tree, which cracks and ſplits. The ſmaller branches are covered with a ſmooth bark, and garniſhed with ſmooth leaves at each joint, ſitting upon very ſhort foot-ſtalks; theſe have three lobes, the middle one being much longer than thoſe on the ſides, ſo that the whole leaf has the form of the point of thoſe halberts uſed by the yeomen of the guards. The flowers are ſmall, of a greeniſh yellow colour, and are ſucceeded by ſmall oval fruit of a dark purple colour when ripe.

The ſixth ſort grows naturally in the Weſt-Indies; this hath a perennial root, from which ariſe ſeveral ſlender

ſlender ſtalks, which riſe eight or ten feet high, garniſhed with ſmooth green leaves ſtanding upon ſlender foot-ſtalks. Theſe are but ſlightly indented into three lobes, which end in acute points, and are ſhaped like the points of halberts, the middle one ſtanding obliquely to the foot-ſtalk. The flowers come out from the wings of the leaves on very ſhort foot-ſtalks; they are of a pale yellow. The petals of the flowers are very narrow, and longer than thoſe of the two former ſorts; the fruit is ſmaller and of an oval form, changing to a dark purple when ripe.

The ſeventh ſort grows naturally in moſt of the iſlands in the Weſt-Indies, where the inhabitants of the Britiſh iſlands call it Love in a Miſt. The root of this is annual; the ſtalks riſe five or ſix feet high when they are ſupported; they are channelled and hairy. The leaves are heart-ſhaped, divided into three lobes, the middle lobe being three inches long, and one and a half broad; the two ſide lobes are ſhort but broad; they are covered with ſhort brown hairs. The tendrils come out at the ſame place as the leaves, as do alſo the flowers, whoſe foot-ſtalks are two inches long, hairy, and pretty ſtrong. The empalement of the flower is compoſed of ſlender hairy filaments, which are wrought like a net; theſe are longer than the petals of the flower, and turn up round them, ſo that the flowers are not very conſpicuous at a diſtance. Theſe are white, and of ſhort duration; their ſtructure is the ſame with the other ſorts, and they are ſucceeded by roundiſh oval fruit about the ſize of an ordinary Golden Pippin, of a yellowiſh green colour, incloſed with a netted empalement. This plant is propagated by ſeeds, which ſhould be ſown upon a hot-bed early in the ſpring, and when the plants are fit to remove, they ſhould be each tranſplanted into a ſmall pot filled with light kitchen-garden earth, and plunged again into a hot-bed, obſerving to ſhade them from the ſun till they have taken new root; after which time they muſt be treated in the ſame way as other plants from the ſame country, ſhifting them into larger pots as their roots increaſe; and when the plants are too tall to remain under the glaſſes of the hot-bed, they ſhould be removed into an airy glaſs-caſe, where they ſhould have the free air admitted to them in warm weather, but ſcreened from the cold. In this ſituation the plants will flower in July, and their ſeeds will ripen in the autumn. The whole plant has a diſagreeable ſcent when touched.

There is a variety of this, if it is not a diſtinct ſpecies, with hairy leaves not ſo broad as thoſe of the former. The whole leaf is ſhaped more like the point of a halbert, and thoſe leaves which grow toward the upper part of the ſtalks, have very ſmall indentures, ſo approach near to ſimple leaves without lobes. The flowers are alſo ſmaller, but of the ſame form, and the roots are of a ſhorter duration, ſo that I am inclined to believe it is a diſtinct ſpecies.

The eighth ſort has ſome appearance of the ſeventh, ſo that many perſons have ſuppoſed it was only an accidental variety of it, but there can be no doubt of its being a different ſpecies. The ſtalks of this riſe upward of twenty feet high, and will continue two or three years; the leaves are larger, but of the ſame ſhape, and hairy; the tendrils of this ſort are very long, as are alſo the foot-ſtalks of the flowers, which are ſmooth, not hairy as the former; the empalement of the flowers is netted, but not ſo long as in the former ſort; the flowers are larger, and the rays are of a light blue colour; the fruit is much leſs and rounder than thoſe of the other, and when ripe changes to a deep yellow colour.

The ninth ſort was diſcovered by the late Dr. Houſtoun growing naturally at La Vera Cruz; this a perennial plant. The ſtalks riſe twenty feet high, dividing into many ſlender branches, which are covered with a ſoft hairy down. The leaves are ſhaped like the point of a halbert; they are three inches long, and one inch and a half at their baſe, of a light green, ſoft and ſilky to the touch, ſtanding obliquely to the foot-ſtalks. The flowers come out at the wings of the leaves like the other ſpecies; theſe are not half ſo large as thoſe of the ſecond ſort, but are of the ſame form. The petals are white, and the rays or filaments are purple, with a mixture of yellow. The fruit of this is ſmall, roundiſh, and yellow when ripe.

The tenth ſort grows naturally in Jamaica, from whence the late Dr. Houſtoun ſent the ſeeds to England; this is a perennial plant. The ſtalks are ſlender, and riſe to twenty feet high when they are ſupported, and divide into many weak branches; the leaves, flowers, and tendrils come out at each joint. The leaves are four inches long, and three broad, rounded at their baſe in form of a heart, but end at their points with two horns, which in ſome leaves are more acute than in others, ſeveral of them appearing as if they were cut a little hollow at the top, like the leaves of the Tulip-tree. They have three longitudinal veins, which join at the baſe of the leaf to the foot-ſtalk, but the two outer diverge toward the borders of the leaf in the middle, drawing inward again at the top. The leaves are of a deep green on their upper ſide, but are pale on their under, and ſtand upon ſhort foot-ſtalks; the foot-ſtalks of the flowers are very ſlender, of a purpliſh colour, about an inch and a half long. The flowers are ſhaped like thoſe of the other ſpecies, but when expanded are not more than an inch and a half diameter, of a ſoft red colour, and little ſcent. The fruit is ſmall, oval, and when ripe, changes to a purple colour.

The eleventh ſort was diſcovered by the late Mr. Robert Millar, growing naturally near Carthagena in New Spain. This hath ſlender ſtriated ſtalks of a browniſh red colour, dividing into many ſlender branches, which are garniſhed with leaves ſhaped like the wings of a bat when extended; they are about ſeven inches in length, meaſuring from the two extended points, which may rather be termed the breadth, for from the baſe to the top they are not more than two inches and a half. The foot-ſtalk is ſet half an inch from the baſe of the leaf, from which come out three ribs or veins; two of them extend each way to the two narrow points of the leaf, the other riſes upright to the top, where is the greateſt length of the leaf, if it may be ſo termed. The figure of this leaf is the moſt ſingular of any I have yet ſeen. The flowers come out at the joints of the ſtalk like the others, upon ſhort ſlender foot-ſtalks; they are about three inches diameter when expanded. The petals and rays are white; the rays are twiſted and ſlender, extending beyond the petals. The fruit of this I have not ſeen entire.

The twelfth ſort was diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz in New Spain. This hath ſlender angular ſtalks which riſe twenty feet high, ſending out many branches, which are garniſhed with moon-ſhaped leaves, and have two blunt lobes, ſpreading aſunder each way, ſo as to have the appearance of a half moon. The flowers and tendrils come out from the ſame joints of the ſtalks. The flowers are of a pale colour and ſmall, but ſhaped like thoſe of the other ſorts; theſe are ſucceeded by oval fruit of a purple colour, about the ſize of ſmall oval Grapes.

The thirteenth ſort has ſome reſemblance of the twelfth, but the ſtalks are rounder and become ligneous. The leaves are almoſt as ſtiff as thoſe of the Bay-tree, and are not ſo deeply divided as thoſe of the former. The flowers ſtand upon long foot-ſtalks, which are horizontal; they are ſmall, white, and ſhaped like thoſe of the other ſort. The fruit is oval, ſmall, and of a purple colour, ſitting cloſe to the petals of the flowers, which are permanent. This was diſcovered by the late Dr. Houſtoun growing naturally at Carthagena in New Spain.

The fourteenth ſort grows naturally in moſt of the iſlands in the Weſt-Indies; this is by Tournefort ſeparated from this genus, and titled by him Murucuia, which is the Braſilian name for this, and ſome of the other ſpecies. This hath ſlender climbing ſtalks, which are channelled, putting out tendrils at the joints, which faſten themſelves about the neighbouring plants for ſupport, and climb to the height of ten

or twelve feet; they are garniſhed with leaves which are cut into two lobes at their baſe, but at the top are only a little hollowed at a diſtance from each point, riſing again in the middle oppoſite the foot-ſtalk. The baſe of the two lobes ſpread and meet, ſo that they appear as if they embraced the ſtalk; but when they are viewed near, they are found divided to the ſhort crooked foot-ſtalk, which does ſcarcely appear. There are two purpliſh veins ariſing from the foot-ſtalk, which extend each way to the points of the lobes. The leaves are of a lucid green on their upper ſurface, but pale on their under; the tendrils, which come out with the leaves, are very long, tough, and of a purple colour. The flowers are produced toward the end of the branches, coming out by pairs on each ſide the branches; theſe have purple foot-ſtalks an inch and a half long, ſuſtaining one flower at the top, whoſe empalement is compoſed of five purple leaves, which form a kind of tube, and within are five very narrow purple petals. The column in the center of the flower is of the ſame length as the petals, but the ſtamina are extended an inch above. When the flowers fade, the germen ſwells to an oval purple fruit, the ſize of the ſmall red Gooſeberry, incloſing a ſoft pulp, in which are lodged the ſeeds.

The fifteenth ſort grows naturally in the Weſt-Indies, where the inhabitants call it Granadilla; the fruit of this ſort is commonly eaten there, being ſerved up to their table in deſerts. This hath a thick, climbing, herbaceous, triangular ſtalk, ſending out ſlender tendrils at each joint, which faſten to the buſhes and hedges for ſupport, riſing to the height of fifteen or twenty feet, garniſhed at each joint with one large, oval, heart-ſhaped leaf, ſix inches long, and four broad in the middle, indented at the baſe, where the ſhort foot-ſtalk is faſtened to the branches, round at the top, having an acute point. There are two large ſtipulæ or ears joined to the ſtalks, which encompaſs the foot-ſtalks of the flowers and leaves, as alſo the baſe of the tendril. The leaves are of a lively green and thin texture, having one ſtrong nerve or midrib running longitudinally, from which ariſe ſeveral ſmall veins, which diverge to the ſides, and incurve again toward the top. The flowers ſtand upon pretty long foot-ſtalks, which have two ſmall glandules in the middle; the cover of the flower is compoſed of three ſoft velvety leaves, of a pale red, with ſome ſtripes of a lively red colour; the petals of the flower are white, and the rays are blue. Theſe flowers are large, ſo make a fine appearance during their continuance; but they are like the other ſpecies, of ſhort duration, but there is a ſucceſſion of flowers for ſome time on the ſame plants. After the flowers are paſt, the germen ſwells to a roundiſh fruit, the ſize of a large Apple, of a yellow colour when ripe, having a thicker rind than any of the other ſorts, incloſing a ſweetiſh pulp, in which are lodged many oblong flat ſeeds, of a browniſh colour, a little rough to the touch.

The ſixteenth ſort grows naturally in the iſlands of the Weſt-Indies; this hath climbing rough ſtalks, which put out claſpers at every joint like the others, which faſten to the neighbouring trees and hedges for ſupport, and riſe upward of twenty feet high, ſending out many ſide branches. The leaves are four or five inches long, and two broad, of a pretty thick conſiſtence, and of a bright green on their upper ſide, but pale on their under. The flowers come out at the joints of the ſtalks, upon foot-ſtalks an inch and a half long; the buds of the flowers are as large as pigeons eggs before they begin to expand. The cover of the flower is compoſed of three large, oval, green leaves, which are indented on their edges, and hollowed like a ſpoon: within theſe is the empalement of the flower, which is compoſed of five oblong leaves, of a pale green on their outſide, but whitiſh within; theſe are about an inch and a half long, and half an inch broad. The petals of the flower are white, and ſtand alternately with thoſe of the empalement, but are not more than half their breadth, and are marked with ſeveral ſmall, browniſh, red ſpots. The rays of the flower are of a Violet colour; the column in the center is yellowiſh, as is alſo the round germen at the top, but the three ſtyles are of a purple colour. Theſe flowers have an agreeable odour, and when they fade, the germen ſwells to the ſize of a pullet's egg, and nearly of the ſame ſhape, which turns yellow when ripe. The rind is ſoft and thick; the pulp has an agreeable acid flavour, which quenches thirſt, abates the heat of the ſtomach, gives an appetite, and recruits the ſpirits, ſo is commonly given in fevers. The ſeeds are heart-ſhaped and browniſh.

The ſeventeenth ſort grows naturally in the Bahama Iſlands, from whence the late Mr. Cateſby ſent the ſeeds to England; this hath ſlender, climbing, three-cornered ſtalks, which ſend out tendrils at each joint, faſtening themſelves to any neighbouring ſupport. The ſtalks climb to the height of twelve or fourteen feet, and are garniſhed with oblong oval leaves about two inches long, and one broad, of a light green, and entire. Their foot-ſtalks are ſlender, and an inch long, from which ariſe three longitudinal veins, one running through the middle of the leaf, the other two diverge to the ſides, drawing toward each other again at the point. The flowers come out from the wings of the ſtalk, upon ſlender foot-ſtalks an inch long; the empalement of the flower is compoſed of five oblong, narrow, purpliſh leaves, and within are five narrower petals of the ſame colour, which turn backward after they have been ſome time expanded. The column in the middle of the flower is very long and ſlender, ſupporting a round germen, from whoſe baſe ſpread out five ſlender ſtamina, terminated by oblong hanging ſummits, and from the top of the germen ariſe three ſlender ſtyles, which ſpread aſunder, and are crowned by roundiſh ſummits. When the flowers fade, the germen ſwells to an oval fruit about the ſize of ſparrow's egg, which changes to a purple colour when ripe, filled with oblong ſeeds incloſed in a ſoft pulp.

The nineteenth ſort was diſcovered by the late Dr. Houſtoun at La Vera Cruz in New Spain, where it grows naturally, from whence he ſent the ſeeds in 1731 to England, which ſucceeded in ſeveral gardens. This hath ſlender climbing ſtalks, ſending out many ſmall branches, which climb to the height of twenty-five or thirty feet, when they meet with neighbouring ſupport, to which they faſten themſelves by tendrils. The ſtalks by age become ligneous toward the bottom; their joints are not far aſunder. The leaves ſtand upon ſhort ſlender foot-ſtalks; they are three inches and a half long, and two broad in the middle, rounded at their baſe, but terminate in a point at the top; they are ſmooth, entire, and of a lively green colour. The flowers come out from the wings of the leaves, ſtanding upon long foot-ſtalks; the empalement of the flower is compoſed of five oblong leaves, green on their outſide, but whitiſh within. The flower has five oblong white petals, ſituated alternately to the leaves of the empalement, which ſpread open; the rays are of a bluiſh purple colour, inclining at bottom to red; the column in the center is ſhort and thick; the germen on the top is oval, and, after the flowers fade, ſwells to the ſize of a pullet's egg, and changes to a pale yellow when ripe, having many oblong ſeeds incloſed in a ſoft pulp. The flowers of this kind have an agreeable odour, but are of ſhort duration, ſeldom continuing twenty hours open; but there is a ſucceſſion of flowers on the plants from June to September, and ſometimes the fruit will ripen here.

The twentieth ſort has much the appearance of the fifteenth, both in ſtalk and leaves; but the ſtalks of this have four angles, whereas thoſe of the fifteenth have but three: the leaves alſo of that are not hollowed at their baſe, but thoſe of twentieth ſort are almoſt heart-ſhaped; the flower of it is much larger, though very like it in colour, and the fruit is near twice as large, and of a very agreeable flavour.

This requires the ſame culture as the fifteenth, with which it will produce flowers, and often will ripen its fruit in England. By ſome perſons this is confounded with the fifteenth ſort, and paſſes for the Granadilla.

All theſe perennial ſorts which are natives of the hot parts of America, require a ſtove to preſerve them here, without which they will not thrive; for although ſome of the ſorts will live in the open air during the warm months in ſummer, yet they make but little progreſs; nor will the plants produce many flowers, unleſs the pots in which they are planted are plunged into the tan-bed of the ſtove, and their branches are trained againſt an eſpalier. The beſt way to have them in perfection, is to make a border of earth on the back ſide of the tan-bed, which may be ſeparated by planks to prevent the earth from mixing with the tan; and when the plants are ſtrong enough, they ſhould be turned out of the pots, and planted in this border; adjoining to which, ſhould be a trelliage erected to the top of the ſtove; againſt this the ſtalks of the plants muſt be trained, and as they advance they will form a hedge to hide the wall of the ſtove, and their leaves continuing green all the year, together with their flowers, which will be plentifully intermixed in ſummer, will have a very agreeable effect.

As there will be only a plank partition between the earth and the tan, ſo the earth will be kept warm by the tan-bed, which will be of great ſervice to the roots of the plants. This border ſhould not be leſs than two feet broad and three deep, which is the uſual depth of the pit for tan; ſo that where theſe borders are intended, the pits ſhould not be leſs than eight feet and a half, or nine feet and a half broad, that the bark-bed, excluſive of the border, may be ſix and a half or ſeven feet wide. If the border is fenced off with ſtrong ſhip planks, they will laſt ſome years, eſpecially if they are well painted over with a compoſition of melted pitch, brick-duſt and oil, which will preſerve them ſound a long time; and the earth ſhould be taken out carefully from between the roots of the plants, at leaſt once a year, putting in freſh: with this management, I have ſeen theſe plants in great perfection. But where there has not been this conveniency, I have turned the plants out of the pots, and planted them into the tan-bed when it was half rotten, into which they have rooted exceedingly, and have thriven for two or three years as well as could be deſired; but when their roots extended to a great diſtance in the tan-bed, they have been injured by renewing of the bark; and when it has fermented pretty violently, the roots have been ſcalded, and the plants have been killed, ſo that the other method is more eligible.

Theſe plants are propagated by ſeeds, which ſhould be ſown upon a good hot-bed in the ſpring, and when the plants are fit to remove, they ſhould be each planted in a ſmall pot filled with good kitchen-garden earth, and plunged into a bed of tanners bark, obſerving to ſhade them from the ſun till they have taken new root; then they muſt be treated like other tender plants from the ſame countries. When they are too high to remain under the glaſſes of the hot-bed, they ſhould be turned out of the pots and planted in the ſtove, in the manner before mentioned.

As theſe ſorts do not often perfect their ſeeds here, ſo they may be propagated by laying down their branches, which, if done in April, they will put out roots by the middle of Auguſt, when they may be ſeparated from the old plants, and either planted in pots to get ſtrength, or into the border of the ſtove, where they are to remain.

Some of theſe ſorts may alſo be propagated by cuttings; theſe ſhould be planted into pots about the middle or latter end of March, and plunged into a moderate hot-bed, obſerving to ſcreen them from the ſun, and refreſh them with water gently, as often as the earth may require it; and in about two months or ten weeks, they will put out roots, and may then be treated as the ſeedling plants.

PASSION-FLOWER. See PASSIFLORA.

PASTINACA. Tourn. Inſt. R. H. 319. tab. 170. Lin. Gen. Plant. 324. [of Paſtus, *Lat.* fed; becauſe it it a plant whoſe root is edible.] Parſnep; in French, *Panais.*

The CHARACTERS are,

It hath an umbellated flower; the principal umbel is compoſed of many ſmaller, and theſe are likewiſe compoſed of ſeveral rays. They have no involucrum, and the empalement is ſcarce viſible; the umbel is uniform. The flowers have five ſpear-ſhaped incurved petals, and five hair-like ſtamina, terminated by roundiſh ſummits. The germen is ſituated under the flower, ſupporting two reflexed ſtyles, crowned by obtuſe ſtigmas. The germen afterward becomes an elliptical, plain, compreſſed fruit, dividing into two parts, having two bordered elliptical ſeeds.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, which contains thoſe plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. PASTINACA (*Sylveſtris*) foliis ſimpliciter pinnatis hirſutis. *Parſnep with ſingle, winged, hairy leaves.* Paſtinaca ſylveſtris latifolia. C. B. P. 155. *Broad-leaved Wild Parſnep.*
2. PASTINACA (*Sativa*) foliis ſimpliciter pinnatis glabris. *Parſnep with ſingle winged ſmooth leaves.* Paſtinaca ſativa, latifolia. C. B. P. 155. *Broad-leaved Garden Parſnep.*
3. PASTINACA (*Opopanax*) foliis decompoſitis pinnatis. Hort. Cliff. 105. *Parſnep with decompounded winged leaves.* Paſtinaca ſylveſtris altiſſima. Tourn. Inſt. 319. *Talleſt wild Parſnep, by Caſpar Bauhin titled, Panax Coſtinum.* Pin. 156.

The firſt ſort grows naturally on the ſide of banks, and on dry land, in many parts of England. This is a biennial plant, the firſt year ſhooting out leaves which ſpread on the ſurface of the ground; theſe are ſingly winged, and the lobes are irregularly cut; the leaves are hairy. The following year the ſtalks riſe four or five feet high, which are channelled, hairy, and garniſhed with winged leaves like thoſe at the bottom, but ſmaller; the ſtalk branches out toward the top, each branch being terminated by a large umbel of yellow flowers; theſe are ſucceeded by compreſſed fruit, having two flat bordered ſeeds. The plant flowers in June, and the ſeeds ripen in Auguſt.

The root and ſeed of this ſort is ſometimes uſed in medicine, but it is ſeldom cultivated in gardens, the markets being ſupplied from the fields; yet the druggiſts commonly ſell the ſeeds of the garden kind for it, which they may purchaſe at an eaſy price when it is too old to grow, but then the ſeeds can have no virtue left.

The ſecond ſort hath ſmooth leaves, of a light or yellowiſh green colour, in which this differs from the former; the ſtalks alſo riſe higher, and are deeper channelled; the foot-ſtalks of the umbels are much longer, and the flowers are of a deeper yellow colour. Theſe two ſorts have been thought only varieties, the Garden Parſnep they have ſuppoſed to differ from the wild only by culture; but I have cultivated both many years, and have never found that either of the ſorts have varied; the ſeeds of each having conſtantly produced the ſame ſort as they were taken from, ſo that I am certain they are diſtinct ſpecies.

This ſort is cultivated in kitchen-gardens, the roots of which are large, ſweet, and accounted very nouriſhing. They are propagated by ſeeds, which ſhould be ſown in February or March, in a rich mellow ſoil, which muſt be well dug, that their roots may run downward, the greateſt excellency being the length and bigneſs of the roots. Theſe may be ſown alone, or with Carrots, as is practiſed by the kitchen-gardeners near London; ſome of whom alſo mix Leeks, Onions, and Lettuce, with their Parſneps; but this I think very wrong, for it is not poſſible, that ſo many different ſorts can thrive well together, except they are allowed a conſiderable diſtance; and if ſo, it will be equally the ſame to ſow the different ſorts ſeparate. However, Carrots and Parſneps may be ſown together very well, eſpecially where the Carrots are deſigned

to

to be drawn off very young; becauſe the Parſneps generally ſpread moſt towards the latter end of the ſummer, which is after the Carrots are gone, ſo that there may be a double crop upon the ſame ground.

When the plants are come up, you ſhould hoe them out, leaving them about ten inches or a foot aſunder; obſerving at the ſame time to cut up all the weeds, which, if permitted to grow, would ſoon overbear the plants and choke them. This muſt be repeated three or four times in the ſpring, according as you find the weeds grow; but in the latter part of ſummer, when the plants are ſo ſtrong as to cover the ground, they will prevent the growth of weeds, ſo that after that ſeaſon they will require no farther care.

When the leaves begin to decay, the roots may be dug up for uſe, before which time they are ſeldom well taſted; nor are they good for much in the ſpring, after they are ſhot out again; ſo that thoſe who would preſerve theſe roots for ſpring uſe, ſhould dig them up in the beginning of February, and bury them in ſand, in a dry place, where they will remain good until the middle of April, or later.

If you intend to ſave the ſeeds of this plant, you ſhould make choice of ſome of the longeſt, ſtraiteſt, 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 very 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, if you give them ſome water twice a week, it will cauſe them to produce a greater 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 umbels, 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 muſt never truſt to theſe ſeeds after they are a year old, for they will ſeldom grow beyond that age.

The leaves of the Garden Parſnep are dangerous to handle, eſpecially in a morning, while the dew remains upon them; at which time, if they are handled by perſons who have a ſoft ſkin, it will raiſe it in bliſters. I have known ſome gardeners, when they have been drawing up Carrots from among Parſneps in a morning, when their leaves were wet with dew, they have drawn the ſleeves of their ſhirts up to their ſhoulders, to prevent their being wet; by doing of which they have had their arms, ſo far as they were bare, covered over with large bliſters; and theſe were full of a ſcalding liquor, which has proved very troubleſome for ſeveral days.

The third ſort riſes with a green rough ſtalk ſeven or eight feet high, garniſhed with large, decompounded, winged leaves, which are very rough to the touch, and of a dark green colour; the juice is very yellow, which flows out where either the leaf or ſtalk is broken; the ſtalks are divided upward into many horizontal branches, each being terminated by a large umbel of yellow flowers. Theſe appear in July, and are ſucceeded by plain ſeeds which are bordered, and a little convex in the middle, which ripen in the autumn. The Opapanax of the ſhops is thought to be the concrete juice of this plant.

PASTURE.

Paſture ground is of two ſorts: the one is low meadow land, which is often overflowed, and the other is upland, which lies high and dry. The firſt of theſe will produce a much greater quantity of hay than the latter, and will not require manuring or dreſſing ſo often; but then the hay produced on the upland is much preferable to the other, as is alſo the meat which is fed in the upland more valued than that which is fatted in rich meadows; though the latter will make the fatter and larger cattle, as is ſeen by thoſe which are brought from the low rich lands in Lincolnſhire. But where people are nice in their meat, they will give a much larger price for ſuch as hath been fed on the downs, or in ſhort upland Paſture, than for the other, which is much larger. Beſides this, dry Paſtures have an advantage over the meadows, that they may be fed all the winter, and are not ſo ſubject to poach in wet weather; nor will there be ſo many bad weeds produced, which are great advantages, and do, in a great meaſure, recompenſe for the ſmallneſs of the crop.

I have already mentioned the advantages of meadow land, or ſuch as is capable of being overflowed with water, and given directions for draining and improving low Paſture land, under the article of LAND; therefore ſhall not repeat what is there ſaid, but I ſhall juſt mention ſome method for improving of upland Paſture.

The firſt improvement of upland Paſture is, by fencing it, and dividing it into ſmall fields of four, five, ſix, eight, or ten acres each, planting timber trees in the hedge rows, which will ſcreen the Graſs from the drying pinching winds of March, which prevents the Graſs from growing in large open lands; ſo that if April proves a cold dry month, the land produces very little hay; whereas in the ſheltered fields the Graſs will begin to grow early in March, and will ſoon after cover the ground, and prevent the ſun from parching the roots of the Graſs, whereby it will keep growing, ſo as to afford a tolerable crop, if the ſpring ſhould prove dry. But in fencing of land, it muſt be obſerved (as was before directed) not to make the incloſures too ſmall, eſpecially where the hedge rows are planted with trees; becauſe when the trees are advanced to a conſiderable height, they will ſpread over the land; and, where they are cloſe, will render the Graſs ſour; ſo that inſtead of being an advantage, it will greatly injure the Paſture.

The next improvement of upland Paſtures is, to make the turf good, where, either from the badneſs of the ſoil, or want of proper care, the Graſs hath been deſtroyed by Ruſhes, buſhes, or mole-hills. Where the ſurface of the land is clayey and cold, it may be improved by paring it off, and burning it in the manner before directed under the article of LAND; but if it is a hot ſandy land, then chalk, lime, marle, or clay, are very proper manures to lay upon it; but this ſhould be laid in pretty good quantities, otherwiſe it will be of little ſervice to the land.

If the ground is over-run with buſhes or Ruſhes, it will be of great advantage to the land, to grub them up toward the latter part of the ſummer, and after they are dried to burn them, and ſpread the aſhes over the ground juſt before the autumnal rains; at which time the ſurface of the land ſhould be levelled, and ſown with Graſs-ſeed, which, if done early in the autumn, will come up in a ſhort time, and make good Graſs the following ſpring. So alſo, where the land is full of mole-hills, theſe ſhould be pared off, and either burnt for the aſhes, or ſpread immediately on the ground, when they are pared off, obſerving to ſow the bare patches with Graſs-ſeed, juſt as the autumnal rains begin.

There are ſome Paſture lands which are full of ant-hills, which are not only diſagreeable to the ſight, but where they are in any quantity, the Graſs cannot be mowed; therefore the turf which grows over them ſhould be divided with an inſtrument into three parts, and pared off each way; then the middle or core of the hills ſhould be dug out and ſpread over the ground, leaving the holes open all the winter to deſtroy the ants, and in the ſpring the turf may be laid down again, and after the roots of the Graſs are ſettled again in the ground, it ſhould be rolled to ſettle the ſurface, and make it even. If this is properly managed, it will be a great improvement to ſuch land.

Where the land has been thus managed, it will be of great ſervice to roll the turf in the months of February and March, with a heavy wood roller, always obſerving to do it in moiſt weather, that the roll may make an impreſſion: this will render the ſurface level, and make it much eaſier to mow the Graſs, than when

when the ground lies in hills; and will alſo cauſe the turf to thicken, ſo as to have what the people uſually term a good bottom. The Graſs likewiſe will be the ſweeter for this huſbandry, and it will be a great help to deſtroy bad weeds.

Another improvement of upland Paſtures is the feeding them every other year; for where this is not practiſed, the land muſt be manured at leaſt every third year; and where a farmer hath much arable land in his poſſeſſion, he will not care to part with his manure to the Paſture. Therefore every farmer ſhould endeavour to proportion his Paſture to his arable land, eſpecially where manure is ſcarce, otherways he will ſoon find his error; for the Paſture is the foundation of all the profit, which may ariſe from the arable land.

Whenever the upland Paſtures are mended by manure, there ſhould be a regard had to the nature of the ſoil, and a proper ſort of manure applied: as for inſtance, all hot ſandy lands ſhould have a cool manure; neats dung and ſwines dung are very proper for ſuch lands, as alſo marle and clay; but for cold lands, horſe dung, aſhes, or ſand, and other warm manures, are proper. And when theſe are applied, it ſhould be done in autumn, before the rains have ſoaked the ground, and rendered it too ſoft to cart on; and it ſhould be carefully ſpread, breaking all the clods as ſmall as poſſible, and early in the ſpring harrowed with buſhes, to let it down to the roots of the Graſs. When the manure is laid on at this ſeaſon, the rains in winter will waſh down the ſalts, ſo that the following ſpring the Graſs will receive the advantage of it.

There ſhould alſo be great care had to the deſtroying of weeds in the Paſture, every ſpring and autumn; for where this is not practiſed, the weeds will ripen their ſeeds, which will ſpread over the ground, and thereby fill it with ſuch a crop of weeds as will ſoon over-bear the Graſs, and render it very weak, if not deſtroy it; and it will be very difficult to root them out, after they have gotten ſuch poſſeſſion; eſpeci ally Ragwort, Hawkweed, Dandelion, and ſuch other weeds as have down adhering to their ſeeds.

Theſe upland Paſtures ſeldom degenerate the Graſs which is ſown on them, if the land is tolerably good; whereas the low meadows, which are overflowed in winter, in a few years turn to a harſh ruſhy Graſs, but the upland will continue a fine ſweet Graſs for many years without renewing.

There is no part of huſbandry, of which the farmers are in general more ignorant, than that of the Paſture; moſt of them ſuppoſe, that when the old Paſture is ploughed up, it can never be brought to have a good ſward again; ſo their common method of managing their land after ploughing, and getting two or three crops of Corn is, to ſow with their crop of Barley, ſome Graſs-ſeeds, as they call them; that is, either the red Clover, which they intend to ſtand two years after the Corn is taken off the ground, or Rye-graſs mixed with Trefoil; but as all theſe are at moſt but biennial plants, whoſe roots decay ſoon after their ſeeds are perfected, ſo the ground having no crop upon it, is again ploughed for Corn; and this is the conſtant round which the lands are employed in, by the better ſort of farmers; for I never have met with one of them, who had the leaſt notion of laying down their land to Graſs for any longer continuance; therefore the ſeeds which they uſually ſow, are the beſt adapted for this purpoſe.

But whatever may have been the practice of theſe people, I hope to prove, that it is poſſible to lay down land, which has been in tillage, with Graſs, in ſuch manner as that the ſward ſhall be as good, if not better, than any natural Graſs, and of as long duration. But this is never to be expected, in the common method of ſowing a crop of Corn with the Graſs-ſeeds; for wherever this hath been practiſed, if the Corn has ſucceeded well, the Graſs has been very poor and weak; ſo that if the land has not been very good, the Graſs has ſcarcely been worth ſtanding; for the following year it has produced but little hay, and the year after the crop is worth little, either to mow or feed. Nor can it be expected it ſhould be otherwiſe, for the ground cannot nouriſh two crops; and if there were no deficiency in the land, yet the Corn being the firſt, and moſt vigorous of growth, will keep the Graſs from making any conſiderable progreſs; ſo that the plants will be extremely weak and but very thin, many of them which came up in the ſpring being deſtroyed by the Corn; for wherever there are roots of Corn, it cannot be expected there ſhould be any Graſs. Therefore the Graſs muſt be thin, and, if the land is not in good heart to ſupply the Graſs with nouriſhment, that the roots may branch out after the Corn is gone, there cannot be any conſiderable crop of Clover; and as theſe roots are biennial, many of the ſtrongeſt plants will periſh ſoon after they are cut; and the weak plants, which had made but little progreſs before, will be the principal part of the crop for the ſucceeding year, which is many times not worth ſtanding.

Therefore, when ground is laid down for Graſs, there ſhould be no crop of any kind ſown with the ſeeds; and the land ſhould be well ploughed, and cleaned from weeds; otherwiſe the weeds will come up the firſt, and grow ſo ſtrong, as to overbear the Graſs, and if they are not pulled up, will entirely ſpoil it. The beſt ſeaſon to ſow the Graſs ſeeds upon dry land is about the middle of Auguſt, if there is an appearance of rain; for the ground being then warm, if there happen ſome good ſhowers of rain after the ſeed is ſown, the Graſs will ſoon make its appearance, and get ſufficient rooting in the ground before winter, ſo will not be in danger of having the roots turned out of the ground by the froſt, eſpecially if the ground is well rolled before the froſt comes on, which will preſs it down, and fix the earth cloſe to the roots. Where this hath not been practiſed, the froſt has often looſened the ground ſo much, as to let in the air to the roots of the Graſs, and done it great damage; and this has been brought as an objection to the autumnal ſowing of Graſs; but it will be found to have no weight, if the above direction is practiſed; nor is there any hazard in ſowing the Graſs at this ſeaſon, but that of dry weather after the ſeeds are ſown; for if the Graſs comes up well, and the ground is well rolled in the middle or end of October, and repeated the beginning of March, the ſward will be cloſely joined at bottom, and a good crop of hay may be expected the ſame ſummer. In very open, expoſed, cold lands, it is proper to ſow the ſeeds earlier than is here mentioned, that the Graſs may have time to get good rooting, before the cold ſeaſon comes on to ſtop its growth; for in ſuch ſituations, vegetation is over early in the autumn, ſo the Graſs being weak, may be deſtroyed by froſt: but if the ſeeds are ſown in the beginning of Auguſt, and a few ſhowers follow ſoon after to bring up the Graſs, it will ſucceed much better than any which is ſown in the ſpring, as I have ſeveral years experienced, on ſome places as much expoſed as moſt in England. But where the ground cannot be prepared for ſowing at that ſeaſon, it may be performed the middle or latter end of March, according to the ſeaſon's being early or late; for in backward ſprings and in cold land, I have often ſowed the Graſs in the middle of April with ſucceſs; but there is danger in ſowing late of dry weather, and eſpecially if the land is light and dry; for I have ſeen many times the whole ſurface of the ground removed by ſtrong winds at that ſeaſon, ſo that the ſeeds have been driven in heaps to one ſide of the field. Therefore whenever the ſeeds are ſown late in the ſpring, it will be proper to roll the ground well ſoon after the ſeeds are ſown, to ſettle the ſurface, and prevent its being removed.

The ſorts of ſeeds which are the beſt for this purpoſe, are the beſt ſort of upland hay-ſeeds, taken from the cleaneſt Paſtures, where there are no bad weeds; if this ſeed is ſifted to clean it from rubbiſh, three, or at moſt four buſhels, will be ſufficient to ſow an acre of land. The other ſort is the Trifolium

pratenſe

pratenſe album, which is commonly known by the names of White Dutch Clover, or White Honeyſuckle Graſs. Eight pounds of this ſeed will be enough for one acre of land. The Graſs-ſeed ſhould be ſown firſt, and then the Dutch Clover-ſeed may be afterward ſown; but they ſhould not be mixed together, becauſe the Clover-ſeeds being the heavieſt, will fall to the bottom, and conſequently the ground will be unequally ſown with them.

After the ſeeds are ſown, the ground ſhould be lightly harrowed to bury the ſeeds; but this ſhould be performed with a ſhort-toothed harrow, otherwiſe the ſeeds will be buried too deep. Two or three days after ſowing, if the ſurface of the ground is dry, it ſhould be rolled with a Barley roller to break the clods and ſmooth the ground, which will ſettle it, and prevent the ſeeds from being removed by the wind.

When the ſeeds are come up, if the land ſhould produce many weeds, theſe ſhould be drawn out before they grow ſo tall as to overbear the Graſs; for where this has been neglected, the weeds have taken ſuch poſſeſſion of the ground, as to keep down the Graſs and ſtarve it; and when theſe weeds have been ſuffered to remain until they have ſhed their ſeeds, the land has been ſo plentifully ſtocked with them, as entirely to deſtroy the Graſs; therefore it is one of the principal parts of huſbandry, never to ſuffer weeds to grow on the land.

If the ground is rolled two or three times at proper diſtances after the Graſs is up, it will preſs down the Graſs, and cauſe it to make a thicker bottom; for as the Dutch Clover will put out roots from every joint of the branches which are near the ground, ſo by preſſing down the ſtalks, the roots will mat ſo cloſely together, as to form a ſward ſo thick as to cover the whole ſurface of the ground, and form a green carpet, which will better reſiſt the drought. For if we do but examine the common Paſtures in ſummer (in moſt of which there are patches of this White Honeyſuckle Graſs growing naturally) we ſhall find theſe patches to be the only verdure remaining in the fields. And this the farmers in general acknowledge, is the ſweeteſt feed for all ſorts of cattle, yet never had any notion of propagating it by ſeeds till of late years. Nor has this been long practiſed in England; for till within a few years, that ſome curious perſons imported the ſeed from Brabant, where it had been long cultivated, there was not any of the ſeeds ſaved in England; though now there are ſeveral perſons who ſave the ſeeds here, which ſucceed full as well as any of the foreign ſeeds which are imported.

As this White Clover is an abiding plant, ſo it is certainly the very beſt ſort to ſow where Paſtures are laid down to remain; for as the hay-ſeeds which are taken from the beſt Paſtures, will be compoſed of various ſorts of Graſs, ſome of which may be but annual and others biennial, ſo when thoſe go off, there will be many and large patches of ground left bare and naked, if there is not a ſufficient quantity of the White Clover to ſpread over and cover the land. Therefore a good ſward can never be expected where this is not ſown; for in moſt of the natural Paſtures, we find this plant makes no ſmall ſhare of the ſward; and it is equally good for wet and dry land, growing naturally upon gravel and clay in moſt parts of England; which is a plain indication how eaſily this plant may be cultivated to great advantage, in moſt ſorts of land throughout this kingdom.

Therefore the true cauſe why the land which is in tillage is not brought to a good turf again, in the uſual method of huſbandry is, from the farmers not diſtinguiſhing which Graſſes are annual, from thoſe which are perennial; for if annual or biennial Graſſes are ſown, theſe will of courſe ſoon decay; ſo that unleſs where ſome of their ſeeds may have ripened and fallen, nothing can be expected on the land but what will naturally come up. Therefore this, together with the covetous method of laying down the ground with a crop of Corn, has occaſioned the general failure of increaſing the Paſture in many parts of England, where it is now much more valuable than any arable land.

After the ground has been ſown in the manner before directed, and brought to a good ſward, the way to preſerve it good is, by conſtantly rolling the ground with a heavy roller, every ſpring and autumn, as hath been before directed. This piece of huſbandry is rarely practiſed by farmers, but thoſe who do, find their account in it, for it is of great benefit to the Graſs. Another thing ſhould alſo be carefully performed, which is, to cut up Docks, Dandelion, Knapweed, and all ſuch bad weeds, by their roots, every ſpring and autumn; this will increaſe the quantity of good Graſs, and preſerve the Paſtures in beauty. Dreſſing of theſe Paſtures every third year, is alſo a good piece of huſbandry, for otherwiſe it cannot be expected the ground ſhould continue to produce good crops. Beſides this, it will be neceſſary to change the ſeaſons of mowing, and not to mow the ſame ground every year, but to mow one ſeaſon, and feed the next; for where the ground is every year mown, it muſt be conſtantly dreſſed, as moſt of the Graſs grounds near London, otherwiſe the ground will be ſoon exhauſted.

Of late years there has been an emulation, eſpecially among gentlemen, to improve their Paſtures, by ſowing ſeveral ſorts of Graſs-ſeeds; and there have been ſome perſons of little ſkill in theſe matters, who have impoſed on many ignorant people, by ſelling them ſeeds of ſome foreign Graſs, recommending them for ſome particular quality, but when tried have proved of little worth, whereby they have loſt a ſeaſon or two, and have had their work to begin again. Therefore I would adviſe every perſon, not to truſt too much upon the faith of ſuch practitioners, who, upon ſlight experiments, have ventured to recommend without judgment; for of all the ſorts of Graſs-ſeeds which have been brought from America (of which I have, at various times, ſown more than a hundred different ſpecies) I have found none equal to the common Poa Graſs, which grows naturally in England, either for duration or verdure; therefore that, and about ſix or ſeven other ſorts, are the beſt worth cultivating; but the trouble of collecting theſe in quantity is ſo great, as to deter moſt people from attempting it; and in the purchaſing of hay-ſeeds, there is generally more ſeeds of weeds than Graſs, which will fill the ground; therefore for ſome years paſt, I have recommended and ſown only the White Dutch Clover-ſeeds, and have waited for the natural Graſs coming up amongſt it, and have generally ſucceeded better this way than by ſowing hay-ſeed with it; for if the Paſture is duly weeded, rolled, and dreſſed, all bad weeds may be deſtroyed, and a fine durable turf obtained: whereas the Burnet, and many other plants, which have been extolled as a good winter pabulum, are of ſhort duration, ſo very improper for improving land; nor are there two better plants yet known for the purpoſe of fodder, than the Lucern and Saintfoin; for where theſe are properly ſown upon right ſoils and duly cultivated, they will produce a much greater quantity of food, than can be procured from the ſame quantity of land, ſown with any other abiding plant: therefore I wiſh thoſe who are curious to have much fodder for their cattle, to apply themſelves to the culture of theſe, and not engage in uncertain experiments.

PAVIA. Boerh. Ind. alt. 2. p. 260. Eſculus. Lin. Gen. Plant. 420. The ſcarlet, flowering, Horſe Cheſtnut.

The CHARACTERS are,

The flower has a ſmall bellied empalement of one leaf, indented in five parts at the top. The flower has five roundiſh petals, waved and plaited on their borders, and narrow at their baſe, where they are inſerted in the empalement. It hath eight ſtamina which are declined, and as long as the petals, terminated by riſing ſummits; and a roundiſh germen ſitting upon an awl-ſhaped ſtyle, crowned by an acuminated ſtigma. The germen afterward becomes an oval, Pear-ſhaped, leathery capſule with three cells,

in which is ſometimes one, and at others two, almoſt globular ſeeds.

This genus of plants ſhould be ranged in the firſt ſectionof Linnæsu's eighth claſs, which includes thoſe plants whoſe flowers have eight ſtamina and one ſtyle; but he has joined this to the Horſe Cheſtnut, under the title Eſculus, and places it in his ſeventh claſs; but as the flowers of this have eight ſtamina, and thoſe of the Horſe Cheſtnut but ſeven; and the capſule of this is ſmooth, and that of the Horſe Cheſtnut prickly, ſo they may be very well ſeparated.

There is but one SPECIES of this genus, viz.

PAVIA (*Octandria.*) Boerh. Ind. alt. 2. p. 260. *The ſcarlet Horſe Cheſtnut.* Dr. Linnæus titles it, Eſculus floribus octandris. Sp. Plant. 344. *Eſculus with flowers having eight ſtamina.*

This plant grows naturally in Carolina and the Brazils; from the firſt the ſeeds were brought to England, where the plants have been of late years much cultivated in the gardens. In Carolina it is but of humble growth, ſeldom riſing more than eight or ten feet high; the ſtalk is pretty thick and woody, ſending out ſeveral branches, which ſpread out on every ſide, which are garniſhed with hand-ſhaped leaves, compoſed of five or ſix ſpear-ſhaped lobes, which unite at their baſe where they join the foot-ſtalk; they are of a light green, having a rough ſurface, and are ſawed on their edges; theſe have long foot-ſtalks, and ſtand oppoſite on the branches. The flowers are produced in looſe ſpikes at the end of the branches, ſtanding upon long naked foot-ſtalks, which ſuſtain five or ſix tubulous flowers ſpread open at the top, where the petals are irregular in ſize and length, having an appearance of a lip flower; they are of a bright red colour, and have eight ſtamina the length of the petals. When the flowers fade, the germen ſwells to a Pear-ſhaped fruit, with a thick ruſſet cover having three cells, one of which, and ſometimes two, are pregnant with globular ſeeds. It flowers in July, and the ſeeds ſometimes ripen here in autumn. It may be propagated by ſowing the ſeeds in the ſpring, upon a moderate hot-bed covered with light ſandy earth; and when the plants come up, they ſhould be carefully cleared from weeds, but they muſt not be tranſplanted until the year following. But as theſe ſeedling plants are tender while they are young, ſo they ſhould be covered with mats the following winter; and this ſhould be carefully performed in autumn, when the early froſts begin; for as the tops of theſe young plants are very tender, ſo a ſmall froſt will pinch them; and when the tops are killed, they generally decay to the ground; and when this happens, they ſeldom make good plants after. Therefore this ſhould be conſtantly obſerved for two or three years at leaſt, by which time the plants will have gotten ſtrength enough to reſiſt the froſt, when they ſhould be removed juſt before they begin to ſhoot, and placed either in a nurſery to be trained up, or otherwiſe where they are to remain; obſerving, if the ſeaſon proves dry, to water them until they have taken root, as alſo to lay ſome mulch upon the ſurface of the ground, to prevent the ſun and wind from drying it too faſt; and as the plants advance, the lateral branches ſhould be pruned off, in order to reduce them to regular ſtems.

You muſt alſo obſerve to dig the ground about their roots every ſpring, that it may be looſe, to admit the fibres of the roots, which, while young, are too tender to penetrate the ground if it be very hard.

With this management the plants will greatly advance, and in four or five years will produce flowers and often fruits, which in warm ſeaſons ripen enough to grow, ſo that the plants may be multiplied therefrom very faſt.

This tree may alſo be propagated by budding or grafting it upon the common Horſe Cheſtnut, which is the common method practiſed by the nurſerymen; but the trees thus raiſed, ſeldom make a good appearance long, for the common Horſe Cheſtnut will be more than twice the ſize of the other, and frequently put out ſhoots below the graft, and ſometimes the grafts are blown out of the ſtocks, after ten years growth; but theſe ſtocks render the trees hardy, and of a larger growth.

PAULLINIA. Lin. Gen. Plant. 446. Serjana. Plum. Nov. Gen. 34. tab. 35. Cururu. Plum. Nov. Gen. 34. tab. 35.

The CHARACTERS are,

The flower has a ſpreading permanent empalement, compoſed of four ſmall oval leaves. It hath four oblong oval petals twice the ſize of the empalement, and eight ſhort ſtamina, terminated by ſmall ſummits, with a turbinated germen, having three obtuſe corners, ſupporting three ſhort ſlender ſtyles, crowned by ſpreading ſtigmas. The germen afterward turns to a large three-cornered capſule with three cells, each containing one almoſt oval ſeed. The capſule of Plumier's Serjana has the ſeeds faſtened to the baſe, and that of Cururu has the ſeeds growing to the top.

This genus of plants is ranged in the third ſection of Linnæus's eighth claſs, which includes thoſe plants whoſe flowers have eight ſtamina and three ſtyles.

The SPECIES are,

1. PAULLINIA (*Serjana*) foliis ternatis, petiolis teretiuſculis, foliolis ovato-oblongis. Lin. Sp. Plant. 365. *Three-leaved Paullinia with taper foot-ſtalks, and oblong oval lobes to the leaves.* Serjana ſcandens, triphylla & racemoſa. Plum. Nov. Gen. 34. *Climbing branching Serjana with three leaves.*
2. PAULLINIA (*Mexicana*) foliis biternatis, petiolis marginatis, foliis ovatis integris. Lin. Sp. Plant. 366. *Paullinia with nine lobes in each leaf, bordered foot-ſtalks, having oval entire lobes.* Serjana ſcandens enneaphylla & racemoſa. Plum. Nov. Gen. 34. *Climbing branching Serjana with nine leaves.*
3. PAULLINIA (*Cururu*) foliis ternatis, foliolis cuneiformibus, obtuſis ſubdentatis. Lin. Sp. Plant. 365. *Three-leaved Paullinia with trifoliate leaves having wedge-ſhaped lobes, which are obtuſe and ſomewhat indented.* Cururu ſcandens triphylla. Plum. Nov. Gen. 34. *Climbing three-leaved Cururu.*
4. PAULLINIA (*Curaſſavica*) foliis biternatis, foliolis ovatis. Lin. Sp. Plant. 366. *Paullina with double trifoliate leaves, having oval ſinuated lobes.* Cururu ſcandens enneaphylla, fructu racemoſo rubro. Plum. Nov. Gen. 34. *Climbing nine-leaved Cururu, with a red branching fruit.*
5. PAULLINIA (*Pinnata*) foliis pinnatis, foliolis inciſis, petiolis marginatis. Hort. Cliff. 52. *Paullinia with winged leaves whoſe lobes are cut, and bordered foot-ſtalks.* Cururu ſcandens pentaphylla. Plum. Nov. Gen. 37. *Climbing five-leaved Cururu.*
6. PAULLINIA (*Tomentoſa*) foliis pinnatis tomentoſis, foliolis ovatis inciſis, petiolis marginatis. *Paullinia with winged woolly leaves whoſe lobes are oval, cut on their edges, and bordered foot-ſtalks.* Cururu ſcandens, pentaphylla & villoſa, fructu racemoſo rubro. Houſt. MSS. *Climbing Cururu with five leaves which are hairy, and a red fruit growing in long bunches.*

Theſe plants all grow naturally in the Weſt-Indies, where there are ſeveral other ſpecies which are not here enumerated. They have climbing ſtalks with tendrils at each joint, by which they faſten themſelves to the neighbouring trees, and riſe to the height of thirty or forty feet, garniſhed at each joint with one leaf, which in ſome ſpecies is compoſed of three lobes like Trefoil, in others of five lobes; ſome have nine, and others have many lobes. Theſe are in ſome ſpecies entire, in others they are indented at the point, and ſome are cut on their edges; in ſome ſpecies their ſurface is ſmooth, in others they are woolly. The flowers come out in long bunches like thoſe of Currants; they are ſmall and white, ſo make no figure; theſe are ſucceeded by three-cornered capſules having three cells, which in the Cururu of Plumier, contain roundiſh ſeeds; but thoſe of the Serjana have winged ſeeds like thoſe of the Maple reverſed, being faſtened at the extremity of the wing to the capſule, the ſeed hanging downward.

As theſe plants are ſo tender as not to live through the winter in England, unleſs they are placed in a warm

ſtove, and requiring a large ſhare of room, they are ſeldom propagated in Europe, unleſs in botanic gardens for the ſake of variety, for their flowers have very little beauty to recommend them.

They are propagated by ſeeds, which muſt be obtained from the countries where they naturally grow, for they do not produce ſeeds in England. Theſe ſhould be ſown in ſmall pots, filled with light earth, as ſoon as they arrive, and the pots ſhould be plunged into a moderate hot-bed of tanners bark. If theſe ſeeds arrive in the autumn, the pots ſhould be plunged into the bark-bed in the ſtove, and then there will be a probability of the plants coming up the following ſpring; but thoſe ſeeds which do not arrive here till ſpring, will not come up the ſame year, ſo the pots in which they are ſown, ſhould be plunged into a moderate hot-bed under a frame, where they may be continued all the ſummer, but in the autumn they ſhould be removed into the ſtove, where they ſhould remain during the winter, and as the earth in the pots will be dry, ſo they ſhould be now and then watered, but it ſhould be given ſparingly. The following ſpring the pots ſhould be removed out of the ſtove and plunged into a new hot-bed under a frame, which will bring up the plants in about ſix weeks if the ſeeds are good. When the plants are fit to remove, they ſhould be each planted in a ſmall pot filled with light earth, and plunged into a hot-bed of tanners bark, obſerving to ſhade them every day from the ſun till they have taken new root, after which they ſhould have free air admitted to them daily, in proportion to the warmth of the ſeaſon. In the autumn they muſt be removed into the bark-ſtove, where they ſhould conſtantly remain, and muſt be treated in the ſame way as other tender plants.

PEACH. See PERSICA.

PEAR. See PYRUS.

PEAS. See PISUM.

PEAS EVERLASTING. See LATHYRUS.

PEDICLE is that part of a ſtalk which immediately ſuſtains the leaf, a flower, or a fruit, and is commonly called a foot-ſtalk.

PEDICULARIS, Rattle, Cocks-comb, or Louſe-wort.

There are four different kinds of this plant, which grow wild in paſtures in ſeveral parts of England, and in ſome low meadows are very troubleſome to the paſtures, eſpecially one ſort with yellow flowers, which riſes to be a foot high, or more, and is often in ſuch plenty, as to be the moſt predominant plant; but this is very bad food for cattle, and when it is mowed with the Graſs for hay, renders it of little value. The ſeeds of this plant are generally ripe by the time the Graſs is mowed, ſo that whenever perſons take Graſs-ſeed for ſowing, they ſhould be very careful that none of this ſeed is mixed with it. As theſe plants are never cultivated, I ſhall not trouble the reader with their ſeveral varieties.

PEGANUM. Lin. Gen. Plant. 530. Harmala. Tourn. Inſt. R. H. 257. tab. 133. Wild Aſſyrian Rue.

The CHARACTERS are,

The flower has a permanent empalement, compoſed of five narrow erect leaves the length of the petal. It has five oblong oval petals which ſpread open, and fifteen awl-ſhaped ſtamina about half the length of the petals, whoſe baſes ſpread into a nectarium under the germen, and are terminated by erect oblong ſummits. It has a three-cornered roundiſh germen, elevated at the baſe of the flower, with a three-cornered ſlender ſtyle the length of the ſummits, and three ſtigmas which are longer than the ſtyle. The germen afterward becomes a roundiſh three-cornered capſule, having three cells, filled with oval acute-pointed ſeeds.

This genus of plants is ranged in the firſt ſection of Linnæus's eleventh claſs, which includes thoſe plants whoſe flowers have from eleven to nineteen ſtamina, and one ſtyle.

We have but one SPECIES in the Engliſh gardens at preſent, viz.

PEGANUM (*Harmala*) foliis multifidis. Hort. Upſal. 144. *Peganum with many-pointed leaves.* Harmala. Dod. Pempt. 121. Ruta ſylveſtris, flore magno albo. C. B. P. 336. *Wild Rue with a large white flower.*

This plant grows naturally in Spain and Syria; it has a root as large as a man's little finger, which by age becomes woody. The ſtalks decay every autumn, and new ones ariſe in the ſpring; theſe grow about a foot long, and divide into ſeveral ſmall branches, which are garniſhed with oblong thick leaves cut into ſeveral narrow ſegments; they are of a dark green, and of a gummy bitteriſh taſte. The flowers are produced at the end of the branches, ſitting cloſe between the leaves; they are compoſed of five roundiſh white petals, which open like a Roſe, having fifteen awl-ſhaped ſtamina, terminated by oblong, yellow, erect ſummits. In the center is ſituated a roundiſh three-cornered germen, having a three-cornered ſtyle the length of the ſtamina, with three ſtigmas which are longer than the ſtyle. The germen afterward becomes a roundiſh three-cornered capſule, having three cells, which contain ſeveral oval acute-pointed ſeeds. It flowers in July, and in warm ſummers the ſeeds will ripen here in the autumn.

It is propagated by ſeeds, which ſhould be ſown thinly on a bed of light earth the beginning of April, and when the plants come up, they muſt be conſtantly kept clean from weeds, which is all the culture they will require till the end of October, or the beginning of November, when their ſtalks decay. At which time, if the bed is covered with tanners bark, aſhes, ſaw-duſt, or ſuch like covering to keep out the froſt, it will be a ſecure way to preſerve the roots, which when young are ſomewhat tender. The following March the roots may be taken up, and tranſplanted into a warm ſituation and a dry ſoil, where they will continue ſeveral years. This is ſometimes uſed in medicine.

PELECINUS. See BISERRULA.

PELLITORY OF SPAIN. See ANTHEMIS.

PELLITORY OF THE WALL. See PARIETARIA.

PELTARIA. Jacq. Vind. 260. Lin. Gen. Plant. 806. Mountain Treacle Muſtard.

The CHARACTERS are,

The empalement of the flower is compoſed of four ſmall, concave, coloured leaves which fall off; the flower has four petals placed in form of a croſs, whoſe necks are ſhorter than the empalement, and ſix awl-ſhaped ſtamina, two of which are ſhorter than the empalement, terminated by ſingle ſummits, with a roundiſh germen ſupporting a ſhort ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes a roundiſh compreſſed pod with one cell, containing one roundiſh ſeed.

This genus of plants is ranged in the firſt ſection of Linnæus's fifteenth claſs, intitled Tetradynamia Siliculoſa, the flower having four long and two ſhort ſtamina, and the ſeeds being included in ſhort pods.

We have but one SPECIES of this genus, viz.

PELTARIA (*Alliacea.*) Jacq. Vind. 260. Lin. Sp. Plant. 910. *Peltaria or Treacle Muſtard.* Thlaſpi montanum, glaſti folio majus. C. B. P. 106. *Mountain Treacle Muſtard with a Woad leaf.*

This plant grows naturally upon the mountains in Auſtria and Iſtria; it is a biennial, ſo generally dies ſoon after the ſeeds are perfected. It riſes with an upright branching ſtalk about a foot high, garniſhed with heart-ſhaped ſmooth leaves, which embrace the ſtalks with their baſe; the ſtalks are terminated by cluſters of white flowers growing in form of umbels, each flower having four petals placed in form of a croſs; theſe are ſucceeded by roundiſh compreſſed pods, each containing one ſeed of the ſame form. The plant flowers in May, and the ſeeds ripen in July. This is eaſily propagated by ſeeds, which may be ſown in ſmall patches in the borders of the flower-garden the beginning of April, and when the plants are up, there ſhould be four or five left in each patch; the others ſhould be pulled out, to give theſe room to grow; after this, they will require no other culture but to keep them clean from weeds.

PENDU-

PENDULOUS HEADS OF FLOWERS are ſuch as hang downward.

PENNATED. A pennated leaf (called in Latin *Folium Pennatum*) is a compound leaf, divided into ſeveral parts (each of which is called a lobe,) placed along the middle rib, either alternately, or by pairs. When the middle rib is terminated by an odd lobe, it is ſaid to be unequally pennated, and equally pennated, when it is not terminated by an odd lobe. When the lobes are all nearly of the ſame form and bigneſs, it is called an uniform pennated leaf; when they are not ſo, it is ſaid to be difform. Examples of pennated leaves are the Aſh, Walnut, &c.

PENNY-ROYAL. See PULEGIUM.

PENTAPETALOUS FLOWERS are ſuch as have five leaves.

PENTAPETES. Lin. Gen. Plant 757. Alcea. Raii Supp. 523.

The CHARACTERS are,

The flower has for the moſt part a double empalement, the outer being ſmall and compoſed of three leaves, the inner is cut into five parts which are reflexed. It has five oblong petals which ſpread open, and fifteen narrow ſtamina joined in a tube at their baſe, with five long coloured ſummits, which are erect and barren; between each of theſe are three ſtamina, terminated by oblong erect ſummits. It has a roundiſh germen, with a cylindrical ſtyle the length of the ſtamina, crowned by a thick ſtigma. The germen afterward becomes an oval capſule with five cells, filled with oblong ſeeds.

This genus of plants is ranged in the third ſection of Linnæus's ſixteenth claſs, which includes thoſe plants whoſe flowers have many ſtamina which are connected with the ſtyle, forming together a column.

We have but one SPECIES of this genus at preſent in the Engliſh gardens, viz.

PENTAPETES (*Phœnicia*) foliis haſtato-lanceolatis ſerratis. Lin. Sp. Plant. 698. *Pentapetes with halbert-pointed, ſpear-ſhaped, ſawed leaves.* Alcea Indica lucido haſtato folio, flore blattarie Phœnicio. Raii Supp. 523. *Indian Vervain Mallow with a lucid ſpear-ſhaped leaf, and a ſcarlet flower like Moth Mullein.*

This plant grows naturally in India, from whence I have ſeveral times received the ſeeds; it is an annual plant which dies in the autumn, ſoon after it has ripened the ſeeds. It hath an upright ſtalk from two to near three feet high, ſending out ſide branches the whole length; thoſe from the lower part of the ſtalks are the longeſt, the others gradually diminiſh, ſo as to form a ſort of pyramid. Theſe are garniſhed with leaves of different forms; the lower leaves, which are largeſt, are cut on their ſides towards the baſe into two ſide lobes which are ſhort, and the middle is extended two or three inches farther in length, ſo that the leaves greatly reſemble the points of halberts in their ſhape; they are ſlightly ſawed on their edges, and are of a lucid green on their upper ſide, but are paler on their under, ſtanding upon pretty long foot-ſtalks. The leaves which are on the upper part of the branches are much narrower, and ſome of them have very ſmall indentures on their ſides; theſe ſit cloſer to the ſtalks, and are placed alternately. From the wings of the ſtalks the flowers come out; they are for the moſt part ſingle, but ſometimes there are two ariſing at the ſame place from the ſides of the foot-ſtalk of the leaves. The foot-ſtalk of the flower is ſhort and ſlender. The exterior empalement of the flower is compoſed of three ſhort leaves, which fall off ſoon; the interior is of one leaf, cut at the top into five acute ſegments, which ſpread open, and are almoſt as long as the petal. The flower is of one petal, cut into five obtuſe ſegments almoſt to the bottom, but as they are joined and fall off in one piece, ſo the flower is monopetalous, according to Mr. Ray and Tournefort. In the center of the flower ariſes a ſhort thick column, to which adhere fifteen ſhort ſtamina, terminated by oblong erect ſummits, and between every third ſtamina is ſituated a larger ſtamina, with an oblong erect ſummit of a deep red colour; theſe five large ſummits are barren, having no farina fœcundens upon them. Between the ſtamina is ſituated a roundiſh germen, ſupporting a ſtyle the length of the ſtamina, which is crowned by a thick ſtigma. Theſe being all joined at their baſe into a ſort of column, diſtinguiſh the tribe to which it belongs, which is the malvaceous; ſo that though the flower at firſt appearance greatly reſembles the flowers of Moth Mullein, yet upon examination of its eſſential characters, it will be found to belong to the claſs here mentioned. The flowers are of a fine ſcarlet colour, appearing in July, and are ſucceeded by roundiſh capſules with five cells, which are a little woody, each cell incloſing three or four oblong ſeeds, which ripen in the autumn.

The ſeeds of this plant muſt be ſown upon a good hot-bed early in March, and when the plants are fit to tranſplant, there ſhould be a new hot-bed prepared to receive them, into which ſhould be plunged ſome ſmall pots filled with good kitchen-garden earth; in each of theſe ſhould be one plant put, giving them a little water to ſettle the earth to their roots; they muſt alſo be ſhaded from the ſun till they have taken new root, then they ſhould be treated in the ſame way as other tender exotic plants, admitting the free air to them every day in proportion to the warmth of the ſeaſon, and covering the glaſſes with mats every evening to keep them warm. When the plants are advanced in their growth ſo as to fill the pots with their roots, they ſhould be ſhifted into larger pots, filled with the ſame ſort of earth as before, and plunged into another hot-bed, where they may remain as long as they can ſtand under the glaſſes of the bed without being injured; and afterward they muſt be removed either into a ſtove or a glaſs-caſe, where they may be ſcreened from the cold, and in warm weather have plenty of freſh air admitted to them. With this management the plants will begin to flower early in July, and there will be a ſucceſſion of flowers continued till the end of September, during which time they will make a good appearance. The ſeeds ripen gradually after each other in the ſame ſucceſſion as the flowers were produced, ſo they ſhould be gathered as ſoon as their capſules begin to open at the top. Theſe plants are ſometimes turned out of the pots, when they are ſtrong and planted in warm borders, where, if the ſeaſons prove very warm, the plants will flower pretty well; but theſe very rarely perfect their ſeeds, ſo that in order to have them in perfection, they muſt be treated in the manner before directed.

PENTAPHYLLOIDES. See POTENTILLA.

PENTHORUM. Gronov. Virg. 51. Lin. Gen. Plant. 580.

The CHARACTERS are,

The flower hath a permanent empalement of one leaf, cut into five equal ſegments; the flower has ſometimes five ſmall narrow petals ſituated between the ſegments of the empalement, and ten equal briſtly ſtamina twice the length of the empalement, which are permanent, terminated by roundiſh deciduous ſummits. It hath a coloured germen with five ſtyles the length of the ſtamina, crowned by obtuſe ſtigmas; and a ſingle five-cornered conical capſule having five cells, filled with ſmall compreſſed ſeeds.

This genus of plants is ranged in the fourth ſection of Linnæus's tenth claſs, intitled Decandria Pentagynia, which contains thoſe plants whoſe flowers have ten ſtamina and five ſtyles.

We have but one SPECIES of this genus, viz.

PENTHORUM (*Sedoides.*) Gron. Virg. 51. Lin. Sp. 620. *Penthorum like Houſleek.*

This is a biennial plant, which grows naturally in Virginia. The ſtalks riſe about a foot high, garniſhed with oblong leaves placed alternately, and are terminated by cluſters of greeniſh yellow flowers, which make little appearance; theſe are ſucceeded by five-cornered conical capſules, filled with ſmall compreſſed ſeeds. The flowers appear the latter end of July, and the ſeeds ripen in the autumn.

As this plant makes but a mean appearance, ſo it is rarely cultivated, except in botanic gardens for the ſake of variety; but ſuch as are deſirous to have it, ſhould ſow the ſeeds on a moiſt ſhady ſpot of ground, and when the plants come up, if they are thinned and kept clean from weeds, they will require no other culture.

PEONY. See PÆONIA.

PEPO. See CUCURBITA.

PERENNIAL PLANTS are ſuch whoſe roots will abide many years, whether they retain their leaves in winter or not; thoſe which retain their leaves are called Evergreens, but ſuch as caſt their leaves are called Deciduous or Perdifols. Some of theſe have annual ſtalks, which die to the root every autumn, and ſhoot up again in the ſpring; to which Jungius gives the title of Radix reſtibilis.

PERESKIA. Plum. Nov. Gen. 37. tab. 26. Cactus. Lin. Gen. Plant. 539. Gooſeberry, vulgò.

The CHARACTERS are,

It hath a Roſe-ſhaped flower conſiſting of ſeveral leaves, which are placed orbicularly, whoſe cup afterward becomes a ſoft, fleſhy, globular fruit beſet with leaves. In the middle of the fruit are many flat roundiſh ſeeds included in a mucilage.

We have but one SPECIES of this plant, viz.

PERESKIA (*Aculeata*) aculeata, flore albo, fructu flavaſcente. Plum. Nov. Gen. 37. *Prickly Pereſkia with a white flower, and a yellowiſh fruit.* Cactus caule tereti arboreo ſpinoſo, foliis lanceolato-ovatis. Lin. Hort. Upſal. 122. *Cactus with a taper, tree-like, prickly ſtalk, and ſpear-ſhaped oval leaves.*

This plant grows in ſome parts of the Spaniſh Weſt-Indies, from whence it was brought to the Engliſh ſettlements in America, where it is called a Gooſeberry, and by the Dutch it is called Blad Apple. It hath many ſlender branches which will not ſupport themſelves, ſo muſt be ſupported by ſtakes, otherwiſe they will trail on whatever plants grow near them. Theſe branches, as alſo the ſtem of the plant, are beſet with long whitiſh ſpines, which are produced in tufts. The leaves are roundiſh, very thick, and ſucculent, and the fruit is about the ſize of a Walnut, having tufts of ſmall leaves on it, and hath a whitiſh mucilaginous pulp.

It may be propagated by planting of the cuttings during any of the ſummer months: theſe cuttings ſhould be planted in pots filled with freſh light earth, and plunged into a moderate hot-bed of tanners bark, obſerving to ſhade them from the ſun in the heat of the day, as alſo to refreſh them every third or fourth day with water. In about two months the cuttings will have made good roots, when they may be carefully taken out of the pots, and each planted into a ſeparate pot filled with freſh earth, and then plunged into the hot-bed again, where they may remain during the ſummer ſeaſon; but at Michaelmas, when the nights begin to be cold, they ſhould be removed into the ſtove, and plunged into the bark-bed. During the winter ſeaſon the plants muſt be kept warm, and ſhould be watered twice a week; but in cold weather it ſhould not be given in large quantities. In ſummer they muſt have a large ſhare of air, and muſt be more plentifully watered, but they ſhould conſtantly remain in the ſtove; for though they will bear the open air in ſummer in a warm ſituation, yet they will make no progreſs if they are placed abroad; nor do they thrive near ſo well in the dry ſtove, as when they are plunged in the tan; ſo that the beſt way is to ſet them next a trellis, at the back of the tan-bed, to which their branches may be faſtened, to prevent their trailing on other plants. This plant has not as yet produced either flowers or fruit in England, but as there are ſeveral plants pretty well grown in the gardens of the curious, we may expect ſome of them will flower in a ſhort time.

PERICLYMENUM. Tourn. Inſt. R. H. 608. tab. 578. Caprifolium. Tourn. Inſt. R. H. 608. tab. 379 Lonicera. Lin. Gen. Plant. 210. Honeyſuckle; in French, *Chevre-feuille.*

The CHARACTERS are;

The empalement of the flower is ſmall, and cut into five parts ſitting upon the germen. The flower is of one petal, having an oblong tube, which is cut at the top into five ſegments which turn backward. It has five awl-ſhaped ſtamina almoſt the length of the petal, terminated by oblong ſummits, and a roundiſh germen ſituated below the flower, ſupported by a ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward becomes an umbilicated berry with two cells, each containing one roundiſh ſeed.

This genus of plants is by Dr. Linnæus placed in the firſt ſection of his fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and one ſtyle, and joins it to the Lonicera of Plumier, and the Chamæceraſus of Tournefort; but as the flowers of this genus differ greatly in their form from either of thoſe genera, ſo I have taken the liberty of ſeparating it from them.

The SPECIES are,

1. PERICLYMENUM (*Sempervirens*) floribus capitatis terminalibus omnibus connatis ſempervirentibus. *Honeyſuckle with flowers growing in heads at the end of the branches, and evergreen leaves joined round the ſtalk.* Periclymenum perfoliatum Virginianum ſempervirens & florens. H. L. *Perfoliate, evergreen, Virginia Honeyſuckle which always flowers, commonly called Trumpet Honeyſuckle.*
2. PERICLYMENUM (*Racemoſum*) racemis lateralibus oppoſitis, floribus pendulis, foliis lanceolatis integerrimis. *Honeyſuckle with flowers in long bunches growing oppoſite, hanging down, and entire ſpear-ſhaped leaves.* Periclymenum racemoſum flore flavaſcente, fructu niveo. Hort. Elth. 306. tab. 228. *Honeyſuckle with yellowiſh flowers growing in bunches, and a ſnowy fruit.*
3. PERICLYMENUM (*Verticillatum*) corymbis terminalibus, foliis ovatis verticillatis petiolatis. *Honeyſuckle with round bunches of flowers at the end of the branches, and oval leaves growing in whorls, having foot-ſtalks.* Periclymenum aliud arboreſcens ramulis inflexis, flore corallino. Plum. Cat. 17. *Another tree-like Honey-ſuckle with inflexed branches, and a coral-coloured flower.*
4. PERICLYMENUM (*Germanicum*) capitulis ovatis imbricatis terminalibus, foliis omnibus diſtinctis. *Honeyſuckle with oval imbricated heads terminating the ſtalks, and the leaves diſtinct.* Caprifolium Germanicum. Dod. p. 411. *The German Honeyſuckle.*
5. PERICLYMENUM (*Italicum*) floribus verticillatis terminalibus ſeſſilibus, foliis ſummis connato-perfoliatis. Hort. Cliff. 45. *Honeyſuckle with whorls of flowers ſitting cloſe at the ends of the branches, and the upper leaves ſurrounding the ſtalk.* Caprifolium Italicum. Dod. p. 411. *Italian Honeyſuckle.*
6. PERICLYMENUM (*Vulgare*) floribus corymboſis terminalibus, foliis hirſutis diſtinctis, viminibus tenuioribus. *Honeyſuckle with a corymbus of flowers terminating the ſtalks, hairy leaves growing diſtinct, and very ſlender branches, commonly called Engliſh Honeyſuckle, or Woodbine.*
7. PERICLYMENUM (*Americanum*) floribus verticillatis terminalibus ſeſſilibus, foliis connato-perfoliatis ſempervirentibus glabris. *Honeyſuckle with whorled flowers ſitting cloſe, terminating the ſtalks, and ſmooth evergreen leaves ſurrounding the ſtalks.* Caprifolium perfoliatum ſempervirens, floribus ſpecioſis. Hort. Chelſ. *The evergreen Honeyſuckle, having beautiful flowers.*

The firſt ſort grows naturally in Virginia, and many other parts of North America, but has been long cultivated in the Engliſh gardens by the title of Virginia Trumpet Honeyſuckle. Of theſe there are two varieties, if not diſtinct ſpecies, one being much hardier than the other. The old ſort, which came from Virginia, has ſtronger ſhoots; the leaves are of a brighter green; the bunches of flowers are larger, and deeper coloured than the other which came from Carolina. Theſe plants have the appearance of the common Honeyſuckle, but the ſhoots are weaker than any of thoſe, except the wild ſort called Woodbine; they are of a purpliſh red colour, and ſmooth. The leaves are of an oblong oval ſhape inverted, and

cloſely ſurround the ſtalk; of a lucid green on their upper ſide, but pale on their under. The flowers are produced in bunches at the end of the branches; theſe have long ſlender tubes, which are enlarged at the top, where they are cut into five almoſt equal ſegments. The outſide of the flower is of a bright ſcarlet, and the inſide yellow; they have great appearance of the Honeyſuckle, but are not ſo deeply divided, nor are the ſegments reflexed. They have no odour, but for the beauty of their flowers, and their long continuance, together with their leaves being evergreen, they are preſerved in moſt curious gardens.

Theſe plants ſhould be planted againſt walls or pales, to which their branches ſhould be trained for ſupport, otherwiſe they will fall to the ground; for they cannot be reduced to heads like many of the Honeyſuckles, becauſe their branches are too weak and rambling, and are liable to be killed in ſevere winters; therefore they ſhould be planted to a warm aſpect, where they will begin to flower the latter end of June, and there will be a ſucceſſion of flowers till the autumn. Theſe are propagated by laying down their young branches, which will eaſily take root, and may be afterward treated like the Honeyſuckle.

The ſecond ſort grows naturally in Jamaica; this hath many ſlender branches which cannot ſupport themſelves, but trail upon any neighbouring buſhes. They grow eight or ten feet long, are covered with a brown bark, and garniſhed with ſpear-ſhaped leaves about two inches and a half long, and one broad in the middle; of a lucid green on their upper ſide, but pale on their under, ſtanding by pairs oppoſite. The flowers come out from the ſide of the branches at each joint; they are ranged on each ſide the foot-ſtalk in long bunches like Currants. The bunches come out oppoſite; they are three or four inches long. The flowers are ſmall, of a yellowiſh green, and are ſucceeded by ſmall berries of a ſnow white colour, from whence the plant is called Snowberry-buſh in America.

The third ſort grows naturally in ſome of the iſlands in the Weſt-Indies; this riſes with a ſhrubby ſtalk ten or twelve feet high, ſending out many ſlender branches, covered with a light brown bark, garniſhed with oval leaves near two inches long, and an inch and a quarter broad, four of them coming out at each joint in whorls round the ſtalk; they ſtand upon ſhort foot-ſtalks, and have one ſtrong midrib, with ſeveral veins running from the midrib to the ſides. The flowers come out in round bunches at the end of the branches; they are of a deep coral colour on their outſide, but of a pale red within. This was found growing in Jamaica by the late Dr. Houſtoun, who brought it to England.

Theſe two ſorts are too tender to thrive in this country without artificial heat; they are propagated by ſeeds, which muſt be procured from the countries where they naturally grow, for they do not ripen ſeeds here. Theſe ſhould be ſown in pots, and plunged into a moderate hot-bed, where they may remain till the autumn, for the plants rarely come up the firſt year; ſo the pots ſhould be removed into the ſtove for the winter ſeaſon, and the following ſpring placed on a freſh hot-bed, which will bring up the plants; and when they are fit to remove, they ſhould be each planted in a ſeparate ſmall pot filled with light earth, and plunged into a freſh hot-bed, ſhading them from the ſun till they have taken new root, after which they muſt be treated in the manner as other tender plants from thoſe countries. As the plants obtain ſtrength, they ſhould be more hardily treated, by placing them abroad in a ſheltered ſituation for two months or ten weeks, in the warmeſt part of the ſummer, and in the winter they may be placed in a dry ſtove, kept to a moderate temperature of warmth, where they will thrive, and produce their flowers in the autumn.

The fourth ſort is the common Dutch or German Honeyſuckle, which has been generally ſuppoſed the ſame with the Engliſh wild ſort called Woodbine, but is undoubtedly a very different ſpecies, for the ſhoots of this are much ſtronger. The plants may be trained with ſtems, and formed into heads, which the wild ſort cannot, their branches being too weak and trailing for this purpoſe. The branches of this are ſmooth, of a purpliſh colour, garniſhed with oblong oval leaves three inches long, and an inch and three quarters broad, of a lucid green on their upper ſide, but pale on their under, having very ſhort foot-ſtalks; they are placed by pairs, but are not joined at their baſe. The flowers are produced in bunches at the end of the branches, each flower ariſing out of a ſcaly cover, which cover, after the flowers fade, forms an oval head, whoſe ſcales lie over each other like thoſe outſide, and yellowiſh within, of a very agreeable of fiſh. The flowers are of a reddiſh colour on their odour. This ſort flowers in June, July, and Auguſt. There are two other varieties of this ſpecies, one is called the long blowing, and the other the late red Honeyſuckle.

The fifth ſort is commonly called the Italian Honeyſuckle; of this there are two or three varieties, the early white Honeyſuckle is one; this is the firſt which flowers, always appearing in May. The branches of this are ſlender, covered with a light green bark, and garniſhed with oval leaves of a thin texture, placed by pairs, fitting cloſe to the branches, but thoſe which are ſituated toward the end of the branches, join at their baſe, ſo that the ſtalk ſeems as if it came through the leaves. The flowers are produced in whorled bunches at the end of the branches; they are white, and have a very fragrant odour, but are of ſhort duration, ſo that in about a fortnight they are entirely over; and ſoon after the leaves appear as if blighted and ſickly, making an indifferent appearance the whole ſummer, which has rendered them leſs valued than the others. The other variety is the yellow Italian Honeyſuckle, which is the next in ſucceſſion to the white. The ſhoots of this are much like thoſe of the former, but have a darker bark; the leaves are alſo of a deeper green; the flowers are of a yellowiſh red, and appear ſoon after the white; they are not of much longer duration, and are ſucceeded by red berries, containing one hard ſeed incloſed in a ſoft pulp, which ripens in the autumn.

The ſixth ſort is the common wild Engliſh Honeyſuckle or Woodbine; this grows naturally in the hedges in many parts of England. The branches are very ſlender and hairy, trailing over the neighbouring buſhes, and twining round the boughs of trees; the leaves are oblong, hairy, and diſtinct, not joined at their baſe; they are placed oppoſite; the flowers are produced in long bunches at the end of the branches. There are two varieties, one with white, and the other yellowiſh red flowers. Theſe appear in July, and there is a ſucceſſion of flowers till the autumn.

There is alſo a variety of this with variegated leaves, and one with cut leaves ſomewhat like the leaves of Oak, and one of theſe with variegated leaves; but, as theſe are accidental varieties, I have not enumerated them.

The ſeventh ſort is ſuppoſed to grow naturally in North America; this hath ſtrong branches, covered with a purple bark, which are garniſhed with lucid green leaves embracing the ſtalks, which continue their verdure all the year. The flowers are produced in whorled bunches at the end of the branches; there are frequently two and ſometimes three of theſe bunches riſing one out of another; they are of a bright red on their outſide, and yellow within, of a ſtrong aromatic flavour. This ſort begins to flower in June, and there is a ſucceſſion of flowers till the froſt puts a ſtop to them, ſo that it is the moſt valuable of all the ſorts.

All the ſorts of Honeyſuckles are propagated either by layers or cuttings: when they are propagated by layers, the young ſhoots only ſhould be choſen for that purpoſe; they ſhould be layed in the autumn,

and by the following autumn they will have taken root, when they ſhould be cut off from the plants, and either planted where they are to remain, or into a nurſery to be trained up, either for ſtandards, which muſt be done by fixing down ſtakes to the ſtem of each plant, to which their principal ſtalk ſhould be faſtened, and all the other muſt be cut off; the principal ſtalk muſt be trained to the intended height of the ſtem, then it ſhould be ſhortened to force out lateral branches, and theſe ſhould be again ſtopped to prevent their growing too long; by the conſtant repeating this as the ſhoots are produced, they may be formed into a ſort of ſtandard; but if any regard is had to their flowering, they cannot be formed into regular heads, for by conſtantly ſhortening their branches, the flower-buds will be cut off, ſo that few flowers can be expected; and as it is an unnatural form for theſe trees, ſo there ſhould be but few of them reduced to it, for when they are planted near other buſhes, in whoſe branches the ſhoots of the Honeyſuckles may run and mix, they will flower much better, and have a finer appearance than when they are more regularly trained; therefore, when the plants are in the nurſery, if two or three of the principal ſhoots are trained up to the ſtakes, and the others are entirely cut off, they will be fit to tranſplant the following autumn, to the places where they are to remain; for though the roots may be tranſplanted of a greater age, yet they do not thrive ſo well as when they are removed while they are young. When theſe plants are propagated by cuttings, they ſhould be planted in September, as ſoon as the ground is moiſtened by rain. The cuttings ſhould have four joints, three of which ſhould be buried in the ground, and the fourth above the ſurface, from which the ſhoots ſhould be produced. Theſe may be planted in rows, at about a foot diſtance row from row, and four inches aſunder in the rows, treading the earth cloſe to them; and as the evergreen and late red Honeyſuckles, are a little more tender than the other ſorts, ſo if the ground between the rows where theſe are planted, is covered with tanners bark or other mulch to keep out the froſt in winter, and the drying winds of the ſpring, it will be of great advantage to the cuttings; and if the cuttings of theſe ſorts have a ſmall piece of the two years wood at their bottom, there will be no hazard of their taking root. The plants which are raiſed from cuttings, are preferable to thoſe which are propagated by layers, as they have generally better roots.

Theſe plants will grow in almoſt any ſoil or ſituation (except the laſt mentioned, which will not thrive where they are too much expoſed to the cold in winter) they thrive beſt in a ſoft ſandy loam, and will retain their leaves in greater verdure in ſuch ground than if planted in a dry gravelly ſoil, where in warm dry ſeaſons their leaves often ſhrink, and hang in a very diſagreeable manner; nor will thoſe ſorts which naturally flower late in the autumn, continue ſo long in beauty on a dry ground, unleſs the ſeaſon ſhould prove moiſt and cold, as thoſe in a gentle loam, not too ſtiff or wet.

There are few ſorts of ſhrubs which deſerve cultivation better than moſt of theſe, for their flowers are very beautiful, and perfume the air to a great diſtance with their odour, eſpecially in the mornings and evenings, and in cloudy weather, when the ſun does not exhale their odour, and raiſe it too high to be perceptible; ſo that in all retired walks, there cannot be too many of theſe intermixed with the other ſhrubs. I have ſeen theſe plants intermixed in hedges planted either with Alder or Laurel, where the branches have been artfully trained between thoſe of the hedge; from which the flowers have appeared diſperſed from the bottom of the hedge to the top, and being intermixed with the ſtrong green leaves of the plants which principally compoſe the hedge, they have made a fine appearance; but the beſt ſorts for this purpoſe, are the evergreen and long-blowing Honeyſuckles, becauſe their flowers continue in ſucceſſion much longer than the other ſorts.

Theſe plants may be propagated by ſeeds, but unleſs they are ſown in the autumn ſoon after they are ripe, the plants will not come up the firſt year.

PERIPLOCA. Tourn. Inſt. R. H. 93. tab. 22. Lin. Gen. Plant. 267. [Περιπλοκη, of περι, about, and πλοκη, a knitting or plaiting, becauſe this plant entangles itſelf with itſelf, or any other neighbouring plants.] Virginian Silk.

The CHARACTERS are,

The flower hath a ſmall permanent empalement, cut into five points. The flower has one plain petal, cut into five narrow ſegments, which are indented at their points, with a ſmall nectarium going round the center of the petal, and the five incurved filaments which are not ſo long as the petal, and five ſhort ſtamina terminated by erect ſummits which join in a head. It has a ſmall biſid germen with ſcarce any ſtyle, crowned by two ſimple ſtigmas. The germen afterward becomes two oblong bellied capſules with one cell, filled with ſeeds crowned with down, lying over each other like the ſcales of fiſh.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, which includes thoſe plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. PERIPLOCA (*Græca*) floribus interne hirſutis. Lin. Sp. Plant. 211. *Virginia Silk, with flowers hairy on their inſide.* Periploca foliis oblongis. Tourn. Inſt. R. H. 93. *Virginia Silk with oblong leaves.*
2. PERIPLOCA (*Africana*) caule hirſuto. Lin. Sp. Plant. 211. *Virginia Silk with a hairy ſtalk.* Apocynum ſcandens, Africanum, vincæ pervincæ folio ſubincanum. Com. Plant. Rar. 18. *Climbing African Dogſbane, with a hoary Periwinkle leaf.*
3. PERIPLOCA (*Fruticoſa*) foliis oblongo-cordatis pubeſcentibus, floribus alaribus, caule fruticoſo ſcandente. *Virginia Silk, with oblong heart-ſhaped leaves which are covered with ſoft hairs, and flowers proceeding from the ſides of the ſtalks, which are ſhrubby.* Periploca foliis cordatis holoſericeis, floribus parvis, albis, campaniformibus. Houſt. MSS. *Periploca with heart-ſhaped ſilky leaves, and ſmall, white, bell-ſhaped flowers.*

The firſt ſort 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 ſide, which twine round each other, and are garniſhed 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 foot-ſtalks. The flowers come out toward the end of the ſmall branches in bunches; they are of a purple colour, and hairy on their inſide, compoſed of one petal, cut into five ſegments almoſt to the bottom, which ſpread open in form of a ſtar, and within is ſituated a nectarium, which goes round the five ſhort ſtamina and germen, and is hairy. The germen afterward turns to a double long taper pod or capſule, filled with compreſſed ſeeds, lying over each other like the ſcales of fiſh, having a ſoft down fixed to their top. This plant flowers in July and Auguſt, but rarely ripens its ſeeds in England.

It is eaſily propagated by laying down of the branches, which will put out roots in one year, and may then be cut from the old plant, and planted where they are to remain. Theſe may be tranſplanted either in autumn, when the leaves begin to fall, or in the ſpring before they begin to ſhoot, and muſt be planted where they may have ſupport, otherwiſe they will trail on the ground, and faſten themſelves about whatever plants are near them.

The ſecond ſort grows naturally in Africa; this hath many ſlender ſtalks, which twine about each other, or any neighbouring ſupport, and will riſe near three feet high, putting out ſeveral ſmall ſide branches; theſe are hairy, as are alſo the leaves, which are oval, about

about three quarters of an inch long, and half an inch broad, ſtanding by pairs upon very ſhort foot-ſtalks. The flowers come out in ſmall bunches from the ſide of the ſtalks; they are ſmall, and of a worn-out purpliſh colour, and a ſweet ſcent, being cut into five narrow ſegments almoſt to the bottom. It flowers in the ſummer months, but does not produce ſeeds here. There is a variety of this with ſmooth leaves and ſtalks, from the ſame country.

The third ſort was diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz in America. This riſes with a ſtrong woody ſtalk to the height of five or ſix feet, covered with a gray bark, putting out many weak branches, which twiſt themſelves about any neighbouring ſupport, and riſe to the height of twenty feet; they are garniſhed with heart-ſhaped leaves three inches long, and two broad near their baſe; they are of a yellowiſh green, covered with ſilky hairs, which are ſoft to the touch; they ſtand oppoſite upon pretty long foot-ſtalks. The flowers come out in ſmall bunches from the wings of the leaves; they are ſmall, white, and of the open bell ſhape; theſe are ſucceeded by ſwelling taper pods, filled with ſeeds crowned with long feathery down.

The ſecond ſort is hardy enough to thrive in this country, with a little protection from the froſt in winter. If the plants are ſheltered under a common frame or placed in a green-houſe during the winter ſeaſon, and placed abroad with other hardy exotic plants in ſummer, they will thrive and flower very well; but as all the plants of this genus have a milky juice, ſo they ſhould not have much wet, eſpecially in cold weather, leſt it rot them. They are eaſily propagated by laying down of their branches, which in one year will have roots enough to tranſplant; theſe ſhould be planted in a light ſandy loam not rich, and the pots muſt not be too large, for when they are over potted they will not thrive.

The third ſort is tender, ſo will not thrive in England, unleſs the plants are placed in a warm ſtove. They may be propagated by laying down of their branches in the ſame manner as the former; or from ſeeds, when they can be procured from the places where they naturally grow. Theſe ſhould be ſown upon a good hot-bed, and when the plants come up, they muſt be treated in the ſame manner as other tender exotic plants.

If theſe plants are conſtantly kept plunged in the tan-bed of the ſtove, they will thrive and flower much better than in any other ſituation, but the ſtove ſhould not be kept too warm in winter; and in the ſummer the plants ſhould have a large ſhare of free air admitted to them; for when they are kept too cloſe, their leaves will be covered with inſects, and the plants will become ſickly in a ſhort time.

All the ſpecies of this genus are ſuppoſed to be hurtful to animals, as the Dogſbanes in general are, and theſe are very near a-kin to them, both in their characters and qualities.

PERIWINCLE. See VINCA.

PERSEA. Plum. Nov. Gen. 44. tab. 20. Laurus. Lin. Gen. Plant. 452. The Avocado, or Avogato Pear.

The CHARACTERS are,

The flower hath no empalement, but is compoſed of ſix petals ending in acute points, which ſpread open. It hath ſix ſtamina which are about half the length of the petals, terminated by roundiſh ſummits, and a ſhort ſtyle, crowned by a pyramidal germen, which afterward becomes a large fleſhy pyramidal fruit, incloſing an oval ſeed having two lobes.

This genus of plants Dr. Linnæus has joined to his genus of Laurus, which he places in the firſt ſection of his ninth claſs, which includes thoſe plants whoſe flowers have nine ſtamina and one ſtyle.

We have but one SPECIES of this plant, viz.

PERSEA (*Americana.*) Cluſ. Hiſt. *The Avocado, or Avogato Pear.*

This tree grows in great plenty in the Spaniſh Weſt-Indies, as alſo in the iſland of Jamaica, and hath been tranſplanted into moſt of the Engliſh ſettlements in the Weſt-Indies on account of its fruit; which is not only eſteemed by the inhabitants as a fruit to be eaten by way of deſert, but is very neceſſary for the ſupport of life. The fruit of itſelf is very inſipid, for which reaſon they generally eat it with the juice of Lemons and ſugar, to give it a piquancy. It is very nouriſhing, and is reckoned a great incentive to venery. Some people eat this fruit with vinegar and Pepper.

In the warm countries where this is planted, it grows to the height of thirty feet or more, and has a trunk as large as our common Apple-trees; the bark is ſmooth, and of an Aſh colour; the brances are beſet with pretty large, oblong, ſmooth leaves, like thoſe of Laurel, which are of a deep green colour, and continue on the tree throughout the year. The flowers and fruit are, for the moſt part, produced toward the extremity of the branches. The fruit is as large as one of the largeſt Pears, incloſing a large ſeed with two lobes, included in a thin ſhell.

In Europe this plant is preſerved as a curioſity, by thoſe perſons who delight in collecting exotic plants; and though there is little hope of its producing fruit, yet for the beauty of its ſhining green leaves, which continue through the winter, it deſerves a place in every curious collection of plants.

It is propagated by ſeeds, which ſhould be obtained as freſh as poſſible from the countries of its growth; and if they are brought over in ſand, will be more likely to grow, than ſuch as are brought over dry. Theſe nuts or ſeeds ſhould be planted in pots, filled with light rich earth, and plunged into a hot-bed of tanners bark, which ſhould be kept pretty warm. The pots ſhould be alſo frequently watered when the earth appears dry, which will greatly facilitate the vegetation of the ſeed, provided the water is not given in large quantities, which would rot them. In about five or ſix weeks the plants will come up, when they muſt be treated very tenderly, for the bed muſt be kept in a due temperature for heat; and when the weather proves warm, the freſh air ſhould be admitted to the plants, by raiſing the glaſſes a little. When they have grown about four inches high, they ſhould be carefully tranſplanted; and where there are ſeveral plants in one pot, they muſt be parted, being careful to preſerve a ball of earth to the root of each, and planted into ſeparate ſmall pots filled with light rich earth, and then plunged into a hot-bed of tanners bark, obſerving to ſhade them until they have taken new root; after which time they ſhould have freſh air admitted to them, in proportion to the warmth of the ſeaſon. Towards Michaelmas the plants muſt be removed into the ſtove, and plunged into the bark-bed, where, during the winter ſeaſon, they ſhould be kept in a moderate warmth, and muſt be gently watered twice a week. In the ſpring the plants ſhould be ſhifted into pots a ſize larger than the former, and the bark-bed ſhould be then renewed with freſh tan, which will ſet the plants in a growing ſtate early, whereby they will make a fine progreſs the following ſummer. Theſe plants muſt be conſtantly kept in the ſtove, for they are too tender to bear the open air in this country at any ſeaſon, but in warm weather ſhould have a large ſhare of air admitted to them.

PERSICA. Tourn. Inſt. R. H. 624. tab. 402. [ſo called of Perſia in Aſia, from whence this kind of plant was brought into our climate.] The Peach-tree. Amygdalus. Lin. Gen. 619.

The CHARACTERS are,

The flower has a tubulous empalement of one leaf, cut into five obtuſe ſegments which ſpread open. It hath five oblong, oval, obtuſe petals, which are inſerted in the empalement, and about thirty erect ſlender ſtamina which are ſhorter than the petals, terminated by ſingle ſummits; theſe are alſo inſerted in the empalement. It hath a roundiſh hairy germen, ſupporting a ſtyle the length of the ſtamina, crowned by a headed ſtigma. The germen afterward

afterward becomes a roundiſh, woolly, large, eſculent fruit, with a longitudinal furrow, incloſing an oval nut with a netted ſhell, having many punctures.

This genus of plants is ranged in the firſt ſection of Linnæus's twelfth claſs, which includes thoſe plants whoſe flowers have from twenty to thirty ſtamina, which are inſerted in the empalement of the flower, and one ſtyle.

There is a great variety of theſe trees, which are cultivated in the gardens of thoſe who are curious in collecting the ſeveral ſorts of fruit from the different parts of Europe: I ſhall therefore firſt beg leave to mention two or three ſorts, which are cultivated for the beauty of their flowers; after which I ſhall enumerate the ſeveral varieties of good fruit which have come to my knowledge.

The SPECIES are,

1. PERSICA (*Vulgaris*) vulgaris, flore pleno. Tourn. Inſt. R. H. 625. *Common Peach-tree with double flowers.*
2. PERSICA (*Nana*) Africana nana, flore incarnato ſimplici. Tourn. Inſt. R. H. 625. *Dwarf Almond with ſingle flowers*, vulgò.
3. PERSICA (*Amygdalus*) Africana nana flore incarnato pleno. Tourn. Inſt. R. H. 925. *Double flowering Dwarf Almond*, vulgò.

The firſt of theſe trees is a very great ornament in a garden early in the ſpring, the flowers being very large, double, and of a beautiful red or purple colour. This may be planted in ſtandards, and if intermixed with other flowering trees of the ſame growth, makes a very agreeable variety; or it may be planted againſt the walls of the pleaſure-garden, where the beautiful appearance of its flowers early in the ſpring, will be more acceptable in ſuch places than the choiceſt fruits, which muſt be expoſed to ſervants, and others, ſo that they ſeldom can be preſerved in large families until they are ripe. This tree may be propagated by budding it on the Almond or Plum ſtocks, in the ſame manner as the other ſort of Peaches, and ſhould be planted in a good freſh ſoil that is not over moiſt.

The other two ſorts are of humbler growth, ſeldom riſing above three or four feet high; theſe may be budded upon Almond ſtocks, or propagated by layers; they will alſo take upon Plum ſtocks, but they are very apt to canker, after they have ſtood four or five years upon thoſe ſtocks, eſpecially that with double flowers, which is tenderer than the other, which ſends out ſuckers from the root, whereby it may be propagated in great plenty.

Theſe ſhrubs make a very agreeable variety amongſt low flowering trees, in ſmall wilderneſs quarters. The ſingle ſort flowers in the beginning of April, and the double is commonly three weeks later.

I ſhall now proceed to mention the ſorts of good Peaches which have come to my knowledge; and though perhaps a greater number of ſorts may be found in ſome catalogues of fruits, yet I doubt whether many of them are not the ſame kinds called by different names; for, in order to determine the various kinds, it is neceſſary to obſerve the ſhape and ſize of the flowers, as well as the different parts of the fruit; for this does ſometimes determine the kind, when the fruit alone is not ſufficient; beſides, there is a vaſt difference in the ſize and flavour of the ſame Peach, when planted on different ſoils and aſpects; ſo that it is almoſt impoſſible for a perſon who is very converſant with theſe fruits to diſtinguiſh them, when brought from various gardens.

The preſent confuſion of the names of fruits, hath been many times owing to the bringing over trees from France; for the perſons who are generally employed to bring over thoſe trees for ſale, are entirely ignorant of their various ſorts, and do themſelves take them upon truſt, from the perſons who make it their buſineſs to propagate great quantities, to ſupply the markets of France, whither they are brought in waggons, and ſold out in parcels to thoſe perſons who bring them into England. It alſo happens many times, if they are received by right names, that theſe in length of time are loſt, or the trees come into the poſſeſſion of other perſons, who not knowing the true name of the fruit, do often give them new names, whereby there is ſuch a confuſion in the names of fruit, as is impoſſible to rectify; and hence ſome perſons have ſuppoſed a much greater variety of Peaches than there is in reality, though as the greateſt part of theſe have been obtained from ſeeds, ſo their varieties may be multiplied annually, until there be no end of the ſorts. However, I ſhall content myſelf with enumerating the principal ſorts now known in England, which are ſufficient for any gentleman to make a collection to continue through the whole ſeaſon of fruit.

1. The white Nutmeg (called by the French, L'Avant Péche Blanche:) this tree has ſawed leaves, but generally ſhoots very weak, unleſs it is budded upon an Apricot ſtock; the flowers are large and open, the fruit is ſmall and white, as is alſo the pulp at the ſtone, from which it ſeparates; it is a little muſky and ſugary, but is only eſteemed for its being the firſt ſort ripe. It is in eating pretty early in July, and ſoon becomes meally.
2. The red Nutmeg (called by the French, L'Avant Péche de Troyes:) this tree has ſawed leaves, the flowers are large and open; the fruit is larger and rounder than the white Nutmeg, and is of a bright vermilion colour; the fleſh is white, and very red at the ſtone; it has a rich muſky flavour, and parts from the ſtone. This Peach is well eſteemed, it ripens toward the end of July.
3. The early or ſmall Mignon (called by the French, La Double de Troyes, or Mignonette:) this tree has ſmall contracted flowers, the fruit is of a middling ſize, and round; it is very red on the ſide next the ſun; the fleſh is white, and ſeparates from the ſtone, where it is red; the juice is vinous and rich. It is ripe the end of July, or beginning of Auguſt.
4. The yellow Alberge: this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is of a middling ſize, ſomewhat long; the fleſh is yellow and dry; it is ſeldom well flavoured, but ſhould be perfectly ripe before it is gathered, otherwiſe it is good for little. It is ripe early in Auguſt.
5. The white Magdalen: this tree has ſawed leaves; the flowers are large and open; the wood is generally black at the pith; the fruit is round, of a middling ſize; the fleſh is white to the ſtone, from which it ſeparates; the juice is ſeldom high flavoured; the ſtone is very ſmall. This ripens early in Auguſt.
6. The early purple (called by the French, La Pourprée hâtive:) this tree has ſmooth leaves; the flowers are large and open; the fruit is large, round, and of a fine red colour; the fleſh is white, but very red at the ſtone; is very full of juice, which has a rich vinous flavour, and is by all good judges eſteemed an excellent Peach. This is ripe before the middle of Auguſt.
7. The large or French Mignon: the leaves of this tree are ſmooth; the flowers are large and open; the fruit is a little oblong, and generally ſwelling on one ſide; it is of a fine colour; the juice is very ſugary, and of a high flavour; the fleſh is white, but very red at the ſtone, which is ſmall. This is ripe in the middle of Auguſt, and is juſtly eſteemed one of the beſt Peaches; this ſeparates from the ſtone. This ſort of Peach is tender, and will not thrive on a common ſtock, ſo is generally budded upon ſome vigorous ſhooting Peach, or an Apricot, by the nurſerymen, which enhances the price of the trees. But the beſt method is to bud this Peach into ſome old healthy Apricot, which is planted to a ſouth or ſouth-eaſt aſpect, and to cut away the Apricot when the buds have taken, and made ſhoots: upon ſome trees which I have ſeen thus managed, there has been a much greater quantity of fairer, and better flavoured fruit than I have ever obſerved elſewhere, and the trees have been much more healthy.
8. The Chevreuſe, or Belle Chevreuſe: this tree has ſmooth leaves; the flowers are ſmall and contracted;

the fruit is of a middling ſize, a little oblong, of a fine red colour; the fleſh is white, but very red at the ſtone, from which it ſeparates; it is very full of a rich ſugary juice, and ripens toward the end of Auguſt. This is a very good bearer, and may be ranged with the good Peaches.

9. The red Magdalen (called by the French about Paris, Madeleine de Courſon:) the leaves of this tree are deeply ſawed; the flowers are large and open; the fruit is large and round, of a fine red colour; the fleſh is white, but very red at the ſtone, from which it ſeparates; the juice is very ſugary, and of an exquiſite flavour. The fruit is ripe the end of Auguſt; it is one of the beſt ſort of Peaches.

10. The early Newington (or Smith's Newington:) this is very like, if not the ſame, with what the French call Le Pavie blanc. This tree has ſawed leaves; the flowers are large and open; the fruit is of a middling ſize, is of a fine red on the ſide next the ſun; the fleſh is firm and white, but very red at the ſtone, to which it cloſely adheres. It hath a ſugary juice, and is ripe the end of Auguſt.

11. The Montauban: this tree has ſawed leaves; the flowers are large and open; the fruit is of a middling ſize, of a deep red, inclining to purple next the ſun, but of a pale colour toward the wall; the fleſh is melting and white to the ſtone, from which it ſeparates; the juice is rich, and the tree is a good bearer. It ripens the middle of Auguſt, and is well eſteemed.

12. The Malta (which is very like, if not the ſame, with the Italian Peach:) this tree has ſawed leaves; the flowers are large and open; the fruit is of a middling ſize, of a fine red next the ſun: the fleſh is white and melting, but red at the ſtone, from which it ſeparates; the ſtone is flat and pointed; the tree is a good bearer. This ripens the end of Auguſt.

13. The Nobleſt: this tree has ſawed leaves; the flowers are large and open; the fruit is large, of a bright red next the ſun; the fleſh is white and melting, and ſeparates from the ſtone, where it is of a faint red colour; the juice is very rich in a good ſeaſon. It ripens the end of Auguſt.

14. The Chancellor: the leaves of this tree are ſmooth; the flowers are ſmall and contracted; the fruit is ſhaped ſomewhat like the Belle Chevreuſe, but is rounder; the fleſh is white and melting, and ſeparates from the ſtone, where it is of a fine red colour; the ſkin is very thin, and the juice is very rich. It ripens about the end of Auguſt, and is eſteemed one of the beſt ſort of Peaches. This tree is very tender, and will not ſucceed on common ſtocks, ſo is budded twice as the Mignon; and if budded on Apricots, as was directed for that ſort, will thrive much better than in any other method.

15. The Bellegarde (or as the French call it, the Gallande:) this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is very large and round, of a deep purple colour on the ſide to the ſun; the fleſh is white, melting, and ſeparates from the ſtone, where it is of a deep red colour; the juice is very rich. This ripens the beginning of September, and is an excellent Peach, but at preſent not common.

16. The Liſle (or as the French call it, La petite Violette hâtive:) this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is of a middling ſize, of a fine Violet colour toward the ſun; the fleſh is of a pale yellow and melting, but adheres to the ſtone, where it is very red; the juice is very vinous. This ripens the beginning of September.

17. The Bourdine: this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is large, round, and of a fine red colour next the ſun; the fleſh is white, melting, and ſeparates from the ſtone, where it is of a fine red colour; the juice is vinous and rich; this ripens the beginning of September, and is greatly eſteemed by the curious. The tree bears plentifully, and will produce fruit in ſtandards very well.

18. The Roſſanna: this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is large, a little longer than the Alberge; the fleſh is yellow and ſeparates from the ſtone, where it is red; the juice is rich and vinous. This ripens the beginning of September, and is eſteemed a good Peach. This is the ſame with what ſome call the purple, and others the red Alberge, it being of a fine purple colour on the ſide next the ſun.

19. The Admirable: this tree hath ſmooth leaves; the flowers are ſmall and contracted; the fruit is large, round, and red on the ſide next the ſun; the fleſh is white, melting, and ſeparates from the ſtone, where it is of a deep red colour; the juice is ſugary and rich. This ripens the beginning of September. This is by ſome called the early Admirable, but is certainly what the French call L'Admirable, and they have no other of this name which ripens later.

20. The old Newington: this tree has ſawed leaves; the flowers are large and open; the fruit is fair and large, of a beautiful red colour next the ſun; the fleſh is white, melting, and cloſely adheres to the ſtone, where it is of a deep red colour; the juice is very rich and vinous. This is eſtemed one of the beſt ſorts of Pavies. It ripens about the middle of September.

21. The Rambouillet (commonly called Rumbullion:) this tree has ſmooth leaves; the flowers are large and open; the fruit is of a middling ſize, rather round than long, deeply divided by a ſulcus or furrow in the middle; it is of a fine red colour next the ſun, but of a light yellow next the wall; the fleſh is melting, of a bright yellow colour, and ſeparates from the ſtone, where it is of a deep red colour; the juice is rich, and of a vinous flavour. This ripens the middle of September, and is a good bearer.

22. The Bellis (which I believe to be what the French call La Belle de Vitry:) the leaves of this tree are ſawed; the flowers are ſmall and contracted; the fruit is of a middle ſize, round, and of a pale red next the ſun; the fleſh is white and adheres to the ſtone, where it is red; the juice is vinous and rich. This ripens the middle of September.

23. The Portugal: this tree has ſmooth leaves; the flowers are large and open; the fruit is large, and of a beautiful red colour towards the ſun, the ſkin generally ſpotted; the fleſh is firm, white, and cloſely adheres to the ſtone, where it is of a faint red colour; the ſtone is ſmall, but full of deep furrows; the juice is rich and vinous. This ripens the middle of September.

24. La Teton de Venus (or Venus's breaſt,) ſo called from its having a riſing like a dug, or bubby: this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is of a middling ſize reſembling the Admirable, of a pale red colour next the ſun; the fleſh is melting, white, and ſeparates from the ſtone, where it is red; the juice is ſugary and rich. This ripens late in September.

25. La Pourprée (or as the French call it Pourprée tardive, i. e. the late purple:) this tree has very large leaves which are ſawed; the ſhoots are very ſtrong; the flowers are ſmall and contracted; the fruit is large, round, and of a fine purple colour; the fleſh is white, melting, and ſeparates from the ſtone, where it is red; the juice is ſugary and rich. This ripens late in September.

26. The Nivette: this tree has ſawed leaves; the flowers are ſmall and contracted; the fruit is large, ſomewhat longer than round, of a bright red colour next the ſun, and of a pale yellow on their other ſide; the fleſh is melting, and full of rich juice, and is very red at the ſtone, from which it ſeparates. This is eſteemed one of the beſt Peaches; it ripens in the middle of September.

27. The Royal (La Royale:) this tree has ſmooth leaves; the flowers are ſmall and contracted; the fruit is large, round, and of a deep red on the ſide next the ſun, and of a paler colour on the other ſide; the fleſh is white, melting, and full of a rich juice; it parts from the ſtone, where it is of a deep red colour.

lour. This ripens the middle of September, and, when the autumn is good, is an excellent Peach.

28. The Perſique: this tree has ſawed leaves; the flowers are ſmall and contracted; the fruit is large, oblong, and of a fine red colour next the ſun; the fleſh is melting, and full of a rich juice; it ſeparates from the ſtone, where it is of a deep red colour. The ſtalk has a ſmall knot upon it; this makes a fine tree, and is a good bearer; it ripens the end of September. Many gardeners call this the Nivette.

29. The monſtrous Pavy of Pomponne (called by the French, La Pavie rouge de Pomponne:) the leaves of this tree are ſmooth; the flowers are large and open; the fruit is very large and round, many times fourteen inches in circumference; the fleſh is white, melting, and cloſely adheres to the ſtone, where it is of a deep red colour; the outſide is a beautiful red next the ſun, and of a pale fleſh colour on the other ſide. This ripens the end of October, and when the autumn is warm, is an excellent Peach.

30. The Catharine: this tree hath ſmooth leaves; the flowers are ſmall and contracted; the fruit is large, round, and of a dark red colour next the ſun; the fleſh is white, melting, and full of a rich juice. It cloſely adheres to the ſtone, where it is of a deep red colour; it ripens the beginning of October, and in very good ſeaſons is an excellent Peach, but being ſo very late ripe, there are not many ſituations where it ripens well.

31. The Bloody Peach (called by the French, La Sanguinolle:) this Peach is of a middling ſize, of a deep red next the ſun; the fleſh is of a deep red quite to the ſtone, and from thence is by ſome gardeners called the Mulberry Peach. This fruit rarely ripens in England, ſo is not often planted, but it bakes and preſerves excellently; for which, as alſo the curioſity, one or two trees may be planted, where there is extent of walling.

There are ſome other ſorts of Peaches which are kept in ſome of the nurſeries, but thoſe which are here enumerated, are the ſorts moſt worth planting, and in the liſt, the choiceſt only ſhould be planted; but I ſhall juſt mention the names of thoſe ſorts omitted, for the ſatisfaction of the curious.

The Sion; the Bourdeaux; the Swalch or Dutch; the Carliſle; the Eaton; the Péche de Pau; yellow Admirable; the double Flower. This laſt ſort is generally planted more for the beauty of the flowers, than for the goodneſs of the fruit, of which ſome years the ſtandard trees produce great plenty; but they are late ripe, and have a cold, watery, inſipid juice. The Dwarf Peach is alſo preſerved in ſome places as a curioſity. This is a very tender tree, making very weak ſhoots, which are very full of flower-buds. The fruit is not ſo large as a Nutmeg, and not good, nor will the tree laſt any time, ſo it is not worth cultivating.

And indeed, from theſe thirty-one above-named, there are not above ten of them which I would adviſe to be planted; becauſe, when a perſon can be furniſhed with thoſe which are good, or has the beſt of the ſeaſon, it is not worth while to plant any which are middling or indifferent, for the ſake of variety; therefore the ſorts which I ſhould prefer, are theſe aftermentioned.

The early purple; the Groſſe Mignon; Belle Chevreuſe; red Magdalen; Chancellor; Bellegarde; Bourdine; Roſſanna; Rambouillet, and Nivette. Theſe are the ſorts beſt worth planting; and as they ſucceed each other, they will furniſh the table thro' the ſeaſon of Peaches; and, where there is room, and the ſituation very warm, one or two trees of the Catharine Peach ſhould have place, for in very warm ſeaſons it is an excellent fruit.

As theſe eleven ſorts do follow each other in their time of ripening, ſo unleſs there is extent of good aſpected walls, theſe will be ſufficient to furniſh any family during the ſeaſon of this fruit: but as in ſome ſeaſons there will be ſome ſorts of Peaches very good, which in other ſeaſons often prove but indifferent; therefore when there is a ſufficient extent of good walls, I would recommend the planting three or four other ſorts, which ſome years are excellent, though in general are not ſo good as thoſe before-mentioned. Theſe are the Montauban, the Liſle, the old Newington, La Teton de Venus, the Catharine, and the Perſique.

The French diſtinguiſh thoſe we call Peaches into two ſorts, viz. Pavies and Peaches; thoſe are called Peaches which quit the ſtone, and thoſe, whoſe fleſh cloſely adheres to the ſtone, are called Pavies. Theſe are much more eſteemed in France than the Peaches, though in England the latter are preferred to the former by many perſons.

The French alſo diſtinguiſh them into male and female; the Pavies they make to be the male, and the Peaches the female; but this diviſion is without foundation, ſince the kernels of both ſorts will produce trees equally; for the flowers of Peach-trees are generally hermaphrodite, and have all the parts of generation in them, ſo that there is no neceſſity for ſuppoſing any of them to be entirely male or female: but it is likely, that this diſtinction is of long ſtanding, before perſons had a perfect notion of male and female in plants, or at leaſt they did not know how to diſtinguiſh them aſunder.

The Nectarines (as I have in another place ſaid) are by the French called Brugnons, which differ from the other two ſorts, in having a firm hard fleſh, and the ſkin quite ſmooth, without any down upon them. The ſorts of theſe I have already mentioned under the article NECTARINES, to which the reader may readily turn, therefore I ſhall not repeat them in this place.

I ſhall now ſet down the good qualities of Peaches, by which any perſon may judge of their worth.

A good Peach ought to have a firm fleſh; the ſkin ſhould be thin, of a deep or bright red colour next the ſun, and of a yellowiſh caſt next the wall. The fleſh ſhould be of a yellowiſh colour, full of juice, which ſhould be high-flavoured, the ſtone ſmall, and the pulp or fleſh very thick. When a Peach hath all theſe qualities, it may be eſteemed a valuable fruit.

All the different ſorts of Peaches have been originally obtained from the ſtones, which, being planted produce new varieties, as do the ſeeds of all other fruits; ſo that where perſons have garden enough to allow room for propagating theſe fruits from ſeeds, there is no doubt but many good ſorts may be obtained, which will be better adapted to our climate, than ſuch as are brought from warmer countries; though it is true, that there will be many of them good for nothing, as is the caſe of moſt fruits and flowers which are produced from ſeeds, amongſt which there may be ſome valuable kinds, ſuperior to thoſe from whence the ſeeds were taken, yet there is always a great number which are little worth; but if we can obtain only two or three valuable ſorts, it is ſufficient to make amends for the trouble of raiſing them; but where perſons are ſo curious as to plant the ſtones of theſe fruits, great regard ſhould be had to the ſorts; and if the fruits were permitted to remain upon the trees until they dropped off, the kernels would be fitter for planting, and more likely to grow. The beſt ſorts for ſowing are thoſe whoſe fleſh is firm, and cleaves to the ſtone; and from amongſt theſe you ſhould chuſe ſuch as ripen pretty early, and have a rich vinous juice, from which ſorts ſome good fruit may be expected.

Theſe ſtones ſhould be planted in autumn, on a bed of light dry earth, about three inches deep, and four inches aſunder; and in the winter the beds ſhould be covered to protect them from the froſt, which, if permitted to enter deep into the ground, will deſtroy them. In the ſpring, when the plants come up, they ſhould be carefully cleared from the weeds, which ſhould alſo be obſerved throughout the ſummer; and if the ſpring ſhould prove very dry, if you refreſh them now and then with a little water, it will greatly promote their growth. In this bed they ſhould remain

main until the following ſpring, when they ſhould be carefully taken up, ſo as not to break their tender roots, and tranſplanted into a nurſery in rows three feet aſunder, and one foot diſtant plant from plant in the rows, obſerving to lay a little mulch upon the ſurface of the ground about their roots, to prevent its drying too faſt; and if the ſpring ſhould prove very dry, you ſhould give them a little water once a week, until they have taken root; after which they ſhould be conſtantly kept clear from weeds, and the ground between the rows carefully dug every ſpring to looſen it, ſo as that the tender fibres may ſtrike out on every ſide.

In this nurſery they may continue one or two years, according to the progreſs they make; after which they ſhould be tranſplanted where they are to remain, to produce fruit.

In removing theſe trees, you ſhould obſerve to prune their downright roots, if they have any, pretty ſhort, and to cut off all bruiſed parts of the roots, as alſo all the ſmall fibres, which generally dry, and when left upon the roots after planting again, grow mouldy and decay, ſo that they are injurious to the new fibres which are ſhot out from the roots, and very often prevent the growth of the trees; but you ſhould by no means prune their heads, for the plants which are produced from ſtones, are generally of a more ſpongy texture, and ſo more liable to decay when cut, than thoſe which are budded upon other ſtocks. Beſides, as theſe trees are deſigned for ſtandards (for it is not proper to plant them againſt walls, until you ſee the produce of the fruit, to ſhew which of them deſerves to be cultivated,) they will never require any other pruning, but only to cut out decayed branches, or ſuch as ſhoot out very irregular from the ſides, for more than this is generally very injurious to them.

In planting theſe trees, it will be the better way to diſpoſe them ſingly in the quarters of the kitchen-garden, where they will thrive, and produce fruit much better than if they are planted near each other in rows; and, as they are thus ſingly diſpoſed, they will not do much injury to the crops which grow under them.

When they have produced fruit, you will ſoon be a judge of their goodneſs, therefore ſuch of them as you diſlike may be deſtroyed; but thoſe which are good, may be propagated by inoculating them upon other ſtocks, which is the common method now practiſed to propagate theſe fruits, therefore I ſhall now proceed to treat of that more particularly; in the doing of which, I ſhall ſet down the method now commonly practiſed by the nurſery-gardeners, and then propoſe ſome few things of my own as an improvement thereon, for ſuch perſons who are very curious to have good fruit. But firſt,

You ſhould be provided with ſtocks of the Muſcle and white Pear Plums, which are generally eſteemed the two beſt ſorts of Plums for ſtocks to inoculate Peaches and Nectarines upon; as alſo ſome Almond and Apricot ſtocks, for ſome tender ſorts of Peaches which will not grow upon Plum ſtocks. Theſe ſhould be all produced from the ſtone (as hath been already directed in the article NURSERY,) and not from ſuckers, for the reaſons there laid down. Theſe ſtocks ſhould be tranſplanted, when they have had one year's growth in the ſeed-bed, for the younger they are tranſplanted, the better they will ſucceed, and hereby they will be prevented from ſending tap-roots deep in the ground; for by ſhortening thoſe roots which ſeem ſo diſpoſed, it will cauſe them to put out horizontal roots. Theſe ſtocks ſhould be planted at the diſtance above-mentioned, viz. the rows three feet aſunder, and one foot apart in the rows. This is wider than moſt nurſerymen plant them, but I ſhall give my reaſons hereafter for this.

When theſe ſtocks have grown in the nurſery two years, they will be ſtrong enough to bud; the ſeaſon for which is commonly about Midſummer, or any time in July, when the rind will eaſily ſeparate from the wood, when you ſhould make choice of ſome good cuttings of the ſorts of fruit you intend to propagate, always obſerving to take them from healthy trees, and ſuch as generally produce a good quantity of well-taſted fruit; for it is very certain, that any ſort of fruit may be ſo far degenerated where this care is wanting, as not to be like the ſame kind. Beſides, whenever a tree is unhealthy, the buds taken from that tree will always retain the diſtemper, in a greater or leſs degree, according as it hath imbibed a greater or leſs quantity of the diſtempered juice. Thus, for inſtance, where a Peach or Nectarine-tree hath been greatly blighted, ſo as that the ſhoots have grown buſled, and the leaves curled up to a great degree, that diſtemper is ſeldom recovered again by the greateſt art, or at leaſt not under ſeveral years management; for let the ſeaſons prove ever ſo favourable, yet theſe trees will continually ſhew the ſame diſtemper, which many perſons are ſo weak as to ſuppoſe a freſh blight, whereas in reality it is no other but the remains of the former ſickneſs, which are ſpread and intermixed with all the juices of the tree; ſo that whatever buds are taken from ſuch trees, will always retain a part of the diſtemper.

Upon the care which is taken in the choice of the buds, the whole ſucceſs depends; therefore a perſon who is curious to have good fruit, cannot be too careful in this particular; for in general no more is regarded by thoſe nurſerymen who are the moſt careful in propagating the ſeveral ſorts of fruit-trees, than the taking their buds or grafts from the true kinds of fruit-trees; but there is ſtill more care required to have ſound healthy trees, eſpecially in this of Peaches and Nectarines; for if the buds are taken from young plants in the nurſery which have not produced fruit, the ſhoots of which are generally very ſtrong and vigorous, theſe buds will have ſo vicious a habit, as rarely to be corrected and brought into good order; for they will ſhoot more like the Willow than the Peach, the joints being extended to a great diſtance from each other, the ſhoots very groſs, and the wood pithy; therefore where the practice of taking the buds from nurſery-trees is long continued, there can be little hopes of the trees ſo raiſed. I would therefore recommend it to every curious perſon, to procure their buds from ſuch trees as have been long growing, whoſe fruit are well flavoured, and the trees perfectly ſound; as alſo never to make choice of the ſtrongeſt or moſt luxuriant ſhoots of theſe trees, but ſuch ſhoots as are well conditioned, and whoſe buds grow pretty cloſe together. And although theſe do not make ſo ſtrong ſhoots the following years, as thoſe which are taken from luxuriant branches, yet they will be better diſpoſed to bear fruit, and will make much better trees.

The cuttings with which you are thus to be provided, ſhould always be taken from the trees either in a morning or evening, or elſe in a cloudy day; for if they are cut off when the ſun is very hot, the ſhoots will perſpire ſo freely, as to leave the buds deſtitute of moiſture, which is often the cauſe of their miſcarrying; and the ſooner they are put into the ſtocks when cut from the trees, the better they will take. The manner of this operation being fully explained under the article of INOCULATION, I ſhall not repeat it in this place. The management of theſe trees, during their remaining time in the nurſery, is likewiſe fully ſet down under that article. I ſhall therefore proceed to give ſome directions for the choice of theſe trees, when they are to be procured from a nurſery. The firſt care ſhould be to find out a perſon of character to deal with, on whoſe integrity you may depend, not only for having the trees of thoſe kinds which you propoſe, but alſo for their buds being taken from bearing trees; and either ſee them taken up, or let ſome perſon you can confide in do it for you; becauſe, as moſt of the nurſerymen have dealings with each other, if the perſon applied to has not the ſort of fruit deſired in his own nurſery, he procures them from another; and if the gardener from whom

whom he gets them, is not as honeſt and careful as himſelf, it is a great chance if the trees prove to be of the right kinds.

The trees ſhould alſo be choſen in the autumn, before others have drawn out the beſt; for thoſe who go firſt to the nurſeries, if they have ſkill, will always draw the fineſt plants. In the choice of the trees, you ſhould obſerve the ſtocks upon which they have been budded, that they are of the right ſort, whether Plum or Apricot; that they are ſound and young, not ſuch as had been budded the preceding year and failed, nor thoſe which have been cut down. If the ſize of the ſtock is near that of a man's finger, it will be better than if they are larger; theſe ſhould be clear of moſs or canker. The buds ſhould be of one year's growth only, and not ſuch as have been cut down in the ſpring, and made a ſecond ſhoot; nor ſhould thoſe trees be choſen whoſe ſhoots are very ſtrong and luxuriant, but ſuch as have clean ſhoots, of a moderate ſize, whoſe joints are not too far aſunder; and thoſe trees which ſtand on the outſide rows, or near the ends of the rows, where they have moſt air, are generally ſuch; for, where they ſtand cloſe in the nurſery, their ſhoots are drawn up in length, their joints are much farther aſunder, and their buds or eyes are flat; for which reaſon, I have before adviſed the planting of the ſtocks at a greater diſtance than the nurſerymen generally allow them; and, if a careful diſcreet nurſeryman would be at the trouble and expence in the raiſing of his Peach-trees according to this method, he would better deſerve three ſhillings per tree, than one in the manner they are uſually raiſed; for every perſon who is at the expence of building walls for fruit, ſhould not think of ſaving a few ſhillings in the purchaſe of their trees; becauſe, if they are bad, or not of the right kinds, there is a great loſs of time and expence to no purpoſe, and the diſappointment will be ſo great, after waiting three or four years, as to diſcourage many from making farther trials, thinking themſelves liable to the ſame ill ſucceſs.

When the trees are choſen in the nurſery, the next care muſt be to have them carefully taken up out of the ground, ſo as not to break or tear their roots, nor injure their bark; for as theſe trees are very apt to gum in thoſe places where they are wounded, there cannot be too much care taken of this. If the trees are to be tranſported to a diſtant place, their roots ſhould be cloſely wrapped either with haybands, ſtraw, or Peas-haulm, and mats ſewed over theſe, to prevent the air from drying their roots and branches. If the leaves of the trees are not fallen when they are taken up, they ſhould be carefully ſtripped off, before the trees are packed up; for when there are many of theſe left, they are very apt to heat, if they are long in their paſſage, and often occaſion a mouldineſs very hurtful to the branches.

We come next to the preparing of the ground to receive the trees. The beſt earth for Peach-trees is ſuch as is taken from a paſture-ground, that is neither too ſtiff and moiſt, nor over dry, but of a middling nature, ſuch as is termed hazel loam. This ſhould be dug from the ſurface of the ground about ten inches deep, taking the turf with it, and ſhould be laid in heaps eight or ten months at leaſt; but that which is prepared one year or more is ſtill better before it be uſed, that it may have the winter's froſt, and ſummer's heat to mellow it; during which time it ſhould be often turned, to rot the turf and break the clods, whereby it will be rendered very light and eaſy to work; and about the beginning of September you ſhould carry it into the garden, and make the borders, which muſt be raiſed in height proportionable to the moiſture of the garden; but if the ground be very wet, it will be adviſeable to lay ſome rubbiſh in the bottom of the border to drain off the moiſture, alſo to prevent the roots of the trees from running downward; and in this caſe it will be proper to make ſome under-ground drains at the bottom of the border, to convey off the ſuperfluous moiſture; which, if detained about the roots of the trees, will greatly prejudice them; then raiſe a border of earth at leaſt a foot, or in very wet land two feet above the level of the ground, ſo that the roots of the trees may always remain dry; but if the ground be pretty dry, the borders ſhould not be raiſed above ſix or eight inches higher than the ſurface, which will be ſufficient to allow for their ſinking,

As to the breadth of theſe borders, that cannot be too great; but they ſhould never be leſs than ſix or eight feet broad, where fruit-trees are planted, for when the borders are made very narrow, the roots of the trees will be ſo confined in four or five years time, that they will ſeldom thrive well after. The depth of theſe borders ſhould not be greater than two feet and a half; for when they are prepared to a great depth, it only entices the roots of the trees downward, which may be the cauſe of their future barrenneſs; for their roots being got down below the influences of the ſun and ſhowers, imbibe a great quantity of crude juices, which only add to the luxuriant growth of the trees, and deſtroy their fruitfulneſs; beſides, whatever fruit are produced from ſuch trees, are not near ſo well taſted as thoſe are which grow upon thoſe trees whoſe roots lie near the ſurface, and enjoy the kindly benefit of the ſun's heat, to correct and digeſt whatever crudities there may be in the earth.

Where the natural ſoil of the garden is ſhallow, and either chalk, clay, or gravel lies near the ſurface, theſe ſhould not be dug out to make pits to receive the earth for the border, as is by ſome practiſed, for this will be no better than planting the trees in tubs or caſes, for their roots will be confined to theſe pits; ſo that when they are extended to the ſides, and can get no farther, the trees will blight and decay; and if it is clay on the ſides, the wet will be detained as in a baſon, and the earth of the border will be like mud in very wet ſeaſons, ſo unfit for the roots of theſe trees. Therefore, whenever it ſo happens that the ground is of either of the ſorts before-mentioned, it will be the beſt way to raiſe the borders of a proper thickneſs of good earth over theſe, rather than to ſink down into them; for when the roots of the trees lie near the ſurface of the ground, they will extend to a great diſtance in ſearch of nouriſhment; but if they get below the ſtaple of the land, they can find nothing but ſour crude paſture very unfit for vegetation.

Your borders being thus prepared, ſhould lie about three weeks or a month to ſettle, by which time the ſeaſon for planting will be come, which ſhould be performed as ſoon as the leaves begin to decay, that the trees may put out new roots, before the froſt comes on to prevent them. Your ground being ready, and the trees brought carefully to the place, the next work is to prepare them for planting, which is to be performed in the following manner: you muſt ſhorten all the roots, and cut off ſmooth and broken or bruiſed roots, as alſo all the ſmall fibres ſhould be taken off, for the reaſons before given; and where any of the roots croſs each other, the worſt of them muſt be cut out, that they may not injure the other.

And having thus prepared your trees, you ſhould meaſure out their diſtance, which ought never to be leſs than twelve feet; but where the ground is very good, they ſhould be planted fourteen feet aſunder. This I doubt not, will be thought too great a diſtance by many perſons, eſpecially ſince it is contrary to the general practice at this time; but I am ſatisfied whoever ſhall try the experiment, will find it no more than is ſufficient for theſe trees where they are rightly managed; for if they take kindly to the ſoil, their branches may be ſo trained as to furniſh all the lower part of the wall in a few years, which is what ſhould be principally regarded, and not, as is too often the practice, run up the ſhoots in height, and leave all the lower part of the tree deſtitute of bearing wood, ſo that in a few years there will not be any fruit but upon the upper part of the trees; which alſo muſt be the caſe where they are planted too cloſe, becauſe there being no room to extend the branches on either ſide,

they are obliged to lead them upright, which produces the before-mentioned ill effect.

There may be alſo ſome perſons, who may think this diſtance too ſmall for theſe trees, becauſe Plums, Cherries, and moſt other ſorts of fruit-trees require much more room; but when it is conſidered, that Peach and Nectarine-trees produce their fruit only upon the former year's wood, and not upon ſpurs, as Cherries, Plums, and Pears do, ſo that the ſhoots of theſe trees muſt be annually ſhortened in every part of them to obtain bearing wood; therefore the trees may be kept in much leſs compaſs than thoſe of any other ſort of fruit, and thereby every part of the wall may be conſtantly ſupplied with bearing branches; for when the trees are planted at a great diſtance, the branches are often extended to ſuch lengths as to leave the middle of the trees naked, for there are never any good ſhoots produced from the old branches of theſe trees.

And here I cannot help taking notice of another very great error in planting of wall-fruit, which is the placing ſtandard or half ſtandard trees between the others, to cover the upper part of the wall, and to produce fruit, until the trees underneath are grown up ſufficient to furniſh the walls, when the ſtandards are to be taken away. This is done, without conſidering that the greater number of trees which are planted in a ſmall compaſs, the leſs nouriſhment they can receive, and ſo conſequently muſt be the weaker, for the ſame ſpace of ground cannot nouriſh twenty trees equally as well as it could ten; ſo that whatever ſtrength the ſtandard-trees may have, the dwarfs will be proportionably weaker; and it is a common obſervation, that moſt trees extend their roots as far under ground, as their branches ſpread above ground; ſo that there ſhould always be the ſame allowance given to the wall-trees, if we would have them ſtrong and vigorous; therefore the building very high walls for fruit, unleſs for Pears, is to no purpoſe, for a ten or twelve feet wall will be ſufficient for moſt ſorts of fruit. I have ſeen gardens planted with fruit-trees by perſons of great eſteem for their ſkill in this art, where Peach and Nectarine-trees have been placed againſt walls expoſed to the eaſt and weſt, but could never ſee any of the fruit on thoſe trees come to perfection; for which reaſon I would caution every perſon never to follow ſuch examples, becauſe it is well known, that the beſt aſpected walls do barely ripen many of the latter Peaches ſome years; therefore the only aſpect to which theſe trees ſhould be expoſed, is ſouth, or with a point or two to the eaſt, and ſome ſorts may do well if they are a point or two to the weſt.

In the diſpoſition of the trees, it will not be amiſs to plant thoſe ſorts of Peaches near each other, which ripen about the ſame time; for by ſo doing, the fruit may be the better guarded from men and inſects, and this will ſave a great deal of trouble in gathering of the fruit; for if a perſon is obliged to go from one part of the garden to the other, or perhaps to look over all the walls of the garden every time the fruit is gathered, it is a great loſs of time, which may be avoided by this firſt care in planting the trees.

But to return to planting; after you have marked out the places where each tree is to ſtand, you muſt with your ſpade make a hole wide enough to receive the roots of the tree; then you ſhould place it down, obſerving to turn the bud outwards, that the wounded part of the ſtock may be hid from ſight; and let the ſtem of the tree be placed about four or five inches from the wall, with its head inclining thereto; then fill in the earth with your hands, obſerving to break the clods, that the earth may fall in between the roots, ſo as no void ſpaces may be left about them. You ſhould alſo gently ſhake the tree with your hands, to ſettle the earth down the better between the roots; then with your foot gently preſs down the earth about the ſtem, but do not tread it down too hard, which is many times a very great fault; for when the ground is inclinable to bind, the treading it cloſe doth often render the ground ſo hard, as that the tender fibres of the roots cannot ſtrike into it, whereby the tree remains at a ſtand for ſome time; and if the earth be not looſened in time, it frequently dies; ſo that whenever you obſerve the earth of your borders to be bound, either by great rains, or from any other cauſe, you ſhould dig or fork it, to looſen it again, obſerving always to do it in dry weather, if in winter or ſpring; but in ſummer it ſhould be done in a moiſt ſeaſon.

Although I have here given directions for the choice of trees from the nurſery, after the uſual method of planting theſe trees, which is that of taking ſuch as have made one year's ſhoot, yet I would prefer thoſe which were budded the preceding ſummer, and have made no ſhoot; for if the bud is ſound and plump, and the bark of the ſtock well cloſed where the bud is inſerted, there will be no danger of its growing; and when the bud has made a ſhoot the following ſpring the length of five or ſix inches, if it is ſtopped by pinching off the top, it will put out lateral branches, which may be trained to the wall, and this will prevent any cutting off the head, as muſt be done to thoſe trees which have had one year's growth in the nurſery; for theſe trees do not care for thoſe large amputations, eſpecially ſome of the more tender ſorts; ſo by this method of planting theſe trees in bud, no time will be loſt, when it is conſidered that the trees which have ſhot muſt be cut down, and there is a hazard of their ſhooting again; therefore I am convinced from experience, that it is the beſt method.

After you have thus planted your trees, which have made their ſhoots in the nurſery, you ſhould faſten their heads to the wall, to prevent their being ſhaken by the wind, which would diſturb their roots, and break off the tender fibres ſoon after they were produced, to the no ſmall prejudice of the trees; you ſhould alſo lay ſome mulch upon the ſurface of the ground about their roots, before the froſt ſets in, to prevent it from penetrating the ground, which would injure, if not deſtroy, the ſmall fibres; but this mulch ſhould not be laid upon the ground too early, leſt it prevent the autumnal rains from penetrating to the roots.

Theſe things being duly obſerved, they will require no farther care till the beginning or middle of March, according as the ſeaſon is earlier or later; when you muſt cut off the heads of the new planted trees, leaving only four or five eyes above the bud; in doing of which, you muſt be very careful not to diſturb their roots; to prevent which, you ſhould place your foot down cloſe to the ſtem of the tree, and take faſt hold of that part of the ſtock below the bud with one hand, to hold it ſteady, while with the other hand you gently ſlope off the head of the tree with a ſharp knife at the intended place, which ſhould always be juſt above a bud; this ſhould always be done in dry weather, for if there ſhould be much rain ſoon after it is done, there will be ſome danger that the wet will enter the wounded part, and damage the tree; nor ſhould it be done in froſty weather for the ſame reaſon, for that would enter the wounded part and prevent its healing over. After you have headed the trees, you ſhould gently looſen the earth of the borders, to admit the fibres of the roots; but you muſt be very careful in doing of this, not to cut or bruiſe their new roots, which would alſo damage them; and if the mulch which was laid about their roots in autumn be rotten, you may dig it into the border at ſome diſtance from the roots of the trees; and when the dry weather comes on, you ſhould pare off ſome turf from a paſture ground, which ſhould be laid upon the ſurface of the border about the roots of the trees, turning the Graſs downward, which will preſerve a gentle moiſture in the earth, better than any other ſort of mulch; and this will not harbour inſects, as moſt ſorts of dung and litter do, to the no ſmall detriment of the trees.

Thoſe trees which are planted in bud, and have not made any ſhoots, ſhould have their ſtocks cut down

at this ſeaſon juſt above the bud, for the buds will rarely ſhoot unleſs this is performed; and the nearer they are cut to the bud, the ſooner will the head of the ſtock be covered by the buds; for although it may be neceſſary to leave a part of the ſtock above the bud, in thoſe trees which are in the nurſery, to which the ſhoots made by the buds may be faſtened, to prevent their being broken by the wind; yet as theſe are placed againſt the wall, to which the ſhoots may be faſtened, there will be no want of any part of the ſtock.

In watering theſe new planted trees, which ſhould not be done unleſs the ſpring proves very dry, you ſhould obſerve to do it with a noſſel upon the watering-pot, ſo as to let it out in drops; for when it is haſtily poured down, it cauſes the ground to bind; and if you water over the head of the tree, it will be of great ſervice to it. Your waterings ſhould not be repeated too often, nor ſhould they be given in great quantity, both which are very injurious to new planted trees.

In the middle or latter end of May, when theſe trees will have ſeveral ſhoots ſix or eight inches in length, you ſhould nail them to the wall, obſerving to train them horizontally, rubbing off all fore-right ſhoots, or ſuch as are weak, whereby thoſe which are preſerved will be much ſtronger; but if there are not more than two ſhoots produced, and thoſe very ſtrong, you ſhould at the ſame time nip off their tops, which will cauſe each of them to puſh out two or more ſhoots, whereby the wall will be better ſupplied with branches; you muſt alſo continue to refreſh them with water in dry weather, during the whole ſeaſon, otherwiſe they will be apt to ſuffer; for their roots having but little hold of the ground the firſt year after tranſplanting, if the ſeaſon ſhould prove very dry, it will greatly retard their growth, if due care be not taken to water them.

In the beginning of October, when you obſerve the trees have done ſhooting, you ſhould prune them; in doing of which, you muſt ſhorten the branches in proportion to the ſtrength of the tree; which, if ſtrong, may be left eight inches long, but if weak, ſhould be ſhortened to four or five; then you ſhould train them horizontally to the wall (as was before directed,) ſo that the middle of the trees may be void of branches, for that part of the tree will be eaſily furniſhed with wood afterwards; whereas, if the ſhoots are trained perpendicularly to the wall, thoſe which are the ſtrongeſt, will draw the greateſt ſhare of the ſap from the roots, and mount upwards; ſo that the ſide branches will be deprived of their nouriſhment and grow weaker, until they many times decay; and this is the reaſon that we ſee ſo many Peach-trees with one or two upright ſhoots in the middle, and the two ſides wholly unfurniſhed with branches, whereby the middle of each tree cannot produce any fruit, that being filled with large wood, which never produces any bearing ſhoots. Nor can the two ſides of the trees be regularly filled with fruitful branches, when this defect happens to them; therefore this method ſhould be carefully obſerved in the training up young trees, for when they are permitted to run into diſorder at firſt, it will be impoſſible to reduce them into a regular healthful ſtate afterwards, the wood of theſe trees being too ſoft and pithy to admit of being cut down (as may be practiſed on many other hardy fruit-trees, which will ſhoot out vigorouſly again;) whereas theſe will gum at the places where they are wounded, and in a few years entirely decay.

The ſummer following, when the trees begin to ſhoot, you ſhould carefully look over them, to rub off all fore-right buds, or ſuch as are ill placed, and train thoſe which are deſigned to remain horizontally to the wall, in their due order as they are produced, for this is the principal ſeaſon when you can beſt order the trees as you would have them; whereas, if they are neglected until Midſummer, as is the common practice, a great part of the nouriſhment will be exhauſted by fore-right ſhoots, and other uſeleſs branches, which muſt afterwards be cut off; and hereby the remaining ſhoots will be rendered very weak, and perhaps ſome part of the wall be entirely furniſhed with branches; which might have been eaſily ſupplied in May, by ſtopping ſome of the ſtronger ſhoots in ſuch parts of the tree where there is a neceſſity for more branches, which would cauſe each of them to ſhoot out two or more ſide branches below the ends of the ſhoots, which may be guided into the vacant parts of the tree as they are produced, ſo as that every part may be regularly furniſhed with proper wood, which is the greateſt beauty and excellency of wall-trees; but you ſhould always forbear ſtopping the ſhoots in ſummer, where there is not a neceſſity for branches to fill the wall; for there cannot be a greater fault committed, than that of multiplying the number of ſhoots, ſo as to cauſe a confuſion, whereby the branches will be too weak to produce good fruit; beſides, when they are too cloſe laid in againſt the wall, the air is excluded from the ſhoots by the great number of leaves, ſo that they are never duly ripened; and conſequently, what fruit is produced thereon, cannot be ſo well taſted, as thoſe which are produced upon ſuch trees where the ſhoots receive all the advantages of the ſun and air to bring them to maturity.

Thus having ſet down the method of training up young trees, I ſhall now proceed to their pruning and future management; which, being the ſame as with full grown trees, will ſerve for general directions how to manage theſe ſorts of fruit.

In the pruning of Peach and Nectarine-trees (which require the ſame management) the two following rules ſhould be ſtrictly obſerved, viz. Firſt, That every part of the tree be equally furniſhed with bearing wood; and ſecondly, That the branches are not laid in too cloſe to each other for the reaſons before laid down (with ſome others which will be hereafter inſerted.) As to the firſt, it muſt be obſerved, That Peach and Nectarine-trees produce their fruit upon the young wood, either of the preceding year, or at moſt, the two years ſhoots, after which age they do not bear; therefore the branches ſhould be ſhortened, ſo as to cauſe them to produce new ſhoots annually in every part of the tree; which cannot be done in the ordinary method of pruning, where perſons neglect their trees at the proper ſeaſon when they are moſt capable of management, which is in April, May, and June; at which time the luxuriant growth of branches may be checked by pinching, and new ſhoots produced where they are wanting, by ſtopping the neighbouring branches; which ſhoots, being produced at that ſeaſon, will have time enough to ripen and gain ſtrength before the autumn comes on; whereas all thoſe ſhoots which are produced after the middle of June, will be crude and pithy; and though they may ſometimes produce a few bloſſoms, yet thoſe rarely bring fruit; nor are the future branches good which are produced from ſuch wood, the veſſels being too large to ſtrain the juices, ſo that they eaſily admit of great quantities of crude nouriſhment to paſs through them. Therefore thoſe perſons who only regard their wall-trees at two different ſeaſons, viz. the winter and Midſummer pruning, cannot poſſibly have them in good order; for when all the branches which were produced in the ſpring, are permitted to remain until the middle or latter end of June (as is the common practice) ſome of the moſt vigorous will draw the greateſt part of the nouriſhment from the weaker branches, which, when the ſtrong ones are taken off, will be too weak to produce fair fruit; and hereby the ſtrength of the tree is exhauſted, to nouriſh the uſeleſs branches which are annually cut off again; and thus are too many trees managed, and at the ſame time complaints made of their luxuriancy; becauſe two or three ſhoots, by drawing away the greateſt ſhare of the nouriſhment grow very ſtrong and woody (whereas, if the nouriſhment had been equally diſtributed to a regular quantity of branches, there would be no ſign of their too great ſtrength) until by often cutting off theſe vigorous branches, the trees are either entirely deſtroyed, or at leaſt rendered ſo weak as not to be able

able to produce fruit; for although by thus weakening the branches, it is often the means to produce a good number of bloſſoms (as may many times be obſerved alſo upon autumnal ſhoots;) yet the utmoſt of their ſtrength is ſpent in expanding the flowers, ſo that they rarely produce fruit; and very often the greateſt part of the branches die ſoon after, which is ſuppoſed to be occaſioned by a blight (as I have elſewhere ſaid) when in reality it is nothing leſs than the fault of thoſe who have the management of the trees. It is therefore of the greateſt conſequence to wall-trees, eſpecially of theſe ſorts, to go over them two or three times in the months of April, May, and June, to rub off all irregular ſhoots, and to train in the branches that are left in due order to the wall, that each ſhoot may have an equal advantage of ſun and air, both of which are abſolutely neceſſary to ripen and prepare the wood for the next year's bearing; therefore the oftener the trees are looked over, to diveſt them of the uſeleſs branches, from the time they firſt begin to ſhoot in the ſpring till the autumn, the better will the wood be ripened for the ſucceeding year.

And by duly obſerving this in ſummer, there will not be occaſion for ſo much cutting as is often practiſed on Peach-trees, to their great injury; for their wood branches are generally ſoft, tender, and pithy, which when greatly wounded, are not healed over again ſo ſoon as in many other ſorts of trees; and the wet inſinuating into the wounded parts, doth often cauſe the branches to canker and die; which may be entirely avoided by the gentle eaſy method of pinching and rubbing off the buds in the manner here directed, which makes no wounds on the tree; and hereby a vaſt deal of labour is ſaved, for one perſon who is ready at this buſineſs will go over a greater quantity of walling in one day, than three or four can when ſuffered to grow rude; ſo that if the trees are permitted to grow rude all the ſpring, they will require ſix times the labour to reduce them into order.

Beſides, it is a great diſadvantage to the fruit, in permitting the branches of the trees to extend from the wall and ſhade them; and when they have grown under the ſhelter of theſe branches and leaves all the ſpring, until Midſummer, then by pruning off and ſhortening moſt of theſe ſhoots, and nailing the others cloſe to the wall, the fruit are ſuddenly expoſed to the ſun and air, whereby they receive a very great check, and are not only retarded in their growth, but often rendered ill-taſted, and have tough ſkins.

The diſtance which the branches of theſe trees ſhould be allowed againſt the wall, muſt be proportioned to the ſize of the fruit or the length of the leaves; for if we obſerve how the branches of the trees are naturally diſpoſed to grow, we ſhall always find them placed at a greater or leſs diſtance, as their leaves are larger or ſmaller, as I have already obſerved under the article LEAVES. And there is no ſurer guide to a curious artiſt than nature, from whence a gardener ſhould always be directed in every part of his profeſſion, ſince his buſineſs is to aid and aſſiſt nature, where ſhe is not capable of bringing her productions to maturity; or where there is room, to make conſiderable improvements by art; which cannot be any otherwiſe effected, than by gently aſſiſting her in her own way.

But to return to pruning theſe trees: the branches being carefully trained in, as before directed, in the ſpring and ſummer ſeaſons, we come now to treat of the winter pruning, which is commonly performed in February or March. But the beſt ſeaſon for this work is in October, when their leaves begin to fall, which will be early enough for their wounds to heal before the froſt comes on, ſo that there will be no danger of their being hurt hereby; and the branches of the trees being proportioned to the ſtrength of the roots at that ſeaſon, all the aſcending ſap in the ſpring will be employed to nouriſh only thoſe uſeful parts of the branches which are left; whereas, if they are left unpruned till February, the ſap in the branches being then in motion, as may be obſerved by the ſwelling of the buds, the greateſt part of it will be drawn up to the extreme parts of the branches, to nouriſh ſuch bloſſoms as muſt be afterwards cut off; and this may be eaſily known by obſerving the ſtrongeſt ſhoots at that ſeaſon, when you will find the extreme buds to ſwell faſter than moſt of the lower ones; for there being no leaves then upon the branches to detain the ſap to nouriſh the lower buds, the upper ones will always draw from thoſe below.

But it is a conſtant practice amongſt gardeners, founded upon long experience, to prune weak trees early in the winter, and luxuriant trees late in the ſpring, in order to check their luxuriancy. Now it is evident, that this check does not proceed from any conſiderable loſs of ſap at the wounds of the pruned tree (excepting a few of the bleeding trees, when cut at that ſeaſon) but muſt ariſe from ſome other cauſe; for by ſeveral experiments made by the Rev. Dr. Hales, in fixing mercurial gages to the ſtems of freſh cut trees, he found thoſe wounds were conſtantly in an imbibing ſtate, except the Vine in the bleeding ſeaſon.

Therefore when a weak tree is pruned early in the beginning of winter, the orifices of the ſap-veſſels are cloſed up long before the ſpring; and conſequently, when in the ſpring and ſummer, the warm weather advancing, the attracting force of the perſpiring leaves is not then weakened by many inlets from freſh wounds, but is wholly exerted in drawing ſap from the root; whereas, on the other hand, when a luxuriant tree is pruned late in the ſpring, the force of its leaves to attract ſap from the root, will be much ſpent and loſt at the ſeveral freſh cut inlets.

Beſides, if it were no advantage to the trees to prune them at this ſeaſon, (which I think no one will have reaſon to doubt after making the trial) but that it only ſucceeds as well as the ſpring pruning; yet there is a great advantage in doing it at Michaelmas, for that being a much more leiſure ſeaſon with gardeners than the ſpring, they will have more time to perform it carefully; and then they will not have too many things come together, which may require to be immediately executed; for the ſpring being the principal ſeaſon for cropping their kitchen-gardens and attending their hot-beds, if they are diſengaged from the buſineſs of pruning at that time, it will be of great advantage, eſpecially where there is a great quantity of walling. And here is alſo another benefit in pruning at this ſeaſon, which is, the having the borders at liberty to dig and make clean before the ſpring, ſo that the garden may not appear in a litter at that ſeaſon.

Having ſaid thus much concerning the time of pruning, I ſhall now proceed to give ſome general directions how it is to be performed on Peach and Nectarine-trees, which require a very different management from moſt other ſorts of fruits.

In pruning theſe trees, you ſhould always obſerve where branches are ſhortened, to cut them behind a wood-bud, which may be eaſily diſtinguiſhed from the bloſſom-buds, which are ſhorter, rounder, and more turgid than the wood-buds; for if the ſhoot have not a leading bud where it is cut, it is very apt to die down to the next leading bud; ſo that what fruit may be produced above that, will come to nothing, there being always a neceſſity of a leading bud to attract the nouriſhment; for it is not ſufficient to have a leaf-bud, as ſome have imagined, ſince that will attract but a ſmall quantity of nouriſhment, the great uſe of the leaves being to perſpire away ſuch crude juices as are unfit to enter the fruit. The length you ſhould leave theſe branches, ſhould be proportioned to the ſtrength of the tree, which, in a healthy ſtrong tree, may be left ten or twelve inches, or more; but in a weak one, they ſhould not be more than ſix inches; however, in this you muſt be guided by the poſition of a leading bud; for it is better to leave a ſhoot three or four inches longer, or to cut it two or three inches ſhorter than might be proper to do, provided there be one of theſe buds, it being abſolutely neceſſary for the future welfare of the tree;

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you ſhould alſo cut out entirely all weak ſhoots, tho' they may have many bloſſom-buds upon them; for theſe have not ſtrength enough to nouriſh the fruit, but they will weaken the other parts of the tree.

In nailing the ſhoots to the wall, you muſt be careful to place them at as equal diſtances as poſſible, that their leaves, when come out, may have room to grow without ſhading the branches too much; and you ſhould never nail them upright if it can be avoided; for when they are thus trained, they are very ſubject to ſhoot from the uppermoſt eyes, and the lower part of the ſhoots will thereby become naked.

Tnere is not any thing in the buſineſs of gardening, which has more exerciſed the thoughts of the curious, than how to preſerve their tender ſorts of fruit from being blighted in the ſpring of the year, and yet there has been little written upon this ſubject which is worth notice: ſome have propoſed mattreſſes of ſtraw or Reeds to be placed before the fruit-trees againſt walls, to prevent their being blaſted; others have directed the fixing horizontal ſhelters in their walls, to prevent the perpendicular dew or rain from falling upon the bloſſoms of the fruit-trees, which they ſuppoſed to be the chief cauſe of their blighting; but both theſe contrivances have been far from anſwering the expectations of thoſe perſons who have put them in practice, as I have elſewhere ſhewn; therefore it may not be improper to repeat ſome things in this place, which I have before mentioned in relation to this matter. And

Firſt, I have already ſaid, that the blights which are ſo often complained of, do not ſo often proceed from any external cauſe, or inclemency in the ſeaſon, as from a diſtemper or weakneſs in the trees; for if we obſerve the trees at that ſeaſon, where they are the moſt ſubject to what is called a blight, we ſhall find the branches very ſmall, weak, and not half ripened, as alſo trained in very cloſe to each other; theſe branches are, for the moſt part, full of bloſſom-buds (which is chiefly occaſioned by their want of ſtrength.) Theſe buds do indeed open, and to perſons not ſkilled in fruit-trees, ſhew a great proſpect of a plentiful crop of fruit; whereas the whole ſtrength of the branches is ſpent in nouriſhing the flowers, and being unable to do any more, the bloſſoms fall off, and the ſmall efforts of the leaf-buds are checked, ſo that many times great part of the branches die away, and this is called a great blight; whereas, at the ſame time it may be often obſerved, that ſome trees of a different ſort, nay, even ſome of the ſame ſort, were ſtronger and in health, though placed in the ſame ſoil, expoſed to the ſame aſpect, and ſubject to the ſame inclemency of air, have eſcaped very well, when the weak trees have appeared to be almoſt dead; which is a plain indication, that it proceeds from ſome cauſe within the tree, and not from any external blight. All this will therefore be remedied, by obſerving the foregoing directions in the pruning and management of the trees, ſo as never to over-burden them with branches, nor to ſuffer any particular part of the trees to exhauſt the whole nouriſhment from the root, which will cauſe the other parts to be very weak; but to diſtribute the nouriſhment equally to every ſhoot, that there may be none too vigorous, at the ſame time that others are too weak; and by continually rubbing off uſeleſs or fore-right ſhoots as they are produced, the ſtrength of the trees will not be ſpent, to nouriſh ſuch branches as muſt be afterwards cut out; which is too often ſeen in the management of theſe trees. And

Secondly, It ſometimes happens, that the roots of theſe trees are buried too deep in the ground, which, in a cold or moiſt ſoil is one of the greateſt diſadvantages that can attend theſe tender fruits; for the ſap which is contained in the branches, being by the warmth of the ſun, put ſtrongly into motion early in the ſpring, is exhauſted in nouriſhing the bloſſoms; and a part of it is perſpired through the wood-branches, ſo that its ſtrength is loſt before the warmth can reach to their roots, to put them into an equal motion in ſearch of freſh nouriſhment, to ſupply the expence of the branches; for want of which, the bloſſoms fall off and decay, and the ſhoots ſeem to be at a ſtand, until the farther advance of the warmth penetrates to the roots, and ſets them in motion; when ſuddenly after, the trees, which before looked weak and decaying, make prodigious progreſs in their ſhoots; and before the ſummer is ſpent, are furniſhed with much ſtronger branches than thoſe trees which have the full advantage of ſun and ſhowers, and are more fruitful and healthy; which muſt certainly be owing to the cauſe here mentioned, as alſo to their drawing in a great quantity of crude moiſture, which, though productive of wood, is yet unkindly for fruit: if therefore this be the caſe, there is no way of helping it, but by raiſing up the trees, if they are young; or if they are too old to remove, it is the better way to root them out and make new borders of freſh earth, and plant down young trees; for it is a great vexation to be at the trouble and expence of pruning and managing theſe trees, without having the pleaſure of reaping any advantage from them, which will always be the caſe where the trees are thus injudiciouſly planted. Or,

Thirdly, This may proceed from the trees wanting nouriſhment, which is many times the caſe, where they are planted in a hard gravelly ſoil, in which it is the common practice to dig borders three or four feet wide, and three feet deep into the rock of gravel, which is filled with good freſh earth, into which the trees are planted, where they will thrive pretty well for two years, until their roots reach the gravel, where they are confined as if planted in a pot; and for want of proper nouriſhment, the branches continually decay every year. This cannot be helped where the trees have been growing ſome years, without taking them entirely up, or by digging away the gravel from their roots, and adding a large quantity of freſh earth, that may afford them a ſupply of nouriſhment a few years longer; but trees ſo planted, cannot by any art be continued long in health.

But if the unfruitfulneſs of the trees does not proceed from any of the before-mentioned cauſes, and is the effect of unkindly ſeaſons, then the beſt method yet known is, in dry weather, when little dew falls, to ſprinkle the branches of the trees gently with water ſoon after the bloſſoming ſeaſon, and while the youngſet fruit is tender, which ſhould always be done before noon, that the moiſture may evaporate before the night comes on; and if in the night you carefully cover the trees with mats, canvas, or ſome ſuch light covering, it will be of great ſervice to them: however, where the trees are ſtrong and vigorous, they are not ſo liable to ſuffer by a ſmall inclemency, as are thoſe which are weak, ſo that there will be few ſeaſons in which there may not be hopes of a moderate quantity of fruit from them, though there ſhould be no covering uſed; for where theſe coverings are uſed, if it is not performed with great care and diligence, it is much better to have no covering, but to truſt to the clemency of the ſeaſon; for if the coverings are kept too cloſe, or continued too long, the trees will receive more injury hereby, than from being conſtantly expoſed; or, if after having been covered for ſome time, and then incautiouſly removed, ſo as to expoſe the trees too ſuddenly to the open air, they will ſuffer more thereby than if they had not been covered. However, I muſt repeat in this place what has been before mentioned under another article, of a management which has been generally attended with ſucceſs, which is, the putting up two feather-edge deal boards joined together over the top of the trees, ſo as to form a pent-houſe to caſt off perpendicular wet. Theſe ſhould be fixed up when the trees begin to bloſſom, and ſhould remain till the fruit is well ſet, when they ſhould be taken down to admit the dew and rain to the leaves and branches of the trees, which muſt not be longer kept off; and where the wall is long, and expoſed to currents of wind, if at the diſtance of forty feet from each other, are fixed ſome croſs Reed-

hedges, to project about ten feet from the wall, theſe will break the force of the wind, and prevent its deſtroying of the bloſſoms; and theſe may be removed away as ſoon as the danger is over. Where theſe things have been practiſed, they were generally attended with ſucceſs; and as there will be no trouble of covering and uncovering in this method, after they are fixed up, there can be no danger of neglect, as very often is the caſe, when the trouble is great, or to be often repeated.

When your fruit is ſet, and grown to the bigneſs of a ſmall nut, you ſhould look over the trees and thin them, leaving them at leaſt five or ſix inches aſunder; for when they are permitted to remain in bunches, as they are often produced, the nouriſhment which ſhould be employed wholly to the fruits deſigned to ſtand, will be equally ſpent amongſt the whole number, a great part of which muſt be afterwards pulled off; ſo that the ſooner this is done, the better it will be for the remaining fruit; and if it ſhould ſometimes happen, that a part of thoſe left, by any accident, ſhould be deſtroyed, yet the remaining ones will be much the larger and better taſted for it, and the trees will gain more ſtrength, for a moderate quantity of fruit is always preferable to a great crop; the fruit when but few, will be much larger, better taſted, and the trees in a condition to bear well the ſucceeding year; whereas when they are overcharged with fruit, it is always ſmall, ill taſted, and the trees are generally ſo much weakened thereby, as not to be in a condition for bearing well for two or three years after; ſo that upon the whole, it is much better to have a leſſer number of fruit than is commonly eſteemed a crop, than to have too many, ſince the fruit and alſo the trees are benefited thereby. The quantity of fruit to be left on large full-grown trees ſhould never be greater than five dozen upon each; but on middling trees, three or four dozen will be enough.

If the ſeaſon ſhould prove hot and dry, it will be proper to draw up the earth round the ſtem of each tree, to form a hollow baſon of about ſix feet diameter, and cover the ſurface of the ground in this baſon with mulch; and once in a week or fortnight, according to the heat and drought of the ſeaſon, pour down eight or ten gallons of water to the root of each tree; or where there is an engine which will diſperſe the water in gentle eaſy drops like rain, if the ſame, or a larger quantity of water is ſprinkled all over the branches of the trees, and this, ſoaking down to the roots, will keep the fruit conſtantly growing, which will prevent their falling off the trees, as they generally do where this method is not practiſed; and the fruit being thus conſtantly nouriſhed, will be much better taſted, and hereby the trees will be maintained in vigour; ſo that it is what I can from long experience recommend, as one of the moſt neceſſary things to be practiſed by all lovers of good fruit. But this ſhould not be continued longer than while the fruit are growing, for afterward it will be hurtful to the trees and fruit, for a dry autumn ripens both wood and fruit better than a moiſt later ſeaſon.

When the Peach-trees are carefully managed in the ſpring of the year, according to the rules before laid down, all the nouriſhment which the roots can ſupply will be uſefully employed in nouriſhing ſuch ſhoots only as are to be continued, as alſo the quantity of fruit which is proper for each tree, therefore both muſt of conſequence be rendered better; for where there is not this care, the trees ſoon grow ragged, and are not furniſhed properly with branches; and thoſe ſhoots which are produced, are ſome of them very weak, and others very luxuriant, whereby the trees are rendered very unſightly, as alſo unhealthy, and never continues many years fruitful; and by thus training the branches to the wall as they are produced, the fruit will be always expoſed to the ſun and air; which in the common method of managing theſe trees, by letting their branches grow rude all the ſpring, they are deprived from, and conſequently do not receive the benefit from theſe equal to thoſe which are properly managed; and by the timely rubbing off uſeleſs and luxuriant ſhoots, it will ſave much trouble, and prevent the uſe of the knife in ſummer, which is very hurtful to theſe trees, for there will be no need to ſhorten any of the ſhoots in ſummer.

When theſe rules are duly executed, there will be no occaſion to pull off the leaves of the trees, to admit the ſun to the fruit, which is often practiſed; for if we conſider, that the leaves are abſolutely neceſſary to cheriſh the bloſſom-buds, which are always formed at the foot-ſtalks of the leaves, the pulling them off before they have performed the office aſſigned them by nature, is doing great injury to the trees, therefore I caution every one againſt that practice.

It is a common opinion which has for ſome years prevailed, even amongſt perſons of good underſtanding, that Peach-trees are not long lived, therefore ſhould be renewed every twenty years; but this is a great miſtake, for I have eaten ſome of the fineſt Peaches of various kinds, which grew on trees which had been planted above fifty years: and I am convinced by experience, that when the trees are budded upon proper ſtocks, and carefully planted and managed, they may be continued fruitful and healthy ſixty years and upward; and the fruit produced on theſe old trees will be much better flavoured, than any of thoſe upon young trees; but I ſuppoſe the foundation of the above opinion was taken from the French, who generally bud their Peaches upon Almond ſtocks, which are of ſhort duration, theſe ſeldom laſting good more than twenty years; but this ſeldom being practiſed in England, the caſe is widely different; nor indeed ſhould we fetch our examples from that nation, where the profeſſors of the art of gardening are at leaſt a century behind the Engliſh; and from their preſent diſpoſition, ſeem unlikely to overtake them; for they depart from nature in almoſt every part of gardening, and are more pleaſed with introducing their little inventions of pruning and managing their fruit-trees, according to their own fancy, than they are careful to draw their inſtructions from nature, from whence the the true art is to be obtained; ſo that in very few inſtances gardeners ſhould deviate from nature, unleſs it be in thoſe particulars, where art may be practiſed to the greateſt advantage, which is in the procuring many ſorts of eſculent plants and fruits earlier and better flavoured than can be obtained without, in which the French are extremely deficient; and herein they truſt too much to nature, and uſe too little art.

In one of the moſt celebrated of their authors, who treats very particularly of fruit-trees, there are directions for planting of Peach-trees twelve feet aſunder, and at the ſame time he adviſes the planting of Pear-trees but nine or ten feet diſtance; and yet he ſays, that a Pear-tree in health will ſhoot three feet on each ſide every year; therefore he does not allow room for theſe trees to grow more than two years, before they meet. There is alſo another thing poſitively laid down by the ſame author, which is, never to lay any dung upon the borders where fruit-trees are growing, which, he ſays, will render the fruit ill taſted; and this opinion has too generally prevailed in England; but this hath been exploded by one of his own countrymen, who affirms, that from upward of twenty years experience, thoſe trees where the borders had been conſtantly dunged, always produced the moſt delicious fruit, and the trees were in the greateſt vigour; and the ſame gentleman mentions the practice of the gardeners at Montreuil near Paris, who have for ſome generations been famous for the culture of Peaches; and are as careful to dung the borders where their Peach-trees grow every other year, as the kitchen-gardeners are for their legumes.

And from a long experience it is, that I can ſubſcribe to the truth of this; for in ſome particular gardens, where the beſt fruit grew that I have yet taſted, the ground was conſtantly dunged every other year; therefore it is what I muſt recommend to the practice of every curious perſon, with this caution, always to uſe ſuch dung for their borders as is well rotted, and to

dig

dig it into the borders in November, that the rain may waſh down the ſalts before the ſpring comes on; and where the ground is very looſe or ſandy, it will be the beſt way to make uſe of neats dung, which is cooler than that of horſes, but for cold ſtrong land the latter is to be preferred.

If the ground is well trenched every year about the roots, it will be of great ſervice to them; and where the ſoil is ſubject to bind very cloſe, if it is forked two or three times in a year to looſen the ſurface, it will greatly help the trees. The borders ſhould not be crouded with any large growing plants, which will draw away the nouriſhment from the trees; therefore when any ſort of kitchen herbs are planted on theſe borders, they ſhould be only ſuch as are of ſmall growth, and which may be taken off early in the ſpring; and if this is carefully obſerved, the cultivating ſmall things on theſe borders can do no harm, becauſe the ground will be ſtirred the oftener, on account of theſe ſmall crops, than perhaps it would have been, when no uſe was to be made of the borders. Theſe rules which are here laid down, if properly obſerved, will direct any curious perſon how to have plenty of good fruit, as alſo to preſerve the trees in vigour a great number of years.

PERVINCA. See VINCA.

PETALS are the fine coloured leaves which compoſe the moſt conſpicuous parts of a flower; theſe are called in Latin Petala, to diſtinguiſh them from the leaves of plants, which are called Folia.

PETASITES. See TUSSILAGO.

PETIVERIA. Plum. Nov. Gen. 50. tab. 39. Lin. Gen. Plant. 417. Guinea Henweed.

The CHARACTERS are,

The flower hath a permanent empalement, compoſed of five narrow obtuſe leaves which are equal. It hath four ſmall white petals, placed in form of a croſs, which ſoon fall off, and ſix awl-ſhaped erect ſtamina terminated by ſingle ſummits. In the center is ſituated an oblong compreſſed germen, with four awl-ſhaped ſtyles, crowned by obtuſe permanent ſtigmas. The germen afterward becomes one oblong ſeed, narrow at the bottom and taper, but broad above, where it is compreſſed and indented at the top, reſembling an inverted ſhield armed with the acute ſtyle, which is reflexed.

This genus of plants is ranged in the fourth ſection of Linnæus's ſixth claſs, which includes thoſe plants whoſe flowers have ſix ſtamina and four ſtyles.

The SPECIES are,

1. PETIVERIA (*Alliacea*) floribus hexandris. Hort. Cliff. 141. *Petiveria with ſix ſtamina in the flowers.* Verbena aut ſcorodoniæ affinis anomala, flore albido calyce aſpero, alii odore. Sloan. Hiſt. 1. p. 171. *commonly called Guinea Henweed.*
2. PETIVERIA (*Octandra*) floribus octandris. Lin. Sp. Plant. 486. *Petiveria with eight ſtamina in the flowers.* Petiveria ſolani foliis, loculis ſpinoſis. Plum. Nov. Gen. 50.

The title of this genus was given to it by Father Plumier, who diſcovered it in America, in honour of Mr. James Petiver, an apothecary of London, who was a curious botaniſt.

The firſt is a very common plant in Jamaica, Barbadoes, and moſt of the other iſlands in the Weſt-Indies, where it grows in ſhady woods, and all the ſavannas, in ſuch plenty, as to become a troubleſome weed; and as this plant will endure a great deal of drought, it remains green when other plants are burned up, which occaſions the cattle to browze on it; and having a moſt unſavoury ſtrong ſcent, ſomewhat like wild Garlick, it gives the cows milk the ſame flavour, and the cattle which are killed ſoon after feeding on this plant, have a moſt intolerable ſcent, and their fleſh is good for little. The roots are ſtrong, and ſtrike deep in the ground; the ſtalks riſe from two to three feet high; they are jointed and become ligneous at bottom, and are garniſhed with oblong leaves three inches long, and an inch and a half broad, of a deep green, and veined; theſe are placed alternately upon ſhort foot-ſtalks. The flowers are produced in ſlender ſpikes at the end of the branches; they are very ſmall, ſo make no figure. They appear in June, and are ſucceeded by ſhort ſeed-veſſels ſhaped like an inverted ſhield, containing one oblong ſeed which ripens in the autumn.

The ſecond ſort is very like the firſt, from which it differs in having a ſhorter and narrower ſtalk, and the flowers having eight ſtamina; but unleſs theſe marks are diſtinguiſhed by a nice obſerver, they may both paſs for one plant.

In Europe, theſe plants are preſerved in the gardens of thoſe perſons who are curious in botany; but they have little beauty, and having ſo ſtrong rank ſcent upon being handled, renders them leſs valuable. They are propagated by ſeeds, which muſt be ſown on a hot-bed early in the ſpring, and when the plants are come up, they ſhould be each tranſplanted into a ſeparate pot, and plunged into a moderate hot-bed to bring them forward. When the plants have obtained a good ſhare of ſtrength, they ſhould be inured to bear the open air by degrees, into which they may be removed toward the latter end of June, placing them in a warm ſituation, where they may remain till autumn, when they ſhould be removed into the ſtove, and in winter muſt have a moderate degree of warmth, otherwiſe they will not live in this country. They will produce flowers and ſeeds every ſummer, and will continue ſeveral years, remaining conſtantly green throughout the year, and may be propagated by ſlips or cuttings.

PETREA. Houſt. Gen. Nov. Lin. Gen. Plant. 682.

The CHARACTERS are,

The flower hath a bell-ſhaped empalement of one leaf, cut into five large obtuſe ſegments almoſt to the bottom, which are coloured, expanded and permanent. The flower hath one petal, having a ſhort tube, but is cut above into five almoſt equal ſegments, which are expanded. It hath four ſhort ſtamina ſituated in the tube, two of which are a little longer than the other, terminated by ſingle ſummits, and four germen ſupporting a ſlender ſtyle, crowned by an obtuſe ſtigma. The germen afterward become four ſeeds wrapped up in a fringed cover.

This genus of plants is ranged in the ſecond ſection of Linnæus's fourteenth claſs, which includes thoſe plants whoſe flowers have two long and two ſhorter ſtamina, and the ſeeds are incloſed in a cover.

The title of this genus was given to this plant by the late Dr. Houſtoun, who diſcovered it growing naturally at La Vera Cruz in New Spain, in honour of Lord Petre, who was a great encourager of botany, and was poſſeſſed of a noble collection of exotic plants.

We have but one SPECIES of this genus, viz.

PETREA (*Volubilis*) fruteſcens foliis lanceolatis rigidis, flore racemoſo pendulo. *Shrubby Petrea with ſtiff ſpear-ſhaped leaves, and flowers growing in long hanging bunches.*

This plant was firſt diſcovered by the late Dr. Houſtoun, growing naturally at La Vera Cruz in New-Spain, in 1731, ſince which time it was ſent me from the iſland Berbuda, where it alſo grows naturally. It riſes with a woody ſtalk to the height of fifteen or ſixteen feet, which is covered with a light gray bark, ſending out ſeveral long branches; theſe have a whiter bark than the ſtem, and are garniſhed with leaves at each joint, which on the lower part of the branches are placed by threes round them, but higher up they ſtand by pairs; they are about five inches long, and two inches and a half broad in the middle, drawing to a point at each end; they are ſtiff, and their ſurface rough, of a light green, having a ſtrong dark midrib, with ſeveral tranſverſe veins running from the midrib to the borders, which are entire. The flowers are produced at the end of the branches growing in looſe bunches, which are nine or ten inches long, each flower ſtanding upon a ſlender foot-ſtalk about an inch long; the empalement of the flower is compoſed of five narrow obtuſe leaves about an inch long, which are of a fine blue colour, ſo are much more conſpicuous than the petals, which are white,

white, and not more than half the length of the empalement. After the flower is paſt, the four germen in the center become ſo many oblong ſeeds wrapped up in a fringed cover.

The Doctor found a variety of this with blue petals, of the ſame bright colour with the empalement, which made a fine appearance, every branch being terminated by a long ſtring of theſe flowers, ſo that he has ranked this among the firſt claſs of beautiful American trees.

So far as I have been able to diſcover from the dried ſamples which the Doctor brought to England, it appears that there are male and female flowers either on different parts of the ſame tree, or upon different trees; for one ſpike of flowers ſeems to be entirely male, and the other ſpikes are female, but the Doctor has not noticed this in his manuſcript.

This is propagated by ſeeds, which muſt be obtained from the places where the trees grow naturally, and theſe are very few good; for, from the ſeeds which the Doctor ſent to England, there were but two plants raiſed, though the ſeeds were diſtributed to ſeveral perſons; and this is a ſort of confirmation of the ſpikes of flowers being of different ſexes, and that the ſeeds gathered by the Doctor, were taken either from trees at ſome diſtance from the male, or ſuch parts of the ſame tree which were remote from the male flowers. The ſeeds muſt be ſown in a good hot-bed, and when the plants come up, they ſhould be each planted in a ſeparate ſmall pot filled with light loamy earth, and plunged into a hot-bed of tanners bark, and afterwards placed in the ſtove, where they ſhould conſtantly remain, and be treated like other plants of the ſame country.

PETROSELINUM. See APIUM.

PEUCEDANUM. Tourn. Inſt. R. H. 318. tab. 169. Lin. Gen. Plant. 302. Hogs-fennel, or Sulphur-wort.

The CHARACTERS are,

It hath an umbelliferous flower. The principal umbel is compoſed of ſeveral long narrow umbels which ſpread open. The cover of the large umbel is compoſed of many linear reflexed leaves. The empalement of the flower is ſmall and indented in five parts. The petals of the great umbel are uniform. Each flower is compoſed of five oblong incurved petals, which are equal and entire; they have each five hair-like ſtamina, terminated by ſingle ſummits, with an oblong germen ſituated under the flower, ſupporting two ſmall ſtyles, crowned by obtuſe ſtigmas. The germen afterward turns to an oval fruit channelled on each ſide, ſplitting in two parts, containing two ſeeds convex on one ſide, compreſſed on the other, with three raiſed furrows, and a broad membranaceous border indented at the top.

This genus of plants is ranged in the ſecond ſection of Linnæus's fifth claſs, which includes the plants whoſe flowers have five ſtamina and two ſtyles.

The SPECIES are,

1. PEUCEDANUM (*Officinale*) foliis quinquies tripartitis linearibus. Lin. Sp. Plant. 358. *Hogs-fennel with leaves which are divided by fives, and theſe are again divided into three linear ſegments.* Peucedanum Germanicum. C. B. P. 149. *German Hogs-fennel.*
2. PEUCEDANUM (*Italicum*) foliis tripartitis filiformibus longioribus, umbellis difformibus. *Hogs-fennel with leaves cut into three parts, which are longer, ſlender, and have irregular umbels.* Peucedanum majus Italicum. C. B. P. 149. *Greater Italian Hogs-fennel.*
3. PEUCEDANUM (*Alpeſtre*) foliolis linearibus ramoſis. Hort. Cliff. 94. *Hogs-fennel with leaves branching, which are very ſlender.* Ferula foliis libanotidis brevioribus, alpeſtris, umbellis ampliſſimis. Boerh. Ind. alt. 1. p. 65.
4. PEUCEDANUM (*Minus*) foliis pinnatis, foliolis pinnatifidis, laciniis linearibus oppoſitis, caule ramoſiſſimo patulo. Flor. Angl. 101. *Hogs-fennel with winged leaves whoſe cuts are linear and oppoſite, with a ſpreading branching ſtalk.*
5. PEUCEDANUM (*Nodoſum*) foliolis alternatim multifidis. Hort. Cliff. 94. *Hogs-fennel with many-pointed leaves placed alternately.* Silaum (quod liguſticum Creticum, foliis fœniculi caule nodoſo. Tourn. Cor. 23.)

The firſt ſort is ſaid to grow naturally in England, but I have not been lucky enough to find it, though I have ſearched the places where it is mentioned, but it grows in ſeveral parts of Germany in marſhy meadows. This hath a perennial root, which divides into many ſtrong fibres running deep in the ground, from which ariſe the foot-ſtalks of the leaves which are channelled; theſe are naked at bottom, but about four or five inches from the root branches into five ſmaller foot-ſtalks, and theſe again divide into three, and each of theſe diviſions ſuſtain three narrow leaves, which when bruiſed emit a ſtrong ſcent like ſulphur. The ſtalks riſe near two feet high; they are channelled, and divide into two or three branches, each being terminated by a large regular umbel of yellow flowers, compoſed of ſeveral ſmall umbels which are circular. Theſe flowers appear in June, and are ſucceeded by compreſſed ſeeds, which are deeply furrowed, and ripen in the autumn.

The ſecond ſort grows naturally on the mountains, and alſo in the low valleys by the ſides of rivers in Italy. The root of this is perennial, ſtriking deep into the ground; the foot-ſtalks of the leaves are large and furrowed, dividing into three ſmall branches, which are again divided into three, and theſe end with three long narrow lobes or ſmall leaves, which are much longer than thoſe of the other ſort. The ſtalks which ſuſtain the umbels riſe near three feet high, and divide toward the top into ſeveral ſmall branches, each ſuſtaining an umbel compoſed of ſeveral ſmaller rays or umbels, which ſtand upon very long foot-ſtalks, that ſpread out irregularly. The flowers of this are yellow, and ſhaped like thoſe of the former, but are much larger, as are alſo the ſeeds, but have the ſame form as the other. It flowers and perfects ſeeds about the ſame time as the former.

The third ſort grows naturally in the foreſt of Fontainbleau, and ſome other parts of France; it hath a perennial root, from which come out leaves which branch into ſeveral diviſions, that divide again into ſmaller; each of theſe ſmaller diviſions are garniſhed with five ſhort narrow leaves. The ſtalks are round, and not ſo deeply channelled as either of the former, ſuſtaining a large umbel of yellow flowers ſhaped like thoſe of the former ſorts; the ſeeds are ſhorter, but of the ſame ſhape as thoſe. It flowers in June, and the ſeeds ripen the beginning of September.

The fourth ſort grows naturally on St. Vincent's rock near Briſtol; this is a biennial plant, which periſhes ſoon after it has perfected its ſeeds. The leaves of this ſort are ſhort and very narrow, ſpreading near the ſurface of the ground; the ſtalks riſe near a foot high, but are branched almoſt from the bottom; theſe branches are almoſt horizontal, and are garniſhed with a few narrow ſhort leaves of a lucid green. Each ſtalk is terminated by a ſmall umbel of flowers, which are of an herbaceous yellow colour and ſmall. Theſe are ſucceeded by ſmall channelled ſeeds.

The fifth ſort grows naturally in Crete; it is not a plant of long duration in England, nor do the ſeeds ripen well here. The ſtalks riſe a foot and a half high, having pretty large knots at the joints, from which ariſes a leaf cut into many diviſions; the flowers terminate the ſtalks in umbels, and appear the beginning of July, and in warm ſeaſons the ſeeds will ripen in the autumn.

The firſt ſort ſtands in the liſt of medicinal plants, but is at preſent rarely uſed; the roots are the only part preſcribed. It is accounted good to clear the lungs of tough viſcid phlegm, and thereby to help old coughs and ſhortneſs of breath; it likewiſe opens obſtructions of the liver and ſpleen, and helps the jaundice.

The other ſorts are preſerved in botanic gardens for the ſake of variety; they are all propagated by ſeeds, which ſhould be ſown in the autumn ſoon after they are ripe, for thoſe which are ſown in the ſpring ſeldom