

SB 419

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A

# TREATISE

ON THE

CULTURE AND GROWTH

OF

DIFFERENT SORTS OF FLOWER ROOTS,

AND OF

GREEN HOUSE PLANTS KEPT IN ROOMS, &c

TO WHICH IS ADDED,

A TABLE OF THE LINNÆAN CLASSES OF BOTANY,  
WITH THEIR ORDERS AND EXAMPLES.

BY J. P. CASEY,  
SEEDSMAN.

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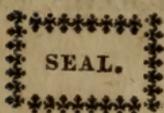
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DISTRICT OF MARYLAND, to wit:

BE IT REMEMBERED, That on the thirtieth day of  
December, in the forty-fifth year of the Independence of the United States of America, A. D. 1820, J. P. Casey, of the said District, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit:



“A Treatise on the Culture and Growth of different sorts of Flower Roots, and of green house Plants kept in rooms, &c. to which is added, a table of the Linnæan classes of Botany, with their orders and examples.”

In conformity to the act of the Congress of the United States, entitled, “An act for the encouragement of learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies during the times therein mentioned,” and also to the act, entitled, “An act supplementary to an act, entitled, ‘an act for the encouragement of learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving and etching historical and other prints.’”

PHILIP MOORE,  
*Clerk of the District of Maryland.*

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## ADVERTISEMENT.

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THE treatise now presented, principally to the notice of Ladies, is the result of twenty years personal experience, in the culture and management of plants, and is intended chiefly for the instruction of those who keep plants in rooms, and have small flower gardens, in or near towns or cities. The author flatters himself that it will also be found useful to the public at large; as it contains many valuable hints, showing the best method of propagating the different kinds of plants herein treated of.

The creation of a new political party  
is the subject of the book. It is the  
result of twenty years personal experience  
in the culture and management of  
the party and is a book which will be  
valuable to those who know little of  
the party and have little idea of a system  
in its own right or value. The author  
writes in a simple and direct style and  
the book is well illustrated with many  
examples of the party in action. It is  
a book which will be of great value  
to the party and to the public at large.  
The author's experience in the party  
is a valuable asset and the book is  
a well written and informative work.

## TREATISE, &c.

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*Hyacinths grown in the open ground.*

**T**HE bulbs of Hyacinths are subject to a disease, or corruption of the sap which occasions the destruction of so many, that the amateur is disgusted and tempted to abandon, entirely, the cultivation of this flower, from the small hope he entertains of ever seeing his endeavours crowned with success.

Without giving himself the trouble to examine the probability of his opinion; he takes it for granted the climate of Holland alone is favourable to the culture of Hyacinths. But I trust I shall be able to undeceive him by the observations and rules I shall lay down; and I beg

leave to assure him that if he will implicitly adhere to the following directions, he can bring them to perfection, not only to equal, but to vie with those raised in Holland, both as to strength and beauty—nay, surpass them.

The disease incident to Hyacinths I have already observed is a putrefaction of the juices; the occasion of it may be attributed to the three following causes:

1. Want of good compost.
2. Too great moisture, and
3. A want of due perspiration.

*Compost or Soil.*

I SHALL first lay down a rule for preparing the proper soil or compost, most adapted to Hyacinths; not with an idea of its being the only proper one, and no other. But to give the amateur a rule by which he may make the soil of his garden approach as near as possible to the compost I am about to describe, in which the Hyacinths thrive best, viz.

- $\frac{1}{4}$ . White river or pit sand.
- $\frac{1}{4}$ . Manure made of leaves well rotted.
- $\frac{1}{4}$ . Cowdung thoroughly rotted, and
- $\frac{1}{4}$ . Old tanners' bark.

(The bark must be that which has been used by tanners, and laid in a heap at least one year, that all the heat may be exhausted.)

These materials should be well mixed together, and frequently turned, one year before they are used.

Those who have a heavy soil and cannot with ease procure such materials as sand and rotted leaves, may supply the deficiency by mixing one-fourth of their soil with one-fourth rotten tan. And those who may want tan, may increase the proportion of sand or of rotten leaves, either of these articles may supply the deficiency of the other two.

Observe to proportion the quantity of these light materials according to the strength or lightness of your soil. The heavier or stronger it is the less cow manure you must use.

Having prepared a spot in your garden after the foregoing manner, you may plant thereon *greens*, during the summer, beans in preference, the last serve best to mix and unite the different materials, and thereby form a natural soil; it is necessary to be informed, that all composts that are not well mixed, are of little or no use in gardening.

*Moisture or wet.*

**WET** or damp being the most destructive incident that can happen to Hyacinths, great care should be taken to protect them from it, by choosing the most elevated spot in your garden—if it is surrounded at a distance with a shallow trench, so much the better. The bed wherein you intend to plant your Hyacinths should be raised seven or eight inches above the level of the garden. Do not imagine that this precaution is useless. The idea in America, and other places, that they have little or nothing to fear from damp, be-

cause those countries are more elevated and lie drier than Holland, is an opinion too prevalent, and too much disseminated among amateurs, and which occasion a loss to them of many bulbs. In all the treatises which have appeared on the cultivation of Hyacinths, there is no observation, (or at least very superficial ones,) on this important circumstance, damp.

Let me undeceive them, damps and moistures are more detrimental in those countries than in Holland. The truth is, the soil being prepared as I have already pointed out, is very light, consequently more disposed to absorb, those rains and snows which fall, from November to March, particularly effects these beds; and the paths around them, being more close and compact than they are in Holland, the moisture cannot be absorbed by them so quick, but remains upon the bed and contributes to render them so wet that they absolutely become mud to the depth of eight to twelve inches.

The bulbs having at this season pushed out their roots to the depth of sixteen or twenty inches, their extremities become immersed continually in water, this added to the little perspiration the vegetable world undergoes during the winter months, causes the roots to putrify, and communicates a disease to the bulbs which totally destroys them, or at least renders the flower poor and small. The bulbs become thin, and when taken up they are found shrivelled, and all in scales.

To prevent this misfortune as much as possible I would advise amateurs in case of heavy rains or melting snows, to give a vent to them, by making small descents to drain them or rather to have small trenches made round the beds as I have already mentioned, and to be particularly careful to raise the beds at least seven or eight inches above the common paths.

*Evaporation.*

THE bulbs of Hyacinths are succulent and full of sap, and for want of due evaporation easily putrify. To prove the bulbs abound with rich juices, take eight or ten roots at the time of taking them up, they will perhaps weigh one pound, three weeks after having lain on the shelves you will find they will only weigh twelve ounces—they evaporated one-fourth part in that space of time.

These vapours being condensed either in the room, or in deep drawers, in which they may be laid to dry one upon the other, will have the same pernicious effect as the wet and moisture in the ground would have; when it is not drained off.

The place destined for the reception of the bulbs after taking them up, should be very dry. For this reason, greenhouses, which face the south, are preferable to any other place.

The windows should be open on all sides, that the air may have a free passage,

during the first three weeks after the bulbs have been there deposited. After this interval, part of the windows only should remain open, except the weather be cloudy, at which time they ought to be closely shut, morning and evening.

Every precaution should to be taken to prevent the humid vapours arising from the bulbs settling on them, which occasions putrefaction; for this reason rooms or garrets which are lined with wainscoat, or have wooden partitions, or that are built entirely of wood are preferable to walls of stone, brick, or plaster. It seems that stone walls, particularly, attract the humid and moist vapours, for if the weather remain cloudy for two or three days those walls appear covered with moisture, which scarcely ever happen to those of wood. In the month of September, the sap in the bulbs begin to move, and it then becomes necessary to pay particular attention to them; for at this period they are most subject to putrefaction, by inhaling the vapours

which they have evaporated in the months of July and August, if proper care has not been taken to keep them in dry and airy rooms.

This remark will appear to many people absurd and ridiculous, but experience has taught me the truth of it, and the considerable losses I have sustained, have confirmed it.

Amateurs, who have had experience, to prevent putrefaction taking place, examine with attention each bulb before they lay them on the drying shelves, and reject, without exception, all those that are the least decayed or unsound. This caution they renew prior to their being replanted, to prevent, as much as possible, infection.

It is much preferable to place the bulbs on shelves separately, and distinguish the different sorts by placing small slips of wood with marks on them, than to put them in small deep drawers, whose depth prevents, the air from having a free circulation through them; you must carefully observe to turn the bulbs from time to

time, during the first two or three weeks after having laid them on the shelves, to facilitate the evaporation, and not lay them on their base but on their sides, otherwise the moisture accumulates, and attaches itself more easily between the old roots, which to get rid of, is attended with much difficulty, and if it remains it occasions them to perish for want of evaporation.

To be convinced of the necessity of following the rules mentioned, is very easy, by examining the rooms in which you have deposited the bulbs, for the first two or three days. On your entrance into them in the morning after having been closely shut during the night, you will perceive a very strong smell, and if the collection is considerable, the room will be quite heated by the exhalations arising from the bulbs, which go off as soon as the air has a free circulation.

As my remarks are entirely designed for the use of amateurs I have dwelt on such observations as I deemed most es-

sential, and will endeavour to explain, in as few words as possible, what remains to be done.

The best season for importing bulbs from Holland are the months of August and September, at that time they have undergone their proper evaporation, and can best endure carriage.

### *Planting.*

WHEN the soil of your garden is very dry and elevated, you may plant your bulbs seven or eight inches deep, but if you prefer a strong and vigorous flower to a large and well nourished bulb, five or six inches is sufficient. Those who have gardens in towns, where a descent is practicable, and where the air is more loaded with vapours, should plant them only five or six inches deep.

Suffice to say, that the deeper your soil permits you to plant them, the wholesomer and stronger will be your bulbs.

But in no soil whatever you ought to exceed eight inches in depth. The best season for planting Hyacinths is from the 20th of October to the 20th of November.

*Frost, &c.*

**FROST** is detrimental in proportion as it approaches the bulbs, so that the intensity thereof ought to be your guide in respect to covering them at this time. From two to four inches of tan laid over them will be sufficient in a common winter. Those who have bulbs of great value, may add planks of wood when the frost is very intense.

You must take care not to cover them too much, especially with leaves. These coverings repulse the vapours which arise from the ground, (although frozen,) and prevents the air from penetrating it, and consequently putrifying the bulbs. A frost which penetrates only three or four inches in depth is preferred to too mild a winter, or to the inconvenience sustained

by too much covering. Those who have collections of great value, tie up the flower stalks to small sticks, and put an awning so as to throw a shade over them, during the greatest heat of the sun, thereby preserving the beauty of the flower, especially those which are of a deep red colour. At the same time they are cautious not to extend the awning over the whole bed, and to use it from nine o'clock, in the morning, till six in the evening. Whatever contributes to increase the growth of the stalk and leaves, weakens the bulb and renders it poor and insignificant.

*Taking them out of ground.*

THE time for taking them up, is when the leaves have lost their verdure and begin to wither. If your garden is very much elevated, you may indeed wait till they are entirely dry and the leaves withered, but then you must be certain you have nothing to fear from the humidity of your ground.

The general custom with the Dutch florist is to put them in the earth again as soon as they have stripped them of their leaves, who practice the following method.

After they take up the bulbs they make the beds quite even, then cutting off the leaves, but not too close, and leaving on the roots, they lay the bulbs on their sides in regular rows, so that they just touch, taking care to lay them in a south aspect; they cover them with fine earth about one inch deep, which raises them three or four inches above the surface of the beds. In this situation they remain three weeks, taking care to renew the mould from time to time, at end of that period they take up the bulbs, cleanse them, take off the offsets and place them on their proper shelves. This method is highly useful and very favourable to evaporation, it renders the bulbs very dry and compact, consequently more adapted for carriage; it likewise prevents their being mouldy or decaying.

The above method is alone practicable in a soil that is light and dry, and that has been well turned. (Where the soil is strong deep and moist, it would be very dangerous to follow this method.)

Those who possess the favourable soil mentioned, may take up their bulbs as soon as the leaves begin to grow yellow; on the contrary those who are not so fortunate, must wait till the leaves have entirely lost their verdure and are withered.

If the rules laid down in this small treatise, be implicitly followed and put into practice, I am convinced, that amateurs will find the good effect, and that this flower will succeed in any country better than it has hitherto done. And he may flatter himself with some reason, if he pays proper attention, and proceed with perseverance, that he may bring his Hyacinths to as great perfection as they are in Holland; the experiment will without doubt, cost him at first some bulbs, but that is inevitable. In Holland, where the cultivation

of this flower is attended with the most unremitting care and attention, they have not yet discovered the secret of saving every one. Notwithstanding the experience of many years the Hyacinth still remains a very difficult flower to cultivate, this difficulty arises in some measure from too great moisture.

Hyacinths must not be planted again in the same soil, at least for two or three years, but the ground should be cultivated with other plants during that time, and always mixed the year before planting with some old cowdung, especially when the soil is light or sandy, as the Hyacinths are very fond of such manure.

Trials and experience of many years have brought the Dutch to a tolerable degree of knowledge in the culture of this flower; my intention in writing the foregoing rules is only to give a hint to amateurs, what way they may turn their attention to improve the culture of Hyacinths; many soils may be found in America, with a little additional compost, which may perfectly answer the desired effect.

*Hyacinths and Narcissus for glasses.*

HYACINTHS and Narcissus, for glasses, should be placed on the glasses the latter part of October, or any time in November. Fill the glasses with clear water, so as to be about one-fourth of an inch above the bottom of the bulb, whence the fibres proceed: for, if the roots are immersed in water more than one-fourth of an inch, it has a tendency to injure the bulbs, and frequently causes them to decay before the flowers appear.

With respect to the water, it should be changed constantly twice a week, the best method of doing it is as follows:—Place the fingers over the root, to keep it close to the glass, and pour out the water; then fill it half full, holding the root as before, and shaking the glass gently, in order to wash both the roots and the glass. This done, pour that out, and fill it with clear water, which has stood in the room, in a bottle for that purpose, till it has acquired an equal degree

of warmth as that which was before in the glass; for I find, that, by pouring cold water into the glasses, the fibres of the roots are thereby checked, and never do so well as when the water is warm in proportion to the heat of the room. If it be not convenient to heat the water in the room, you may add one point of boiling water to three quarts of cold, which will impart to it a proper degree of heat, and will keep the plants in a growing state, and they will blossom in the greatest perfection. If clear rain-water can be procured, it is better than hard water; but which ever is first used should be continued.

When the roots are first placed in the glasses, they should be kept in a cold room where there is no fire, and exposed to the air as much as possible, (but not to the draft of a door or window,) when it is not frosty. They should be kept in the cold room till the fibres reach half way down the glasses, and then they may be removed into a warm room where there is a fire, and placed in a sunny window. If they

are far from the light, they are drawn up weak, and appear yellow and sickly. If they are wanted to be placed in any other part of the room, they should be continued at the window till they are in bloom; and when in bloom, the water should not be changed, but the glasses should be supplied with water as it evaporates with the heat of the room. The roots also imbibe more water, when in bloom, than at any other period, and consequently need more attendance. If they are then neglected, it weakens and checks the plants more than at any other period.

When the bloom is faded, take the roots out of the glasses, and plant them in the following manner, viz. make a hole in a dry and airy part of the garden about three inches deep, and fill it with sand, placing the roots in it almost close together, and cover them with sand about two inches above the crown of the bulb. They are to remain in this situation till perfectly ripe, (at which time the green withers and becomes brown,) then taken up and laid in

the shade about a fortnight to dry and harden. When perfectly dry, clean them from the soil, &c. which adheres to them, put them in bags, and keep them in a dry room.

*To blow Hyacinths and Narcissus in Pots.\**

IN the first place, it is necessary to be provided with pots. Such as are about seven inches deep, and six over at the top, are the best size: or larger pots will be as well, with regard to the growth of the roots; but the former are the most convenient. Next procure some rich mould mixed with one-third part of sand. River sand is the best; but if that cannot be procured, such as is washed together by the rain. If the sand found in beds be used, it should be laid in a heap and exposed to the sun and air eight or ten days before being used; it will then be in good order.

Let the compost be well mixed and incorporated together, and sifted through a fine

\* Hyacinths grown in pots require a different treatment from those grown in the natural ground.

sieve, or made fine by any other method. Having the pots and compost ready, begin by placing an oyster-shell, or piece of tile, over the hole at the bottom of the pot, to drain off the water; then fill the pots with the compost, and force the roots into the mould, so as that the crown of the bulb may be even with the surface, and about half an inch below the top or rim of the pot: however, they must not be covered.

Plant three roots in a pot, or more if the pots are large. They should be placed about two inches distant every way, and may be planted close to the edge of the pot or not. Put them in the window of a cold room where there is no fire, or in a garden-frame under glasses, just to preserve them from the frost; for the less they are forced, the finer they will be.

In about a week after they are planted, if the earth on the top of the pot appear rather dry, give them a little water, but not before. After being once watered, they must be kept moderately moist, and in about a fortnight they will have thrown out fibres

at the bottom, about an inch or more in length, when they may be removed into a warm room, where there is a fire kept, and placed in a sunny window; or they may remain in the room or frame longer if they are not wanted forward. They must be moderately watered every day, when in a warm room: but never let the water stand in the water-pans under the pots, as it stagnates, and is very pernicious to the tender fibres. If managed in this way, they will generally blow fine in January, or early in February, according to the time they were planted, and the manner in which they were forced.

As soon as the bloom is over, they should be turned out of the pots (with the bulb entire) and planted in the open ground, where they will increase in size, and ripen. When the leaves are withered and become dry, take them up and dry them in the shade for a few days. When thoroughly dry, put them in paper bags, and hang them up in a dry room, first taking off the offsets; then plant them immediately in the borders

of a sandy soil, and let the crown of the bulb be two inches under the surface. Keep the blooming roots dry till October or November, when they should be planted in beds by themselves, or in bunches in the borders, and the crown of the bulb should be about four inches below the surface of the bed. They will blow very well in the ground next year, and tolerably well in pots the second year after, but never so well as the first time: it is necessary to have the largest roots every year, for forcing either in glasses or pots.



*Crocuses and Snow-drops,*

SHOULD be planted any time from the month of December to January, very thick in the pots, and plunged in the ground, or kept in a frame, merely to keep them from frost. They should not be removed to a room till very severe frost sets in; because, if brought into a room too soon, they

are drawn weak, and run much to green. I find the best way is to take them up in bunches out of the garden, and pot them as soon as they appear above the surface of the ground; and they always blow much finer by this method of treatment.

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*Lilies of the Valley,*

SHOULD by no means be potted till the flower-buds appear; for, if potted before, it is uncertain whether one quarter of them will flower. If you have them growing in a garden, they should be frequently examined in the spring, as the flower-buds are easily perceived a considerable time before they flower. Take them up carefully with a knife, with as much earth as possible about them, and plant them thick in pots or boxes. They must be kept moderately moist, and they will blow in perfection.

When placed in a room, the window should never be opened against them, as the draft is pernicious to their welfare.

When the window is opened for any considerable length of time, the plants should be removed to a distance from it; and when the bloom is over, they should be planted out in the borders, or plunged in the ground in pots, &c. They seldom blow well if potted before the green is up; if potted before, you can see the flower-buds. The best time for doing it is from January to March. They do well in any common garden-mould, as each crown blows but once in three years.



*Sweet or duc Van Thol Tulips,*

SHOULD always be potted in the same compost as hyacinths, &c. but they do not require such large pots. They must have the same treatment, and be potted at the same time as hyacinths, narcissus, &c.

*Guernsey Lilies,*

SHOULD be planted in pots as small as you please: they do best in compost, that is, half sand and half mould, or in sand only.

*Ranunculusses,*

SHOULD be planted in pots which are about nine inches deep, and seven inches over. The compost proper for them is a fresh and rather sandy loam, mixed with a little rotten dung, but very little. The mould thrown up in heaps by moles, in a fresh loamy soil, is preferable to any; if of a red color, the better. The Scarlet Turban should be planted in November. Fill the pots with the compost to the brim; then take the root between the finger and thumb, and thrust it into the mould about half an inch below the surface, which is the proper depth at which they should then be plunged in the ground, (for they never do

well in pots, if they are not plunged) in a warm sunny situation, to forward them; but they must not be put under glasses, as they never flower well if forced, and sometimes, in that case, not at all. I find the best way to obtain them in perfection in pots is to plant them in a warm sunny situation in the natural ground, and defended from very severe frost by placing hoops and mats over them; but they must not be covered except the frost is severe, as the covering weakens them if continued long. When it is necessary to cover them, these mats should be taken off while the sun shines on them, and covered again when it goes off. Just as the blossom begins to expand, is the best time to pot them. Take them up with as much earth about them as possible, and plant three or four roots in each pot, placing them in a room or frame, under glasses; but they must be watered every day, and kept quite wet, (as they thrive in moisture) and they will bloom in the greatest perfection, and continue in beauty a long time.

The *Variiegated* or *Persian Ranunculus* should not be planted till the latter end of February, or the beginning of March. If hard frost should set in a few days after the roots are planted, before they have time to vegetate, they should be slightly covered with fern, straw, &c. but must not be continued longer covered than the frost lasts. The roots being wet after they are planted, are in more danger of being hurt by frost before they vegetate than after vegetation has actually taken place, when they may be potted and treated exactly in the same manner as the Turban.

The method of propagating the plants is by parting the roots, and by seed. The method of raising them by seed is as follows:—In the beginning of April provide some boxes, next get some fine rich sandy loam well sifted and broken, and carefully pick out the worms, if it contains any; fill the boxes, and lay a thin stratum of dung about four inches below the surface. Make the surface of the mould as even as possible: strew the seed over it rather thick, on

which throw some of the finest mould, enough just barely to cover it; for if it be covered more than one-eighth of an inch, it will never vegetate. The boxes should be placed where they will have the influence of the morning sun till about nine o'clock, but not longer; and they should remain in this situation till the green covers the mould, when they may, by degrees, have more sun. However, they must not be placed in a very hot situation, but they must be constantly watered, and never suffered to get dry. Keep them always clear from weeds; the best way to destroy which is to cut them off close to the surface with a pair of scissors, when very young, as pulling them up disturbs the seeds, and retards their vegetation.

Worms being very destructive to the young plants, it is a good method to water the mould with a decoction of the leaves or branches of the walnut-tree, or with salt water before being put into the boxes, and they must be watered with a pot of clean water after, and moderately dried. When

the green of the plants is dried up, they may be taken up by means of a small three-pronged grain-fork, (such as is used at table,) and carefully separated from stones, &c. dried in the shade, put in paper-bags, and kept dry till March, when they may be planted in the same manner as the large roots, except they should not be planted more than an inch and a quarter deep, which is the proper depth, and they will blow fine the second year. Nature points out the proper depth at which to plant these roots; for if planted too deep or too shallow, a new root is formed at the proper depth, which considerably weakens the plant.

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*Anemonies,*

**MAY** be planted in October, November, or March, as they are hardier than the Persian Ranunculus, and may be potted and managed in the same manner as the Scarlet Turban Ranunculus, only planted rather deeper. The Single Anemonie, or Wind

Flower, may be raised in great variety from seed, which should be sown in beds four feet wide, in March, and covered the same depth as the *Ranunculus* seed, or a little deeper, but not more than an eighth of an inch. A mat should be placed over it, through which it should be watered till the seed is fairly up, then exposed to the sun by degrees, and kept constantly moist by frequent waterings: by these means they will bloom the same season, and you may probably obtain some fine new double flowers, which should be marked, and separated from the others. The double sorts are increased by parting the roots; for the old roots, when come to their full size, become hollow, and separate naturally.



### *Single and Double Jonquils,*

SHOULD be planted, whether in the open ground or in pots, any time from October to January. The pots for this purpose should be the same size as those used for

hyacinths. Plant six or eight roots in a pot in the hyacinth compost, or in any light rich garden-mould mixed with a little dung. But, in order to have them in perfection in pots, it is best to take them up in bunches, provided they have been in the ground long enough to be grown so; if they were planted in the autumn, take them up singly: the proper time for doing this is when they first show flower; remove them into a warm room, give them plenty of water, and they will blow very fine.

When the bloom is over, they should be turned out of the pots, and planted in the garden, to remain there till the foliage becomes withered and dry, when they may be taken up and treated the same as hyacinths. But it is best to let them remain in the ground three years before taken up, as they will rise in large bunches for potting, and always bloom stronger.

*White Lilies*

**ARE** beautiful sweet plants for rooms. If you have them growing in a garden, they may be taken up in large bunches, and planted in large pots, in which they will thrive remarkably well. The best time for taking them up is in January or February. Keep them in a warm room in a sunny window; constantly supply them with water, and they will blossom very fine. When the bloom is over, they should be turned out of the pots, and planted in the borders again, each root separately, and they will be in good order for forcing the second or third year after.

All the different sorts of Martagon or Turn Cap Lilies will do to force equally as well as the White. Any good common garden-mould is proper for potting them in. They are all propagated by dividing the offsets from the old roots, and planting them in the borders.

*Pinks and Carnations,*

For forcing, should be potted in October. Fine young plants, raised in the summer, are to be preferred. They should be potted in light rich mould, and must be defended from hard frost and rains, by placing them in a garden-frame, if convenient; or otherwise, when there is danger of much rain, lay them down on their sides in a warm situation, as the wet often kills the Carnations. Pinks are hardier than Carnations; but if both are kept rather dry, the better during the winter. You may remove them into a warm room, in January or February, and give them plenty of water according to the heat of the room. If they are kept in a very warm room, they will require water every day. By attending to these instructions, you will obtain them in perfection, particularly the Carnations, a month or six weeks before those in the open ground.

The method of propagating them is by layers or pipings.

*By Layers.*

CARNATIONS are generally increased by this method. When the plants are in bloom, and the young shoots of sufficient length, choose the longest and strongest of them, and such as may be bent down to the earth: the others may be piped. Begin by stripping or cutting off the leaves, from the bottom of the shoot upwards to the third joint from the heart, when you should be provided with a sharp penknife, and small crooks of wood or fern. Such as may be cut out of an old birch broom answer very well for the purpose. The top of each layer should be cut off to about an inch and a half from the heart; then holding the layer between the finger and thumb, make the incision by entering the knife in a sloping direction about an eighth of an inch below the fourth joint, bringing it through the

middle of the joint, and a quarter of an inch above it. The small piece or tongue that is left below the fourth joint, after the incision is made, should be cut off close to the joint. Then, having some fine rich sandy mould ready, put some round the root, that the layers may be the more easily laid down, without breaking or cracking them; after which, fix the layers in the mould with the incision open about half an inch under the surface, and give them a little water, which should be done every dry day. They generally strike good roots in about six weeks, and are then fit to be taken off, and planted in small pots or borders. The mould for potting them in should be rich and light; and if any of the layers be accidentally broken off, or if there are any on the plant not low enough to be laid, they may be piped, as many of the sorts grow well by this method.

*By Pipings.*

**PINKS** are generally propagated by this method from their striking so easily, and from its being much less trouble to pipe them.

In the first place, dig a hole about two feet in depth and in length, and in breadth according to the quantity to be piped. This bed should be in the warmest situation. Fill it with long dung or straw, (the former is the best:) let it be well trodden, and made level with the surface of the garden; or if it be a few inches higher, it will not be the worse. Then get some good mould, mixed with a little rotten dung, which, being well sifted through a fine sieve, lay six or eight inches thick over the bed, making the surface as even as possible: then pull off some of the stronger young shoots from the old roots, such as have about four or five joints. Strip the leaves off carefully to the third or fourth joint, shortening the top of the pipings to about an inch and a

quarter from the heart; then cut it off at the fourth joint, passing the knife exactly through the middle of the joint, and it is finished. Then proceed to plant them as follows. Cap or other glasses should be provided; small glasses under ten inches in diameter are the best. Water the earth a little, before you plant the pipings, having marked the exact situation of the glass on the bed by pressing it on the surface. Take the pipings one by one, and force them into the earth about half an inch, or rather more, according to the strength of the piping, and about an inch distant from each other; then give them a little water to settle the earth about them, and place the glass close over them. They must be watered a little every day, the glasses kept close, and never shaded from the sun. Continue to keep the glasses close over them for about a month, by which time they will nearly all have taken root. The glasses should then be taken off, the plants exposed to the sun and air, and kept moist by frequent waterings, if the weather be

dry. In about a fortnight after the glasses are taken off, they should be planted off into beds, about six inches distant from each other, or they may be planted in beds, to remain to flower, about nine inches distant.



### *Roses.*

THE sorts which answer best for forcing are the Common Province, White Province or Rose Unique, and the Moss. They all do remarkably well in pots.

To flower them well in rooms or hot-houses, they should be potted in the autumn as soon as the leaves are off. However, they should not be forced till the second year, but they will blow in pots in the ground, though not so fine.

They must be kept moist during the drought of summer, to make them grow as strong as possible. After they have had one summer's growth in pots, they will be in good order for forcing, and may be put into a room in the beginning of January,

placed in a sunny window, and well watered. If they are forced in a hot-house, there must be a quantity of young plants potted every year for a succession, as they will not force two years following. The Damask and Maidens-Blush Roses will force, but not so well as the sorts before mentioned. The Rose Demaux and Pom-pone may be planted in pots, and plunged in the ground, the same as the other sorts, and may be taken into the room when they shew flower, as they do not force well. Small insects, commonly called the green fly, which appear on the tops of the young shoots and flower-buds, are very destructive to the roses, and, if not destroyed, totally spoil the flower-buds, and kill the tops of the young shoots. They may be destroyed by fumigating them with tobacco. If you are not provided with a fumigating bellows, I find it answers quite as well to put the tobacco in a small flower-pot with a fiery coal, and blow it with a common bellows. If the plants are kept in rooms it may be done in any back place, as the

smell of the smoke is very disagreeable for some time after in the room. Place the tobacco on the floor, and the plants all round it, and blow it continually till the tobacco is consumed. The smoke should be confined where the plants are for three or four hours, if possible, and it will entirely destroy those insects.

All plants kept in rooms should be served in this manner as soon as any insects appear. Before the plants are taken into the rooms again, about two inches of the mould at the top of the pots should be taken off, and some fresh rich soil put in the place of it; as, by the fumigation, many of the insects fall off on the mould almost lifeless, but will sometimes recover and get on the plants again if the earth on the top be not changed.

The plants should have a good watering of clear water from a watering-pot with the rose on, all over their heads, in order to wash them, and to take off the smell of the tobacco before being taken into the room. Let this be done on a fine warm day, as

taking the plants out of a room in a cold day, and watering them with cold water, checks them very materially. If the water be just luke-warm, it will be much better, and the plants will not be checked. Where roses are forced in a hot-house, they should be plunged in the tan, and fumigated every month.

There is another insect which infests roses, that cannot be destroyed by fumigating, and are easily discovered; for wherever they are, the leaf of the plant is curled. They should be picked off and crushed to death, or in a few days they will destroy every one of the flower-buds.

The afore-mentioned Roses are all increased by layers and suckers from the old roots. The young shoots should be laid in summer, and cut in the same manner as carnations, or twisted, and laid and forked down about three inches deep. They will be well rooted by the autumn, and may then be taken off and potted or planted in beds. The suckers should be carefully taken off with a spade from the old roots in autumn,

and treated in the same manner as the layers.

The China or Monthly Rose is a fine plant for a room, on account of its blooming the greater part of the winter. These should be fresh potted in the autumn in large pots, according to the size of the plants; and the mould should be very rich and light. They must be removed into rooms when the frost comes on. No plant requires more fumigating than this. They thrive remarkably well if planted under a south wall, and nailed up; they grow to a great height, and make a beautiful appearance during the principal part of the summer, and late in autumn.

These plants are propagated by cuttings. Any part of the young branches in spring or summer being taken off at the joint and planted in pots or in the ground, and covered with a glass, readily strike root, and may be potted as soon as they are struck, or planted in a border.

*On Tuberoses.*

THE Double and Single Tuberoses are beautiful sweet-scented plants, and may be brought to perfection with very little trouble. They should be planted in April or May. Provide some fine, light, rich compost, and middle sized pots, planting one root in the centre of each pot. Many people divest them of the offsets, which is a bad practice: for, instead of strengthening the roots, it weakens them. The crown of the root must be only just covered with mould, and if not covered at all, the plant will not be the worse for it.

This beautiful plant always thrives better, and blossoms earlier, if indulged with a hot-bed. For those who force cucumbers or melons, and have but a few roots, it will be a good plan to plunge the pots to the rims at the back or sides of the bed, to forward them; but if you have a large quantity of roots, they should have a slight hot-bed made for them, and they well deserve

it. A bed made for a one-light frame will contain a great quantity of plants; if it be two feet and a half in height, it will be sufficient. At this season, about six inches of old tan, fine mould or saw-dust, must be placed on the bed, to plunge the pots in, which may be put as close together as possible, or so as to fill the bed. They will require a little water two or three days after being planted, but it must be used very sparingly till the foliage on the top is grown two inches in length, then they must be kept moderately moist. Air should be admitted every day, if the weather be at all favorable, by letting up the light at the back of the frame, or pushing it down a little; but this light must be kept close every night. When the flower-stalks appear, the plants should have more air, by drawing the light half off, or you may take it entirely off in fine weather, while the sun shines on them: if the frame be shallow, the flower-stalks will reach the glass before they blow. When this happens to be the case, the frame may be raised, by placing a

brick or stone at each corner of the frame, laying boards or straw round the top of the bed to keep the mould up, and to prevent the air from being drawn in, which would prove injurious. When the plants are in bloom, they may be removed where wanted, either to adorn the warm conspicuous part of the garden, or the apartments of the house, still keeping them well supplied with water, as they will require more when not plunged.

These flowers may be grown equally successful in hot-houses, plunged in the bark-bed, or kept in front of the house on the flue, but the former method is to be preferred: or they may be blown in perfection in a room or green-house, potted exactly the same as for hot-beds; but they will require more water, and, if planted at the same time, will succeed, and be in their beauty when the others are gone. Those grown in beds or hot-houses may be removed to any warm sunny apartment of the house when the flower-stems are about six inches in length, which will keep them

back; and by these means you will have a succession, which is very desirable. The windows may be opened, without detriment to the plants, in fine weather; in fact, it is necessary to give them air frequently, as it strengthens the bloom. The pots should always be removed a little distance from the window, out of the draft, when it is opened, or it will certainly destroy them.

These plants are increased by offsets, which may be taken off after the plants have done flowering and the green is dried. These must be buried in dry sand in winter, and planted in the natural ground in a warm situation at the beginning of April.

*Violets.*

To have the different sorts of Double Violets in perfection, they should be potted in the summer in middle-sized pots, or planted in boxes. The pots may be plunged in the ground in a shaded situation during the summer. The boxes should likewise be kept in the same situation. They should be re-plunged in a sunny situation in the autumn, to remain there to blow; for they do not blossom well, if taken into rooms before the blossom appears. They bear planting very well, and may be taken up out of the ground and potted when in full bloom, if it be more convenient; but they do not remain so long in bloom.

The *Neapolitan Violet*, which is far superior to any other for its beautiful scent and long continuance in bloom, answers remarkably well if planted on an old cucumber bed. The plants must be about six inches distant from each other; if leaf-mould can be easily procured to plant them in, it is to

be preferred to any other.\* The flowers of this violet being so uncommonly sweet, the insects are particularly fond of them; and, if not attended to, they will destroy every one of them. I find the best way to counteract this is to place slices of carrot or turnip round the pots, boxes, &c. as they will eat those in preference to any thing else, and conceal themselves under them during the day. Thus, by turning over these pieces every morning, they may be discovered and consequently destroyed.

Violets are easily propagated by dividing the roots in autumn or spring.



### *Persian Iris.*

THE Persian Iris is a beautiful flower, and will blow on glasses, like the hyacinth, narcissus, &c. but they will blow much stronger in small pots of sand, or sandy

\* What is here called leaf-mould is a compost made from leaves raked up in the autumn, and laid in a heap till perfectly rotten.

loam, putting three plants in each pot. They are managed in a way exactly similar to the hyacinth.

A few pots or glasses of these plants will scent a large apartment. They succeed very well in the natural ground, in a dry situation, and sandy soil.

They are propagated by dividing the offsets from the old roots.



### *Mignonnette,*

SHOULD be sown thick in pots, or boxes, at any time of the year, and transplanted when in rough leaf, either into pots filled with light rich mould, (four plants to a pot,) or in boxes, (the plants to be two inches apart) in the same kind of compost. It must be kept in a sunny window, during the winter, and constantly supplied with water, keeping it moderately moist. In the summer it may be kept outside of the window.

ON

## GREENHOUSE PLANTS.



*The Verbena Trifoliata, or Sweet Vervain,*

Is a beautiful plant for rooms, particularly in the summer. However, it loses its leaves generally about December, when many people throw it away, thinking it is dead; but if it be cut back rather short, and shifted into a larger pot, in good rich mould, as soon as the leaves fall off, it will break again immediately, form a fine green plant, and retain its leaves after till next winter.

This plant will live in the open ground; but the root should be covered with muck, sawdust, ashes, or any thing most convenient, to keep the frost a little from the root. If the frost kill it to the ground,

which it generally does, unless in a very warm situation, it may be cut off close to the ground in April, when it will soon break, and grow very strong. It is very easily raised from the slips or cuttings of the young wood in the summer. Plant them in a large pot; plunge the pot to the rim in a hot situation, and place a glass over them, making it air-proof. Give them water every morning, and they will strike root in about three weeks or a month, when they may be put singly into small pots.\*



*The Fushia Coccinea,*

Is a very handsome plant, and blossoms very fine if managed in the following manner:—

It requires a large-sized pot, and should be potted in strong rich mould. It also requires a good deal of water, and always thrives best if plunged in rather a shady

\* Glasses for this purpose may be had at my store.

situation during the summer. If kept in a room or a garden, and not plunged, they are not of so good a colour; and unless kept in very large pots, they lose their lower leaves. They generally lose their leaves in the winter, and must then have but very little water. They are propagated by planting the cuttings in the summer, in the same manner as the verbena, or by seed, which must be sown in April, in pots filled with light mould, and kept constantly moist, by which means they will blow in autumn.



*The Cobæa Scandens,*

Is a most beautiful flowering creeper, fit to ornament a flower-stand, back of a green-house, &c. They do remarkably well to run up a column or tree, or if planted against a wall. They thrive in almost any situation where they have plenty of light and air, even in a northern aspect, where many hardy creepers will not thrive.

If wanted to grow in the air during the summer, (as they are killed by the first hard frost) they may be planted out in April or May where wanted; give plenty of water, and defend them from frost. About the month of June, if the weather be at all warm, they will grow very rapidly—six inches a day, or more, and will cover an arbour in a very short time. If they are against a tree, they will climb of their own accord, and never require any nailing or tying; but if grown against a wall, they must be constantly nailed.

They are easily propagated by seed, which they bear plentifully in a greenhouse, or in a sunny situation in the open ground; or by cuttings, which should be planted in pots of light rich mould any time during the summer, and the pots plunged in the ground in a warm situation; or in bark-beds, placing glasses over them, which should be kept close, and well watered; by which means they strike root in about six weeks, when they may be placed in small pots, and plunged in the ground,

in a warm situation, and will be fit for planting out in a month.

Being a green-house plant, it is necessary to raise a fresh supply of young plants every year, either by cuttings raised at the latter end of the summer, or by seed sown in the spring about March or April. If it be raised in a room, it must be kept warm, and the window never opened against it. It may also be kept in a cucumber-bed or hot-house, where convenient, and they will flower much sooner.

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*The Heliotropium Peruvianum, or Peruvian Heliotrope,*

Is a beautiful sweet-scented plant for the different apartments of a house. Few plants require more water. It is very impatient of frost, and may be plunged in the ground, in a warm situation, about July, when the weather becomes settled. It is easily propagated, both by cuttings and by seed.

**First, *By Cuttings.***—Provide some very light mould, and plant the cuttings, which should be young shoots, in large pots, in the early part of the summer, plunging the pots to the rims in a very warm situation. Keep the glasses close over them every morning when the weather is hot and dry; but the plants must never be suffered to get dry. They strike good root in a month, and are then fit for planting in small pots. The glasses should never be shaded from the sun, provided they are air-proof.

The reason why the cuttings are recommended to be planted in pots, is, because the worms often draw every plant out, if they are planted in the earth. But when they are planted in pots, this may be prevented by placing a piece of tile close over the hole at the bottom of the pot, and several small pieces round it, to draw off the water. The mould should be carefully examined before the pots are filled, and if it contain any worms, they must be picked out.

*By Seed.*—The seed should be sown in pots of rich mould, and kept in the hot-house, or plunged in a dung or bark-bed. They should be planted off into small pots when about three inches high, and will blow in the autumn. When the plants are plunged in the ground in summer, they may be taken into rooms while in flower.



*The Camellia Japonica, or Japan Rose.*

Is a beautiful well-known plant, and may be kept in the room, green-house, or hot-house. There are many varieties; but the most common ones are the Single and Double Red, Double White, and the Double Striped. They require rather large pots, not liking to be too much confined at the root. Fine sandy loam, mixed with a little black, sandy, or boggy mould, and a very small proportion of light rotten dung, or leaf-mould, well mixed together and sifted, is a proper compost to pot them in.

They should be shifted every year in the beginning or middle of the summer.

This is a hardy green-house plant, and, when kept in rooms, should have as much air admitted to them as possible, and have a good washing all over the heads of the plants once a month at least with clear water, by means of a watering-pot with the rose on. If the plants are very dusty, it will be necessary to use a piece of sponge, or any soft substance, to wash each leaf singly, holding the leaf in the palm of the hand, with the under side of the leaf downwards; and afterwards give them a washing with the watering-pot of water, as nothing disfigures this plant so much as dust.

They are propagated by seed, layers, cuttings, and inarching. The double sorts are generally propagated by inarching them on the single, and sometimes raised by layers. The single answer best, and make the finest plants, when raised from seed imported from China, and sown early in spring in middle-sized pots filled with the same kind of compost as before recom-

mended for potting the plants. The pots must be plunged in a dung or bark-bed, as the plants will not rise without it.

The *Single Red* may be raised from cuttings, which should be the young shoots of last year's growth, and planted in pots during the spring in the same compost as that used for the seed: they are then to be plunged in a good heat in a hot-house, &c. covered with hand or bell glasses, and kept moderately moist by frequent waterings.

When the body or stock of the single sort is about the size of a large goose-quill, it is then large enough for inarching.

The method of doing this is as follows:\* The stocks must be placed so near the tree from which the graft or scions are to be taken, that the young shoots may be easily bent down and joined to the stock. Perhaps it may be necessary to erect a small stage round the plant from which they are to be inarched, which may be done in a green-house, hot-house, or apartment of the

\* The month of April is the best time for performing the work.

house. Having placed the stocks so as that the grafts may be easily joined to them about the middle, or near the bottom of the stem, then, being provided with a sharp knife and fine tough bass,\* make an incision into the stock about one and a half or two inches length-ways, and about one-third of the thickness of the stock in the middle of the incision, but thinner at the top and bottom: then cut the side of the shoot or graft in the same manner, as smooth as possible, about six or eight inches from the top, so as that the bark of both may join. This done, cut a small slit or tongue in the scion or graft upwards, within half an inch of the top of the incisions, about a quarter of an inch in length, but not more; then make another tongue in the stock of the same length downwards, so as that the tongue of the graft may fit exactly into it, joining the rind exactly on every side, and tying them together as close as possible with a piece of bass. This part of

\* A smooth part of the stock must be chosen, where the graft may be joined to it.

the stock must then be clayed over with well-tempered clay, bringing it an inch above, and an inch below the parts that are joined together, and making it very close, so as to keep out both sun and air. The scion is not to be separated from the tree till firmly united to the stock, and they begin to grow together; nor is the head of the stock to be cut off till then.

The method of propagating by layers is as follows:—If you have the conveniency of a melon or other pit, where you have a good dung or tan heat, place fine mould on the top of the bed six or eight inches in thickness, turning the plants out of the pots, and planting them in the mould. If it be necessary to lay the plant a little sloping, in order to lay down more of the branches, it will not be the worse. Lay down all the branches you can, giving each a twist; or cut them in the same manner as directed for carnations. Give them plenty of water till they are struck.

But this is, of the two, the most objectionable method of propagating them; nor

do I recommend it, as they are a long time striking root, and sometimes will not strike at all. After the layers are rooted, they may be potted in small pots, and the old plant taken up and re-potted.



### *Myrtles.*

THE *Myrtus Communis* is the species most commonly cultivated, for adorning rooms, green-houses, &c. There are many varieties of this species, and all very hardy green-house plants, viz. 1. The Broad-leaved Dutch; 2. Venus; 3. Roman; 4. Box-leaved; 5. Italian; 6. Nutmeg; 7. Orange-leaved; 8. Gold-striped; 9. Silver-striped, two varieties; 10. Thyme or Rosemary-leaved; 11. Double Flowering.

The first, third, fifth, sixth, and eleventh sorts are all very hardy, and thrive well growing against a south, or any warm sunny wall, and only require to be matted in hard frost: if they are not sheltered at all, the frost very seldom destroys them.

They are indeed often killed almost to the ground, but generally break and grow again very strong during summer.

Those intended for rooms or green-houses should be in moderate-sized pots, not too much confined at the root, and potted in rather strong rich mould. They should be well supplied with water, and washed over the heads with clean water, by means of a watering-pot and rose, once a month. To keep them dwarf and bushy, the tops of the young leading shoots should be pinched off as they advance in growth. They are propagated by cuttings of the young shoots in summer, stripping the lower leaves off, planting and treating them the same as the Verbena.

ON  
GREEN-HOUSE PLANTS, &c.  
KEPT IN ROOMS.

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HAVING already given directions for the management of a few different sorts of green-house plants separately, which are commonly grown in rooms, I now come to treat of the management of them in general.

All green-house plants, &c. kept in rooms, must be constantly supplied with water, which should be always applied on the tops of the pots, and from no consideration whatever should any be suffered to remain in the water-pans under the pots, (the consequence of which has been before spoken of) particularly in the winter season, when they must also be kept clean from dead leaves, &c. When the plants begin to draw, which will be discovered by their

weak and sickly appearance, and the branches growing long and weak, the tops of the shoots should be just nipped off with the finger and thumb, or a pair of scissors, which will cause them to grow bushy and handsome; and be sure not to forget to fumigate them when there is any appearance of insects. The method of doing this has been before described.

With respect to air, the plants should have a good share in fine warm weather. Many people open the under-sash windows where the plants stand, which is a very bad practice, as they are then exposed to the draft, which injures them more than if they were entirely exposed to the open air. If the top-sash be drawn up, or a window opened, where there is no plants, in fine weather it will prove beneficial to them. If the under-sash be opened where the plants stand, they should be removed out of the draft to some other part of the room.

All green-house plants should be shifted every year, about the month of May, into

larger pots, in light rich sandy compost, such as is recommended for hyacinths, as most of them thrive well in it.

The different sorts of geraniums are generally raised by cuttings, which strike very free, and are planted and treated the same as the heliotrope; or many of the sorts may be raised by seed sown in March, in pots of fine light mould. By these means new varieties are often obtained.

**A TABLE**  
**OF**  
**THE LINNÆAN CLASSES,**

**WITH THEIR ORDERS AND EXAMPLES.**



A **CLASS** in botany is the first and highest division in the arrangement of plants systematically, and by which the whole vegetable kingdom is divided into twenty-four classes, distinguished by some essential and invariable mark in the fructification, possessed by all the plants of each respective class; and by the same rule, each class is subdivided into secondary divisions or orders, the orders into genera, and each genera or genus into species, and the species into varieties.

A class, in botany, is defined to be an assemblage or collection of genera, that have

some striking mark in common, derived from the fructification, i. e. generative parts of the flower; as, for instance, one stamina, or male organ. Every genus and species, therefore, having flowers with one stamina, belong to the first class, (*Monandria*, i. e. of *one* and *a man*;) of two stamina, belongs to the second class, (*Diandria*, i. e. of *two* and *a man*;) and of three stamina, or male organs, to the third class, (*Triandria*, i. e. of *three* and *a man*;) and so of all the others, as explained under each head in the succeeding arrangement of the twenty four classes. Each of these classes as above noticed, are subdivided into sections or orders, and that, as the establishment of the classes, is founded on the number of stamina, or male organs: the orders, or secondary divisions, are founded principally upon the number and situation of the pistil, i. e. style, or female organ, or some other striking part of the fructification; as, for example, I observed above, that all plants having only one stamina, belong to the first class, *Monandria*; of

which class there are but two orders, the first of which having one style, (*Monogynia*, i. e. *one and a woman*) is *Monandria Monogynia*, one stamina and one style; the second have two styles, (*Digynia*, of *two and a woman*) is *Monandria Digynia*, one stamina and two styles: the same is also observable in the second, third, and every succeeding class, as is sufficiently illustrated in the following arrangement of the twenty four classes, and their respective secondary divisions or orders, according to the Linnæan sexual system, as founded on the fructification or sexes of plants.

*First Class.*

**MONANDRIA**, of *one and a man*, *one male organ*, comprehending plants with hermaphrodite flowers, having but one stamina, or male organ, and of which there are but two orders, these derived from the number of styles in each order.

The orders are,

1. **MONANDRIA MONOGYNIA**—one stamina and one style. *Canna Indica*.

2. **MONANDRIA DIGYNIA**—one stamina and two styles. *Blitum, Capitatum.*

*Second Class.*

**DIANDRIA**, of *twice*, or *two and a man*, *two male organs*, plants with hermaphrodite flowers, having two stamina, or male organs, and consists of three orders, derived from the number of styles, or female organs, in each order.

The orders are,

1. **DIANDRA MONOGYNIA**—two stamina and one style. *Jesminum Azoricum.*

2. **DIANDRIA DIGYNIA**—two stamina and two styles. *Anthoxanthum Odoratum.*

3. **DIANDRIA TRIGYNIA**—diandrous plants with three styles. *Piper Nigrum.*

*Third Class.*

**TRIANDRIA**, of *three and a man*, *three male organs*, plants having hermaphrodite flowers, with three stamina, or male organs, and consists of three orders.

The orders are,

1. **TRIANDRIA MONOGYNIA**—three stamina and one style. *Crocus Vernus.*

2. **TRIANDRIA DIGYNIA**—three stamina and two styles. *Saccharum Officinarium*.

3. **TRIANDRIA TRIGYNIA**—three stamina and three styles. *Polycarpon Tetraphyllum*.

#### *Fourth Class.*

**TETRANDRIA**, of *four*, &c. comprehends plants having hermaphrodite flowers, with four stamina of equal length, and comprises three orders.

The orders are,

1. **TETRANDRIA MONOGYNIA**—four stamina and one style. *Scabiosa Alpina*.

2. **TETRANDRIA DIGYNIA**—four stamina and two styles. *Hamamelis Virginica*.

3. **TETRANDRIA TETRAGYNIA**—four stamina and four styles. *Ilex Canadensis*.

#### *Fifth Class.*

**PENTANDRIA**, of *five* and *a man*, *five* male organs, comprises plants having hermaphrodite flowers, with five stamina, and consists of six orders.

The orders are,

1. **PENTANDRIA MONOGYNIA**—five stamina and one style. *Phlox pilosa*.

2. **PENTANDRIA DIGYNIA**—five stamina and two styles. *Beta Vulgaris*.

3. **PENTANDRIA TRIGYNIA**—five stamina and three styles. *Rhus Glabrum*.

4. **PENTANDRIA TETRAGYNIA**—five stamina and four styles. *Parassia Palustris*.

5. **PENTANDRIA PENTAGYNIA**—five stamina and five styles. *Linum humile*.

6. **PENTANDRIA POLYGYNIA**—five stamina and many styles. *Myosurus Minimus*.

*Sixth Class.*

**HEXANDRIA**, of *six* and *a man*, *six male organs*, plants with hermaphrodite flowers, having six stamina, and comprehends five orders.

The orders are,

1. **HEXANDRIA MONOGYNIA**—six stamina and one style. *Amaryllis Lutea*.

2. **HEXANDRIA DIGYNIA**—six stamina and two styles. *Oriza Sativa*.

3. **HEXANDRIA TRIGYNIA**—six stamina and three styles. *Rumex Crispus*.

4. **HEXANDRIA HEXAGYNIA**—six stamina and four styles. *Damosonium, Indicum*

5. **HEXANDRIA POLYGYNIA**—six stamina and many styles. *Alisma Plantago*.

*Seventh Class.*

**HEPTANDRIA**, of *seven*, &c. consisting of plants with hermaphrodite flowers, having seven stamina, and furnishes four orders.

The orders are,

1. **HEPTANDRIA MONOGYNIA**—seven stamina and one style. *Esculus, Pavia*.

2. **HEPTANDRIA DIGYNIA**—seven stamina and two styles. *Limeum, Africanum*.

3. **HEPTANDRIA TETRAGYNIA**—seven stamina and four styles. *Saururus Lucidus*.

4. **HEPTANDRIA HEPTAGYNIA**—seven stamina and seven styles. *Septis Capensis*.

*Eighth Class.*

**OCTANDRIA**, of *eight and a man, eight mule organs*, plants with hermaphrodite flowers, having eight stamina, or male organs, and comprehends four orders.

The orders are,

1. **OCTANDRIA MONOGYNIA**—eight stamina and one style. *Fushia, Coccinea.*

2. **OCTANDRIA DIGYNIA**—eight stamina and two styles. *Galinea Africana.*

3. **OCTANDRIA TRIGYNIA**—eight stamina and three styles. *Polygonum fagopyrum.*

4. **OCTANDRIA TETRAGYNIA**—eight stamina and four styles. *Paris quadri-folia.*

*Ninth Class.*

**ENNEANDRIA**, of *nine, &c.* comprehends plants with hermaphrodite flowers, having nine stamina, and consists of three orders.

The orders are,

1. **ENNEANDRIA MONOGYNIA**—nine stamina and one style. *Laurus Sassafras.*

2. ENNEANDRIA TRIGYNIA—nine stamina and three styles. *Rheum Palmatum*.

3. ENNEANDRIA HEXAGYNIA—nine stamina and six styles. *Butomus umbellatus*.

*Tenth Class.*

DECANDRIA, of *ten and a man, ten male organs*, plants with hermaphrodite flowers, having ten stamina, or male organs, and it consists of five orders.

These orders are,

1. DECANDRIA MONOGYNIA—ten stamina and one style. *Cassia Marilandica*.

2. DECANDRIA DIGYNIA—ten stamina and two styles. *Hydrangea, Hortensis*.

3. DECANDRIA TRIGYNIA, ten stamina and three styles. *Cucubalus Stillatus*.

4. DECANDRIA PENTAGYNIA—ten stamina and five styles. *Sedum Ternatum*.

5. DECANDRIA DECAGYNIA—ten stamina and ten styles. *Phytolacca decandria*.

*Eleventh Class.*

DODECANDRIA, of *twelve and a man, twelve male organs*, comprises plants with

hermaphrodite flowers, having twelve or more stamina, or male organs, and consists of six orders.

The orders are,

1. **DODECANDRIA MONOGYNIA**—twelve or more stamina and one style. *Hudsonia Ericoides*.

2. **DODECANDRIA DIGYNIA**—twelve or more stamina and two styles. *Agrimonia Parvi flora*.

3. **DODECANDRIA TRIGYNIA**—twelve or more stamina and three styles. *Reseda Odorata*.

4. **DODECANDRIA TETRAGYNIA**—twelve or more stamina and five styles. *Calligonum Pallasia*.

5. **DODECANDRIA PINTAGYNIA**—twelve or more stamina and eight styles. *Glinus Lotoides*.

6. **DODECANDRIA DODECAGYNIA**—twelve or more stamina and twelve styles. *Sempervivum, Hirtum*.

*Twelfth Class.*

**ICOSANDRIA**, of *twenty and a man*, or *husband*, *twenty male organs*, consists of plants with hermaphrodite flowers, having about twenty or more stamina, or male organs, that are inserted either into the inner side of the calix, or to the corolla; by this last circumstance is the class in question distinguished from that immediately following, *Polyandria*, which have also frequently about twenty stamina, but they are inserted into the receptacle. This class, *Icosandria*, is also distinguishable by having a monophyllous, hollow, or concave calix, and to the inner side of which the petals are fastened by their claws; and there are five orders.

The orders are,

1. **ICOSANDRIA MONOGYNIA**—twenty or more stamina and one style. *Cactus*, *pentagonus*.

2. **ICOSANDRIA DIGYNIA**—twenty or more stamina and two styles. *Cratægus coccinea*.

3. **ICOSANDRIA TRIGYNIA**—twenty or more stamina and three styles. *Sorbus Aucuparia*.

4. **ICOSANDRIA PENTAGYNIA**—twenty or more stamina and five styles. *Mespilus, Ovalis*.

5. **ICOSANDRIA POLYGYNIA**—twenty or more stamina and many styles. *Rosa, Lutea*.

### *Thirteenth Class.*

**POLYANDRIA**, of *many and a man*, or *husband*, *many male organs*, plants with hermaphrodite flowers, having many stamina, or male organs, which in this class are inserted into the receptacle, and which distinguishes it from that immediately preceding, *Icosandria*, where the stamina are also numerous, but are attached to the inner part of the calix, &c. therefore all plants having more than twelve stamina inserted in the *receptaculum* are of this class, *Polyandria*, and consists of seven orders.

The orders are,

1. **POLYANDRIA MONOGYNIA**—many stamina and one style. *Cistus Villosus*.

2. **POLYANDRIA DIGYNIA**—many stamina and two styles. *Pæony Humilis*.

3. **POLYANDRIA TRIGYNIA**—many stamina and three styles. *Delphinum Ajacis*.

4. **POLYANDRIA TETRAGYNIA**—many stamina and four styles. *Cimicifuga Palmata*.

5. **POLYANDRIA PENTAGYNIA**—many stamina and five styles. *Aquilegia Canadensis*.

6. **POLYANDRIA HEXAGYNIA**—many stamina and six styles. *Stratiotes Aloides*.

7. **POLYANDRIA POLYGYNIA**—many stamina and numerous styles. *Magnolia, Cordata*.

#### *Fourteenth Class.*

**DIDYNAMIA**, of *twice*, and *power*, *two powers*, comprehends plants with hermaphrodite flowers, having two long and two short stamina: in this circumstance of the stamina, long and short, consists the main difference between the class in question, and that of the fourth, which have also four stamina, but which are of equal length;

therefore all plants having four stamina that are of unequal length, two of them long, and two short, are didynamous, i. e. of the class *Didynamia*, of which there are but two families or orders, and are founded upon the absence and presence of the *pericarpium*, or seed-vessel.

The orders are,

1. **DIDYNAMIA GYMNOSPERMIA**—two long and two short stamina, and naked seeds (*gymnospermia*) lodged in the calix. *Lavendula spica*.

2. **DIDYNAMIA ANGIOSPERMIA**—two long and two short stamina, and covered seeds (*angiospermia*) lodged in a proper pericarpium, or seed-vessel. *Digitalis purpurea*.

### *Fifteenth Class.*

**TETRADYNAMIA**, of *four* and *power, four powers*, plants with hermaphrodite flowers, having four long and two short stamina, and consists of two orders, founded on the pericarpium; such as have a short round pod, (*siliculosa*) as honesty and candy tuft,

and such as have a long pod (*siliquosa*,) as stock-gilliflower, &c.

The orders are,

1. **TETRADYNAMIA SILICULOSA**—four long and two short stamina, and short round pods. *Iberis, odorata*.

2. **TETRADANAMIA SILIQUOSA**—four long and two short stamina, and long seed-pods. *Brassica Rapa*.

*Sixteenth Class.*

**MONADELPHIA**, of *alone*, and a *brotherhood*, *one brotherhood*, hermaphrodite flowers, having all the stamina united below into one body, forming a column, through which passes the style; and the orders are seven, founded on the number of united stamina.

The orders are,

1. **MONADELPHIA TRIANDRIA**—three monadelphious stamina. *Ferraria, undulata*.

2. **MONADELPHIA PENTANDRIA**—five monadelphious stamina. *Passiflora, maculata*.

3. **MONADELPHIA HEPTANDRIA**—seven monadelphious stamina. All the Palergonums.

4. **MONADELPHIA OCTANDRIA**—eight monadelphious stamina. Aitonia Capensis.

5. **MONADELPHIA DECANDRIA**—ten monadelphious stamina. Geranium Maculatum.

6. **MONADELPHIA DODECANDRIA**—twelve or more monadelphious stamina. Monsonia, speciosa.

7. **MONADELPHIA POLYANDRIA**—numerous monadelphious stamina. Hibiscus, Palustris.

*Seventeenth Class.*

**DIADELPHIA**, of *twice and a brotherhood*, *two brotherhoods in the same flower*, hermaphrodite flowers, having two sets or columns of united stamina, i. e. united below into two different bodies; the flowers are all papilionaceous, and have apparently ten stamina, but which are only two, one of which splits longitudinally from the middle upward, and terminates in about nine parts, appearing like so many distinct filaments;

and the other stamina is simple or undivided, and lies closely along the fissure of the divided filament, which have generally as many antheræ as divisions, and the simple stamina have but one antheræ; and from the number of antheræ in both filaments is founded the orders, which are four.

The orders are,

1. **DIADELPHIA PENTANDRIA**—diadelphous stamina, having five antheræ.

2. **DIADELPHIA HEXANDRIA**—diadelphous stamina with six antheræ. *Fumaria Solida*.

3. **DIADELPHIA OCTANDRIA**—diadelphous stamina with eight antheræ. *Polygalia Amara*.

4. **DIADELPHIA DECANDRIA**—diadelphous stamina with ten antheræ. *Lupinus Perennis*.

### *Eighteenth Class.*

**POLYADELPHIA**, of many brotherhoods, many brotherhoods, or unions of stamina, in

*the same flower*, hermaphrodite flowers that have each many sets of united stamina, i. e. united by their filaments into several distinct bodies, and consists of four orders, derived from the number of stamina or antheræ, appearing in each flower.

The orders are,

1. **POLYADELPHIA DECANDRIA**--ten polyadelphious stamina in each set. *Theobroma, cacao*.

2. **POLYADELPHIA DODECANDRIA**--twelve or more polyadelphious stamina in each set. *Abroma augusta*.

3. **POLYADELPHIA ICOSANDRIA**--twenty polyadelphious stamina. *Melaleuca, lanata*.

4. **POLYADELPHIA POLYANDRIA**--many polyadelphious stamina. *Hypericum maculatum*.

### *Nineteenth Class.*

**SYNGENESIA**, of *together* and *generation*, plants with compound flowers, having all the antheræ, or generative male organs, united into one cylindric body, and through

which the style, or generative female organ, rises, uniting in the same manner.

This class contains the numerous tribe of compound flowers, and the orders, or secondary divisions, arise from the different modes of intercommunication, or polygamia of the florets that compose each flower; such as, the florets all hermaphrodites—hermaphrodites and females—hermaphrodites of no sex or neuter—males and females—the florets in distinct cups within the main one—simple florets; this class is divided into five orders.

The orders are,

1. SYNGENESIA POLYGAMIA ÆQUALIS—equal polygamia, or the florets all hermaphrodites. *Lactuca, Sativa.*

2. SYNGENESIA POLYGAMIA SUPERFLUA—superfluous polygamia, or the florets of the disk all hermaphrodites, and the circumference or radius all females, which latter are said to be superfluous or useless, because the impregnation of them is unnecessary, the fructification being completed in the hermaphrodites in the centre. *Tanacetum, Vulgar e.* 8\*

3. SYNGENESIA POLYGAMIA FRUSTRATA—frustrated polygamia, i. e. the florets in the radius are neuter, or of no sex, being devoid both of stamina and style, so are ineffectual to the fructification, as in the case of sun-flower, &c. in which the fructification is perfected only, in the hermaphrodites, in the disk. *Helianthus annuus.*

4. SYNGENESIA POLYGAMIA NECESSARIA—necessary polygamia, or being male and female florets, and no hermaphrodites, the presence of the male and females is necessary for perfecting the fructification. *Baltimora recta.*

5. SYNGENESIA POLYGAMIA SEGREGATA—separated polygamia, the florets of each flower separated from each other by means of partial cups, containing one or more florets, and stand within the general calix, as in globe-thistle and elephant's foot. *Echinops, ritro.*

*Twentieth Class.*

**GYNANDRIA**, of a woman and a man, plants having the stamina or male organs placed either upon the style or female organ, or the common receptacle elongated in the form of a style, supporting both the pistillum and stamina; and is divided into three orders, founded each on the number of stamina in each flower.

The orders are,

1. **GYNANDRIA DIANDRIA**—two gynandrous stamina in each flower. *Orchis, ciliaris.*

2. **GYNANDRIA HEXANDRIA**—six gynandrous stamina in each flower. *Aristolochia, sippo.*

3. **GYNANDRIA POLYANDRIA**—many gynandrous stamina in each flower. *Arum Virginicum.*

*Twenty-first Class.*

**MONOECIA**, of alone and a house, plants with male and female flowers apart, or alone, in separate cups; that is, within different cups on the same plant, as in the cu-

cumber, &c. and is divided into ten orders, arising from the number, union, and situation of the stamina of the male flowers.

All monoecious plants are also termed androgynous, from the same circumstances of male and female flowers on different parts of the same plant.

The orders are,

1. **MONOECIA MONANDRIA**—monoecious plants with one stamina. Chara, Flexilis.

2. **MONOECIA DIANDRIA**—monoecious plants with two stamina. Lemna, Minor.

3. **MONOECIA TRIANDRIA**—monoecious plants with three stamina. Zea Mays.

4. **MONOECIA TETRANDRIA**—monoecious plants with four stamina. Morus Alba.

5. **MONOECIA PENTANDRIA**—monoecious plants with five stamina. Ambrosia Elatier.

6. **MONOECIA HEXANDRIA**—monoecious plants with six stamina. Zizania Aquatica.

7. **MONOECIA POLYANDRIA**—monoecious plants with numerous stamina. Quercus.

8. **MONOECIA MONADELPHIA**—monoecious plants with monadelphous or united stamina, i. e. all the stamina united below into one cylindric body. Pinus Inops.

9. **MONOECIA SYNGENESIA**—monoecious plants with synganesious antheræ; that is, with all the antheræ, or tops of the stamina, united into a cylinder, as in the cucumber, gourd, bryony, &c. See class Syngenesia, Gourd, Cucumber, &c.

10. **MONOECIA GYNANDRIA**—monoecious plants with gynandrous stamina; i. e. the filaments situated upon a sort of imperfect style. See the class Gynandria. *An-drachne Telephioides*.

*Twenty-second Class.*

**DIOECIA**, of *twice and an habitation, two habitations*, male and female flowers on two separate plants; that is, all the plants of this class are either male or female, not hermaphrodite, as in the greater number of classes; nor with male and female on the same plant, as in the immediately preceding class, *Monoecia*, but male and female flowers on distinct plants, as in the genus *cliffortia*, *coriaria*, *carica*, moonseed, spinach, hop, and many others; and the female plants only produce seeds, which,

however, require the vicinity of a male plant, or the aspersion of the male dust to impregnate the female flowers, or at least to render the seeds fertile; and from the seeds of the females, both male and female plants are produced.

This class is divided into thirteen orders, and are founded upon the number, union, and situation of the stamina of the male plants.

The orders are,

1. **DIOECIA MONANDRIA**—dioecious male plants with one stamina. *Pandanus Spiralis*.

2. **DIOECIA DIANDRIA**—dioecious male plants with two stamina. *Salix Rubra*.

3. **DIOECIA TRIANDRIA**—dioecious male plants with three stamina. *Empetrum Album*.

4. **DIOECIA TETRANDRIA**—dioecious male plants with four stamina. *Viscum Album*.

5. **DIOECIA PENTRANDRIA**—dioecious male plants with five stamina. *Cannabis Sativa*.

6. **DIOECIA HEXANDRIA**—dioecious male plants with six stamina. *Smilax Aspera*.

7. **DIOECIA OCTANDRIA**—dioecious male plants with eight stamina. *Populus Alba*.

8. **DIOECIA ENNEANDRIA**—dioecious male plants with nine stamina. *Mercurialis Annua*.

9. **DIOECIA DECANDRIA**—dioecious male plants with ten stamina. *Carica Papaya*.

10. **DIOECIA DODECANDRIA**—dioecious plants with twelve stamina. *Minespermum Virginicum*.

11. **DIOECIA POLYANDRIA**—dioecious male plants with numerous stamina. *Cycas, Revoluta*.

12. **DIOECIA MONADELPHIA**—dioecious male plants with monadelphious or united stamina, being united by their filaments into a pillar or column. *Juniperus*.

13. **DIOECIA GYNANDRIA**—dioecious male plants with gynandrous stamina, or that are situated on a kind of style. See the class *Gynandria*. *Clusia Collina*.

*Twenty-third Class.*

**POLYGAMIA**, of *many and marriage*, plants of a variety of sexes, that is, hermaphrodite flowers, and likewise male or female flowers, or both on the same plant, or on distinct plants of the same genus; and from the different circumstances of polygamia this class is divided into three orders.

The orders are,

1. **POLYGAMIA MONOECIA**—the polygamia all on the same plant. *Holcus Bicolor*.

2. **POLYGAMIA DIOECIA**—the polygamia on two distinct plants. *Fraxinus Americana*.

3. **POLYGAMIA TRIOECIA**—the polygamia on three distinct plants. *Ficus, carica*.

*Twenty-fourth Class.*

**CRYPTOGAMIA**, of *to hide or conceal and a marriage, a clandestine marriage*,—plants that have their fructifications either entirely concealed, or, from their minuteness or situation, are imperfectly visible: such are the ferns, mosses, flags, sea-weed or wrack, and mushrooms, and of which the classic

character is very imperfect, and the genera of course without any essential mark or distinction, so great is the obscurity that still prevails in this considerable part of the vegetable kingdom.

This class of imperfect plants is divided into four orders or families, very different in their general habit.

The orders are,

1. CRYPTOGAMIA FILICES—the *Filices* or Ferns.

This is a large tribe of plants, defined to be plants which bear their flower and fruit on the back of their leaves; but the flower and other parts of fructification are so minute, or imperfectly visible, that they do not admit of any regular classic distinction.

2. CRYPTOGAMIA MUSCI—*Musci* or Mosses.

This is also a large tribe of plants with imperfect distinguishable fructifications: their chief characteristic distinction is—antheræ without filaments—male flowers, constituted by the presence of the antheræ—

the antheræ have, or are destitute of a *calyptra*—seeds entirely naked, being devoid of the cotyledon or cover, so exhibit the naked embryo. See Musci.

3. CRYPTOGAMIA ALGÆ—*Algæ*, Flags or Sea-weed.

A numerous tribe of imperfect plants, whose root, stem, and leaf are all one, and their fructification imperfectly known.

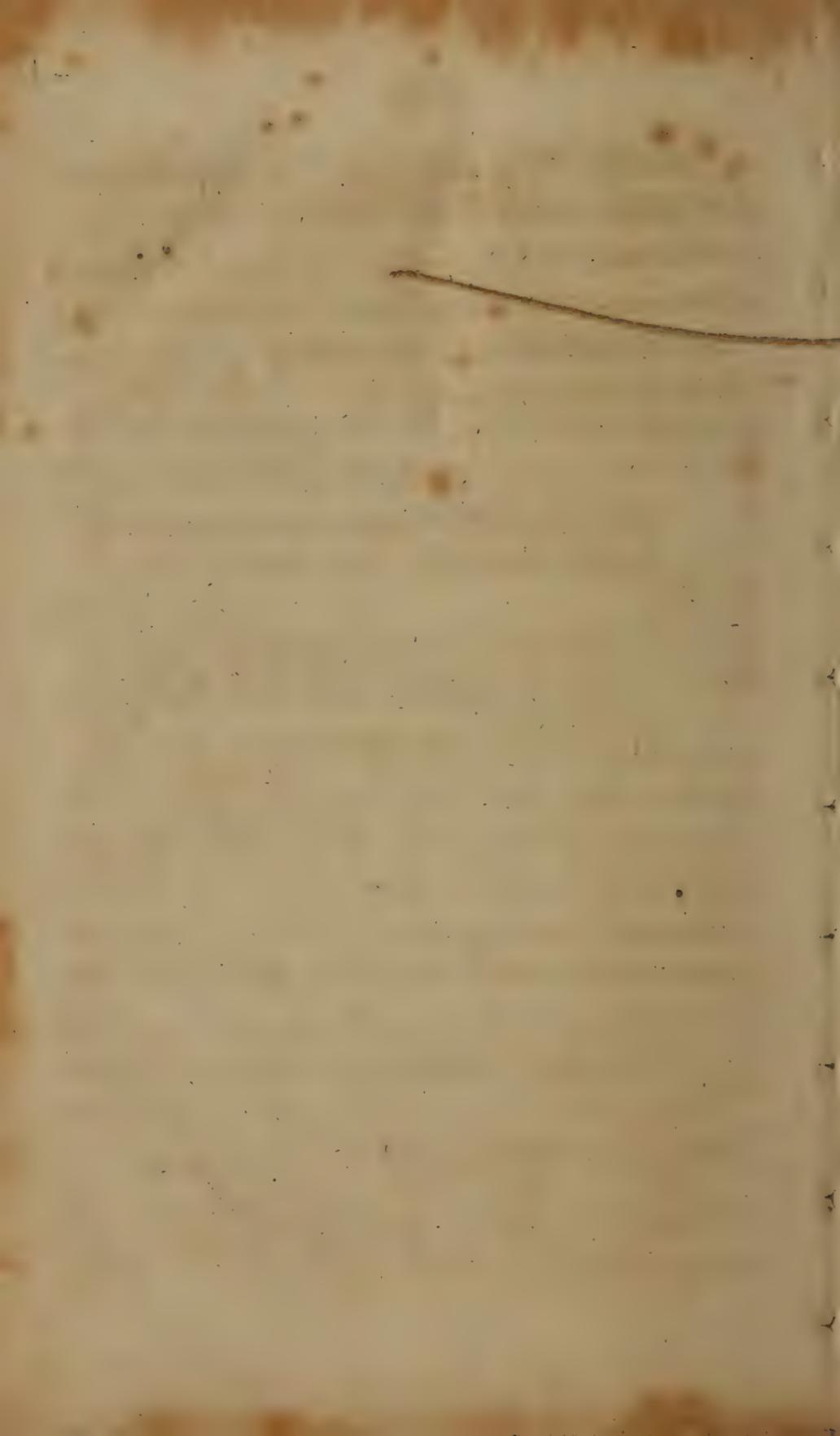
4. CRYPTOGAMIA FUNGI—*Fungi*, or Mushrooms.

A very extensive tribe of plants, whose fructification is still entirely unknown.

By the foregoing arrangement of the twenty-four classes of the vegetable kingdom, and their respective orders, the student in gardening and botany will easily explain to himself the proper class and order of all the different genera; especially, as to each genus we have all along subjoined the name of the class and order to which it belongs, as also a plant of each order; observing, that all the different species and varieties of each genera or genus, are also all of the same class and order.

Doctor Withering in his arrangement of British plants, has distributed the plants of four of the Linnæan classes, Gynandria, Monoecia, Dioecia, and Polygamia among the first nineteen, according to the number of their stamens.

THE END.



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