

PLANTS IN POTS.

NOTES FOR AMATEURS ON THE CULTIVATION OF PLANTS IN POTS.

IN TWO PARTS.—PART I.



THE cultivation of plants in pots is a different matter to the culture of the same plants in the open ground. A plant in a pot is like a bird in a cage, wholly dependent on the hand that feeds it and therefore in need of constant watching. A plant in the open ground is like a bird on a tree, for although it cannot fly to find food and drink, it can send its roots far and wide to search for what suits it, and many plants have the power to shift their ground, so that if the rich border does not suit them, they may, perhaps, try the gravel walk, and, if allowed, make a vigorous growth amongst the flinty pebbles. To grow a plant in a pot must be the aim of every amateur who possesses a greenhouse, and the task is not a small one. For the illustration of the subject let us take two extreme cases. The first shall be that of the unskilled beginner, who provides a large pot for a small plant, and some stuff which we must call mud for the roots of the poor thing to *perish in*. You will find examples of this case if you look for them, especially amongst beginners in window gardening. You will find that plants potted in black mud are kept soaking with excess of water for weeks together, until they are nearly dead, and then are allowed to go dust dry, and end their miseries ignobly. The other extreme is that afforded by the man who grows plants for the market. He provides for the public very large plants, wonderfully rich in leaf and flower, in pots so small that, like the king who was puzzled by the apple dumpling, one might wonder how the roots were ever got into so tiny a receptacle. The amateur may take lessons from both, but he is not to follow either, for the market system of plant-growing is not adapted in all particulars for the private garden. But if you will purchase one of these luxurious plants, you will find that it is in a new pot, and that the soil is sandy, and will not acquire the texture of mud or paste, even when heavily watered. If you turn the plant out of the pot, you will find that the roots form a tough, fibrous mass that have touched the pot all round, and, at the bottom, are closely wound round some pieces of broken brick or flower-pot that, in the first instance, were carefully packed so as to afford instant escape to every drop of water in excess of what the soil in the pot would retain without being actually wet. The leafy part of a plant must have light and air, and the roots must have air and moisture. The plant that was potted in mud was killed by suffocation, for the texture of the soil prevented the access of air to the roots. The beautiful market plant was nourished by air as well as water at the roots, and it was encouraged to make a free growth before coming into flower, which, in the first place, insured size; and then it was allowed to get pot-bound, which promoted the production of an

abundance of flowers; and to make amends for the comparatively small amount of soil in the pot, it was supplied from the first and always with soft water slightly charged with some fertilizing agent, and always warm as the air the plant was growing in. There were other circumstances that conduced to its perfection, but these we will not inquire into, because, as remarked above, the amateur cultivator would not be prudent in adopting the practice of the market grower *in extenso*, even if that were possible, as, generally speaking, it is not.

It is, therefore, important to master the art of growing plants in pots, and for the practice of this art a certain amount of machinery is necessary, which we shall now hastily describe.

THE POTTING SHED is the workshop, storehouse, and tool repository. It is a good plan to place it so as to cover the stoke-hole, and thus make a snug place of it in winter. It may be a quite rough affair, but it must be large enough and weather-proof, and quite light. Old window-frames and doors may be used up advantageously in making a potting shed, and a brick or tile flooring is to be desired. A lean-to with tiled roof, in which a few glass tiles are inserted, will answer well, if a wall can be spared for it, and the whole front may be open, if the situation is quite sheltered. If the front is closed there must be two or three windows. To give an idea of the proper size for such a shed, we should say that a length of twelve feet and a width of eight feet would suffice for a small garden. Any way, there must be room for handling plants and for a wheelbarrow to turn, and for a store of necessary materials.

A strong bench should run the whole length of the shed, and beneath it should be rough bins with sloping fronts for storing loam, peat, sand, and other stuff. The stout uprights which support the bench will afford a holding for the divisions of the bins, which should be six in number at least, one or two of them much larger than all the rest for loam and peat, of which there must always be a good store. The sloping front should drop into grooves to facilitate filling the bins. A locker for labels, seeds, and other oddments will be useful, and the whole of the garden tools may be accommodated on the back wall by providing rails and hooks to hang them on.

COMPOSTS for plant-growing are compounded in a great many different ways, as patent medicines are; but the wise cultivator will not have many of them. We will suppose that the bins are filled with materials. These should consist of mellow loam full of decayed fibre, tough fibrous peat, silver sand, leaf-mould, potsherds, old broken plaster or mortar, and the most rotten portion of the manure from an old hotbed or any similar source. With these before us we will prepare what shall henceforth be termed the *universal compost*. We will put upon the bench a bushel of the loam, a peck of leaf-mould, a peck of the powdery manure, and half a peck of silver sand, and proceed to chop them over and mix them with the trowel, throwing out all large stones as the mixing proceeds. If this is well done the compost will be ready, and will suit perfectly nine-tenths of all the plants you are likely to cultivate. Another useful compost will consist of one bushel of peat, one peck of leaf-mould, and

one peck of silver sand. This will suit for the remaining tenth; and, upon my word, if you never deviate from these prescriptions, you may become, by proper attention to other matters, an expert plant-grower and a winner of first prizes. Sometimes loam and peat are mixed, and we must confess that we ourselves mix them; but the mixing can scarcely be considered good practice, for one being decidedly acid and the other decidedly alkaline, they do not quite agree when chopped up together. As a matter of fact, however, it must be confessed that the best plant-growers employ both loam and peat in composts, and see no reason to doubt the propriety of the procedure.

It will be found in practice that young plants of all kinds and plants of soft texture, whether young or old, thrive best in a light soil containing a rather large proportion of sand, whereas plants that are advanced beyond the stage of infancy, and all plants of woody texture, of whatever age, require a firmer compost. Hence, in potting a lot of little things that have just begun to put forth roots, sand and leaf-mould may be added to the compost; or in shifting on robust habited plants that have acquired a place in the world, it may be well to add loam or peat, as the case may be, just as in feeding a baby soft food is alone suitable, whereas a "lubberly boy" will want cartloads of bread and meat and pudding.

It is a bad practice as a rule to sift composts, for they should always be rather lumpy, and the finest part should be reserved for filling in at the top of the pot. But sifting may be proper in preparing a mixture for seedlings and cuttings, and the finer the compost the larger should be the proportion of sand in it, to prevent its becoming an obnoxious paste. There ought not to be a single worm in any mixture for pot plants. Large stones must, of course, be removed. Any bits of decayed wood which occur in the leaf-mould should be thrown out. A mixture ready for use should be quite damp, yet dry enough to be handled freely without soiling the fingers. If it is wet and sticky it is not fit for use.

A capital basis for the universal compost may be prepared in the following manner:—Procure equal quantities of the top spit of a good loamy pasture and of good stable manure from well-fed horses. As they are carted into the yard have them built up into a tall square stack in alternate layers, a layer of turf, and a layer of manure, and leave the stack untouched for twelve months. Then cut from the stack by slicing downwards from the top as wanted, and take the mixture as the basis of a loam compost, adding sand and leaf-mould to lighten it, but not adding any manure, as in this respect it will be rich enough already.

Loams and peats differ so much in quality that it is difficult to convey an idea of what is good or bad of either. Nevertheless, it will not be difficult, in any district, to make discovery of the best sorts available for horticultural purposes, and the amateur who means it will soon discover the way.

Having always dwelt in a northern suburb of London, we have been accustomed to keep a good store of Wanstead peat in the garden

for all rough purposes, and have trusted to Epps's "selected" peat, which is packed in barrels and sold at a reasonable price by Mr. Epps, of Lewisham, for all the more delicate habited of the peat plants. As for the loam, that which we are best accustomed with is a modified clay, except when full of fibre; we use none but silver sand from Reigate for small work, but find the siftings of the sweepings of the gravel walks the best of sand in the world for general use. Leaf-mould must be prepared at home, and the way to ensure plenty is to lay up grass mowings, leaves, and the worn-out stuff from flower-pots in which plants have been grown, in a compact heap *above* the level (not in a pit or any wet place), and allow it at least twelve months to rot through; it is better if allowed to remain two years.

POTTING is a test of dexterity, even amongst experienced gardeners, for many who could pot off "bedding-stuff" by the thousand in "no time" would have to put on a "puzzling cap" if required to repot a gigantic agave or camellia; but on good potting success will turn more certainly than on any other separate process in all the round of greenhouse practice. We will first speak of the pots, which must always be clean and better if new. The sizes required for ordinary purposes are 60's, which are three and a half inches in diameter at top; 48's, which are five inches in diameter; 32's which are six inches in diameter; and 24's, which are eight inches in diameter. To clean old pots is a simple matter enough; but it may be well to remember that, if a lot of old pots are left lying loose about out of doors all the winter, they will be quite clean and as good as new in spring, for the frost will scrub them, not only on the surface, but in the very pores of the clay.

In preparing the pots, first of all place in the bottom, hollow side downward, a concave piece of crock large enough to cover the hole. Over this place a layer of crocks, the thickness of which must be regulated by the size of pot and the character of the plant. We will take a six-inch pot or "thirty-two." If a soft-wooded plant, such as a geranium or fuchsia, is to be potted, it will suffice to place five or six rather large crocks over the one that covers the hole. On the other hand, in preparing the pot for a hard-wooded plant—such, for example, as the heath, the crocks should be broken up small and placed in the pot somewhat regularly to a depth of about an inch. For large pots it will not be necessary to break the crocks so fine, but in no case must they be used too large. Over the crocks put a layer of the rougher portions of the compost, flaky leaf-mould or dried moss, to prevent the finer portions of the compost running down between the crocks and choking up the drainage. If precaution is not taken to prevent this mishap the superfluous water will be unable to escape, and the soil will soon become sour through remaining in a saturated condition.

To form a nice bed for the ball of the plant to be potted, put in the bottom a sufficient quantity of the compost to raise the plant to the desired height. No rules on this point can be given, but in no case should the crown of the plant be buried very deep, and in the case of large specimens of hard-wooded plants sufficient soil should

be placed underneath to raise the surface of the old ball of soil high enough to require little or no soil over it. In all cases the soil must be pressed firm, and composts consisting entirely or chiefly of peat will require much more pressing than would be desirable for composts of which loam is the staple. In potting off from cutting pots there will be no difficulty in pressing the soil firm enough with the hands, but in shifting established plants from one pot to another a potting stick will be necessary. This can be readily made, and the most convenient size will be fifteen inches long, an inch and a half wide, and between a quarter and half an inch thick at the top, to admit of its being more readily grasped with the hand; the corners can be shaved off with the knife. With this the soil must be worked regularly round the ball, so that no vacant space may be left between the old ball and the side of the pot. The soil must also be pressed to an equal degree of firmness all round the ball; for if less firm on one side than the other, the water will drain away down that side and the other side will be only partly moistened. In repotting plants growing in peat it is well nigh impossible to ram it too firm, and unless the new soil is made quite hard the water will run through it before the old ball has become properly moistened. It is owing to a neglect of this precaution that so many cultivators fail in growing hard-wooded plants satisfactorily. It is not less important for the old ball of soil to be of a proper degree of moisture for the well-being of the plant before it is transferred to a fresh pot, for when the soil is in a dry state there is a considerable amount of difficulty in moistening it afterwards. In the event of a difficulty in making the soil equally moist, whether in the case of a plant that has been long in the same pot, or one newly potted, make an end of the difficulty, by dropping it gently into a bucket of water, and leaving it there for half an hour, by which time the roots will be well wetted throughout.

S. H.

GARDEN GUIDE FOR APRIL.

KITCHEN GARDEN.—Owing to the wet weather during the winter, the work of the last month has been delayed, and seeds sown early will not be much behind those sown last month. Sow Windsor, Longpod, and Johnson's wonderful beans; Marrow and Prussian Blue peas, and a few rows of the earliest sorts, to come in before the late peas are ready. In small gardens, the dwarf kinds are always to be preferred. Sowings should also be made of Horn carrot, Savoy cabbage, Brussels' sprouts, Scotch kale, broccoli, cauliflowers, and cabbages, for autumn use; a succession of such things being preferable to a glut all at once for the private grower. Among cabbages, Atkin's Matchless, Wheeler's Imperial, Early York, and West Ham are good sorts to sow now, but the main crop of cabbages should be up by this time, and must be hoed between, when the ground is in a fit state. Beet should be sown in the second week, in ground deeply dug, but not manured; the main

bottom, makes an easily-fixed and effective foundation for training objects against a wall. A good deal may be done towards hiding and improving objectionable corners by an ingenious application of the new material, virgin cork. The use of this article, however, has so much extended that the subject would form a long paper of itself.

By way of parting advice for suburban horticulturists, we would say that, *cæteris paribus*, always prefer a dwelling with some sort of garden, and that, if possible, with separating partitions of open work instead of blocks of bricks.

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IN TWO PARTS.—PART II.

PROPGATING by seeds and cuttings will be part of the regular routine work, and the amateur who loves plant growing will be ambitious of distinction in this part of the business. It must be confessed, however, that to take a young plant from the hands of a nurseryman, and by careful management develop its full capabilities, so that in due time—it may be but a few months or it may be many years—that plant shall have become a noble specimen, is a task far more worthy of an amateur's ambition. We can always buy plants to begin with, but we must acquire by patience and perseverance the skill requisite to the development of their beauties. One of the first requisites to success in the multiplication of plants is a propagating house or pit. It is customary to enclose, by means of a glass screen, a small portion of the warmest end of a stove or greenhouse for this purpose, and to ensure bottom-heat by means of a shallow tank covered with slates, the water in the tank being heated by conducting it through the flow-pipe at the point where the latter is connected with the boiler. But almost any amount of propagating may be done without any special arrangement of this sort, especially in a garden where a hotbed is made up in spring, and advantage is taken of the natural heat of the earth in the later portion of the summer season. Frames and pits are valuable auxiliaries to the greenhouse, and, indeed, there can be but little done without them where soft-wooded plants, notable for an abundant production of flowers, are held in favour. The grower of hard-wooded plants and succulents will have much less need of them. Hand lights, bell glasses, and the propagating boxes made of cheap tile-ware, may be rendered serviceable at all seasons of the year in the multiplication of plants, and the enthusiastic plant-grower will soon learn how to make them repay their cost a dozen times over every year. The necessity for such contrivances arises out of the fact that a moist, warm soil, and a still, moist, warm atmosphere, are peculiarly favourable to the germination of seeds, and the rooting of cuttings, and if the amateur will always bear this fact in mind, the business of pro-

pagating will be no longer a perplexity and a worry, but one of the most delightful amusements.

In sowing seeds select the compost in which it is recommended the plants should be grown, and add about a fourth part of its bulk of sand to it. Shallow pans are useful things for seeds, but wooden boxes answer equally well. The depth seeds are sown is regulated by their sizes: those as large as a pea may be fully one inch deep, and those of smaller size in proportion. It is of the utmost importance, however, for the amateur to bear in mind that small seeds of all kinds should be covered with the merest dusting of soil, for many are lost through being sown too deep. It is good practice to lay a square of glass over a seed pan when the seed is sown, to prevent evaporation, because, if the soil is sufficiently moist when the sowing takes place, it will continue so until the seeds germinate if covered with glass, and thus the necessity of watering will be obviated. If you cannot cover the pans with glass, sprinkle a little clean moss over, or lay a sheet of paper over, and be sure to remove the moss or paper as soon as the sprouting of the seed is visible. When the little plants have grown sufficiently large to bear separation they must be potted two or three together, or separately in small pots, or they may be pricked out into boxes, with a view to a separate potting at the next stage.

By far the largest proportion of greenhouse plants are raised from cuttings, and in the case of soft-wooded plants, the process is so simple, sure, and speedy, that there need be but little said about it. As a rule it is a difficult matter to strike cuttings of hard-wooded plants, but the compensation for the difficulty is found in the fact that no one is in want of large quantities of such plants, and as well-made young heaths and such like can be purchased at a very low price, the propagating business need not stand in the way of the formation and good keeping of a pretty collection. The amateur must begin practice with plants of soft texture, such as fuchsias, pelargoniums, and veronicas. Any of the young shoots of these may be made into cuttings at any time of the year. Preference should be given to shoots that are somewhat firm, but still in a growing state. In the case of fuchsias, they may be broken off at the joint by a slight pressure of the thumb, the shoot having its own "heel," and its removal causing a slight scar on the parent stem. If you cannot do this dexterously cut the shoots with a sharp knife, and in every case let the cuttings be from two to four inches long, and remove from them a few of the lowest leaves, so as to secure a sufficient length of clear stem to insert them firmly in the soil. The more leaves a cutting can carry and keep the better, but there must be no leaves buried in the soil, and any leaves that "flag" or droop from exhaustion, will do more harm than good. Cuttings are usually put in sand first, and as soon as they begin to form roots are taken out and potted in light compost. This is not always necessary, especially in summer time, when quick-rooting cuttings may be put singly in small pots in proper compost, and will at once make plants and occasion very little trouble. It may always be known when cuttings are throwing out roots, as their tops become

greener, and begin to grow simultaneously with the emission of roots from the base. Then they should have a little more air and light to prepare them for the life they are to lead as independent plants. A cheap propagating frame may be extemporized by fitting together two flower-pots and filling the space between them with moss or sand, and then fitting a bell-glass over. This plan answers well for hard-wooded plants, which are very slow in making roots, and are apt therefore to be neglected, and, perhaps, occasionally forgotten.

The multiplication of stemless plants, such as the cineraria and primula, is accomplished by division of the root where named varieties are required, but when the cultivator has no wish to keep a named collection, and desires only to have plenty of gay flowers, seeds are to be preferred. In dividing these herbaceous plants, the "stool" is cut through so as to divide it into as many plants as it has centres of growth, each portion having a few roots attached. The best way to learn the art is to practise on stools of chrysanthemums in spring, for they are easy to divide, and the destruction of a few by unskilful handling will not entail a serious loss.

A considerable number of useful plants may be propagated from leaves, and the practice is of great value when it is desired to obtain stock of an expensive variety. In the case of begonias and coleus, which may be increased in this way, the leaves are merely laid on a surface of moist sand, and kept in their places with little wooden pegs. Sometimes the leaves are clipped partly across by a pair of scissors to hasten the production of roots and buds. In the case of several succulents, such as echeverias, the leaves are removed so as to leave a clean scar on the stem, and are fixed with their bases on or in a surface of sand by driving a little peg through them. The time to remove the leaves for the purpose is when they are "ripe," that is full grown, quite mature, but not yet showing signs of decay.

CULTIVATION consists in providing at every stage of the life of a plant conditions favourable to increase of the individuals or full development in any form desired (and possible) of individual specimens. The treatment to which the principal groups or classes of plants are to be subjected for the attainment of these ends will be described in the papers to follow, but a few important generalities may be usefully disposed of now. In any and every case it is well to wait until a plant has filled with its roots the pot it occupies, before shifting it into one of a larger size. In any and every case it is well to "stop," that is, pinch the points of the shoots, or prune with the knife, some little time before the shift is made, and to give the shift when the new shoots that the stopping process has caused the plant to produce have grown about half an inch or so. In other words, never stop and shift at the same time. A "large shift" means transferring the plant to a pot two or three sizes larger than the one it occupied before the shift. This practice is followed with advantage in the case of fast-growing and free-rooting plants of soft texture, such as the hydrangea, for example. A "small shift" means transferring to a pot only one size larger, and is the only safe practice with slow-growing plants of hard texture,

such as the erica. The amateur is advised to practise small shifts until some experience has been acquired, for if a plant does not quickly fill its pot with roots, it is apt to grow smaller instead of larger. Reasons could be given for all these directions, but if we begin to philosophize, we may not only waste time and space, but be tempted to indulge in essay writing.

THE INSECTS AND DISEASES that injure, and not unfrequently destroy plants, may be kept at bay to a wonderful extent by good cultivation. As a rule, the appearance of green-fly, red spider, scale, or mildew, is an evidence of debility in the plant—it may be through too much or too little food; it may be through too much or too little heat; it may be through downright neglect of the most ordinary rules of cultivation. The best remedial agents are air, water, and light; but in aid of these we are compelled occasionally to employ tobacco, soap, sulphur, lime, charcoal, soot, and patent preparations, made of no one knows what. A slight dusting with tobacco-powder will generally make an end of green-fly, or aphid, without harm to the leaves dusted; but when all the plants in a house are covered, it will be well to fumigate, and any machine will answer the purpose that will quickly diffuse an impenetrable cloud of cool smoke, the fuel being the strongest shag tobacco. The little mite called "red spider" usually appears where the stock is kept too hot and too dry. Hence atmospheric moisture and a good watering of the roots of the plants will generally dispose of him to the satisfaction and advantage of the atmosphere. But if a medical agent is wanted, provide some means of slowly diffusing the fumes of sulphur, and you will settle him certainly. But beware; for if you diffuse sulphur flames rapidly, whether by the aid of burning coals or otherwise, you will probably kill all the plants in the house. The safe way, if the fire is going, is to paint the pipes with a mixture of clay and sulphur, and if the fire is not going, it is best to fumigate. Before fumigating, the plants should be quite dry, and the house closely shut. Make so much smoke that you can see nothing, and thus leave the matter until the following morning, when the whole stock should be well syringed with soft water, and an hour afterwards air should be given. Slight dustings of flowers of sulphur will usually destroy the mildew. Now for an experiment which will teach you more than a library of books on the subject of vermin. In the month of April get a lot of old plants of *Solanum capsicastrum* or *S. pseudo-capsicum*, and shut them up close in a warm sunny house, and for three weeks starve them within an inch of their lives—they must have a little water or they will die and spoil the experiment. If carefully starved and heartily humbugged, they will in the course of three weeks become horribly infested with green-fly. On the first mild dull day in the month of May plant them out in a rich mellow soil in a sunny spot, give them a good watering, and forget them. Some time in June look at them and you will be surprised and delighted, for they will be making a free, healthy growth, and there will not be left a fly on them. If you perceive the philosophy of the case you will not need much instruction on the subject of greenhouse vermin.

S. H.