

THE SIMPLE LIFE

THE HOME GARDEN

HOW TO GROW BULBS IN PEAT MOSS AND OYSTER SHELL



WITH the advent of the bulb catalogues come thoughts of winter and how to brighten our homes in which so many hours will probably be spent. Having derived much interest and pleasure from this form of gardening myself, I hope a few words may be a help to others. No one with any love for flowers need be daunted, for by adhering to a few simple rules success is practically assured.

First, order with your bulbs the fertilized fibre, charcoal and oyster-shell, it is about 38. 6d. the bushel, then proceed to fill any pots, basins, cups or glasses you may have; they must be glazed inside, no hole at the bottom. The compost does not stain and cracks do not signify. Small earthenware milk basins, about 7 inches across and 5 inches or 6 inches deep, to be got in country towns for 2d. each, look charming with Daffodils; an old copper lustre jug minus handle which I planted with five Snake's Head (Fritillaria Meleagris) left little to be desired when "in blow," as the Warwickshire folk say. The depth of the jug lent itself well to Fritillarias, as they should be planted 5 inches deep. These flowers, being rather uncommon, usually evoke interest and speak of Oxford to all who know and love the water meadows there in which they flourish; the sight of them there is a never-to-be-forgotten joy to a true Nature lover. Plant large bulbs, such as Hyacinths and Narcissus, half covered in fibre, smaller ones entirely covered about 1 inch or their own depth and Freesias rather deep. Plant firmly, pressing the compost well down. To attain even height in leaf and flower plant the five, or any number of bulbs you wish, of the same weight as nearly as possible. Having planted them, keep damp; watering once a week will usually be found sufficient. When the fibre looks dry and dusty on top it is a sign water is needed. When filling the bowls with compost leave half an inch from the rim free to allow of watering without making a mess.

Place the planted bulbs in a spare room in a dark corner, and when they are about three-quarters of an inch up above the fibre gradually bring them into more light, then sunlight. Beware of leaving them too near windows in times of sharp frost. A spare room in the early stages merely to avoid dust and fires, as a warm room brings them up so fast, causing the foliage often to grow limp and the flowers poor and delicate. For those who have greenhouses with the damper air and more even temperature the case would, of course, be quite different.

Freesias, the sweetest of all winter flowers in perfume, give splendid results, but not unless they are carried into the greenhouse when about 4 inches high. To a beginner I advise, for Tulips, Artus (red), Grisdell (pale pink) and Canary Bird (yellow); Hyacinths Charles Dickens (both pale pink and pale blue), Mary (dark blue), La Belle Blanchiseuse (white), and Yellow Hammer (yellow); Jonquils, sweet scented; Emperor and Queen of Spain Daffodils; any Crocus, Scillas and Grape Hyacinths do well. There are, of course, many others. All these I have proved for many years. Single Hyacinths thrive much better than double ones. Roman Hyacinths seldom fail, and give the quickest results in bloom. Snowdrops and Anemones do not force well, at least I have not been clever enough to succeed with them.

Acorns and Horse Chestnuts make delightful little forests planted in this way, and by a stretch of imagination convert a winter dinner-table into a summer picnic.

Different sorts of bulbs in one bowl are not suitable, as they never flower altogether. Hyacinths bloom from the time of planting in from sixteen to twenty weeks, Tulips from twenty to twenty-four and Roman Hyacinths from twelve to fourteen, but often sooner than this.

ROOT PRUNING FOR FRUIT

If a tree is making too much wood growth, and is not bearing what might be considered a fair crop, it should be deprived of a few of its roots. In order to illustrate the value of this, I will give one of my experiences along that line. A few years ago I received a Wealthy apple tree and, if my memory serves me right, it was of one year's growth, and about 12 to 15 inches high, branched out as a dwarf, and so I let it remain. It grew to be eight feet high and six feet in width and with no sign of fruit. I said to it one day, "You have got to stop this. I don't want so much wood; I want fruit." I dug a hole about 30 inches from the trunk and then, tunneled in under it and there I found four large roots. I cut these off and put the soil back again. The next year, I had to prop up every branch but one on the opposite side to where I dug the hole, and in the fall, I had about three bushels of splendid apples.

My boys found they were good to eat, and as a consequence the branch nearest the wall was stripped of its load quite a while before the rest. The next year, the branch which did not require to be propped and the one which the boys stripped, had to be propped. Altogether, the trees bore about one and one-half bushels and the third year it bore about two bushels. They were as good a sample as one could wish to pick up. This instance is not a

solitary one but one of scores, and always with about the same results. To my knowledge, it has been practiced through three generations, I myself having been taught it over 40 years ago by my grandfather, who was a nurseryman and knew whereof he spoke.

AN ISLAND FARM IN BRITISH COLUMBIA

About a mile inland from the town of Nanaimo, Vancouver Island, B. C., lies a farm 535 acres in extent which is owned by the Western Fuel company, and maintained for the purpose of supplying fodder for the mules and horses working down in the coal pits, says a writer in the Farmers' Advocate. The coal pits are extensive and labyrinth of workings run beneath the harbor of Nanaimo. Mr. Thomas Cunningham is the manager and we were fortunate enough to catch him at home. On hearing our errand, he very courteously put off the business he had in hand, showed us around the farm and provided us with his views and observations on things agricultural and the results of the past two years working which he has kept in a carefully tabulated

other year; the cream goes to the government creamery and the hogs are readily disposed of in Nanaimo. There are no sheep kept and one cannot help thinking that a moderate sized flock to feed off a catch crop, as often in rotation as possible, would greatly increase the fertility of the soil and at the same time be a not unprofitable investment in themselves. However, the farm has to keep putting out as much forage per annum as it possibly can and there appears not to be scope enough for even an occasional change such as we have suggested. A few acres of carrots, marigolds and sugar beets are grown as feed for the farm stock in winter. These Mr. Cunningham likes to pull and store before the rains commence, as once the rainy season sets in they are apt through being continuously wet, to become rotted to some extent, also the haulage is much heavier.

Wind breaks have been planted along the roadsides and of these the acacia seem to be thriving best. Some English walnuts have done well only in the gravelly ridges; on the clay the young wood does not seem to ripen properly, the bark on it splits at the slightest frost, allowing the wet to penetrate and rot the

efficient method is to sack the pollen-bearing blossoms before they open, and to leave the sack on until ready to pollinate. This means that the two varieties must blossom at about the same time. The branch enclosed by the sack may be cut off and taken to the blossoms that are to be pollinated. Then the pollen-bearing blossoms are picked off, their petals stripped back and the stigmas touched with their anthers. This is the most natural method of pollinating, and it usually gives a high per cent. of success, but it is too slow.

A more expeditious method, for pome fruits especially, is to scrape or pull off with the thumb and forefinger mature but unopened anthers from flowers that are just opening. In this way a large quantity of anthers can be collected in a short time. These are placed on a sheet of paper or a blotter in a warm, dry place, where there are no drafts, and they will burst in a few hours. There is, of course, a slight possibility that the pollen of another variety may have fallen upon these anthers.

The most generally approved method of collecting pollen in large quantities is to pick off the unopened buds, clip off the anthers with scissors and let these open on a paper.

gone, and clip off the anthers. Place these in a new, very clean, tin box, which is three-quarters filled. Set the box in a warm room where there are no drafts, but do not allow direct sunlight to fall on the anthers. Every half hour put the lid on the box and shake it violently. All the pollen should be out in two hours. Winnow out very gently all anthers and everything but the pollen; then set the pollen in a sunny room, but not in direct sunlight, for two hours longer. Close the box and paste a strip of paper all around the crack of the cover, making it air tight. Place the box in a dry room, where the temperature does not rise above 80 degrees or fall below 65 degrees. "Under these conditions," writes Mr. Munson, "grape pollen I have collected in Texas went to New York, was used there successfully three weeks later by Jacob Moore, and the remainder I used successfully in Texas one year later."

How to Apply Pollen

The simplest way, and the slowest, is to touch the stigma with a dehiscent anther. When the pistils are as large as they are in all our common tree fruits, the thumb or forefinger may be dipped in the pollen and then pressed upon the stigma. Luther Burbank does most of his pollinating in this way. Much pollen is wasted in thumb pollination, but the method is rapid and efficient. A majority of people, however, prefer a small, pointed, camel's-hair brush, having a handle about eight inches long. I carry pollen to the orchard in corked vials, one by three and a half inches. The vial is carried in the upper vest pocket for convenience.

When pollinating blossoms that have a single pistil (as the peach), it is well to rest the end of the pistil against the thumb nail of the left hand; this steadies the brush and focuses the eye upon the stigma. When pollinating several blossoms in a cluster, (as the apple or pear), gather the three or four blossoms together and pollinate all at once; this saves both time and pollen. It pays to put on pollen until it can be plainly seen on the stigma. Brush pollination is somewhat clumsy and is certainly quite wasteful of pollen, but it is often the most practicable method. Professor C. P. Close places the pollen in a shallow glass dish, and dips the stigmas into the pollen.

What Kind of Sack to Use

A paper bag of thin, tough paper is needed. Manila sacks as used by grocers are employed almost exclusively, the two to six pound sizes most commonly; the four, five and six pound sizes being most serviceable for tree fruits. They should be large enough to loosely cover the flowers without cramping. A grade known as "Rawhide" has given especial satisfaction to the United States Department of Agriculture. The sack may be tied, wired, or pinned upon the branch; being careful to gather the bottom edge closely around the branch.

Ordinarily they should be removed as soon as possible after danger from outside pollination has passed. If left upon the limb the foliage and fruit are more apt to become diseased, and plant lice are especially liable to do harm. As long as there is danger of a frost, however, leave the sacks on. I prefer to remove them immediately after the petals have dropped from the tree and to spray very thoroughly with Bordeaux mixture and an arsenite. Some workers find it an advantage to leave the bags on apple and pear crosses for three weeks, or until the first brood of codling moths has gone. If manila sacks are fastened on with the label wire, they may be merely torn open, not removed. The bags are best left on grapes until the fruit is ripe.

To prevent depredations by birds and to catch any fruits that drop prematurely, crossed fruits may be covered with mosquito netting sacks. This should not be done until the fruits approach maturity.

When pollination operations are conducted on a very large scale and complete accuracy is not absolutely necessary, it is sometimes expedient to dispense with sacks altogether. Professor N. E. Hansen writes: "I am getting away more and more from using sacks. I try to avoid removing the stamens, but apply the pollen early enough so there is no danger from self-fertilization."

The Percentage of Successes

This is extremely variable and depends upon many factors, including the skill of the worker; but the results of several men are interesting as indicating about what may be expected. Seven men of considerable experience place their average of successes in crossing fruit at 50, 50, 50, 45, 10, 10, and 2 per cent. respectively and their best results have been 100, 95, 84, 60, 50, 30, and 14 per cent. respectively.

From 10,405 apple, pear, and peach blossoms cross-pollinated at the Michigan Agricultural College in 1906, 1,945 fruits set, or a little over 17 per cent. This means that a tremendous amount of work must be done in the very short space of time when the trees are in blossom; and one is likely to see no results from much of it. There are bound to be many failures; occasionally there may be successes of 90 to 100 per cent. when only a few blossoms are pollinated. But pollination work, though more uncertain and often more discouraging than many other lines of experimental horticulture, has a fascination that of itself is fully as much reward to the horticulturist as the improved varieties that are frequently secured by this means.—S. W. Fletcher, in Garden Magazine.



form. Before glancing at these figures it is well to make a few mental notes on local conditions. The soil is very variable in character, one or two blocks being peaty with clay subsoil, others red clay over white clay. Some portions are gravelly, and the surface of the whole is decidedly undulating. In its virgin state fairly large trees covered the ground, and the whole area is a comparatively young farm. Another point to note is that the one and only object of the cropping has been to supply forage to mules and horses, so that a proper crop rotation is out of the question. In face of this an average yield of fifty-three and fifty-four bushels of oats, and one and a half to two and a half tons of hay to the acre are not exceptions, whilst the clean state of the fields speaks eloquently of care and attention in working the land. The whole farm we might say, here appeared to be really more suitable for fruit culture than field crops and the five acre lots all round, devoted to fruit and poultry entirely, bears out in this supposition. Mr. Cunningham said, "I always sow about six pounds to the acre of clover with my cereal crops and, as a rule, plough the clover under after the harvest, though occasionally I am able to feed a little of it off with the cows or some horses or mules from the mines. My object in sowing the clover is to increase the humus and fertility of the soil—this land here seems to me to lack nitrates chiefly and I believe that nitrates without the humus are of little use. For this reason the land gets all the rotted manure I can give it and the more it gets the better it is."

"What does your hay crop consist of?" "Red clover, alsike and timothy. The first year we get nearly all clover, the second year part clover and part timothy and the third year mostly timothy. The latter does not seem to do very well here, but clover thrives exceedingly and gives good crops. This year on account of the dry summer the hay crop all round has been poorer than usual—very poor compared to what we generally reckon on."

"Have you ever tried alfalfa?" "Yes, once, but that was on low lying land with a clay subsoil and I think I made a mistake, for it should do well on the higher and more gravelly parts—it was not a success on the lower clays."

The stock on the farm is about eight to ten horses, upwards of one hundred pigs and ten cows (grades). The cows and pigs are a recent addition and will likely be increased another year.

core—such is Mr. Cunningham's view on this point and it seems reasonable.

Considerably richer soil is to be found both north and south of Nanaimo. Comox, some seventy miles up the coast and served by steamboats from Nanaimo, is quite an extensive farming district; and Duncan, Cowichan and other places to the south are also well settled. A considerable number of people keep poultry at Nanaimo, and these fanciers generally carry off a large proportion of the prizes at the annual shows up and down the Island.

HOW NEW FRUITS CAN BE MADE BY CROSSING

(Conclusion.)

The unpollinated pistils usually remain receptive longer than those on the tree at large that have been pollinated. I have had good results from pear crosses made eight days after the stigmas became viscid, and from strawberry crosses made eight days after. Orange blossoms are receptive about two days, grape blossoms about two days. It is a safe practice not to begin pollinating until the blossoms on the tree at large that were in about the same stage of development when the cutting was done, have about passed their receptive period. The sack seems to retard the development of the pistils somewhat—from twelve to eighteen hours, according to Dr. W. Varr Fleet, especially in a cool season.

The safest time to pollinate is near the beginning of the receptive condition of the pistils. When there are several thousand blossoms of one variety to be pollinated, and all the pistils cannot be pollinated at just that time, pollination may commence about twenty-four hours before the time when the pistils begin to be receptive, and continue for at least forty-eight hours after that time. A receptive stigma usually glistens when it catches the sunlight, and in most fruits it is beginning to be slightly brownish. The stigmas of the blossoms of many fruits are receptive about the time that the nectar is secreted in abundance, but this varies with different fruits.

Collecting and Storing Pollen

The greatest difficulty that the pollinator encounters, when working on a large scale, is to secure a supply of pollen. This may take more time than emasculation, and is responsible for many losses. When few pistils are to be pollinated, the simplest and the most ef-

The buds may be gathered from one to five days before they would open, or any time after the anthers are mature, the later the better. The petals and sepals may be stripped back and only the anthers clipped off, but a more rapid way (at least with fruits having an inferior ovary) is to clip off the entire top of the bud low enough to include most of the anthers. The petals and sepals are then winnowed or sifted out and the anthers spread on blotting paper which will absorb their moisture. Place the paper of anthers where there are no currents of air. A greenhouse bench is an excellent place. Professor F. A. Waugh simplifies this method by gathering the partially open buds, spreading them in the sun, and shaking off the pollen upon paper; or twigs with buds may be cut and placed in water or moist sand indoors until the pollen can be shaken out. If the anthers are to be clipped off, one man can prepare, in half a day, enough apple, pear or peach pollen for about eight hundred blossoms. Strawberry pollen can be gathered more rapidly.

If the pollen cannot be used the day it is collected, it must be stored very carefully. If corked up in a vial before it is perfectly dry, it will ferment in a few hours. Frequently it is more convenient to gather pollen several days in advance of pollination and sometimes it must be stored several weeks or longer. How long it will retain vitality depends as much upon the way it is dried and stored as upon the kind of pollen. Before all else it is necessary to have the pollen perfectly dry and to remove from it all anther sacks, filaments and other matter that might decay. In my own work I do not winnow out the empty anther sacks. The pollen will then keep very satisfactorily in a dry paper envelope, and may even be mailed in this package. Professor J. C. Whitten makes the pollen envelopes of blotting paper, the edge being folded, not sealed. A perfectly dry glass vial is often used.

Stored pollen should be kept from excessive heat or cold and from dampness. It is not known how long properly stored fruit pollen will retain its potency. Much depends upon the vigor of the tree. I have had fair results from apple pollen three weeks old; several correspondents have had success with fruit pollen six to eight weeks old.

Mr. T. V. Munson describes a remarkably successful method of storing grape pollen: Gather flowers in midday, when the dew has