

PROPAGATION OF BULBOUS AND BULBOUS-LIKE PLANTS

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The plants we are concerned with fall into clearly defined groups. These are:

1) *Bulbs*, which are modified swollen leaves, usually but not always containing the shoots, made up of the compressed flower stem and bud; e.g. narcissus.

2) *Corms*, which are modified stems, with buds externally at the bottom; e.g. crocus.

3) *Stem tubers*, which are modified stems, with buds or eyes at the top; e.g. cyclamen.

4) *Rhizomes*, which are modified stems growing horizontally, either on the surface of or underneath the soil; e.g. some irises.

5) *Stolons*, which are again modified stems growing horizontally, but which have the shoots appearing at the ends and not at the upper surface; e.g. *Scilla adlamii*.

Bulbs are the easiest of all to propagate and do so naturally with usually a year between each stage. The sequence is *offset*; single nose; double nose; double nose with offsets, one — occasionally two; *mother bulb*, i.e. a single nose bulb (occasionally absent) with numerous offsets clinging loosely together and eventually breaking apart to start the cycle again.

Obviously this is a fairly slow method of increase and it is possible to hasten it by the process known as *twin scaling*. Here one cuts through the bulb with a sharp knife, dividing it into portions containing a pair of leaf scales and, most important, a section of the base plate. These are put in a polythene bag with damp vermiculite (12 parts vermiculite to one of water) and kept at 70°F. After 3-4 weeks adventitious shoots arise around the edges and in between the leaf scales and, in many instances, roots as well. At this stage they are potted up normally in our standard nursery compost of ½ John Innes No. 2 and ½ sedge peat. This process sometimes occurs naturally where the centre of the bulb has been eaten away by the grubs of the Daffodil Fly.

It is important to keep everything free of dirt and disease at all times and it has been recommended (Ticknor - Daffodils 1974) to soak the scales in Benlate at the rate of 1 oz. to 1½ gallons of water for one hour. I have not done this but I do dip

the knife into methylated spirits between cutting up each complete bulb.

There are several ways of producing adventitious bulbs on hyacinths, which I have not practised. These are by removing the whole central portion of the bulb vertically, with an apple corer, when up to 10 bulbils are produced of a comparatively large size, maturing in 2 to 3 years; by cross-cutting a star shape on the base of the bulb, giving about 25 bulbils which mature in 3 to 4 years; and by scooping out the centre of the base plate to the depth of $\frac{1}{2}$ " leaving a small ring to hold the bulb together, giving 25 to 50 bulbils maturing in 4 to 6 years. All these operations are usually done in August in a propagating chamber, with high humidity and a controlled temperature of 70-90°F and the bulbils are produced 2 to 3 months later. The whole bulb is planted out in November or December in the usual way and, on lifting the second June, the bulbils are separated and grown on until they are large enough for sale.

Corms are subjects which naturally produce so many offsets that I don't bother to propagate them artificially. Also they usually flower when very small and, given sufficient high potash fertilizer, will quickly come to a saleable size. In nature they are also propagated by seed (see below).

Stem Tubers may also propagate by seed in nature. However this is not always satisfactory, especially when it is not produced in sufficient quantities. Cyclamen and potatoes are tubers (although the former is traditionally but wrongly referred to as a corm). Cyclamen can be propagated in two ways. Firstly by cutting them to pieces, each with an eye. This is not normally done as the eyes are often indistinguishable. They do not require any heat. Secondly, many cyclamen produce stalks on top of the tubers and these may be cut off when dormant and treated as hardwood cuttings in gentle bottom heat. For many years this was the only way of propagating *Cyclamen rohlfsianum*.

Dr. D. Meikle, senior botanist at Kew Gardens, reported that the seedleaf of cyclamen seedlings can be removed and treated as a softwood cutting. Cyclamen seedlings apparently have a second immature seedleaf which does not develop unless the first one is damaged. (Ref. Cyclamen Society Conference Sept. 1978; to be published spring, 1979).

Rhizomes are easily propagated by the method used for root cuttings. They reproduce best by just cutting off the current season's growth at the node; they will produce shoots both from the new and the old portions. However, it is not always realised that by cutting at each node along the rhizome each portion will grow in time. Heat is not required.

Stolons are a most unusual form of natural corm reproduction. Indeed I can only think of three examples — *Crocus nudiflorus*, *Scilla adlamii* and *Erythronium americanum*. These produce stolons from the base of the parent corm and, after a year, the tips form corms of their own, sever themselves from the parent bulb, usually by rotting, and the process starts again. This can be hastened by removing the stolon before the new corm is formed but it often takes as long for the new corm to arrive at flowering size as it would do naturally, so I do not bother.

All the foregoing is, of course, on the methods of vegetative propagation. Last, but not least, we must consider sexual reproduction. Seed is our chosen method of propagating as many of the subjects that we grow as possible. It is, however, only applicable to species and to a very few "fixed" hybrids. Until recently almost all our seed sowing was done using 2¼" deep plastic seed boxes with our standard nursery compost already referred to. All the seed was covered by sieved compost to a depth of ¼". The boxes were kept in a cold glasshouse. We are now sowing more and more seed in drills in sleeper-edged beds which can be covered with shading material or Dutch lights as necessary.

Depending on the subject, the seedlings mature in 2 to 10 years which can make for a very expensive bulb. Trillium seeds, for example, exhibit double dormancy; I have had some success in mixing the seeds with damp vermiculite and putting them for six weeks in a domestic freezer box, followed by six weeks in the airing cupboard, then back in the freezer for six weeks and then finally sowing them. It has been suggested to me, however, that the second period of freezing should be delayed until the spring, as Trilliums put down their first root after the first freezing and will not produce cotyledons until after the root has been frozen. I am intending to put this to the test this autumn (1978).

Question. Many cyclamen, e.g. *C. coum*, do not produce "trunks" — are they then propagated by seed?

Answer. Yes, but most cyclamen will produce "trunks" if planted deeply enough (this is seen by recent collections from the wild, including *C. coum*).

Question. I have read about a method of producing adventitious buds on plants of *Trillium* species by cutting away a broad band at the base of the bud. Have you done this?

Answer. No, but I, too, have read of this and will have to experiment with it.