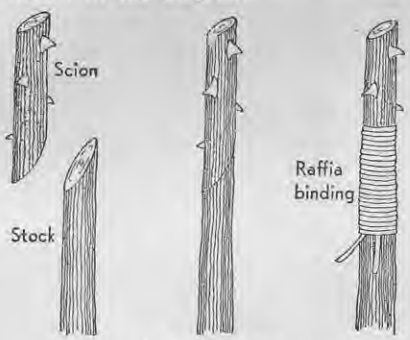
Roses, like most other plants, can be propagated from seed, grafts, buds, or cuttings.

Seed Raising

In practice seed raising is restricted mainly to persons concerned with hybridising roses and does not often enter into the home gardener's sphere of activities. It is the standard method of raising what are known as species roses, but as these are not included in the scope of this article propagation by seed will not be discussed.

Grafting

Grafting is usually carried out only for the production of special-purpose roses, mainly for glasshouse cultivation. During autumn brier stocks are potted in 4in. pots and stood outside in a position where they do not dry out. In April or May they are taken into the glasshouse for grafting. The scions should be no more than 2in. long and bear only one bud. The whip graft is the most common and usually the most successful method; the stock and scion must be of equal thickness and are cut with a sharp knife as shown in the diagram.



The method of whip grafting.

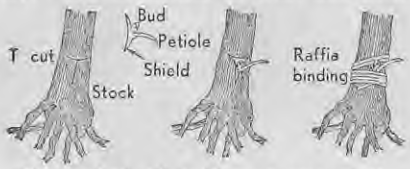
The grafts are kept in the glasshouse at 55 to 60 degrees F. with fairly high humidity, and when growth has been made the ventilation of the house is increased and the plants grown on normally.

Budding

For budding, which is the principal commercial method of raising roses, *Rosa multiflora* is the stock most commonly used. Plants of this species can be grown without difficulty from hard-wood cuttings, the second method described under the next heading. Once good stock is established budding can be started.

For bush roses the head is left on the stock and the bud inserted on the main stem at about normal soil level. Soil is not placed over the bud until union is sure and growth has been produced. For standard roses straight stocks are selected and all side growths except the top two or three removed. *R. odorata* and *R. canina* may also be used for stock, and the only standard grown widely in New Zealand is the "full" or 3ft. 6in. type. The budding is done on the top growths as close as possible to the junctions of the top growths and the main stem. If *R. rugosa* stocks are used for standards, the buds are placed on the main stem rather than on the side shoots.

Budding is carried out when the bark strips freely from the wood—normally during late January and February. While the operation is in progress the bud wood is held upside down and a very sharp knife used to cut out the bud, beginning about an inch above the bud and finishing half an inch below it. The leaf is removed, but part of the petiole is left for convenience of handling. The wood lying inside the bark of the bud is removed, and the bud is then ready for insertion in a T cut made on the stock. The cross-cut of the top of the T is made first, then the down cut. The bark is lifted back carefully from beside the down cut and the bud slid in from the top. The fit should be neat and firm.



The method of budding a rose plant.

The area is bound with raffia so that the lips of the down-cut of the T lie flat against the shield of the bud. When the bud has taken—about a fortnight later—the raffia should be cut to prevent strangulation. The stock growth is not removed until all growth for the season has ceased, when it is taken away by a clean cut about an inch above the bud union. The raffia is also removed at this stage.

Cuttings

Of all the vegetative methods of propagation the simplest and most common among home gardeners is growing from cuttings of the stem. This may be done in two distinct ways.

About December 6in. pieces of stems which have flowered are taken from the parent and most of the lower leaves removed. These cuttings are inserted to half their length in sandy soil in a 5in. or 6in. pot and well watered. Given the shelter of a frame or glasshouse and sufficient but not too much water, such cuttings should produce roots in 3 to 4 weeks. When well rooted the cuttings may be potted into 5in. pots and hardened off in preparation for planting out.

Department of Internal Affairs photo.
Rose Betty Uprichard grown from a cutting.

The second method is to take hardwood cuttings about 9in. long in late autumn or early winter. A narrow, straight-backed trench 5in. deep is dug in a sheltered position and an inch-deep layer of sharp sand placed at the bottom. The cuttings are set against the back with their bases in the sand and the trench filled and trodden firmly. Rooting should take place at about the time growth begins in spring, but the resulting plants should not be moved until the following planting season, when they may be set out in their permanent positions. This method takes longer to give results, but is even simpler than the first.

Diseases and Pests

The control of diseases and pests is of paramount importance in rose growing, for good results cannot be achieved with infected plants. The small effort required to keep the plants clean is well rewarded in strength and vigour of foliage and perfection of bloom. Many diseases and pests affect roses in New Zealand, the most serious and most common of the fungous diseases being black spot and mildew.

Black spot usually appears in early summer, the first indication of its presence being purple-brown spots on the mature leaves. Defoliation may follow heavy infection, and if this happens, all fallen leaves must be gathered and burnt, as the spores over-winter in the soil, and a dressing of 8oz. of slaked lime per square yard applied to the soil surface about June. During July the dormant plants should be given a spray of Bordeaux mixture 1 : 1 : 10, repeated about 3 weeks later if growth has not begun. Spraying may also be carried out while the foliage is on the plants with a mixture of 1½ tablespoons of lime sulphur to 1 gallon of water. The developmental cycle of the fungus occupies about 14 days, so spraying should be repeated every 10 days until the disease has disappeared.

Mildew is probably the most common disease of roses. Whitish spots on the leaves are the first indication of its presence, these spreading rapidly until they cover the whole of each leaf and finally the young shoots, resulting in loss of vigour and bloom. Some rose varieties are almost immune from attack by mildew, but most of the softer, quick-growing types are very susceptible. Correct pruning, which keeps the plants open to the circulation of air, does much to prevent infection. The lime sulphur spray, used in the same way as for black spot, is effective as a controllant, as are many proprietary mixtures.

The rose aphis (*Macrosiphum rosae*) is undoubtedly the most important of the insect pests. This insect reproduces with amazing rapidity, so spraying must be carried out at regular intervals to eliminate it. Proprietary sprays with a nicotine sulphate base give excellent control, but spraying must be repeated at 10-day intervals to eliminate the young insects which are born while the older ones are dying as a result of earlier applications of the spray. This procedure should be followed while the plants show any sign of the pest.