## PROTEA CARE

If properly established, proteas need no more attention than the manzanitas on a California hillside. Dig up a wild manzanita bush, replant it and water and fertilize it and it almost surely will die. Do the same to a protea and it almost surely will die.

It is best to plant proteas as small plants at the time of the first heavy autumn rains. Likewise it is best to plant proteas in an open position in slightly acid soil where the drainage is excellent. Do not fertilize them. In coastal Northern California, small proteas planted during the autumn may never again need to be watered. In warmer or drier parts of California, proteas are likely to require summer irrigation.

Summer irrigation is likely to produce a problem: soil organisms harmful to proteas flourish in warm, wet soil. Keep the soil cool if you must water during the summer. To accomplish this, keep the sun off the soil. Use the shingles, loose gravel, paper— whatever. Or, if you wish, let weeds grow and dry up around your proteas.

Proteas kept in pots must not be over-watered and must not be allowed to dry out. If you forget to water them, you will not get a second chance. Pots must not be allowed to become hot in the summer sun. Wrap them with several layers of paper or with other insulating material.

Most California soils are rich enough in nutrients for proteas. Many native California soils are far too fertile. Proteas planted in overly rich soil (by their frugal standards) throw out straggling, floppy branches that are very subject to frost and disease. Fertilizing proteas in the fashion that you might fertilize roses or tomatoes will produce fatal results. Proteas are especially sensitive to phosphate-rich fertilizers (whether from organic or inorganic sources). Phosphate tends to stay put in all but the sandiest soils, and if ever during past centuries someone has applied a phosphate-rich fertilizer to an area, it has likely been ruined forever for proteas. Moderate phosphate poisoning in proteas produces a mixture of bleached and blackened growth. (Proteas do, however, require some phosphate, and some artificial soil mixes may not contain or retain enough.)

The most vigorous proteas in the Arboretum are planted in an area where the soil is so lacking in both nitrate and phosphate that weeds do not survive. (Among the weeds growing on immediately surrounding soils are Bermuda grass, plantain, Bermuda buttercup, foxtail grass, blackberries, and sorrel.)

Proteas should be planted in situations with good air circulation. Organisms harmful to the foliage thrive in warm, moist, stagnant air.

Mature proteas that have not been over-watered or over-fertilized can withstand a fairly severe frost. Over-watered and over-fertilized proteas are likely to be killed by a slight frost.

Curious deer may yank young proteas out of the ground or bite off flower heads. Unless very hungry, deer usually drop the proteas that they bite off. Gophers may tunnel through proteas and kill them, but mostly gophers are not at all fond of eating protea roots. Argentine ants can prove a serious problem through protecting colonies of scale.

Proteas are much longer--lived than petunias or snapdragons. However a protea is likely to be old in ten years and is not likely to survive twenty years. Old proteas are very prone to disease, and there is very little that you can do for them.