CREATION OF A RAINFOREST IN THE CANBERRA BOTANIC GARDENS

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The Canberra Botanic Gardens occupy about 100 acres on the northeastern slopes of Black Mountain, less than 1 mile from the centre of Canberra. Canberra has an annual rainfall of 25" distributed fairly evenly through the year, although during some summers as little as 2" of rain has fallen in 3 months. The temperature range in the past 10 years has been from 109° maximum to 4.5°F minimum. Frosts occur regularly from May to September but snow rarely falls. Relative humidity is low, often as low as 15%. It is easy to see that these conditions are not those conducive to the growth of rainforest species, particularly as it is the extremes of climate which usually determines whether a plant can be grown in an area.

Only Australian plants are grown and we hope to have a complete living collection of the Australian flora, which has some 20,000 species. At the moment there are more than 5,000 species in cultivation and about 100,000 plants in the gardens. There are a large number of tropical and frost-sensitive sub-tropical species in the Australian flora, and in an attempt to grow some of these outside a glasshouse in Canberra an artificial rainforest environment has been created.

A deep gully runs through the gardens formed in times when the rainfall was obviously much greater than at present. It rarely has more than 6" of water in the bottom of the gully even after heavy rain. It is up to 40 ft deep and averages about 120 ft wide.

An extensive misting system has been installed in part of this gully about 700 ft long. The system is in four sections, each serving both sides of the gully for a length of 170 ft. Along the laterals which are spaced at equal intervals down the slope, there are mist nozzles (Buchner Fogger nozzles) spaced about 3 ft apart on ⅜" dia copper pipe risers. There are about 3,000 nozzles in the whole system. The mist is only turned on during the day. In the summer it is a 2 min on, 2 min off cycle, and in the winter the cycle may be as low as 2 min on, 15 min off. The decision to turn the mist on, and the frequency setting, is made on a daily basis, based on experience.

The top of each side of the gully has been densely planted with *Acacia* spp. which grow on the fringe of rainforests. These have grown rapidly and are providing a protective canopy. The sides of the gully have been extensively planted with ferns and rainforest species. Staghorns, elkhorns and orchids have been tied to trees and are thriving. The acacia canopy, together with the mist has increased

the humidity, which has allowed moisture loving plants to grow well and the canopy has prevented frost from settling in the gully.

Many rainforest species are well established after only 5 years; however the natural dry sclerophyll vegetation is dying because of the increased water regime. The use of a mist spray in this situation has allowed species which would normally not grow in Canberra's low humidity and cold winters to be successfully grown. It also provides an unique and aesthetically beautiful collection of rainforest plants where one would least expect to find them.

HAND POLLINATING SOME PHILODENDRON CULTIVARS

LEONARD DELLOW

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The inflorescense of these species is made up of the spathe and the spadix. Most cultivars are bisexual or dioecious and hence the spadix contains both pollen-producing and ovular sections. The male, pollen producing part of the spadix, is at the top end usually about 1/3 of the total, and the female or ovular section is partially protected in a cup at the base of the spadix. A third part, the function of which I am not sure, but appears to be to keep the male and female sections apart, is in the centre of the spadix and occupies a little more than a third of the total length.

In most cultivars, the flower opens fully in late evening, but does not release pollen or become receptive until later, (this time difference varies considerably). The female section next becomes receptive and this is indicated by the emission of a strong perfume and a pronounced rise in the temperature of the sapdix. Within a very short period the spathe then begins to close around the ovular section, before any pollen is produced. This would appear to be nature's way of preventing self-pollination. The pollen is then released from the top end of the spadix in the form of a rather thick paste. In the case of selloum types, a large tablespoon-full can be collected. The spathe continues to close tightly around the spadix and unless you are there constantly you will miss collecting the pollen.

Having observed all of these processes, I thought that if I could prevent the flower from closing until I collected the pollen and pollinated the ovular area, the task would be much easier. I cut a number of pieces of wood, approximately ⅛" thick by ¾" wide with lengths varying from 3 to 6", smoothed and rounded the edges to avoid damage to the flower. When the flower is fully open, I insert