We found that the large briars had roots through into the trays and these were broken as they were removed prior to budding. This broke the sap flow and caused a poor take. We reverted to striking our briar in the open ground and budding them there.

Conifers. I have found many conifers difficult, yet the majority are so easy that one could kick a cutting along the footpath and it would grow roots.

Cupressus macrocarpa 'Aurea' (Syn.: Lambertiana Aurea) was once only propagated by grafting onto a suitable green conifer rootstock but by selecting and reselecting suitable parent plants I have found these quite easy to strike from cutting.

Cupressus macrocarpa 'Coneybear' (Syn.: Conybere Aurea') is very difficult to strike from cuttings. I have actually grown the odd plant on their own roots but they are very slow to strike and slow to grow when struck. They are easy to graft onto a suitable conifer rootstock.

Rondeletia speciosa. Many years ago I visited Richards Nursery in Toowoomba, Queensland, where I saw a delightful dwarf shrub in full flower. It turned out to be *Rondeletia odorata* (Syn.: *R. speciosa).*

They gave me the cuttings I wanted. I took soft tip cuttings and planted them as I would any normal softwood cuttings. They stayed alive for nearly a year before eventually one after another they rooted and were potted up. From there they took two years to grow into saleable plants.

This shrub, *Rondeletia odorata,* is still flowering in my garden. It appears to be always in flower producing clusters of vivid orange blossoms. Maybe somebody may be able to tell me how to develop it in less than three years.

JOHN TEULON: We have good success with variegated *Toxicophlaea* treated with 2% IBA.

MARK PETERSON: I suggest that the problem encountered with *Grevillea* 'Robyn Gordon' could be fungal and that spraying with Daconil can control it.

ELECTRONICS IN PROPAGATION

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In the past, moisture-sensing has been carried out in different ways. These include the use of time clocks or balance devices

of many types, all with their built-in inaccuracies. We have now entered an electronic age and plant propagators should be availing themselves of this sophistication. Simple electronic devices enable the propagator to control moisture to the cuttings, with light and temperature variations being two of the major factors that have to be considered.

Types of devices currently used include time control with light sensing. This device has a misting duration period in seconds and an interval between misting periods in minutes. Also included is a light sensing cell (UV sensitive). The light sensor enables the cycle period between misting to be increased up to two hours during darkness. Timing equipment is normally used in controlled environment propagation houses and multi-station controllers are available.

Carbon leaf devices sense moisture level at the cuttings. Fine mist is applied to the cuttings. When the desired level of mist is obtained by pre-setting the resistance between two carbon rods mounted into an epoxy resin block, the electronic unit opens a circuit to the solenoid valve, so cutting off the water supply. As evaporation takes place both the foliage and the sensing block moisture levels are reduced. When the pre-determined level is reached the circuit closes on the solenoid valve and turns on the mist until the maximum level is reached again, and this cycle continues.

On an overcast day when humidity levels are high and the evaporation rate is lower the sequence of operation is less frequent. On a day when temperatures are higher and evaporation rates are higher, the frequency is much greater.

A propagation house having good air circulation will have a much higher evaporation rate at the cuttings than a propagating house with poor ventilation. Under these conditions very sensitive equipment is desired. An inherent problem with sensing probes is the quality of the water. Each time evaporation takes place salts from the water build up on the probe and so increase the resistance set on the controller. This affects regularity and the amount of mist applied. All types of sensing probes should be cleaned regularly.

When high salt levels create problems in controllers of this type, it would be advisable to use time-sensing equipment.

A weaning or hardening off unit can be connected to any of the units that have been discussed. This unit is an electronic counter and can be set with a 1:1, 1:2, 1:3, 1:4, ratio. Cuttings can be hardened off from the propagation bench by using this unit. We would normally tube up the struck cuttings and then place them on a weaning bench for 2 to 3 weeks and harden off using 1:2, 1:3, 1:4 ratios for this period. Some propagators carry out this

practice in the bush house with mist sprays installed.

A more sophisticated system involves the use of programmes to enable one to control all factors, such as light, bottom heat, ambient air temperatures (heating and/or cooling) and air circulation, allowing for extended daylight hours, and reduced daylight hours. The term given to this equipment is micro-electronics or computers. Propagation being carried out in controlled environment conditions could utilize a programme to control the environment. Moisture, bottom heat, and air circulation are the main factors to be controlled by a simple programme.

Mist cycles can be programmed within defined temperature ranges — for example, a three-second misting cycle every 15 minutes with a controlled temperature bottom heat of say 22°C and ambient air temperature between 15°C and 18°C with one air change every two minutes. This control can be achieved very simply with the use of thermisters (electronic thermostats) for sensing both air temperature and soil temperature. The signals from these devices are fed to the micro-processor. The inputs are then compared with the required conditions and predetermined responses are sent to the misting equipment, ventilation system, and soil heating equipment, as appropriate. The cost of such a system prohibits its use to all but the largest installations; however, future cost reductions are highly likely given to the current trends in the price of electronic equipment.

THE VEGETATIVE PROPAGATION OF GIANT BLUE MOSS (*Selaginella wildenowii*)

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Giant blue moss has never been easy to propagate except by layering runners. This is not economically feasible, particularly if uniform plants are required.

In our tissue culture laboratory we have spent a great deal of time and expense endeavouring to mass produce this plant, but its very slow and erratic behaviour in flasks has so far excluded it from satisfactory tissue culture propagation.

The method described here is the most successful approach we have developed for this difficult subject. Many well advanced stock plants, preferably about six feet high and well branched, are required. At no stage should the stock plants or young plants be allowed to drop below 25°C minimum temperature, and high humidity must be maintained.