them up every day for 5 minutes without adverse effects. We have started this ventilation as it does reduce the *Botrytis* problem. In fact, with M9 continuous exposure to low light does not reduce the "etiolation" effect, so complete exclusion of light is not a prime requisite for improvement of rooting.

MY EXPERIENCE WITH DOUBLE CLAD TUNNELS

JONATHAN VAN DER BORGH
Toxward Nursery
Horsham, West Sussex

We have always been concerned with waste in our business. We have tried to prevent waste of resources where possible, and have used waste products if available.

On our dairy farm, for example, we installed a Retriever unit in 1974. This is a water tank with a copper coil inside which uses the waste heat from the compressors for the refrigerated bulk milk tanks, and uses it to heat 60 gallons of water to 128°F from the ambient temperature of the day. We need water at 150°F to circulate and clean the milking pipelines, so we only have to buy the energy for the additional 22°F required. For an outlay of £740 in 1974, we are saving currently £1,250 a year in fuel costs.

Also on our dairy farm, we use old railway sleepers for silo walls, old motor car tyres to cover the silo sheets, wood shavings for cow bedding and we feed wet brewers grains to the cows as a part of their bulk winter ration.

In 1974 we started our container nursery on an acre of waste land, that is to say, land which was unsuited for dairying, but with frontage on the farm drive.

We built and installed everything ourselves, aiming at a low-cost enterprise, and we were guided from the outset by Don Gilbert of ADAS. A great deal of the credit for the present state of our nursery must go to my colleague, John Miller, who as well as propagating and growing our plants, has been builder, joiner, plumber, electrician, designer and innovator.

We started with two Robinsons tunnels 54 × 16 ft., in one of which we installed a mist bench with a capacity of 35,000 cuttings at a time. This tunnel was clad with 600 gauge UV clear polythene and the floor was concreted. The bench is raised 2½ ft. above ground level, constructed of Dexion slotted angle and old corrugated asbestos and timber from the dairy farm. To prevent heat loss underneath the bench, we made an envelope of black polythene sheeting, filled with surplus polystyrene granules, in all 1½ in. thick.

We also installed a Nobel Instruments unit to control the heat under the bed, to keep electricity costs to a minimum. The mist operates on leaf control in summer and time control in winter.

For frost protection we installed an Aladdin Hot Box paraffin heater. In each of the first two winters we used an estimated 2,500 litres of oil for the burner in the propagation house. We experienced high levels of condensation on the inside of the tunnel walls, and this froze when the outside temperature fell below 25°F.

In 1976/77 we decided to double-clad our propagation tunnel and to try and keep the two 600 gauge sheets apart with blown air. We purchased from Airflow Developments Ltd. a 40 BTF single inlet blower with a ventilated 12 watt output, shaded pole motor, approximate speed 2,500 r.p.m. This cost £19. The blower was slung 3½ ft. above the mist bench. The outlet was attached to a tube made of polythene sheeting and "plumbed" into the side of the tunnel. The two sheets were fixed with battens attached to timber (4 × 1½ in.) which was fastened to the tunnel frame with U bolts. The windows were also double-glazed with the same clear polythene.

Above the door we constructed an air inlet vent 2½ ft. × 6 in., covered with Rokolene netting, to enable air to be drawn into the tunnel, to ensure a constant supply of fresh air.

The tunnel took 5 minutes to inflate. The warm air from the mist bench provided insulation from the outside air temperature, considerably reduced condensation on the inside of the tunnel walls, and there has been no further need for the paraffin heater for frost protection. The net annual saving at 1980/81 prices is estimated at £300, after allowing for electicity for the fan and the additional polythene sheet.

The slight reduction in light intensity has not been detrimental, in fact our experience on the whole is that we require shading in the mist tunnel for more days than otherwise.

We now spray Clovis Lande 'Sun Clear' on the inside of the tunnel walls which has practically eliminated condensation.

In 1980 we further improved the system, by constructing wooden trunking, slung above the mist bench, with two blowers attached to it. The blown air is now introduced into the tunnel walls, via the trunking, on both sides of the tunnel through old 3 in. plastic down-pipes. These two small blowers (total cost £41) inflate at the same time two additional double-clad tunnels on either side of the propagation tunnel, through underground pipes.

It is difficult precisely to calculate the cost saving of having all three tunnels inflated, but we use the two additional insulated tunnels in winter to store weaned cuttings, pot up early liners and ericas and carry out other operations under protection and in relative warmth.

VOICE: What is the light reduction with a double skin?

J. Van der BORGH: Estimation with a light meter from a camera suggests that the extra sheet cuts out a further 9% of light, but this has not affected plant growth.

PLANT HUNTING IN SPAIN

KELVIN LAWRENCE
Kelvin Lawrence Nurseries
Tilford, Surrey

Our purpose in going to Spain in December, 1980, was to renew acquaintance with two species of plants which we had previously found growing wild and flowering in mid-winter on the Sierra de Ronda in southwest Spain, inland from Gibraltar. These plants were *Clematis cirrhosa* and *Iris planifolia*, both flowering naturally in mid-winter, whose presence would be unsuspected unless you were travelling in that part of Spain in December and January. Both Chris Brickell and Roy Lancaster, who had seen my photographs, thought the *Clematis cirrhosa* of that region was a particularly good form and well worth introducing into cultivation here if we could bring plants back.

From Le Havre, our first stop in France was at the famous Minier Nurseries near Angers, where we spent two rewarding days. We then pointed the car south towards Spain and crossed the snow-covered Pyrenees by the Somport Pass, 5,000 ft. high. Although this is a "Chaines Obligatoire" pass in winter, we had crossed several times before without chains, and had no trouble this time. The sun on the Pyrenean snows was dazzling — what a marvelous combination sun and snow can be. It is worth mentioning here that in early summer the Pyrenees are a rich source of alpine plants, in our experience more varied than in the Alps. One can spend many happy days among the gentians, primulas, *Daphne cneorum* scenting the air, *Saxifraga longifolia* spewing from the perpendicular cliffs, and if you look in the right places *Ramonda myconi (Syn. R. pyrenaica)* in rocky crevices, but now sadly becoming scarce On the top of the Bonaigua Pass at 6,000 feet, we once counted 180 flowers on a huge clump of *Gentiana verna* within an area of a square foot.