The plants shown were propagated on the 13th April, 1967, the heights varying between 2 ft. and 3 ft, with a small proportion between 1 ft. and 2 ft., and it is probably best if the plants are cut back and grown on for another year. I am confident that it is possible to produce 100% saleable plants in the year after taking the cuttings.

C. E. SALTER: I have found that a safe way to assess the correct time to take Lilac cuttings is to estimate three weeks before they come into flower.

DAVID CLARK: Have you had any experience of the resultant growth of these lilacs from cuttings? We find that they are slow to get away on their own roots.

ROBERT HARES: No, we have not been doing this long enough to give a considered opinion of their growth after planting out.

H. J. WELCH: I would confirm that I have found them slow to get away but ultimately they make excellent plants.

BIRCH GRAFTING

P. C. R. DUMMER
Hillier's Nurseries, Winchester, Hampshire

The stocks are lifted from the seed bed in the fall of the second year. The sizes most suitable for grafting stocks are between 3 - 5 mm.

Potting

Potting should be done using a 3.½ ins. clay pot which should have previously been crocked using a ¾ ins. straight gravel. The compost should be a fairly light open mix, we at Hillier's use 7 peat, 4 loam, and 2 parts coarse potting grit to which has been added 4 oz. of John Innes base manure to each bushel of compost. No ramming is required so long as a few taps on the bench and the use of the thumbs are employed when potting.

After potting they should be stood down on a well drained open plunge. A covering of leaves or peat should be given to protect the clay pots from frost damage, also the size of the plunge should be banked-up either with sand or ashes, this not only protects the outside rows of pots from frost but also helps to steady them when personnel and trucks go up and down the paths of the plunges.

Spraying

Frequent spraying with a copper fungicide should be carried out during the growing season in order to keep in check the rust fungus (*Melamporidium betulinum*).

Malathion can be incorporated into the copper mixture to eliminate any aphids which might be present.

Drying-Off Process

Grafting usually takes place in January but before grafting can take place the stocks have got to be dried-off. The stocks therefore will have to be brought into the greenhouse or airy shed several weeks prior to grafting.

This drying-off process cannot be emphasized too strongly as the whole success of the grafting depends upon this operation for without it the grafts would die due, to the excessive flow of sap which would follow if these precautions were not taken.

Preparation of Grafting Benches

We use benches which have thermostatically controlled heating cables which are permanently covered with 1.½ ins. of coarse sand. Prior to the commencement of grafting a 2 ins. layer of peat is placed over the bench and flooded with water. The thermostats are set at 68°F.

We employ the use of polythene sheeting as a cover for the bench and this is supported every 6 ft. by the use of tee irons which can be raised or lowered at will. The bench when ready for grafting has the appearance of a huge tent.

Choice Of Scion Material

Scions taken from trees 3 - 5 years old have proved over a number of years to be the best. Strong, vigorous one year old wood is to be preferred but there is no reason why two year old wood should not be used providing it is strong and in a healthy condition.

The scions when cut should be bundled together and plunged in sand on the north side of a shed or greenhouse.

Grafting Procedure

When one is satisfied that the stocks are in the right condition for grafting, (they should be dry at the roots and the buds beginning to swell), grafting should commence. I should mention here that speed is a key point otherwise one will find that the stocks can become too dry before they are all completed, this of course does not apply to propagators who have only a few hundred to graft but rather to those who have several thousand with perhaps only one or two propagators who can do the job.

First the stocks are cut to within 6 ins. from the base of the stock. A side veneer graft has been found to be the best, particularly as a stub is left on the stock.

The reason why we leave the stub on the stock is to serve as an escape root for any excess sap which might be present, if a stock was insufficiently dried or became accidentally watered.

Cutting Of The Scions

The scions are cut leaving at least 4 - 5 buds on the scions. One should always aim for a bud to be on the opposite side af-

ter the cut is made. The cuts on stock and scion should be at least 1¼-1½ ins. in length.

Sterilization of Knife

The knife should be wiped after every graft on a pad containing a 0.4% Formalin Solution.

Tying Of The Grafts

Tying of the grafts is accomplished by the use of rubber ties. Two turns are made at the top of the graft before proceeding downwards in a spiral-like fashion leaving small gaps of about 1/8 in. between each tie until the small flap in the stock is reached. The flap should *never* be tied in, otherwise bruising might occur on this delicate part of the stock resulting perhaps in death of the scion.

Once grafted they should be placed on the prepared bench and lightly sprayed. The polythene should be placed over the grafts to within 3 in. from the top of the grafts and tucked into the sides of the bench. Under such conditions no waxing of the grafts is necessary.

Shading Of The Grafts

We have moveable hessian shading for the south side of the greenhouse. Above the grafting benches we employ the use of 6 ft. wide woven polythene the ends of which are fitted with curtain rings. Strained wires run the length of the house at intervals of 6 ft. The rings are attached to the outside wires while the other wires are solely for support for the rest of the shading.

The woven polythene shading is drawn across the benches when the sun begins to fall on the grafts but it is removed immediately the sun has gone off the house.

After-Care

For the next week or so the grafts will not require much attention other than the turning of the polythene, a practice which should be carried out twice a week.

Towards the end of the second week callusing of the grafts should be quite prominent and a few minutes air each morning will be of benefit to them.

The same treatment should continue until the scions have made a good union together with about three inches of new growth.

Now is the time for watering. I find it best to use a hosepipe fitted with a coarse rose, and several runs will have to be made in order that the grafts are really saturated.

With the application of water the young grafts can begin to take more air. The morning airing should be increased, also airing at night should be practiced taking care to flood the greenhouse paths with water before packing up for the day. A week or so of this treatment is all that is required before the temperature is lowered which should be done very gradually.

The final hardening-off can be done outside in a cold frame and while the shift is being done the young grafts can have their snags removed by the use of a pair of sharp secateurs and the wound waxed over.

Shading will probably have to continue according to the weather, but every effort must be made to ensure that the lights are removed on dull overcast days.

Until the dangers of frosts are over the lights should be placed back on at night for their protection. When the danger of frost is over they should be planted out in well prepared soil and staked.

A MEMBER: Do you still use grafting wax on your grafts?

PETE DUMMER: No. By covering the entire bench with a kind of polythene tent this is not necessary but you must be careful with the air in the beginning.

PROPAGATION OF SOFTWOOD SHRUB CUTTINGS FOR JIFFY-POTTED LINING OUT STOCK

JOHN EMERY,
Ashdown Forest Nurseries Ltd.,
Duddleswell, Uckfield, Sussex

Requirements:—

Preferably a glasshouse, with benches fitted with soil-warming and overhead mist. Alternatively, a range of double-glazed cold frames may be used, either on their own, or in conjunction with the glasshouse.

A ready available supply of potting compost, either "John Innes", "Levington", or the "U. C. Soilless Composts".

I use "U. C. Mix D", to which is added slightly more lime for the general line of shrubs and ¼ in. shingle at a ratio of 1 part shingle to 3 parts U.C. mix. A medium grade of sphagnum peat is used throughout.

The jiffy pot used is No. 425, size 2½ ins. round x 3 ins. deep, the extra depth is an asset to shrub production.

Last but not least, a good supply of cutting material, which alas, is not readily available on most nurseries. It is a good idea and I feel, a must, if one is contemplating producing large numbers of shrubs in variety to have a "Stock Block" planted in the vicinity of the greenhouse or frameyard, with the required number of plants of each variety. This is an assured way of keeping the varieties true to type and nature. All too often, one finds nurserymen and propagators taking cuttings from young plants lined out in the field, without knowing if they are true to variety, resulting in mixed stock. Also, if a large quantity of cuttings are taken of a certain variety, the plants are rendered unsaleable for that season.

Propagation:—

Cuttings of the popular shrubs, e.g. Forsythia, Deutzia, Spiraea, Philadelphus, Hypericum, Weigelia, Kerria, Leyces-