THE LONG ASHTON GRAFTING MACHINE

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For many years grape growers have bench grafted their cultivars on American rootstocks resistant to root aphis (*Phylloxera*). Since this technique is usually carried out indoors during early spring it has been relatively easy to construct machines which facilitate the operation. Simple matching "joints" are made in both rootstock and scion, and grape vines would seem to be easily propagated by using this technique.

Bench grafting of fruit trees has been practiced in this country only to a very limited extent but at Long Ashton interest in mechanizing this technique was aroused when considerable quantities were required for an experimental purpose.

Whilst grafting machines are available in Europe a certain amount of difficulty was encountered in the purchase of a suitable machine, therefore a purpose designed tool was constructed. Various types of "joint" could have been used but from carpentry experience a mortice and tenon is the easiest to manufacture yet probably the most efficient in operation.

The machine described here is powered by a heavy duty electric motor and all the working parts are well guarded. An important feature is that the guards cannot be removed unless the electric supply

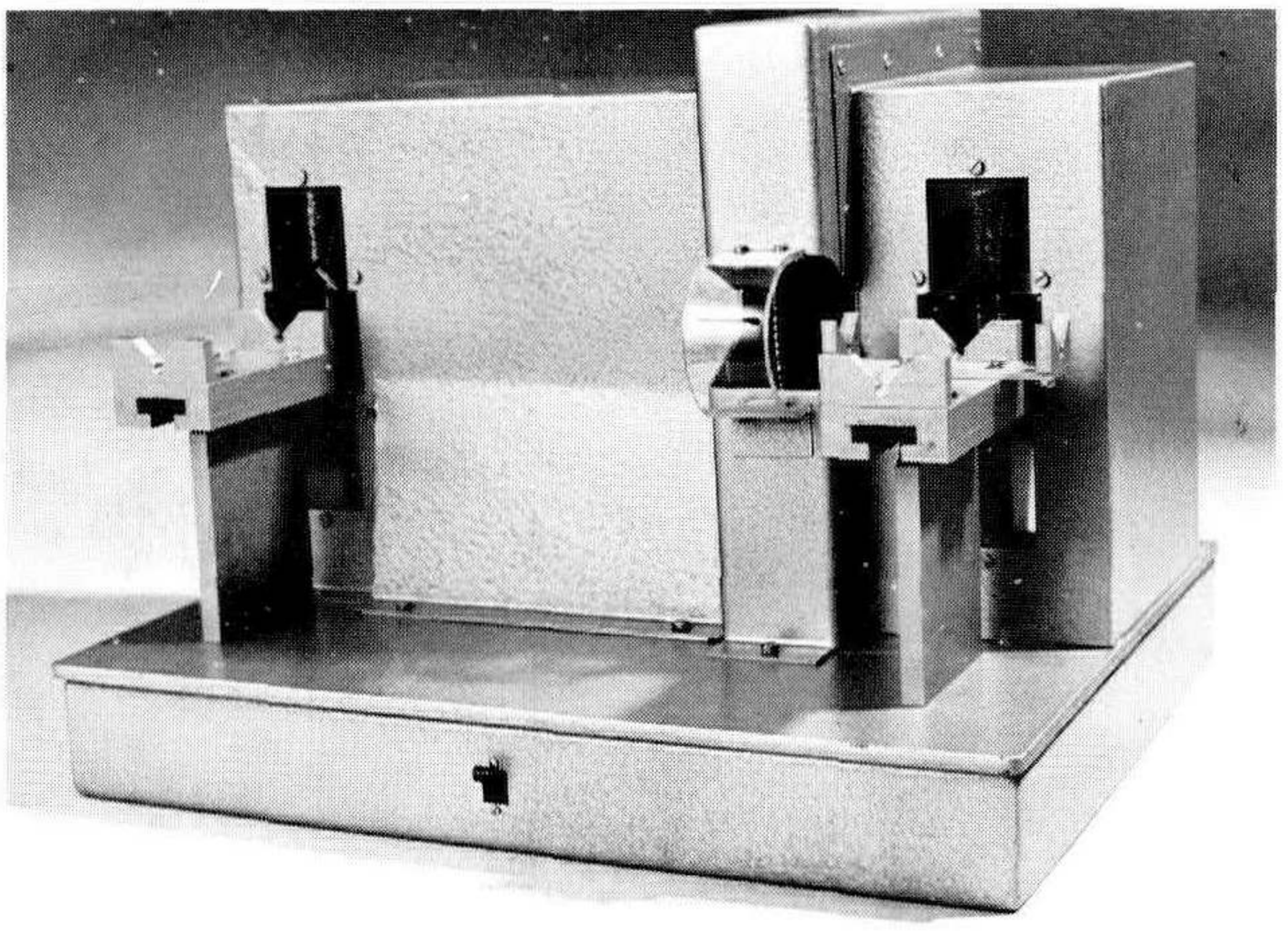

Fig. 1. Long Ashton Grafting Machine.
Note. (1) Well guarded saw blades
(2) Movable platforms for sliding material into blades.

is disconnected. The initial transverse cuts on both scion and rootstock are made with a normal circular saw blade (Figs. 1 and 2). If a simpler type of machine is desired these cuts can be made with secateurs.

The mortice joint in the rootstock is produced by pushing the sliding jig and the cut-off rootstock towards the rotating saw blade (Fig. 3). The resulting cut is thicker than the blade as wobble washers

Fig. 2. Normal saw for making transverse cut on scion or rootstock.

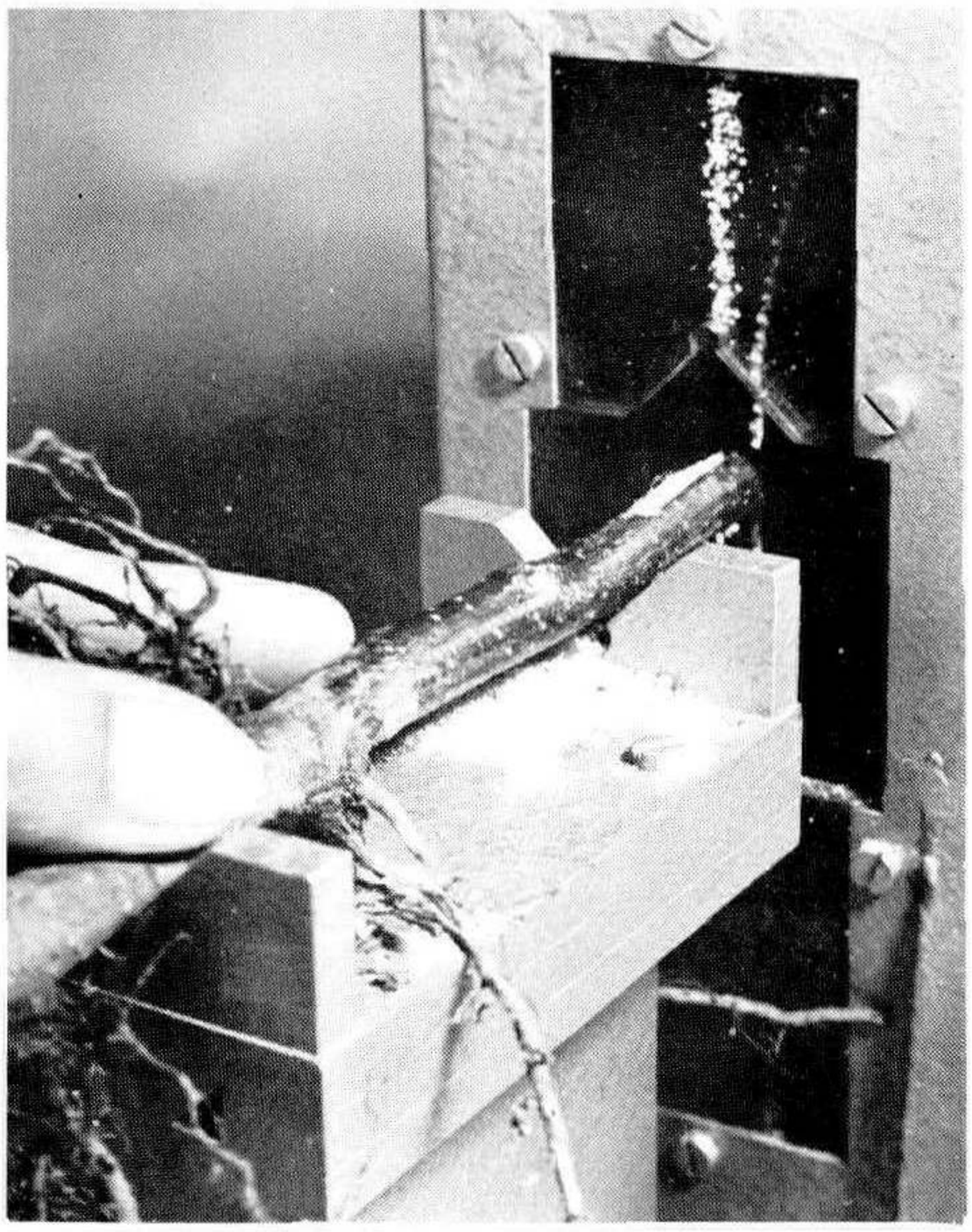

Fig. 3. Mortice cut in rootstock — Single wobble blade.

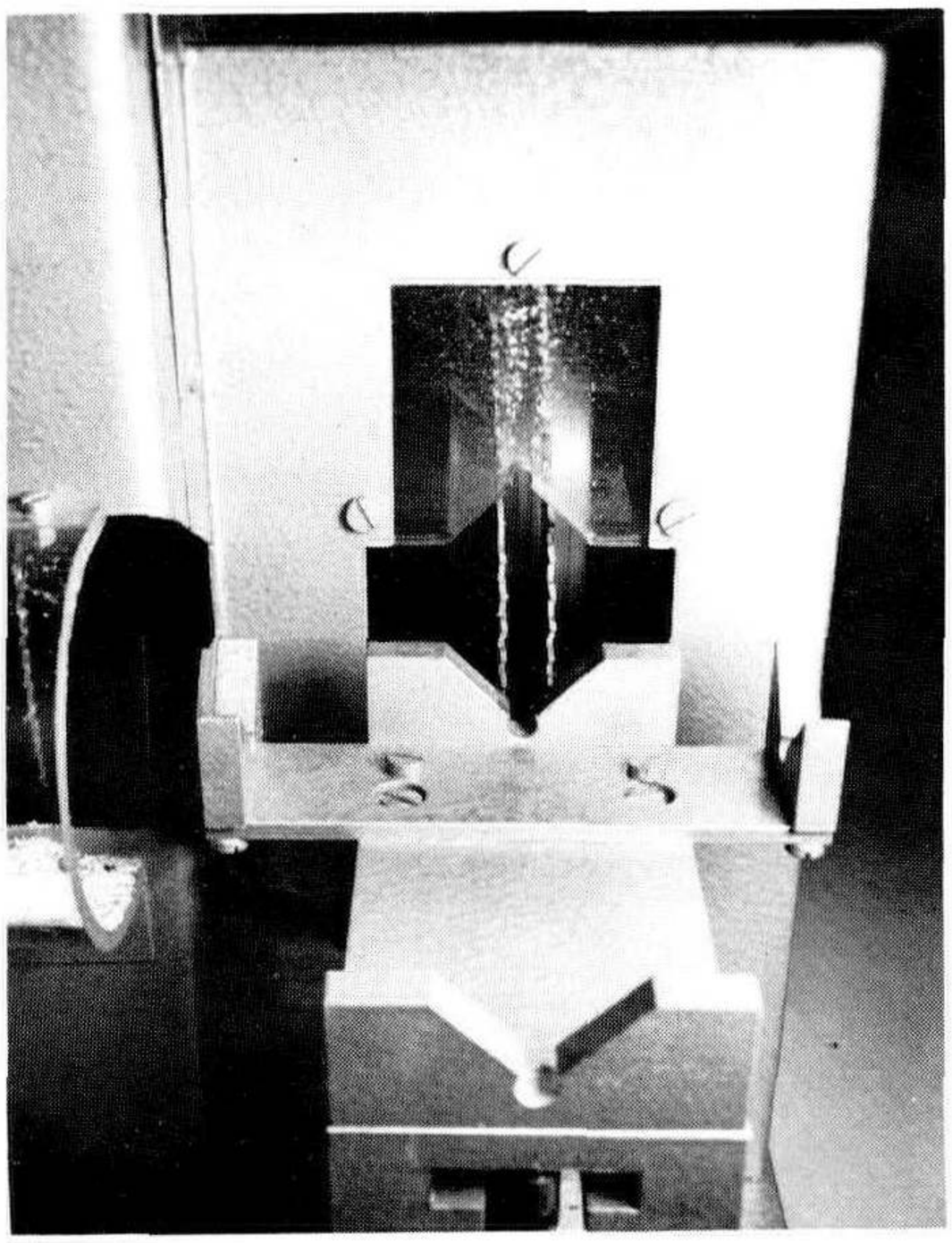

Fig. 4. Parallel wobble blades — Produce tenon joint on scion.

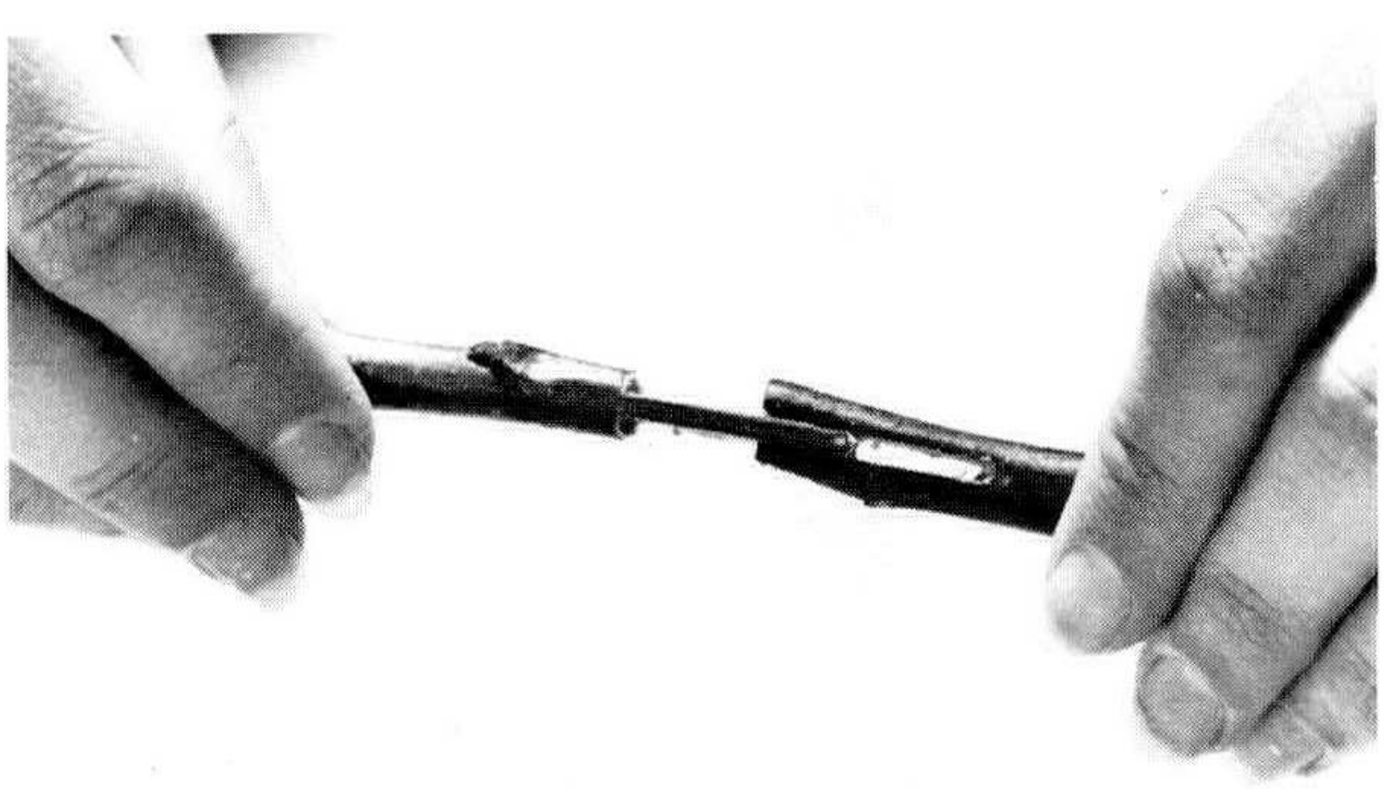

Fig. 5. Prepared graft being assembled.

cause the blade to follow an uneven plane. The scion cut is similarly produced, except that since a tenon joint is required, two wobble blades are used (Fig. 4). The completed mortice and tenon are now assembled (Fig. 5) and secured with 200 gauge, one-inch wide, polythene. It is preferable if the scion and rootstock are the same diameter, but if this is not possible the cambium of each must be matched.

After planting, bench grafts require a very favourable environment. Irrigation, mulching and shelter with windbreaks should

all be provided, otherwise failure rate will be very high. It is unlikely that fruit tree raisers will wish to use bench grafting techniques, since other methods are more suitable. However, the general plant raiser already practices hand bench grafting and suitable machines may be very desirable. Machine grafting is not claimed to be faster than conventional methods but unskilled workers can soon be trained to master the technique, thus enabling better use to be made of staff during wet winter conditions. It would seem likely that with the continually increasing demand for trees and shrubs in containers a machine of this type could be invaluable to many nurserymen. Some slight modifications would probably be necessary, but a wide range of species could be tried using these techniques.

GROUND-COVER PRODUCTION FOR MAXIMUM NUMBERS

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While some nurserymen are practicing ways of rooting larger and still larger cuttings to shorten the time between rooting and sale, I have begun to look for ways of propagating ground-cover plants commercially using the least possible plant and container material and, in some cases, to remove the need to stick individual cuttings or to pot or lift from the field. These alternatives are not new, but their use to mass-propagate plant material economically can be pursued with advantage.

Why should it be necessary to consider any new techniques when the majority of ground-cover plants are very easy to propagate and usually make a profit, and when the small numbers now produced are sold at prices as high as those asked for the normal run of flowering shrubs or perennials? In answer, if ground-cover is to be mass-planted as it must be to be successful, the plants offered in Great Britain will have to come down in price to an equivalent level to that of bedding plants and they need to be constantly available in large numbers, which few nurseries could now supply.

Among the present limitations to economic production are:

(a) Running out of stock material for normal division and cutting making.

(b) Slowness of production of some natives from seed or difficulty in rooting cuttings.

(c) Too many handling moves after rooting, e.g. potting, lining out, lifting, bundling and boxing.