in the nursery and trees frozen to the ground. Under such conditions the new growth can be staked and saved from too much mechanical stress until a strong union is established.

Cleft grafting is a standard method of top-working and the results are excellent, but the work is slow and tedious. It has one special advantage in that the work can be done when the bark will not "slip". For this work a grafting iron is needed with which to split the stub of the limb or trunk (Figs. 21A and 21B). The cut is made squarely across and smoothed up as for bark grafting. It is then split longitudinally with the iron and a mallet. Orange wood does not always split smoothly and in careful work it is desirable to make a cut through the bark and into the wood on each side of the stub with a knife, giving a smooth cut where the scion is to be inserted. This can be easily done by placing the edge of the knife as in Fig. 21A and hitting it a sharp blow with a mallet. Care must be taken to get the cuts on the opposite sides of stub and accurately in line if two scions are to be used. The grafting knife is then placed across the stub, lined up with the two initial cuts and the splitting is accomplished with the aid of a mallet (Fig. 21B). The split is then wedged open by the use of the wedged end of the mallet or a wooden wedge cut for the purpose. The scions should be six or eight inches long and cut with a budding knife to a long wedge at the butt end (Fig. 21C). These wedges should be slightly thicker on one side than on the other. The scions are inserted in the split and the cambium of the scion and the cambium of the stock carefully placed together with the wood of the scion against the wood of the stock. The thick edge of the wedge should be the one lined up with the cambium as this will bring the pressure at the point where it is needed. After the scions are in place the wedge is removed, the stub taped and the cut end covered with grafting wax or paraffin (Fig. 21D).

This type of grafting gives the union a great deal of mechanical strength from the start and is sometimes used in working over large trees on this account. Frequently the pressure exerted on the scion will be so great in large stubs as to tend to pinch the scion off. Where this is likely to happen a wooden wedge should be left in the split to help ease the pressure on the scion.

Success in any of the above methods lies in the careful carrying out of certain basic principles. Once the cutting is started, finish up as rapidly as possible so that the cut surfaces will not dry out. Be sure that the cambium of the scion and the cambium