

Grafting.

By D. A. KIMBALL, '20.

THIS method of propagation is used principally with apples, pears and plums. The reasons for grafting are threefold: (1) To perpetuate a variety; (2) To increase the ease and speed of multiplication; (3) To produce some radical change in nature or habit of stock or Scion.

By the term scion we mean the part cut from one plant to be inserted on another (or the same) plant, the stock, with the intention that it shall grow there.

The fundamental principle on which the practice of grafting is based is purely a question of plant physiology, and any one doing this work will have several points to keep in mind. First, the relationship between the stock and scion must be one that will permit a union from a physiological standpoint; i.e. the cambium cells of the stock must be so constituted that a union is possible between them and the cells of the scion, and vice versa. Second, the cambium layer of the stock must coincide with that of the scion so that sap may pass from one to the other. Third, every precaution must be taken to seal up the union to prevent the loss of moisture and consequent drying out. For best results it is essential that the stock commence growth quickly, following the operation of grafting, except in whip grafting, in which the union can be easily kept moist. Grafting may be done at any time when the wood is dormant.

For the various operations of grafting, the tools necessary are a good strong knife, a hand-pruning shears, a saw, a waxing pot and brush, and some

material for tying the union. In working over large trees a chisel or grafting tool, a mallet and a two-handled pruning shears should be added to the list.

Selection of Scions

This is the first operation in all grafting work. The scions should be preferably taken from one year old wood, which has strong, well-matured growth, discarding all soft and pithy sticks. This wood must be secured when the buds are absolutely dormant. The scions may be packed in damp moss or similar material and kept in a cool place until needed. If the moss is too wet the scions will become water-soaked and worthless. In preparing the scions at grafting time the first few inches of the year's growth should be discarded as the buds are small and poorly developed, and will not start readily. Likewise the tips should be discarded as the buds are usually immature and the wood too soft. The usual length of scion is from two to four inches.

Many methods of grafting are in use, but space will only permit dealing with three most commonly used in Canada, namely: (1) Whip Grafting; (2) Cleft Grafting; (3) Bridge Grafting.

Whip Grafting

The whip graft is used chiefly for root grafting, and on nursery stock and small limbs. It is easily made and, because of the several edges at which scion and stock unite, is very apt to form a good union. Whip grafting of