

to question, but investigation will show it to be right, and the statement stands.

Success in getting cuttings to root depends very much on the recognition of the truth just stated, for it is only by keeping life in the cutting until roots are formed that success can be attained. Cuttings that are struck in the open ground or in boxes without protection are mostly put in at a time when sun-power is low. Cuttings that take a long time to root cannot possibly succeed at any other time, because they perish for want of roots to supply them with moisture. Pelargoniums, which have fairly solid yet succulent wood which stores up a lot of moisture, are successfully struck early in the year—February—while the sun is hot, but besides their structure fitting them to bear heat without perishing they root quickly. But pentstemons would fail at that time, April being a better period for them. Cuttings of shrubby calceolarias should not be put out till May, when every cutting will root. And here an apparently curious thing may be mentioned. Delay putting in the cuttings till mid-June and the chances are they will fail; but if at that time they are planted in boxes and placed in a cold frame all will root. One need not look far for the reason. The plant loves cool conditions, and during hot weather it is only surviving; therefore cuttings separated from the plant while the weather is hot wither away at once. Take the cuttings in May and the cool conditions enable them to keep alive for some time without roots, which are not made until the days begin to lengthen and the weather becomes warmer. In the meantime the callus has formed; this prevents loss of sap, and roots soon come when the days lengthen. But put the cuttings in much later and the callus will not have formed in time to make roots before the weather becomes too warm for them to survive without roots. In a cold frame, however, the cuttings are protected from the weather and in a moist atmosphere which feeds the leaves, consequently they succeed.

This is the general principle which guides the propagator of plants by cuttings. Most trees and shrubs that are quite hardy have qualities that are strongly resistant to decay, and can survive without roots for a considerable period, provided the soil and atmosphere are both moist. Cuttings of these will root in the open air during the period of short days. The kind of cuttings, and the time of taking it is a matter of varying importance. In the case of the more difficult plants, such as heaths, success is impossible of attainment unless there is a full understanding on these points.

Many plants, such as the common fuchsia, can be propagated at any time when young growths are obtainable, though the means required vary according to the time of year. A little bottom heat is required in winter or spring, while a sheet of glass over the pot is sufficient during the summer months. These plants can also be increased by cuttings of older wood put out in the open ground, but the resultant plants are less vigorous than those from young shoots, which alone provide plants suitable for pot culture. Most hardy shrubs can be propagated by cuttings of fairly young compound tops made 8 in. to 10 in. long, the base cut square across just below a joint. Others will root only if smaller shoots are taken, and with a heel of the old wood. This is the case with conifers, most of which, other than the pines, root quite freely. In other cases it is necessary