

two or three buds upon it ; if so, they are all the better, as roots usually start from each bud, but are seldom emitted the first season, in cuttings grown in the open ground, from the stem between the buds.

With a sharp knife smooth off the wood close to the base of the lower bud, and cut off the top end about an inch above the bud, at an inclination as shown in Fig. 86, which gives the form of a two-bud cutting."

The cuttings, after being prepared, are buried in the ground, placing them at an inclination of  $45^{\circ}$ , in layers of about an inch or so deep, of grape wood and fine earth, alternately. In the spring, as soon as the ground is ready, they should be set upright in a trench, or, if more than six inches long, they will need to be somewhat inclined. They are usually planted three or four inches apart, leaving the upper bud about even with the surface of the soil. The earth should be pressed firmly about the cuttings. A simple way of planting is to make a trench along the side of a line by simply inserting a spade full depth in the ground and moving the handle back and forward until the soil remains sufficiently open to receive the cuttings. They are then put in place and the ground pressed back firmly about them by the treading of the foot. This same mode of planting will apply to all kinds of cuttings.

Grapes are sometimes propagated by joints of a single eye with an inch or two of wood attached. These should be prepared in the fall and packed in clean, damp, not wet, sand, in a cellar that is not too warm. Under such conditions a callus will soon be formed—a curious excrescence,



FIG. 87.

nature's mode of covering an exposed portion of wood—and from this roots will soon be sent out. The accompanying illustration, Fig. 87, from Downing's "Fruits and Fruit Trees of America," will clearly show how single eye cuttings are made.

The making of cuttings of gooseberries and currants scarcely needs any directions, even for the novice. In the pruning time we make it a rule to remove about one-third of the last year's growth, and these, averaging from three to four inches in length, are buried in the soil, as above directed, and then planted in the spring in rows about four inches apart. If the cuttings are of more account than the fruitfulness of the bush from which they are cut, it will be an advantage to remove with each cutting a small portion of the older wood along with the new, or, in the case of a side shoot, the cut may be made very close to the old wood. While this is helpful, it is by no means necessary, as these cuttings, in a favorable season, grow with the greatest ease.

Formerly writers on horticulture advised removing every bud from the cuttings with the exception of a few at the upper end, the object being to procure young plants with clean straight stems at the surface free from suckers. Were it not for the borer this plan would still be advisable, but in our experience of later years we find it important to encourage suckers from the roots, because