

into new activity. As regards irrigated districts, it may be said that up to and including any activity which may be induced by the last irrigation during the growing season, no active blight may be left. Infection that has apparently dried up may be left, subject to the approval of the Inspector, and on the distinct understanding that should it once more become active it must be removed without delay. In non-irrigated districts it may be possible to allow rather more latitude as to the time when infections may be considered past spreading. While it may under certain conditions prove economical to leave the blight for a time, it must be understood that this is not a safe practice, and can only be permitted when the grower has the situation well in hand. The stringency of the regulations is not directed towards compelling a grower for his own good, but as a protection to neighbouring orchardists. As long as actively growing trees have blight exudate in their vicinity and insect pests are present, it is possible for such trees to be infected, thus causing loss to a grower in spite of every care on his part. In some varieties of apples—e.g., Spitzenberg, Wagener, and Crabs—and in many varieties of pears, blight may continue to work as long as the sap flows. In his own interest it would be better for the grower to endeavour to stop the loss of tissue by proper cutting. If, however, the season is advanced, and with a knowledge of all the circumstances, such as the condition of the nearest orchards, the number and kind of insect pests, etc., the Inspector does not consider that the orchards of others are endangered, it may be permissible to allow the disease to run its own course, provided that a thorough clean-up is made during the dormant season.

CROWN-GALL (*Pseudomonas tumefaciens*).

This disease attacks a large variety of plants, including most of our tree and bush fruits, and is transmissible from one to the other; e.g., from raspberry to peach. It consists of a swelling or gall, usually on the roots or at the crown of the plant, although it may also occur on parts well above ground, especially in the blackberry. On the apple, in addition to the typical gall, an abnormal condition known as "hairy root" may be found. This is due to an excessive formation of branch roots, of a somewhat fleshy character, from the infected main root or crown. "Hairy root" is due to the same parasite as the typical gall, but may or may not be associated with it in the same plant. The galls themselves are of two types, a soft form which rots away each year, and generally grows again at or near the edge of the old wound, and a hard woody form which may persist for many years. Peculiar excrecences occasionally seen on the limbs of apple-trees are probably due to the same disease, infection having been produced by insects.

On the apple the disease is chiefly serious on nursery stock, plants at this stage being apparently more susceptible, and the wounds made in grafting and budding affording a better opportunity for infection. The extent to which an affected tree is injured is a somewhat disputed point. There is no doubt, however, that a galled young plant has a much poorer chance of developing into a vigorous tree than has one free from the disease, while if the galls are cut off the root system is liable to be so much injured as to seriously check the growth of the tree. It is, however, true that a tree may outgrow the infection entirely, and that an established tree may have a certain amount of galls on it without showing any ill effects. Large galls, however, especially around the crown, interfere with sap-conduction, and also offer favourable opportunities for the entrance of other diseases, particularly fire-blight.

Control.—Soil known to be infected should not be used for growing nursery stock. As little opportunity as possible should be given for galls to decay in the soil, since by this means the soil becomes infected. Affected stock should not be planted out, but destroyed. On older and apparently thrifty trees galls may be left alone unless exposed to fire-blight infection. In such a case they should be cut out completely, an inch or more beyond the edge of the gall, and the wound disinfected and painted over.