

a short germ-tube (Fig. 10, *b*), or give rise to numerous minute conidia by budding (Fig. 10, *a*). Budding may occur in the ascus either before spore-discharge, or upon the leaf-surface after, when the upper surface of diseased leaves becomes coated with these conidia, appearing as if covered with hoar-frost. With the production of these spores our knowledge of the life-history ceases. It is not known where the spores remain until they cause infection the following spring, or the method of infection, or the part played by mycelium located in the shoots in the perpetuation of the disease. But from field observations a fair idea as to the subsequent behaviour of the organism may be obtained. Thus it appears that in the majority of cases infection of the leaves as they unfold from the buds is due to spores—whether ascospores or conidia (buds) is unknown—carried over the summer and winter months in bud-scales and crevices in the bark; and that perennial mycelium plays a minor part. This assumption is based on the readiness with which the disease may be controlled by spraying, as a single application at the proper time results in almost complete control. Such a condition could not be obtained if infection were due to perennial mycelium, as the spray would not destroy the mycelium which is protected by the tissues of the shoot. In consequence it is assumed that the spores are lodged in bud-scales and bark-crevices, and that they infect the young leaves as they emerge from the bud, so that a spray applied before the buds unfold destroys these spores, and this prevents infection. The fact must not be lost sight of, however, that perennial mycelium does play a part in infection, as in certain instances where trees have been carefully sprayed slight infection may persist; or, again, with certain varieties, notably Paragon, this disease cannot be effectively controlled by spraying alone. Infection may be severe, and persist throughout the whole of the growing season. This would tend to show that with this variety, at any rate, mycelial infection is a serious factor, and control in such a case calls for additional treatment.

(2.) BLADDER-PLUM, *TAPHRINA PRUNI* (FCL.) TULASNE. Synonyms: *Exoascus Pruni* Fcl.; plum-pockets.

Bladder-plum is world-wide in its distribution, occurring wherever the hosts are grown. In New Zealand it is confined to the plum, but in North America it has been recorded on *Prunus virginiana*, and in North America and Europe on the bird-cherry, *Prunus Padus*. All varieties of cultivated plums appear liable to infection, but in New Zealand it appears, as a rule, only on the so-called Japanese plums, although English plums are occasionally infected.

ECONOMIC IMPORTANCE.

As this disease is confined to plums, it may be claimed that its importance is slight, owing to the fact that plums do not figure among the more important commercial fruits. Nevertheless, to those growing these fruits its attacks may prove serious enough, for where infection is severe the greater part of the crop may be lost. As leaves, too, are attacked, partial defoliation and consequent debilitation of the tree may follow. Furthermore, shoots may be stunted, and in cases of severe infection killed outright.