

cases the fruit may wither up before the cane as a whole dies. Fruit-spurs and leaves are commonly sent in for examination by those ignorant of the nature of the disease, in the belief that the cause of the trouble will be found there. This is not the case, however, the drying-up of the berries, leaves, and other portions of the cane at one point being due to the failure of the sap-supply, which in turn is due to the destruction of the sap-conducting tissues at some point lower down the stem. Such canes, if examined carefully below the wilted portion, will show the presence of dead brittle areas, lighter in colour than the healthy parts, and which may extend all around the cane. Fruiting-bodies are formed in the outer layers of the bark of the affected areas and are visible as minute dark-brown or black points. The surface of the cane in their vicinity is often covered with a smoky-brown powder of escaped spores. The fungus probably gains entrance in most cases through wounds. It is probable also that it can exist for an indefinite time on fragments of dead canes in or on the ground³.

Control.—This is a difficult disease to control. In starting a plantation every care should be taken to secure healthy stock. Affected canes should be removed as completely and as soon as possible and burned. Refuse, such as broken canes, etc., should be collected and burned. Raspberries should not be planted again for a considerable time on land that has borne a badly diseased plantation. Spraying has so far proved of doubtful value.

CROWN-GALL.

Raspberries often suffer severely from this. Such plants can be detected by the yellow, unhealthy foliage and stunted appearance of the plant. They should be dug out carefully and burned and only some non-susceptible variety of plant put in their place. Any plant found infected when the plantation is being set out should not be planted, but destroyed.

ROSE.

POWDERY MILDEW (*Sphaerotheca pannosa*).

This is well known to rose-growers, being the commonest fungus enemy of the rose. There is a great difference between different varieties in regard to susceptibility, the Crimson Rambler being one of the worst. The fungus, like other powdery mildews, forms a white or grey mouldy growth over the leaves, young shoots, and flower-buds. On this mycelium numerous spores are produced through the season, and by means of these the fungus is enabled to spread rapidly. Affected leaves wrinkle and curl up and the young shoots are distorted. Later in the season little black fruiting-bodies may be formed in the mycelium, but commonly these are not noticeable. Sudden changes of temperature render the plants more liable to severe attacks of the disease.

Control.—In mild cases dusting with flowers of sulphur when the dew is on or after rain is of benefit. Spraying with potassium sulphide (liver of sulphur), $\frac{1}{2}$ oz. to a gallon of water, is more effective, but the sulphur in this form acts upon the lead in white-lead paint to produce a black-lead sulphide. Hence, if used to spray rose-bushes against a verandah or other structure painted white, the results may be very disconcerting. In such cases the flowers of sulphur should be tried. The potassium sulphide solution must be made up afresh each time, as it decomposes on standing. When lime-sulphur is on hand it may be used instead at a dilution of about 1 to 30. It may be necessary to discard the most susceptible varieties.

RUST (*Phragmidium subcorticium*).

This is a very common disease. In the early part of the season it appears as orange-red pustules on the stems, leaf-stalks, leaf-veins, and calyx. The orange-red colour is due to the formation at these points of enormous numbers of summer spores. Later in the season these are replaced by black masses of resting spores. No satisfactory control measures are known, one difficulty being the abundance of the disease on wild roses. However, although disfiguring, it rarely causes serious injury.