

WATER-CORE.

Like the last, this is a "physiological" disease, being the effect of a want of balance or a disturbance in the functions of the tree not brought about by the action of a parasite. It affects a wide range of varieties and is especially common in the Dry Belt. The tissue of a normal apple consists of minute cells filled with liquid and numerous air-spaces between them. These latter make the tissue opaque. If the pressure of sap becomes too great, liquid, instead of being confined to the cells themselves, is also forced into the spaces normally filled with air. Such tissue has a water-soaked and semi-transparent appearance. This is what has taken place in "water-core." The watery tissue is at first in small spots adjoining the vascular bundles or sap-channels, but later the core becomes filled with liquid. At this stage the hard lining membrane of the core will be found to be broken, and is often covered with a hairy growth. Affected fruit is generally exceptionally highly coloured. Fruit on the south and south-west sides of the tree is generally most affected. According to recent investigations, the development of the trouble is due mainly to two factors when the fruit is maturing: First, an excessive amount of sap in the tree, such as may occur after a period of heavy precipitation; and, secondly, a wide range between the day and night temperature over a period of time. During the warmth of the day transpiration from the leaves is active, but this is checked at night more rapidly than root-absorption is, with the result that the sap-pressure in the tree becomes so great that the sap is forced into the intercellular spaces. The main factors, therefore, are not under our control, except in so far as excessive sap-flow may be due to too much irrigation. It has been found, however, that if fruit is picked before the water-core has become too far advanced and placed in ordinary cellar—not cold—storage, the excess of sap will be reabsorbed and the fruit become normal. This does not apply to cases so far advanced that liquid has already appeared in the core. A recent authority cites a case where 10,000 boxes of water-cored apples grown in the Yakima District were removed from storage late in the season with a loss of only 0.3 per cent. Since the disease may be present in the apples from the south and south-west sides of a tree only, it would be well to determine if this is the case before commencing picking; and, if so, the two sets of apples should be kept separate.

BEAN.**ANTHRACNOSE (*Colletotrichum lindemuthianum*).**

This disease attacks stems, leaves, and pods, but is most conspicuous on the last. It is commonly known as "pod-spot." On the leaves it appears as brown spots of varying shape and size; on the pods it forms sunken roundish spots of a dark-brown or black colour. Two or more spots may coalesce to form large irregular areas. Spores are produced in great numbers in spore-beds on the surface of the spots. The spores are cemented together by mucilage forming a minute pink mass. When wetted, e.g., by rain, the mucilage is dissolved and the spores set free. On the pod the fungus often makes its way into the underlying seeds, which become infected. Such seeds, if planted the following year, serve as the starting-point for the disease.

Control.—Use only seed gathered from pods free from the disease. Unless the selection is made from such pods no subsequent hand-picking of the seed will ensure that it is disease free, since seeds apparently sound may be sufficiently infected with the fungus to spread the disease if planted. If the disease appears in the crop, working amongst the plants when they are wet should be avoided, since it is then that the spores are freed. It should be possible to produce an unlimited quantity of clean seed in the Dry Belt.