small, red, necrotic (dead) centres and a dwarfing of the plants.

Often in mild infections these virus diseases cannot be detected by the symptoms described until autumn, as hot weather tends to mask the disease, but the symptoms usually become visible in autumn, when temperatures are lower. Severe infections, however, can be detected readily by the general dwarfing of the plant and its failure to develop normal runners.

Control: Infected plants do not recover and should be dug out and destroyed by burning as soon as the infection is detected. The degree of spread may be reduced by the control of the aphis by spraying (see section dealing with insects). A practical method of dealing with the trouble is rigorous inspection and rogueing to eliminate all visibly infected plants and thus the building up of a stock of plants as free from disease as possible. This is a long-term procedure, but if adopted by all plant growers, would bring about an improvement in planting stock.

Rogueing: Too much emphasis cannot be placed on the value of thorough and frequent rogueing to eradicate virus-infected plants from beds. This is particularly important in virus-tolerant varieties such as Captain Cook, in which virus cannot be detected until it is so severe that it induces degeneration and unthrifty plants. In an infected plant the virus permeates the entire plant system, including every runner plant produced. Thus every one of the progeny of an infected mother plant is a potential source of infection when planted in fruiting beds. This can go on until all existing plants of a variety are infected with virus disease to a greater or less extent. Rogueing should be done when the first signs of infection are seen and in the nursery bed can be carried out at any time. To facilitate this, even wider planting of both the plants and rows would be advantageous. Infected plants should be taken from the nursery beds and burnt.

Plant (slightly enlarged) infected with red core root rot. A feature is the absence of small feeding roots.

Insect Pests

Strawberry aphis (*Pentatrichopus fragariae*): This aphis commonly attacks strawberry plants throughout New Zealand, but infestation only occasionally reaches such serious proportions as to devitalise plants by the amount of sap extracted and so cause crop reduction. However, the aphis must be considered a serious pest even when present in small numbers, because it is the sole means of transmitting the virus diseases of strawberries in New Zealand.

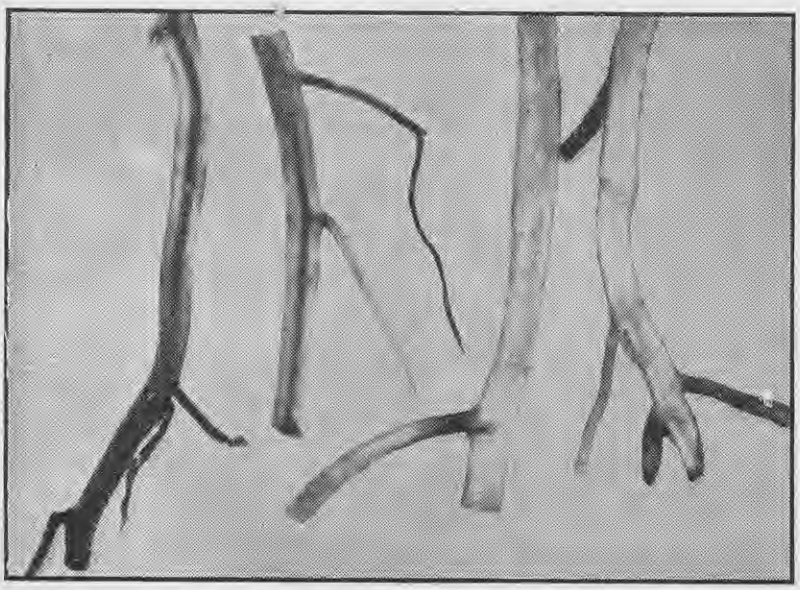
The aphides transmit virus by feeding on the sap of infected plants and injecting virus into healthy plants when they transfer to feed on them. In this way a considerable reduction of crop can be brought about in one season. As aphides multiply very rapidly, control measures should be adopted as soon as they appear.

Control: Beds should be sprayed periodically, as necessary, with one of the following:—

1. **One per cent. of summer oil plus nicotine sulphate 1 : 800:** To make 100 gallons use 1 gallon of summer oil, 1 pint of nicotine sulphate, and 100 gallons of water. To make 4 gallons use 6½ fl. oz. of summer oil, 4/5 fl. oz. of nicotine sulphate, and 4 gallons of water.

2. **Hexaethyl tetraphosphate (H.E.T.P.) 1 : 1600:** To make 100 gallons use ½ pint of H.E.T.P. and 100 gallons of water. To make 4 gallons use 2/5 fl. oz. of H.E.T.P. and 4 gallons of water.

3. **Tetraethyl pyrophosphate (T.E.P.P.) 1 : 1600:** To make 100 gallons use ½ pint of T.E.P.P. and 100 gallons of water. To make 4 gallons use 2/5 fl. oz. of T.E.P.P. and 4 gallons of water.



Longitudinal sections of strawberry roots infected with red core root rot (left) and healthy roots (right).

Fungous Diseases

Leaf spot (*Mycosphaerella fragariae*): Leaf spot is probably the most common fungous disease affecting strawberries in New Zealand. Attacks