

DIAGNOSIS.

A diagnosis is based usually on a knowledge of the prevalence of the disease, the number affected in a herd, and on *post mortem* examinations of a suspected case. Pleuro-pneumonia may be mistaken for several other conditions before death, but after death the state of the lungs narrows the trouble down to one of two—hæmorrhagic septicæmia ("corn-stalk disease" of U.S.A.) and pleuro-pneumonia. These are easily differentiated with the aid of the microscope, as they are caused by totally different organisms. Seen before incision the lungs appear non-collapsed and swollen; they sink in water, and feel more or less like liver; when incised a clear straw-coloured fluid exudes and later coagulates. This cut surface has a beautiful marbled appearance, which is caused by the white streaks of connective tissue running between the lobules being greatly distended with exudate in the lymph spaces. Between these white lines are islands of various colours, some dark red, others scarlet, and others, again, muscle-coloured or pale yellow-pink. This thickened area of the lung fades off into the still active lung-tissue.

As the disease becomes chronic the solid area is enclosed in a capsule of fibrous tissue, and, if the animal survives, the piece of lung so enclosed becomes necrosed and dry owing to a shutting-off of the blood-supply. This condition is dangerous, as the area may open up at any time, and the organism of the disease appears to be ever ready to take advantage of such an opening. The position is that either the animal will get a second attack of the disease or it will act as a potential carrier for the rest of the herd. It is for this reason that any cow affected must be killed and not allowed to convalesce. Only rarely does a sloughing of the lungs occur, as the lung-lesion is so well enclosed that other organisms do not easily gain entrance, and they are seldom imprisoned in the area. On the walls of the lungs there is usually to be seen a thick creamy layer of deposit, with some 2 gallons of a clear fluid in the chest-cavity itself.

Where intramuscular inoculation of an animal is carried out for obtaining active lymph, the muscles show just such a marbling as is seen in the lungs, together with a quantity of serum which causes the doughy condition of the swelling.

There are several scientific laboratory methods of identifying the disease: (1) Cultivation in broth plus serum, after passing through a porcelain filter; (2) the agglutination test, in which the serum of an affected animal in certain dilutions has the property of causing the organisms to mass together and form a deposit on the sides and bottom of the tube; (3) the complement fixation test. The last two methods have been perfected recently by Major G. Heslop, at the Veterinary School, Melbourne. Major Heslop also keeps pure cultures in stock for the work of immunizing animals against the disease.

IMMUNIZATION.

To gain an immunity several methods are in vogue. That of Willem is the simplest. By this method a small amount of lung-lymph is taken from an animal killed while affected with an acute attack of the disease, and inoculated into the tip of the tail. The method has several drawbacks, such as the loss of tails in 5 to 15 per cent.