

So far as I am aware, no experiments have been hitherto recorded to show in what form the liver-coccidia enter the rabbit. From experiments of Waldenburg on the *Coccidium perforans* (Leuckart) of the intestine of the rabbit (a species distinct from the liver-coccidia) it seems probable that the spores in the condition just described are capable of developing further when given to a rabbit. Three rabbits obtained from the Waikato, where the disease is not known, were fed with large numbers of Coccidia which had been kept in water until the spores were formed as above described. When the rabbits were dissected several weeks later all were found with perfectly sound livers. This result must, however, be considered as purely negative evidence: the experiment may have failed because the rabbits were unsuitable subjects. I should have preferred to experiment with younger rabbits; but it was winter-time, and the youngest rabbits available were some eight months old.

Want of material has prevented me from investigating the matter further; but this is of the less importance because the disease, though frequently fatal to rabbits, is not one which could be recommended for the object now in view, as it has been known to affect human beings.

8. Disease due to Scab- or Louse-mites and Lice.

Two external parasites were found in the rabbits in the Wairarapa—namely, the scab- or louse-mite and a kind of louse. As these are readily distributed by the contact of the rabbits in their burrows, they are not uncommonly found together on the same animal. The scab- or louse-mite is a minute species of mite, just visible to the naked eye. I have not been able to find any description of this species in the books available in Auckland, but it is probably a species of *Symbiotes*. It is clear, however, that it does not burrow into the skin like the true itch-mites, but lives upon the surface. This mite is therefore distinct from the true itch-mite (the *Sarcoptes cati* of Hering and Gerlach, or *S. cuniculi* of Gerlach, or *S. minor* of Furstenberg) found on the cat and rabbit, which burrows in the skin and causes a much more formidable injury. The *Sarcoptes minor* is not uncommon on the Continent of Europe, and is especially destructive to cats in the larger towns. The intensity of the malady produced varies from time to time, sometimes causing very severe epidemics. The mite found on the Wairarapa rabbits, confining its attacks to the surface, seems to be comparatively harmless, though all the rabbits which have any large number of the mites show scabby spots.

The rabbit-louse (*Hæmatopinus ventricosus*) is a much larger animal than the mite, being readily seen by the naked eye. Sometimes it is found in considerable numbers. It may be seen with its beak buried in the skin, whilst its abdomen becomes round and distended with the dark-coloured blood it has sucked up. In a majority of the rabbits seen by me in the Wairarapa I found a larger or smaller number of either lice or mites, or both. As a rule, the number of parasites was small, and the injury done to the rabbit was insignificant. A few of the rabbits carried greater numbers, and these were marked by scabby patches. Mr. Orbell states that he has found rabbits showing scabby symptoms of a similar kind, but in a much higher degree, with the hair falling off over large areas of skin. Some of the rabbiters, too, state that they have found rabbits largely denuded of hair, and with scabby patches, and so thin as not to be able to run more than a few yards at a time. More recently the same mite has been noticed by Agent H. Hull in Southland. On the Sunnyside Station a diseased rabbit was dug out of a burrow: the skin showed scabby patches outside and dark spots inside, and it adhered to the flesh. Mites were discovered by the aid of a lens, and some of these were afterwards identified by me as belonging to the species found in the Wairarapa. It is not improbable that a rabbit may occasionally succumb to these parasites; but I am of opinion that the combined effects of the mites and lice are seldom so serious as to lead to the death of the rabbit.

III. VALUE OF THE DISEASES AS A MEANS OF DEALING WITH THE RABBIT-PEST.

1. General Conditions.

Any disease, to be suitable for this purpose, must fulfil the following conditions: (1) It must be sufficiently destructive to rabbits; (2) it must not be injurious to man or any of the animals useful to man.

When we know that these conditions are satisfied we have still to consider the economical aspects of the question—i.e., whether the good effected would be commensurate with the cost of the employment of the disease; for, be it observed, what is really required is a cheaper means of destroying rabbits than the customary poisoning, rabbiting, &c. Of the five parasitic diseases found in the rabbits in the Wairarapa only two cause a disease of such intensity as to at all satisfy the first of the above conditions; the other three seldom cause death to the rabbits. The two parasites which concern us here are the bladder-worm and the liver-coccidia.

Before discussing to what extent the two diseases are valuable, it may be well to observe that evidence of the injurious effects of a disease may be adduced from the following considerations: (a.) The disease may be shown to be more or less widely prevalent. It is clear that it is not enough that a disease should have an intensive character and have the power of causing death: it is also essential for our purpose that it should affect a large proportion of the rabbits in the district. (b.) The intensive or destructive character of the disease may be shown by the fact that rabbits are found dead or clearly suffering a serious amount of injury from the presence of the parasite. (c.) The character and power of the parasite may be gathered from the results of experiments on rabbits in the laboratory. But here we must bear in mind that the conditions in the laboratory are not quite the same as those in nature: the mere confinement of rabbits in hutches introduces a condition very different from that of the full freedom of the wild rabbit. Nevertheless, the detailed knowledge of the natural history of the parasites will give us a fuller knowledge, and enable us to form a sound judgment on many points which it is difficult to observe in animals in a state of freedom.