

LENGTH OF TIME CATTLE-TICK PRESENT IN NEW ZEALAND.

One of the most difficult portions of the investigation was the sifting of evidence from various sources on such aspects of the tick problem as could not be solved by an appeal to the verifiable facts of observation. There is scarcely a person in the tick-infested area who has not some opinion, more or less hazy, but not necessarily any the less strongly held, as to the length of time that has elapsed since the cattle-tick was introduced into New Zealand. This tick is a tropical species with its centre of greatest abundance in India and neighbouring regions, and it has therefore almost certainly been introduced accidentally into New Zealand by the agency of man. The probability is the more strong in view of the fact that this tick is essentially a parasite of mammals, and these latter were practically unrepresented in pre-European New Zealand.

A large part of the "evidence" for the existence of cattle-tick in the Dominion for thirty years or more could be rejected at once as utterly unreliable. The only spark of truth in it is based on records of the kiwi-tick (*Ixodes anatis* Chilton), a totally distinct species which the Maoris rightly assert to have been in the country from time immemorial. Mr. H. Munro, principal Inspector of Stock for the Auckland District, states that when he was inspecting the whole North Auckland Peninsula up to fifteen years ago the tick did not come under his notice in any way. The first occasion on which specimens actually came under the notice of an officer of the Department was in December, 1910. It may be concluded provisionally that there is yet no exact evidence as to the length of time the tick has been present in New Zealand.

There is a very prevalent belief, amounting in places to dogmatic certainty, that the cattle-tick was introduced from South Africa in saddles brought back from the Boer War by members of the New Zealand contingents. This is conclusively negated by the fact that this tick does not occur in South Africa. Perhaps the favourite explanation is that it came from Australia when the grass *Paspalum dilatatum* was first introduced from there into the north of New Zealand. This on the face of it is a more likely theory, especially in view of the close association now observed between the cattle-tick and paspalum in the infested area. Unfortunately, however, for the theory, *Haemaphysalis bispinosa* is by no means widespread nor common in Australia, and has probably been only recently introduced there.

LIFE-HISTORY OF HAEMAPHYSALIS BISPINOSA.

The Eggs.

The very numerous dark-reddish eggs are laid on the ground in one batch. Their glossiness is due to a liquid secreted over them by a bilobed dorsal organ, the purpose of the secretion being to stick the eggs together. In this tick, as in foreign species, it has been shown that unless the eggs are thus kept together in one compact bunch they will not hatch, the failure being perhaps due to resulting desiccation. Egg clumps are deposited by the engorged female at the bases of grass and weeds, at no great distance from the spot where she fell from the cattle-beast or other host. In about two months the