

appearances being characteristic of those of plague. Cultures were successfully made, which had also the characteristic peculiarities, both to the naked eye on the various media, and under the microscope, of the bacillus pestis. Guinea-pigs inoculated with the material morbes and with cultures did not succumb. For the first day or two slight symptoms of illness were exhibited, then rapid recovery took place. Regarding the origin of these infected rats at Mokau nothing definite is known. The assumption is that they were travelling overland from the direction of Auckland. At all events they were flying from the epidemic, leaving their dead and dying en route.

At Wanganui and Aramoho a similar occurrence was observed. From subsequent inquiries it would appear that the first sick rats were noticed about March in the vicinity of the Castlecliff Freezing-works. It was not, however, until a similar occurrence around the Aramoho Freezing-works was observed by Mr. J. F. McEachran, M.R.C.V.S., Government Veterinary Inspector there, that our attention was drawn to the matter. Mr. McEachran forwarded several specimens of rats and their tissues to Wellington, as a result of the examination of which I visited Aramoho and secured further specimens. After an exhaustive examination of many of the affected rats both at Aramoho and in Wellington, I arrived at the conclusion that they were suffering from bubonic plague. The organism isolated had this in common with that of the Mokau rats: that it was not fatal to guinea-pigs. Neither was it so virulent even with rats as the germs isolated in Auckland, and those subsequently isolated in Wellington from affected rats in those centres, for some of the experimental rats soon recovered.

Regarding the origin of the outbreak among the Aramoho and Wanganui rats, it is again difficult to decide. It is a curious coincidence, however, that the sick rats were only observed around the Aramoho works a few days after the arrival of two ships at Wanganui wharves from New South Wales. Of course, presuming that the epidemic originated at Castlecliff works in March, and that the affected rats travelled from the one establishment to the other (the Town of Wanganui lying between), these ships would not have had necessarily any connection with the occurrence. Assuming the landing of rats carrying infection from a ship lying at the wharf, the most likely point to which they would travel would be one or other of the freezing-works lying on the river bank (in the case of Aramoho, only a mile or so from the wharves) where an abundance of food, in the shape of blood, offal, &c., is readily obtainable.

Credit is due to Messrs. Mitchell and Co. for the energetic warfare they conducted against the rats when they were made aware of the circumstances. Drains, burrows, and other harbours of rats were thoroughly flushed out with boiling water containing strong antiseptics, poison was everywhere distributed, and dead rats were always cremated in the engine-furnace. By these means in a short time there was barely a rat to be found in the place. Naturally such places as freezing-works will always be a favourite locality for rats, and from time to time they reappeared, but the vigorous onslaughts kept down the numbers, and now for months past I am assured by the Inspector no sickly rats have been seen.

Wellington.—Although numbers of dead rats had been brought and sent from various portions of the Wellington District suspected of being plague-infected, it was not until the middle of July that a true case was submitted for examination. This animal was reported to have been found dead in the street in front of a certain warehouse in the city, whence it was sent to me for examination. On *post-mortem* examination the animal was found to be poor in condition. The left subscapular gland was enlarged to about the size of a marble, and suppurating in the centre. The lungs were affected, especially towards the base, where they were undergoing caseation, while both pleuræ were inflamed. Microscopical examination disclosed the presence of numerous bacilli morphologically characteristic of those of plague, as well as many other apparently accidental micro-organisms in the degenerating lymphatic gland. The caseated material of the lung contained very few bacilli, and very few could be detected microscopically in the spleen.

Tubes of culture media were inoculated with material from the bubo, the lung, and the spleen. A guinea-pig was inoculated in the thigh from the bubo, and a rat similarly inoculated from the lung. Naturally the cultures were at first impure, but eventually the bacillus of plague was isolated. The guinea-pig died in three days and a half, and on *post-mortem* examination presented the typical lesions of plague—*i.e.*, swollen lymphatic gland above the seat of inoculation, spleen very much enlarged and mottled, &c. The bubo, the spleen, liver, and blood contained numbers of the characteristic bacilli, which grew in the characteristic manner on the various media. The rat inoculated succumbed on the fourth day, and presented the usual typical *post-mortem* appearances.

Unfortunately the name of the firm who sent me the rat appeared in the Press with my memorandum reporting same to the Hon. the Colonial Secretary, and, whether as a consequence or not, no other dead rats were handed to me from business premises.

The only other specimen of an affected rat was received from premises in Molesworth Street. The rat had been observed for two days previous crawling about as if sick, and finally came out during broad daylight, lay down, and died in the passage. This animal was in poor condition and suffered from skin eruption. There was a large swollen gland in the subscapular region, and both precrucial glands were enlarged and inflamed. These glands and the spleen contained the characteristic bacilli, which were isolated and cultivated.

Characteristics of the Bacillus.

Morphology.—Polymorphic, varying from almost a coccus, or at least a cocco-bacillus, to a bacillus almost as long as that of typhoid, in relation to which, however, it may be said generally to be about the same breadth and about half the length. The polymorphism is more distinct in cultures than in the tissues. It stains readily with ordinary aniline dyes, and, in my experience, is very readily decolourised by light. Occasionally it stains more readily at the ends, but this characteristic I have found to vary considerably, in some cases the bipolar staining being very distinct, in others