

## APPENDIX.

### UNDULANT FEVER IN NEW ZEALAND.

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Between August and October, 1931, an investigation was made into the extent of undulant fever prevalent in New Zealand. For this purpose inquiries were made from Hospital Superintendents, pathologists, and general practitioners regarding past cases of the disease; and some 109 dairy-farms were visited and inquiries made as to the existence of contagious abortion among the herds, and the extent of sickness among the people living and working on the farms. Where possible, blood-samples were obtained from farm workers and investigated for the presence of specific agglutinins.

Very considerable help was afforded by Dr. Lynch and his staff at the Wellington Hospital Laboratory, where the blood-samples were examined, and by Mr. C. S. M. Hopkirk, of the Wallaceville Laboratory, who examined a number of blood-samples from cows, and supplied general information concerning the disease in cattle. Mr. Wilson, also of the Department of Agriculture, assisted considerably in the direction of collecting blood from cows.

#### I.—EXTENT OF ABORTUS INFECTION AMONG NEW ZEALAND HERDS.

Contagious abortion has been prevalent among New Zealand herds for more than thirty years, and all the information at the disposal of the Department of Agriculture goes to show that the majority of dairy herds at the present time are infected. Once infected the cows may remain so, although they no longer abort, and may continue to give infected milk. They may also at each time of calving have infected uterine discharges to which the dairy-farm worker is exposed.

In the present inquiry definite evidence of infection in ninety-eight herds was obtained either by a history of abortion or by positive laboratory tests, one herd was proved to be not infected, while the remaining ten were not able to be tested.

#### II.—UNDULANT FEVER IN NEW ZEALAND.

Up to November, 1931, particulars were obtained of thirty-six cases of undulant fever occurring within the last three years. Of the persons affected twenty-seven were males and nine females, and 80 per cent. of the cases occurred in the Auckland, Waikato, and Wanganui-Horowhenua districts. Three cases only were reported from the South Island. Most cases were mild in type, but one death occurred. The occupations concerned were as follows: Dairy-farm workers, 17 cases; dairy-farmers' wives or children, 4; all other occupations, 15.

Included in the fifteen "other occupations" were a veterinary surgeon, a slaughterman, and a bacteriologist, all of whom had been in direct contact with infected cows or their discharges.

As dairy-farm workers represent approximately 5 per cent. of the total population, and the total dairy-farm population only 12.7 per cent. of the total population, it is apparent that this class of the community is exposed to a special risk as regards this disease. Infection by contact with infected animals must therefore involve a greater risk than does the drinking of infected milk to which the greater part of the general population is exposed.

#### III.—INFECTION AMONG DAIRY-FARM WORKERS.

During the investigation inquiry was made regarding the health of 326 farm workers and 322 persons living but not working on dairy-farms. Of the 326 workers 247 gave no history of any illness, thirty-one had suffered from more or less severe forms of "influenza," and forty-eight from other diseases. Influenza is a disease most easily confused with undulant fever, and there is a great likelihood of mild cases of the latter being regarded as influenza by the patients themselves and even by medical men. Of the thirty-one "influenza" patients fourteen had been confined to bed for a week or longer, and the remaining seventeen had also had bed treatment for shorter periods. In two or three cases the symptoms and course of the illness were suggestive of undulant fever. The "influenza" rate of farm workers compared with adult farm residents not working among cows was as follows: 326 farm workers accounted for thirty-one cases of "influenza"; attack rate, 9.5 per cent. 140 other adults accounted for five cases of "influenza"; attack rate, 3.6 per cent.

The other forty-eight diseases mentioned may be classified as follows: Rheumatism (all forms including neuritis), 23 cases; pneumonia, 7; pleurisy, 3; bronchitis, 1; appendicitis 4; hepatitis and jaundice, 3; other diseases, 7.

Rheumatic symptoms are a common accompaniment of undulant fever, but in most of the above cases the rheumatism was of a long-standing chronic nature. In one case only was there a strong likelihood of undulant fever having occurred.

As regards lung conditions the literature of the disease records pulmonary abscess and bronchopneumonia as possible complications. In the Danish cases reported by Kristensen bronchitis was a frequent symptom of undulant fever. In this series two workers who had suffered from pneumonia, one who had had bronchitis, and one pleurisy, showed the presence of agglutinins in their blood. The possibility of their having suffered from undulant fever cannot therefore be lightly dismissed.