

Appendicitis, in common with other acute abdominal conditions, is frequently confused with undulant fever. In one of the four cases mentioned agglutinins were present in the blood, and full particulars of the other three were not available.

It is on record that undulant fever has been wrongly diagnosed as cholecystitis or liver abscess. The two cases of hepatitis and one of jaundice reported in this series may possibly have been wrongly diagnosed.

As mentioned above, 104 blood-samples were obtained and tested for the presence of specific agglutinins. In seventeen sera agglutinins were found to be present in dilutions ranging from 1/32 to 1/4000. Ten of the persons concerned gave no history of illness, but the remaining seven had suffered from one or other of the diseases mentioned above.

These agglutinins tend to disappear possibly within twelve months of an infection, and it is probable therefore that 17 per cent. does not represent the total percentage of farm workers who at one time or another have had agglutinins in their blood. Investigations made at two of the largest bacteriological laboratories on upwards of two thousand sera taken from the general population in New Zealand go to show that the percentage containing *Brucella* agglutinins is not more than 1 per cent. It is evident, therefore, that farm workers and others coming into contact with infected animals, as compared with the general population, are exposed to very much greater chances of infection. This may vary from a serious illness of some weeks' duration to attacks of minor indisposition or even a complete absence of symptoms. Ambulatory undulant fever is known to occur, and it is not unreasonable to suppose that there exists among dairy-farmers a certain amount of *Brucella* infection not severe enough to send the sufferer to bed, but sufficient to cause at least some temporary inconvenience and loss of efficiency. The present tendency to label all minor illnesses "influenza" does much to obscure the existence of such a similar disease as undulant fever.

#### IV.—SUMMARY AND CONCLUSIONS.

(1) Contagious abortion has existed in New Zealand during more than thirty years, and is now very widespread.

(2) The disease as it affects man in New Zealand is clinically mild, and the infectivity is low.

(3) Most dairy-farm workers, and others coming into direct contact with cattle, are exposed to the risk of direct infection with *Brucella abortus*. The general population is exposed to a very much smaller degree of risk through consumption of raw infected milk.

(4) Thirty-six diagnosed cases of undulant fever during the past three years have been noted. It may be considered an occupational disease of the dairy-farming industry.

(5) A survey was made of 109 dairy-farms taken more or less at random.

(6) An undue amount of "influenza" was reported among 326 dairy-farm workers as compared with 322 other residents on the same farms. Certain other diseases were reported, some of which bear some resemblance to undulant fever.

(7) Seventeen per cent. of dairy-farm workers were found to have specific agglutinins in their blood, as compared with approximately 1 per cent. of the general population.

(8) It is probable that a certain amount of clinical undulant fever is undiagnosed, and that a mild ambulant form of the disease accounts for some inconvenience and loss of efficiency among workers on dairy-farms.

### THE SANITARY RECONSTRUCTION OF NAPIER AND HASTINGS.

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#### REPAIR OF EARTHQUAKE DAMAGE.

The most notable event of the year has been the reconstruction of the water and sewage systems in Napier. To recapitulate briefly the damage done by the earthquake it may be stated that all the large artesian wells were thrown temporarily out of commission through breaks in the bores, the pumping-station was wrecked, the steel water-tower was demolished, and both high- and low-level concrete reservoirs were damaged by cracks. In addition, numerous breaks occurred in the reticulating mains, resulting in great loss of water. As regards the sewage system, that portion serving over eight hundred houses in Napier South was so badly damaged as to necessitate complete renewal: the compressed-air ejectors were thrown out of action through breaks in the air-main, and this factor prevented sewage from the hill areas reaching the outfalls. In addition, the majority of house-fittings were damaged, and many drains and sewers in other parts of the borough were found to be blocked.

Within a week the pumping-station was put into commission, but the supply of water from the wells was greatly reduced, and was insufficient to keep the pumps fully occupied. This, combined with the great leakage of water from faulty reservoirs and mains, enabled an intermittent supply only being maintained for some weeks. Chlorination of the water was instituted to guard against the risk of pollution between the wells and the pumping-station. In this portion of the system the water was conveyed at very low pressure through a badly cracked concrete pipe.

The supply improved as leaking mains were discovered and sealed, and the artesian bores repaired. To assist the latter, three new 6 in. bores were sunk to a distance of about 300 ft., a cast-iron main replaced the shattered concrete one, and a booster pump was installed to facilitate