

(2.) THE EPIDEMIC.

On the 7th April, 1922, the Medical Superintendent of the Asylum informed the Medical Officer of Health that he had several cases of typhoid among the 1,100 patients in the Asylum, and the possibility of the water-supply—which was derived from the Mount Albert borough system—was discussed. At that time, however, only one case of typhoid had been notified in the Mount Albert district, the notification being received in February. So far since the 1st January the typhoid returns in the whole metropolitan area showed the following figures: January—City, one case. February—City, two cases; Mount Albert, 1 case. March—City, three cases. 1st–7th April—No cases in city or suburbs. Of the cases in the city some at least were probably infected outside the city or suburban area, and there was nothing suggestive of an epidemic in any part of the Auckland district. The water-supply at the Asylum was not therefore suspected. Next day the first case of the epidemic in the Mount Albert Borough was notified, but was at first diagnosed as pneumonic influenza.

Further samples of the water were taken on the 10th April and showed *B. coli* in 0.01 of the water at the pump-well; and, on learning from the laboratory on the 13th April that the results were so unsatisfactory, and in view of the fact that a number of cases diagnosed as gastric influenza existed in the Mount Albert district, Dr. Hughes thought it well to direct the Borough Council to shut off the water-supply from the Mount Albert Springs. This was possible since by an arrangement with the City Council a connection between the city and the borough mains had been made some years before, so that a supplementary supply from the city might be obtained in dry weather when the borough supply was deficient.

On the 13th April the reservoirs were chlorinated, and the mains and all dead ends flushed out with city water. The city water was then turned on throughout the area.

On the 17th April notices were also published in the Press warning the inhabitants of the area supplied from the Mount Albert Borough station to boil the water and take other precautions. The public schools were closed, since it was not possible to prevent the children drinking unboiled water from the school taps.

There is little doubt that this prompt action by the Medical Officer limited the outbreak very considerably, and it is satisfactory to note that three weeks from the date of these measures the number of notifications began to drop rapidly.

On the 17th April three notifications of typhoid were received from Mount Albert, and thereafter they began to come in rapidly. A number of so-called gastric-influenza cases were now diagnosed as enterica. On the 18th April sixteen cases were notified, and on the 19th fifteen.

The total number of cases, inclusive of those occurring outside the Mount Albert water-supply area but obviously connected with the Mount Albert epidemic, is 216, of which sixty were in the Asylum. Included among cases obviously connected with the epidemic are several children living in the city area but attending the Point Chevalier School, which has the Mount Albert water-supply. Other cases in the city or Mount Eden areas worked or visited in the Mount Albert area within two weeks of the beginning of their illness.

The progress of the epidemic is shown as follows:—

Date.	Cases.	Date.	Cases.
April 3–10	1	May 22–29	0
April 10–17	23	May 29–June 5	4
April 17–24	59	June 5–12	0
April 24–May 1	35	June 12–19	0
May 1–8	17	June 19–26	1
May 8–15	11	June 26–30	0
May 15–22	5		
			156

These figures do not include the sixty cases in the Asylum, which began chiefly in the first two weeks of April. Deaths reported and attributed to the epidemic at Mount Albert numbered fourteen. In the Mental Hospital a further seventeen deaths occurred from the 1st April to the 31st December.

(3.) EVIDENCE THAT THE MOUNT ALBERT WATER-SUPPLY WAS THE SOURCE OF INFECTION.

First Area affected: A glance at a spot map shows very conclusively how markedly the area supplied from the Mount Albert pumping-well has been picked out by the incidence of the typhoid cases. It forms a long narrow wedge running up between the city and the Mount Eden Borough, both of which are supplied from the city supply from the Waitakerei Ranges, ten miles out of the city. The edges of this wedge are sharply defined. For example, four adjacent streets running from Mount Albert to Mount Eden and bisected evenly by the boundary show on the Mount Albert side of the boundary fourteen cases and on the Mount Eden side one case.

Typhoid cases have occurred in every part of the Mount Albert water area, but in two districts the cases are sparse as compared to the population. In one of these the city supply mixes with the Mount Albert supply, and in the other a high proportion of the residents are returned soldiers who have been protected by vaccination.

The total population of Auckland City and metropolitan area is 157,000. Of this population 11,300 persons live in the area supplied from the Mount Albert springs, among whom there occurred 195 cases of typhoid between the 7th April and 20th May. During the same period among the 145,700 persons living outside the area so supplied, thirty-eight cases of typhoid have been reported, and of these fifteen were among persons who, like the Point Chevalier school-children, were known to