

SECTION 7.—GENERAL.

During the year the usual routine work of the Department has been carried out in the direction of supervision of water-supplies and of refuse and sewage-disposal schemes, inspection of buildings, abatement of nuisances, &c.

Considerable time has been devoted to the preparation of regulations dealing with the many matters which come within the purview of the Department.

In conclusion, mention should be made of the Wellington municipal milk scheme, which is now in full operation and working satisfactorily. The Wellington City Council at the present moment supply some seventy-five thousand people (approximately three-quarters of the total population) with pasteurized bottled milk treated and distributed by the Municipality.

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APPENDIX A.—NOTES ON AN OUTBREAK OF TYPHOID FEVER IN THE MOUNT ALBERT DISTRICT, AUCKLAND.

(By R. H. MACKILL, Acting Medical Officer of Health, Auckland.)

(1.) HISTORICAL.

Mount Albert is a suburban borough adjoining Auckland City and Mount Eden Borough. The total population of the borough is 12,500. It has its own water-supply, which is derived from a spring about a quarter of a mile outside the borough boundaries, situated in the centre of some 20 acres of grasslands belonging to the Avondale Asylum. The spring is tapped at the bottom of a well which passes through volcanic scoria rock. From this well a yield of about 15,000 gallons an hour has been obtained, sinking to about two-thirds of that in dry weather, when an auxiliary supply is obtained from the city mains. The catchment area of the spring covers the slopes of an extinct volcanic hill about 400 ft. high. This is merely a volcanic cone of ash and scoria with a central crater. A few lava-streams come from the hill, and the spring is probably an old water-course flowing from the hill, but covered with lava and scoria ash. These scoria beds vary in depth, being several hundred feet at the actual cone, but thinning off to nothing at the edges of the volcanic area. The stream forming the water-supply at Mount Albert is deeply covered throughout the catchment area. The lava beds are much broken and fissured, doubtless the result of accumulations of steam when the lava covered streams or swamps. Some big passage-like caves thus formed are known to exist on the hillsides. It is difficult in such country to know what the actual catchment area is, as springs flow out from the cone in various directions; but on the possible catchment there are now about one thousand houses, most of which have been built in the last five or six years.

The spring was first used about twelve years ago—the water being pumped to two reservoirs, one near the top of the hill and the other half-way down. Besides the Mount Albert Borough, the Avondale Asylum and the Point Chevalier School, situated in the city bounds, are supplied. When the supply was first taken for public use there were few houses on the catchment area and the water was very pure, both by chemical and bacterial analyses. Since then the number of houses built on this area has rapidly increased. There are no sewers, and each household disposes of its slop waters by letting them soak into very porous scoria soil, dumps being dug for the purpose. Some of the houses have water-closets connected to septic tanks, the effluent from which is conducted to such dumps. For other houses there is a nightsoil service, the excreta being removed from the district.

As might be expected, this increase of population on the catchment area has been a source of anxiety to the Health Department, and a watch has been kept on the purity of the water for some years. Warning that the supply was beginning to show signs of diminished purity was sent to the Borough Council in 1913, but the water was not in such a condition as to occasion serious alarm till November, 1921. For example, the following were the results of bacterial and chemical analyses in January, 1921:—

Bacterial.—Sample taken on 20th January, 1921. Colonies on agar at 37° = 24. Colonies on gelatine at 22°C.—Liq. 5, non-liq. 44 = 49. Smallest quantity of water showing faecal *B. coli* = 5 c.c.

Chemical.—Sample taken on 13th January, 1921. Free ammonia, 0.0007 part per 100,000; alb. ammonia, 0.0023; chlorides, 3.1; nitrites, nil; nitrates, 0.43; oxygen absorbed in four hours at 80°F., nil; odour at 100°F., nil; colour, nil; sediment, nil; reaction, faintly alkaline; appearance, brilliant.

Chemically, therefore, the water was still satisfactory. The Council, however, were advised to be making preparations for obtaining the borough supply from another source, as it was evident that the increasing population was a growing danger.

In November, 1921, the bacterial test showed the presence of *B. coli* in 0.1 c.c. of the water, while the number of bacterial colonies in gelatin was 127 per cubic centimetre. Hitherto the water had never shown the *B. coli* in less than 2.5 c.c., and the colonies in gelatin plates were about 50 to 60 per cubic centimetre. The Medical Officer of Health, Dr. T. Hughes, thereupon warned the Council that the water was no longer safe, and, pending arrangements for securing another supply, directed that chlorination should be done. A temporary chlorinating plant was established at the pumping-station, and the result of a test of the water after treatment made on the 13th December, 1921, showed that the smallest amount of water in which *B. coli* could be found was 50 c.c. The chlorination was therefore at that time effective. Towards the end of March the Medical Officer of Health recommended that the amount of chloride of lime used should be increased. Apparently there had been some complaint from some ratepayers as to the taste, and the Council had reduced the proportion below that originally indicated as necessary by the Medical Officer of Health.