In a degree proportional to our population in this country we also must have these successive additions of influenzal infection of increasing virulence. The type introduced in May would be less infective than that arriving in September and October, and this must have had an influence in enhancing the virulence of the primary wave. In Auckland, on the 11th and 12th October, two troopships and the Vancouver mail-boat arrived from overseas, the latter with about 80 cases of influenza, and the former with men convalescent from attacks in English camps. Among these carriers may have been present.

Infection in Ships' Crews.—Reference has already been made to the apparent influence of infection in the maritime ports. In New Zealand the incidence of the disease seems specially heavy among the crews of vessels passing up and down the coast.

Climatic Influences.—Influenza is generally a winter disease, and for the last two years the weather all over the world has been unusually wet and cold, both in summer and in winter. In New Zealand we have suffered also, and catarrhal diseases have been encouraged. It is of interest to note that horticulturists throughout Britain, America, and New Zealand have suffered from a series of epidemics among fruit-trees and vegetables during the same period. Wet and cold favour the development of all low forms of vegetable life, whether preying on human beings or on the higher plants. October was a particularly wet, stormy month, especially in Auckland, and this must have had an influence in stimulating the activity of the catarrh-producing organisms, especially those causing pneumonic complications.

The rise each winter in deaths from pneumonia and bronchitis is well known, and applies equally to New Zealand. The Principal Medical Officer, Featherston, in his report draws attention to the influence of the exceptionally severe weather of July and August in encouraging the first epidemic wave, while after the storm of the 6th and 7th November, when the second wave was in progress, the improvement in the weather was followed by a marked diminution in the proportion of pneumonic complications.

It is obvious that one effect of bad weather—the driving of people into shelter—must directly influence the spread of infection by contact. In addition to this the effect of cold and wet in diminishing resistance must be considered.

Aggregation of Population.—The influence of troop-trains in spreading infection has been mentioned, and we have followed the spread of the epidemic from Auckland to the various camps by this means. In the same way the railways have been a potent factor in carrying influenza during the movement of population from country to town in connection with Peace celebrations at the time when the epidemic was in its early stages of development.

Lack of Natural Immunity in New Zealand.—The absence of acquired immunity in a rural population is well known, and in New Zealand such population predominates. Moreover, the isolated position of the average country settlers and the general good health of the community must result in an unusual lack of immunity of catarrhal and pneumonic diseases in the New Zealand people. That such lack exists we know from the reports of the Medical Officers in charge of troops in the Expeditionary Force overseas. (See report on vaccination of New Zealand troops, *Lancet*, 16th October.) This peculiarity must have provided an admirable nidus for the reception and exaltation of the organism of influenza and its attendant complicating infections.

Summary.—Reviewing these factors making for the severity of the influenza outburst of November last we are able in a measure to grasp the position. The influenzal infection found in 1918 world-wide climatic conditions favouring its spread. It found gatherings of troops to exalt its virulence, and by the transference of such troops about the world it was able to reach the other countries with ever-increasing infectivity. The influence of the appalling prison camps in Germany and Austria has not been discussed, but among the starved crowded soldiers there abnormal infections would find a good breeding-ground. Either in this way or simply from camps of unprotected persons the ordinary influenzal virus became associated with pneumonia-producing organisms capable of unusual potency in favourable conditions. Such conditions presented themselves in New Zealand in the climatic disturbances, the unusual movements and aggregation of troops, and the natural lack of immunity of the people. The virulence would increase naturally as the primary epidemic spread over the country, and as the successive accretions of higher virulence came from overseas. At Auckland it found an aggregation of susceptible troops at Narrow Neck which would doubtless give it an extra fillip, and just following this came the overseas vessels with a further addition of infectious cases. The result was an explosion, just as in other countries similar accretions led finally to similar outbursts about the same time. Owing to the aggregation of persons of the most susceptible age in the training-camps the effect of this epidemic was of course felt there more perhaps than among the general population, and but for the effective measures taken by the Medical Staffs would have resulted in an even higher mortality.

R. H. Makgill, Lieut.-Colonel.

REPORT OF CAPTAIN J. W. CRAWSHAW, N.Z.M.C., ON CASES OF CEREBRO-SPINAL FEVER AT FEATHERSTON MILITARY CAMP FROM JULY TO DECEMBER, 1918.

Detailed Account of Cases.

The total number of cases was 40, of which 36 were soldiers and 4 civilians. During July 4 cases were admitted; during August, 6 cases; during September, 1 case; during October, 7 cases; during November, 18 cases. One civilian case was seen in July, 1 in October, and 2 in November.