

a simple solution of the question of the origin of the epidemic to assume that the "Niagara" arrived with the epidemic all ready-made on board. This solution, however, does not stand the test of scientific inquiry for the following reasons:—

1. The itinerary of the passengers to and from Europe fails to produce any connection between the New Zealand outbreak and any previous outbreak in other countries. They must have left Britain not later than the 7th September, therefore before the second wave began there, and passed through America between the 12th September and the 24th September. The vessel sailed from Vancouver on the 24th September. We know that the epidemic, even in the eastern States of America and of Canada, did not develop till the end of September, and there was no epidemic at Vancouver or San Francisco when she left there. She left Honolulu on the 1st October, and a few days afterwards the epidemic began on board. Yet the United States Public Health reports show that even by the 18th October very few cases had appeared at Hawaii, and they were very mild in character. During the whole of October only fourteen cases were reported in Honolulu. Where, then, could the "Niagara" have picked up this virulent type of infection? Had it been of the type which visited the transport "Tahiti," or which we met in November, she would not have left America or Honolulu more than a few days before the majority of those on board would have been down with the disease, and a high percentage would have died, and her visit to Fiji would have left a trail of disaster behind her. Yet none of these things happened. Those who advocate the "Niagara" as the source of the epidemic in New Zealand are conveniently silent about the source of the epidemic on the "Niagara."

2. The disease which existed on the "Niagara" on her arrival at Auckland had not the intensity of the epidemic of November, and, indeed, was no more severe than the type which already existed in Auckland on her arrival. Had it been otherwise it would have been impossible for the passengers to have escaped as they did, yet we find that among all classes only ten persons out of 312 had been affected. Out of over one hundred cases amongst the crew only one death had occurred, and that in a man already weakened by other causes. On their arrival in Auckland twenty-nine cases were taken to the Hospital, and of these only two were regarded as pneumonic, and only one of these cases died. Of the nurses who attended the "Niagara" cases one died, but not from pneumonic influenza, but from cerebro-spinal fever. Many nurses were infected in the Auckland Hospital, but with the widespread epidemic already existing there is as much likelihood of their having received their infection from outside as from the "Niagara" patients, and as the wards were soon much crowded with these city cases there is no reason to seek further for conditions sufficient to breed a very acute type of disease in the wards and among the attendants. The medical opinion of the doctors on board at the time of the arrival was that the cases were no more severe than the type already prevalent; and we must assume that the same opinion was held by the medical staff at the Hospital, since no warning was issued that a special virulent type of disease had arisen, and special precautions as regards isolation of the cases and of the nurses were not considered necessary.

3. A careful inquiry into the history of the passengers landing from the "Niagara" failed to reveal any instance in which their stay at hotels and boardinghouses or with friends produced an outburst of influenza. These arrivals scattered all over New Zealand, and had they been carriers of infection would have produced a series of outbursts wherever they went. Yet the outburst took place only in Auckland, and that was a fortnight after the boat arrived.

Evidence, then, fails to convict the "Niagara" as the source of the epidemic. There is, in fact, more reason for thinking that New Zealand gave the severe type of infection to the "Niagara" on her arrival than that the "Niagara" produced the epidemic in New Zealand. It is unfortunate that the situation has been clouded in the public mind by political considerations, which do not favour a dispassionate view of any subject. It must be remembered that this epidemic has appeared with the same element of surprise in all countries, and that the greatest medical authorities in England and America have freely admitted a lack of that omniscience of the sources of the epidemic claimed by some of our local sanitary critics. The specific virus must have been carried to all countries in a form other than a virulent epidemic wave, and doubtless the same thing occurred in New Zealand. During September five vessels from Europe or America arrived in Auckland, and in October there were six. Many of them had on board convalescents from European military hospitals, and among the crew, probably, other potential carriers existed. We know that the mercantile vessels must have spread the disease, and it is significant that the water-side workers of New Zealand, who were naturally in closest touch with the crews of vessels, were the first to show symptoms of alarm as to the developing epidemic. Probably these eleven vessels coming to Auckland all added their quota to the massing infection, the "Niagara" yielding her share with the rest. That October should happen to be a particularly cold and wet month at Auckland, with a rainfall of over 8 in., doubtless added a very powerful influence making for prevalence of catarrhal infection.

We have, then, at Auckland the necessary ingredients for an explosion—a population of susceptible people, more especially Natives in camps and elsewhere, a catarrhal epidemic, and a virus of special potentiality from overseas. The November outburst was the result. The low degree of resistance to pneumonia of the New Zealand troops has been demonstrated in Britain. Their lack of resistance is probably the result of the general healthful condition of life and climate here, whereby our population fails to acquire that natural immunity to disease of the type which the slum dweller derives from constant struggle with invading organisms. It is, doubtless, to this that we owe the very violent character of the outbreak. But we can go further and conclude that to this very violence we owe our present comparative immunity from a recrudescence of the disease such as visited Britain and America in January. Our vaccination may be said to have produced a severe reaction, but it has been effective. It is to be regretted that vaccination of this sort is evanescent in the case of catarrhal infection, and that we cannot hope that our immunity will be indefinitely prolonged.

A report of the work done in the Bacteriological Laboratory, Wellington, follows, being an extract from the annual report of the Government Bacteriologist for the year.