V. RELATIONSHIP BETWEEN DENSITY AND INCIDENCE

Let us look more closely into this question. To get dependable results we should require figures for a large number of areas similar in all respects except in density. The nearest approach at our disposal consists of the Auckland urban area, less the North Shore, with Otahuhu (which is virtually part of Auckland) thrown in. This area is divided into eleven subdivisions (see Fig. IV) of varying density. Functionally the population concerned is fairly homogeneous, but unfortunately there are many differences, socially and developmentally, between one area and another, and it cannot be held that the requirements mentioned above have been completely fulfilled.

The next illustration (Fig. III) shows, on the left, the area and population of each subdivision, and on the right the incidence of positive cases to the end of March, 1949. An inverse relationship between density and incidence is remarkably well demonstrated down to and including One Tree Hill, especially if we accept that Otahuhu's incidence may have been boosted by influx from the country. Beyond that something appears to have gone wrong. That Ellerslie and New Lynn should have escaped so lightly seems very strange; though relatively sparsely populated, they show incidences such as we should have expected only from the heart of the city.

Ellerslie would not have puzzled a racing-man for so long as it puzzled me. I have been told (by an Aucklander) that its racecourse is the most important in New Zealand. Several times each month the actual density of persons within Ellerslie's confines is intense. For this reason its proper place is probably at the head of the column, and its low incidence is in accord.

New Lynn is not so easily accounted for; in its case the story is perhaps not complete. (Two of the seven cases notified in April in the area now being discussed were from New Lynn, bringing its incidence to 6·3 per 10,000; this was the only area significantly affected during April.) It is a district, however, whose expansion (23 per cent. between 1936 and 1945) has been largely due to an influx of urban dwellers from the city, and it differs sharply in this respect from the heavily affected towns on the southern side.

It is at least arguable, therefore, that these two apparent exceptions are not really exceptions at all, and that, in fact, their closer study lends support to the theory. If we ignore them for the moment, the other areas of low density (Mount Roskill and Mount Wellington) may perhaps be regarded as showing the early effects of increasing dispersal in eventually curtailing the incidence.

If the reader will look at Fig. III he can imagine Papatoetoe (3·2 per acre) just below New Lynn, with its incidence bar (17·5) projecting just below the edge of the diagram; and Papakura (1·2 per acre) second from the bottom, with its bar (58·3) projecting right off the page, more than three times as long. It is obvious that while they follow the same general tendency as the others, in their cases the effect is widely exaggerated, probably for the reasons mentioned above.

If Fig. III is held at arm's length, the eye gets some impression of the actual differences in density between the areas concerned. It is admittedly not easy to believe that variations of density of the order shown between, say, the seven most closely settled areas could produce the effects attributed to them. But it would be even more difficult to believe them due to chance or to the operation of some factor unrelated to density.