

explained on the basis of climate, density of population, character of preventive measures exercised, or any other determined environmental factor.

More details can be given only the briefest mention here. In order to secure reliable statistics of morbidity the Public Health Service has made special house-to-house surveys in a number of localities, ascertaining the number of persons affected, the dates of onset, and a few other simple facts in accurately enumerated groups representative of the general population. Partial analysis of the results of these surveys in eight localities, giving an aggregate of 112,958 persons canvassed, shows the following as the chief facts of interest:

The percentage of the population attacked varied from 15 per cent. in Louisville to 53.3 per cent. in San Antonio, Texas, the aggregate for the whole group being about 26 per cent. This agrees with scattered observations in the first phase of the 1889-90 epidemic, when the attack rate seems to have varied within about these limits.

The case incidence was found to be uniformly highest in children from 5 to 14 years of age, and progressively lower in each higher age group. It was slightly higher in females than in males of corresponding age; usually higher in the white than the colored population.

The ratio of pneumonia cases to total population varied from 5.3 cases per 1,000 in Spartanburg, S.C., to 24.5 per 1,000 in the smaller towns of Maryland. The pneumonia rate showed little correlation with the influenza attack rate.

The ratio of deaths to population varied from 1.9 per 1,000 in Spartanburg to 6.8 in Maryland towns. The death rate was by no means parallel to the influenza attack rate, but was closely correlated with the pneumonia rate. In other words the case fatality rate of pneumonia tended to be fairly constant, around 30 per cent. The death rate was notably high in children under one year old, in adults from 20 to 40 and in persons over 60; high in males than in females of comparable ages; higher among the whites than the colored.

Concerning the important question of immunity conferred by an attack of influenza, the evidence is not conclusive, but there is reason to believe that an attack during the earlier stages of the epidemic confers a considerable, but not absolute immunity in the later outbreaks.

In general the pandemic of influenza was largely similar to that of 1889-90 in its development, first a mild form, later in a severe world-wide epidemic, in the rapidity of its spread and its high case incidence. It has however been notably different in a much higher mortality, especially among young adults. Such evidence as has been gathered confirms the conclusion previously reached that it is transmitted directly and indi-