

for the members of the Local Board being appointed for three years, one-third retiring annually. This, perhaps, assisted somewhat; but so long as the Local Board had no power to definitely levy an assessment for its own work, just so long its members, who came to be mostly a committee of the municipal council, failed to develop any new lines of health work for lack of funds, and it was only in the larger cities that annual grants were placed in the estimates for

public health purposes. The remedy became apparent, and in different years at the annual meetings of the executive health officers of Ontario, the necessity for enlarging the unit of Local Health organizations in Ontario, as had been done for the public schools by Dr. Egerton Ryerson, from township inspectors to county inspectors, was debated and generally coincided in. Along what lines this proposal was worked out will be dealt with again.

TRANSMISSION OF PLAGUE

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Long immunity has made us forget the horrors of the "black death," and Defoe's "Journal of the Plague" is to-day read with no more concern than his "Robinson Crusoe." But it should not be forgotten that long periods of quiescence are not by any means a new feature in the history of the disease. For instance, Bombay, after nearly two centuries of immunity, was attacked by plague in epidemic form in September, 1896.

Another cause of public indifference is the erroneous notion that, owing to modern sanitation, we are no longer susceptible to plague. That sanitation has improved in recent times is shown by the greater general healthiness as compared with the conditions obtaining two or three centuries ago; but so-called "ordinary sanitation" is of no greater protection against plague than against other insect-borne diseases such as malaria, yellow fever, relapsing fever, typhus fever, or filariasis. The vehicles of the plague germ are not sewage nor drinking water, but rats and fleas; wherever rats and fleas are to be found, there the conditions necessary for a plague epidemic exist. Indeed, within recent years plague outbreaks have occurred at Oporto, Glasgow, Naples, Cape Town, Sydney, San Francisco, Buenos Ayres, East Anglio and other places, some of which may well boast of their systems of sanitation, systems, nevertheless, inferior to those of Imperial Rome; yet Rome was desolated by a fearful epidemic of plague in the year 291 B.C.

Recent investigation concerning the epi-

demology of plague has shown that in order to prevent the introduction of the disease into any previously immune place we must prevent the introduction of plague-infected rats.

The fact that rats are the main carriers of plague from place to place, though only recently established by the modern sanitarian, was well known to the ancients. Of this we have irrefutable proof. I need but mention the golden images of plague-buboes and rats which the plague-afflicted Philistines presented as a trespass offering in returning the Ark, and the colonial coin of Lucius Verus struck at Pergamum at the time of a plague epidemic. On this medallion *Æsculapius*, god of medicine, is represented with a rat at his feet. He takes the place and attributes of a local deity—*Apollo Smintheus*, the destroyer of rats, "whose arrows spread the plague."

Both archæologists and zoologists have long entertained the belief that rats were unknown in Europe during the classic period, that the black rat (*Mus rattus*) was first introduced into Europe in the early Middle Ages, and that the brown rat (*Mus norvegicus* v. *decumanus*) did not arrive until the 18th century). With regard to the brown rat, we know that large hordes crossed the Volga in 1727, but this fact does not prove that the brown rat first migrated to Europe at that date. Indeed, *Ælian*, in his "De Natura Animalium," probably refers to this species when he relates that the "Caspian rat" at times migrates in numberless swarms and fearlessly swims across rivers, whilst holding on by