

Havana physician Dr. Carlos Finlay had propounded the view that the mosquito was responsible for the transmission of yellow fever and it was natural that Reed and Carroll should turn their attention to the influence of the mosquito.

The results of the work of these investigators was to show that yellow fever could be communicated by blood taken from patients on the first or second day of the disease. That it could be transmitted by a mosquito (*Stegomyia fasciata*) which had sucked the blood of a yellow fever patient, but only 12 or 25 days after the insect had had its meal of blood. That is the parasite required to live a certain time in the mosquito. Further they showed conclusively that it could not be transmitted by fomites.

The practical outcome of this work has been that by excluding mosquitoes from the sick, *i.e.* prevention of infection of mosquitoes, and exclusion of mosquitoes from the well, *i.e.*, prevention of infection by mosquitoes: it has been possible to rid Havana of yellow fever. A practical result in disease prevention which has never been surpassed.

But the special interest which we have in this virus of yellow fever is in the fact that microscopic examination and culture methods failed to show organisms in the mosquitoes or in the blood during the first two days.

It was natural then that the filtration test should be applied and with positive results it was shown that the virus passed freely through a Berkefeld filter which was impermeable for bacteria.

It is quite probable that other human diseases may be found to be due to ultra-microscopic organisms but as far as some of the disease of as yet unknown etiology are concerned, this is not likely. It seems that rabies for instance is not filterable. It is held back by the Pasteur filter.* Similarly vaccine virus will not pass through the filter. In regard to other diseases we do not know anything definite.

We may now ask ourselves what is the nature of these minute living particles? Are they simply smaller bacteria than we are accustomed to deal with, or are they a minute species of some type of animal parasite, or do they belong to a class of organism smaller and simpler than anything we have yet considered possible?

These are difficult questions to answer, but in regard to the first, we may perhaps be a little more positive.

I called attention at the beginning to the marked uniformity of size among the bacteria. That in itself is no proof that there may not be bacteria many times more minute than those we are accustomed to, but it is a presumption against that view. A more important reason

*Recent work seems to show that the virus of rabies can be filtered through the most permeable of these filters.