The Transmission of *Litomosoides Carinii*, Filariid Parasite of the Cotton Rat, by the Tropical Rat Mite, *Liponyssus bacoti* [1]

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The authors recently reported (*2*) the development of *Litomosoides carinii*, filariid parasite of the cotton rat, *Sigmodon hispidus*, from the microfilarial to the infective stage in the tropical rat mite, *Liponyssus bacoti*. We now have experimental evidence that the tropical rat mite serves as a vector of this filariid.

Four albino rats, 30 days old, were used in the experiment. Two of these rats were placed in individual wire-mesh cages, each cage being placed in a separate box beside a similar cage containing an infected cotton rat. A colony of mites were developed on each of the two cotton rats in their respective boxes prior to the introduction of the albino rats. The position of the two cages in each of the two boxes was periodically interchanged so that the mites could more readily have access to the albino rats after having fed on the infected cotton rats. The other two albino rats, which were used as control animals, were placed together in a wire-mesh cage. This cage was placed in a box, which harbored no mites, beside a similar cage containing a cotton rat heavily infected with *L. carinii*. The position of the cages containing the control rats and the infected cotton rat were also interchanged periodically. All three boxes, the two with the mites and the one without mites, were kept in the same room.

The two albino rats subjected to contact with the mites were autopsied 42 and 44 days after being placed in the mite colonies with the infected cotton rats. The rat autopsied after 42 days contained seven *L. carinii* worms in the pleural cavity ranging in length from 1.165 to 12 mm., while the second rat contained two worms, one 9 mm. and the other 42 mm. in length. The control rats were negative when autopsied after 44 days.

The length of the infective stage within the mites was found to be from 800 to 1,000 μ. It is interesting to note that the smallest worm found in the pleural cavity of the infected albino rat was only 165 μ longer than the largest infective form found within the mites. This indicates that either the parasite reaches the pleural cavity soon after gaining entrance to the rat or that growth is very slow until the pleural cavity is reached. It is also of interest that a length of 42 mm. could be attained in 44 days or less.

In a similar experiment a cotton rat and an albino rat, which had been experimentally infected by the mite vector, exhibited microfilariae in their blood 80 days after exposure to infected mites. Epidemiological evidence indicated by naturally infected rats points to the possibility that rats may be infected and exhibit microfilariae as early as 50 to 60 days after exposure to infection.

Chandler (*1*) reported that at the Rice Institute an albino rat which had been housed with cotton rats infected with this filariid parasite was also found to be infected with this worm. The mode of infection was unknown.

Now that it is possible to infect rats readily in the laboratory, new fields of filariasis investigation are open. Immunological and prophylactic drug studies can be conducted, and age resistance of worms to various chemotherapeutic agents can be studied.

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References

1. CHANDLER, A. C. *Proc. U. S. nat. Mus.*, 1931, **78** (Art. 23), 1–11.
2. WILLIAMS, R. W., and BROWN, H. W. *Science*, 1945, **102**, 482–483.

Scanning Science—

The Eighth Annual Report of the Trustees of the Marine Biological Laboratory at Woods Hole has just been issued, and shows that the summer of 1895 was the most successful in the history of the Laboratory. At different times during the summer there were 63 investigators present, 42 of whom occupied special research rooms. At present 25 colleges subscribe for investigator's rooms, besides five societies, including the American Association for the Advancement of Science and the American Society of Naturalists.

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