

## THE MENACE OF RAT PARASITES IN VANCOUVER IN 1936

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Ever since the depression hit Vancouver in 1930, and the city fathers were forced to curtail the number of garbage collections to once in two weeks, and more recently to once a week, the Norway or sewer rat, **Rattus norvegicus** Erxleben, which has spread with commerce all over the world, has increased greatly and has spread practically all over the city. At the University, it occurred first in 1933, swarming out from the Endowment Lands garbage incinerator just west of the University on Marine Drive and has at times since then occasioned considerable loss by chewing up bulbs and sprouting shoots in the Botanical gardens. Moreover, it has occurred in some of the laboratories of the University.

This infestation at the University, isolated as it is by nearly two miles of forest-covered land, is nothing compared to the swarms of rats which have been reported from time to time in lanes, around garbage cans and in stores in the city. Elevator and feed-mill men have also complained about the vastly increased numbers of rats.

Now this rat carries with it the rat flea **Ceratophyllus fasciatus** Bosc., the rat louse **Polyplax spinulosa** (Burmeister) and the rat mite **Liponyssus bacoti** Hirst, not necessarily all together, but at one time or another. I have collected all three from rats in Vancouver. The parasites are not latent creatures merely sucking blood from their hosts; they serve as reservoirs of other parasites. The flea carries a trypanosome, **Trypanosoma lewisi** Minchin which occurs in the black, the brown and some wild rats the world over. This protozoan happens to be relatively harmless so far as we know and is probably carried by the rat louse as well. The flea also carries a very common tapeworm of rats and mice **Hymenolepis diminuta** (Rudolphi) which sometimes occurs in human beings also, chiefly in children. It is also concerned in the transmission of bubonic plague, and since this rat flea bites man when hungry, it has had much to do with the spread of the disease. Moreover, rats carry another flea of Asiatic origin, **Xenopsylla cheopis** Rothschild, the true plague flea, which has been spread to many parts of the world by these rodents, including many of the large sea-ports of the United States, especially the southern ones. I have not collected it, so far, from rats in Vancouver but it will probably turn up here sooner or later. I am on the look-out for it.

However, it is with the rat mite, **Liponyssus bacoti** Hirst especially, that this note is concerned. This winter and spring (1935-36) I was called into consultation by certain authorities over an outbreak of mites

in a large store on Hastings street in Vancouver where most of the employees, chiefly young women, were being bitten by mites. I collected samples and found that they were *L. bacoti* Hirst, the same as were sent to me previously by the authorities who first reported the outbreak to me. In the store, I found that the susceptibility of individuals to attacks varied considerably, but most girls complained of being bitten on the arms and around the ankles. The main source or centre of the outbreak was in cartons of merchandise in the basement where rats had made their nests; there were very few under goods exposed for sale on counters. The mites appear red when filled with blood and are then about 2 mm. long. Their excrement in and around the nests of the rats resembles a concentration of fly specks. From these breeding centres, the mites had spread to all parts of the building concerned, crawling freely and rapidly in all directions at night and generally hiding by day in cracks and crevices.

The itching and irritation to humans from the bites of the mites, lasts about two days on sensitive people and only a few hours on less susceptible ones. Fortunately, the mites do not appear to carry any disease as do the rat fleas.

As far as I can determine, this is the first record of this trouble in Canada. In the United States it has been reported by Dr. Bishopp who came across outbreaks in 1920 and 1921 in Dallas, Fort Worth and Houston, Texas, and in a small town in Mississippi. Previous to this, it had been reported in outbreak form in New South Wales and in Western Australia, Egypt, Argentina and Abyssinia. In every instance recorded, the trouble from mites followed a heavy infestation of rats and occurred more in stores and places of business than in private dwellings.

The essence of mite control is to eradicate the rats—generally a difficult problem but a first essential. It takes about ten days or two weeks, after the rats have been killed off, for the mites to disappear.

Shortly after recording the above, another severe infestation of mites in a large office building in town was reported to me. I was unfortunately unable to inspect the building myself and the specimens sent up for identification in an envelope were too battered to examine, but the report of conditions and the attacks on employees coincided exactly with the first infestation, so I feel convinced that the same species of mite was concerned. In this second case, a commercial exterminator was called in who treated the building extensively and the trouble soon subsided.