PRELIMINARY REPORT ON A NEW VECTOR OF ONCHOCERCIASIS IN THE AMERICAS: *SIMULIUM AMAZONICUM* (GOELDI, LUTZ, 1910 AND 1917)[1]

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Previous articles have described a recently discovered focus of river blindness (onchocerciasis) in an extreme northern part of Brazil (4,5). *The report that follows implicates the fly species* Simulium amazonicum *in transmission of the disease within part of that region.*

Introduction

As part of a PAHO-sponsored survey investigating onchocerciasis (river blindness) in Brazil, the authors of this preliminary paper captured *Simulium* flies with human bait. The aim was to determine which fly species were biting man, and what proportion of these man-biting flies were carrying the disease agent *Onchocerca volvulus.*

The larger survey to which this work relates was carried out over a wide area encompassing northwest Amazonas State and a major part of the Federal Territory of Roraima.[8] Preparation of a full report on the survey's entomologic and epidemiologic findings is now underway. The present preliminary report concerns only the observation of a new vector species, *Simulium amazonicum,* which was found naturally infected with *O. volvulus* on the banks of the Toototobi River in Amazonas State.

Materials and Methods

During the period of the survey (1 May through 6 June 1974), adult *Simulium* flies were captured on 48 occasions with human bait. A representative sampling of these flies (1,368 in all) were placed in 85 per cent alcohol, so as to fix any filarial parasites they contained. The flies were then taken to PAHO's new International Center for Training and Research in Leprosy and Related Diseases at Venezuela's National Institute of Dermatology in Caracas.

With the guidance of Dr. Jacinto Convit, Director of the Center, we attempted to stain *O. volvulus* microfilariae in these specimens, using the Mayer's hemalum technique suggested by C. S. Nelson (*6*). On the second try we obtained adequate coloration of a microfilaria (stage occurring in man), which was found in the stomach of one of the flies (see Plate 1).

Results

Four evolutive "sausage form" microfilariae were found in thorax muscle tissue from one

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[8] Additional information on onchocerciasis in this region is contained in Moraes, *et al.*, Onchocerciasis in Brazil, *Bull Pan Am Health Org* 7(4): 50-56, 1973, and also in Moraes and Chaves, Onchocerciasis in Brazil: New findings among the Yanomama Indians, *Bull Pan Am Health Org* 8(2): 95-99, 1974.

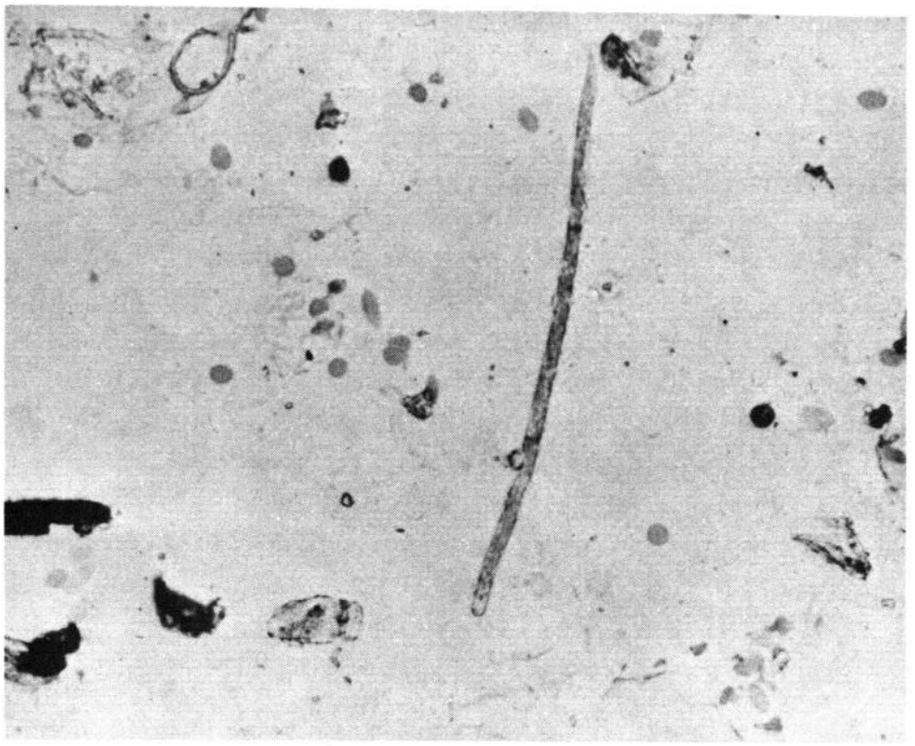
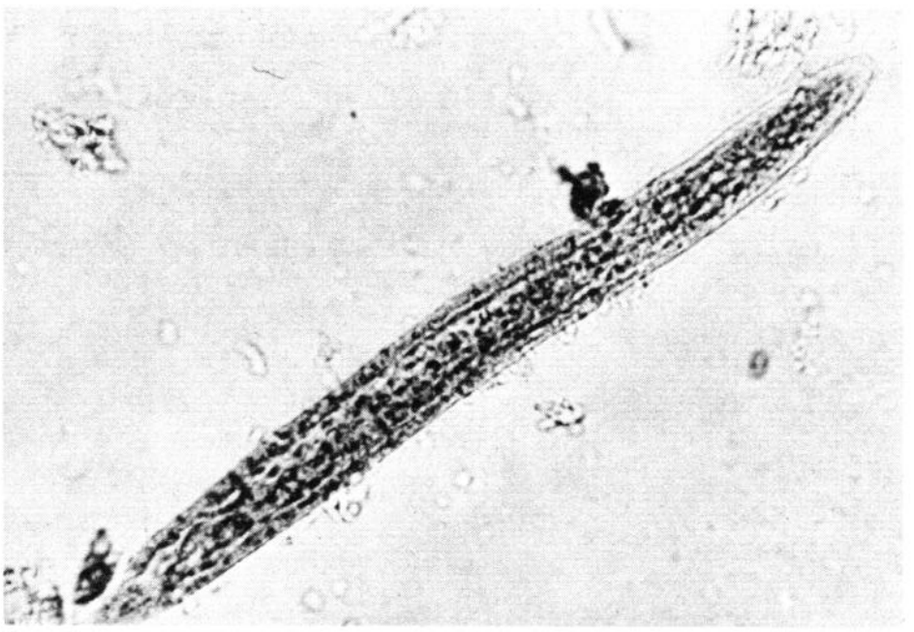
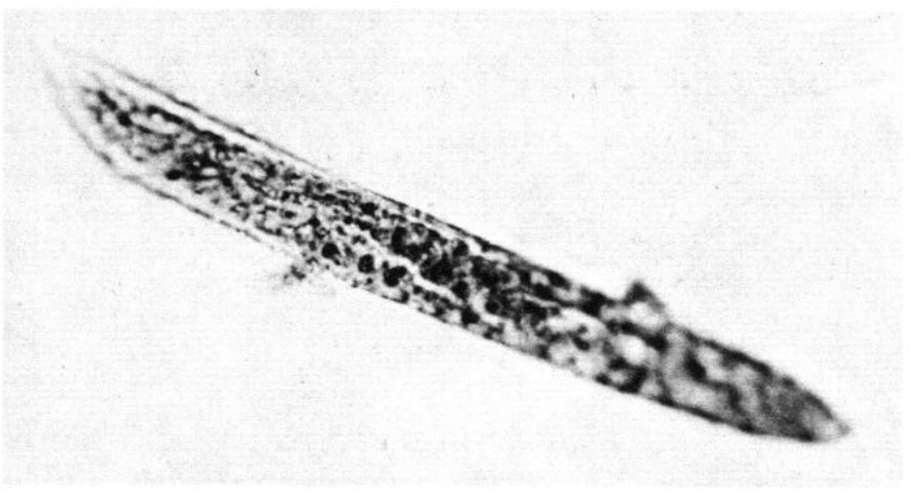


PLATE 1 (Top)–An *O. volvulus* microfilaria (a stage parasitic in man) found in the stomach of a *S. amazonicum* (x 10).



PLATES 2 and 3 (Middle and Bottom)–Two developing *O. volvulus* ("sausage form") larvae found in thoraxes of *S. amazonicum* specimens (x 40).



fly (number 220), two were discovered in another fly (number 422), and one was observed in each of five other flies (see Plates 2 and 3).

These naturally infected flies had been captured along the banks of the upper Toototobi River, close to a village (*maloca*) of Xiriano-teri Indians (belonging to the Yanomama group) where the rate of onchocerciasis in the population (as indicated by detection of microfilariae in skin samples) was on the order of 606 per thousand. The captured flies belonged to the only *Simulium* species observed biting man in this endemic area, a species identified by us as *S. amazonicum* (Goeldi, Lutz, 1910 and 1917).

This observation of "sausage form" microfilariae in seven *Simulium* flies from the Toototobi area was based on examination of 922 flies. We consider this rate of infection (0.75 per cent) low, in view of the high rate of onchocerciasis among the local people.

However, the presence of *O. volvulus* in nodules found on local residents and the absence of another filarial parasite, *Mansonella ozzardi* (*6*) (confirmed in every fourth person tested for *O. volvulus*), reinforces the hypothesis that the evolutive "sausage form" we observed was in fact *O. volvulus*, and that *S. amazonicum* is a vector of onchocerciasis along the Toototobi River.

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(*5*) Moraes, M.A.P., and G. M. Chaves. Onchocerciasis in Brazil: New findings among the Yanomama Indians. *Bull Pan Am Health Org* 8: 95-99, 1974. Also published in Portuguese in *Bol Of Sanit Panam* 77: 1-5, 1974.

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