past the third instar. The lumpy larvae, however, often reached the fourth instar and sometimes pupated. Few larvae in which infection was obvious were even seen to complete their life cycle.

Unfortunately, no measurements of infection levels in the population as a whole were made this year although it is hoped that this information will be forthcoming next spring. It is evident, however, that larvae with an obvious infection constitute but a very small fraction of the population. It would seem that the large accumulation of fat which results in part from the relatively long larval period coupled with the relatively low water temperature is quite favorable for the development of large numbers of spores per infected larva.

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PRIMATE MALARIA INFECTIONS IN *Mansonia uniformis*

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The general assumption that primate malarias are infective only to *Anopheles* mosquitoes has remained virtually unchallenged. Mulligan (1935) made a brief reference, with no details, to the presence of *Plasmodium cynomolgi* oocysts in *Culex vishnui*. Williamson (1937) reported human malaria infections in *Culex bitaeniorhynchus* but this report has not been given wide credence. Russell *et al.* (1946) mentioned, without details, the experimental infection of *Aedes regimae* and *Armigeres obturbans* with *Plasmodium knowlesi*, with the production of sporozoites in both species. Finally, Jaswant Singh (1949) reported (unpublished results by Mohan) the experimental transmission of *Plasmodium knowlesi* by the inoculation of sporozoites from *Armigeres obturbans*.

During studies on simian malaria in our laboratories, *Mansonia uniformis* were exposed to *Macaca mulatta* which were infected with *Plasmodium cynomolgi bastianellii*, a vivax-type parasite of Malayan macaques. These were wild-caught mosquitoes from a swamp area near Kuala Lumpur where monkeys have been found to be infected with malaria. The mosquitoes which are responsible for transmitting the monkey malaria in this area are unknown.

Nine experiments have been conducted in which *Mansonia uniformis* and *Anopheles maculatus* were fed on infected monkeys. Laboratory reared *Anopheles maculatus*, which are quite susceptible to this species of *Plasmodium*, were used as controls on the infectivity of the donor animal at the time of the feeding. Dissections were made starting 5.5 days after feeding and continued at intervals until sporozoites were expected in the salivary glands, at which time gland dissections were also made. *Mansonia uniformis* from the same area were dissected as controls for possible natural infections. See Table 1 for data.

TABLE 1.—Result of dissection of mosquitoes

Mosquito species	No. diss.	No. pos.	Percent pos.
Mansonia uniformis	213	41	19
Anopheles maculatus	56	42	75
Mansonia uniformis (unfed controls)	221	0	0

The average oocyst load in the infected *Mansonia uniformis* is much lower than that seen in *A. maculatus*. *M. uniformis* showed an average of 25 oocysts/positive gut (maximum number for one gut, 327 oocysts) while *A. maculatus* showed an average of 327 oocysts/positive gut (maximum number for one gut, 800 oocysts). The general pattern of development of the oocysts in *M. uniformis* is comparable to that seen in *A. maculatus*. Sporozoite differentiation was apparent on the 9.5 day after infection and sporozoites were free around the guts on the 10.5 day. One sporozoite was observed in a gland preparation dissected on the 12.5 day after infection but this was an isolated finding and the impression given was that the great majority of the sporozoites fail to reach the glands. There may exist, under laboratory conditions, some barrier preventing invasion of the glands.

First attempts to transmit the infection to clean monkeys with *M. uniformis* have been unsuccessful. Work is currently in progress on this problem and preliminary results with *M. annulata*, *M. bonneae* and *M. dives* suggest that these species are not susceptible.

It should be noted that though none of the unfed controls were infected, one experimental *M. uniformis* had a midgut infection which was considered to be natural due to the large size (67–100 microns) of the oocysts 3.5 days after infection.

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MALARIA INFECTIONS IN *Mansonia* MOSQUITOES

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During the examination of *Mansonia* mosquitoes for filarial infection oocysts were seen on the stomach wall of a specimen of *M. dives* caught at Ulu Lui in Selangor, Malaya. As a result of this chance finding, mosquitoes other than *Anopheles* were included among the mosquitoes to be examined for malaria infection in the monkey malaria investigation at present in progress in this Institute, and additional infections have been found in other *Mansonia* mosquitoes. Preliminary findings with experimental infections of primate malaria in *Mansonia uniformis* are reported separately.

The results of dissections from two localities in Selangor and Pahang are shown below. The trapping site in Pahang was at the edge of swamp-forest close to the place where the *Macaca irus* monkey was caught from which *Plasmodium cynomolgi bastianellii* was isolated (Garnham, 1959).

Species	No. diss.	No. infected: Gut	No. infected: Glands
M. annulata	213	..	..
M. bonneae	895	1	1
M. dives	857	2	..
M. uniformis	183	..	..

There were three oocysts 60–70$_u$ in diameter on the gut of the first *M. dives* and twenty oocysts 50–85$_u$ in diameter in the second *M. dives*. Both infections were found in mosquitoes caught in Selangor at an aborigine settlement in a valley bordered by hill forest. The infection in *M. bonneae* was from Pahang, and 25 oocysts 40–100$_u$ in diameter were present on the gut, as well as sparse sporozoites approximately 7–8$_u$ in length in the glands.

The origin of these malaria infections in *Mansonia* mosquitoes is at present unknown. The large size of the oocysts and small size of the sporozoites would suggest that they are unlikely to be from primates.

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THE MOSQUITO, *Psorophora ciliata* (FABR.), AT LONDON, ONTARIO

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On June 30, 1962 at about 10.00 p.m. a man in London, Ontario, while sitting on the verandah of his house, noticed a large, dark mosquito circling over his arm. The insect was captured and identified as a female *Psorophora ciliata* (Fabricius), with keys in Carpenter and LaCasse (1) and Steward and McWade (3). The pinned specimen is deposited in the collection of the Department of Zoology, University of Western Ontario. Distinguishing features of the insect were clearly evident, including long wings (8 mm), the stripe of golden hairs along the mid-line of the scutum, broad basal white bands on the tarsi, erect black scales giving a shaggy appearance to the hind tarsi and pointed abdomen. This species was not found at the time of the mosquito survey conducted at London in 1952 by Judd (2). It has previously been reported at four other localities in southern Ontario: Normandale, Vineland, Roseland and Sarnia by Steward and McWade (3). These four localities are close to the shore of Lake Erie and Lake Ontario while London lies inland about 25 miles north of the north shore of Lake Erie.

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