the toxicant prepared with a 10 percent sucrose or 20 percent Karo syrup solution. The concentration of toxicant was varied, but the sugar was constant. The filter papers were allowed to dry for several days, and then each was fastened inside a 6" x 9" x 12" screen cage. The treated paper covered only 1/12 of the interior surface of the cage, and 50 *Aedes aegypti* (6-to-8-day-old sugar-fed females) were tested for each treatment and dosage. Based on the percentage mortality after 24 hours exposure, the effectiveness of malathion and malathion + 20 percent syrup residuals on 4-day-old and on 21-day-old test papers are compared in Table 1.

TABLE 1.—Residual effectiveness of malathion or malathion+20% Karo. Mortality counts made after 24 hours in screen cage in which 1/12 of the interior was lined with treated paper, 50 *Aedes aegypti* ♀♀ per cage.

Malathion concentration	Mortality after 24 hrs. Malathion	Malathion +20% Karo	Age of test papers Days
1 mg./ml.	64%	100%	4
0.5 mg./ml.	26%	100%	4
0.1 mg./ml.	4%	70%	4
0.5 mg./ml.	12%	96%	21
0.25 mg./ml.	0	60%	21

In this example, only 1/10 of the toxicant was needed when sugar was present on the treated surface. Furthermore, the period of effectiveness of the sugar-baited residues was considerably extended. The females probed the sugar-treated paper and remained in contact with the residual treatment longer. Sugar-baited residual treatments might, therefore, be effective against populations which have developed the behavioral characteristic of "insecticide avoidance" (Mattingly, 1962). Males should be susceptible to sugar-baited residues since they feed on nectar, and if a breeding site was small and clearly defined, a sugar-residual treatment of nearby vegetation could be effective against both the male and female populations. Finally, sugar-residuals might also be tested in a program of premises spraying (i.e. the exterior of a house and vegetation adjacent to buildings) as an adjunct to current methods of combatting encephalitis epidemics in urban areas, provided the emergency warranted the hazard to beneficial insects.

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A NEW DISTRIBUTION RECORD AND AN INCIDENCE OF MERMITHID NEMATODE PARASITISM FOR *Leptoconops kerteszi* KIEFFER (DIPTERA:CERATOPOGONIDAE)

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Recently Dr. D. W. Kirkland, of the University of New Mexico, sent me a number of adult gnats collected from Carmen Island, Baja California, Mexico in January, 1964. The material received for determination consisted of 1 male and 9 female *Leptoconops* (*Holoconops*) *kerteszi* Kieffer.

Carmen Island is in the Gulf of California directly opposite Loreto and 130 miles northwest of La Paz. The island has a length of 20 miles and an average width or about 3 miles. The gnats were collected at Salinas Bay which opens to the south and is protected from the prevailing winds.

Dr. Kirkland (p.c., 1965) relates that isolated depressions in the beach deposits are ideally suited for *L. kerteszi* breeding. The salinity of the water in these depressions is relatively low, but periodic flooding with sea water occurs throughout the year. Following summer rains an increased nuisance problem is experienced by the occupants of a nearby settlement.

The male terminalia agreed in all important aspects with the description given by Freeborn and Zimmerman (1934). Examination of the antennae, palpi, lamellae, spermathecae, and wings of 4 female specimens did not reveal any distinctly different characters from those described by Carter (1921) and Smith and Lowe (1948).

Fox (1955) lists *L. kerteszi* in the Western United States from California, Colorado, Montana, Nebraska, New Mexico, Utah, and Wyoming. The occurrence of *L. kerteszi* in Canada was reported by Curtis (1957). This is the first record of this species in Mexico.

One of the female gnats possessed an entomophilic nematode in the abdomen. Dr. H. E. Welch of the Canada Department of Agriculture, Belleville, Ontario examined the specimen and reported that it was an immature mermithid parasite. Unfortunately, a generic identification was not possible as the taxonomy of the mermithids is based on mature adults. In addition, this specimen was not very well preserved.

Mention is made of mermithid parasitism in Ceratopogonidae in a recent review by Welch (1965).

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It is not unlikely that a relatively high rate of parasitism may be present in the Carmen Island *Leptoconops* population. The emergence of the mermithid parasite is normally fatal to the host.

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A DAY-FEEDING STRAIN OF *Anopheles maculatus* THEOBALD

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The establishment of *Anopheles maculatus* as a laboratory colony at the Institute for Medical Research, Kuala Lumpur, Malaysia was reported by Ow Yang, *et al.* (1963), and was included by Ward and Kitzmiller (1963) in their list of *Anopheles* colonies. These latter writers included origin of stock, susceptibility to insecticides, susceptibility to malaria infection and location of the colonies. No information was given on host animals used or on times females would feed.

In January, 1964, material was taken from the main colony for the establishment of a subcolony of *An. maculatus* at the U. S. Army Medical Research Unit, located on the grounds of the Institute for Medical Research. The subcolony was established without difficulty by the techniques described by Ow Yang, *et al.* Subsequently at the 36th generation, while cleaning a cage in daylight, it was noticed that the females were trying to feed. A bare arm was then offered and approximately 50 of the 300 females in the cage readily fed. Further feedings on guinea pig and monkeys indicated that many of the females would feed during the day. After four generations of selection approximately 80 percent of surviving 2- to 3-day old females readily fed during the day. When it was found that the subcolony would feed during the day animals were also offered to the parent colony during the day. Day feeding was also successful with this colony and it is presently maintained by day feeding on monkeys and guinea pigs. All feeding of both colonies is now done during the day while normal insectary chores are being performed.

The day feeding is most successful when the animal is anesthetized or tranquilized as movements of the animal tend to frighten away any females not already feeding, and fewer engorged females are obtained unless these movements are prevented. Monkeys used for feeding both colonies are routinely administered promazine hydrochloride prior to mosquito feeding.

This report is submitted as additional information on colonies reported by Ward and Kitzmiller. It is suggested that in the future those reporting on laboratory colonies include information on times of feeding as the advantages of day feeding are useful to many workers.

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Aedes aegypti WITH FOUR SPERMATHECAE [1]

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In studies on the morphology and physiology of the reproductive system of *Aedes* (*Stegomyia*) *aegypti* (Linnaeus) of the Bangkok strain, we have encountered on two occasions an unusual anomaly among at least several hundred females which were being routinely dissected.

The eggs were originally obtained from the Department of Entomology at Walter Reed Medical Center, Washington, D. C. The two anomalous females, in addition to having a normal complement of one large median spermatheca and two smaller lateral spermathecae, possessed one additional and even smaller spermatheca. The normal thecae had normal appearing basal glands, ducts,

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