



FIG. 1.—Modified aquarium cleaner bulb used in combination aspirator and killing tube.

screen wire is placed over this orifice from the inside. The flanged cleaning tube is reduced to 3 cm in length, with a 2 cm flanged orifice and inserted into the collecting unit (see Figure 1). After the bulb has been converted to a collecting cage, a small doughnut-shaped piece of dichlorvos resin strip is placed snugly over the collecting tube. The two halves of the collecting bulb are then put together and the unit inserted into the "O" ring.

This unit has the advantage of using several commercial parts, thus reducing the cost of labor when large numbers of cages are needed. The major advantage is the elimination of a killing jar. This makes it possible to obtain any number of samples without a transfer problem. Mosquitoes collected in the cage begin to die within one minute of collection time and do not damage themselves attempting to escape. They can then be left in the cages or transferred without damage.

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#### References

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#### THE USE OF HYPODERMIC NEEDLES AS SCALPELS FOR INSECT MICRODISSECTION

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Extremely effective micro-scalpels can easily be made from various gauges of hypodermic needles, particularly from the #27 gauge needle bearing the trademark B-D, because of its long bevel. The large hole in the body of the needle, which receives the snout of the syringe, is deep enough to receive and hold a wooden, metal, or plastic rod, the front of which is shaped to fit into the hole. Cement may be applied if desired, although a tight-fitting rod does not fall out in ordinary use. Other needle gauges may be used. The #27 gauge needle comes in various lengths; the writer prefers the  $\frac{3}{8}$ " or  $\frac{1}{2}$ " length because

they retain their rigidity best when cutting chitinous material.

The two edges of the bevel at the tip of the needle are quite sharp, cutting through chitin easily. In addition, the point is fine enough to be used as a micro-needle. The bevel also provides a flat surface for transferring tiny pieces of tissue. In practice it was found that, however small the tissue, it did not fall into the hole at the bevel, when using the #27 gauge needle. If desired, however, the hole can be filled with a waterproof or metal cement, or plugged with a piece of non-corrosive wire.

The hypodermic needle, being of stainless steel or other non-corroding metal, has the advantage of being very suitable for use under damp or tropical conditions. The needle unit may be detached from the rod and carried separately. If handled and stored properly, neither the cutting edges nor the point become dull. Also, the needle is relatively inexpensive, and it is easily replaced if lost or damaged. When using it as a micro-scalpel, it is recommended that the tissue being cut be held with a plain, fine needle, except when it is desired to cut with two scalpels simultaneously.

*Anopheles indefinitus* AND *Culex fuscans*  
(DIPTERA: CULICIDAE) IN SAIPAN

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A "malaria free" area in the Western Pacific, including Guam and Saipan, has long been of interest to malarialogists because of the absence of malaria mosquitoes of the genus *Anopheles* (Russell *et al.*, 1963).

Although a number of medical entomologists were stationed in the Marianas during World War II, *Anopheles indefinitus* (Ludlow) apparently was not collected in either Guam or Saipan during this period. Sometime during the period 1945 to 1948 this species became established in Guam. It was first collected in March 1948 by the 207th Malaria Survey Unit, U. S. Army, as reported by Yamaguti and LaCasse (1950), and later in 1948 by Reeves and Rudnick (1951), mostly in southern Guam. It spread to central Guam fairly rapidly, as reported by Hull (1952). By 1969 it was considered generally distributed throughout

the island, according to information furnished by the Guam Department of Public Health and Social Services. However, it apparently has never been reported previously from the neighboring island of Saipan, approximately 75 miles to the north of Guam.

Yamaguti and LaCasse (1950), Reeves and Rudnick (1951), Hull (1952), and Bohart (1957) all reported the *Anopheles* as *Anopheles subpictus indefinitus* (Ludlow). However, Reid (1966 and 1968), considers this a full species *Anopheles indefinitus* (Ludlow) in the *Pyretophorus* series, also referred to by Christophers (1933) and others as the Group *Pseudomyzomyia*, which includes *A. subpictus* and *vagus*.

Following a Vector Biology and Control Course sponsored by the World Health Organization in Kuala Lumpur, West Malaysia, during the fall of 1969, the junior author returned to his home station and collected larvae of *Anopheles indefinitus* (Ludlow) and *Culex (Lutzia) fuscans* Wiedemann on Saipan. Neither species has previously been reported from Saipan.

The specimens were found in a ditch near a village house during the first half of January 1970. The *Culex (Lutzia) fuscans* larvae, which were larger than the *Anopheles* larvae, ate *Anopheles*, *Culex*, and *Aedes* larvae voraciously. When the *Anopheles* larvae were collected, among them were larger larvae *Culex (Lutzia)*, and both were placed in the same container. About an hour or so later, practically all the *Anopheles* larvae were gone. The *Culex (Lutzia)* were eating both the *Anopheles* larvae and the first or second instar of their own kind. Ten of them were kept in separate containers and fed daily with *Culex* and *Aedes* larvae. Each ate an average of 3 to 5 larvae per hour before pupation.

There is some travel between Guam and Saipan. *Anopheles indefinitus* may have been introduced from Guam into Saipan following World War II.

Specimens of larvae and adults of both newly introduced species were sent to the U. S. National Museum and are now in the Museum collection. Dr. Alan Stone confirmed the identification of *A. indefinitus* (Ludlow) and Suthorn Sirivanakarn of the Southeast Asia Mosquito Project identified the *Culex (Lutzia) fuscans* Wiedemann. Dr. Richard F. Darsie, Entomologist with the Malaria Eradication Training Center in Manila, Philippines, also has confirmed the identification of the *A. indefinitus* and has checked the characters of the Saipan specimens with the key he and Ramos published in 1970.

The introduction of *Anopheles indefinitus* into Guam and Saipan is of interest because American military personnel with malarial infections acquired in Southeast Asia were being hospitalized in Guam during 1969 and may possibly visit Saipan. While there is a possibility of local transmission of malaria if *A. indefinitus* should bite an infected person and, later, bite an uninfected one, Reid (1968) has written, "Adults feed mainly on cattle and there is no evidence in the Philippines or

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