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LARVAL/PUPAL CONCENTRATOR

GLENN M. STOKES AND DONALD PAYNE
Jefferson Parish Department of Mosquito Control, 118 David Drive, Metairie, LA 70003

To collect large numbers of mosquito larvae and pupae for laboratory study the Jefferson Parish Department of Mosquito Control has constructed a larval/pupal concentrator which can be constructed in about one hour and can save many hours in field collecting. Take a standard 8 in. tin funnel and with a soldering iron remove the spout from the bottom of the funnel, then solder the outer portion of a Mason jar lid to the bottom side of the funnel. Flatten approximately 1½ in. of one end of an 18 in. long piece of ¾ in. electrical conduit. This is easily done by placing in a vise and tightening.

Next take a piece of strap metal 1 in. wide and 23 in. long, bend the ends at a 90° angle ¾ in. from each end. Then drill two 3/16 in. holes in each angle. Secure with 3/16 x 2½ in. stove bolts. When bolted together it forms a ring into which funnel fits. Opposite the bolts in this strap drill two holes and attach to the flattened portion of the conduit with rivets. Then take a piece of 3/8 in. copper tubing 16 in. long and bend in the shape of a "J" to form a spout. About 1½ in. of the short end should extend below the Mason jar lid.

Drill a hole into the funnel into which the copper tubing spout will fit snugly; hole should be as close as possible above the top of the Mason jar lid. Next cut 2 windows in funnel in areas opposite each other just above top of hole for copper tubing spout. Two cuts will be approximately 1⅞ in. on the bottom cut and 2½ in. on the top cut with 1 in. separating the 2 cuts. Place over each window a piece of 1½ x 3 in. copper screening (50 mesh) and solder; then copper tubing should be fitted and soldered into place on the funnel. Make sure that the tube is parallel with the electric conduit stake. Now place a piece of hardware cloth over the top of the funnel and fold down to approximately 1 in. to 1½ in. over outside of the funnel. When funnel with hardware cloth is placed into the 1 in. strap, bolts should be tightened snugly. Then fasten copper tubing to conduit with electrical tape. Next place piece of copper screen 1¾ in. x 3 in. (50 mesh) over the short end of the copper tubing spout, which extends down into the jar. This is best done by making tube from the screen by rolling around the copper tubing and soldering. Lower end of screen should extend about ¾ in. below the bottom of siphon. Pinch the lower end and solder closed. This will retain the larvae/pupae in the jar while the siphoning removes excess water from the jar.

MATERIALS—1 Piece Copper Tubing (16 x ⅜ in., 8 in. Tin Funnel, 1 Qt. Mason Jar, 3 Pieces Copper Screen 1¾ x 3 in. (50 Mesh), 1 Piece Hardware Cloth (12 in. Circle Cut), 1 Metal Strap 1 x 23 in., 1 Piece Conduit ¾ x 18 in., 2 Rivets, 2 Stove Bolts 3/16 x 2½ in.

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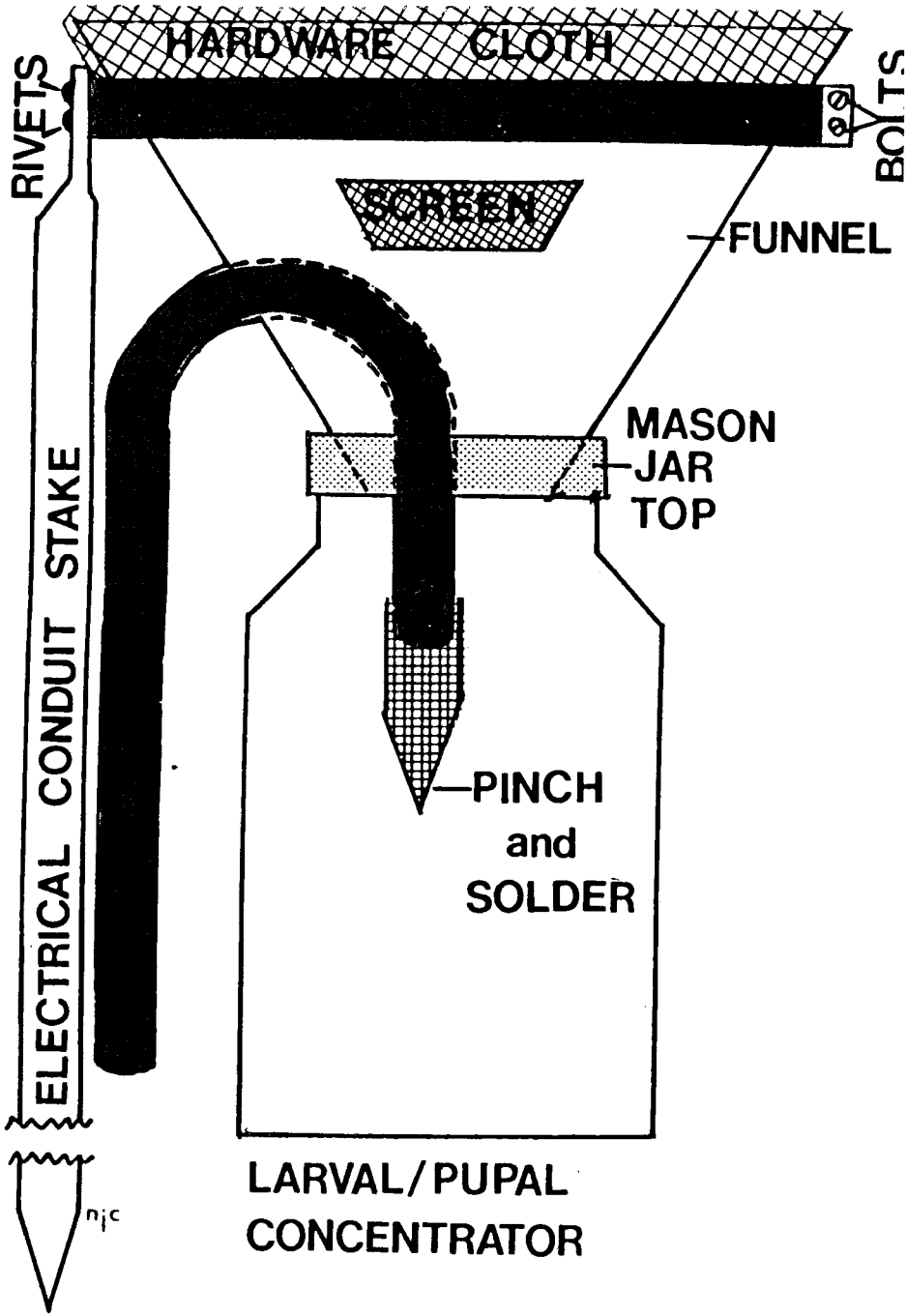
INITIATION OF A NEOTROPICAL SAND FLY COLONY IN THE U.S.

L. C. RUTLEDGE, G. N. PIPER AND M. A. MOUSSA
Department of Tropical Medicine, Letterman Army Institute of Research, Presidio of San Francisco, California 94129

Sherlock and Sherlock (1972) have reviewed the methods employed in the laboratory culture of phlebotomine sand flies (Diptera, Psychodidae). In general, the current methods of culture are laborious, and the rearing of New World species is more difficult than the rearing of Old World species. Colonies of the Old World species *Phlebotomus papatasi* and *P. argentipes* were formerly maintained at the Walter Reed Army Institute of Research in Washington, D.C. (Eldridge et al. 1963). To our knowledge, these were the first self-sustaining colonies of phlebotomine sand flies to be established within the U.S.

Killick-Kendrick (1973) announced the establishment of a colony of *Lutzomyia longipalpis* at the Imperial College, London, England, representing the first self-sustaining colony of a New World phlebotomine species to be established outside the Neotropics. The purpose of the present paper is to report the establishment of a colony of this species at the Letterman Army Institute of Research, Presidio of San Francisco, California. This is the first self-sustaining colony of a New World phlebotomine species to be established within the U.S.

Eggs of *L. longipalpis* were received by air from Dr. R. Killick-Kendrick in London on 19 May 1975 and were immediately placed into culture. This parent generation yielded a total of 35 replete female sand flies. At the time of the


HARDWARE CLOTH
RIVETS
BOLTS
SCREEN
FUNNEL
MASON JAR TOP
ELECTRICAL CONDUIT STAKE
PINCH and SOLDER
LARVAL/PUPAL CONCENTRATOR
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present writing (December 1975), 4 daughter generations have been reared, and the yield has been increased by a factor of 3.6. The colony is now regarded as being firmly established in our laboratory.

Currently, our efforts are directed toward bringing the colony to strength and the development of methods for mass-production of the species. The immature stages are presently reared in 6 x 5 cm ID plastic tubes with floors and inner coatings of plaster of paris. The rearing medium is commercial organic garden compost supplemented with liver powder. The adults are maintained in cylindrical 1-pint ice cream carton cages on 10 percent sucrose in demineralized water. The adult females are fed on hamsters. It is anticipated that present methods will be modified substantially as rearing experiments currently in progress proceed. At present the major problem is that of excessive mortality among the gravid females, as reported by Killick-Kendrick (1973).

The species *L. longipalpis* is a well-known vector of leishmaniasis in South America. The present colony was established for use in ongoing research on this disease and in studies directed toward the development of improved insect repellents for the protection of military personnel from vector-borne diseases. Interested investigators are invited to keep abreast of the progress of the colony as a source of starter material.

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EFFECTS OF ABATE 2G® AND ABATE 4E® MOSQUITO LARVICIDES ON SELECTED NON-TARGET ORGANISMS COEXISTING WITH MOSQUITO LARVAE IN WOODLAND DEPRESSIONS

KHIAN K. LIEM AND RICHARD N. LASALLE

South Cook County Mosquito Abatement District, P.O. Box 30, Harvey, Ill. 60426

As a follow-up of the laboratory work done by Didia et al. (1975), a study of the effects of Abate 2 G (o, o, o', o'-tetramethyl o, o' thiodi-p-phenylene phosphorothioate) and Abate 4E on non-target organisms was carried out in the field. Didia et al. (1975) found that the organisms most susceptible to the insecticide were members of the Order Cladocera, (*Simocephalus* sp. and *Ceriodaphnia sp.*), and members of the Order Diptera (F. Chironomidae and *Culex pipiens* L.). The populations of the remaining non-target organisms sustained little or no mortality. It was determined that Abate 2G at a concentration of 2.5 lbs. per acre killed all cladocerans within 1 day. This mortality rate occurred for 2 consecutive days, when new populations were introduced. At higher application rates of 5.0 lbs. per acre, a total mortality was observed each day for 5 consecutive days. After the 5th day a total mortality occurred within 2 days, and after the 7th day, a mortality rate of approximately 30% occurred within 3 days. Similar mortality rates were found with chironomid and *Culex pipiens* larvae.

The non-target organisms used in this study and found in woodland depressions throughout the Bremen Township area of Illinois were the cladocerans, *Simocephalus* sp., and *Ceriodaphnia* sp., the copepods *Cyclops* sp., *Ectocylops* sp., and *Eucyclops* sp., the ostracods (1 species), and 1 species of damselfly (*Lestes* sp.). The target organisms were the mosquito species *Aedes fitchii* (Felt & Young), *A. canadensis* (Theobald), *A. stimulans* (Walker) and *A. vexans* (Meigen).

Several woodland depressions serving as natural breeding sites for the above species of mosquitoes were selected within the boundaries of the South Cook County Mosquito Abatement District. These breeding sites were observed daily at approximately the same time. Rainfall and temperatures as well as rate of development and mortality of both target and non-target organisms were recorded. All the organisms studied were collected from each source by means of an enamel dipper (350 cc in volume). Ten dips of water were taken from each mosquito-breeding source and poured through a plankton net into a vial (50 cc in volume). This was done in order to concentrate the organisms and facilitate their transportation and storage. The population estimates were determined according to the stratified random sampling procedure for cladocerans, copepods and ostracods (Snedecor and Cochran 1971) and by actual counts for the damselfly nymphs and mosquito larvae. Observations on the fluctuations of the population of each organism were recorded for a period of 5 days before treatment until 10 days after the treatment.

To record the natural development and fluctuations of untreated organisms in the field, a control was set up which consisted of 2 enamel pans at each treated source. The enamel pans were filled with water and debris taken from the source and pretreatment population counts of all organisms collected from 10 dips were placed inside the pans. Each of these enamel pans was then placed inside a cut-off metal drum to protect it from being disturbed by animals or other unexpected forces.