mosquitoes engorge rather rapidly while others, not so aggressive, delay probing and feeding. If feeding is not begun within 30 minutes from the time the "host" takes its blood meal the speed of feeding by the starved marauding mosquito is considerably slower than of those who feed immediately. *A. aegypti* will feed on *A. aegypti* as seen in Fig. 1, or on engorged *C. pipiens*. Sometimes two or more mosquitoes may feed on one host. Most unfed mosquitoes were attracted to the engorged mosquitoes.

Blood smears were prepared and stained from mosquitoes that robbed mosquitoes that had engorged on chicken blood infected with *Plasmodium gallinaceum*. As was anticipated, these mosquitoes also were infected with erythrocytic parasites and could be expected to develop an infection. Caged mosquitoes, especially from laboratory cultures, behave quite differently from wild mosquitoes but if this occurred in nature it would seem likely that a wider distribution of the malaria would be effected since it could be passed on to several mosquitoes. This might be especially true in the case where certain mosquitoes leave the protected environment of a house or barn at dawn and fly into woodland or jungle environment.

ACKNOWLEDGMENTS. The authors are grateful to Jan Smith who drew our attention to the mosquitoes' behavior.

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FIRST REPORT OF *Aedes thibaulti* Dyar and Knab IN CONNECTICUT AND NEW YORK

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The recorded distribution of *Aedes thibaulti* in the United States is in the southeastern region. According to Carpenter and La Casse (1955) this mosquito is found north to Ohio and west to Texas. Carpenter and La Casse also list it present in Alabama, Arkansas, Florida, Georgia, Illinois, Kentucky, Louisiana, Mississippi, Missouri, North and South Carolina and Tennessee. Up to the present time there has been no publication of collection records of this species in New England, and the purpose of this note is to report the first collection of *A. thibaulti* in Connecticut and also in New York.

COLLECTION RECORDS. At Chappaqua, New York, four females were found in biting collections on June 21, 1965.

In Connecticut, specimens of *A. thibaulti* were found at four locations in the state, ranging from the southern area near New Haven (Bethany Bog) to a northern area at Simsbury which is located near the Connecticut-Massachusetts border. All specimens were adult females from biting collections as follows: two from Mt. Carmel on July 26, 1968; one from North Branford on July 29, 1968; one from Simsbury on June 13, 1970; six from Bethany Bog, Bethany on June 30, 1970, and one additional specimen on July 8, 1970.

Since *A. thibaulti* has not previously been reported from New York, the finding of this mosquito at Chappaqua was of interest. However, it was of greater interest to have found it in Connecticut—particularly since it occurred in four different places over a two-year period. This indicates that its presence was not due just to an isolated breeding focus located in the southern portion of the state. The significance of its presence beyond the northern boundary of its previously known range is not known. However, the collection sites in Connecticut are located beyond the extent of southern type woodlands, which indicates that the breeding habits of this species may not be as restricted as previously believed.

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A ONE-PIECE ALUMINUM CAGE DESIGNED FOR ADULT MOSQUITOES

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The literature contains numerous references to methods and techniques for collecting, trapping, and rearing mosquitoes. However, little information is available concerning standardized holding cages for mosquitoes. Apparently, there are as many different sizes and types of cages as there are researchers.

The laboratory cages in use today undoubtedly evolved from wooden frames covered with screen wire. The adaptations included the use of glass, plastic, or cloth sides, an entry sleeve, and some-

times an area of soft sceen or a wire tunnel where a blood source could be made available without opening the cage. Most of these cages require considerable time and labor to construct, and the adjoining parts and corners make them almost impossible to clean thoroughly. The more recent use of metals such as aluminum has somewhat reduced the cleaning problem by providing a cage that can be autoclaved or soaked in liquid disinfectants, but construction time and expense are still a problem. Moreover, the typical rigid box design has always presented a storage problem that is only partially solved by using a collapsible cage.

We are now using a cage designed to overcome all of these problems. It provides sufficient resting area for about 800 adult *Anopheles quadrimaculatus* Say, but for test purposes, the limit is usually set at 250 per cage.

Construction is simple and fast. A 0.040 gauge sheet of aluminum is cut into 71.12 x 21.25 cm (28 x 6 inches) pieces, the edges are filed smooth, and two right-angle bends are made 25.4 cm (10 inches) from each end to form a "C" shaped frame. Then, a 1.295 m (51 inches) length of seamless tubular gauze is knotted at one end and slipped over the frame. Thus, the open sides are covered and an entry sleeve is provided (Fig. 1). The entire cage can be assembled in about 5 to 6 minutes.

Thirty-three cage frames can be made from one 1.22 x 2.44 m (4 x 8 foot) sheet of aluminum and 35 cages can be covered with one roll of tubular gauze. The average costs of the frames and the tubular gauze are $0.70 and $0.16, respectively.

Cleaning is fast and thorough since the aluminum frame has no corners and the tubular gauze can be discarded or, if necessary, cleaned and/or sterilized and reused. Reused tubular gauze is susceptible to tears, but the holes are easy to patch with masking tape. The shape of the frames allows them to be stacked one inside another (Fig. 1) during sterilization or storage.

Blooding of adult mosquitoes is accomplished without putting the blood source in the cage. The cage is placed on its side or front over a restrained animal. The weight of the cage is sufficient to mold the soft, flexible tubular gauze to the shape of the animal, and the openings in the tubular gauze are large enough so the insects can feed.

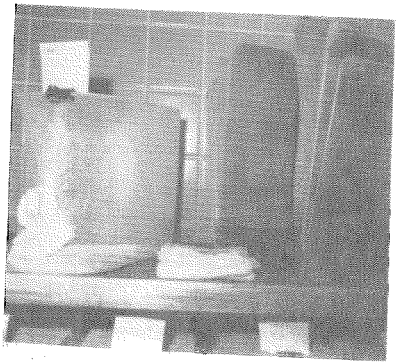

FIG. 1.—One-piece aluminum cage covered with seamless tubular gauze (left) and frames stacked one inside another for storage (right).

A COMBINATION ASPIRATOR AND KILLING TUBE FOR COLLECTING MOSQUITOES AND OTHER INSECTS [1]

SPICER C. JACKSON [2] AND R. H. GROTHAUS [3]

INTRODUCTION. Many different aspirators utilizing the portable, hand-held vacuum cleaners have been developed in recent years (Carver, 1967). Trpis (1968) developed a portable unit with detachable collecting cages. There are several workers currently utilizing aquarium cleaner bulbs as holding cages. These bulbs are readily available and require little modification.

The authors found a need to develop a combination aspirator when they were working with bed-net penetration studies. Studies of this type required an individual collector in each net to make timed collections, keeping the collections separated for each increment of time. When many nets were being compared simultaneously, an outside technician was hurried to collect the large number of bulbs and kill the mosquitoes before the next collection period ended. The combination collector was developed to alleviate this problem by providing an inexpensive holding cage combined with a rapid killing agent. This unit provided undamaged specimens that could be left in the bulb for an indefinite period.

DESCRIPTION OF ASPIRATOR. The unit consists of a 5-mm thick Plexiglas "O" ring with a center opening diameter of 4.3 cm. The ring is permanently attached to the vacuum cleaner intake with an appropriate adhesive. A 4.3 x 7.0 cm aquarium bulb is prepared by removing the flanged cleaning tube. The opening in one end of the bulb is then enlarged to 2 cm with a low-speed drill or counter-sink. A piece of 22-mesh

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[1] The opinions or assertions contained herein are the private ones of the authors and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

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