of diseases of public health significance has been well documented (Hughes and Porter, 1956; Joyce, 1961). Used tires are especially high risk cargo items. Pratt *et al.* (1946) reported the discovery of mosquito larvae in tires in 3 of 12 ships carrying old tires and other salvage from combat areas of the Pacific to the United States. Seven species of mosquitoes not indigenous to the United States were recovered, several of which are disease vectors. Used tires containing water are attractive oviposition sites for a number of mosquito species; even though dry on arrival at U. S. ports, such tires might well contain viable mosquito eggs.

Since about 1966, large quantities of military material, called retrograde cargo, have been moved from the Republic of Vietnam to the United States. Used tires have been transported as retrograde by both aircraft and surface vessels. Retrograde tires are U. S. Government property and are shipped in U. S. owned or contract ships and aircraft. Existing regulations require that government property being shipped out of Vietnam be treated and processed so that it is free of soil deposits and plant and animal life of concern to the public health and to agriculture. Used tires are to be treated with a mosquito larvicide.

No difficulty has been experienced with retrograde tires entering quarantine at United States ports. However, large quantities of used tires from automobiles, trucks, aircraft and earthmoving equipment are being declared surplus in Vietnam. Civilian contractors are purchasing these tires for resale to United States firms and shipping them to the United States in commercial vessels. There are no requirements that these privately owned tires be treated with mosquito larvicide prior to leaving Vietnam.

A number of partial shiploads of surplus tires have been inspected by Public Health Service quarantine officers at the ports of Oakland and Los Angeles during the Vietnam conflict. Prior to the case described here, no recoveries of mosquitoes were made. The tires were usually dry, although an occasional one was encountered which contained water.

A ship entered quarantine at Oakland April 2, 1971, with 460 short tons of surplus, earthmoving equipment tires consigned to a tire dealer in Los Angeles. A few of the tires contained water. Two larvae and three pupae of *Aedes albopictus* were discovered in one of them. The ship was remanded to Los Angeles where the tires were unloaded under the supervision of Public Health Service quarantine officers. Two additional tires containing several *Ae. albopictus* larvae and pupae were found.

Ae. albopictus is widely distributed in the Oriental and Indomalayan regions, where it has been implicated in the transmission of dengue viruses (Chan *et al.*, 1966; Gould *et al.*, 1968). It is a common mosquito in Vietnam, breeding in both natural and artificial containers in close association with man. The species was introduced and became established in Hawaii in the 19th century (Joyce, 1961).

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A STUDY OF OVIPOSITION OF *AEDES* MOSQUITOES

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The biological peculiarities of the *Aedes* (*Stegomyia*) species of mosquitoes and the role of some amongst them as agents of human diseases is now well recognized (Christophers, 1960). However, even at present there seem to be enough lacunae in the various facets of their ecology (Macdonald, 1965) and in particular their oviposition behaviour. A number of workers have reported on various influences on oviposition (Beckel, 1955; Fay and Perry, 1965; Petersen and Rees, 1966; Snow, 1971), but no studies on the role of different timbers appear to have been carried out. The object of the present investigation is to describe the preferential role of *Aedes* (*Stegomyia*) species in ovipositing on timbers in the laboratory.

Fifteen different types of timbers were selected for oviposition studies. An enamel bowl containing clean tap water and filled to ¾th its height was kept in the centre of the colony cages containing 50 gravid females of *Aedes aegypti*, *Aedes albopictus* and *Aedes vittatus*, each kept separately. The mosquitoes were fed on rabbits and utilised on the 4th day after feeding for egg laying. The timber pieces were floated on the

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surface of water in the bowl and were left for 48 hours for oviposition. They were then withdrawn and examined. The rate of oviposition response i.e. in terms of number of eggs deposited was assessed by the counts or the size of the dark spots present on the surface of the timber.

The results showed that the heaviest egg laying took place on deodar (*Cederus deodara*) followed by Shivan (*Gmelina arborea*); Nana (*Lagerstroemia lanceolata*); Sissum (*Dalbergia latifolia*); Gurjan (*Dipterocarpus turbinatus*); Dhaman (*Grawia tiliaefolia*) and Siris (*Albizzia lebbek*). The remaining timbers, namely, Gugal Dhup (*Alianthus malbericum*); Dhavada (*Angoeissus latifolia*); Pisa (*Actinodaphne hookeri*); Babul (*Acacia arebica*); Lal Khair (*Acacia chunira*); Kakad (*Gargua pinnata*); Phanas (*Atrocarpus integrifolia*) and neem (*Melia azedirechta*) showed either insignificant oviposition or none at all. It is thus clear from the above that the *Aedes* mosquitoes show a definite preference for oviposition on some timbers as opposed to others. Such timbers can be usefully utilized as artificial devices (ovitraps) in conducting survey programs of *Aedes* species thereby recognizing the latent danger in any locality, if the species so isolated happens to be a recognised vector.

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A PORTABLE BOX TRAP FOR THE COLLECTION OF *GAMBUSIA AFFINIS*

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The use of mosquito fish, *Gambusia affinis* (Baird and Girard), for the biological control of mosquitoes is receiving increased attention by a number of agencies, including the military. The U. S. Navy has initiated a project to assist naval shore activities along the East Coast in utilizing mosquito fish as an adjunct to their mosquito control programs. To accomplish this, activities are visited and assistance is provided in selecting and stocking suitable locations with *Gambusia*. Sources for the fish are generally available in the area visited, however, their collection often presents some difficulty.

The use of aquatic nets, minnow seines and minnow traps was usually found to be inefficient and time-consuming. The box-style traps described by Caton and Sjogren (1969) and Stains (1970) were effective, but too cumbersome for easy transportation and use in outlying areas. To fulfill the need for a less permanent and more portable collection system, a modified box trap was designed which was lightweight, collapsible, and easily assembled in the field by one man. It is anticipated that such a design will be of use to agencies which do not require permanent traps and have limited storage facilities.

The portable box trap (Fig. 1) was patterned after one described by Stains (1970). It was constructed of ¾″ x 1⅞″ cypress slats covered with eight-mesh or four-mesh hardware cloth. The eight-mesh (⅛ inch) hardware cloth was generally used for collecting large numbers of males and females. In cases where only the larger, mature females were desired, a trap covered with four-mesh (¼ inch) hardware cloth was used, as the smaller males and immature females could easily pass through the screen. Approximately 4 man hours were required to complete the trap. The total cost for materials was about twenty-five dollars.

The trap was constructed in a series of steps (Fig. 2) to insure a propert fit of all pieces. In step A, the two trap sides were completed with outside measurements of 35¼″ x 55½″. All corners were joined using 2½″ finishing nails and secured with polyvinyl resin white glue. The hardware cloth was trimmed to the proper dimensions and attached with a hand-operated stapler and ½″ staples.

The two trap ends, step B, measured 25½″ x 35¼″. Double wood slats were utilized at the top and bottom of the trap ends to allow space for the turn buttons to function. The center slat was carefully measured in order that the funnel and flat inserts could be freely interchanged. Finally, small strips of hardware cloth were stapled in place over the double slats.

The bottom of the trap was completed in step C after minor adjustments were made to insure a uniform fit of the side and end pieces. After the hardware cloth was secure, the trap sides and ends were placed in position upon the bottom piece. By taping the parts together with masking tape, the hook and eye latches could be accurately secured. Fourteen latches were used; 2 in each corner and 6 along the bottom. To hold the funnel and flat inserts in place, a total of 10 turn

[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.