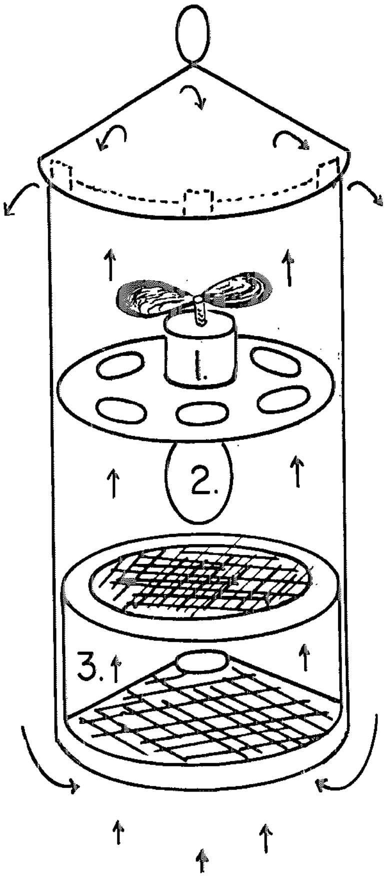

Fig. 2.—Internal view of the new bottom-draft light trap. 1. Inverted fan. 2. Light source. 3. Holding cage.

to obtain a kill-cage. Several cages can be carried so that transfer of specimens can be accomplished in the laboratory if desired.

The combination of the light source and the updraft appears to enhance the collection of species normally repelled by one or both of the other two commonly used traps. The configuration of the trap should prove of value when Co_2 is used as an additional attractant. The design of the trap holding cage greatly simplifies the handling and transfer of live specimens. Except for the photoelectric switch, the components of the trap can be made or purchased from local sources at minimum cost.

Although the trap efficiency has not been compared to a standard trap with respect to species diversity, it has been operated in the field and appears to attract most of the species commonly collected by the other light traps. To date the species spectrum for the trap includes *Aedes atlanticus, A. taeniorhynchus, A. infirmatus, A. canadensis, A. fulvus pallens, Anopheles crucians, Culiseta melanura, Culex quinquefasciatus, C. salinarus,* and *Psorophora ferox.*

Acknowledgment. Mr. E. R. Babcock, Chief, Equipment Testing and Development Division, Naval Medical Field Research Laboratory, is thanked for building the prototype unit and making valuable suggestions during the development period.

Literature Cited

Floore, T. G. and R. H. Grothaus. 1971. Conversion of the New Jersey light trap for collecting live mosquitoes in Da Nang, Vietnam. Mosq. News 31(2):221–222.

Headlee, T. J. 1932. The development of mechanical equipment for sampling the mosquito fauna and some results of its use. Proc. Ann. Meet. N. J. Exterm. Assoc., pp. 106–126.

Stewart, W. W. A. 1970. A modified CDC light trap. Mosq. News 30(2):188–191.

Sudia, W. D. and Chamberlain, R. W. 1962. Battery light trap, an improved model. Mosq. News 22(2):126–129.

OBSERVATIONS ON LARVAE AND PUPAE OF *AEDES ATROPALPUS* (COQ.) CONFINED TO A BOTTOM AIR-WATER INTERFACE [1]

William E. Bickley and John B. Duvall
Department of Entomology,
University of Maryland, College Park 20742

Meola (1961) reported that larvae of *Aedes aegypti* (L.) and *A. triseriatus* (Say) could be reared in inverted culture tubes. Some larvae, forced to obtain air at the bottom of the medium, overcame the effects of gravity. Mortality of pupae was high, but a few adults emerged. The number of individuals observed is not specified.

The objective of the work reported here was to determine whether or not *A. atropalpus* (Coq.) larvae and pupae would tolerate an inverted air-water interface. The medium consisted of small amounts of very finely ground dog food in seasoned tap water. First instars were placed in

[1] Miscellaneous publication No. 818, contribution No. 4611 of the Maryland Agricultural Experiment Station, Department of Entomology, Project H-104.

10 x 75 mm culture tubes and the volume of medium was kept fairly constant at 3.5 ml. The temperature was fairly constant at 27° C. In the inverted tubes small air pockets often developed at the closed ends. These pockets were removed at intervals. This air presumably had been exhaled by the larvae. Forty larvae were placed in inverted tubes, and 4 of these pupated. Larval mortality usually occurred in the 4th stage. In 25 upright tubes used as controls, 7 larvae pupated, and 5 adults emerged. In the inverted tubes the 4 pupae apparently died because they were unable to orient themselves so as to obtain sufficient air.

Reference

Meola, Roger. 1961. Some preliminary observations on mosquito larvae and pupae confined to a bottom air-water interface. Ohio J. Science 61(1):38.

A COMPARISON OF EGG PRODUCTION OF *CULEX PIPIENS PIPIENS* L. FED ON AVIAN AND MAMMALIAN HOSTS [1]

DONALD A. SHROYER [2] AND R. E. SIVERLY

Public Health Entomology Laboratory, Ball State University, Muncie, Indiana 47304

Previous workers have reported differences in egg production of various subspecies of *Culex pipiens* when fed on avian and mammalian hosts. Woke (1937) reported greater egg production from canary-fed mosquitoes than from mosquitoes fed on man. Shelton (1972) found that *C. salinarius* also produced more eggs after feeding on avian hosts.

An extended study of host preference of *C. p. pipiens* at waste lagoons in Indiana is being conducted. In the course of this study it was observed that mosquitoes which fed on an avian host produced approximately twice as many egg rafts per cage than did mammal-fed mosquitoes. However, the clearest demonstrable difference was in the size of egg rafts.

Three caged populations were established from larvae obtained at waste lagoons in the summer of 1971, and were maintained under a 15-hour photoperiod and standard temperature and humidity conditions. Adults were routinely provided sucrose. Harnessed *Coturnix* quail were the only host for two cages, while a third was given only narcotized guinea pigs. Neither the fertility, nor the quantity of blood ingested by each female was determined. Egg counts were made under a dissecting microscope of only obviously intact egg rafts included in the samples collected from each cage of mosquitoes.

Data from these observations are summarized in Table 1. Apparent differences in egg yield between quail-fed and mammal-fed mosquitoes were confirmed by the paired t test, which was significant at the 5 percent level ($t=7.99$, with 7 d.f.) (critical region <-2.365 and >2.365).

One gains the impression from the literature and recently reported research that *C. p. pipiens* is a preferential avian feeder. Obviously, a high fecundity associated with preference for certain wild blood hosts amounts to adaptive advantage, and could have been derived through natural selection. Some increase in egg production by laboratory selection was reported by McCray and Schoof (1970), whereas egg production from the P1 to F5 generations of *C. p. quinquefasciatus* increased from 30 to 100 or more per rabbit blood meal. Egg production per chicken blood meal was 200 in both P1 and F5 generations.

The higher egg production of bird-fed house mosquitoes is not due to higher volume of intake, according to Woke (1937). The reasons for this

TABLE 1.—Egg production of *Culex pipiens pipiens* L. fed on *Coturnix* quail and guinea pig.

	Coturnix quail host	Guinea pig host
	Egg rafts examined	Egg rafts examined
	80	69
Observation day	Average eggs/raft	Average eggs/raft
1	200.000	142.273
2	245.000	136.842
3	170.000	135.625
4	260.000	158.333
5	171.875	105.000
6	167.000	107.500
7	241.000	132.500
8	218.063	140.000
	Mean no. eggs/raft	Mean no. eggs/raft
	209.063	132.259
	Ratio of means 1.58	Ratio of means 1

[1] This investigation was supported in part by a grant from the Indiana State Board of Health, funded by PL 89–749, Section 314(d).

[2] Present address: Purdue University, Department of Entomology, Lafayette, Indiana 47907.