overnight, and few or no mosquitoes are lost in changing to a fresh feeder. These techniques also offer an excellent means of studying the nutritional requirements of the adult mosquito. The results of feeding milk to *A. aegypti* adults have been reported by Lea *et al.* (1955), and the preliminary results of feeding mixtures of amino acids by Dimond *et al.* (1955).

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THE BREEDING OF *HAEMAGOGUS ARGYROMERIS* D. AND L. IN SALINE WATER (DIPTERA, CULICIDAE)

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Haemagogus argyromeris D. and L. 1921 is a widespread and common mosquito in the Panama Canal Zone and adjacent Panama. In its choice of breeding-places, it is perhaps less restricted than any other species of *Haemagogus.* Dyar (1) records the larvae from tree holes. Galindo *et al.* (2) record the larvae from "a greater variety of breeding habitats than any other *Haemagogus* in this area [Panama], including tree holes, cans, coconut hulls, tires, rock holes, terrestrial bromeliads and occasionally ground pools" (p. 118), and from "5-gallon cans which had been left on the slopes of the island" [Flamenco, near the Pacific entrance to the Panama Canal].

In 1949 the writer recorded *H. argyromeris* larvae from terrestrial bromeliads in the Panama Canal Zone and the Republic of Panama, and once from an arboreal bromeliad in El Valle de Anton, in Panama (3). He now reports the larvae of this species breeding in definitely saline water contained in rock holes on the Pacific shores of the Republic of Panama.

Punta Paitilla is a low, isolated, rocky

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promontory lying east of the city of Panama. The eastern shoreline of this promontory is composed of a volcanic breccia ("a rock composed of angular fragments cemented together"). The softer components have been worn away, leaving in their place pot-holes in the harder rock. These holes are well above the high-water line, even of the Pacific tides, which may reach 18 feet above mean sea level. During the dry season (January-April) these pot-holes are dry, but shortly after the rains begin they become filled with water. During the high "spring" tides a strong surf dashes against the rocks, and wind-driven spray is blown on-shore. Some of this salt spray reaches the pot-holes in the rocky cliff, and evaporates. After the onset of the rains in May, these pot-holes contain saline water of various concentrations. In some of them, late in June and July, and again in October, during several years, fourth-instar larvae of *Haemagogus* were collected. These were reared to adults in the laboratory, and found to be *H. argyromeris* by examination of the male terminalia. These larvae all had very short anal gills, an adaptation to the high salt content of the water.

Several samples of the water in which the larvae were found were analyzed for salt content by the chemist of the Board of Health Laboratory in Ancon, C. Z. These samples were reported to contain various amounts of sodium chloride (NaCl), up to 0.9 percent. The NaCl content of English Channel sea water is given by Sollman (4) as 2.7 percent.

It is well known that some species of Culicidae, e.g., *Aedes taeniorhynchus, A. sollicitans* and *Anopheles aquasalis,* will breed in undiluted or slightly diluted sea water, but a search of the literature shows that no species of *Haemagogus* (except *argyromeris,* as here reported) is known to tolerate sodium chloride. All species of the genus *Haemagogus* are "container breeders" (5), and are found in habitats such as tree holes, usually high in organic matter, but normally lacking in sodium chloride.

According to Galindo *et al.,* (2) *H. argyromeris* is "predominantly a ground level biter." Up to the time of writing (March 1955) no evidence, experimental or otherwise, is on record as to its capability to transmit yellow fever.

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