

Preliminary Report on Growth Studies in *Olivella biplicata*

by

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(Plate 36)

While making observations on *Olivella biplicata* (Sowerby, 1825) for the studies reported on previously (Stohler, 1952, 1960), it became apparent that an estimate of the life span of this species was not possible on the basis of distinct size classes of the shells. As was indicated (op. cit., 1960), *Olivella* exhibited mating behavior at every low-tide period when observations were possible, and thus distinct and chronologically separable size classes could not be expected. However, the growth rate, as well as the life span, was of interest to me. A possible approach to the study of these two problems presented itself when the populations of *Olivella* were seen in the Flood Control Channel in San Diego. The following facts seemed to make these particular populations especially suitable for an experimental approach to the problem. The Flood Control Channel is closed to the ocean, at least for the major part of the year, by an extensive sand bank, yet in the study area the water changes with each tidal cycle, although the change is somewhat retarded. The water flows through a dike along the north side of the area. This dike forms the boundary between the entrance to Mission Bay and the Flood Control Channel and consists of large quarried rocks relatively loosely piled upon each other. Furthermore, adjacent to these large rocks there is a relatively extensive area consisting of small boulders and gravel, thus effectively preventing the *Olivella* living in the deeper sand bed from escaping, yet permitting free exchange of the water. That the ecological conditions in the area are suitable for the animals is borne out by the fact that the populations seem to be thriving.

It will be seen, then, that it is possible to collect some of the animals living in this restricted area, measure them, mark them, and return them to their usual habitat with a fair probability of being able to recapture a per-

centage of the marked animals at a later date. It need hardly be mentioned that this approach would not be feasible in the usual habitats where *Olivella biplicata* occurs along the California coast, namely, on the open shore.

The problem, however, was to find a suitable method of marking the shells. The first approach was to file an area near the apex of the shell so that a flat surface was obtained on which numbers were written with a crow-quill pen and India ink. In a preliminary test, 100 individuals were marked in this manner and released in 1958. This method of marking, however, had to be abandoned because experience showed that the numbers became illegible after approximately six months.

A second experiment consisted in applying a pressure-sensitive tape on which had been printed numbers with a specially prepared printing ink. For further protection of the printed number, adhesive cellulose tape was placed over this patch. This method proved to be unsuitable within less than three months; the pressure-sensitive tape was lost in the water.

It was unfortunate that individually measured and marked specimens could not be observed by the use of one or the other of these methods. As an alternative method, it was then decided to collect a large number of individuals, measure them, and pick out a particular size class, mark all individuals of that selected size class, and release all captured animals. The mark consisted of a notch filed into the whorl just above the body whorl, opposite of the aperture. Care had to be exercised in preventing the file from cutting through the wall of the shell, thus injuring and exposing the living animal.

On July 25, 1959, 242 *Olivella biplicata*, from 11.0 to 13.0 millimeters, were marked in



Figure 1

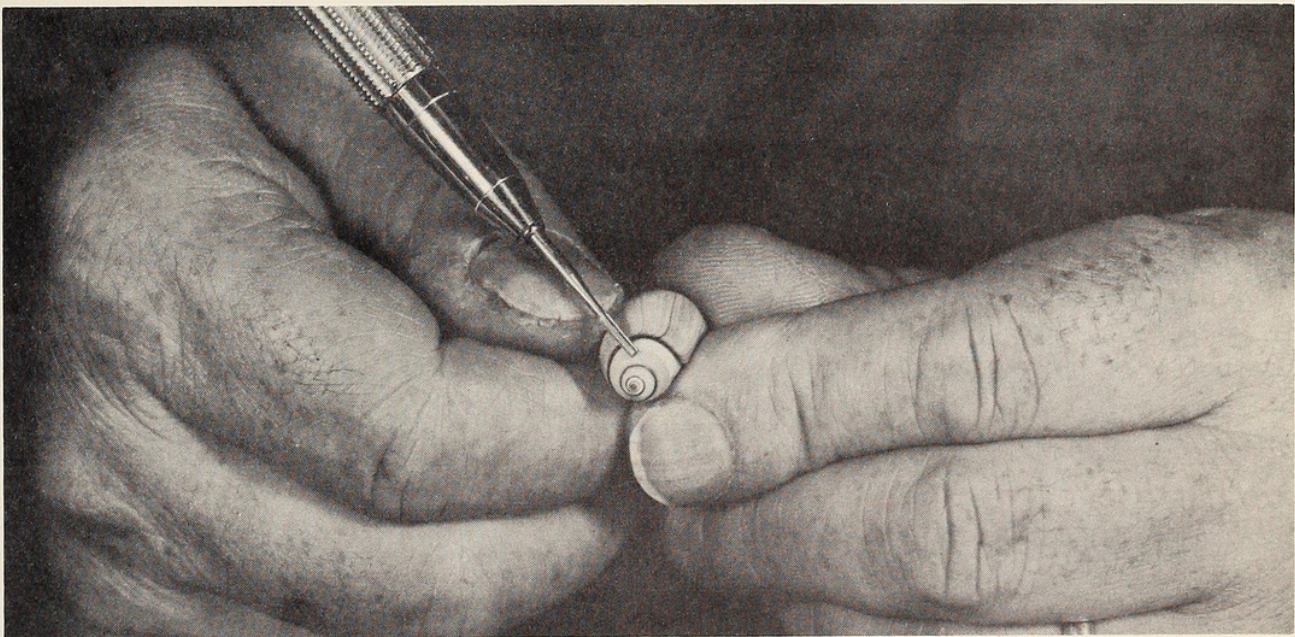
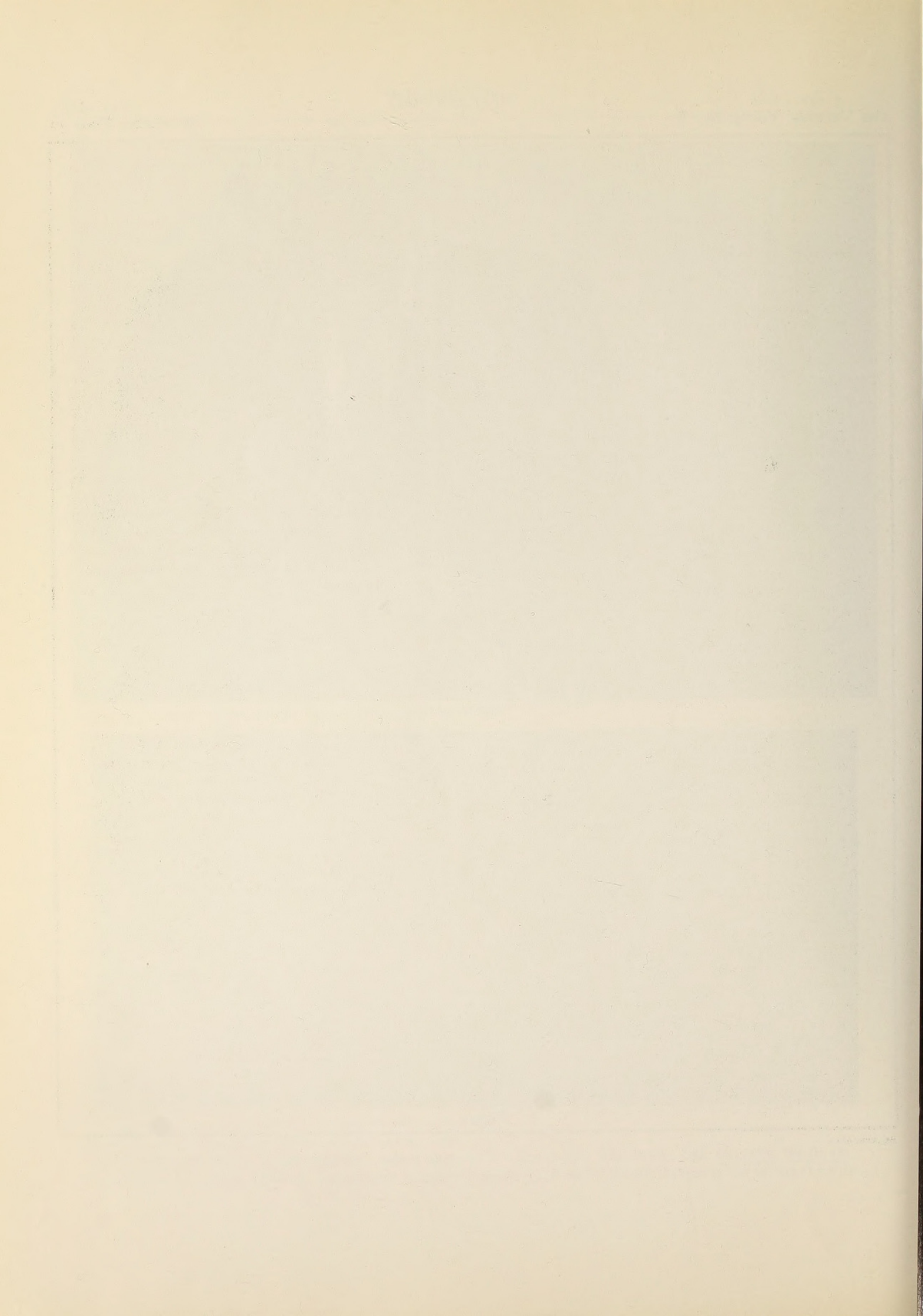


Figure 2





Campbell, Bruce. 1962. "A new deep-water *Anadara* from the Gulf of California." *The veliger* 4, 152–154.

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