

The Introduction to the first edition of this book (1957) (see page viii) stated that the volume was admittedly incomplete, and that new methods for obtaining, handling and studying marine eggs and embryos would undoubtedly be forthcoming. This prediction has been abundantly borne out in the intervening 14 years, and a complete revision of the book is clearly called for. A major re-writing is now (June, 1971) in progress. However, steadily continuing sales have resulted in the first edition going out of print, and it seemed advisable to re-issue it, with certain minor changes, as a stopgap measure, pending the major re-writing in progress. In the interim, it is appropriate here to point out some of the newer sources of information now available, and to note a few of the advances which have been made since 1957.

Among others, the following books and papers will prove to be of value to workers utilizing marine embryological materials: Allen, M. J., 1959, Biol. Bull. 116: 339-361 (*Diopatra*); *ibid.*, 1964, Biol. Bull. 127: 187-205 (*Autolytus*); Armstrong, P. B., and J. S. Child, 1965, Biol. Bull. 128: 143-168 (*Fundulus*); Arnold, J. M., 1965, Biol. Bull. 128: 24-32 (*Loligo*); Cumulative Index to Volumes 105-129, inclusive, of Biol. Bull. (see, especially, the entries under the headings considered for each animal in the present work). The forthcoming volume *Reproduction of Marine Invertebrates* (A. C. Giese and J. S. Pearse, eds.; Academic Press) contains much useful information, and a summary describing larval forms is to be found in the article by Costello (1970) in *Encyclopedia of the Biological Sciences* (2nd. ed.; Van Nostrand Reinhold; pp. 481-486).

Since 1957 there have been many notable advances in technical procedures, especially in the field of electron microscopy (both transmission and scanning) and in certain areas of light microscopy as well — notably, Nomarski optics. Our carefully worded and explicitly qualified statements concerning electron microscopy (see page xiii) are still applicable, insofar as they point out the necessity for adequately controlled techniques for this tool. Negative staining has proved to be an informative method for electron microscopy, particularly for the study of male gametes.

An important new technique for obtaining gametes from certain echinoderms came with the finding of Kanatani *et al.* (1969; *Nature* 221: 273-274; see also the review by Kanatani and Shirai, *Development, Growth and Differentiation* 12: 119-140) that 1-methyladenine injected into the coelomic cavity resulted in a controllable discharge of ripe gametes.

Knowledge of seasonal, lunar, and diurnal periodicities in the natural spawning of many different marine invertebrates is now more detailed, and some beginnings have been made in the experimental investigation of their controls.

Increasing use of biochemical techniques, with concomitant requirements of large amounts of material, in the study of various aspects of development makes necessary a warning that investigators familiarize themselves thoroughly with the availability and the general characteristics of the forms with which they propose to work. Obtaining 100-gram collections of many of the less abundant invertebrates is not only difficult, if not impossible, but could seriously deplete the species.

The cover illustration and layout were prepared by Julia S. Child, to whom we are much indebted. The trochophore larva of *Hydroides* was re-drawn after Figure 43 in the paper by Hatschek (1886) (see page 80 for reference).

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Donald P. Costello
Catherine Henley