EMBRYOLOGY OF *ACMAEA TESTUDINALIS*

F. G. WALTON SMITH
Commonwealth Fund Fellow, London

As a result of the author's recent work on the development of *Patella vulgata,* it was considered desirable to carry out further investigations on the more primitive Gasteropoda, of which the limpet, *Acmaea,* is a particularly interesting, though not too widely distributed example. The species *A. testudinalis* is found on the east coast of North America, although it is confined to regions mostly to the north of Mount Desert Island. Nevertheless a partially successful attempt to collect a series of the larval stages was made while at the Mt. Desert laboratory, mainly by means of the artificial fertilization of the eggs, and the subsequent rearing of them in laboratory tanks. The eggs were obtainable until early in September, and a few of the larvae were reared to a stage just prior to metamorphosis, in plunger tanks supplied with sea water filtered through glass wool. A limited number of larvae were also obtained by the examination of the townettings from near Googins Ledge in Frenchman's Bay.

The egg of *Acmaea* was found to segment in a manner similar to that of *Patella,* and in fact, the general features of larval development bear the resemblance to those of *Patella* that is to be expected from a consideration of their close relationship. Important confirmation of some recently elucidated facts in the development of *Patella* was the main result of the preliminary investigations, but it is intended to follow up even more important points by the examination of further material next summer.

CHEMICAL STIMULATION OF *FUNDULUS HETEROCLITUS* BY OXALIC AND MALONIC ACIDS AS A FUNCTION OF TEMPERATURE

IRWIN W. SIZER, *Rutgers University*

Chemical stimulation has been investigated previously (BULL. MT. DESERT IS. BIOL. LAB., 1933, and 1934) by using the dicarboxylic acids as stimulating agents on the barnacle and *Fundulus.* A study of chemical stimulation of *Fundulus* as related to temperature should yield additional information concerning the underlying mechanism controlling stimulation. An analysis of the data is made in terms of the Arrhenius equation, $K_2 = K_1 e^{\mu/2(1/T_1 - 1/T_2)}$ where K_1 and K_2 are velocity constants, T_1 and T_2 the absolute temperatures, and μ is the energy of activation in calories of the catalyst of the reaction controlling the rate. The temperature characteristic, μ, is a measure of how rapidly the rate of a process changes with temperature and is itself independent of temperature. It may be determined by the slope of the line drawn through the experimental points when log rate of a process is plotted against 1/T.

The experimental procedure was the same as that described previously. The range of temperatures between 0 and 29°C., was studied;