WORK AT THE MOUNT DESERT ISLAND BIOLOGICAL LABORATORY DURING SUMMER OF 1935

ULRIC DAHLGREN, *Princeton University*

Some general collecting showed several interesting conditions. Again *Aurelia* was practically absent as a medusa. This seems to be due to the absence of *Zostra* on whose grass-like blades the planulae of *Aurelia* usually pass the winter.

Zostra, however, seems to be coming back again: the few resistant individuals having overcome the disease that had almost eliminated it in the past few years.

The swinging balance between the larger Tubularian hydroids and the nudibranch mollusks that feed on them was just about at a standstill. Last year (1934) the nudibranch mollusks, mostly *Dendronotus* were in the ascendancy and the hydroids very low in numbers. In 1935 the hydroids were quite numerous and but small numbers of nudibranchs.

Next year should see very large bunches of the hydroids and a rising number of nudibranchs.

A fine growth of the *Nematomorphid* worms, *Gordioidea*, was found in Lake Wood. They were pure white and remained there near the pond outlet all through June and July.

Working with the writer was Mr. Alan Smith who collected and studied the Microdril Oligochaete worms. A large number of interesting forms were found.

Also Mr. Tufton Mason who studied the growth of muscle tissue in the fishes. The rectus muscles of the eye of the flounder were used and probably other muscle masses of this and other fishes will be used.

At this time it appears that all myoblasts in a given muscle are developed into striated fibers in the larval stage. As the fish grows one after another of these *post-myoblasts* are suddenly expanded into active muscle fibers. This continues as long as growth takes place. After this definite maturity the fibers grow but little more, increase in muscle size being attained by the expansion of more *post-myoblasts*.

Mr. Thurlow Gordon also worked with the writer and surveyed the external copepod parasites of fishes. A considerable number were found and studied.

PRELIMINARY STUDY OF A RARE OR LITTLE KNOWN TUBULARIAN HYDROID, *ACAULIS PRIMARIUS*

SAMUEL STOCKTON MILES, *Princeton University*

This hydroid is highly specialized for a free life on fine marine muds of sedimentary origin. For this reason it is seldom encountered by naturalists and also for this reason it seemed a matter of

interest that its specializations for breeding, feeding, etc., should be studied. A study of the morphology, development, and habits was attempted.

Acaulis is present in large numbers in Salisbury Cove, Maine, and the adjacent waters. It is found on mud bottom at depths of 30 to 70 feet. The highest temperature recorded at these depths was 11°C. at about 70 feet on August, the twenty-ninth. It is a solitary hydroid with a whorl of 6 to 10 basal tentacles about the base of a roughly conic body. Above the basal tentacles are sporosacs and around the distal portion the hydranth is covered with shorter capitate tentacles. A free moving foot of about one-quarter to twice the length of the body extends from the proximal end. The food found in regurgitated masses consists mostly of plankton. *Podon* was identified in one of these masses and various other unidentified species were observed.

Histological examination has brought to light various interesting tissues. Perhaps the most interesting is a type of cell found scattered throughout the endoderm but in greatest numbers around the hypostome. They appear to a greater extent in the first evagination of the young sporosac and remain present in the manubrium of the mature sporosac.

Two types of nettle cells are found. The longitudinal muscle fibers are very easily observed. In some individuals a granular material is present inside and outside the endodermal cells to such an extent that the whole body appeared to be in a process of disintegration. This may have been caused by formaldehyde fixation. The ectodermal cells of the foot are specialized to secrete a sticky perisarc. A ring of this specialized glandular tissue is located around the foot just below the basal tentacles.

The egg- or sperm-bearing sporosacs were found to have both egg and sperm in four cases out of the forty-seven so far histologically examined. Spermatogenesis and the development of the ovum are visible. The immature egg in the sporosac apparently ingests the younger oogonia. When ripe the eggs and sperm are shed and fertilization takes place on the mud surface. The cleavage stages are regular and were observed to the 32-cell stage. Some eggs were seen to develop without a fertilization membrane.

Two specific reactions to stimuli were found. First—if a point on one side of the individual is touched either on tentacle or body wall, the hydranth snaps around the point stimulated and the tentacles wrap around it. Second—if the juice of a crustacean (*Gammarus, Cancer,* or of plankton) be allowed to fall on the hypostome, the mouth is evaginated and as the viscous fluid sinks to the bottom of the glass container, the mouth may in rare instances be applied to the surface of the glass. These reactions are probably concerned with feeding.

The abundance and ease of collection (by means of netting dragged over the bottom) of *Acaulis primarius* make it a very favorable object of study. I am greatly indebted to Doctor Dahlgren for much advice and assistance throughout the summer's work.