

ZOOLOGY.—*Stereobalanus canadensis* (Spengel), a little-known enteropneustan from the coast of Maine.¹ EDWARD G. REINHARD, Catholic University of America and University of Maine Marine Laboratory.

A considerable number of specimens of an enteropneustan, hitherto known only from four fragments dredged off Cape Breton, Nova Scotia, were collected by the author on the coast of Maine during the summers of 1940 and 1941. William C. McIntosh, who collected the type material, sent it to Spengel in 1878 for study. The latter described the animal (1893) under the name *Balanoglossus canadensis* and subsequently (1901) created a new genus, *Stereobalanus*, to receive it. Although Spengel's description is extremely detailed and authoritative, it is necessarily lacking in some particulars since the material was poorly preserved and did not comprise a complete specimen. These deficiencies, coupled with the fact that the appearance of the animal when alive was entirely unknown also introduced unavoidable errors into the description. Spengel himself, commenting on the poor quality of the specimens, remarks: "Dies ist um so mehr zu bedauern, als *Balanoglossus canadensis* durch eine ganze Reihe interessanter Eigenthümlichkeiten ausgezeichnet ist. Eine ahermalige Untersuchung dieser Art unter Benutzung reicheren und besser erhaltenen Materials ist daher sehr wünschenswerth."

Stereobalanus was first encountered by the author on July 31, 1940, while on a dredging trip in Frenchmans Bay with a party of students and staff members of the University of Maine Marine Laboratory. The collecting ground has been revisited on two occasions since, and no dredge haul has failed to yield some specimens of this species. The hauls were made at a depth of 40–50 feet about half a mile southeast of Crabtree Light at the mouth of Sullivans River. The bottom at this station is a soft, fine mud. Together with *Stereobalanus canadensis*, the dredge usually contained such mud-dwellers as the hydroid *Corymorpha pendula*, the polychaete *Nephtys caeca*, or the starfish *Ctenodiscus crispatus*.

It is very difficult to collect this animal in perfect condition with the apparatus

used, a 3-foot scallop drag. A box dredge or some other type of equipment might give better results. *Stereobalanus* is extremely soft-bodied and fragile. The specimens were mostly entangled in the meshes of the net bag and almost invariably mutilated. Although more than 40 were obtained, only 4 were entire. I was fortunate in being able to enlist the aid of my friend Dorothy Olsen Johnston, collaborating artist of the American Museum of Natural History, who at once made color sketches of the living animal. For her work, reproduced in Fig. 1, I am deeply grateful.

Size.—Total length up to 50 mm. Since Maine is probably the southern limit of the species, it is likely that Nova Scotia specimens may be larger.

Color.—The color is a pale lemon-yellow except for the liver region, which is brown.

Proboscis.—The proboscis of the largest specimen, measured alive, showed a length of 11 mm and a width of 6 mm. Well-fixed mature specimens had proboscides averaging 6–7 mm in length and about 5 mm in width at the base. The dimensions given by Spengel for the proboscis (5 mm long and 7 mm wide) and his illustration (pl. 17, fig. 1) are obviously based on strongly contracted specimens. In life, the proboscis is nearly twice as long as it is broad, and even in properly fixed animals it retains a length greater than the width.

As in other Enteropneusta, the proboscis is joined to the anterior surface of the collar by means of a short, thin, tapering neck. Spengel's statement that the neck is absent in *Stereobalanus* is clearly erroneous and again attributable to the highly contracted nature of the material at his disposal.

Collar.—The collar is approximately as wide as the base of the proboscis and has a length of 2–3 mm. It is very short in comparison to the collar-length of most other Enteropneusta. The presence of two circular furrows gives the collar a triannulate appearance. Spengel was unable to discover collar-pores in this species, but they are

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clearly evident if the collar is severed from the trunk and the posterior collar surface examined. The pores lie directly dorsal to the pharynx, one on each side of the midline.

Skeleton of proboscis and collar.—This is sufficiently well illustrated in Fig. 2 to require no additional comment. The drawing was made from a whole mount of a small specimen and checked against maceration-preparations of larger specimens.

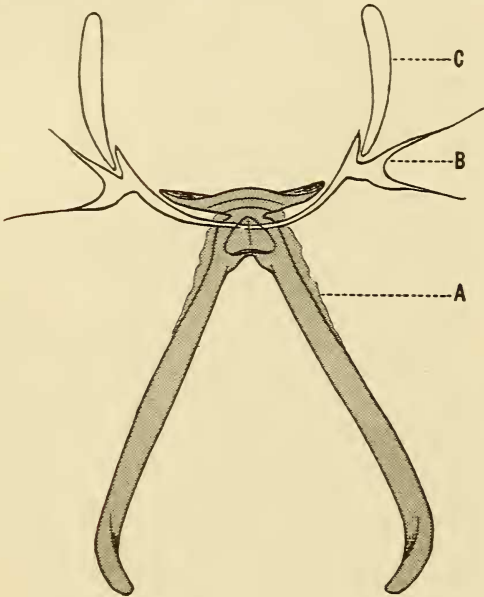


Fig. 2.—The proboscis skeleton of *Stereobalanus canadensis*, ventral aspect, with associated structures: A, proboscis skeleton; B, chondroid tissue; C, marginal lamellae.

Trunk.—The trunk measures up to 36 mm in length and is nearly uniform in diameter except in the caudal region where it becomes somewhat less thick. Its general width equals or slightly exceeds that of the proboscis and collar. It bears a distinct dorsal and ventral longitudinal ridge, and its surface, except for these ridges, is conspicuously ruffled.

In the branchiogenital region, which is immediately posterior to the collar, *Stereobalanus* exhibits several unusual features. Instead of possessing a series of gill pores, as does the familiar *Dolichoglossus*, there is a single, deep, slitlike pore on each side, dorsolateral in position. Its presence gives

rise to a smaller dorsal and larger ventral genital wing in which the gonads are located. The gills are visible externally, particularly if the genital wings are spread apart slightly.

The number of gills varies with the size of the individual. Young specimens have 12 or 13 pairs of gills, while average mature individuals have about 36 pairs. The gill skeleton consists of 3-pronged forks. The arch that joins the three prongs of a fork

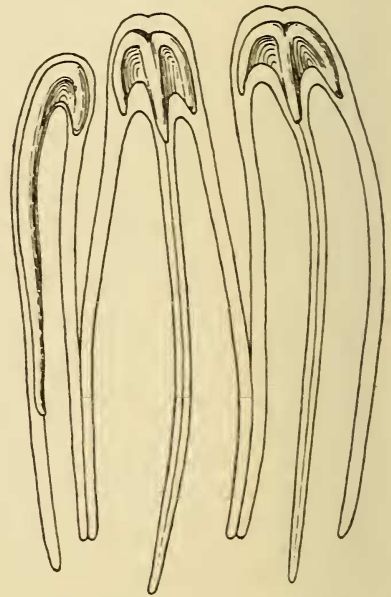


Fig. 3.—The first three forks of the gill skeleton of a mature *Stereobalanus canadensis* showing chitinous thickenings as seen from inner side.

together is feeble in young specimens and in the posterior gills of older animals. Elsewhere it is greatly thickened with a massive cap of chitin. Spengel's "Rücken massig verdickt." is therefore true only of the older gill skeletons.

Following the branchiogenital region, a portion of the trunk entirely devoid of gills or gonads intervenes before the liver region is reached. This transitional portion, which is somewhat longer than the branchiogenital region itself, was somehow missed by Spengel, who reported the liver region as following directly upon the gill region. Van der Horst (1927-39), on the basis of comparative studies on other Enteropneusta,

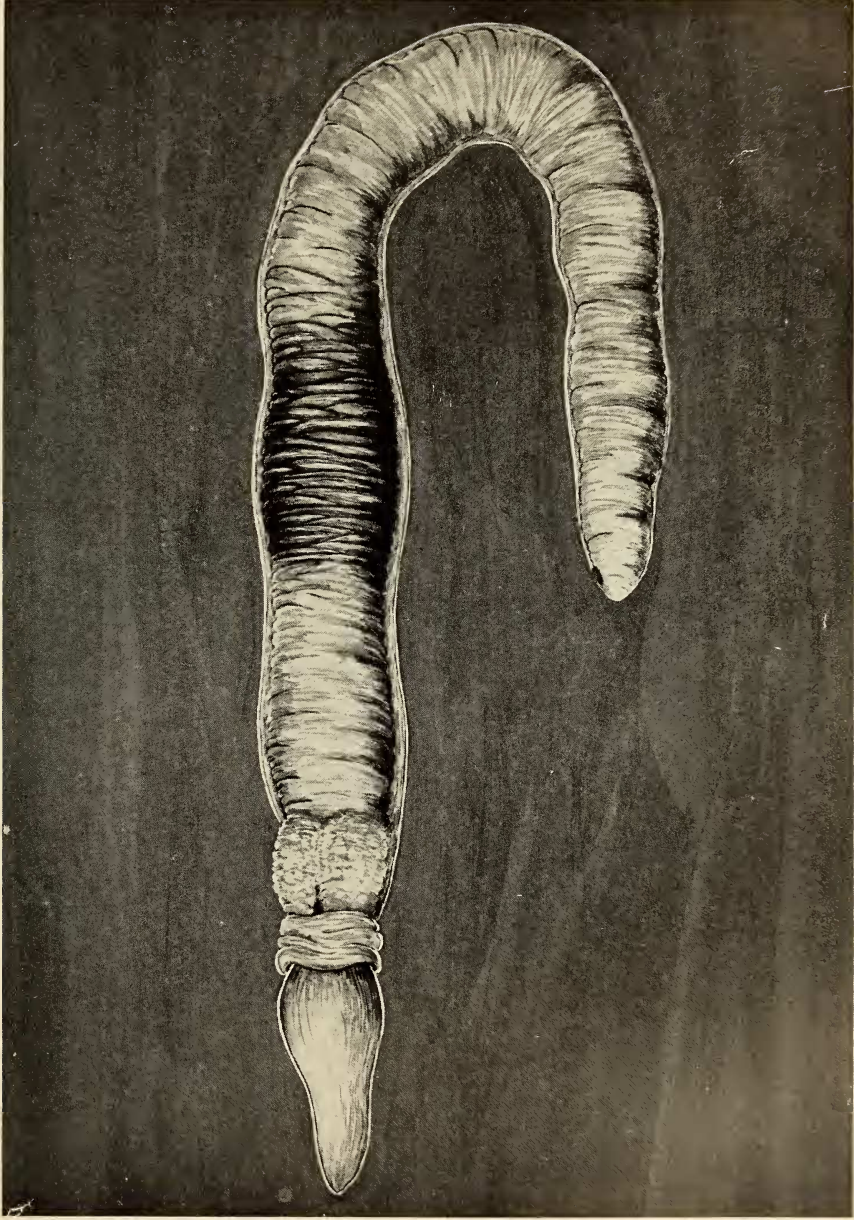


Fig. 1.—*Stereobalanus canadensis* (Spengel). Four times natural size. From a color sketch of the living animal by Dorothy Olsen Johnston.