

pleteness of material hitherto described. Most specimens examined were broken at the junction of the genital and transitional regions. The post-hepatic regions were more robust and are well figured by Köehler⁸. The accompanying drawing is a reconstruction based on several specimens showing the hepatic region in its correct form. Sectioned material revealed that the dorsal diverticulum of the buccal cavity had two latero-ventrally placed diverticulæ proximally, the lumina of which remained distinct from that of the main one, but tended to become confluent posteriorly.

All the specimens were found in muddy sand with some admixture of shell gravel. A few of the Kenmare specimens were found in comparatively clean sand and shell gravel. The shores which yielded these specimens were subjected to a good tidal flow without undue turbulence, for in all cases the areas were sheltered from surf action. Adjacent *Zostera* beds or dense algal growth provided an abundance of detritus upon which the enteropneusts could feed^{5,9,10}.

The associated fauna was in many respects typical of sandy mud, and included *Echino-cardium cordatum* (Pennant), *Acrocnida brachiata* (Montagu), *Leptosynapta inhærens* (O. F. Müller), *Labidoplax digitata* (Montagu), *Upogebia deltaura* (Leach), *Arenicola marina* L., *Amphitrite johnstoni* (Malmgren), *Cerianthus lloydi* (Gosse), *Chaetopterus variopedatus* Renier, and numerous bivalves.

The specimens collected on the shore were found between mean low-water springs, and in many instances involved a considerable amount of deep digging. Their burrows often extended from twelve to fifteen inches into the substratum. For an account of the fauna and flora of the Small's Cove and Mill Bay area from which the Salcombe specimens were collected see Wilson¹¹.

Although many enteropneusts are gregarious animals, and solitary specimens may be strays from a colony near by, the prolonged planktotrophic life of the tornaria undoubtedly results in a wide scattering of individual specimens. *Glossobalanus marginatus* and *G. sarniensis* are both common in the Skagerrak¹², the former favouring muddier areas and deeper water than the latter, and it is very probable that they are also widely distributed throughout the North Sea. The Baltic Stream and cyclic currents of the North Sea would assist in their dispersal. The frequent occurrence of *Tornaria mielcki* and *T. bournei* in this area tends to substantiate this. From collections of adults made in the Skagerrak, and tornaria examined from various parts of the North Sea, it seems that *G. marginatus* is the dominant species, whereas tornaria collected from the Plymouth area and other points in the Celtic Sea indicate that *G. sarniensis* and *Balanoglossus clavigerus* are the dominant species in the English Channel and more southern British waters. Both species have been recorded from the coast of Brittany. Of these species, *Balanoglossus clavigerus* alone penetrates into the Mediterranean Sea, whereas the abundance of *T. bournei* in the waters around the Scilly Isles suggests that *G. sarniensis* is likely to prove the dominant form in the Celtic Sea west of Penzance, and along the Atlantic coast of Ireland. The occurrence of *Tornaria bournei* at Port Erin coupled with the recent Portaferry discovery are strong indications that *G. sarniensis* may also be widely dispersed throughout the Irish Sea.

Thanks are due to all who have provided material or information relevant to the above, and especially

to Mr. J. G. Cattley, of the Ministry of Agriculture and Fisheries at Lowestoft, for numerous tornaria, and to Miss M. Green and Dr. D. P. Wilson for much of the adult material.

C. BURDON-JONES

Department of Zoology,
University College of North Wales,
Bangor.

¹ Tattersall, W. M., *Ann. Rep. Fish. Ireland, Sci. Invest.*, 1902/3, Pt. 2, App. 7 (1905).

² Meek, A., *Quart. J. Micro. Sci.*, **66**, 579 (1922).

³ Stiasny-Wijnhoff, G., and Stiasny, G., *Ergebn. Fortscher. Zool.*, **7**, 38 (1927).

⁴ Stiasny, G., *Z. wiss. Zool.*, **110**, 36 (1914).

⁵ Burdon-Jones, C., *Nature*, **165**, 636 (1950).

⁶ Holme, N., *J. Mar. Biol. Assoc. U.K.*, **32**, 1 (1953).

⁷ Edwards, C., *Nature* [see following communication].

⁸ Köehler, R., "Internat. Monatsschr. Anat. Hist.", **3**, Heft 4, 139 (1886).

⁹ Barrington, E. J. W., *Quart. J. Micro. Sci.*, **82**, 227 (1940).

¹⁰ Burdon-Jones, C., *Nature*, **165**, 327 (1950).

¹¹ Wilson, D. P., *J. Mar. Biol. Assoc. U.K.*, **28**, 395 (1942).

¹² Gustafson, G. (personal communication).

Occurrence of the Enteropneust *Glossobalanus sarniensis* Köehler in Northern Ireland

PREVIOUS records of adult Ptychoderidae in British waters are extremely few, despite the widespread occurrence of tornaria larvæ. However, Burdon-Jones¹ reports the occurrence of adults in several localities, and it is of interest to record the recent finding of *Glossobalanus sarniensis* Köehler in Northern Ireland.

Four examples of this species were taken in September and October 1952, at Portaferry, Co. Down, at the narrow entrance to Strangford Lough. They were obtained between the levels of mean and extreme low-water springs in a restricted area of somewhat muddy sand with a substratum of shell gravel. The area is subject to great tidal change of water but with little turbulence, and is adjacent to shores densely covered with weed. These conditions provide an abundance of detritus, as is evidenced by the varied fauna occurring with the enteropneust. Species found commonly or abundantly there include *Cerianthus lloydi* Gosse, *Sagartia elegans* (Dalyell), *Arenicola marina* L., *Amphitrite johnstoni* Malmgren, *Pectinaria belgica* (Pallas), *Ensis arcuatus* (Jeffreys), *Acrocnida brachiata* (Montagu), *Echinocardium cordatum* (Pennant), and *Leptosynapta inhærens* (O. F. Müller).

In view of its restricted intertidal area of occurrence and its sparseness there, it is probable that the main, and so far undetected, area occupied by the enteropneust lies below the tidal zone, and even in the Irish Sea, larvæ being probably brought into the lough with the tidal flow.

Spengel² figures the species as having a small egg-shaped proboscis, but admits that he was working with preserved material. Köehler³ describes the proboscis as being conical in life. My specimens showed it in the resting condition in life to be approximately conical and bluntly pointed.

C. EDWARDS

Department of Zoology,
The Queen's University of Belfast,
Northern Ireland. March 11.

¹ Burdon-Jones, C., *Nature* [see preceding communication].

² Spengel, J. W., "Fauna u Flora Neapel", 18 (1893).

³ Köehler, R., "Internat. Monatsschr. Anat. Hist.", **3**, Heft 4, 139 (1886).