Oceanogr. Mar. Biol. Ann. Rev., 1971, **9**, 141–192
Harold Barnes, Ed.
Publ. George Allen and Unwin Ltd., London

GASTROTRICHA[1]

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HISTORICAL

It is only relatively recently that the study of marine gastrotrichs has been systematically undertaken. Although the freshwater species, discovered in 1718 by Joblot, was the subject of an extensive literature by the beginning of this century at which time the basic systematics had been established, only three publications prior to 1924 were concerned with marine species. Schultze (1853) published the diagnosis of the first species, *Turbanella hyalina*,* found near Cuxhaven; his denomination of this species as an "aberranten Gastrotrichen" was used by writers for three-quarters of a century, and increased the indecision of Schultze and his successors as regards the exact systematic position to be assigned to that species. Claparède (1867) described *Hemidasys agaso* of the "biotopes fangeux" of the Bay of Naples, a second aberrant gastrotrich; this had the peculiarity of living quite frequently on the body of the 'annelide' *Nereilepas caudata*, but this association was not obligatory; the species has never been found again. Giard (1904), investigating the diatomaceous sands in the region of Ambleteuse, discovered the existence of *Zelinkiella plana*, later related to the genus *Turbanella*, and whose existence as a distinct species of *T. cornuta* was questioned by Remane until 1924; Giard likewise observed in the same biotope the first marine representative of the 'normal' gastrotrichs, to which he gave the name of *Chaetonotus marinus*. Unlike that of Schultze, the descriptions of the latter species were quite succinct. Beginning in 1924, Remane undertook a systematic programme of research into the marine gastrotrichs of the Baltic coasts, the North Sea, the Mediterranean, and the Adriatic, and described exhaustively the morphology and anatomy of numerous species. These studies led him in 1924 to divide the gastrotrichs into two clearly defined Orders, the Macrodasyoidea (formerly 'gastrotriche aberrant'), and the Chaetonotoidea (formerly 'gastrotriche normal'). To the systematic work which enabled him to institute the whole of the classification at present in use, he added studies on anatomy, histology, and physiology, all collected in an important monograph (1936) the foundation of our knowledge of this group.

Subsequent workers have attempted to define precisely the systematics of

[1] Editor's translation approved by the author.
* For taxonomic authorities see Table I, p. 161–180.

Suborder Multitubulata nov.

Three or four pairs of caudal tubes merged at their base; 10 to 20 pairs of lateral tubes, the number increasing with age; subcephalic tubes absent or scarcely apparent; no cuticular formations; a narrow, very elongated body, very easily distorted and marked with transverse folds; female genital organs very elongated and running the length of the intestine; size of the eggs

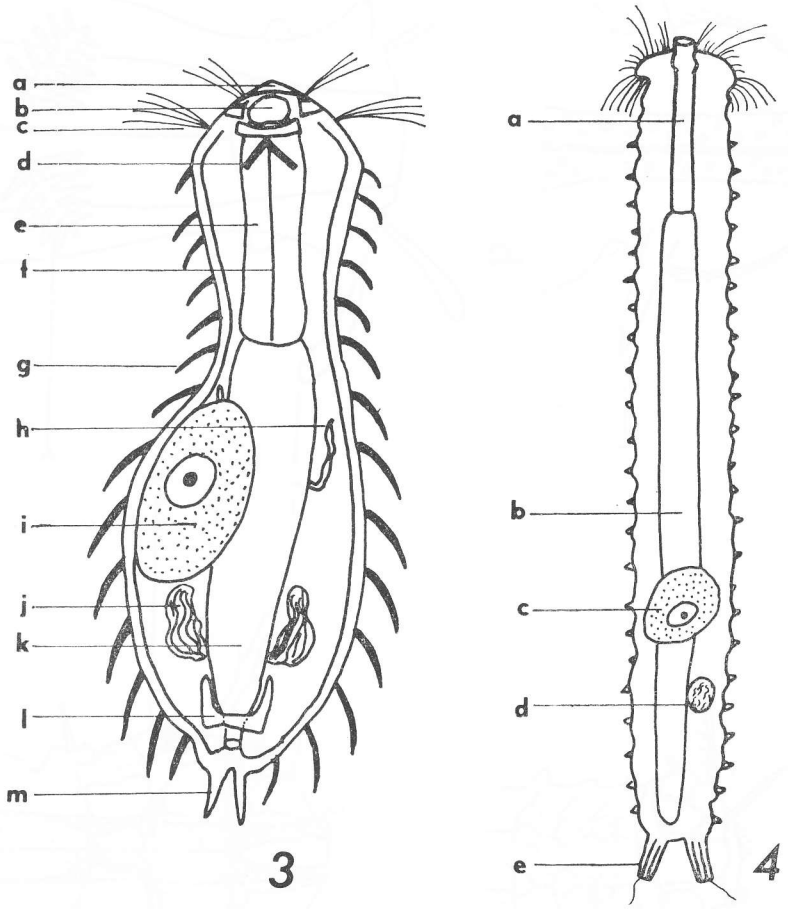

Fig. 3.—The major characteristics of a *Chaetonotus* sp. (Chaetonotoidea); ventral view: a, anterior cephalic cuticular plate ('cephalion'); b, mouth; c, tuft of cephalic cilia; d, masticatory processes of Schrom; e, oesophagus; f, oesophageal lumen; g, spine; h, nephridium; i, egg; j, testis; k, intestine; l, seminal receptacle; m, adhesive tubule.

Fig. 4.—*Neodasys chaetonotoides* Remane; dorsal view: a, oesophagus; b, intestine; c, egg; d, seminal receptacle; e, caudal adhesive organ.

increasing from the anterior towards the posterior; the intestine formed from about ten longitudinal rows of cellules. One single family, Neodasidae, Remane, 1936 (genus *Neodasys*, Remane 1927a). In my opinion, it is necessary also to place in this suborder another and still little known genus, *Xenodasys*.

Suborder Paucitubulata nov.

One (or in exceptional cases, two) pairs of caudal tubes; the number of pairs of tubes definitely fixed at the moment of hatching; no lateral or sub-cephalic tubes; cuticular formations present (except for a freshwater South American species, *Proichthydium coronatum*) and in particular four peribuccal cephalic plates; body more or less elongated, but never marked with transverse folds; female reproductive organs concentrated at the back of the body; size of the eggs increasing from a ventral-posterior area towards a dorsal-anterior zone; intestine formed from four longitudinal rows of cellules. Six families: Proichthydiidae Remane 1927, Dichaeturidae Remane 1927, Neogosseidae Remane 1927, Dasyditidae Daday 1905, Chaetonotidae Zelinka 1889, Xenotrichulidae Remane 1927. The genera found in saline waters are as follows:

Xenotrichulidae (Figs. 6, 7) (no ventral ciliature; presence of a beard of lateralpharyngian ventral locomotive cirri; almost always peduncular scales): *Xenotrichula*, *Heteroxenotrichula*, *Xenotrichuloides*.

Chaetonotidae (a ventral locomotive ciliature, but no cirri; diverse types of scales): *Heterolepidoderma*, *Musellifer*, *Aspidiophorus*, *Ichthydium*, *Polymerurus*, *Chaetonotus* (of which the marine and brackish water species belong exclusively to the sub-genera *Halichaetonotus*, *Schultzei*, *Maximus*, and *Antipai* nov.

TECHNIQUES OF STUDY

SAMPLING

Quantitative sampling of the substratum

The superficial sediment thought to contain animals is sampled with a Petri dish (Remane, 1927), with a glass jar (Swedmark, 1955), or collected by means of a small trowel and emptied into a plastic bag (d'Hondt, 1967a). This bag can be emptied into a Petri dish or sea water can be added until the level is 1 to 2 cm above that of the sand. In these three cases, the sample should be left for anything from a few hours to a few days in order to allow the animals to return to the surface; certain species do not appear until fairly late and after the sediment has begun to loose its oxygen. The surface of the sand can then be raked, and studied in small fractions.

Quantitative sampling as a core (*d'Hondt, 1967a*)

A series of small tubes, 5 cm in diameter and 25 cm long is forced vertically into the sand; when the core of sediment thus obtained rises up to the top, the cylinder is carefully withdrawn, and both ends stoppered; it can then be transported to the laboratory. To obtain material from a greater depth, a second tube is forced into the same hole, starting at the level reached by the bottom of the first tube.

Other methods (*purely qualitative*)

For species of sublittoral biotopes, water held in the sand may be sucked off (Delamare-Deboutteville, 1953), or dredges may be used. The method of Chappuis (1942) modified by Delamare-Deboutteville may be used; it consists of filtration through a plankton-filter of the water held by the sand seeping into a hole dug to the depth of the filter element.