

3. The "Suckers" of the Myzostomidae.

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(With 2 Figures.)

eingeg. 25. Januar 1911.

The large collection of Annelida made by Mr. Cyril Crossland in the Red Sea in 1905 included several species of Myzostomids. These, together with the Polychaetes, were sent to Mr. F. Potts of Trinity Hall, Cambridge who very generously handed them over to me for examination.

As the material contains a large number of specimens my full report on the collection will not be ready for some time; in this note, however, I desire to call attention to one species which presents certain peculiarities of considerable morphological importance.

The specimens I refer to present most of the features characteristic of the old established species *Myzostoma costatum* founded in 1836 by F. S. Leuckhart¹ for forms obtained from *Comatula multiradiata* Lam. in the Red Sea, and it is my intention to call them by that name, at least provisionally.

Von Graff, in his well-known monograph² on the group, defines *M. costatum* as follows: — "Corpus ovale depressum, incisura antica triangulari, griseo- aut nigro-brunneum, supra costatum. Costa una longitudinalis mediana qua communicantes 10—14 costae transversales ad marginem productae. Margine orientes inter has costae breviores secundariae et tertiariae illam longitudinalem non attingentes marginemque crenulantes. Parapodia crassitudine uncinorumque forma *M. glabrum*, longitudine *M. cirriferum* aequantia. Acetabula elliptica. Os ad basin incisurae triangularis, ventrale, papilla cloacalis ventralis.

Longit. ad $3\frac{1}{2}$ mm.

In mari rubro Comatulae multiradiatae Lam. in mari prope Bohol Actinometrae solaris Lam. incolae".

Mr. Crossland's specimens differ from previously described examples in being devoid of the triangular incision of the anterior margin, the latter being transparent and deeply indented to form a number of broad, blunt processes. Whilst examining the oral region of a small mounted specimen under the microscope I was surprised to find that, in addition

¹ F. S. Leuckart, »In Beziehung auf . . . das Schmarotzertier auf *Comatula*«, Forrieps Notizen. No 1087. Bd. 50. S. 130.

² L. v. Graff, Das Genus *Myzostoma* F. S. Leuckart. Leipzig, 1877. S. 22.

to the usual four pairs of suckers, an extra pair was present near the anterior margin, and a more careful examination of the whole specimen revealed yet a sixth pair close to the posterior extremity of the body. These extra pairs were found in other individuals and were seen on whole specimens as well as in sections, I must therefore conclude that the species under discussion constantly possesses six pairs of suckers instead of the four pairs which have hitherto been considered so characteristic of all species in which these organs have been noticed.

The suckers lie very close to the margin of the body, reference to my sketch (fig. 1) will show that four pairs of these are in the usual

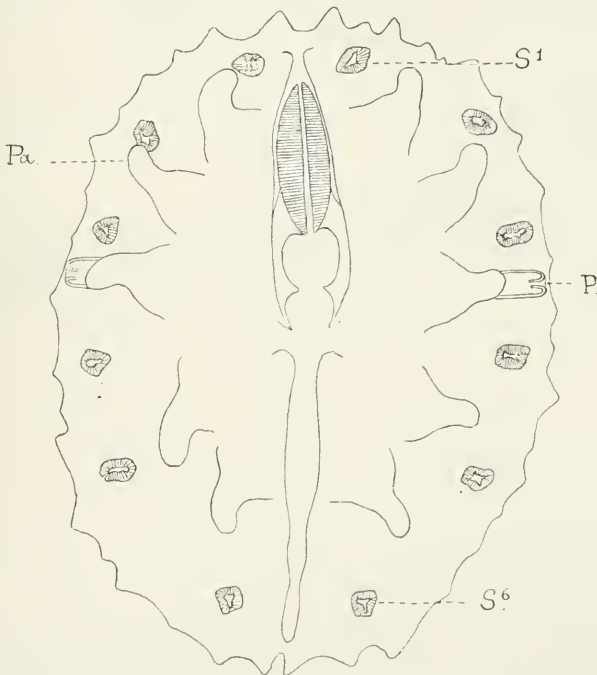


Figure 1. *Myxostoma costatum* Leuck. Ventral view of one of Mr. Crossland's specimens; Actual length 2 mm. P=penis. Pa=parapodium. S¹ and S⁶=first and sixth suckers.

position, that is to say in the interspaces between the five pairs of parapodia, these are the second to fifth pairs. The first pair is situated in front of the first pair of parapodia close to the anterior margin of the animal, the last or sixth pair lies a considerable distance behind the fifth pair of parapodia.

The suckers are all alike and quite typical, having much the same

structure as those described by W. M. Wheeler³ in *Myxostoma glabrum* Leuck., when retracted appearing as spherical or oval bodies with walls so thick that the cavity is almost obliterated or reduced to an irregular ramifying slit between the folds of the wall.

The features described above seem to me of considerable interest as they make a modification of the definition of the Myzostomidae essential.

The presence of six pairs of suckers in a species of *Myxostoma* necessitates a change in the generally adopted views on the morphology of the Myzostomida. W. M. Wheeler in his important paper on the sexual phases of these animals⁴ discusses the structure and homologies of the suckers at some length. These organs (which he prefers to call segmental sacs) he considers to be metameric, lying laterally or dorsally to their respective parapodia like the 'Seitenorgane' of Capitellidae and for various reason he believes them to be homologues of these lateral line organs or segmental sacs. In the course of his discussion of this subject we find the following passage: —

"The fact that in *Myxostoma* there are five pairs of parapodia but only four pairs of segmental sacs, naturally leads to the question as to what has become of the missing pair of sacs. The answer to this question I believe we need not go far to seek: the third pair of the original five pairs of sacs has been converted into the so-called penes. These are more or less prominent papillae lateral to and near the bases of the third pair of parapodia. Each papilla is perforated by a ductus ejaculatorius which widens proximally into a vesicula seminalis. The latter receives the mature spermatozoa from the vasa deferentia and these in turn from the ramifying testicular follicles. Bizarre as the development of a male reproductive organ from a lateral line organ may appear at first sight, I am nevertheless unable to see any great difficulty in such a change of function. It is in fact easy to see how the bottom of an eversible sac might acquire an opening into the body cavity under the pressure of a great accumulation of spermatozoa; the sac would then become reduced to a mere conduit".

The occurrence of a species of *Myxostoma* with six suckers renders Wheeler's views on the subject quite untenable, for in this form we find the number of pairs of suckers or segmental sacs to be greater than the number of pairs of parapodia, and we have to consider that we are dealing with six segments instead of five. The problem before us

³ W. M. Wheeler, 'The Sexual Phases of *Myxostoma*'. Mitt. Zool. Stat. zu Neapel. Bd. XII. 1895—97. S. 281.

⁴ W. M. Wheeler, T. c. p. 278.

is therefore changed and we have now to account for the missing sixth pair of parapodia, it seems probable that the pair of penes are homologues of parapodia and represent the vanished pair. This theory strikes me as a quite likely one and certainly less far-fetched than Wheeler's; I do not however wish to insist on this point as such homologies, based on mere supposition and not backed up by any phylogenetic or ontogenetic evidence, cannot be of any real value.

Consideration of the above-mentioned points leads one naturally

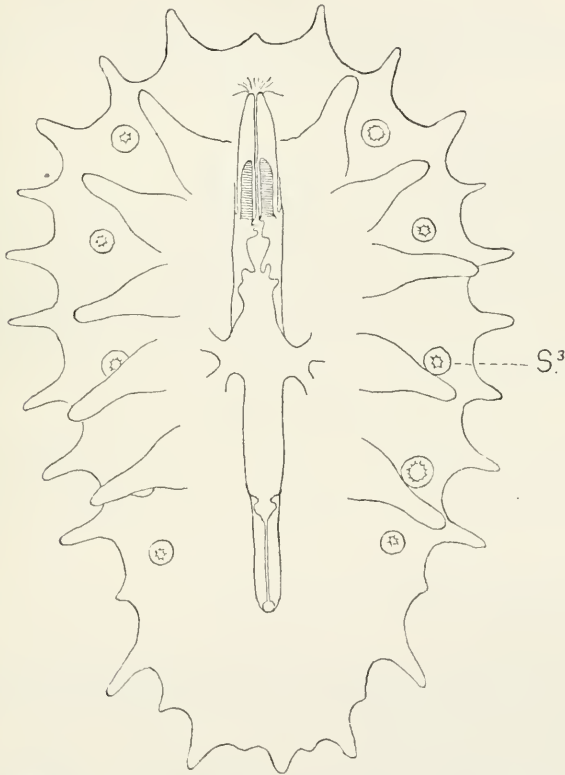


Figure 2. *Myxostoma moebianum* v. Graff. (after von Graff). S^3 = third sucker, labelled ♂ in the original figure.

to consider the question: — is it possible that some of the other described species of *Myxostoma* bear more than four pairs of suckers? These organs are often very difficult to make out on unmounted specimens, a fact which the majority of workers on this subject have commented on from time to time; von Graff, for instance, in his report

on the 'Challenger' Collection⁵, remarks that although some species are devoid of suckers "it would be desirable to place this beyond a doubt by the help of sections, since it is always possible that (except in *Stelechopus* and the encysted species) there may be microscopic rudiments of suckers remaining; and on the other hand, it is possible that certain cavities on the ventral surface of many species do not really represent suckers at all, as they were formerly supposed to do.

It seems also the limit of the suckers and their appearance generally varies according to the different state of contraction in which they are."

I have carefully searched through the literature and examined the figures of described species of *Myzostoma* in some detail, as the result I feel confident that one species at least possesses more than four pairs of suckers. This is *M. moebianum* v. Graff, from Fouquet Island, south east of Mauritius. The species was described⁶ from some sketches, notes and preparations sent to the author by K. Moebius in 1877. The preparations were very badly preserved with the exception of the hook-apparatus, and von Graff follows Moebius's notes in his description; he also reproduces his drawing of the animal⁷ and it is to this drawing that I particularly wish to refer. Moebius's sketch distinctly shows five pairs of suckers the last of which occupies a similar position to the sixth of Mr. Crossland's specimens, i.e. between the last pair of parapodia and the hinder end of the body; the remaining four pairs are in their usual position between the parapodia.

In the written description, however, von Graff says: "Of the five pairs of suckers figured by Dr Moebius, one pair seems to me to be really the male generative aperture" and he labels the third pair of suckers in the figure ♂. He gives no reason for this step, nor does he explain why he singled out this particular pair; all the suckers are drawn alike and there seems no reason to doubt the accuracy of Moebius's sketch.

Moreover, if we accept von Graff's conclusion that the third pair of suckers represent the penes we find that the remaining four pairs are in an abnormal position, thus the last pair is behind instead of in front of the last pair of parapodia.

I have reproduced the figure in question, and I think there can be no doubt that *M. moebianum* really possesses five pairs of suckers.

It is possible that additional pairs of suckers have been overlooked in other species, being either very inconspicuous or rudimentary and only visible in sections or in mounted specimens.

⁵ L. v. Graff, Report on the Myzostomida . . . Zool. Challenger Exp. Part XXVII. 1884. p. 10.

⁶ L. v. Graff, T. c. p. 48.

⁷ T. c. pl. VIII. fig. 3.

In connection with the above it is interesting to take note of an abnormal example of the common *M. glabrum* obtained by von Graff at Triest and described in his monograph⁸. This specimen possessed only four parapodia on the right side, this however was compensated for by the occurrence on the same side of a well-developed additional sucker close to the mouth.

II. Mitteilungen aus Museen, Instituten usw.

Notizen über die Fauna der Adria bei Rovigno.

Herausgegeben von der Zoologischen Station Rovigno in Istrien.

V. Ein Vertreter der Hyperideae curvicornia aus der Adria.

Von Prof. Adolf Steuer (Innsbruck).

(Mit 2 Figuren.)

eingeg. 8. März 1911.

Bisher war aus der Adria kein einziger planktonischer Amphipode bekannt. Wohl gibt Graeffe (1902) in seiner »Übersicht der Fauna des Golfes von Triest« S. 24 (56) eine *Hyperia mediterranea*? V. Costa an, die sich bei Triest an *Discomedusa lobata* Cls. (syn. *Umbrosa lobata* Haeckel) findet, allein schon Bovallius (1890) sagt über diese Art (S. 141): ». . . Costa proposed the name *Lestrigonus mediterraneus* for a new species, but with so few and insignificant characteristics that it is quite impossible to judge of its identity.«

Im Dezember 1910 fing Kollege T. Krumbach in Rovigno an einer *Deiopea kaloktenota* Chun einen etwa 3,3 mm großen, zur Familie Oxycephalidae gehörenden Amphipoden, den er mir zur Bestimmung übergab.

Chun erwähnt in seiner Ctenophoren-Monographie (1880, S. 89 und 243) eine »glashelle, bis zu anderthalb Zentimeter heranwachsende, noch nicht beschriebene *Oxyrhina*-Art«, die an der Innenseite der Lappen von *Eucharis* lebt. »Durch die langen spinnenförmigen Beine« scheint die Art besonders befähigt, sich auf den Lappen umherzutreiben. Da der Genusname *Oxyrhina*, soweit mir bekannt, für eine Haifischgattung verwendet wurde, dürfte es sich hier vielleicht um eine Verwechslung mit »*Oxyrhynchus*« oder »*Oxyrhingus*« handeln.

Die adriatische Form gehört jedenfalls zur Gattung *Glossocephalus* Bovallius 1887 und ist mit *G. milne-edwardsi* Bovallius 1887 identisch oder doch sehr nahe verwandt.

Der wichtigste Unterschied, wodurch sich das einzige mir vorliegende Exemplar, ein junges ♀, von der erwähnten Art merklich

⁸ L. v. Graff, Das Genus *Myxostoma* (F. S. Leuckart). Leipzig, 1877. S. 80.

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Zeitschrift/Journal: [Zoologischer Anzeiger](#)

Jahr/Year: 1911

Band/Volume: [37](#)

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Artikel/Article: [The "Suckers" of the Myzostomidae. 346-351](#)