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Annals and Magazine of Natural History: Series 6
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tnah12

XX.—Contributions towards a general history of the marine Polyzoa, 1880-91.—Appendix

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Published online: 12 Oct 2009.

To cite this article: Rev. Thomas Hincks B.A. F.R.S. (1891) XX.—Contributions towards a general history of the marine Polyzoa, 1880-91.—Appendix , Annals and Magazine of Natural History: Series 6, 8:44, 169-176, DOI: 10.1080/00222939109460412

To link to this article: http://dx.doi.org/10.1080/00222939109460412

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tically from the same locality, and since, as I have pointed out, the peculiarities in the description of *Syntethys* can be easily accounted for on the supposition that Forbes and Goodsir's specimens were, like the Duke of Argyll's, the *Diazona violacea* of Savigny.

XX.—*Contributions towards a General History of the Marine Polyzoa*, 1880–91.—*Appendix.* By the Rev. THOMAS HINCKS, B.A., F.R.S.

[Continued from p. 93.]

'Annals,' November 1880 (p. 28 sep.)

Steganoporella Rozieri, Audouin.

I have taken this species as the type of a new genus, *Thalamoporella*, distinguished from *Steganoporella* by important differences in the internal structure of the zoœcium *.

Ibid. (p. 29 sep.).

Steganoporella elongata, sp. n.

This species must be referred to the genus *Micropora*. The structure of the Steganoporellidæ had not been thoroughly investigated when my description of it was published; later researches have shown that it is not a member of this family, but finds its proper place in the kindred tribe of the Microporidæ.

Ibid. (p. 30 sep.).

Steganoporella Jervoisii, sp. n.

This form belongs to the genus *Thalamoporella*. The list of the recent species of *Steganoporella* which I have given (p. 30) is from the cause just mentioned defective. The first of the species which it contains, *Eschara impressa*, Moll, must be removed from it. Of the rest, *Flustra Rozieri*, Audouin, *Membranipora gothica*, Busk (=*S. Rozieri*, form *gothica*, mihi), and *Steganoporella Smittii*, Hincks, belong to the genus *Thalamoporella*; *Membranipora magnilabris*, Busk, is the only representative of the genus *Steganoporella* as now defined.

* "Critical Notes on the Polyzoa," 'Annals' for Feb. 1887, pp. 163, 164.

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The synonymy of *Micropora impressa* contained in Miss Jelly's invaluable 'Catalogue' includes *Membranipora Andegavensis*, of Busk, and in a note at the close of it the author adds the following:—"Regarding the synonymy of this species it must be remarked that opinions differ. Hincks places the *Membranipora Andegavensis* of Busk as a synonym of *Steganoporella* (*Thalamoporella*) *Smittii* (B. M. P. 178)." My reason for doing so I have already explained (B. M. P. vol. i. pp. 178, 179). Through Mr. Busk's kindness I had the opportunity of examining the type-specimen of the *Membranipora Andegavensis* of the 'Crag Polyzoa.' So far as my recollection goes, I had been struck by the close resemblance between the avicularia of the latter and those of *Steganoporella Smittii*, which I was about to describe, and asked Mr. Busk to allow me to see his specimen. And, in passing, I may remark that the presence of the large and remarkable avicularia, which are clearly shown in Busk's figure of *M. Andegavensis*, is in itself conclusive as to the synonymic question. *Micropora impressa*, so far as I know, is altogether destitute of these appendages. On examining the type-specimen I found such a general agreement between it and the recent species as to leave no doubt respecting the identity of the two forms. The shape and structure of the avicularium are the same in both; this I was able to determine even with respect to the minute details, as in one or two cases the mandible of the avicularium had been preserved in the fossil specimen. What Mr. Busk's reasons might be for identifying his species with the *Eschara Andegavensis* of Michelin I have no means of knowing; but his own figure shows that he was mistaken. Michelin's species, there can be little doubt, is the *Eschara impressa* of Moll. *Membranipora Andegavensis* of Busk must therefore be removed from the synonymy of the latter.

Manzoni identifies *Membranipora calpensis*, Busk (which is no doubt *Eschara impressa* of Moll), with Michelin's *E. Andegavensis*, but follows Busk in referring the Crag species to the latter. Probably he merely copied Busk without careful examination of his figure.

Ibid. (p. 30 sep.).

Microporella fissa, sp. n.

On the whole I am inclined to refer this form to *Adeona violacea*, Johnston (sp.). The points of difference are the shape of the pore, the oblique direction of the suboral avicularium, the presence of zoœcia bearing a large lateral avicu-

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larium of peculiar form and structure, instead of the small central one below the orifice, and the frequent occurrence of a second avicularium similar to the last-named on the lower part of the front wall. The pore, we now know, is liable (as in *Microporella decorata*) to very considerable variation within the limits of a species. The oblique direction of the suboral avicularium, on which Busk founded his *Lepralia plagiopora*, is, as I long since pointed out, a character of very small moment. The occurrence of the second small avicularium would hardly merit notice were it not the case that in *A. violacea*, as commonly met with, there is a remarkable constancy both as to number and character in this appendage. Amongst the large number of British specimens examined I have never met with any diversity of shape, a fact which gives more significance to the presence of the gigantic avicularium, with its elongate beak and scimitar-shaped mandible, than it would otherwise possess. It may be regarded as probably a local adaptive modification of the ordinary suboral form, which is always absent from the cells bearing the large lateral avicularium.

So far the latter has only been noticed on specimens from the Indian Ocean. When present it produces a remarkable change in the appearance of the zoœcium, which is much widened above, the increase being entirely on the avicularian side and being due to the presence of the large avicularian cell. The long curved beak is also carried up for some distance, causing an extension of the zoœcium above. The transformation of the avicularium in some of the cells of a colony (as in *Smittia nitida*, Verrill, p. 46 sep.) is of not uncommon occurrence; but I cannot recollect a case in which it so materially affects the aspect of the zoœcium.

A question arises as to the true specific name of the *A. violacea*, Johnston (sp.). In her 'Synonymic Catalogue' Miss Jelly records it as *Microporella Heckeli*, Reuss, on the ground that Reuss described it in 1847 and Johnston in his second edition, bearing date 1849. This is an error, and I regret to say that I am responsible for it. In the Bibliography at the close of my Hist. Brit. Mar. Polyzoa, through an oversight in correcting the proof, 1849 is given as the date of Johnston's second edition, which was really published in 1847, the same year as that in which Reuss's Pol. d. Wiener Tertiärbeck. appeared. Johnston's preface is dated April 1847, and unless it can be shown that the German author's book was published earlier in the year, there is no ground whatever for the change.

It is not probable that Johnston's claim will be disputed.

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Ibid. (p. 31 sep.).

Porella rostrata, sp. n.

In Miss Jelly's 'Catalogue' *Lepralia papillifera*, MacGillivray, is given as a synonym of the above. Neither the description nor the figure in the 'Prodromus of the Zoology of Victoria' would lead me to identify the two; but if there is any sufficient ground for regarding them as one and the same species MacGillivray's name should supplant mine, as it was first published in 1868.

Ibid. (p. 32 sep.).

Mucronella tubulosa, sp. n.

Waters * ranks this species as a synonym of *Rhynchopora longirostris*, Hincks; but the species are entirely distinct. The most significant characters of *Rhynchopora* are wanting in *M. tubulosa*.

'Annals,' Feb. 1881 (p. 34 sep.).

Membranipora bicolor, sp. n.

In the description of this species it should be added that there is commonly a rather prominent nodule on the elongate interspace which separates the zoœcia in the same line from each other.

Ibid. (p. 37 sep.).

Membranipora patula, sp. n.

Additional Locality. Queen Charlotte Islands, very common.

Ibid. (p. 37 sep.).

Membranipora spinosa, Quoy and Gaimard.

Jullien has formed a new genus for this species (*Chaperia*), with the following diagnosis:—"Deux lames calcaires internes, à extrémités fixes et servant à l'insertion des fibres musculaires rétractrices de l'opercule" †. This genus is made the type of a family group Chaperidæ.

It is hardly possible without an extended comparative study of the opercular mechanism to estimate the precise

* 'Annals,' ser. 6, vol. iv. p. 19, "On Australian Bryozoa."

† 'Mission du Cap-Horn, Bryozoaires,' p. 61, pl. v. figs. 3–5, and pl. xv. figs. 4, 5.

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systematic value of this character. But I confess it seems to me unlikely that it has the kind of importance which Dr. Jullien assigns to it.

Additional Locality. Cape of Good Hope, common (*M. Maurice Chaper*).

Ibid. (p. 38 sep.).

Membranipora permunita, sp. n.

This species is ranked as a variety of *Cellepora Michaudiana*, d'Orb., by Waters *. Miss Jelly, in her 'Catalogue,' reverses this decision on the ground of the important difference in the avicularia, and places the latter amongst the synonyms of the present form. The distinction, however, between the avicularia, though sufficiently striking (they belong to different classes), is by no means the only ground for separating the two forms. The zoœcia are also described, not merely in slight particulars, but in general character. It is sufficient to instance the marked difference between the apertures of the two species both in form and in the proportion which they bear to the rest of the area. *M. permunita* is clearly not a mere variety of *M. Michaudiana*, but a distinct species; and the latter has therefore no claim to a place in the synonymy.

Ibid. (p. 39 sep.).

Membranipora (*Caleschara*) *denticulata*, MacGillivray.

The account which I have given of the structure of the cell in this species is, I believe, strictly correct; but I certainly do not adhere to my interpretation of it. *Caleschara* belongs to the family Steganoporellidæ † (which had not been properly defined when my paper was written), and would find a place in the genus *Onychocella*, Jullien, but for the entire

* "On Cheilostomatous Bryozoa from Aldinga &c., South Australia," Quart. Journ. Geol. Soc., August 1885, p. 289.

† In the definition which I have given of this family ("Critical Notes," 'Annals,' Feb. 1887, p. 162) the membranous front wall is described as "carrying the orifice and operculum." But this is not universally true of the forms embraced in it. It is the case in *Onychocella*, Jullien, and kindred forms, but not in *Steganoporella* and *Thalamoporella*. This character must therefore be removed from the family diagnosis. Probably this difference is sufficiently important to warrant a division of the family. Jullien's group Onychocellidæ has been formed for species in which the membranous ectocyst carries the orifice. In these forms the true front wall is in all respects similar to that of the *Membraniporæ*, and the orifice and operculum are of the primitive Membraniporidan type.

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absence of avicularia. As, however, it agrees in the more essential elements of structure with this tribe, the absence of the appendages should hardly separate it from its kindred. In his diagnosis of the family (Onychocellidæ) Jullien describes the avicularia as "plus ou moins constants."

MacGillivray's genus *Caleschara* is hardly tenable, as from the condition of his specimens he has been unable to give in his diagnosis a sufficient indication of the distinctive characters. The "*generic character*" is not such as to enable the student to appreciate the peculiarities of the type. Apart from what relates to the habit of growth and other non-essential points, there is nothing but the following clause :— "Front calcareous, except a small part anteriorly, which is membranous."

According to ordinary usage a genus so constituted must give place to one founded on a diagnosis sufficient for identification. Jullien's *Onychocella* with a very slight revision and somewhat wider scope would include *Membranipora antiqua*, Busk, and kindred forms, as well as *Caleschara*. Busk (in his 'Challenger' Report) adopts MacGillivray's name, and associates it with a new generic character. The whole subject requires fresh treatment.

Ibid. (p. 41 sep.).

Note on Membranipora transversa, *Hincks* (=M. cincta, *Hutton*).

This form seems to be nearly allied to *Onychocella* and *Caleschara*. The membranous ectocyst bears the orifice, and below it a calcareous wall passes down from the elliptical opesia to the base of the cell, dividing it into two chambers*.

Ibid. (p. 43 sep.).

Vincularia abyssicola, Smitt.

The old genus *Vincularia* was founded on the erect subcylindrical habit of growth, and is now superseded †. The present species is the type of the genus *Smittipora*, Jullien, but in my judgment should be transferred (as I have already stated) to *Onychocella*, Jullien, *revised*.

* On page 42 (sep.), line 15 from the top, *for* strong *read* stony.

† Busk indeed has retained the name in the 'Challenger' Report, but has connected with it a new definition. He assigns it to a genus "intermediate between *Micropora* and *Steganoporella*," *and with a cylindrical or polygonal habit of growth.* Such a genus is quite inconsistent with the later views of classification.

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The portion of this paragraph from p. 42, line 8 from the bottom, "I mention this" &c., to p. 43, line 4 from the top (inclusive), may be cancelled.

Ibid. (p. 44 sep.).

DIACHORIS, Busk.

The species of *Diachoris* must be ranged under the genus *Beania*, Johnston. There are no generic differences between the two forms. In both the zoœcial characters are Bicellarian; *Diachoris*, which is usually furnished with articulated avicularia, making a nearer approach than *Beania* to *Bugula*, from which indeed it is chiefly distinguished by the more complex character of its zoarium *. MacGillivray has already united the two genera under the earlier name *Beania*†.

'Annals,' July 1881 (p. 49 sep.).

Membranipora radicifera, sp. n.

This was the first species of *Membranipora* in which attachment by means of tubular fibres had been observed. Since its discovery the same structural peculiarity has occurred in several forms, and may prove to be far from uncommon. A more systematic study of the radical appendages is a desideratum, and would form a very interesting chapter in the history of the Polyzoa.

MacGillivray has placed this species in the genus *Beania*, a decision which I am quite unable to accept (see "Critical Notes," 'Annals,' ser. 5, vol. xix. p. 158).

Ibid. (p. 55 sep.).

Steganoporella magnilabris, Busk.

In the last line of this paragraph for "*Lepralia*" read *Membranipora*.

Ibid. (p. 55 sep.).

Cribrilina ferox, MacGillivray.

This species has certainly no right to a place in the genus *Cribrilina*, from which it is separated by the remarkable

* Brit. Mar. Polyzoa, vol. i. pp. 65, 66.
† Prodr. Zool. Victoria, dec. xii. p. 67.

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structure of its cell-wall and other characters. MacGillivray has constituted the genus *Hiantopora* for its reception. It is one of the forms which is attached by tubular fibres.

[To be continued.]

XXI.—*On the Molluscan Genera* Cyclostoma *and* Pomlitias *and the Crinoid Genus* Comaster *and Family* Comatulidæ. By the Rev. Canon A. M. NORMAN.

IT is not my habit to write for controversy, but for science's sake, and I do not quite follow Mr. Newton when he says ('Annals,' June 1891, p. 522) that my statement that I thought he had "misapprehended the facts" betrays an "amount of prejudice." One thing is certain: either he has "misapprehended" the facts or I have done so. I merely gave the facts opposing his views in my last notes, hoping that this would suffice for my purpose, and not desiring to point out too closely what I considered to be errors of statement. It seems, however, now necessary to notice these. I will therefore examine his arguments in detail.

1. The opening words of his first paper ('Annals,' vol. vii. p. 345) were "Much confusion has existed since Lamarckian days regarding the Molluscan name of *Cyclostoma*." There was much confusion, I grant, *in* Lamarckian days; but it would be difficult to find any genus which has received more universal acceptance for ninety years than *Cyclostoma* (or *Cyclostomus*), with its type *C. elegans*. Confusion is only introduced when Mr. Newton proposes to substitute *Pomatias* for that time-honoured name.

2. Mr. Newton argues that Lamarck described *two different* genera which he named *Cyclostoma*.

My reply is, Lamarck (as I showed in the 'Annals' for May last) did not describe two different genera named *Cyclostoma*. His definition in 1799 was intended to cover every species which he or other authors subsequently placed in it; he gave *Turbo scalaris* as an example (*type*, as used in modern times, was not then understood). The subsequent limitations of the genus were as follows:—

1799. *Cyclostoma*, Lamarck. *Cyclostoma scalaris.*

1801 *. *Cyclostoma*, Lamarck (=Lamarck, 1799, partim). *Cyclostoma delphinus.*

* In definition of genus Lamarck here adds the words "sans côtes longitudinales," to restrict the genus and exclude *Turbo scalaris* (=*Scalaria*).

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