

the text at the head of the first part of this series of papers, quoted from Mr. Wallace's 'Distribution of Animals,' however far short of its requirements I may myself have reached. Uniformity of method in recording natural-history observations, especially as regards distribution and migration, is a desideratum which, I hold, is only second in importance to uniformity of nomenclature. I confess, however, that I see little hope of such a uniformity being established, unless the subject be taken up by an influential body of naturalists, discussed and formally sanctioned and adopted, and advocated in somewhat the same manner as 'The British-Association Rules for Zoological Nomenclature.' This accomplished, however, upon a firm basis, the future work of naturalists in these branches (distribution and migration) could not fail to be made easier and smoother; and thereby science would be materially aided and advanced, and our knowledge of distribution more rapidly extended. If I have, in the very smallest degree, contributed towards its attainment, or have even awakened a desire in others for such a uniformity of method, I shall feel that all the labour expended on the above papers has not been entirely fruitless.

It only remains for me to thank kind friends and correspondents for the assistance they have rendered me in the course of my work, hoping that, so far as it is carried out, it will meet with their approval, as a contribution to our knowledge of the distribution of species in Europe.

ERRATUM IN PART II.

Page 13 (Tables), in the column for the N.E. District insert the symbol ↙ opposite *Hirundo rustica* (auct. 13).

Page 18, delete 19 before *Circus æruginosus*.

Page 19, under *Asio otus*, instead of "same category as No. 19," read "The actual occurrence north of 64° 30' N. lat. is doubtful;" and thereafter, wherever the words "same category as No. 19" occur, viz. under (8), (14), (18), (20), (32), read "same category as (7)."

Page 24, delete "vide Postscript, p. 30."

XXVIII.— *On British Polyzoa*.—Part I. By the Rev. THOMAS HINCKS, B.A., F.R.S.

THE first part of this paper is devoted to brief descriptions of a number of new forms, which I hope shortly to illustrate more fully and to figure in my forthcoming 'History of the British Marine Polyzoa.'

Suborder **Cheilostomata**, Busk.Genus **MEMBRANIPORA**, De Blainville.1. *Membranipora nodulosa*, n. sp.

Zooecia small, oval, margin slightly raised, granular, unarmed; more than half the area covered in by a minutely granulated calcareous lamina; orifice occupying rather more than a third of the area, arched and somewhat contracted above, lower margin straight, obscurely trifoliate; at the base of each cell a very large, prominent, smooth nodule, usually subtriangular in shape: *ooecia* very small and shallow, rounded, smooth.

Colonies forming small and very inconspicuous crusts.

Localities. Coast of Antrim (*Hyndman*); South Devon, off Brixham (*T. H.*).

Distinguished from *M. Rosselii*, to which it is allied, by the much smaller size and *oval form* of the cell, the continuous and very slightly granular margin, and the large and conspicuous intercellular bosses or nodules.

2. *Membranipora aurita*, n. sp.

Zooecia ovate, somewhat expanded below, disposed with great regularity in quincunx; area with a membranous covering, no calcareous lamina; margin plain, on one side, about halfway down, a blunt, short spine; immediately above each cell, or the ovicell, when present, two raised avicularia, one on each side, with a pointed mandible, usually directed upwards and slightly outwards: *ooecia* subglobose, partially immersed, with a strong rib on the front, rising to a point above and inclosing a triangular space.

Colonies forming large, subcircular patches, resembling the most regular lacework.

Localities. Antrim (*Hyndman*); Cornwall and South Devon (*T. H.*); Northumberland (*Alder*).

Distinguished from *M. Flemingii* by the more regularly ovate form of the cell, the entire absence of a calcareous lamina, the triangular figure on the front of the ovicell, and the perfectly regular quincuncial arrangement of the cells.

3. *Membranipora flustroides*, n. sp.

Zooecia large, in regular lines, set closely together, oval; margin with 12–14 massive, flattish, sometimes subclavate, sometimes bifid spines, which bend inwards and meet across

the area, with the exception of the two uppermost, which stand erect; an oval avicularium on a somewhat quadrate area at the top of many of the cells, slanting upwards, with a semicircular mandible: *ooecium* very small and inconspicuous, smooth, elevated in front, forming a hood-like covering over the extreme end of the cell.

Colonies forming large, subcircular patches, with a somewhat lobate edge.

Localities. Antrim (*Hyndman*); Guernsey; off the Deadman, Cornwall, 60 fathoms; South Devon (*T. H.*).

The massive, often subclavate spines, and the avicularium, which is of the Flustrine type, distinguish this fine species from the other spiniferous *Membranipora*.

The name was suggested by the Rev. A. M. Norman, who has also observed this form and recognized it as new.

Genus LEPRALIA, Johnston.

Lepralia marmorea, n. sp.

Zooecia ovate, short and rather broad, disposed in lines, punctured round the edge; surface coarsely granular; orifice suborbicular, with a loop-like sinus on the lower margin; peristome raised, not thickened; a very broad plate or denticle set deeply within the mouth; a little below the orifice an elongate avicularium, immersed, with a pointed mandible directed downwards: *ooecium* — ?

Locality. Cornwall probably, on stone (*T. H.*).

The walls of the cells are thick, and the surface, which is covered with rather large granules, has a somewhat polished and marble-like appearance.

LAGENIPORA, n. gen.

Colonies consisting of a number of cells immersed in a common calcareous crust: *zooecia* decumbent, contiguous, the front wall solid; oral extremity produced, tubular, with a terminal orifice.

The chief characteristic of the genus is the common calcareous crust, in which the cells composing the colony are more or less immersed. The zoarium is not a mere collection of cells laid side by side in a certain order, but consists of a calcareous matrix in which a number of *zooecia* are imbedded, and by which they are united into one commonwealth. The cells themselves bear a close resemblance to those of *Cylindroporella*, but are destitute of the large tubular pore on the front wall, which is so striking a character of the latter genus.

Lagenipora socialis, n. sp.

Crust whitish, granulated, of irregular figure: *zoocæcia* flask-shaped, the lower part immersed, the upper part (in adult cells) produced into an erect tubular neck; orifice circular, terminal, frequently with a number of spinous processes on the upper margin; surface granular, except on the erect portion, which is smooth: *ooæcia* small, rounded, smooth, set far back behind the tubular neck of the cell.

Colonies forming small, rather thick, white crusts.

Locality. Hastings, on the shells of *Pecten maximus* (*Miss Jelly*).

Suborder **Ctenostomata**, Busk.

I retain in this paper the established genera; but the Ctenostomata require careful revision, and some of the groups as at present constituted can hardly be maintained.

Genus VALKERIA, Fleming.

1. *Valkeria caudata*, n. sp.

Stem creeping: *zoocæcia* biserial, opposite, elongate, sub-cylindrical, truncate at the top, slightly narrowed below, and produced at the base into a short, pointed, caudate process; disposed in companies along the creeping stem: *polypide* with eight tentacles; destitute of a gizzard.

This well-marked form may be at once recognized by the spur-like process below, which is very conspicuous in the youngest cells. The cell is attached at a point near the base, and the caudate extremity bends outwards. I have failed to detect a gizzard in *V. caudata*; but this portion of the structure is not always recognizable in preserved specimens. I place it provisionally in the genus *Valkeria*, hoping shortly to revise the classification of the Ctenostomata.

I am indebted to Mr. Leipner, of Clifton, for specimens of this species, beautifully mounted, and showing the polypides expanded as in life.

2. *Valkeria citrina*, n. sp.

Stem erect, slender, dichotomously branched: *zoocæcia* clustered, somewhat spirally disposed, oval, small, and delicate: *clusters* short, placed immediately below each bifurcation, occupying about the upper half of the internode or less; cells not densely crowded: *polypides* of a citron-colour, with eight tentacles, and furnished with a gizzard: *shoots* clustered, of delicate habit, forming bushy tufts.

Locality. On rocks near low-water mark, and dredged in shallow water off the Capstone, Ilfracombe.

Distinguished from *V. pustulosa*, its nearest ally, by its smaller size and more delicate habit, by its short and not very dense clusters of cells, which do not extend much below the joint, while those of the kindred species are elongated and compact and occupy a large proportion of the internode, and by the exquisite colour of the tentacles and other portions of the polypide.

3. *Valkeria gracillima*, n. sp.

Stem creeping, rather stout and sinuous: *zoocæcia* disposed in groups of varying size at intervals, slender, elongate-oval when contracted, flask-shaped when the polypide is extended, rounded off below, of a light horn-colour: *polypides* with eight tentacles and a powerful gizzard.

Hab. Creeping over *Corallina officinalis*.

This species is not characterized by any very marked feature, but is sufficiently distinct from any form with which I am acquainted. The cells originate on the sides of the creeping stem, but are not as regularly biserial and opposite as in *V. caudata*; they are also more delicate, of rather smaller size, and less cylindrical than those of the latter species. The groups of cells are small, usually consisting of about three or four. The gizzard is very conspicuous.

I am indebted to Mr. Leipner's kindness for the opportunity of describing this species also.

GENUS ARACHNIDIUM*, Hincks.

Arachnidium clavatum, n. sp.

Zoarium forming an irregular network: *zoocæcia* clavate, elongate, enlarged above, rounded at the top, and tapering off below; orifice small, placed near the upper extremity.

Locality. On the tests of Ascidiæ, Shetland.

Distinguished from the only other species, *A. hippothoides*, by its elongated, clavate cells, and the absence of the fibrous processes round the margin. The cells are also larger and more definite and constant in shape. The *papilla* marking the orifice seems to be smaller and less prominent than in the last-named species.

A. clavatum spreads over the tests of Ascidiæ from Shetland, for which I am indebted to Mr. J. G. Jeffreys.

* The generic name was published at first as *Arachnidia*—wrongly, inasmuch as it represents the Greek ἀραχνίδιον, dim. of ἀράχνη, a spider's web.

Genus *AECYONIDIUM*, Lamouroux.1. *Alcyonidium disjunctum*, n. sp.

Zoarium incrusting: *zooecia* elongate-ovate, disposed in linear series, which bifurcate at intervals and occasionally anastomose; the lines of cells bordered by a gelatinous crust; aperture small, placed near the anterior extremity; cells often massed together.

Locality. Unknown. My specimens were received from Mr. Alder. The cells differ much in shape from those of *A. mytili*, Dalyell, whilst the habit of the two forms is totally dissimilar.

The cells are much elongated and are linked together in single series, and on each side runs a margin of the gelatinous crust. The series bifurcate frequently, two lines originating from the summit of a cell. At the bifurcation the crust forms a web-like expansion between the two series. Every here and there collections of cells occur, from which the single series are given off.

I have only had the opportunity of examining dried specimens of this form; and there is therefore a possibility that in some points the characters may not be adequately represented.

2. *Alcyonidium lineare*, Hincks, MS.

This species is included by Mr. Alder, under the above name, in his 'Catalogue of the Zoophytes of Northumberland and Durham.' I had corresponded with him about it, and had so named it in my letters; but no description of it has been published beyond the brief notice which he has given in the catalogue. In the meanwhile my specimens of it have unfortunately perished, and I can add but little from my notes or from memory to what he has written.

It may be thus characterized:—*Zooecia* oval, with prominent tubular apertures, immersed in a gelatinous crust, disposed in linear series, which generally branch from a central mass.

Localities. On mussel-shells from the Dogger Bank (*T. H.*); Cullercoats, from deep water (*Alder*).

Smith, in his 'Review of the Scandinavian Polyzoa,' ranks this species as a hippothoid "form" of *A. hirsutum* (Fleming). But the zooecium, which Prof. Smith will be the first to recognize as the important element, is widely different in the two, and separates them conclusively, apart from the very characteristic and apparently constant habit. The tubular aperture is very prominent and directed horizontally upwards,

and projects at the extremity of the cell instead of standing erect, as it does in *A. hirsutum*. To the best of my recollection, the apertures are turned slightly outwards; and I find, from a note made at the time of its first occurrence, that it resembles an *Alecto* in habit.

As it is said to be not uncommon on shells from deep water off the Northumberland coast, we may hope to hear of it again before long.

SPECIES NEW TO BRITAIN.

Hippothoa flagellum, Manzoni.

This species, described by Manzoni from the Mediterranean and the Italian Tertiaries, occurs abundantly on our shores and is widely distributed. It has, no doubt, been confounded with *H. divaricata*, to which it bears a general resemblance, but from which it is separated by a very important character, in addition to other minor differences. The orifice is subovate, somewhat elongate, rather broader above than below, whereas that of *H. divaricata* is semicircular, with a straight lower margin and a central notch. The cells are also shorter (less produced below) and in every way smaller; and the connecting fibre is very long and slender.

XXIX.—*Note on the Radical Fibres of the Polyzoa.*

By the Rev. THOMAS HINCKS, B.A., F.R.S.

IN 'Nature' for June 21, 1877, I find a brief notice of a paper on British Polyzoa, by Mr. Peach, presented to the Linnean Society by Mr. Busk, in which the interesting observation is recorded, that "the tubulous roots" of *Scrupocellaria scruposa* are armed with spines, by which it attaches itself to sponges. Much remains to be written of the filamentary appendages by which the members of certain genera attach themselves, and their modifications. Mr. Peach's observation shows that in *S. scruposa*, as in others of its tribe, these organs exist under two forms at least. Commonly they are present as smooth, slender fibres, which adhere to solid bodies by means of a terminal enlargement or disk. It now appears that under certain conditions they take on a different character, are clothed with spines, and act as grapnels by means of which the polyzoon fastens itself to the soft substance of the sponge. I have not noticed these facts in the case of *S.*