

The ear-coverts only to just beneath the eye chestnut, the feathers white-shafted. Chin, throat, and all the lower parts white. Flanks pale sepia-grey; under tail-coverts the same, tipped white.

Irides reddish brown. Legs umber.

Length 4·6 inches, wing 2·3, tail 2·05, tarsus 0·7, bill at front 0·3.

This bird is close to *Staphida torqueola*, Swin.; but in that species the chestnut commences at the base of the lower mandible, passes under the eye and round the nape in a broad band of chestnut-brown, and the last three tertiaries are margined white on inner web. This is absent in the Assam bird. Obtained by Mr. M. J. Ogle near Sadya and Brahmakhúnd, Eastern Assam.

In my note-book I find that I obtained one example in the Dikrang valley, Dafla hills, which I shot at camp no. 9; but this was subsequently lost somehow or other, and therefore I did not bring it into the list of birds from the Dafla hills, published in the Journ. Asiatic Society of Bengal.

It is also interesting to record the occurrence near Sadya of *Halcyon pileata* und *Podica personata*.

LXVI.—On *British Polyzoa*.—Part II. *Classification*.

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

Order INFUNDIBULATA.

Suborder CHEILOSTOMATA.

In attempting the classification of the Cheilostomatous Polyzoa, one of the most important points to be determined is the exact amount of weight which is to be assigned to the colonial habit or mode of growth in constituting the generic groups. Smitt takes the position that the system of classification should be based entirely on the characters of the individual zooecium; and amongst these characters he assigns the first place to the form of the aperture*.

* "Quod ad hunc ordinem (*Cheilostomata*) in subordine distribuendum attinet, principia sequimur, quæ conjecisse videtur primus Milne-Edwards, quum, in adnotationibus ad *Flustras* apud Lamarck, formam zooecii solam esse de Bryozois notam dixit, quæ certo limite genera describeret" (Smitt, "Bryozoa marina in regionibus arcticis et borealibus viventia," Öfv. k. Vet.-Akad. Förh. 1867, p. 468). "In its generic character" (he is speaking of his genus *Hippothoa*) "of course we must cast away the form of the colonial growth, founding it upon the form of the zooecial aperture" ('Floridan Bryozoa,' part ii. p. 40).

I may remark here that Prof. Smitt's method is, of course, inappli-

The opinions of so learned and able an investigator are entitled to the most respectful consideration, and properly carry very great weight with them. No doubt many points may be urged in support of the position which he has assumed; and these he has presented in his various works with much force and ample illustration. But I have been unable to satisfy myself that the extreme view which he adopts in reference to the colonial characters is philosophically just, or (consequently) that the systematic method based upon it is likely to yield a good practical result. As to the latter point, I think I may appeal with some confidence to the writings of Prof. Smitt himself. The agglomeration of diverse forms, to which the application of his theoretic principle has in many cases given rise, cannot certainly be regarded as *natural*, and may fairly be taken as a warning against the entire disregard of colonial characteristics.

After giving the subject the best consideration in my power, it seems to me that to represent at all adequately what may be called the *family relationships* of a tribe like the Polyzoa, in which colonial life is all but universal, more or less account must be taken of the two elements, the zooecial and the colonial, and that the circumstances of each case must decide what amount of systematic significance shall be assigned to the *latter*. I have no doubt that authors have commonly laid undue stress on trifling variations in the mode of the colonial growth, and have consequently multiplied genera needlessly, and have at the same time obscured the natural relationships.

Another fruitful source of error has been the tendency to make the mere habit of growth, apart from the characters supplied by the structure of the cell, the basis of generic groups. Thus the old genera *Lepralia* and *Eschara* are miscellaneous assemblages of forms which have often little in common but general habit.

Between the two extremes, that of the older classification and that which has found so able an advocate in Prof. Smitt, the true systematic method must, I believe, be sought. The position which I should adopt would be, that whilst the zooecium is undoubtedly the most important and significant element, the mode in which the cells are combined, the facies of the adult colony, is a point that must be taken account of in forming natural groups. In applying the principle here

cable to the other divisions of the Polyzoa. In dealing with the *Cyclotomata*, for instance, the genera are perforce founded in great part on the mode in which the cells are combined—on the colonial habit.

laid down, the chief weight will be assigned to zooecial affinity; but cardinal and striking differences in the colonial organization may require the separation (as a matter of classification) of forms agreeing more or less in the character of the cell. I will give one or two illustrations. The *Gemellipora eburnea*, Smitt, forms erect shoots in its adult state, and has its ivory-coloured cells, bearing a general resemblance to those of *Eucratea*, arranged in pairs, back to back, like those of *Gemellaria*, but with a difference. The aperture is nearly round, with a broad sinus below and two small lateral sinuses. The *Gemellipora striatula*, Smitt, which is identical with *Lepralia venusta*, Norman, is an incrusting species, its cells decumbent and adnate, arranged side by side, so as to form a continuous expansion, and presenting in almost every point a very marked contrast to *G. eburnea*. But there is a resemblance in the form of the aperture; and on the strength of this Smitt refers the two to the same genus*. In this case, the shape of the mouth only is taken into account, to the exclusion of the other portions of the cell, and the colonial characters are of course entirely ignored. It can hardly be contended that this is a *natural* alliance in any true sense of the term. It seems to me eminently unnatural; but it is only one of many similar results to which the rigorous application of Prof. Smitt's method has conducted him.

To take another case. The *Membranipora vulnerata*, Busk, is a crustaceous form, spreading in patches of indefinite shape and size, having the front area of its cells completely covered in by a calcareous lamina, and furnished with vibracular cells, which alternate with the ordinary zooecia throughout the colony†. In the general character of the cells and the position of the vibracula it agrees with the genus *Cupularia*, Lamx.; but the latter possesses a zooecium of definite form, usually more or less conical or cup-shaped, and is *free*, in all probability, in all stages of its existence, certainly in its adult state. In recent specimens "the entire surface of both the concave and convex surfaces is covered with a continuous chitinous epidermis" [Busk].

Smitt unites *M. vulnerata* with *Cupularia*‡, relying on the general similarity of the cells and vibracula, and ignoring altogether the remarkable difference in the organization of the colonies, and the complete change which has taken place in the conditions of the colonial life. I cannot recognize

* 'Floridan Bryozoa,' part ii. pp. 35, 37.

† In another part of this paper I have constituted a new genus for the reception of this form, which is clearly distinct from *Membranipora*.

‡ 'Floridan Bryozoa,' part ii. p. 14.

in this a *natural* arrangement, and should certainly separate the two forms generically, though quite prepared to admit that genealogically they may be not very remotely connected.

Proceeding to the application of the principle that I have just laid down, the old genus *Lepralia*, founded on mere similarity of habit, without reference to the zooecial characters, must of course be dismembered and divided into groups, based on the structural peculiarities of the cell. I have suggested a number of such groups in another part of this paper.

As to the question whether forms which exhibit an erect mode of growth should be combined in one genus with those which are crustaceous in habit, I believe that no universal rule can be laid down. One thing seems to me clear—that the tendency to form free expansions, consisting of a single layer of cells, ought not to be accounted a generic diagnostic. The genus *Hemeschara* represents a very trivial variety of habit, and forms a most unnatural group, including as it does very distinct types of cell.

Nor can the development of erect foliaceous expansions, *composed of two layers of cells placed back to back*, by forms which very commonly assume a simply crustaceous habit, be taken as a distinctive character in itself, and apart from structural peculiarities in the zooecium. *Lepralia Landsborovii* has been transferred to the genus *Eschara*, because it takes on at times such an erect, foliaceous habit, though more usually crustaceous in its mode of growth. But this very trifling and occasional change of *habit* is a very insufficient ground for severing it from the simply incrusting forms to which it is closely allied in zooecial character (e. g. *Lepralia reticulata*, *L. trispinosa*, &c.).

On the other hand, the habitual formation of erect, well-compacted, more or less dendroid zoaria, which marks the adult or perfect condition of the species, is a character fairly included in the generic diagnosis. The old genus *Eschara* rests on this foundation; but, like *Lepralia*, it will require to be subdivided should it be found to include various distinct zooecial types. I cannot see that the validity of this character is affected by the fact that in many cases the dendroid zoaria exhibit a tendency to be decurrent at the base, and spread out into a lepralioid crust of varying size. This is no doubt a significant genealogical indication; but if we are to have any distribution into groups at all, I see no reason why forms which have made a great and distinctive advance in colonial development should not be set apart from those which have been left behind at a lower grade. At the same time we

should expect them to retain signs of their descent in some part of their developmental history*.

Prof. Smitt makes no account of differences in the mode of growth. Finding a species with the characteristic cell of *Membranipora* and the equally characteristic colonial habit of *Retepora*†, he at once ranks it as a *Membranipora*. But surely the remarkably diverse *plan of the gemmation*, which has resulted in the formation of an erect reticulate zoarium instead of a continuous crust, should count for something. From my point of view, I should regard this form as the type of a distinct genus in the *Membraniporidan* series. I am well aware that there will be many difficulties in seeking to give practical effect to the principles I have briefly indicated; but difficulties neither few nor slight seem to attend every attempt at the classification of the Polyzoa.

To sum up, whilst agreeing with Prof. Smitt in assigning the highest systematic value to the zooecium, and dissenting entirely from the authors who have founded their genera on mere colonial habit, I hold that the latter should not be altogether disregarded, but that in its more marked modifications it should enter as an element into generic diagnosis. The form of the zooecial aperture, the architecture and structural composition of the cell, and the plan of the gemmation are all to be taken into account. I have made no reference to the appendicular organs (avicularia and vibracula) as systematic helps. In some sections they are very constant in character and position, and may be employed with propriety as distinctive marks; but amongst the *Membraniporidae* (Busk) they constitute the most unstable and variable structural element, and are of comparatively little value for systematic purposes.

The polypides amongst the Infundibulata generally offer few marked structural peculiarities. Amongst the Ctenostomata the presence of a gizzard is a true generic character. The peculiar arrangement of the tentacles in *Valkeria uva* of authors, and some other kindred forms, on which I have founded the genus *Campylonema*, is a character of undoubted importance. But, speaking generally, with our present knowledge we do not derive much help from the polypides in constructing our secondary groups.

* Prof. Smitt himself retains the genus *Flustra*, Linn.; but in an early stage of growth *F. foliacea* (and no doubt the same is the case with other species) forms a spreading crustaceous network, often of considerable size, and in this condition is not distinguishable, so far as either the habit or the structure of the cell is concerned, from a *Membranipora*. The genus is really founded on the remarkable colonial characters of the adult.

† *Membranipora sigillata*, Smitt, 'Floridan Bryozoa,' part ii. pp. 8-10.

I am quite prepared for the criticism that some of the divisions which I shall propose are really artificial rather than natural. Must there not always be a large element of artificiality in any scheme for distributing into definite groups the series of natural forms, so variously interconnected and melting as they do at all points one into the other?

Family *Membraniporidæ*, Busk and others.

The large and heterogeneous group of Cheilostomatous Polyzoa composing this family was ranged by Johnston under the two genera *Membranipora* and *Lepralia*. The latter, comprehending an immense number of species, has been maintained by Busk in its integrity; and he has been followed by many other writers on the Polyzoa. D'Orbigny, in his great work the '*Paléontologie Française*,' has broken it up in part, and distributed its contents through several genera. Gray, in his '*Catalogue of the British-Museum Radiata*,' has introduced a number of new groups to include certain sections of the genus *Lepralia*, a few of which have every claim to stand, while a large proportion are founded upon trivial characters and are wholly superfluous.

But the most elaborate and philosophical attempt to place the classification of these forms on a more natural basis has been made by Prof. Smitt in his '*Critical Review of the Scandinavian Marine Bryozoa*.'

Every student of the Polyzoa is deeply indebted to the Swedish zoologist for his minute and thorough and discriminating investigation of the northern species, in all the stages of their growth and development, and through all their varietal modifications, and, whether he may accept all his conclusions or not, for his suggestive views respecting *the true method* of classification. Whilst freely admitting the great value of those views under many of their aspects, I find myself quite unable to accept a large number of the practical results to which they have conducted their author.

In attempting the very difficult task of revising the classification of the *Membraniporidæ*, I have derived the most valuable assistance from Prof. Smitt's writings; but I have been compelled to differ frequently from him as to the definition and composition of the groups which are to supplant the older divisions. In the present paper I merely propose to characterize briefly some of the new genera into which, I believe, the *Membranipora* and *Lepralia* of authors ought to be resolved.

The genus *Lepralia* includes a multitude of forms agreeing

in certain general characters, but many of them distinguished from the rest by differences of very great significance. For example, *L. nitida*, Johnston, and *L. Peachii*, Johnston, agree in being adnate and incrusting, and in having cells which are calcareous, decumbent, and contiguous; but they differ widely in the structural composition of the cell (the plan upon which it is built); and to group them together is simply misleading. The definition of the genus, in short, is too general and vague. To make any approach to a natural system our groups must be founded on a careful and minute study of the individual cell in its various stages of growth.

The following seem to me to constitute natural and well-defined groups:—

1. MEMBRANIPORELLA, Smitt.

(*Lepralia*, part, Johnst., Busk, &c.)

Zoarium incrusting; *zooecia* closed in front by a number of flattened calcareous ribs, more or less consolidated.

Type *Lepralia nitida*, Johnston.

2. CRIBRILINA, Gray.

(*Lepralia*, part, Johnston &c.)

Zoarium incrusting; *zooecia* in a single layer, contiguous, having the front more or less occupied by transverse or radiating punctured furrows.

Type *Lepralia radiata*, Moll.

3. MUCRONELLA, nov. gen.

(*Lepralia*, part, Johnston &c.)

Zoarium incrusting; *zooecia* usually ovate, punctured round the base, with a suborbicular or semicircular aperture, the inferior margin mucronate, a denticle within it; *avicularia* generally wanting.

Type *Lepralia Peachii*, Johnston.

4. MICROPORELLA, nov. gen.

(*Lepralia*, part, Johnston &c.

Porellina, Smitt.

Reptoporina, part, D'Orbigny.)

Zoarium incrusting; *zooecia* with a semicircular aperture, the lower margin straight and entire; a semilunate or circular pore below it.

Type *Lepralia ciliata*, Pallas.

The *Reptoporina* of D'Orbigny includes this group; but as

it also embraces a miscellaneous assemblage of forms, it seems better to employ a new name.

5. MASTIGOPHORA, nov. gen.

(*Lepralia*, part, Johnston &c.
Hippothoa, part, Smitt.)

Zoarium incrusting; *zooecia* with a semicircular orifice; the inferior margin straight, with a central sinus; one or more lateral *vibracula*.

Type *Lepralia Hyndmanni*, Johnston.

6. SCHIZOPORELLA, nov. gen.

(*Lepralia*, part, Johnston &c.
Hippothoa, part, Smitt.)

Zoarium incrusting; *zooecia* with a semicircular or sub-orbicular orifice, the inferior margin with a central sinus; *avicularia* usually lateral, sometimes median, with an acute or rounded mandible.

Type *Lepralia unicornis*, Johnston.

7. LEPRALIA, Johnston (part).

(*Lepralia*, Smitt.)

Zoarium incrusting (or erect?); *zooecia* with a semi-elliptical aperture, contracted on each side about the middle or below it.

Type *Lepralia Pallasiana*, Johnston.

Smitt has retained Johnston's name for the section of the old genus *Lepralia* with a more or less horseshoe-shaped aperture; and it is clearly right that his decision should be respected. The group seems to be a natural one.

8. ESCHARELLA, Smitt (part).

(*Lepralia*, Johnston, part.
Eschara, part.)

Zoarium incrusting, or rising into foliaceous expansions, which are either simple or bilaminate; *zooecia* with a sub-orbicular aperture, the lower margin slightly curved inward; the peristome raised and forming a secondary aperture, which is channelled in front; a median avicularium generally placed immediately below the sinus.

Type *Lepralia reticulata*, Macgillivray.

I retain Smitt's name *provisionally* for this large and well-defined group; but I have serious doubts whether the introduction of a new name is not a less evil than the retention of one which has been so variously applied.

9. CYLINDROPORELLA, nov. gen.

(Lepralia, part, Norman &c.)

Zoarium adnate, incrusting; *zooecia* having the front wall composed of a single piece, not depressed; oral extremity produced, tubular, with a terminal orifice; an elevated pore on the front of the cell.

Type *Lepralia tubulosa*, Norman.

10. LAGENIPORA, nov. gen.

(See 'Annals' for September 1877, p. 214.)

Type *L. socialis*, Hincks.

11. SCHIZOTHECA, nov. gen.

Zoarium incrusting; *zooecia* with a suborbicular (primary) aperture, the lower margin slightly sinuated; secondary aperture raised, tubular, notched or dentate in front; *ooecium* terminal, with a fissure in the front surface; *avicularia* borne on distinct areas and distributed amongst the cells, sometimes wanting.

Type *Lepralia fissa*, Busk.

12. RHYNCHOPORA, nov. gen.

(Lepralia, part, Johnston.)

Zoarium incrusting; *zooecia* with a suborbicular or sub-quadrangular aperture, the lower margin supporting an uncinate process; a large avicularium (in fully developed specimens) placed transversely below the aperture; *ooecium* terminal, closed in front by a calcareous lamina.

Type *Lepralia bispinosa*, Johnston.

13. ANARTHROPORA, Smitt (part).

(Lepralia, part, Busk.)

Zoarium incrusting; *zooecia* free and suberect above, aperture transversely elongate, contracted, with an entire and thickened peristome; an avicularium below and above the aperture.

Type *Lepralia monodon*, Busk.

The diagnosis is founded on the adult state. The *primary* aperture is slightly arched above, with a straight inferior margin, and is little if at all elevated.

I quite agree with Mr. Norman* that Smitt has united distinct types in his genus *Anarthropora*; and in conformity

* Rep. Brit. Assoc. 1868, fig. 309.

with his suggestion, and to avoid confusion, I have assigned this name to *L. monodon*.

Many other distinct groups are blended in the genus *Lepralia* of authors; I merely give the foregoing as a sample of the work of redistribution which has to be done, and must reserve the more complete treatment of the subject for some future opportunity.

The genus *Membranipora* also includes a large number of species; but there seem to be few distinct types of structure amongst them.

1. MICROPORA, Gray.

(*Membranipora*, part, Busk.
Lepralia, part, Norman, &c.)

Zoarium incrusting; *zooecia* with prominent raised margins; front depressed, wholly calcareous; oral aperture semicircular, enclosed by a calcareous border.

Brit. spec. *Membranipora coriacea*, Esper.

Lepralia complanata, Norman.

2. SETOSELLA, nov. gen.

(*Membranipora*, part, Busk.
Cupularia, part, Smitt.)

Zoarium incrusting; *zooecia* with raised margins; front depressed and wholly calcareous; aperture semicircular; *vibracular cells* alternating with the *zooecia* throughout the colony; *vibracula* setiform.

Type *Membranipora vulnerata*, Busk.

3. MEGAPORA, nov. gen.

(*Lepralia*, part, Busk.)

Zoarium incrusting; *zooecia* with prominent raised margins; front depressed, wholly calcareous; oral aperture trifoliate; oral valve composed of two portions, a fixed transversely elongate lamina and a movable lip.

Type *Lepralia ringens*, Busk.

Suborder CTENOSTOMATA, Busk.

Smitt has pointed out that the principal character on which this suborder is founded, the operculum of *setæ*, occurs occasionally amongst the Cheilostomata and is not absolutely distinctive. Ehlers questions the validity of this division, and proposes to dismember it, by separating the fleshy forms, *Halcyonellea*, Ehrenb. (*Alcyonidium*, &c.), from the *Vesiculariidae*. The latter he would constitute a distinct group,

characterized by the presence of a jointed stem and the development of the zooecia by budding from the internodes of this stem. For this group he suggests the name *Bryozoa stolonifera**.

I confess I cannot see that Busk's classification is invalidated by the mere fact that we find in two or three cases amongst the Cheilostomata a structure analogous to the opercular termination of the cell in the *Vesiculariidae*†. We do not meet with completely isolated groups; and our zoological provinces cannot be shut in by perfectly hard and fast lines. In the absence of any very distinct types amongst the polypides, the structure of the zooecium seems to offer the best systematic characters; and the principal points selected by Busk have certainly the merit of marking out very natural groups, as sharply defined probably as nature permits. The *opercular valve* of the Cheilostomata involves all the appendicular organs (*avicularia* and *vibracula*), which are so characteristic a feature of this division; *the absence of operculum* distinguishes the multitudinous forms which are constituted by the varied combination and arrangement of simple calcareous tubes; the *setose operculum* is characteristic of a very homogeneous group, the *Vesiculariidae*, and also of the fleshy forms included in the genus *Alcyonidium*. Ehlers is undoubtedly right in insisting on the marked differences between these two sections in the mode in which the cell is developed by budding. In the former case cells are produced only by budding from a stem or stolon; in the latter they are produced by gemmation from another zooecium.

This is an important distinction, but it seems to me less significant than the structural peculiarities of the cell on which the suborder Ctenostomata is founded; and I therefore propose to range these two sections under the latter as subgroups.

Amongst the Cheilostomata the zooecia are developed by gemmation from a stolon in the *Æteidae*, and amongst the Cyclostomata in the *Crisiidae* to a certain extent.

In the genus *Eucratea* we have *both kinds of gemmation*: the primary zooecia are developed on a creeping stolon that

* *Hypophorella expansa*, 'Ein Beitrag zur Kenntniss der minirenden Bryozoen,' von E. Ehlers, p. 126 (sep.), 1876.

† In the genera *Ætea* and *Eucratea* the uppermost portion of the tentacular sheath is composed of a number of delicate rods connected by an attenuated membrane; when the polypide is fully extended, this portion, which is scalloped round the free extremity, is thrown back, and stands out like a frill at right angles to the cell. This may be the homologue of the setose operculum of the Ctenostomata; but it exists in a very rudimentary condition; and as it is associated with the cheilostomatous movable lip, it has lost its significance as a protective covering.

swells out at intervals into ovate expansions from which the cells originate, as in the genus *Ætea*. These give rise to secondary cells, which bud from their upper extremity*.

Even in the genus *Ætea* we meet with one case, at least, in which gemmation from a stolon is combined with gemmation from the cell itself. In *Ætea truncata* the zooecia are usually developed on a creeping stem, which is sometimes divided by joints into more or less fusiform internodes. But occasionally a long and slender tubular offshoot rises from the back of the primary cell, terminating above in a zooecium; from this secondary zooecium another tubular offshoot is in some cases developed, bearing a third cell. Beyond this I have not seen the process of gemmation carried. The tubular stem, proceeding from the dorsal surface of a cell and bearing another cell at its extremity, must be regarded as a kind of pedicel†, and we have therefore in *Ætea truncata* the direct development of cell from cell, as well as the production of zooecia by budding from a stolon. This seems to be the case amongst the *Crisiidae* also, according to Ehlers.

In the presence of these facts I cannot regard the Stolonifera as a suborder.

Suborder CTENOSTOMATA, Busk.

Group 1. *HALCYONELLEA*, Ehr.

Zoarium fleshy; *zooecia* developed by budding from other zooecia.

Group 2. *STOLONIFERA*, Ehlers.

Zoarium horny or membranous; *zooecia* developed by budding from the internodes of a distinct stolon or stem.

The Stolonifera (= *Vesiculariidae*, Johnst.) range themselves under two divisions: in one the tentacles form a perfect circle; in the other, two of them are constantly bent outwards and the circle is broken on one side.

For the species in which this remarkable peculiarity was first noticed I constituted the genus *Campylonema*; but I have since ascertained that it has a wider range, and occurs, amongst others, in the well-known *Valkeria uva*, Fleming. It is met with only in species of the simplest structure, which

* In some cases, however, the colony commences with a line of decumbent and adnate cells, assuming the habit of *Hippothoa*, and from these the erect shoots rise. I believe that these decumbent cells must be regarded as the morphological equivalent of the creeping stolon, and that the more or less clavate swellings which occur on the latter, in both *Ætea* and *Eucratea*, are in fact aborted cells.

† The primary cells, it may be noted, are sometimes pedicellate.

are destitute of a gizzard. I have detected it so far in *Campylonema tremula*, mihi, *Valkeria uva*, Flem., *Valkeria cuscute*, Linn., and *Mimosella gracilis*, mihi. As *Valkeria uva* is the type of Fleming's genus *Valkeria*, his name will supplant my *Campylonema*, now that this species is known to possess the bent tentacles. *Valkeria pustulosa*, Ellis and Sol., *V. citrina*, mihi, and *V. gracillima*, mihi, have the tentacles in a perfect circle and are furnished with a gizzard; they must therefore be referred to another genus.

I propose to classify the Stolonifera as follows:—

STOLONIFERA, Ehlers.

a. **ORTHONEMIDA**, Hincks.

Polypides with the tentacles disposed in a perfect circle.

With a gizzard.

1. Family **Vesiculariidae**.

Genera: *Vesicularia*, *Bowerbankia*, *Valkeria* (part), *Amathia*.

Without a gizzard.

2. Fam. **Farrellidae**.

Genera: *Farrella*, *Avenella*, *Anguinella*.

3. Fam. **Triticellidae**.

Genera: *Triticella*, Dalyell; ?*Hippuraria*, Busk.

I suspect that the latter genus will prove to be nearly allied to *Triticella*; but until it has been more thoroughly investigated, it can only be placed provisionally in this family.

b. **CAMPYLONEMIDA**, Hincks.

Tentacles not forming a perfect circle, two of the number being always everted; no gizzard.

1. Fam. **Valkeriidae**.

Genus *Valkeria*, Flem.

2. Fam. **Mimosellidae**.

Genus *Mimosella*, Hincks.

Ehlers includes in his Stolonifera the *Entoprocta* of Nitsche (*Pedicellina*, *Loxosoma*, and ?*Urnatella*); but I am quite unable to accept this view. The structural and embryological peculiarities of this group are such as to entitle it, in my judgment, to rank as a *subclass*.