

Quarterly Journal of the Geological Society

**Further Notes on the Family Diastoporidae, Busk.
Species from the Lias and Oolite**

George Robert Vine

Quarterly Journal of the Geological Society 1881; v. 37; p. 381-390
doi:10.1144/GSL.JGS.1881.037.01-04.34

**Email alerting
service**

[click here](#) to receive free email alerts when new articles cite this article

**Permission
request**

[click here](#) to seek permission to re-use all or part of this article

Subscribe

[click here](#) to subscribe to Quarterly Journal of the Geological Society or the Lyell Collection

Notes

Downloaded by

on 3 June 2007

29. *Further Notes on the Family DIASTOPORIDÆ, Busk. Species from the LIAS and OOLITE.* By GEORGE ROBERT VINE, Esq. (Communicated by Prof. P. MARTIN DUNCAN, M.B. Lond., F.R.S., F.G.S.) (Read January 19, 1881.)

[PLATE XIX.]

SINCE my first paper, "A Review of the Family Diastoporidæ for the purpose of Classification"* was written, a very important book has been published, namely 'A History of British Marine Polyzoa,' by the Rev. Thomas Hincks †. In this work the classification adopted by Prof. Busk in his Monograph of the Fossil Polyzoa of the Crag, 1859, and also in his British-Museum Catalogue, part iii. Cyclostomata, 1875, is set aside for one that I have little hesitation in saying will prove to be far more valuable to the working student. Instead of separating *Diastopora*, and making it the type of a family, Mr. Hincks places this genus with others in his second group of the Cyclostomata, which he calls Incrustata, D'Orb. The family name which he adopts is Fam. II. Tubuliporidae, which includes the genera

Stomatopora, <i>Bronn.</i>	Entalophora, <i>Lamouroux.</i>
Tubulipora, <i>Lamarck.</i>	Diastopora, <i>Lamouroux</i> (pt.).
Idimonea, <i>Lamouroux.</i>	

Seeing that I have already committed myself to Prof. Busk's arrangement, it is impossible for me now to retreat; and, with this explanation, I must be excused for still adhering to the family name I used at first ‡.

In his remarks on the Cyclostomata, Mr. Hincks says:—"Simplicity is in the highest degree characteristic of the group; the cells are universally tubular; the polypide is without complexity of structure, and has a small number of tentacles; all appendicular organs are wanting" §. In another place he says:—"In classifying the Cyclostomata we have to base our divisions mainly on habit or mode of growth, on the plan according to which the zoecia are aggregated together into colonies; the simplicity and general similarity of the cell throughout the tribe leave no other course open to us. We have to deal with very uniform structural elements very variously combined; and the modes of combination chiefly supply us with the bases of our system. Under

* Quart. Journ. Geol. Soc. vol. xxxvi. p. 356 (August 1880).

† Van Voorst: 1880.

‡ Of the two evils I choose the least. To call my paper "Further Notes on the *Tubuliporidae*" would be to commit myself to remarks on the other genera, which at present I have no intention of doing; and the retention of the family name Diastoporidæ, Busk, may have its special advantages.

§ Brit. Marine Polyzoa, Introduction, p. cxxv.

these circumstances we may not expect very strongly marked boundary lines" *.

The family Tubuliporidae, Hincks, is thus defined :—" *Zoarium* entirely adherent, or more or less free and erect, multiform, often linear, or flabellate, or lobate, sometimes cylindrical; *Zoecia* tubular, disposed in contiguous series, or in single lines; *Oecium* an inflation of the surface of the zoarium at certain points, or a modified cell" †.

These further Notes have reference to the *Diastopora* found in the English Lias and Oolite, and are the results of a very careful study of material kindly and liberally placed at my disposal by two good local workers, Mr. E. A. Walford, of Banbury, and Mr. F. D. Longe, F.G.S., of Cheltenham. Whilst I was engaged in the study I was continually perplexed with the ever-varying modes of growth of what may be considered to be true *Diastopora*. To fix many of these forms under the descriptions already given by authors is indeed impossible; or to call them, arbitrarily, "species" or "varieties" would give a false idea of their significance. The wisest course to adopt is to call them "types;" and in giving them specific names I have kept this suggestion constantly before me. Between the Liassic and Oolitic forms very little variation is perceptible if we select groups of the same or similar habit. If, as in the Inferior Oolite, for instance, we take the three or four different types, and try to correlate them under one specific name, the varietal or typical divergency is at once apparent. In this paper I have directed the attention of the palæontologist more particularly to these typical forms; and it remains now for local workers to mark the differences well, and then, by a rigid and philosophical scrutiny, to try and ascertain whether any of these varietal types creep gradually from one into the other. The doing of this as it ought to be done depends on whether material for the scrutiny is accessible to the student; and besides the material, patience is needed to follow out a set design to its conclusion. To take away the stigma so continually repeated to our disadvantage, "the imperfection of the geological record," work done in the direction indicated must be attempted, even if it be imperfect; but, after going over only a small portion of the labours of two local workers, I believe it to be possible to carry out the design to perfection, or nearly so, if keen eyes and willing hands are engaged in the task.

I am not aware that previously to the labours of Prof. Quenstedt the attention of the palæontologist had ever been directed to Liassic Polyzoa. In his great work, 'Der Jura,' many Liassic fossils are described and figured, and amongst others we have figured and described the earliest known Mesozoic *Diastopora*. Quenstedt names it *D. liasica*; and he says of it, "One usually recogn the primary cell; at first a rapid increase occurs; but the polyzoarium soon divides itself into two groups, draws itself back, and

* Brit. Mar. Polyzoa, vol. i. p. 425.

† Ibid. vol. i. p. 424.

completes a perfect circle"*. He further says, *D. liasica* "occurs so abundantly, and precisely on shells of the Jurensis zone, that you can often identify your horizon from it." The specimen he figures is found on *Ammonites jurensis*.

Jules Haime †, in correlating *Berenicea striata*, says that this species was discovered by M. Terquem in the Lias of Valière. He says:—" *D. liasica*, Quenstedt, Handb. der Petrefact. p. 637, pl. lvi. fig. 10, "is closely related to this species: it begins in the same manner with a plate in the shape of a fan; but it branches out more on the outside."

Dumortier, in his 'Palæontological Studies of the Jurassic Deposits of the Basin of the Rhone,' recognizes another species, as he calls it, in the fourth part of the Superior Lias. This he names *D. crussolensis*; and the only distinguishing feature between this and *D. liasica* is "that it grows thicker than the last, and the form of the colony is more circular" ‡.

In Mr. E. A. Walford's pamphlet on some Upper and Middle Lias beds in the neighbourhood of Banbury §, the author relies upon Quenstedt's description for the identification of his specimens found in the zone of *Amm. spinatus*, and also in the transition-bed, on corals and shells.

In the best work on Oolitic Polyzoa that I have yet met with, 'Description of the Fossil Bryozoa of the Jurassic Formation' ||, Jules Haime divides his typical Diastoporidæ into two groups, the *Bereniceæ* and the *Diastoporæ*. The incrusting forms treated of as *Diastoporæ* in this paper belong to the first group of Haime. His species are:—*B. diluviana*, Lam., a common form of the Great Oolite; *B. Archiaci*, Haime; *B. microstoma*, Mich.; and *B. lucensis*, Haime. Both of these last are found in the Bradford Clay and the Great Oolite, very beautiful species with very characteristic cells. The *Diastoporæ* of Haime belong to the Foliaceous group. Another paper, by Prof. D. Brauns ¶, contains some very valuable information on both the foliaceous (especially *Elea*) and incrusting Diastoporidæ.

Mr. Walford has placed in my hands, for description or study, the whole of his local fossil Polyzoa; and so inadequately have the species been described and figured, that, for scientific purposes, the labours of these eminent palæontologists are almost useless. In giving the Liassic species a new name, I have had regard more particularly to its typical character than to any thing else. In this Liassic type I recognize a family likeness to later fossil and more recent *Stomatoporæ*; and it will be advantageous to science to draw attention to the fact.

* 'Der Jura,' pp. 279-292, fig. 1, tab. 40.

† Bryoz. fossiles de la form. Jurass., in Mém. Soc. Géol. de France, 1854.

‡ Dumortier, l. c. p. 226, pl. 48. figs. 11, 12.

§ Proceedings of the Warwickshire Naturalists' and Archæological Club, 1878.

|| Loc. cit.

¶ Zeitschr. d. deutschen geolog. Gesellsch. 1879.

1. DIASTOPORA STOMATOPORIDES, mihi. Plate XIX. figs. 1-10.

? *D. liasica*, Quenstedt, Handb. der Petref. p. 637, pl. lvi. fig. 10.

? *D. crussolensis*, Dumortier, Palæont. Studies, p. 226, pl. xlvi. figs. 10 & 12.

Zoarium subcircular or orbicular, sometimes indefinite in its mode of growth, forming small isolated patches on shells or corals, varying in breadth from one and a half to three lines. *Zoœcia* arranged linearly, or nearly so, long and slender tubes, many of them wrinkled or surface-roughened, and adherent by their whole length; orifice, when perfect, oval, rarely circular. Primary zoœcia either very excentric in the larger colonies, or proximal in the smaller ones, which soon become excentric as the colonial growth increases. *Oœcia* rare, when present pyriform, involving at least two of the cells. Zoœcial tubes very faintly punctate.

Hab. On *Amm. cornucopiæ*, Up. Lias, Bloxham; on *Cardinia hybrida*, Sow., Appleton; and on *Montlivaltia Victoria*, Mid. Lias, zone of *Amm. Henleyi*, Cherrington, Oxfordshire; Sup. Lias, Crussol, Dumortier; on *Amm. jurensis*, in zone of ditto, Southern Germany, Quenstedt. "Deeper than this," says Quenstedt, "I have never found it."

A careful study of the figures given will convey to the palæontologist a very fair idea of the character of this very early Mesozoic type of *Diastopora*. Unlike any of the palæozoic types, it seems to be persistent, so far as the character of the cell is to be relied upon, high up into the Oolitic series, and, but for the peculiarity of its habit, might be recognized in the *Stomatopora diastoporides*, Norman, and the *Tubulipora lobulata*, Hassall*. Indeed, of the first of these species Mr. Hincks says "that it is the largest of British *Stomatopora*," and has very much the look of *Diastopora*;" and of the other species, "I can see no sufficient ground for placing *Tubulipora* and *Diastopora* in separate families; the two genera are nearly related, and have many common characters." He said this without being aware of the existence of the forms now figured and described, which are in every sense confirmatory of the justness of his family arrangement.

In the Oolitic series, beginning with the lowest beds—the Pea-Grit of the Inferior Oolite—we recognize altogether different types, not widely separated, but even on the same blocks. These types belong to the foliaceous as well as to the crustaceous forms; and where to draw the line between the two it is difficult to say. In some few cases the boundary lines are broken down; and one at least of the typical *Diastopora* pass from the crustaceous into the foliaceous form by a series of quiet gradations. Mr. Longe has given more attention to these forms than I have; and his remarks on these peculiar species may be referred to for exact information †. After

* Figures and description in Hincks's Brit. Polyzoa, vol. i. pp. 434 & 444, pls. 61 & 63.

† Geological Magazine, January 1881.

a careful study of the crustaceous forms from several horizons, ranging from the Pea-Grit to the Coral Rag, I can detect at least three types that have not been specially noticed, so far as I am aware, by previous authors. They may, and I have not the least doubt that they have been, casually identified; but that is all. They deserve, however, more than a passing notice, because some of these types, when they pass into the Bradford Clay and the Forest Marble, delicately preserved on branches of *Terebellaria* and fragments of broken shell, assume an altogether different character. Some of them are beautifully papyraceous; others appear to have a kind of basal lamina extending slightly beyond their circumference, a character I have never observed in the Inferior-Oolite species.

The papyraceous species of the Lower Oolite are also deserving of closer study than I can possibly give to them. Such work belongs rather to local students than to me. They, too, may study the types as they pass from one stratum to another; and in so doing, I would recommend them to mark the beginnings of the divergences, and the boundary lines of each of the four types given; and by doing so they will aid the palæontologist in classifying the evolutionary stages of a most important genus.

2. DIASTOPORA VENTRICOSA, mihi. Plate XIX. figs. 15-17.

Zoarium adnate, discoid in the earlier stages of growth, of most irregular outline in its later stages. *Zoecia* produced and partially free in the centre, gradually depressed towards the margin; tubes slightly bent and swelling towards the orifice, which causes a constriction of the circular or subcircular mouth; cells well separated, the proximal ends being immersed in the zoarium. *Oecia* very largely developed, sometimes round the margin, at other times indiscriminately all over the colony, involving two or three cells or only a considerable swelling of a single tube. In the best-preserved specimens the cells and also portions of the *oecia* are finely punctate.

Hab. On a weathered and partially smoothed pebble (No. 5), Inferior Oolite, Pea-Grit, Cheltenham: Mr. Longe's Cabinet. On drift wood, Chipping Norton, lowest beds, Great Oolite: Mr. Walford's cabinet. Good specimens also in Museum of Practical Geology, Jermyn Street.

This species, or type, is a very peculiar one, well deserving especial study. I have it from several localities, ranging from the Pea-Grit to the Great Oolite. The specimen in Mr. Walford's cabinet contains innumerable colonies piled up very irregularly round a piece of water-logged coniferous wood of Oolitic age. The wood was originally large; but the broken fragment submitted to me for examination was about three inches long, and from half to three quarters of an inch in diameter. The incrustation of the wood, made up wholly of colonies of *Diastopora*, varies in thickness from a quarter to half an inch, the margins of the newer colonies gradually becoming compressed into the general mass through successive stages of growth. The *ventricose* swellings are not so typical in this specimen as in the more beautiful specimens from

the Pea-Grit series (Mr. Longe's cabinet). One colony is five lines by four; and the oœcia are well developed, for there are no fewer than from 25 to 27 swellings in various stages of development; and it is from this specimen that the drawings (Plate XIX.) are taken. Measured across the cell-mouths, there are about six (or varying from five to seven) cells to a line. Three oœcia occupy about the same space. The earliest stages of colonial growth are disks with free cells, flabelliform at later stages, ultimately presenting the appearance of one continuous mass of immersed cells. On the broken edge of a fragment of Mr. Walford's specimen I can count from twenty to thirty layers, representing successive colonial growths.

It may be that some at least of the specimens of this type are the *Berenicea diluviana* of authors, and the *Diastopora verrucosa* of Milne-Edwards. *Berenicea Archiaci*, Haime, is closely related to this species; but the cells, and also the oœcia as figured by Haime*, are not so characteristic of our own Oolitic series as *D. ventricosa*.

3. DIASTOPORA OOLITICA, mihi. Plate XIX. figs. 11-14.

Zoarium circular or nearly so, completely adnate, and varying in size from one to three lines in diameter either way. *Zoœcia* short and bulging near the distal, gradually contracting towards the proximal end; orifice variously shaped, the lower margin, in some cases, slightly mucronate (?); primary cell excentric. Central zoœcia partially raised, becoming gradually depressed towards the margin. *Oœcia*? Tubes faintly punctured, and no "adventitious tubules."

Range from the Pea-Grit to the Great Oolite.

Cabinets: (from several localities) my own; Miss Gatty's, Kidlington, Oxon; Mr. Longe's, very rich, from Pea-Grit; and also from Mr. Walford's; Museum of Practical Geology (several specimens on shells).

Hab. On stones and shells, forming small disk-like patches, more frequently isolated than clustering.

This delicate little species is the most abundant of the Oolitic *Diastopora*. From its peculiar habit specimens are generally referred by collectors to the *D. obelia* of Busk; and in my early identifications I was inclined to place it as a variety (var. *oolitica*) of that species. After drawing and carefully working out the type I soon found this to be impossible. The general habit is different; the cells are more closely packed, and their shapes are altogether different; and, above all, there is in none of the specimens I have examined any indication of "adventitious tubules." Judging from Manzoni's figure †, which he refers to *Berenicea striata*, J. Haime‡, a doubt naturally suggested itself when correcting the proof of my first paper § as to whether some specimens of this type may be referred to Haime's species. There seems to be no identity either with that or

* Bryozoa Jurassic Form. pl. ix. fig. 11.

† Fig. 79, Bryozoa of the Pliocene of Castrocaro.

‡ Reuss, Die Bryoz. des braunen Jura von Balin, &c.

§ Quart. Journ. Geol. Soc. vol. xxxvi. p. 357, note.

Busk's *D. obelia*. *D. oolitica* is a very characteristic type, especially of the Pea-Grit Series, in the Cheltenham district at least.

Another type, not the least important of the whole group, is a most peculiar one. In general habit and mode of growth it seems to be a true *Diastopora*; but it must be looked upon more as a passage form than as a constant one in all its characters. The type of the cells, when slightly worn, approaches nearer to that of the Palæozoic *Ceramopora* than to any Mesozoic *Diastopora*; but in the more perfect cell the largely developed peristome is unlike any thing in the more ancient or the more recent Diastoporidæ. If this be a true passage-form, rather than a constant one, the tendency is toward the *Pustulopora-subverticellata* type*. In this type the cells are connate; but in the one under consideration only some few of the cells are connate; the great majority are "separated pores," as in ordinary *Diastopora*. My diagnosis is made from both the younger and older growths of several colonies; and the description may be relied upon, however the species may be placed in the future. In the Pea-Grit Series the cells have a very bold outline, with interspaces (in some places) between cell and cell. In one specimen from Chipping Norton the cells have a *Lepralia*-like growth, the colonies being semicircular and piled one upon another; and some of the cells are so immersed that only the peristome can be seen. In naming this "type" or "species," I desire to preserve a generic name, though the genus itself is now merged in that of *Entalophora* and *Spiropora*.

4. DIASTOPORA CRICOPORA, mihi. Plate XIX. figs. 18-25.

Zoarium adnate, forming small and large irregular patches, sometimes self-attached, at other times incrusting other species of Polyzoa. In the early stages of growth the colony has a bicircular or oval outline; in its later stages the growth is most irregular. *Zoecia* short and stunted tubes, very coarsely punctate; orifice ring-like, with a largely developed peristome. Primary zoecium inconspicuous, being deeply immersed, giving off to the right and left secondary zoecia, which in their turn give off others. The after colonial growth is thus early directed to two opposite points; ultimately the proximal cells unite below the primary cell, so that it in time becomes centric or excentric. *Oocia*?

Range from Pea-Grit to Great Oolite.

Cabinets: several very fine specimens of this type are in the cases of the Museum of Practical Geology, Jermyn Street; Mr. Longe's, Mr. Walford's, and Mr. Windus's.

Hab. Chiefly on water-worn stones and broken shells.

I have had very great difficulty in describing this type, more particularly on account of its peculiar preservation. One colony on Mr. Longe's specimens (block 6) is very well preserved in its earliest stages; and from this specimen most of the figures are drawn. The natural size is shown at fig. 18, and is about three lines at its widest

* See Busk's 'Crag Polyzoa,' pl. xviii. fig. 1, right-hand specimen.

part. In fig. 19¹ (an enlargement of a portion of the same colony) the tendency of the cells to the right and to the left is shown; the other figures are enlargements of special cells to show the ring-like character of the mouth and peristome. There is another colony on the back of the same slab; but this is very much worn, and the cell-mouths are somewhat angular. The largest colony is on block 9* ; and it is a very interesting study. This block is a piece of coarse Oolitic Limestone, much worn by attrition; and, besides many *Serpulæ*, it contains on its surface several colonies of Polyzoa. Fig. 25 is a magnified portion of a colony of *D. cricopora* adherent to a colony of *Elea* (?), or one of its nearest allies, the one almost wholly enveloping the other. In the fragment figured the different characters of the two fossils are shown. The under one of the *Elea* (?) type has all the cells in one plane, the walls of each cell so closely connected as to leave no interspaces. The normal orifice of the cell seems to be of a subcircular character; when slightly worn it is large and circular, unlike any of the cell-mouths figured by Busk in his 'Crag Polyzoa' as *Mesenteripora*, which seems to have been used as a synonym † of *Elea foliacea* (*D. foliacea*, Lamx.). Manzoni also figures ‡ a "*Diastopora*" ? having a habit somewhat similar to this, which he calls *D. expansa*, Manz.; but the aperture is normally circular with a well-developed peristome. This flat adherent type of the Inferior Oolite becomes (so Mr. Longe informs me) foliaceous in its after stages; but whether it ever becomes really leaf-like with cells on both sides I cannot, as yet, satisfy myself. I have no desire, however, to put this type under the genus *Diastopora*. The other incrusting form is a marginal portion of *D. cricopora*, having many of the characters of the group, but with cells altogether at variance with the general build of the true *Diastopora*-cell.

The genus *Diastopora* has been, and is, in many instances, very much abused; and before proceeding with these studies it may be as well to define and limit the genus. Lamouroux used two terms which have come into general use—the one *Berenicea*, and the other *Diastopora*. Under these two names many divergent forms have been placed, so that to some extent *Berenicea* and *Diastopora* are synonymous terms, the term *Berenicea* being used for one section of the Diastoporidæ and *Diastopora* for another section. In subdividing the foliaceous Cyclostomata, Milne-Edwards formed two great groups, "distinguished," says Busk, "by the character that in the one the tubes are almost wholly immersed, and in the other partially free." To the former group Milne-Edwards applied the appellation "*DIAS-TOPORES*," and to the latter that of "*TUBULIPORES*." "This division is natural; but it seems convenient that it should be carried still further;

* These numbers refer to the specimens as numbered in Mr. Longe's cabinet. It would be a good thing to have the types preserved in some public museum, so that they could be accessible to future students. Whenever I could, I have referred to specimens so preserved.

† D'Orb., Pal. Franç. terr. Crét. (p. 808).

‡ Briozoi di Castrocaro, tav. vii. f. 83.

and in the doing of this . . . no better classification can be adopted than that suggested by the same author, viz. into 1. *Diastopores simples*; 2. *D. enveloppantes*; 3. *D. biserialaires*. I propose, therefore, to term the simple *Diastoporæ* of Milne-Edwards *Diastopora*, the enveloping or laminated forms *Berenicea*, and the biserial *Mesenteripora**. This arrangement Mr. Busk follows in his 'Crag Polyzoa.' But *Mesenteripora* is placed as a genus of the Tubuliporidae, whereas in the Museum Catalogue, part iii. Cyclostomata, it is placed as a genus of the Diastoporidæ. This I have no objection to, because it is only those who have gone over the same ground who can possibly know what difficulties there are to encounter in classifying the species under discussion. The differences, however, between Mr. Busk and Mr. Hincks† are very striking on this point. In the 'Catalogue of Cyclostomata,' *Mesenteripora* (a foliaceous form of the Diastoporidæ) is included in the FAMILY; whereas in 'British Marine Polyzoa' the foliaceous forms are included in the genus *Diastopora*. This I entirely object to, on account of the confusion it is sure to create when we are dealing with Mesozoic forms. With this exception *Diastopora*, in the sense in which I have used it, may be defined as follows:—

"*Zoarium* adnate and crustaceous, usually discoid or flabellate, less commonly irregular in form. *Zoecia* tubular, with an elliptical or subcircular orifice, crowded, longitudinally arranged, in great part immersed."

The foliaceous species will have to be separately dealt with; and I think it very unwise to use the term *Berenicea*, as defined by Lamouroux, for other than Palæozoic species. If *Berenicea* is used for Palæozoic and Oolitic species indifferently, simply because the "corallum incrusts foreign bodies" and is "composed of a thin calcareous base"‡, confusion will be sure to follow, for the simple reason that the characters of the Palæozoic and Oolitic species are altogether different. The *Ceramoporæ* and *Bereniceæ* of the Palæozoic rocks are not typical *Diastoporæ*.

There now remain for investigation the Chalk- and Greensand-forms; and these I would gladly revise if Members would help me by the loan of material for this purpose. Some of the species catalogued are undoubtedly *Diastoporæ*; others are not *Diastoporæ* in the restricted sense used by me in this paper.

My thanks are due to kind friends who have assisted me with material for the writing of this paper—to Mr. Walford for supplying me with extracts and tracings from Dumortier and Prof. Braun, and to Mr. J. D. Longe, F.G.S., for the loan of specimens from the Inferior Oolite. I also tender my thanks to Mr. R. Etheridge, F.R.S., and to Mr. E. T. Newton, F.G.S., for allowing me to examine the specimens in the Museum of Practical Geology.

* Crag Polyzoa, p. 109.

† British Marine Polyzoa, p. 457.

‡ M'Coy, Brit. Pal. Foss. p. 44.

EXPLANATION OF PLATE XIX.

Figs. 1-10. *Diastopora stomatoporides*, Vine.

- 1, 2. Natural size of two different colonies.
- 3, 4, 7. Enlarged respectively about 10, and 15 diameters, to show the disposition and character of the cells.
- 5, 6. $\times 25$ diam., showing the elongated character of cells, together with the rugose markings on some.
8. $\times 50$ diam.
9. $\times 30$ diam.
10. Aperture of cell, $\times 50$ times, to show the true *Elea-foliacea* (*Diastopora*, Lamx.) type of peristome; from colony. Fig. 4. As above. (Compare *Berenicea striata*, Haime, pl. vii. fig. 8, *a, b*, 'Foss. Bryozoa of the Jurassic Formation.')

Figs. 11-14. *Diastopora oolitica*, Vine.

11. Natural size of colony.
12. \times about 8 diam. There is much variation in this type; but it has generally a circular habit, as depicted.
13. \times about 33 diam.
14. \times about 50 diam.

Figs. 15-17. *Diastopora ventricosa*, Vine.

15. Natural size of colony. This also varies as to size of colony.
16. $\times 25$ times, showing the disposition of the oœcial "gonœcia," Hincks, in the different parts of the colony.
17. \times about 50 diam.

Figs. 18-25. *Diastopora cricopora*, Vine.

18. Natural size of colony from which the type is drawn. The specimens in the School of Mines vary considerably.
19. Portion of colony, enlarged in the direction of line I, fig. 18, to show the disposition of the partially immersed cells.
- 20-22. $\times 25$ times, giving a fair illustration of the ornamentation of the cells.
- 23, 24. $\times 75$ times.
25. Two separate colonies: the uppermost, *D. cricopora* (marginal edge), incrusting *Elea foliacea*, Lamx.

DISCUSSION.

The PRESIDENT bore witness to the great value of the author's study of this group of microscopic organisms.

Prof. SEELEY stated that his study of the Polyzoa had led him to conclude that many of the supposed generic differences were mere accidents of age and growth. He thought that Mr. Vine's paper was a valuable addition to science. He doubted the wisdom of inventing wholly new names for previously described species, as had been done in one instance by the author.

