Descriptions *of* New *and* Rare Diatoms. Series ~~XX.~~ XIX

By R. K. Greville, LL.D., F.R.S.E., &c.

(Communicated by F. C. S. Roper, F.L.S., &c.)

(Read March 14th, 1866.)

plates VIII, IX.

Plagiogramma.

Plagiogramma orientale, n. sp., Grev.—Minute; valve panduriform, with central costæ and shortly produced apices; puncta very minute, impervious decussating lines. Length, ·0012″. (Pl. VIII, fig. 1.)

Hab. Zanzibar; Professor Hamilton. L. Smith.

Almost as minute as *P. atomus*, and resembles it in form, only not so deeply constricted. The chief difference, however, lies in the absence of costæ at the ends.

Gephyria.

Gephyria constricta, n. sp., Grev.—Valve with obtuse, crenate ends, and deeply constricted in the middle; costæ 5—6 in ·001″. Length, ·0055″ to ·0072″. (Fig. 2.)

Hab. Monterey deposit; L. Hardman, Esq.

A noble species, of which, through the kindness of Mr. Hardman, I have seen a number of examples. The constriction is so remarkable that, while the widest part of the frustule is nearly ·0020″, it is often only ·0007″ across the middle. The relative proportion, however, of the two parts varies to some extent. Between the costæ the valve has a minutely punctate appearance; but on a careful examination this seems to arise from a subjacent very minute cellulation. In Mr. Hardman's cabinet is the front view of a lower valve of a gigantic Gephyria, nearly ·0120″ in length; in which the base of the valve is punctato-striate.

Melosira.

Melosira costata, n. sp., Grev.—Pale; joints cylindrical, uninterrupted, longitudinally costate. Breadth of filament, ·0003″ to ·0007″. (Figs. 3—6.)

Melosira?—Small form with longitudinal markings, Norman, in 'Annals of Nat. Hist.,' vol. xx. 2nd Series, p. 159. (1857.)*

* 'Notes on Diatomaceæ from the Stomach of Ascideæ.' By George Norman, Esq.

Hab. North Sea, off the coast of Yorkshire, in the stomachs of Ascidians; George Norman, Esq. Hongkong; J. Linton Palmer, Esq.

The diatom above indicated by my friend Mr. Norman I find, on examination, to be identical wilh the specimens kindly communicated to me by Mr. Palmer from Hongkong, where it appears to be abundant. The remarkable longitudinal costæ, seven or eight of which are sometimes visible at once, constitute an admirable character. Under a high power the costæ are seen to be dilated at their apices, and attached to those of the adjoining frustule.

CRESSWELLIA.

Cresswellia rudis, n. sp., Grev.—Valves convex, depressed at the apex, minutely cellulate, with a circle of numerous, short, obtuse spines towards the margin, and a row of similar smaller ones round the depressed apex. Diameter, ·0035″ to ·0040″. (Fig. 7.)

Hab. Monterey deposit; L. Hardman, Esq.; R. K. G.

Distinguished chiefly by the numerous, short, clumsy spines, which are nearly of the same thickness from their base to their apex, which is often encumbered with fragments apparently torn from the spines of the valve to which they have been attached. The outer circle is situated at some distance from the margin; then come a few very small, scattered spines, which are probably sometimes wholly absent; lastly, the inner circle crowning the flattened apex. The substance is somewhat thick, and the cellules nine in ·001″. Neither Mr. Hardman nor myself have been so fortunate as to find entire frustules; but this is of little consequence, as the valves in this genus are simply repetitions of each other.

COSCINODISCUS.

Coscinodiscus Lewisianus, n. sp., Grev.—Disc oval or oblong; granules conspicuous, forming an irregular central cluster, from which a few nearly straight, wide lines radiate to each end, and some very short ones to each side; margin striated, with an interior narrow band of minute puncta. Length, ·0024″ to ·0045″. (Figs. 8—10.)

Hab. Rappahannock deposit, United States; E. W. Dallas, Esq.; R. K. G.

I have not been able to find any description of this well-marked and beautiful species. The form renders it at once

conspicuous, for it does not appear to be ever circular or even to approach towards it, but ranges between a true oval and elliptic-oblong. There is no umbilicus, but a loose irregular cluster of large, round granules, radiating in either slightly curved or straight lines to each end, diminishing gradually in size; the lines are so wide apart that four to seven fill up the space, and leave but little room for the few very short lines which radiate to the sides. Just within the striated margin is a very narrow belt of minute puncta.

CRASPEDODISCUS.

Craspedodiscus umbonatus, n. sp.—Disc hexagonally cellulate, the border nearly equal to half the radius, the centre rather sharply umbonate. Diameter, ·0035″. (Fig. 15.)

Hab. Barbadoes deposit, Cambridge estate; in slides communicated by C. Johnson, Esq.

Distinguished at once by its umbonate centre. Cellules near the margin of the border 8 in ·001″.

COSMIODISCUS, *n. gen.*

Frustules simple discoid; disc radiato-punctate or cellulate, with linear, blank radiating spaces extending from the margin inwards (no processes nor internal septa).

Whether the three diatoms I have here brought together are really generically allied I will not, in the present state of our knowledge regarding them, take upon myself to say. As, however, they agree in the most prominent character, a provisional union will be, at least, convenient. The genus is constructed specially for the disc first described, which for many years has perplexed me when called upon to examine the Monterey deposit. All these discs appear to be allied to *Aulacodiscus*, in having blank lines or channels radiating through more or less of their surface towards the margin; but being destitute of lateral processes they must be arranged among the *Coscinodisceæ*.

Cosmiodiscus elegans, n. sp., Grev.—Disc with a broad, smooth margin, and numerous very narrow radiating blank lines; intervening compartments filled with very minute puncta passing into striæ next the margin. Diameter, ·0035″. (Fig. 13.)

Hab. Monterey deposit; L. Hardman, Esq.; R. K. G.

Disc with an irregular, blank umbilicus; granules minute, somewhat scattered and irregularly arranged for some dis-

tance round the umbilicus, gradually becoming crowded and more minute, and ultimately passing into fine close striæ as they reach the circumference. Radiating lines numerous (24 in the example figured), commencing indefinitely, generally at about a third of the radius from the centre, so narrow as frequently to resemble dark striæ, but, on careful examination, are perceived to be exceedingly narrow blank spaces; margin or border pale, smooth, and somewhat broad.

Cosmiodiscus Barbadensis, n. sp., Grev.—Disc convex, with numerous linear blank lines, extending about one third of the radius from the margin; the portion of the disc so occupied forming a sort of broad, less convex border. Diameter ·0034″. (Fig. 12.)

Hab. Barbadoes deposit, Cambridge estate; in slides communicated by C. Johnson, Esq.; exceedingly rare.

Disc convex for about two thirds of the radius from the centre, then becoming somewhat flattened; umbilicus a small, circular, blank space; granules equal, minute, distinct radiating in straight lines to the boundary of the convex centre, then becoming larger, and diminishing gradually in size to the margin. In the flattened circumference are situated about fourteen blank, linear, radiating spaces, not produced by divergence in the lines of granules, but commencing and terminating abruptly.

Cosmiodiscus Normanianus, n. sp., Grev.—Radiating blank lines numerous, extending about half way from the margin to the centre, the intervening compartments filled with radiating lines of minute puncta; centre with scattered and much larger puncta. Diameter ·0024″. (Fig. 11.)

Hab. Barbadoes deposit; cabinet of George Norman, Esq.; exceedingly rare.

The central portion occupying as much as half the radius, containing large, remotely scattered puncta, and presenting a sudden contrast to the minute puncta between the blank, radiating lines, give a remarkable aspect to this disc, and may possibly lead to its separation when we come to be better acquainted with it.

EUPODISCUS.

Eupodiscus Hardmanianus, n. sp., Grev.—Large; disc with four circular marginal processes, hexagonally cellulate, with a broad, raised, remotely striate margin, and circle of teeth. Diameter ·0055″. (Fig. 14.)

Hab. Shell-cleanings from South America; L. Hardman, Esq.

A splendid and well-defined species, with four circular, not very prominent processes, placed just within the broad margin, which is furnished with a circle of numerous obtuse teeth. Within this margin or border is a narrow, irregular, somewhat dark line, apparently indicating a sudden depression of the surface between it and the marginal border. Hexagonal cellules 6 in ·001″.

BIDDULPHIA.

Biddulphia Chinensis, n. sp., Grev.—Large; frustules quadrangular; valves with the angles terminating in short, slender, obtuse, curved processes, and with a long stout spine springing from the swollen base of each process. (Pl. IX, fig. 16.)

Hab. Harbour of Hongkong; J. Linton Palmer, Esq.

A very fine diatom, with the colour, structure, and fragility of *Biddulphia Mobiliensis* (*B. Baileyi*, Sm.). At first sight the general resemblance is so striking that the observer might be excused for at once pronouncing it to be a large state of that species; and, considering the notoriously variable character of the valve in some *Biddulphiæ*, it would require very decided differences to separate it. I am, indeed, bound to confess that I have been deceived for a time by variations from normal forms in this genus, and, for example, that I am now convinced that my *B. Roperiana* is nothing more than one of the endless varieties of *B. aurita*. Nevertheless, in the case now under consideration, I venture to assume that really good diagnostic characters exist. Of *B. Mobiliensis* Mr. Ralfs remarks (Pritch. 'Infusor.,' p. 851, 1861): "There is no central projection of the valves, but two slight elevations, furnished with one or more bristles, and dividing the margin into three nearly equal portions. The elevations appear to be situated between the processes, but are really placed on opposite sides." This description is well illustrated in Smith's 'Synopsis,' vol. ii, pl. lxii, fig. 322 (front view); and in Roper's excellent article "On the Genus *Biddulphia* and its Affinities," in 'Trans. Mic. Soc.,' vol. vii, Pl. I, figs. 8, 9 (side views of valve). Now, in *B. Chinensis* this relative position of the bristles or spines with the processes is completely changed. The former do not divide the margin into three nearly equal portions, nor, indeed, divide it at all, nor are they situated on the margin. They arise from the swollen base of the processes themselves, on the inner side; so that, instead of being margined, they may be said to be actually on the median line (an imaginary one drawn between the

processes). If these remarkable differences are not considered of value, I do not see how any character derived from the position of spines in any of the other species can be depended on. No approach towards an intermediate condition has been observed. It may also be remarked that the processes seem to be influenced by the position of the spines in *B. Chinensis*, for they are covered outwards, and are not straight, as figured by Smith and Roper in *B. Mobiliensis*.

Biddulphia ? podagrosa, n. sp., Grev.—Frustules quadrangular; valves with the angles prolonged into very thick processes, which are swollen and punctate near the base, then contracted, and again dilated into broadly capitate truncate, punctate apices; median space, with a hemispherical or subcapitate elevation. Length of perfect frustule ·0035″. (Fig. 17.)

Hab. Barbadoes deposit, Cambridge estate; in slides communicated by C. Johnson, Esq.

One of the extraordinary forms of the *Biddulphia* family only to be met with in the Barbadoes deposit. It is obviously allied to my *Hemiaulus ? capitatus* ('Trans. Mic. Soc.,' vol. xiii, pl. 6, fig. 24), which would have been more appropriately registered as a doubtful *Biddulphia*. The present diatom has a most whimsical appearance. The horn-like processes seem as if they had become proliferous; as if a second series had grown out of the first. The summits are large, inflated, almost cyathiform. The central projection is punctate like the processes, and in one specimen is so prolonged as to be almost capitate. The whole surface, with the exception of the punctate portions, is smooth and somewhat glassy. The processes are ·0020″ in length.

TRICERATIUM.

Triceratium lautum, n. sp., Grev.—Large; valve with straight sides, rounded angles, and large pseudo-nodules (processes); margin with a somewhat pectinate row of large cellules; granules rather remote, radiating from a central cluster, and increasing in size towards the margin. Distance between the angles ·0050″. (Fig. 20.)

Hab. Barbadoes deposit, Cambridge estate; C. Johnson, Esq.

This species bears a great general resemblance to *T. prominens*, but differs in the marginal cellules, in the angles being arched off and filled up with much larger processes, and in the absence of any central inflation.

Triceratium repletum, n. sp., Grev.—Small; valve with nearly straight or slightly convex sides and obtuse angles, and large ovate, minutely punctate pseudo-nodules (processes); surface entirely filled with small roundish granules, which become gradually smaller towards the margin, which is striate. Distance between the angles ·0030″. (Fig. 18.)

Hab. Barbadoes deposit, Cambridge estate; in slides communicated by C. Johnson, Esq.

Conspicuous for the very large processes which fill up the almost rounded angles, and extend over more than a third of the space between the angles and centre. Cellules near the centre, about 10 in ·001″.

Triceratium quinquelobatum, n. sp., Grev.—Valve with five obtuse lobes, the sides concave; cellules small, radiating from the centre, hexagonal, becoming less towards the margin. Distance between the angles ·0024″. (Fig. 21.)

Hab. Moron deposit, Province of Seville; Rev. T. G. Stokes.

This differs from the hexagonally-lobed *T. reticulatum*, not only in having only five angles (which might not prove of sufficient importance), but in the much smaller and more regularly hexagonal cellulation, which at the angles passes into very crowded, minute puncta. The lobes are also much less rounded.

Triceratium picturatum, n. sp., Grev.—Valve with slightly concave sides and obtuse angles containing a few minute puncta in the extreme apices; margin giving off a number of very short veinlets, and in the middle of each side a roundish impression reaching nearly to the centre. Distance between the angles ·0032″. (Fig. 19.)

Hab. Barbadoes deposit, Cambridge estate; in slides communicated by C. Johnson, Esq.; extremely rare.

A species somewhat akin to *T. denticulatum*, but differing essentially in the three middle impressions. The general surface has remote, scattered puncta, with smaller and more numerous ones between the marginal veinlets and on the impressions.

SYRINGIDIUM.

Syringidium dæmon, n. sp., Grev.—Frustules smooth, central portion quadrangular; one of the valves contracted into an elongated conical process, the other globose, with two truncate, spine-bearing horns and an intermediate spine. (Figs. 22—28.)

Hab. Harbour of Hongkong; J. Linton Palmer, Esq.

In general aspect, this whimsical-looking diatom comes nearest to *S. Americanum*, but is more minute, has a smooth surface, and the capitate valve is furnished with a spine or bristle between the processes. The frustule is subject to considerable variations, which may probably be accounted for by its progress toward the period of self-division. In its early stage the diatom is filamentous, specimens in my possession showing three frustules *in situ* (Fig. 22); and it will be perceived that the capitate ends of the frustules are opposed to each other within the tube, the horns meeting, and the terminal spines overlapping each other, as in the genus *Hemiaulus*. It appears that the frustules become fully developed within the tubes before they escape, for although, in the figure just referred to, the conical process is not yet visible, it is mature, or nearly so, in Fig. 24. When perfect, the frustule may be described as comprised of two valves, rather sharply quadrangular (as viewed in the microscope); the one suddenly contracted and passing into a long conical process terminating in a minute spine; the other contracted into a short, thick neck, supporting a spherical head furnished with two short, conical, truncate horns, each tipped with a spine at its inner angle, while a slender, short spine is also situated in the intermediate space. The relative proportion of the two valves varies greatly, as will be seen by consulting the figures; but this seems to be of no momemt in a diagnostic point of view. A very remarkable deviation from the typical structure of the genus occurs in *S. simplex*, Bail.* A very minute species, in which the valves are described as "nearly symmetrical," and "both gradually tapering into pyramidal cones."

It is to Mr. Palmer that we are indebted for specimens in so perfect a state as to indicate distinctly their affinity with *Hemiaulus*. Nevertheless, we cannot but agree with Mr. Ralfs in his observation, that, "although it is not difficult to point out differences between the *Chætocereæ* and other groups, yet, on account of the variety in their forms, we confess our inability, in the present state of our knowledge, to give a concise definition which shall include its own members and exclude all others."†

NAVICULA.

Navicula spectalissima, n. sp., Grev.—Elongated, deeply

* "Notes on new species of microscopical organisms, chiefly from the Para River, South America." By Loring W. Bailey. 'Boston Journal of Natural History,' vol. vii, p. 343, fig. 65.

† Pritchard, 'History of Infusoria,' 4th edition, p. 860.

constricted, with ovate-cuneate lobes, minutely punctate; margin composed of a single series of large, linear-oblong cellules, which, as well as the puncta, disappear opposite the central nodule. Length ·0050″. (Fig. 29.

Hab. Zanzibar; Professor Hamilton. L. Smith.

One of the most exquisite diatoms which have ever come under my observation, and for which I am indebted to the kindness of my excellent correspondent, Professor H. L. Smith, Gambier, Ohio, who is prosecuting original and important investigations into the structure and development of the diatom frustule. The present new species belongs to the extensive group of *Naviculæ,* in which the valves are more or less constricted at the middle, constituting the exploded genus *Diploneis* of Ehrenberg. Its nearest ally appears to be *N. marginata,* of Lewis,* in which there is also a minute inner structure, and a single row of large marginal cellules. In *N. spectalissima,* however, this contrast of structure is carried much farther, for the puncta next the median line are more minute, and the marginal cellules form a band nearly as broad as the punctate portion itself. These cellules are 7 in ·001″, and at the widest part of the valve are ·0004″ in length, and so regular as to give the margin a pectinate and crenate character. They gradually diminish in length, and disappear near the apex, and opposite the central nodule.

Stauroneis.

Stauroneis rotundata, n. sp., Grev.—Small; valve linear, or very slightly dilated in the middle, rounded at the ends; stauros broad, linear, reaching to the margin; striæ parallel, exceedingly fine, not quite reaching to the median line. Length ·0033″. (Figs. 30, 31.)

St. rotundata; Grev. MS.; Dr. L. Lindsay. 'Journ. Linn. Soc.,' vol. ix, p. 134 (name only).

Hab. Otago, in New Zealand, in fresh water; Dr. Lauder Lindsay.

This seems a well-marked species, with its parallel sides (sometimes slightly dilated at the middle) and very rounded ends, where the margin is broader than at the sides.

Stauroneis scaphulæformis, n. sp., Grev.—Small; valve linear; lanceolate somewhat contracted and produced at the sub-acute ends, which are arched over by the thickened

* 'Notes on new and rarer species of Diatomaceæ of the United States' seaboard.' By F. W. Lewis, M.D., 1861, p. 6, pl. ii, fig. 1.

margin; stauros broad, dilated, reaching to the margin. Length ·0036″. (Fig. 32.)

St. scaphulæformis, Grev. MS.; Dr. L. Lindsay. 'Journ. Linn. Soc.,' vol. ix, p. 134 (name only).

Hab. Otago, New Zealand, in fresh water; Dr. Lauder Lindsay.

Very similar in general appearance to the diatom figured by my friend Dr. Lewis,* as a variety of *St. Legumen*, of Ehrenberg; but it differs in having a very broad, dilated stauros, instead of a very narrow, simple one; and in the contraction of the valve below the apices.

On the so-called PACCHIONIAN BODIES.

By H. CHARLTON BASTIAN, M.A., M.B. Lond., F.L.S.

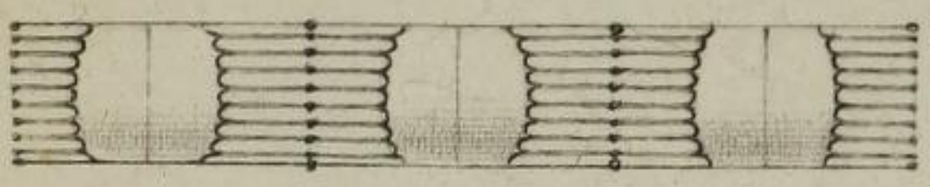
(Communicated by W. H. INCE, F.L.S.)
(Read March 14th, 1866.)

CERTAIN granulations or minute polypoid excrescences in connection with the membranes of the human brain, now familiar to so many anatomists and pathologists, were first described in 1705 by Antonius Pacchionius,† and regarded by him as rounded glands, secreting a clear pellucid fluid, from which lymphatics proceeded to the pia mater. Succeeding anatomists, for a time sharing in this opinion, spoke of them as 'Pacchionian glands,' and by this name they were known till a comparatively recent period, when a growing doubt as to their nature gradually resolved itself into a pretty firm conviction that they had no real claims to be included in the category of glandular structures. Now almost all anatomists prefer to speak of them as 'Pacchionian bodies.'

Although these growths have received a very fair share of attention since the date of their first discovery, still many of the statements made concerning them are quite conflicting, and the accounts to be found in English text-books more especially are meagre and inexact as to their real nature and mode of origin. Seeing that they are found in several situa-

* "On extreme and exceptional variations of Diatomaceæ in some White Mountain localities," &c. By F. W. Lewis, M.D. 'Proceedings of the Academy of Natural Sciences of Philadelphia,' Jan., 1865, pl. 2, fig. 14.

† Dissert. Epistolaris de Gland. conglobatis duræ meningis Humanæ, indeque ortis Lymphaticis ad Piam meningem productis. Reprinted also at p. 103 of his 'Dissert. Physico-Anatom. de dura meninga Humanâ.' 1721.



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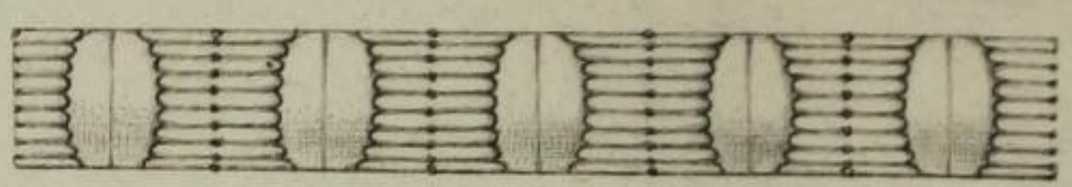

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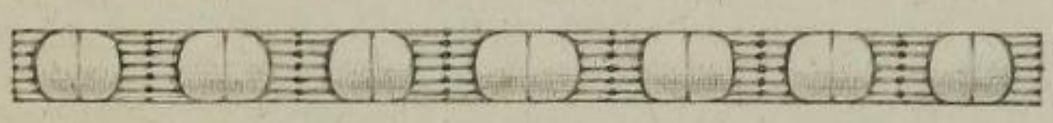

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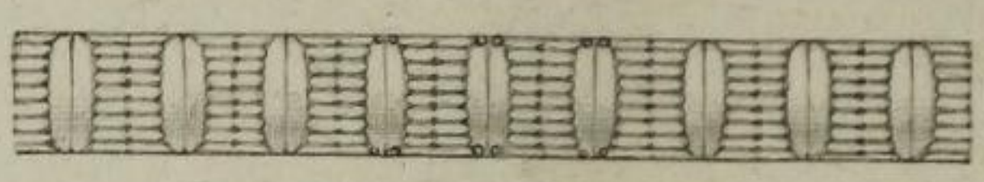

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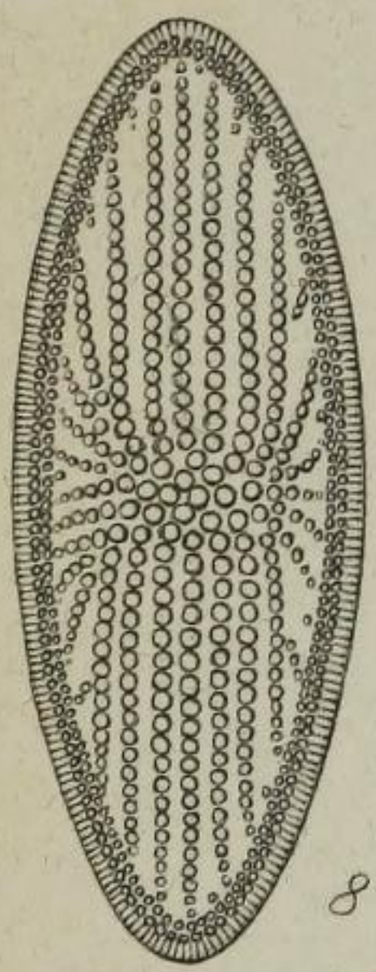

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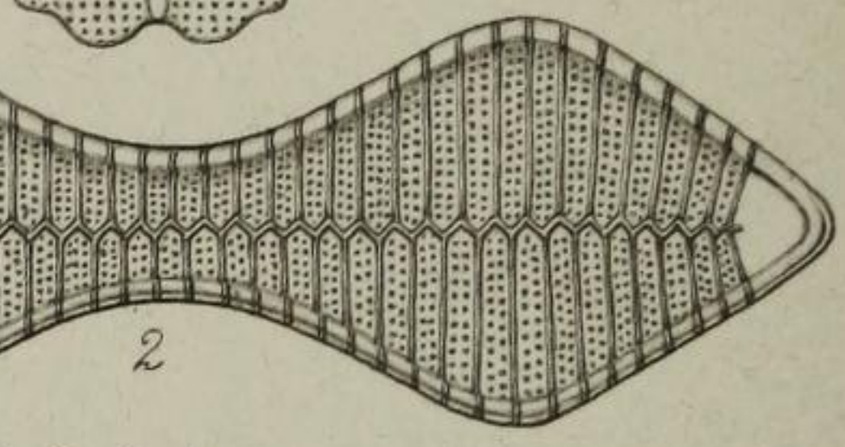

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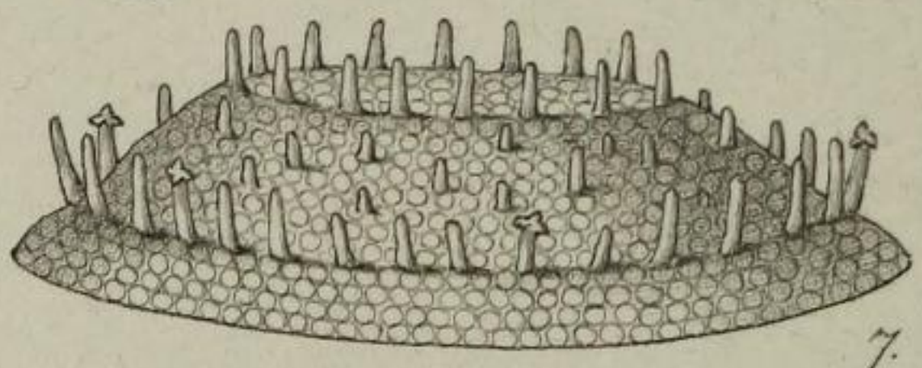

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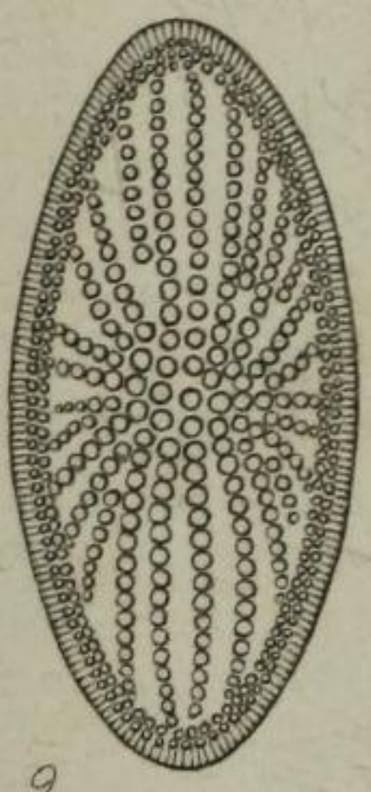

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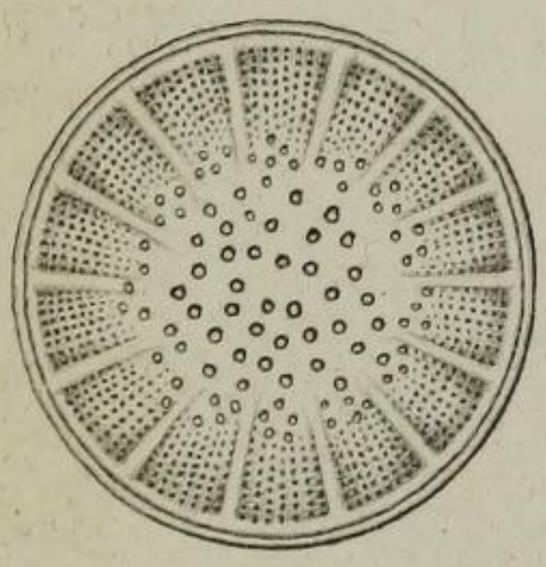

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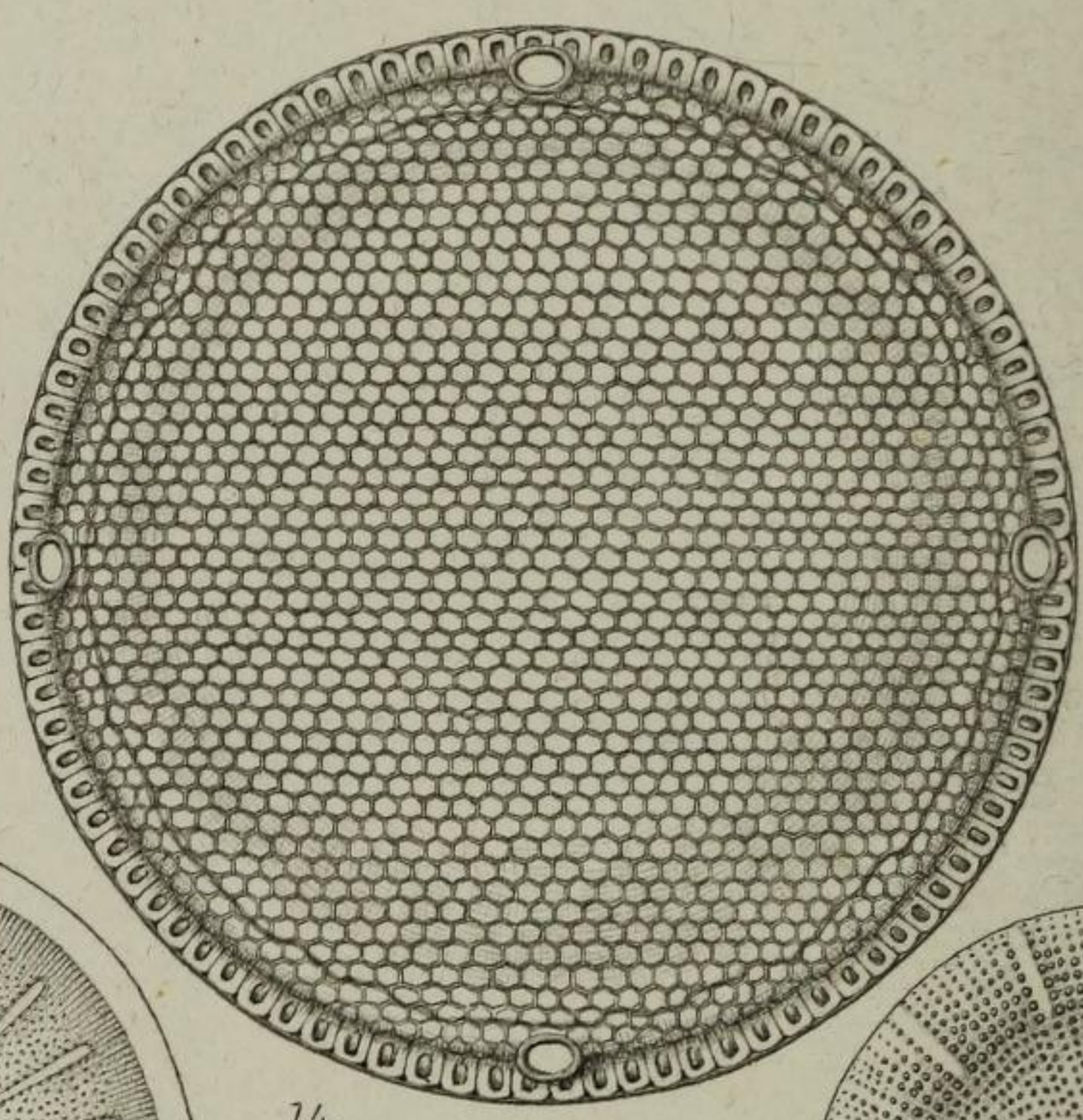

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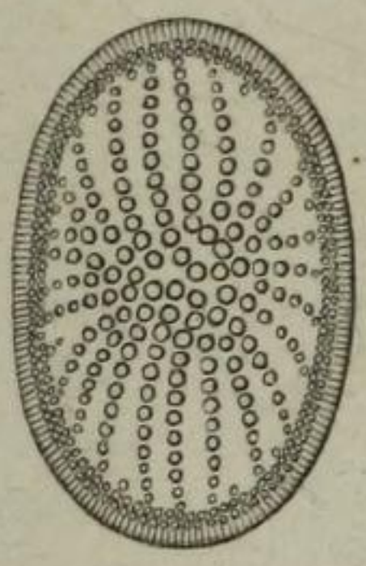

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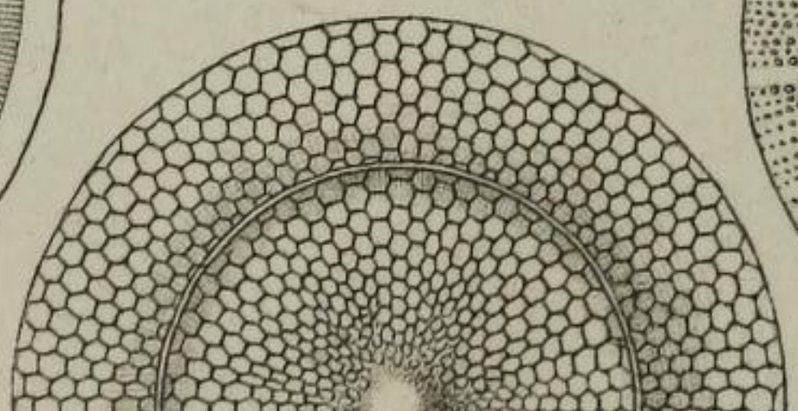

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R. K. Greville, del.t on stone by P. Huth.

W.H. Mc Farlane, Lith.r Edin.r

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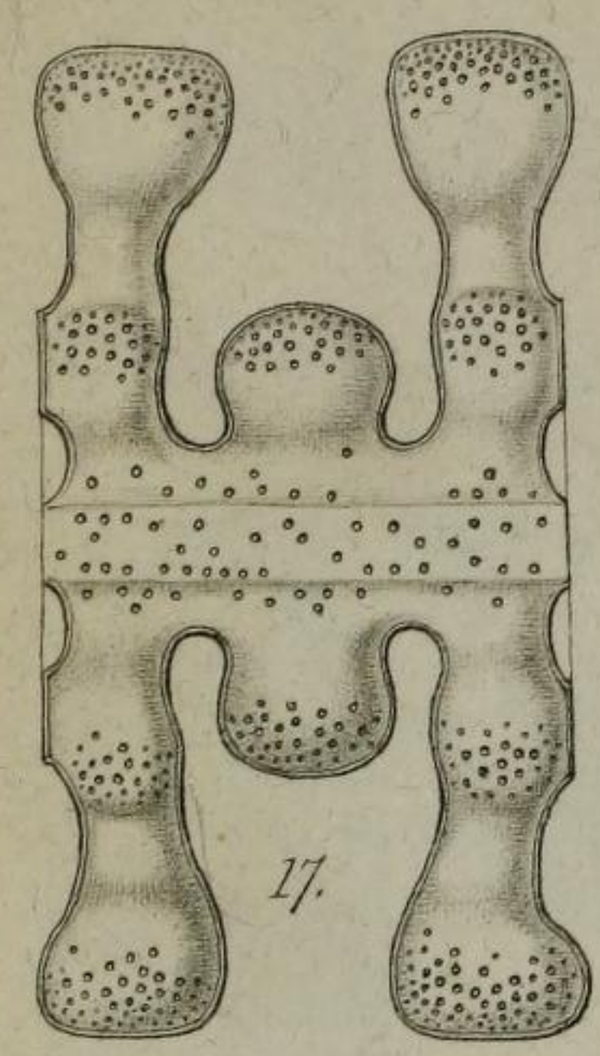

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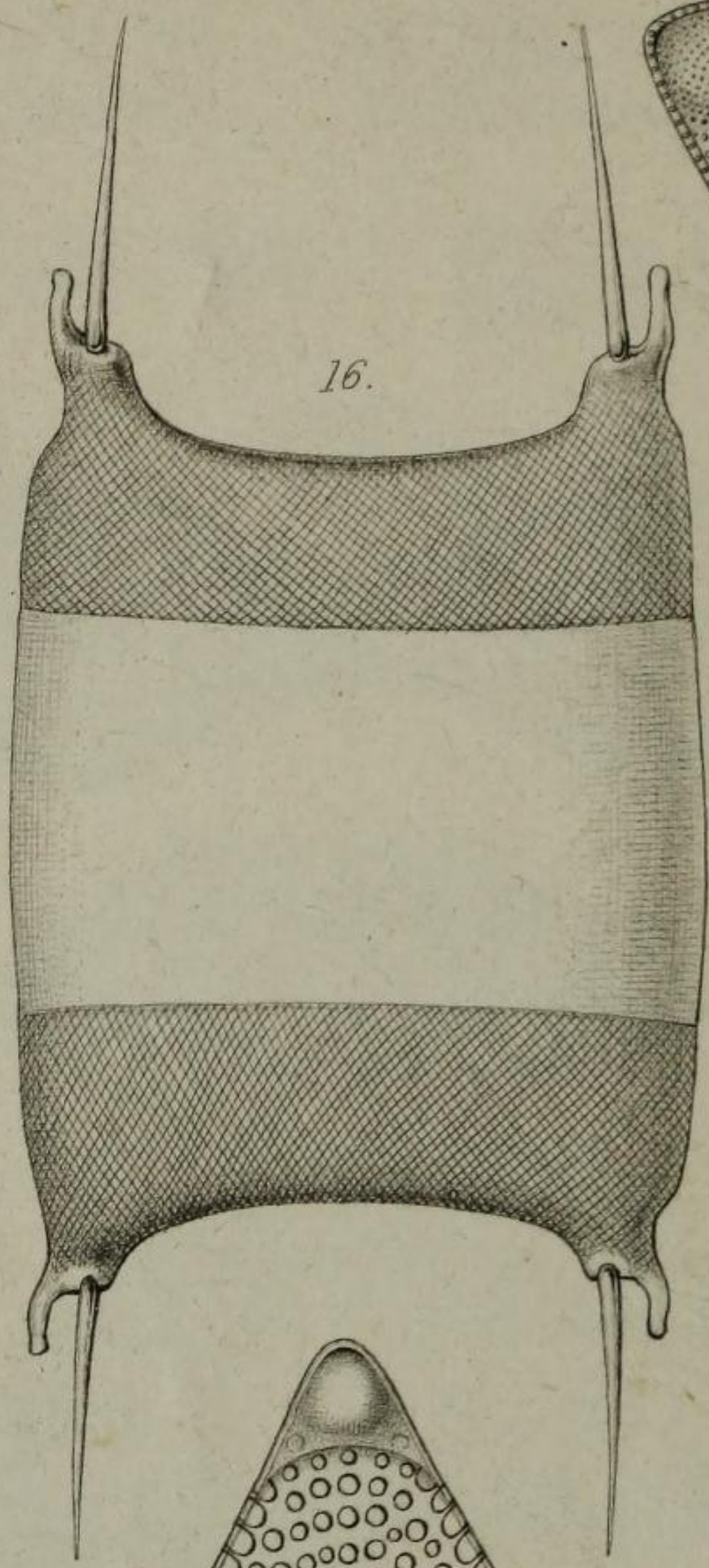

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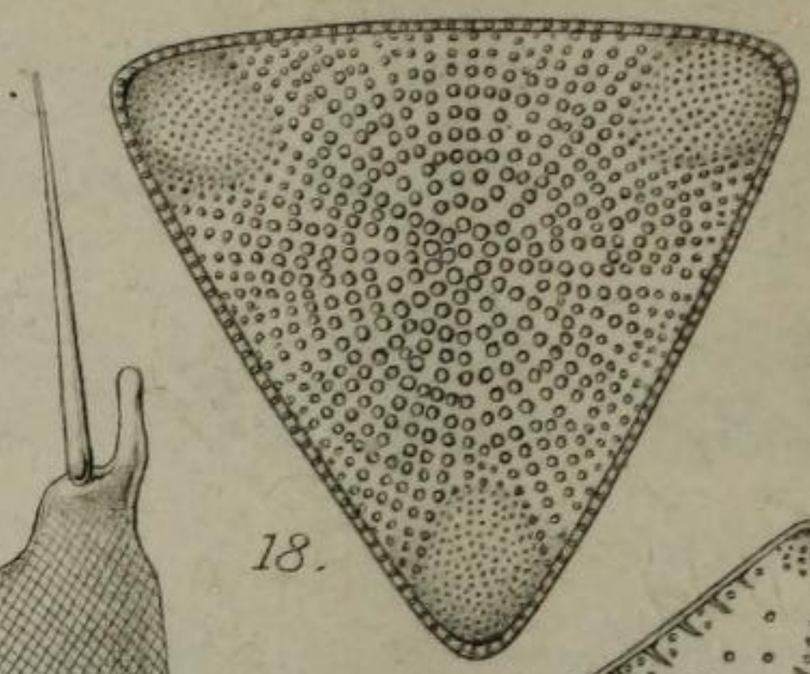

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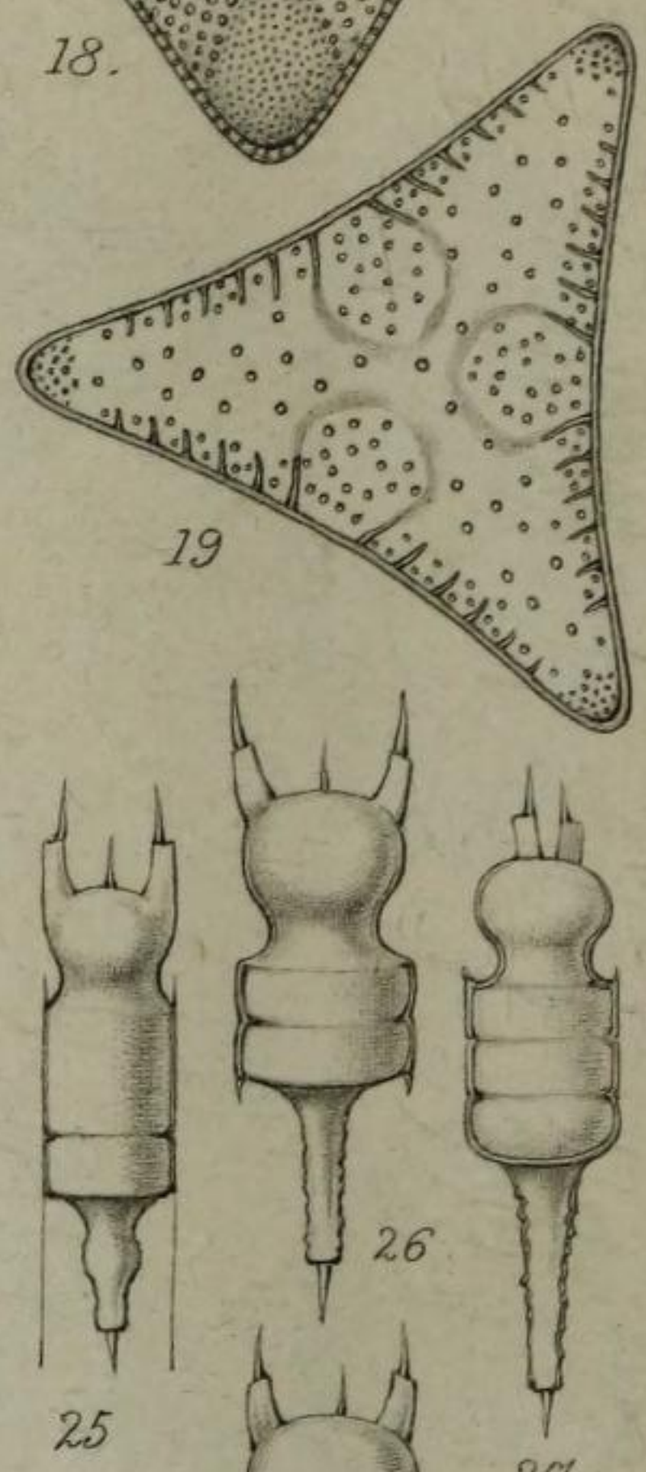

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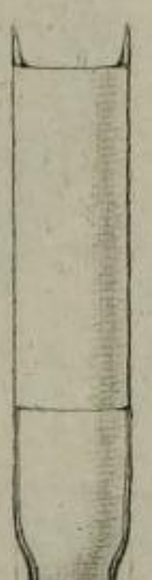

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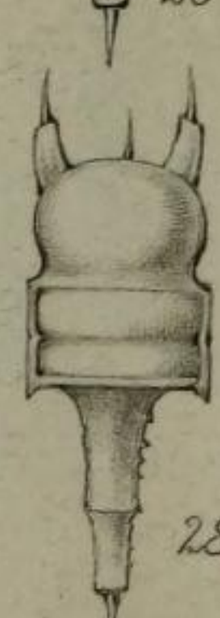

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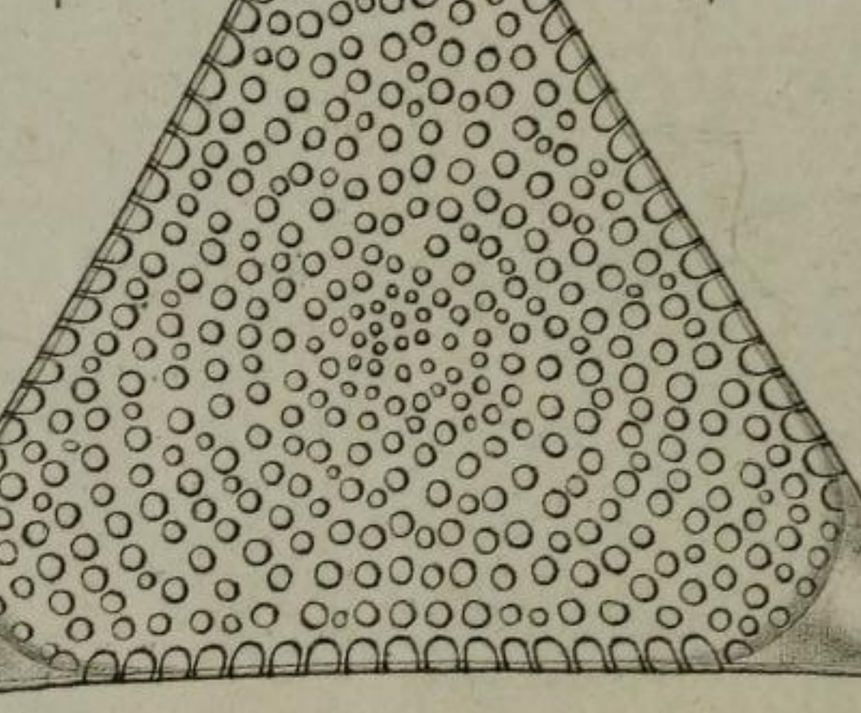
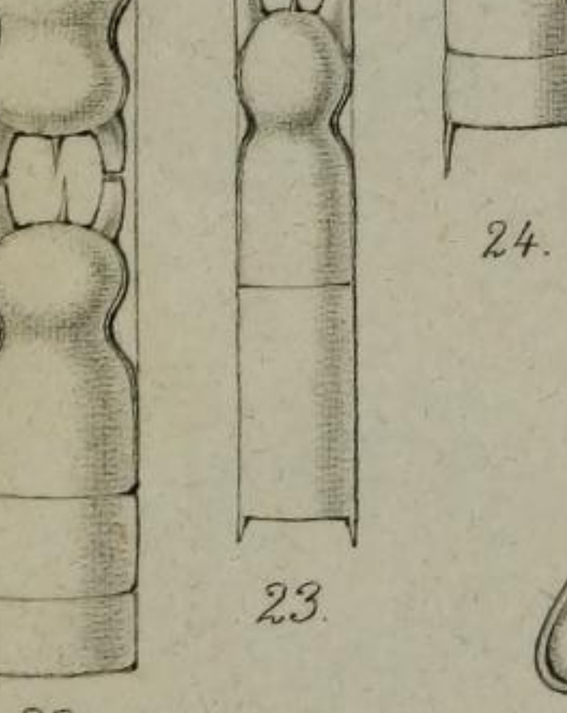


21

29.



30.

31

32.

R.K. Greville, del^t. on stone by F. Huth.

W.H. M^c Farlane, Lith. Edin^r.

DESCRIPTION OF PLATES VIII & IX,

Illustrating Dr. Greville's paper on New Diatoms. Series XIX.

Fig.

1.—*Plagiogramma orientale.*
2.—*Gephyria constricta*, valve.
3—6.—*Melosira castata.*
7.—*Cresswellia rudis.*
8—10.—*Coscinodiscus Lewisianus.*
11.— „ *Normanianus.*
12.— „ *Barbadensis.*
13.— „ *elegans.*
14.—*Eupodiscus Hardmanianus.*
15.—*Croispedodiscus umbonatus.*
16.—*Biddulphia Chinensis.*
17.— „ *podagrosa.*
18.—*Triceratium repletum.*
19.— „ *picturatum.*
20.— „ *lantum.*
21.— „ *quinquelobatum.*
22—28.—*Syringidium Dæmon.*
29.—*Navicula spectatissima.*
30, 31.—*Stanroneis rotundata.*
32.— „ *scaphulæformis.*

All the figures × 400 diameters, except fig. 16, which is × 200.