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TRANSACTIONS.

Descriptions *of* New *and* Rare Diatoms. Series XVIII.

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

(Read Nov. 8th, 1865.)

(Plates I & II.)

Plagiogramma.

Plagiogramma decussatum, n. sp., Grev.—Valve elliptic-oblong, with 2 central costæ and numerous pervious striæ composed of minute granules, so arranged as to form decussating lines. Length ·0022″. (Figs. 1—2.)

Hab. St. Helena, in fifteen fathoms; Dr. Wallich. Shark's Bay, west coast of Australia, in stomachs of Ascidians; Dr. Macdonald. Zanzibar; Professor Hamilton Smith.

This species is so exceedingly like *P. Gregorianum* (*Denticula Staurophora*, Greg.) that it requires careful examination to detect the difference. One character, however, is amply sufficient to separate them. In *P. Gregorianum* the pervious striæ are merely obscurely moniliform, whereas in the species under consideration, under the same magnifying power, they are seen to be composed of distinct, somewhat transversely oblong granules, so regularly arranged that they form distinct longitudinal and transverse decussating lines. The valve is also considerably more robust than that of *P. Greyorianum*. The discovery of this species is due to Dr. Wallich, in whose notes and sketches it is clearly indicated.

Plagiogramma Barbadense, n. sp., Grev.—Valve narrow, elongated, contracted in the middle, then dilated, and again contracted into linear subacute extremities; costæ 2, strong, centrical; structure showing exceedingly fine longitudinal and transverse lines (dots) and another series of numerous very fine transverse pervious striæ. Length ·0035″. (Fig. 3.)

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

I regret to say that no perfectly entire valves of this species have been obtained; but the only deficient part is the striation of the inflated portion of the valve. The sutural ends of the striæ are, however, quite evident, and there can be no reason to conclude that they differ from those of the narrower portion. In form it is allied to *P. lyratum*. In structure it varies from the other members of the genus, having, in addition to a groundwork of exceedingly delicate decussating rows of dots, a series of transverse pervious striæ. Fine illumination and careful adjustment is required to bring out the characters.

MASTOGONIA.

Mastogonia Actinoptychus. (Fig. 4.) Ehr., 'Bericht. d. Berl. Akad.,' 1844, p. 269; 'Mikrog.,' pl. xviii, fig. 19. Kütz., 'Sp. Alg.,' p. 25. Ralfs, 'in Pritch. Infus.,' p. 814, pl. v, fig. 59.

As the figure published by Ehrenberg is not quite satisfactory, I have been induced to offer one taken from a fine example in my friend Mr. L. Hardman's cabinet. The station given by Ehrenberg is Virginia. Mr. Hardman obtained his specimens from the celebrated Monterey deposit in California. They exhibit a minutely punctate structure, and a very variable number of radiating lines or segments. Ehrenberg fixes them at 13, but his own figure has 19. The valve I have copied shows 25, and I have seen another with as many as 30. It is evident, therefore, that number in this case is not a trustworthy character.

XANTHIOPYXIS.

Xanthiopyxis? umbonatus, n. sp., Grev.—Disciforme, circular, broadly umbonate, the umbonate portion more or less covered with strong short setæ. Diameter about ·0040″. (Fig. 5.)

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

Of this fine diatom, which is by no means rare in the Monterey deposit, I have seen no specimen with the valves *in situ*, and I am consequently by no means certain that it is a genuine *Xanthiopyxis*. The curve of the umbo is variable, as well as the proportion of the disc which it occupies; and the setæ, although generally confined to the centre, some-

times occupy two thirds of the radius. The substance appears to be fragile.

COSCINODISCUS.

Coscinodiscus elegans, n. sp., Grev.—Disc small, with a smooth irregular umbilicus; granules rather large, equal, in radiating, not very close lines, which terminate in a narrow belt of minute crowded puncta; border strong, finely striate. Diameter about ·0030″. (Fig. 6.)

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

Allied, apparently, to *C. Lunæ* and *gemmifer* of Ehrenberg, having, in common with those species, a smooth umbilicus and a narrow belt of minute puncta between the termination of the radiating lines and the border; but differing from both in the strong, finely striated border, which appears double in consequence of a fine dividing line. The narrow punctate belt is scarcely so broad as the border. Granules large, circular, conspicuous, about 8 in ·001″ in the radiating lines.

Coscinodiscus pulchellus, n. sp., Grev.—Large; valve convex, largely reticulate; cellules hexagonal, somewhat smaller near the margin, the last row more or less oblong; border strong, rather broad, with strong, subremote striæ. Diameter about ·0050″. (Fig. 7.)

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

A fine species, with a regular, somewhat delicate hexagonal cellulation, which becomes smaller only near the margin, the cellules of the last row being not wider, but only longer. The strong striæ of the border pass for a short distance into these oblong cellules.

Coscinodiscus robustus, n. sp., Grev.—Large; disc convex, cellulate; cellules large, roundish-hexagonal in the middle, becoming smaller, rounder, and more remote towards the margin; border very strong, broad, elevated, with irregular striæ. Diameter ·0045″ to ·0055.″ (Fig. 8.)

Hab. Monterey deposit; cabinet of L. Hardman, Esq.

A rather singular species, strong and robust in its general aspect with a broad elevated rim. The cellulation is coarse, and the hexagonal spaces are continued nearly equal in size to the margin; but the cellules themselves have a roundish appearance, large in the central region, then becoming gradually smaller as they approach the margin. The walls, of course, become correspondingly thicker, until at length the cellules look like mere circular perforations in the middle of

the hexagonal spaces. In the centre of the disc the cellules are 4—5 in ·001″.

Coscinodiscus oblongus, n. sp., Grev.—Disc more or less oblong, having the centre depressed, and an umbilicus containing a number of subremote granules; surface filled up with radiating granules, which diminish in size next the umbilicus and towards the margin, where they resemble minute puncta. Length ·0028″ to ·0050″. (Figs. 9, 10.)

Hab. Barbadoes deposit, chiefly in Springfield estate; C. Johnson, Esq.; L. Hardman, Esq.; R. K. G.

This beautiful little species is liable, on account of its similarity in form, to be taken for a variety of *C. punctatus* of Ehrenberg; but on a close examination it appears to be essentially different from the figures of that diatom in 'Mikrogeologie.' The granules forming the radiating lines, for example, become smaller as they approach both the margin and umbilicus. The latter is not smooth, but always contains a number of granules, which, in the more elongated valves are generally arranged in lines. The centre of the valve is also much depressed. *C. punctatus* itself, however, is not very clearly established. Ehrenberg gives two figures ('Mikr.' Tab. xvii, figs. 40, 41), the first of which is oval, but neither of them exhibits the slightest indication of one of the most conspicuous characters contained in the description, viz., cellules "very densely crowded at the margin, and forming a broad yellowish-white border." At present I am under a very strong impression that two or three oval or oblong species belong to the American deposits, one of which may be the diatom Ehrenberg had in view.

BRIGHTWELLIA.

Brightwellia Johnsoni, Ralfs, MS.—Valve with the border composed of radiating lines of cellules diminishing in size from the coronal circle to the margin, and of ridge-like ribs at subregular intervals. Diameter about ·0035.″ (Fig. 11.)

Hab. Barbadoes deposit, Cambridge and Springfield estates, most abundant in the latter; C. Johnson, Esq.; L. Hardmann, Esq.; R. K. G.

This exquisitely beautiful diatom is similar in size to *B. elaborata*, but is at once distinguished by the radiating lines of cellules becoming smaller towards the margin, and by the dark ribs which radiate, at short intervals, parallel with them. The coronal circle of larger cellules and the spiral arrangement of the central cellules are very like the

same parts in the species above mentioned. It is seldom that a good view of the spine-like character of the ribs can be obtained; but the disc now figured happened to be tilted up in such a way as to show it very conspicuously.

ACTINOPTYCHUS.

Actinoptychus minutus, n. sp., Grev.—Minute; valve 8-rayed; the compartments alternately slightly raised and depressed, very minutely punctate; umbilicus in the form of a minute cross, with the ends truncate. Diameter ·0017″. (Fig. 12.)

Hab. Monterey deposit; cabinet of L. Hardman, Esq.; very rare.

The smallest species of the genus, with the surface nearly even, and the cellulation so minute as to justify the term punctate.

HELIOPELTA.

Heliopelta nitida, n. sp., Grev.—Disc with six compartments, the cellulate ones with 4—5 marginal spines; central space obtusely hexagonal, containing a circular umbilicus; margin narrow, with a fine line running through it, and no perceptible striæ. Diameter ·0040″. (Fig. 18.)

Hab. Deposit at Los Angelos, California; L. Hardman, Esq.; very rare.

To my friend Mr. Laurence Hardman we are indebted for the discovery of what appears to be an unquestionably new species of this fine genus, and individually I have to thank him for enriching my cabinet with a specimen. Whatever view may be taken of the species described by Ehrenberg, the Californian disc differs from all of them in the non-striate rim and in the well-defined non-stellate centre. The latter is an hexagonal umbilicus, containing a circular nucleus, and of a thicker and more opaque substance than the stellate central space in the other *Heliopeltæ*. The margin is relatively narrower, and the cellules larger.

EUPODISCUS.

Eupodiscus minutus, n. sp., Grev.—Small; disc slightly convex, obscurely cellulate, with four circular, submastoid processes, distinguished by a prominent lip on their marginal side. Diameter about ·0020″. (Fig. 13.)

Hab. Barbadoes deposit, Springfield estate; cabinet of L. Hardman, Esq.

Considerably smaller than *E. obscurus*, and, like that species, possessing four processes, but is not otherwise allied to it. I place our present little diatom provisionally in *Eupodiscus*, but am doubtful whether that be its true position. The processes, which are situated near the margin, are somewhat similar to those of the genus *Craspedoporus*, having the edge next the margin of the disc considerably raised, and with a thickened lip. The structure is rather obscure, but can be made out to be a faint, uniform, minute, roundish cellulation.

AULISCUS.

Auliscus Hardmanianus, n. sp., Grev.—Large; valve circular, with two processes; whole surface more or less granulose; umbilical space four-angled, the angles attenuated, two of them passing to the base of the obovate ridges within which the processes are placed, the other two passing into rough transverse lines, terminating in a sort of capitate mass of radiating short lines and granules. Diameter ·0040″ to ·0055″. (Fig. 17.)

Hab. Monterey deposit; cabinet of L. Hardman, Esq.

There is no genus of diatoms in which a greater variety of sculpture occurs in proportion to the number of species than in *Auliscus*. The present most remarkable disc, of which I have seen a number of examples, is quite unlike any of those previously described. The most striking peculiarity is the attenuation of the angles of the umbilicus, especially those which are intermediate with the processes, which are prolonged into more or less distinct linear channels, ending in intra-marginal knobs or rough clusters of short radiating lines. These knobs are connected with the ridges surmounting the processes by a few fine, sometimes obscure lines, stretched, as it were, across from one to the other.

BIDDULPHIA.

Biddulphia Johnsoniana, n. sp., Grev.—Large; frustules oblong, turgid; valves broadly oval, very minutely scabrous, destitute of spines, with large, very shortly produced, broadly truncate processes. Diameter of valve ·0040″ to 0055″. (Figs. 14, 15.)

Hab. Moron deposit; very rare; C. Johnson, Esq.

This very rare species has considerable affinity with *B. tur-*

gida, which it resembles in general form and dense structure, and especially in the short, broad, flat processes. I have been unable to perceive any trace of spines, nor is there any indication of a rough line or fringe of apiculi, like that in the valve of *B. turgida*. Like most of the other members of the genus, our new species varies greatly in size.

Biddulphia? mammosa, n. sp., Grev.—Valve in front view produced at the angles into large, elliptical, mammæform, minutely punctate processes; median surface slightly convex, and transversely remotely striate; the rest of the surface smooth. Length of valve ·0040″. (Fig. 16.)

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

We have here another of the dubious forms of which so many occur in the Barbadoes deposit, and of which it is desirable to place on record. It is fortunate that although, in the absence of the end view of the valve, we cannot describe the exact contour, characters amply sufficient for the determination of species are obtained from the front view. At least this has been found to be the case in the fossil *Biddulphiæ* and *Hemiaulidæ* from Barbadoes. The end view of the valve of the present species must be very beautiful, being apparently composed of a series of long, linear, transverse cellules, traversed by a median line.

TRICERATIUM.

Triceratium Robertsianum, n. sp., Grev.—Large; valve with gibbous sides and subobtuse, slightly produced angles, a short, horn-like process at each angle, and 1—2 strong spines, arising from the surface within the margin on each of the sides; cellulation hexagonal, large, equal; margin broad, elevated. Distance between the angles ·0042″. (Fig. 22.)

Triceratium grande?—'Brighton Mic. Jour.,' vol. i, p. 249, pl. iv, fig. 8.

Hab. Woodlark Island, South Pacific; in a dredging communicated by Dr. Roberts, of Sydney.

For nearly two years I have refrained from making any use of the drawing of this diatom, in the hope that I might be enabled to come to some satisfactory understanding relative to *T. Favus* and its varieties. In the mean time multitudes of that species have come under my observation, and I have met with no form which tended to unite the one under consideration with that species. *T. Favus* frequently occurs with the sides of the valve "slightly convex," in accordance

with the specific character adopted by Mr. Ralfs ('Pritch. Inf.,') ; but a slight convexity is very different from the prominent gibbous curve in the valve now before me. The presence of strong spines also, by themselves of very uncertain value, contributes, in connection with the other characters, to confer upon it great *primâ facie* distinctness. Size alone is of little importance, but it may be well to state that it is scarcely more than half that of *T. Favus*, as figured in the 'Synopsis of British Diatomaceæ.' At the same time the margin is far more decidedly defined, and the reticulation more delicate. After all, however, it may turn out to be nothing more than an extreme form of *T. Favus*, to which Mr. Ralfs seems disposed to refer *T. grande* of Brightwell.

Triceratium Stokesianum, n. sp., Grev.—Large; valve with slightly concave sides and subobtuse angles; surface with subremote, roundish, irregularly radiating cellules, minute in the centre, becoming large towards the sides and angles; angles imperfectly cut off by two vein-like lines springing from the margin on each side, obscurely united in the middle; margin strong, remotely striate. Distance between the angles ·0062″. (Fig. 23.)

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

This fine species appears to be allied, as my kind correspondent Mr. Stokes remarks, to *T. areolatum* of the Barbadoes deposit, being of the same form, and having a very similar radiating cellulation; but it differs in being a very much larger species, and in having the angles partially cut off by a pair of vein-like undulating lines given off on each side, which become faint and obscure towards the middle. The pair next the angle are less distinct than the others, and would probably be found obsolete in some specimens. The cellules are sometimes oval, and are larger and more regular as they approach the angles. The Moron deposit is remarkable for the small number of individuals of the new species which have been found in it. No one but Mr. Stokes has been so fortunate as to discover the subject of the present notice.

Triceratium inelegans, n. sp., Grev.—Small; valve pulvinate, with straight sides and broadly rounded angles; whole surface filled with irregularly radiating, somewhat remote, oblong, rather large granules, except the angles, which are minutely punctate. Distance between the angles ·0025″. (Fig. 21.)

Triceratium obtusum? Ehr., 'Mikrog.' Tab. xviii, fig. 48.

Hab. Monterey deposit; cabinet of L. Hardman, Esq.

Allied to *T. tesselatum* and *robustum*, and more nearly to *T. obtusum* of Ehrenberg; but that close observer would scarcely have omitted in his figure of the latter species the crowded puncta in the angles of the Monterey diatom. Nevertheless I think it right to quote it as a doubtful synonym.

Triceratium dulce, n. sp., Grev.—Small; valve with slightly convex sides and subacute angles, the margin with oblong striæ; surface depressed, with radiating lines of remote punctiform granules; angles raised, and filled with minute puncta. Distance between the angles ·0030″. (Fig. 20.)

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

A very elegant species, of which but few examples have occurred. It is remarkable for its depressed surface, so that when the angles are in focus the central puncta are scarcely perceptible. The angles do not appear to be very prominent, but are so abruptly elevated that the vertical view of the side might be taken at first sight for a transverse line. The central puncta are minute, faint, and remote, becoming a little larger towards the margin. The latter is rather broad, and marked with elegant, oblong striæ, 8 in ·001″.

Triceratium mammosum, n. sp., Grev.—Minute, with thick, produced, rounded angles, filled with minute puncta and straight sides (reckoning from the base of the angles); the central space hexagonal, marked with remote and scattered puncta. Distance between the angles ·0015″. (Fig. 19.)

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

Very conspicuous at a glance, from the large, produced, mammæform, hemispherically rounded angles, which, being covered with puncta, appear out of all proportion to the rest of the valve. Central puncta circular, irregularly scattered.

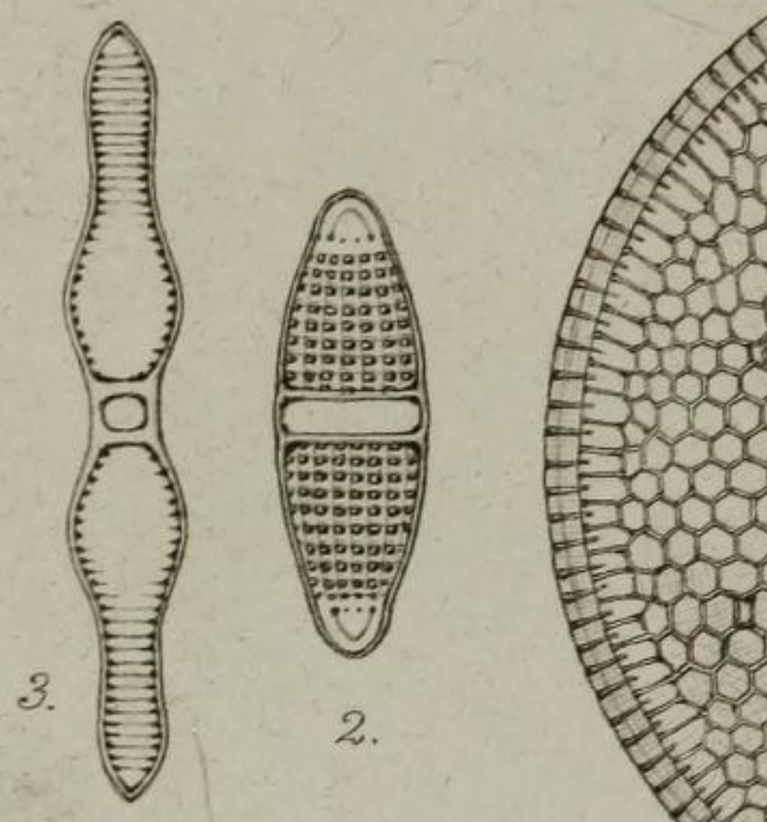
AMPHITETRAS.

Amphitetras elegans, n. sp., Grev.—Small; valve with the sides slightly concave in the middle; angles rounded, terminating in a small, ring-like pseudo-opening; cellulation minute, radiating from the depressed centre, somewhat smaller and more crowded within the angles. Distance between the angles ·0025. (Fig. 24.)

Hab. Monterey deposit; L. Hardman, Esq.

A most beautiful small species, elegantly radiate, with a very narrow simple margin. The pseudo-openings have the appearance of being the ends of short hyaline tubes.

Trans. Micr. Soc. Vol. XIV. N.S. Pl. I.



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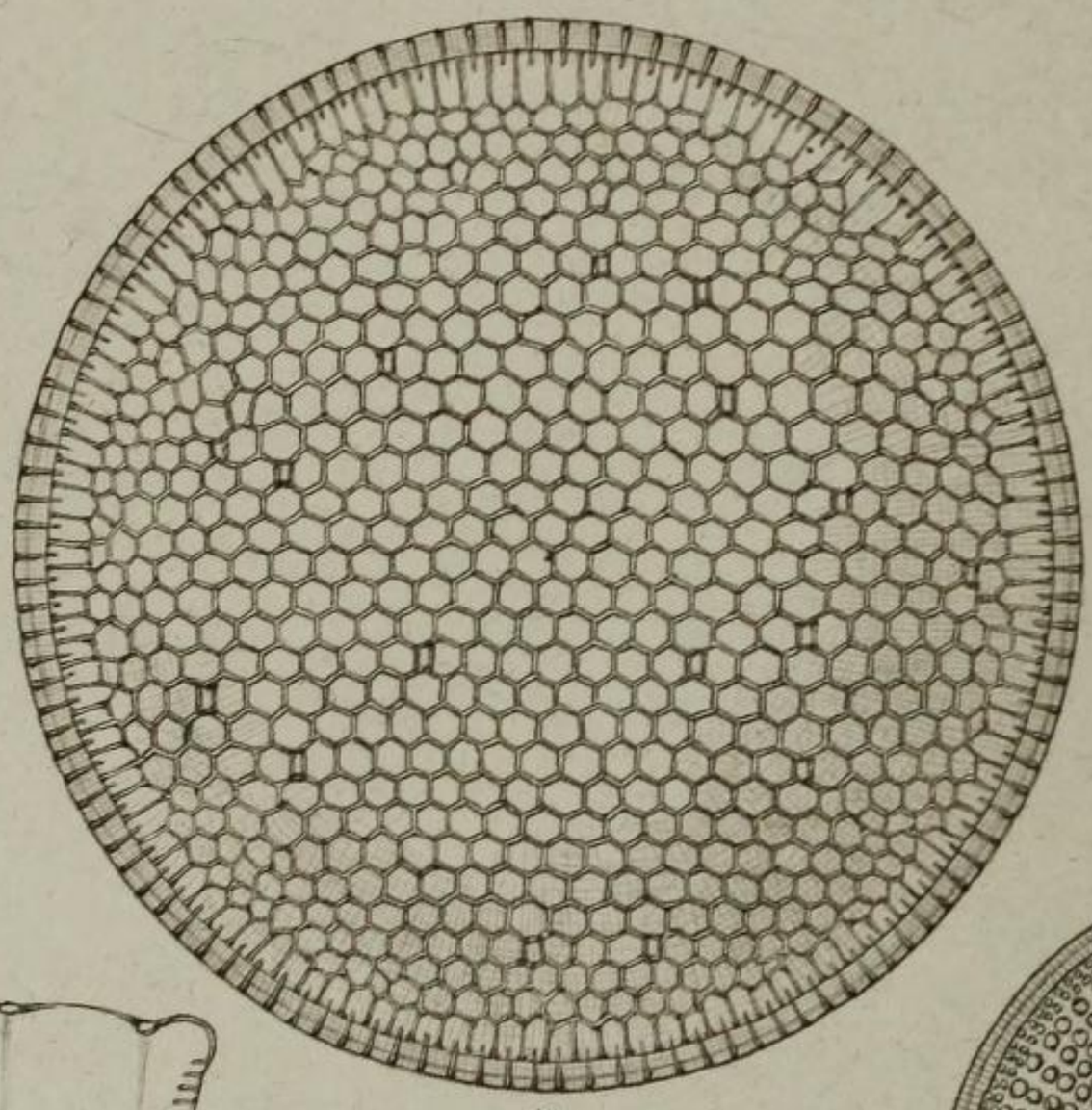

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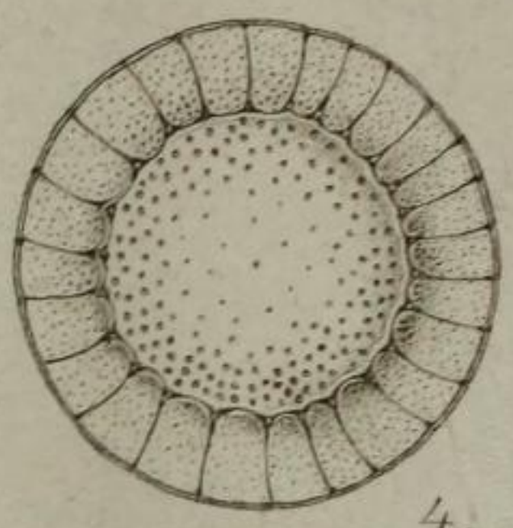

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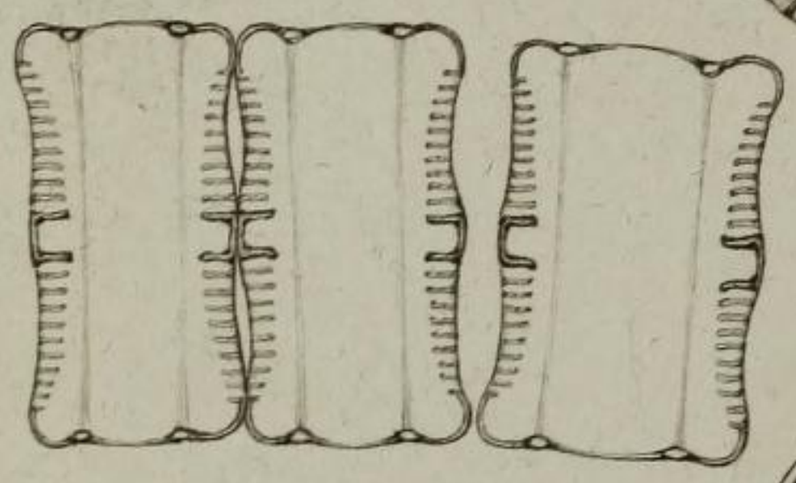

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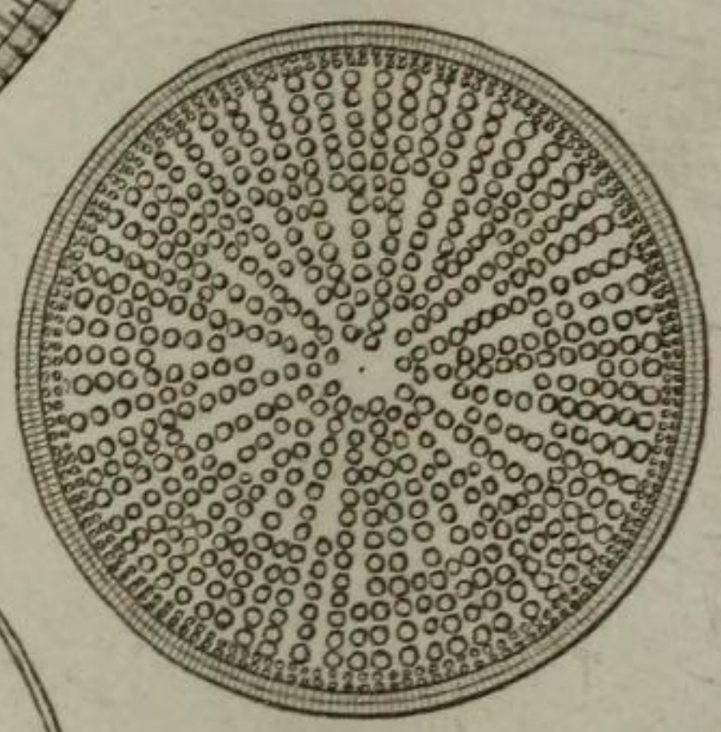

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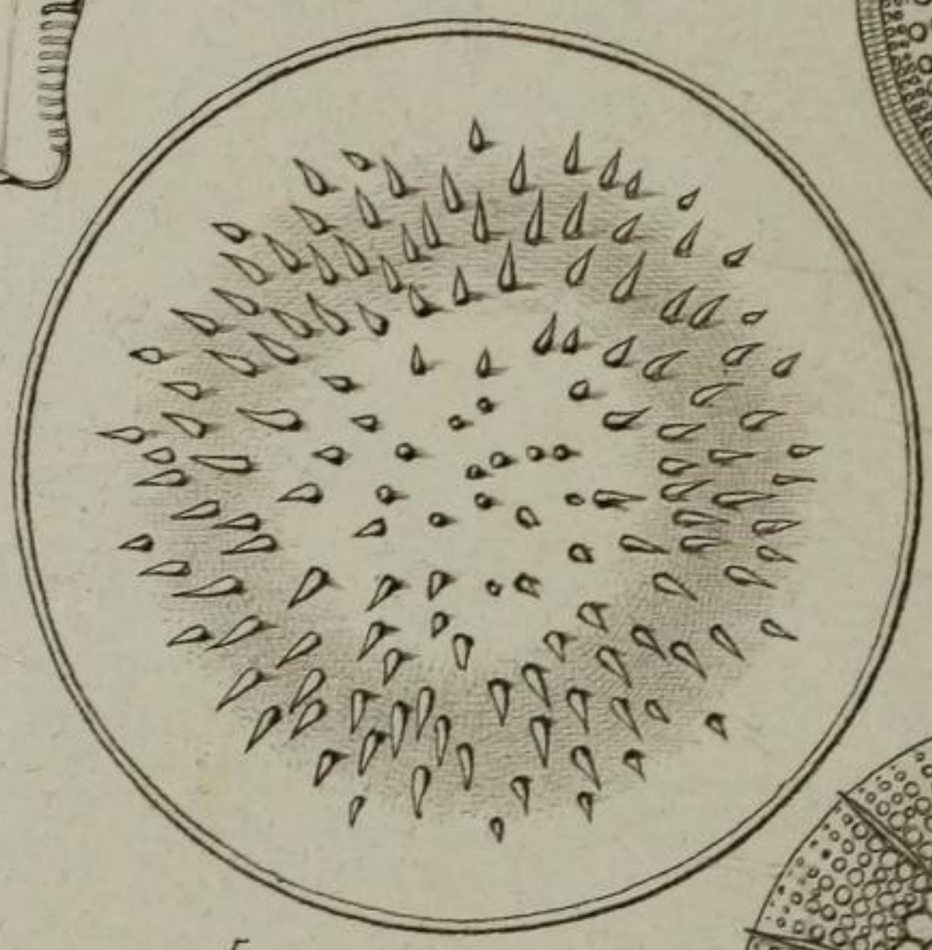

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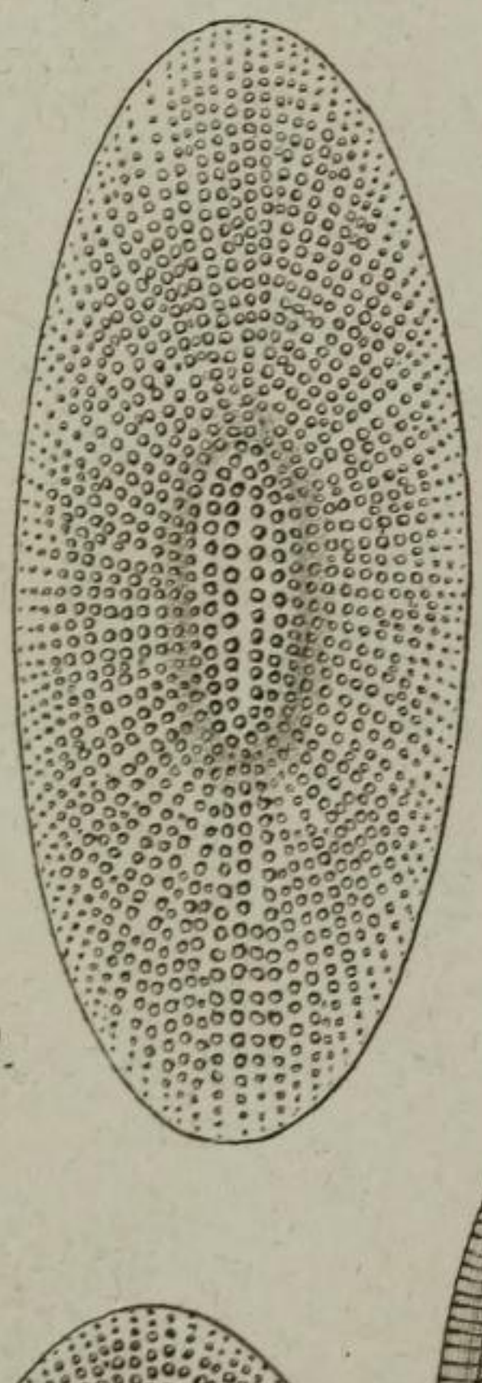

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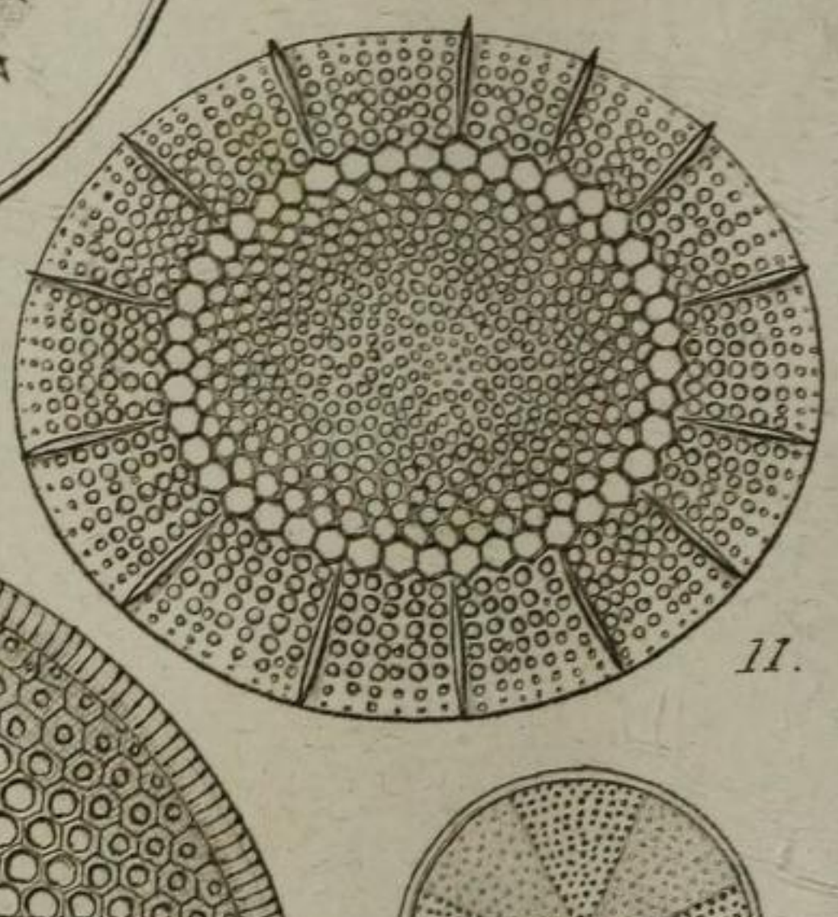

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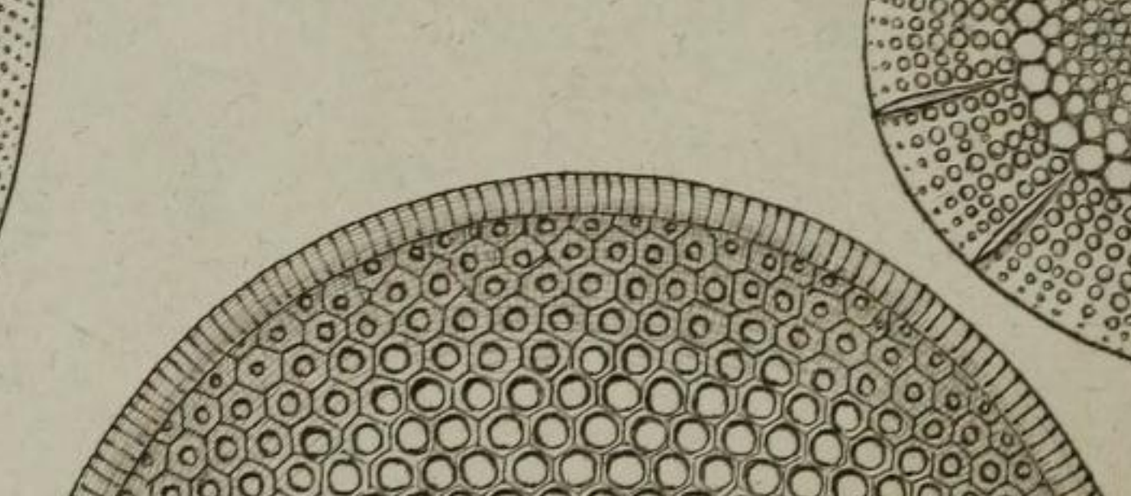

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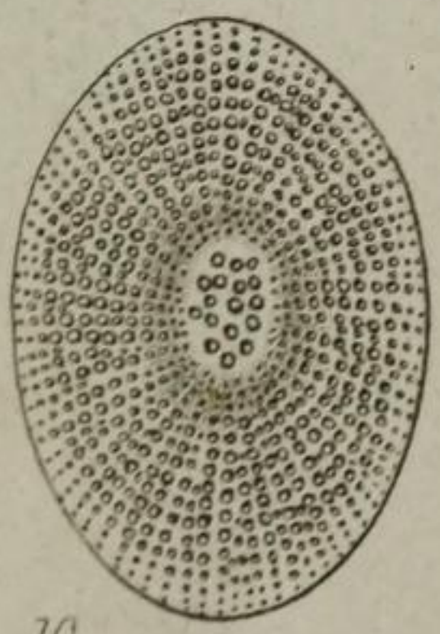

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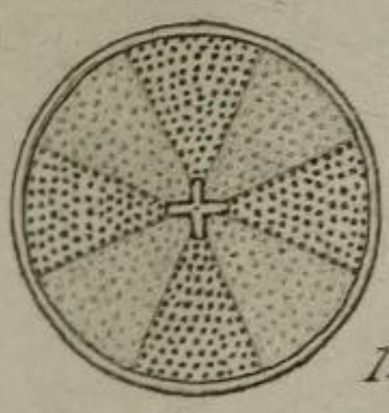

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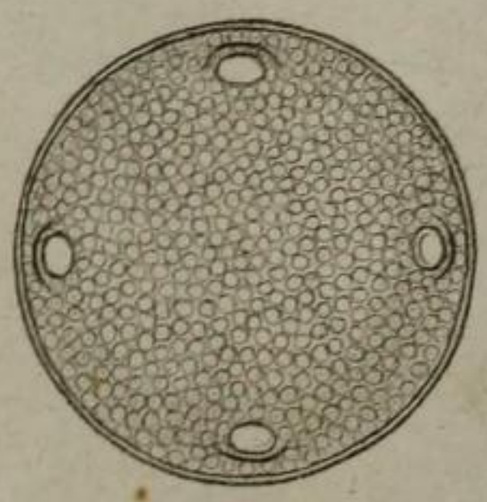

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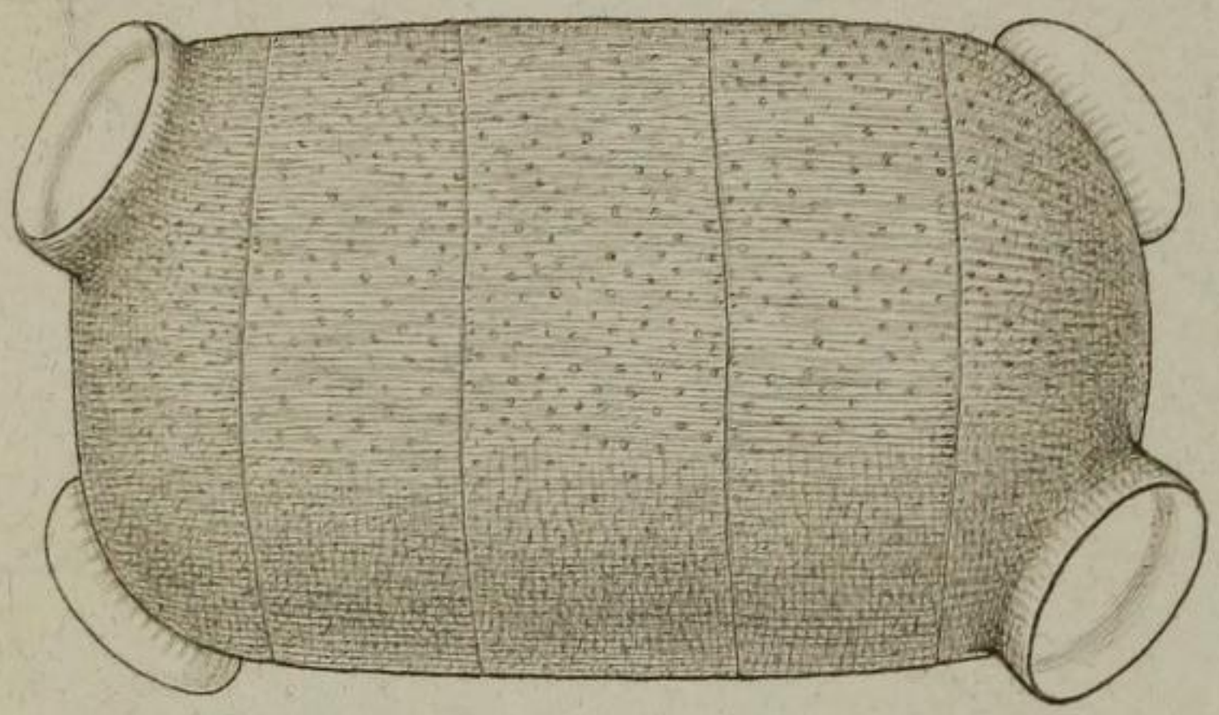
R.K. Greville, delt – on stone by F. Huth.

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



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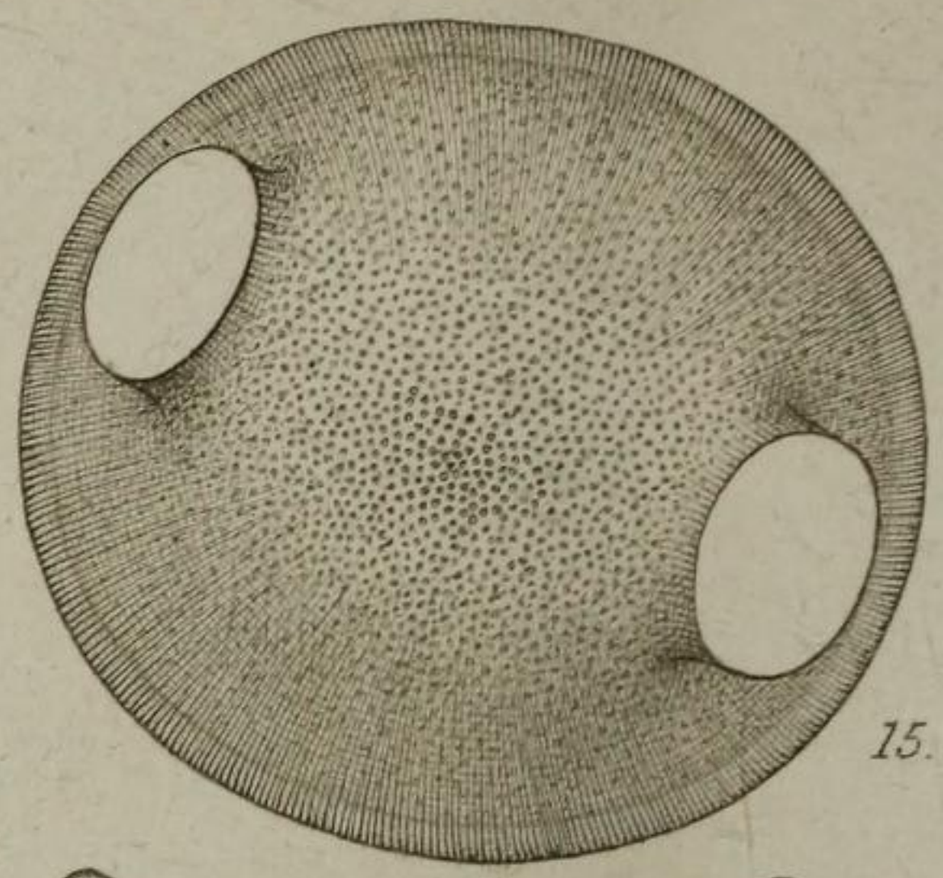

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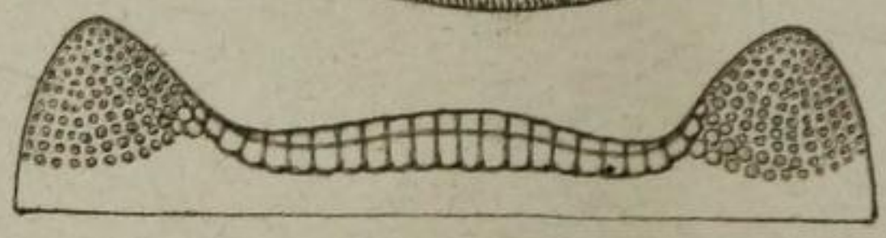

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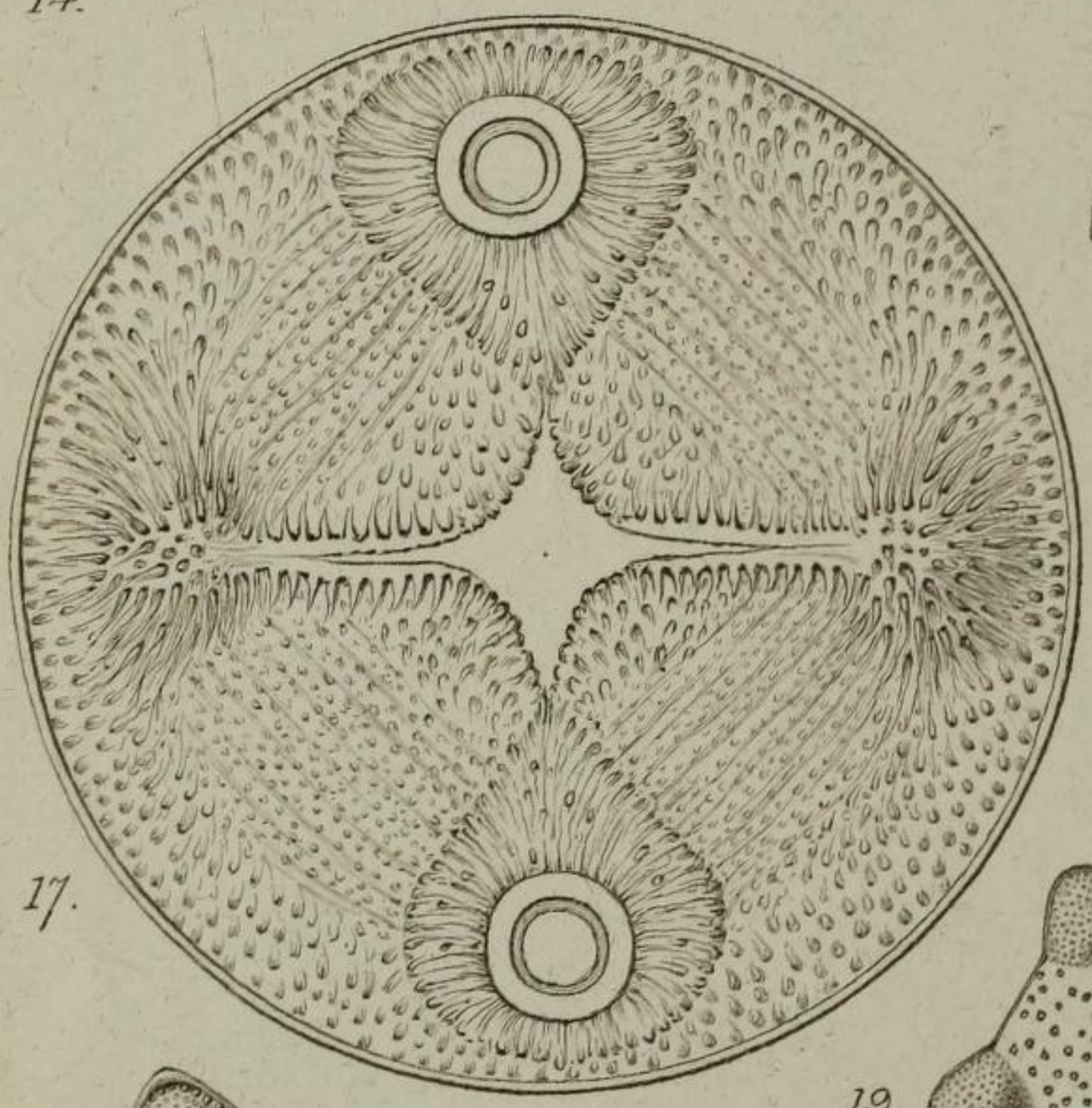

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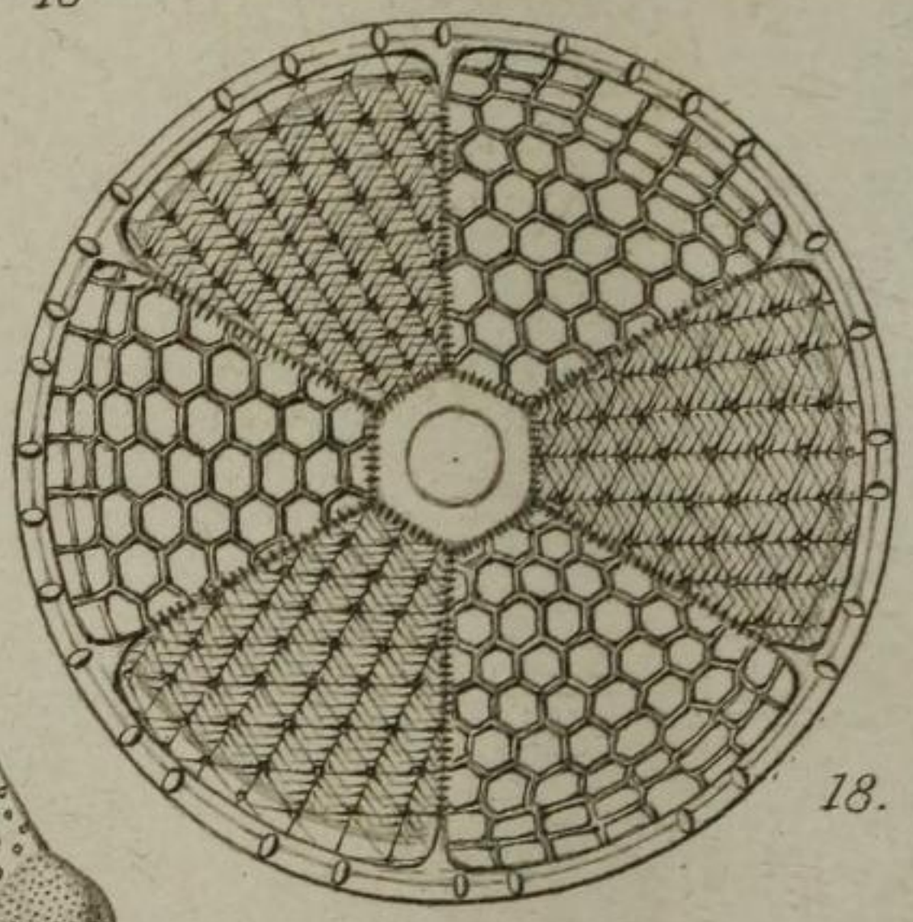

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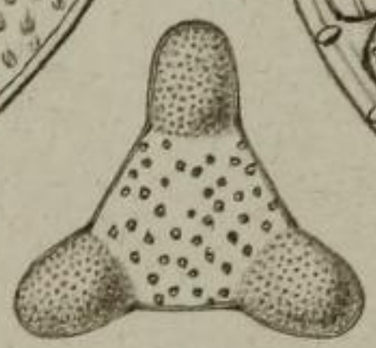

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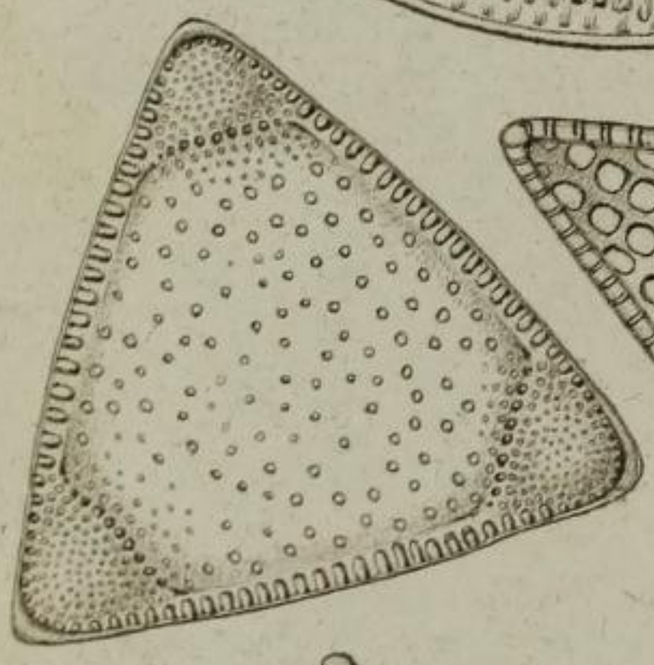

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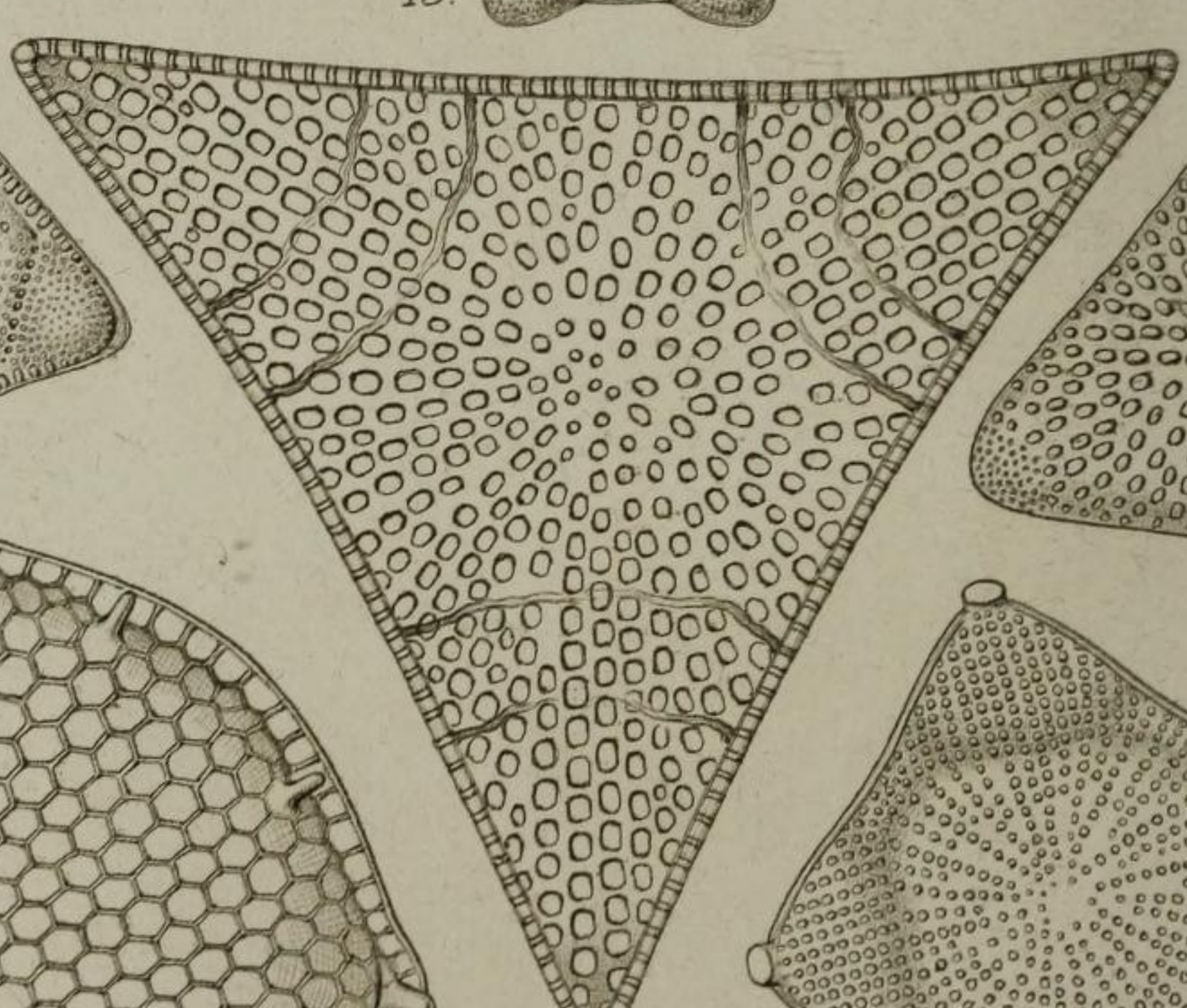

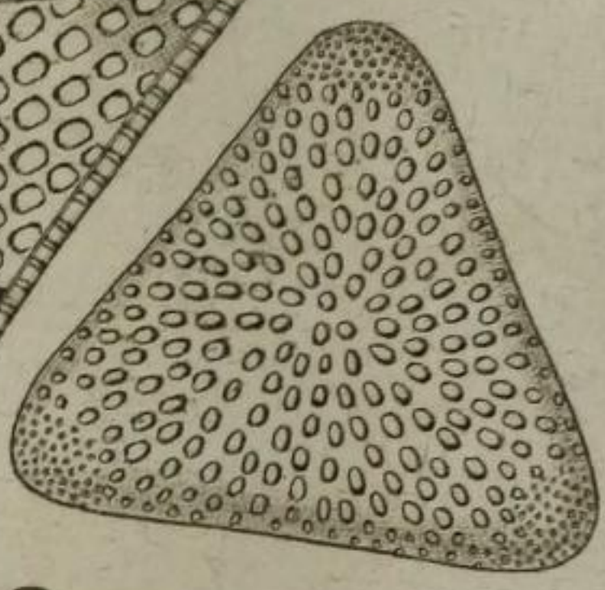

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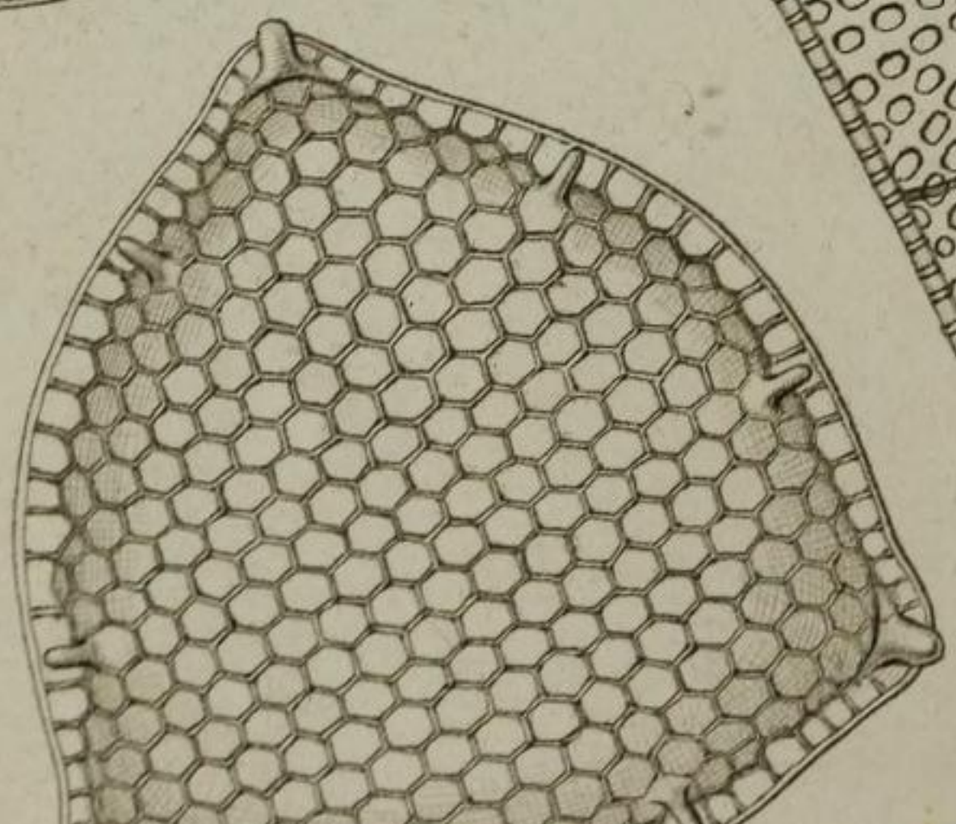

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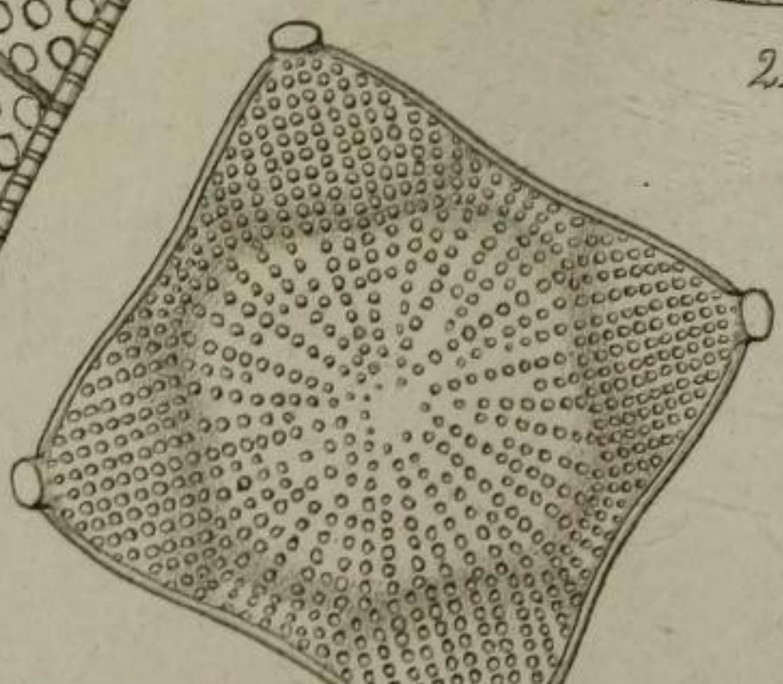

24.

R.K. Greville del.t - on stone by F. Huth.

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

DESCRIPTION OF PLATES I & II,

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

Fig.

1.—*Plagiogramma decussatum*, front view.
2.— „ „ side view.
3.— „ *Barbadense.*
4.—*Mastogonia Actinoptychus.*
5.—*Xanthiopyxis? umbonatus.*
6.—*Coscinodiscus elegans.*
7.— „ *pulchellus.*
8.— „ *robustus.*
9, 10.— „ *oblongus.*
11.—*Brightwellia Johnsoni.*
12.—*Actinoptychus minutus.*
13.—*Eupodiscus minutus.*
14.—*Biddulphia Johnsoniana*, front view.
15.— „ „ valve.
16.— „ *mammosa*, front view of valve.
17.—*Auliscus Hardmanianus.*
18.—*Heliopelta nitida.*
19.—*Triceratium mammosum.*
20.— „ *dulce.*
21.— „ *inelegans.*
22.— „ *Robertsianum.*
23.— „ *Stokesianum.*
24.—*Amphitetras elegans.*

All the figures are × 400 diameters.