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TRANSACTIONS

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1864.

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

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

(Communicated by F. C. S. Roper, Esq., F.L.S.)

(Read May 11th, 1864.)

(Plates XII & XIII.)

Aulacodiscus.

Aulacodiscus extans, n. sp., Grev.—Large; rays 4, forming elevated ridges terminating in broadly rounded marginal inflations; processes oblong; granules small; minute raised points remotely scattered over the surface of the disc. Diameter ·0090″. (Pl. XII, fig. 1.)

Hab. Barbadoes deposit, Cambridge estate; C. Johnson, Esq.; R. K. G.; extremely rare.

A noble species, which for a long time I only knew by small fragments. It is conspicuous at once for the large cruciform ridges, which are, in fact, inflations of the disc extending from the centre to the circumference, and preserving a nearly horizontal position, while the intermediate spaces following the usual convexity of the disc pass out of focus. In the centre is a small circular blank space from whence the close lines of minute granules radiate, having a great similarity to those of *A. decorus*.

The processes are so marginal that when the disc is viewed vertically, they reach or pass slightly beyond the outer line. Over the whole surface of the disc minute apiculi are remotely scattered, but are most evident on the large terminal inflations. This fine diatom is allied to *A. mammosus*, in which the inflations are also dotted with apiculi, which were overlooked in the representation. That species, however, is much smaller, and the inflations are suddenly elevated like a

cone, instead of being continued in a horizontal direction, as in *A. extans*.

AULISCUS.

Auliscus ornatus, n. sp., Grev.—Small; valve circular, without any umbilical space, the whole surface very minutely granulose; processes 5. Diameter ·0027″. (Fig. 2.)

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

The more recently discovered species of this beautiful genus considerably disturb what have been usually regarded as its typical characters. In *A. Ralfsianus*, it is with difficulty that any trace of converging lines can be perceived through the meshes of the network which appears to envelope it. In *A. ambiguus* the entire surface is filled up with a very minute cellulation, not the slightest convergent arrangement of any kind being apparent. And now we have a species in which the surface is throughout, uniformly and exceedingly minutely granulose. In addition to this peculiarity it stands alone in possessing five processes; and as the alternating ones of the lower valve are almost equally conspicuous, the circle is nearly filled up. The occurrence of this diatom tends to confirm the idea previously thrown out, that the number of processes may furnish a reliable character.

EUPODISCUS.

Eupodiscus trioculatus, n. sp., Grev.—Valve, with 3 large, flat, circular processes; surface minutely reticulato-cellulate. Diameter ·0035″. (Fig. 3.)

Hab. Barbadoes deposit, Cambridge estate; C. Johnson, Esq.; R. K. G.

It is quite possible that this diatom, three specimens of which are now before me, may belong to the genus *Auliscus*, as the three processes appear to point in that direction. But in the absence of characters more strongly distinctive of that genus, I consider it a safer proceeding to place it in *Eupodiscus*. Indeed it seems to evince considerable affinity with the following species, as well as with *E. oculatus*.

Eupodiscus Barbadensis, n. sp., Grev.—Disc irregularly reticulato-cellulate, the cellules being equal in size throughout; processes 2, large, flat, circular; margin with a row of very minute granules. Diameter ·0030″. (Fig. 4.)

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

At first sight this species might be taken for a small variety of *Auliscus Ralfsianus*, which it greatly resembles in the processes and in the character of the reticulation. The latter, however, is much smaller and destitute of puncta. The extreme margin is minutely headed, the beads 17 in ·001″, a character never observed, I believe, in the *Aulisci*. The present species is closely allied to *E. oculatus*, found in the Monterey fossil earth, from which it differs in its much smaller diameter, and in the cellules not diminishing in size, and never becoming in the slightest degree radiate toward the margin. In proportion to the size of the disc, the processes are broader, even, than in *E. oculatus*.

TRICERATIUM.

Triceratium prætenue, n. sp., Grev.—Minute; valve with concave sides, the concavity interrupted by a small convexity in the middle; the attenuated angles with a minutely rounded apex containing an indistinct pseudo-nodule; surface with 3 central spines, and radiating puncta, the margin with a row of larger cellules. Distance between the angles from ·0013″ to ·0020″. (Fig. 16.)

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

In all the examples which I have seen, the central spines are present, although sometimes very inconspicuous. The central portion of the valve is circular and somewhat concave, and the minute puncta radiate to the boundary of this area, while beyond it they appear to be disposed without any particular order. The margin of that part which may be said to belong to the angles, is furnished with a row of larger puncta or cellules.

Triceratium perminutum, n. sp., Grev.—Minute; valve with concave sides (slightly convex in the middle portion); angles attenuated, obtuse, with a minute indistinct pseudo-nodule, separated from the centre by a slender line on which is situated a minute spine; puncta radiating, about 4 larger marginal ones in the angles. Distance between the angles ‘0015″. (Fig. 18.)

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

In some respects this little species is allied to the preceding,

which it resembles closely in form. But it is separated at once by the distinct but delicate line which divides the angles from the centre, and which also gives a more angular character to the central area. The spines appear to be invariably placed upon these lines, and attract the eyes as points of light.

Triceratium venulosum, n. sp., Grev.—Minute; valve with straight sides and somewhat rounded angles; surface marked with remotely scattered, minute puncta, and short vein-like lines given off in pairs from the margin. Distance between the angles ·0020″. (Fig. 21.)

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

A very distinct little species, without any appearance of pseudo-nodules in the angles.

Triceratium obesum, n. sp., Grev.—Minute; valve with slightly concave sides and very rounded angles; a few very short lines projecting from the margin, a few very minute puncta forming a central triangular figure, and a few others arranged in a line so as to cut off the angles. Distance between the angles ·0012″. (Fig. 11.)

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

The angles are perfectly smooth, and present no appearance of pseudo-nodules. The short lateral lines are equidistant and five or six in number.

Triceratium Rylandsianum, n. sp., Grev.—Small; valve with straight sides and large, rounded, capitate angles cut off from the centre by a transverse line; surface minutely granulose; margin with a few remote puncta. Distance between the angles ·0025″. (Fig. 6.)

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

A very remarkable and distinct species. The angles have the appearance of a circular loop without markings of any kind. The margin is strong, and extended round the angles, the transverse line cutting them off from the centre being equally strong. The marginal puncta (about 6 or 7) appear as if imbedded in the substance of the margin itself.

Triceratium microstictum, n. sp., Grev.—Large; valve with slightly convex sides and somewhat obtuse angles; surface filled with minute radiating puncta; margin with a row of conspicuous granules, largest in the middle; angles minutely punctate, cut off from the centre by a fine transverse line. Distance between the angles ·0052″. (Fig. 17.)

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

I am not aware of any species with which our present diatom can be confounded. The radiating puncta are pale, slightly increasing in size from the centre to the margin, which latter is well characterised by a row of larger and darker roundish cellules, 8 in ·001″, which become smaller by degrees and disappear before reaching the angles.

Triceratium attenuatum, n. sp., Grev.—Small; valve with undulate sides and attenuated angles, terminating in short minute horns; whole surface loosely cellular, with a circular umbilicus and a band of linear-oblong cellules cutting off each angle. Distance between the angles ·0027″. (Fig. 10.)

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

A singular diatom, bearing no resemblance to any recorded species of the genus. The reticulation may be compared to a pattern of fine lace-work. The rather large umbilicus contains a few obscure cellules considerably larger than those of the general area, while those of the angles are smaller. The most remarkable feature is the row of about seven or eight linear-oblong cellules placed side by side, and which cut off the angles.

Triceratium ligulatum, n. sp., Grev.—Valve triradiate, the segments somewhat ligulate, terminated by a sub-elliptical, obtuse pseudo-nodule; surface fitted with minute, radiating puncta. Distance between the angles ·0038″. (Fig. 9.)

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

This species is nearly allied to *T. Solenoceros*, but is separated from it by the pseudo-nodules, which are cut off by a fine transverse line, and are very minutely punctate. There is also a row of marginal puncta, larger and darker than those which radiate from the centre.

Triceratium inæquale, n. sp., Grev.—Minute; valve unequally triradiate, the angles minutely obtuse, the extreme ends separated by a transverse line; surface minutely and faintly punctate, the margin composed of a line of close, larger puncta. Distance between the angles ·0020″ to ·0030″. (Fig. 19.)

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

Invariably with unequal sides, so that one arm, at least, is extended more than the others. The sides are unequally concave; the angles prolonged and slender. There is no

obvious radiating arrangement in the minutely punctate structure.

Triceratium perpusillum, n. sp., Grev.—Minute; valve with the sides very deeply concave, and the angles broadly rounded; centre smooth, the angles filled with an oval mass of very minute puncta. Distance between the angles ·0012″. (Fig. 13.)

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

In this minute and well-marked species I cannot perceive that the angles are cut off from the centre by a transverse line. It is not therefore so closely allied to *T. castellatum* and *Normanianum*, as it would appear to be from its form.

Triceratium Smithianum, n. sp., Grev.—Valve with slightly convex sides and rounded angles containing prominent pseudo-nodules; surface filled with closely radiating lines of very minute puncta, having a central space in which they are sparingly scattered; margin very strong. Distance between the angles ·0040″. (Fig. 7.)

Hab. Barbadoes deposit, Cambridge estate; George J. Smith, Esq.; R. K. G.

This species was kindly communicated to me by its discoverer, Mr. G. J. Smith, of Workington, and the specimen accidentally destroyed, but not before I had made the drawing now engraved. Two other examples have subsequently occurred to myself, which in all respects confirm the characters exhibited in the original specimen. This species is remarkable for the fine and extremely close radiating punctation which does not commence from the centre itself, but from the edge of a rather large half-blank space, in which a few puncta are remotely scattered. The strong margin is not striated. The pseudo-nodules are not large, but sharply defined, and are evidently very prominent. This diatom is allied to my *T. connexum*, but the structure is more minute, and the small, defined umbilicus of that species differs widely from the central half-blank space in *T. Smithianium*.

Triceratium irregulare, n. sp., Grev.—Large; valve pale, with nearly straight sides and rounded angles, generally more or less unsymmetrical; margin very slender; cellules conspicuous, radiating, and somewhat plumose, nearly equal in size; angles within slightly concave. Distance between the angles ·0040″ to ·0055″. (Fig. 5.)

Hab. Barbadoes deposit, Cambridge estate; common.

The most frequent of all the *Triceratia* which occur in the

Barbadoes deposit, and under all its variations easily recognised by its size, pale colour, and radiating, and somewhat plumose, subquadrate cellules, which are also sometimes more or less concentric. It is rarely that a truly symmetrical valve can be seen. Generally the sides of the valve differ, more or less, as well as the angles, even in the same specimen. There is no pseudo-nodule whatever, but often a slight concavity and a less conspicuous cellulation within the angles.

Triceratium foveatum, n. sp., Grev.—Small; valve with straight sides and rounded angles; surface with 6 radiating segments alternately raised and depressed; those terminating at the sides oblong, with small remote equal cellules; the intermediate ones passing to the angles with cellules, larger, remote, unequal, and pit-like. Distance between the angles ·0030″. (Fig. 15.)

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

This most remarkable species is so unlike any one previously described, that it scarcely requires any supplementary notice. The cellules in the six compartments are not arranged in any regular order. Immediately within the angles is a cluster of very minute puncta, but no obvious pseudo-nodule.

Triceratium firmum, n. sp., Grev.—Minute; valve with straight sides, rounded angles, and strong, coarsely striated margins; surface filled with rather large, subquadrate, somewhat radiating cellules; angles minutely punctate. Distance between the angles ·0022″. (Fig. 8.)

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

A stout, pretty little species; the cellules largest in the centre, where they are 5 or 6 in ·001″, somewhat radiating, and sometimes more or less concentric. Margin thick, strongly defined, broadest in the middle.

Triceratium modestum, n. sp., Grev.—Small; valve with strictly straight sides and rounded angles; surface reticulato-cellulate, the cellules angular (not hexagonal), becoming smaller towards the angles, which are somewhat concave within and destitute of pseudo-nodules; margin striated. Distance between the angles ·0025″. (Fig. 14.)

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

Conspicuously reticulato-cellulate; the cellules 5 or 6 in ·001″, with slender walls, becoming smaller within the angles, but not passing into puncta. Margin at the angles somewhat thickened.

Triceratium acutangulum, n. sp., Grev.—Large; valve with

4 acute angles, and concave sides, the angles thickened and bearing a claw-like process; granules or cellulation radiating, the cellules becoming larger as they approach the margin. Distance between the angles ·0050″. (Fig. 12.)

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

All the valves I have seen are 4-angled, and sharply acute; colour pale; cellules near the margin 7 in ·001″. The margin itself slender, with a row of darker cellules. This is a most distinct species.

Triceratium oculatum, n. sp., Grev.—Small; valve with 4 angles and nearly straight sides, the angles much rounded, with large transversely oval pseudo-nodules; surface filled with minute, radiating puncta. Distance between the angles ·0018″. (Fig. 20.)

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

Whether this be the normal condition of the species it is impossible at the present moment to say, as only a single specimen has been observed.

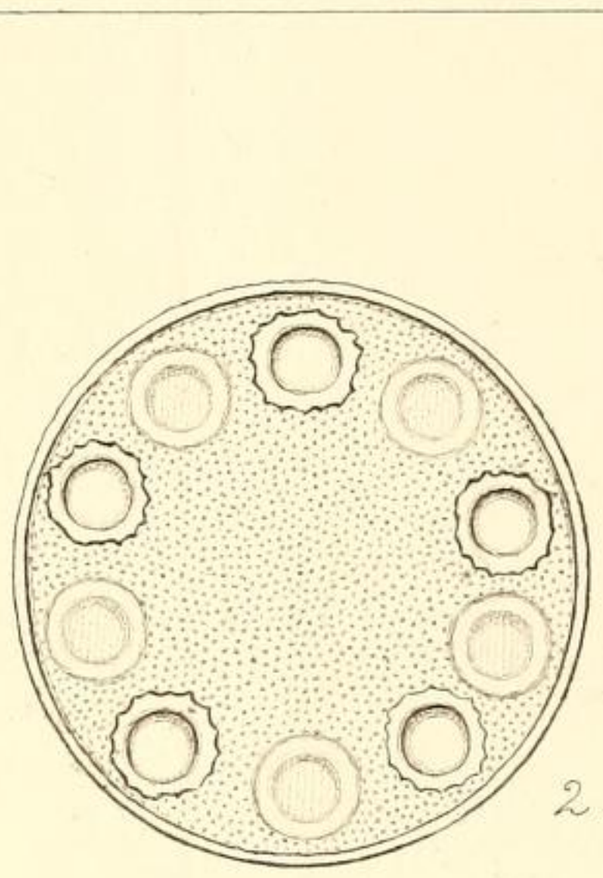
On the STRUCTURE *and* FORMATION *of the* SARCOLEMMA *of* STRIPED MUSCLE, *and of the* EXACT RELATION *of the* NERVES, VESSELS, *and* AIR-TUBES (*in the case of* INSECTS) *to the* CONTRACTILE TISSUE *of* MUSCLE.

By LIONEL S. BEALE, M.B., F.R.S., Fellow of the Royal College of Physicians; Professor of Physiology and of General and Morbid Anatomy in King's College, London; Physician to King's College Hospital.

(Read June 8th, 1864.)

(Plates XIV & XV.)

THE apparently structureless and perfectly transparent membranous tube called the sarcolemma contains the contractile material of striped or voluntary muscle, which may be split up in a longitudinal direction to form "fibrillæ," and in a transverse direction to form "discs." The precise relation of the sarcolemma to the contractile material of the muscle on the one hand, and to the nerve-fibres and capillaries on the other, and the mode of its formation, have long been questions of the utmost interest to anatomists and physio-



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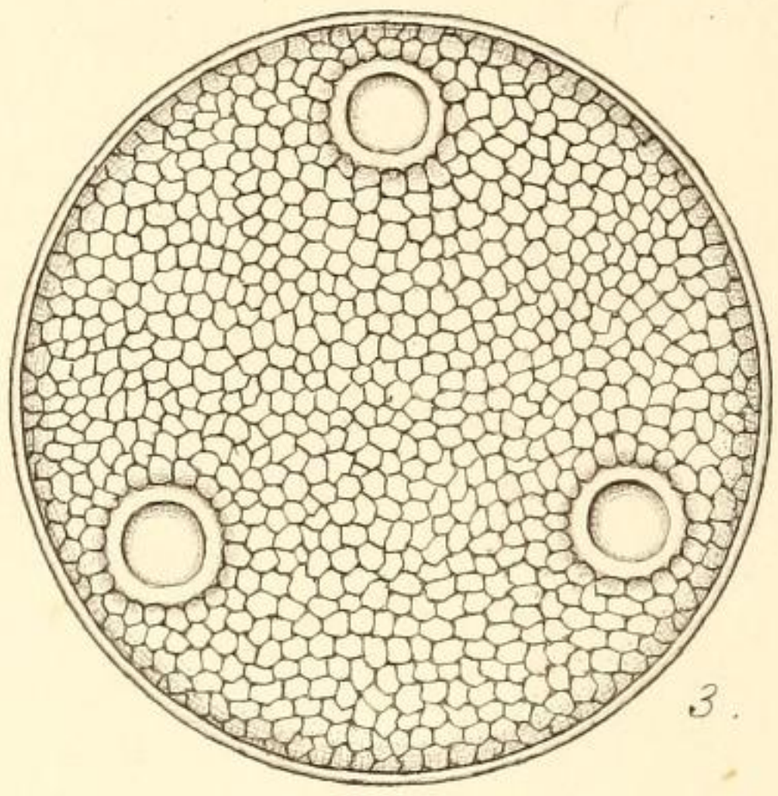

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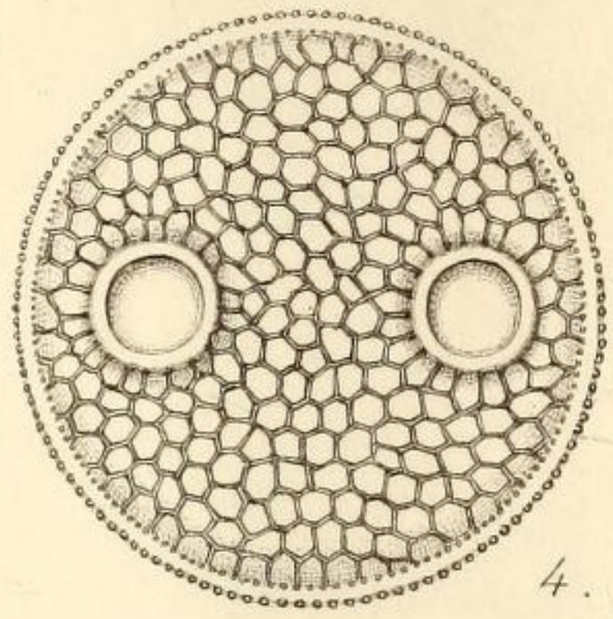

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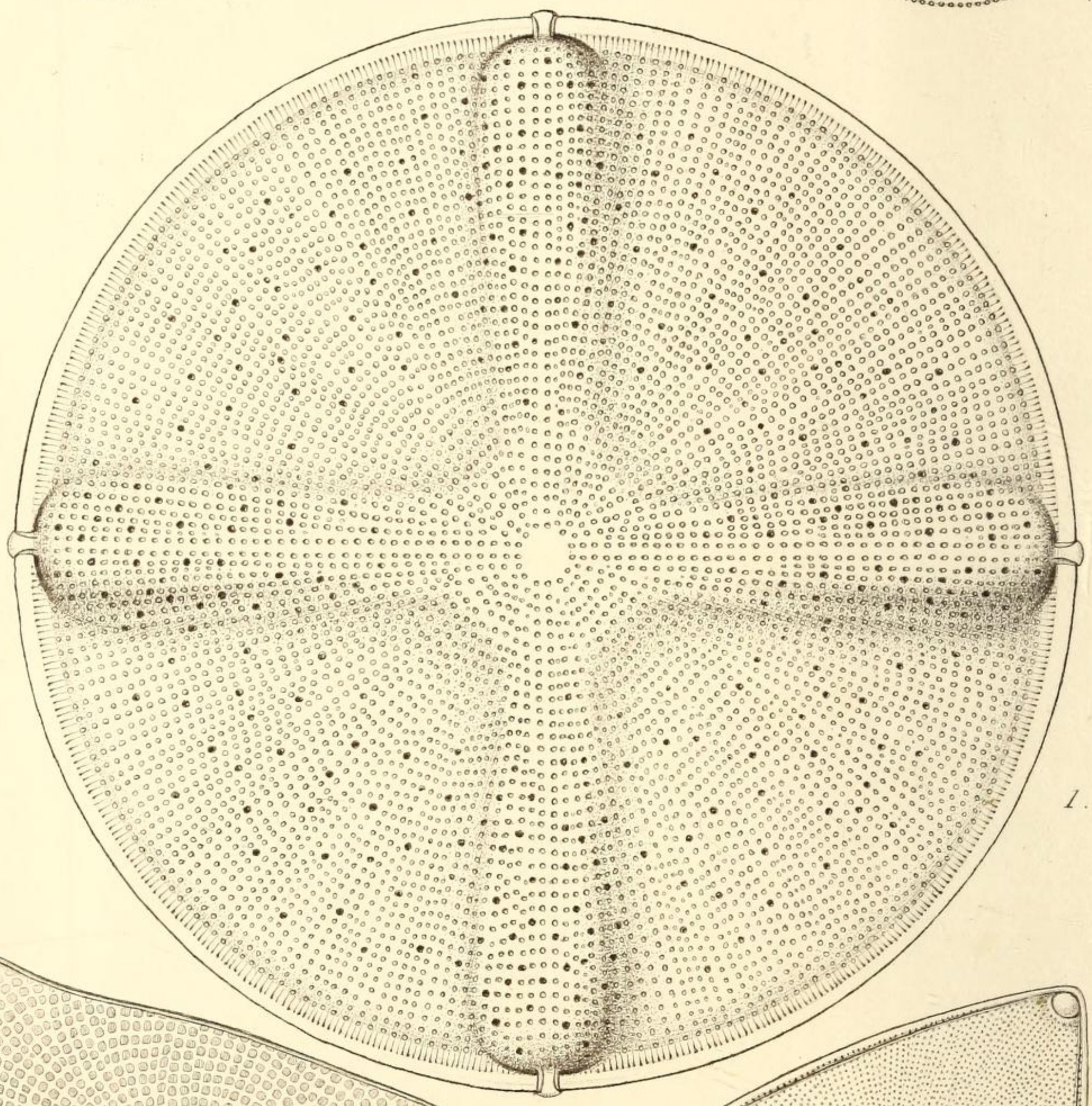

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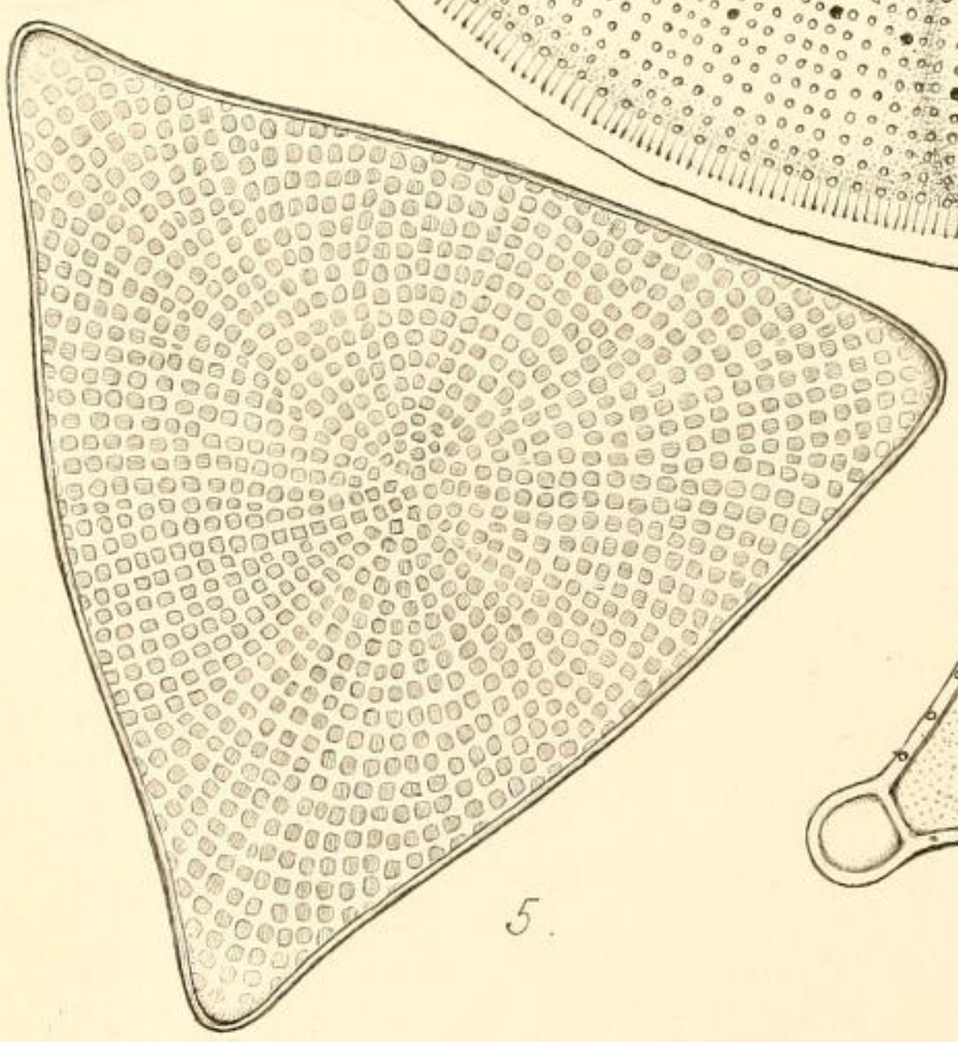

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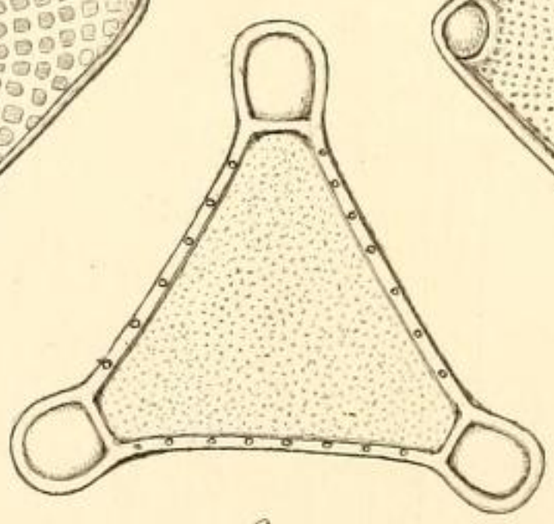

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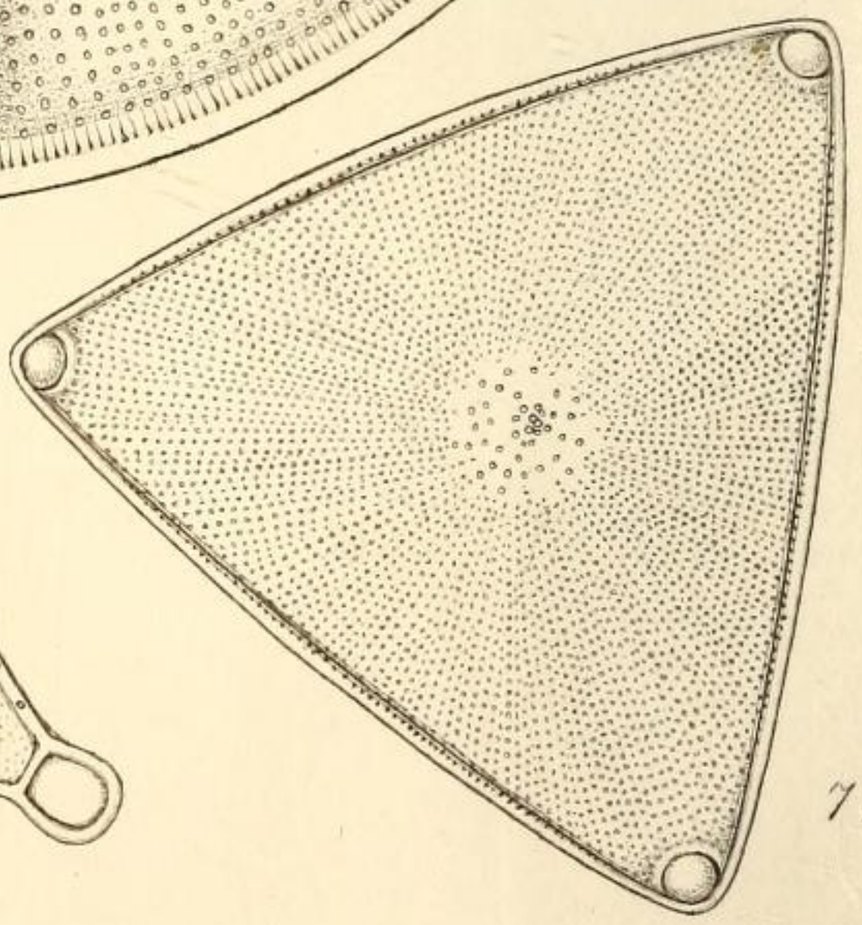

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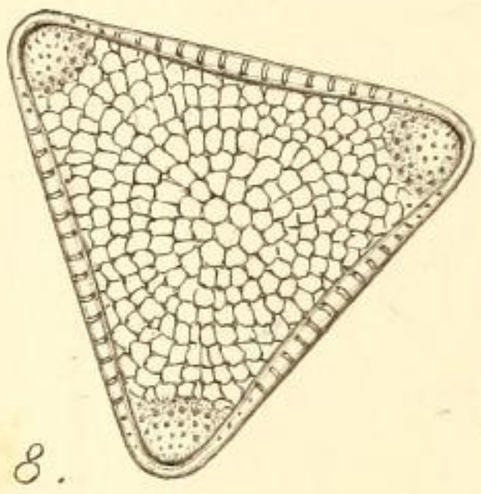
R.K. Greville, del.t - on stone by F. Huth.

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



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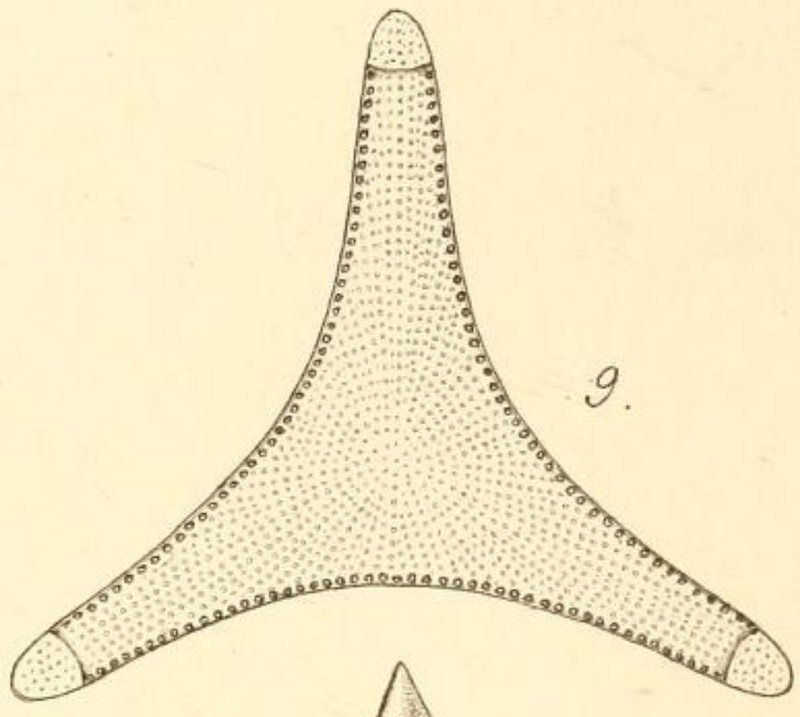

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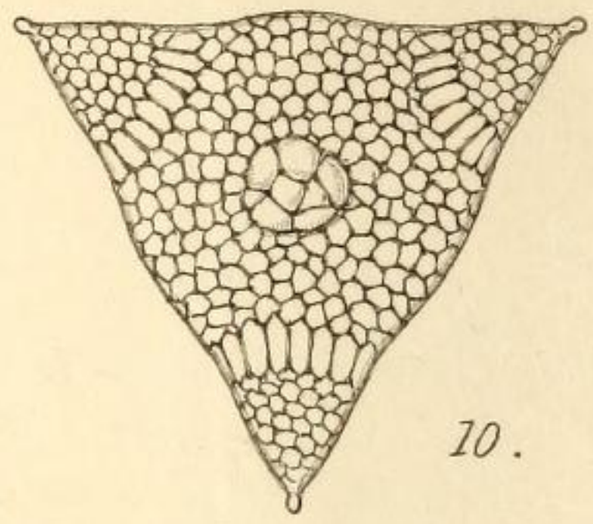

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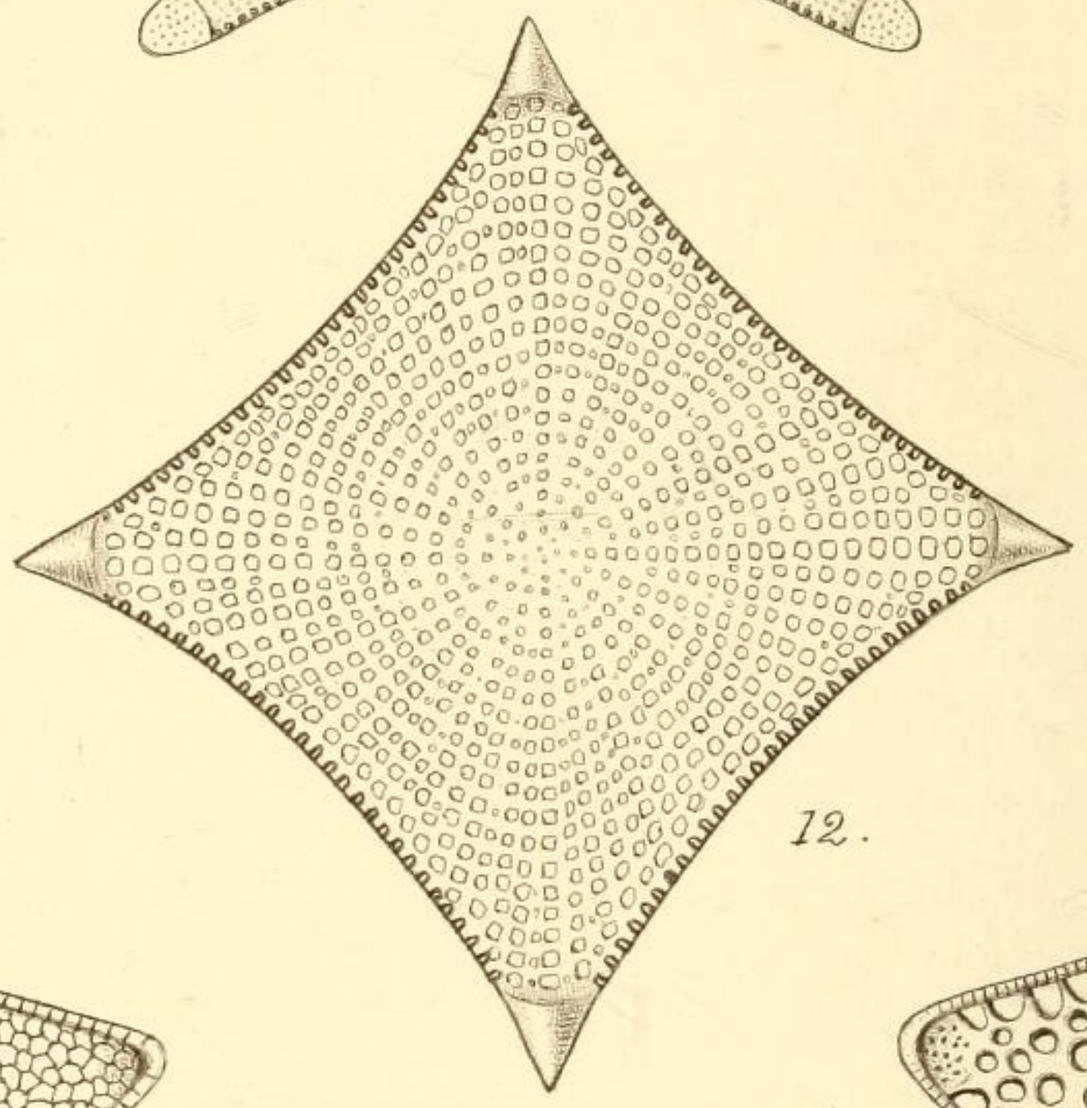

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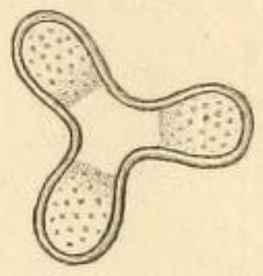

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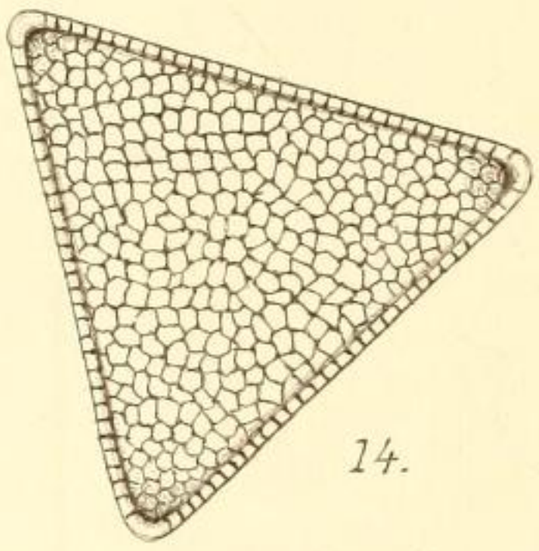

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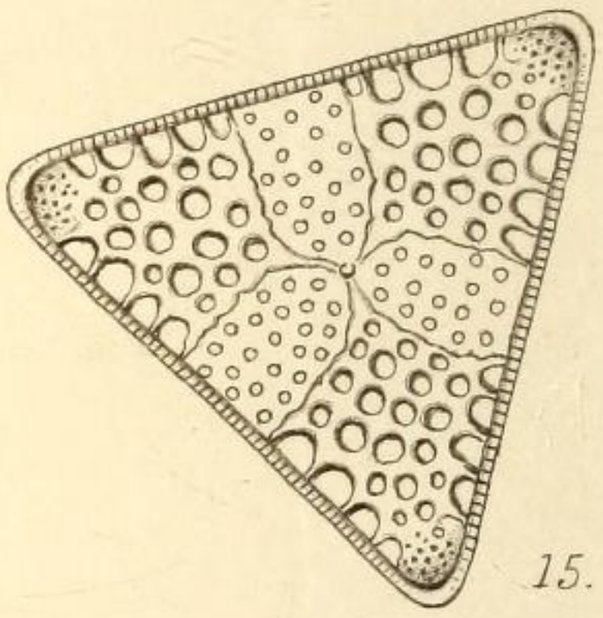

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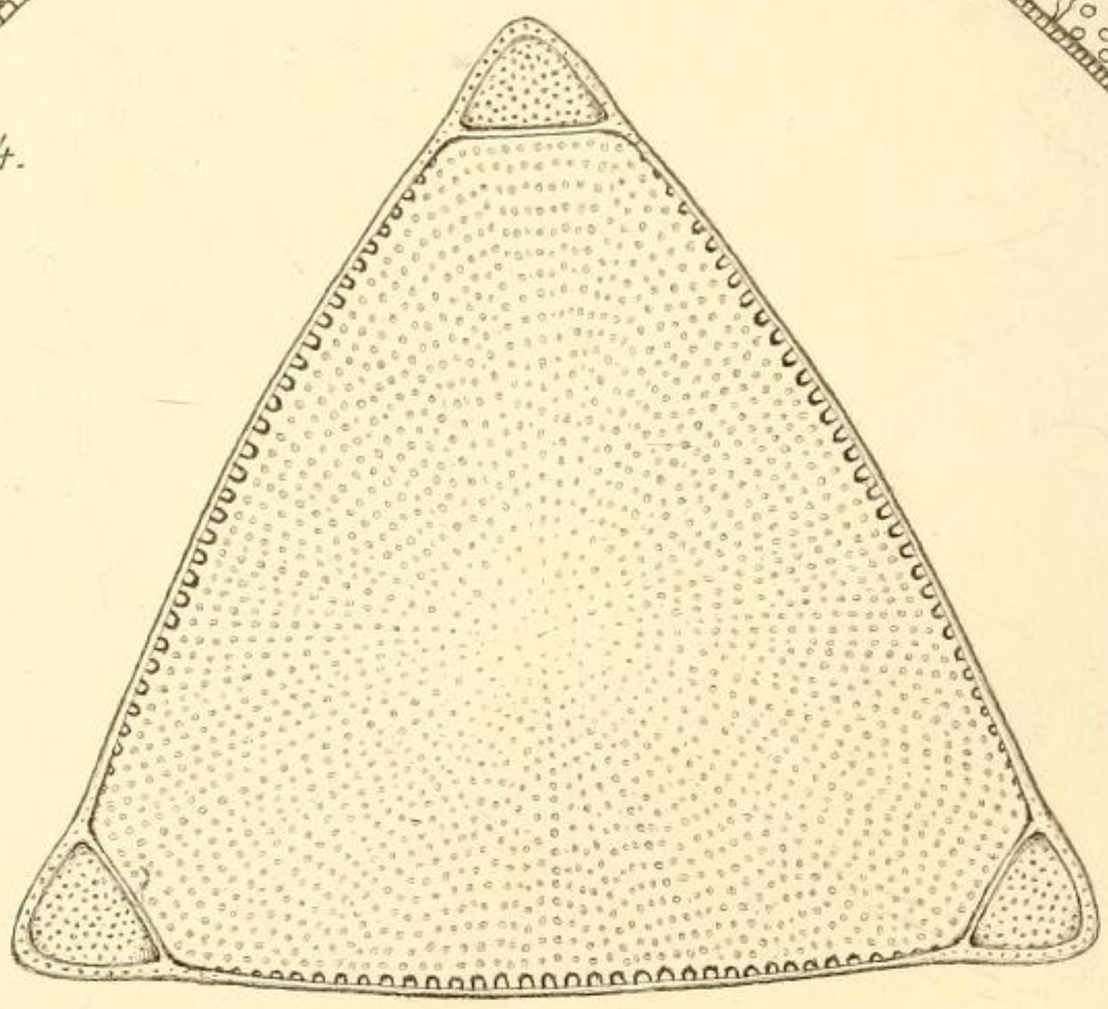

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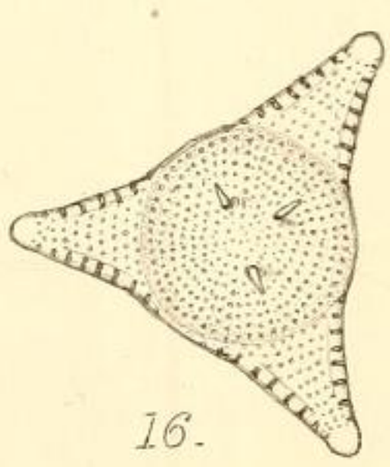

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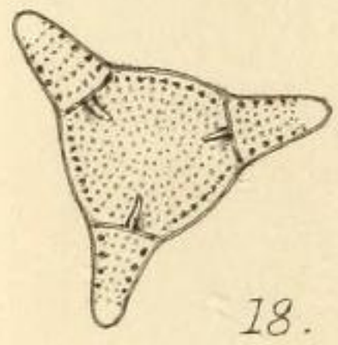

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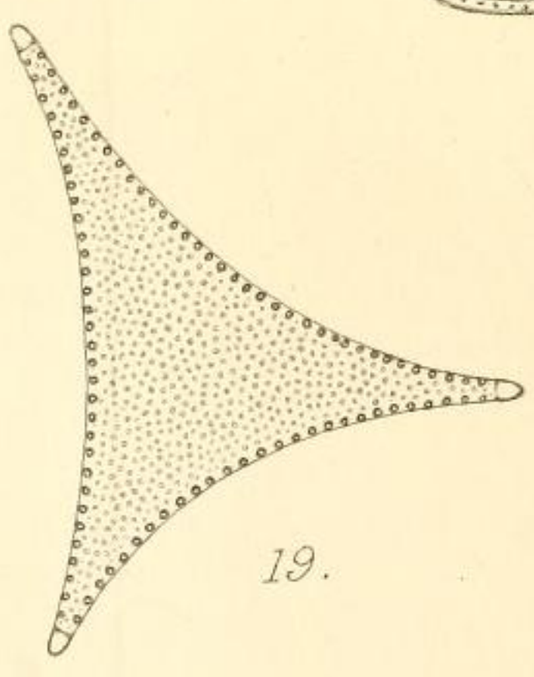

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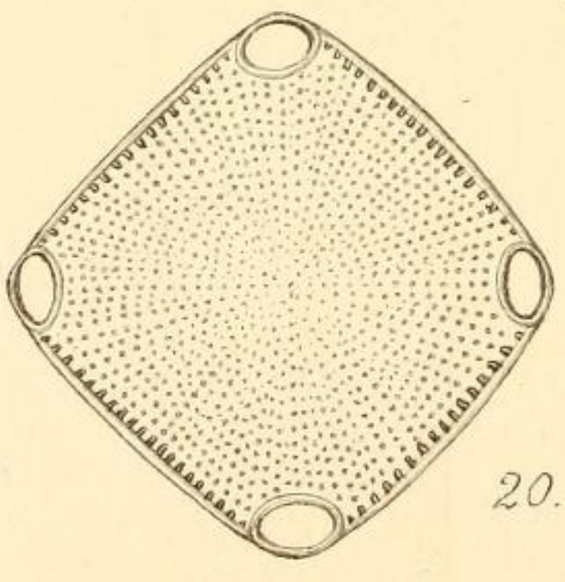

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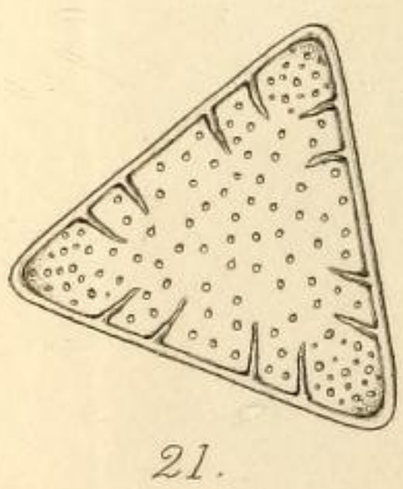

21.

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

W.H.Mc Farlane, Lithr Edinr.

DESCRIPTION OF PLATES XII & XIII,

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

Fig.

1.—*Aulacodiscus extans*

2.—*Auliscus ornatus.*

3.—*Eupodiscus trioculatus.*

4.— „ *Barbadensis.*

5.—*Triceratium irregulare.*

6.— „ *Rylandsianum.*

7.— „ *Smithianum.*

8.— „ *firmum.*

9.— „ *ligulatum.*

10.— „ *attenuatum.*

11.— „ *obesum.*

12.— „ *acutangulum.*

13.— „ *perpusillum.*

14.— „ *modestum.*

15.— „ *foveatum.*

16.— „ *prætenue.*

17.— „ *microstictum.*

18.— „ *perminutum.*

19.— „ *inæquale.*

20.— „ *oculatum.*

21.— „ *venulosum.*

All the figures are × 400 diameters.