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

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

(Read June 14, 1865.)

Plates VIII & IX.

Cladogramma.

Frustules simple, disciform; lateral valves convex, marked with radiating, irregularly forked lines; connecting zone ring-like.

I am not aware that Ehrenberg has anywhere defined this genus, which is only known by the figure he has given of his *Cladogramma Californicum* ('Microgeologie,' pl. 33, 13, f. 1**). Ralfs, in introducing it into his arrangement, in Pritchard's 'History of Infusoria' (1861), gives a copy of the figure above referred to, but also adds, "The characters of this genus are unknown to us." Under these circumstances, I have, in adopting Ehrenberg's name, ventured to supply a generic character.

Cladogramma conicum, n. sp., Grev.—Lateral valves conical, with numerous, nearly straight, forked, or simple lines. Diameter ·0017″. (Figs. 1 and 2.)

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

It is quite possible that the present diatom may differ from Ehrenberg's undefined genus, of which only the hemispherical valve has been discovered. Mr. Kitton obtained a single specimen, which was unfortunately lost in its transit through the post-office, and with it the opportunity of determining the question. His sketch, now before me, is precisely similar to Ehrenberg's figure, showing about four lines radiating from the centre, which divide and subdivide into diverging branches, about half way between the centre and margin. In the present species the valve is distinctly conical, and the lines radiate rather closely from the very centre, dividing in a straight manner somewhat irregularly, with occasional independent lines, to fill up the spaces, so that at the margin all the lines are nearly equidistant. The connecting zone appears to be slightly vertically rugose.

Thaumatonema.

Thaumatonema? costatum, n. sp., Grev.—Minute; disc

with minute radiating puncta, and 8 rib-like lines; centre a smooth nodule, giving off 2 simple, diverging, cylindrical, flatly capitate processes. Diameter ·0020″. (Fig. 3.)

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

I venture to place this little diatom in the genus *Thaumatonema* because the only material difference seems to lie in the absence of the little stalk which supports the diverging processes. They seem, in the present instance, to spring at once from a smooth, prominent, central nodule, but the flat dilated apices are so similar to those in the genus above mentioned that they may be regarded with some confidence as articulating surfaces. Specifically, the radiating ribs constitute an excellent character.

DICLADIA.

Dicladia ? robusta, n. sp., Grev.—Large; valves ovate-conical, beset with scattered minute spines, both terminating in a single strong horn. Diameter ·0020″. Length, including the horns, ·0055″. (Fig. 11.)

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

Both valves are furnished with strong horns, as in the diatom I have called *Dicladia Barbadensis;* but in the present instance they are undivided. One of the valves is somewhat larger than the other, and both are sparingly and irregularly covered with minute spines, a few of which are found even on the horns.

STICTODISCUS.

Stictodiscus Hardmanianus, n. sp., Grev.—Large; radiating compartments very numerous, reaching nearly to the centre, with 5—6 transverse rows of minute puncta at the base, followed by a single row of pseudo-pores; centre occupied by two circles of granules, and a minute cluster at the umbilicus. Diameter ·0050″. (Fig. 4.)

Hab. Monterey deposit; L. Hardman, Esq.

An exquisite species, well distinguished by the centrical circles of granules and the marginal rows of exceedingly minute puncta. The very numerous septa are transversely divided, so as to appear clathrate or ladder-like, while by slightly altering the focus a single pseudo-pore is observed in the middle of each division.

LIRADISCUS.

Liradiscus ellipticus, n. sp., Grev.—Disc elliptical, oval, or oblong, with the ends subacute; sinuate reticulation very small. Length of disc about ·0030″. (Fig. 6.)

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

Very similar to *L. ovalis*, only with the ends always more or less acute, and the reticulation comparatively minute.

ASTEROLAMPRA.

Asterolampra eximia, n. sp., Grev.—Large; segments numerous, more than one third of the radius in length, quadrately cellulate, their inner margin very convex, and composed of elongated cellules; umbilicus irregularly cellulate. Diameter ·0060″. (Fig. 10.)

Hab. Barbadoes deposit, Cambridge estate; L. Hardman, Esq.

A most beautiful species, quite distinct from those previously described. The umbilicus is loosely and irregularly cellulate, and gives off, in the specimen before me, 22 umbilical lines. The segments are remarkable for the arched outline of their inner margin, which is composed of 6 linear elongated cellules, the 4 middle ones being more prominent than the 2 lateral ones.

BIDDULPHIA.

Biddulphia? decorata, n. sp., Grev.—Valve in front view rectangular, produced at the angles into short, thick, rounded processes, wholly filled with rounded cellules; median surface convex, with a single stratum of cellules, which in the front view appear to be vertically oblong; the rest of the valve smooth, with one or two transverse rows of round cellules. Length ·0026″. (Fig. 7.)

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

I have only seen two specimens of this diatom, the genus of which must be considered doubtful. The median surface is curious; the upper half of the oblong cellules projecting above the line, which would render the surface papillose.

PORPEIA.

Porpeia quadriceps? Bail.—(Fig. 13.)

Having obtained, since the publication of my previous series, a most remarkable frustule of what I take to be a variety of this diatom, I offer a figure of it in addition to my former illustrations. It will be perceived that Bailey's drawing, as copied into Pritchard's 'History of Infusoria' (if, indeed, it represents the same thing), indicates, when compared with our present diatom, a wide range of form.

HEIBERGIA, n. gen., Grev.

Frustules compressed, quadrilateral, cellulate, with a punctate surface at the angles, where they probably cohere; valves with one longitudinal and several transverse costæ, the longitudinal one terminating towards each extremity in a blank space.

This interesting genus, which I propose in honour of Dr. P. A. C. Heiberg, author of the valuable 'Conspectus Criticus Diatomacearum Danicarum,' is nearly allied to *Biddulphia*, but differs in having a median costa terminating at each end in a definite blank space, and in the lateral valves not being constricted at their base. There appears also to be some affinity between this genus and *Entogonia*, the broad borders of which, with their transverse costæ, strongly resemble the two sides of the valve of *Heibergia*, and the curious blank spaces near the ends of the valve in both genera seem quite analagous.

Heibergia Barbadensis, n. sp., Grev.—(Figs. 8 and 9.)

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

Frustules cellulate; cellules hexagonal, conspicuous in the valves, minute in the connecting zone; the angles broadly and slightly mammillose, finely punctate. Valves linear-oblong, longitudinally and transversely costate. The longitudinal or median costa terminating at each end in a subtriangular blank space, which is separated from the punctate angles by a belt of cellules. Transverse costæ 5—8, extending from the median costa to the base of the valve, which is not constricted. All the costæ are very slender and slightly flexuose. Length of valve ·0055″.

HEMIAULUS.

Hemiaulus crenatus, n. sp., Grev.—Valve in front view with the angles produced into minute subconical horns; median space elongated, slightly convex, with numerous crenations; structure very minutely punctate. Breadth of frustule ·0037″. (Fig. 12.)

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

Quite unlike any of the other species obtained from the same deposit. In the perfect frustule now before me the two valves united only measure ·0007″ in the centre, and from the suture to the apex of the horns is under ·0004″. Number of crenations 17, but this character doubtless varies according to the age (?) of the frustule.

Hemiaulus minutus, n. sp., Grev.—Minute; valve in front view with the angles produced into very minute short horns, tipped with a short spine; median space divided into three equal parts, the central one convex, with 2 transverse costæ reaching to the suture; structure minutely punctate. Breadth of frustule ·0014″. (Fig. 5.)

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

The minute horns are rather slender and the spines extremely small. The punctation of the valve is not crowded.

TRICERATIUM.

Triceratium figuratum, n. sp., Grev.—Minute; valve with concave sides, and broadly ovate rounded angles; margin broad, continuous, with a few remote strong striæ; central area defined by lines cutting off so much of the angles as to leave only a minutely punctate triangular space; angles within filled with minute puncta. Distance between the angles ·0012″. (Fig. 15.)

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

A beautiful little species, about the size of *T. brachiatum*, and totally unlike any species I am acquainted with.

Triceratium brevinervum, n. sp., Grev.—Minute; valve with strictly straight sides and subacute angles, each of which is bounded interiorly by two short, marginal, vein-like lines; central area with small, scattered, remote puncta; angles filled with more minute and more crowded puncta. Distance between the angles ·0022″. (Fig. 26.)

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

A very neat-looking diatom, closely allied to *T. venulosum*, of which it may possibly prove to be a variety. But in all the specimens I have seen there is only a single pair of short lines to each angle (a line on each side).

Triceratium implicitum, n. sp., Grev.—Minute; valve with convex sides and very rounded angles; surface nearly filled with a closely sinuate network of minutely branching lines, not reaching to the margin. Distance between the angles ·0022″. (Fig. 25.)

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

This very peculiar little species may be regarded as remotely allied to *T. labyrinthæum*, being similar in outline and size, and having the centre filled with a sinuous network. In the last-named diatom the cells are very much larger, and are, moreover, distinctly punctate. In our new species the network is minute and delicate, without puncta, and having a sort of prickly appearance, in consequence of very short lines being given off from the walls of the cellules.

Triceratium zonatulatum, n. sp., Grev.—Minute; valve cruciform, the four angles with nearly parallel sides and broadly rounded ends; surface with a faint, circular nucleus, surrounded by faint, scattered puncta; angles nearly filled up with minute crowded puncta, leaving a blank, transverse space between them and the central puncta. Distance between the angles ·0012″. (Fig. 17.)

Hab. Singapore; obtained from shell-cleanings, by Laurence Hardman, Esq.

This, and a number of other interesting species, are preserved in the cabinet of Mr. Laurence Hardman, who has kindly placed in my hands a large number of exquisitely mounted slides for examination. It is difficult to say whether the four-angled form of many of these *Triceratia* be the normal one. In some cases I believe that it is, and that in others five or six angles may also be a constant character. On the other hand, we know that additional angles are sometimes mere variations, as in *T. Favus*, *T. scitulum*, &c., which are occasionally four-angled, and in *T. striolatum*, as figured by Brightwell ('Mic. Journ.,' Vol. I, Pl. IV), where the angles vary from three to five. In the little species now before us the prominent characters are the large portion of the angles filled with crowded puncta, and the transverse blank spaces which separate the mass of puncta referred to from the apparently somewhat depressed centre.

Triceratium latum, n. sp., Grev.—Valve 4-angled and cruciform; angles very broad, with nearly parallel sides and semicircular ends; surface with very remote, scattered puncta, the extreme ends of the angles crowded with minute puncta. Distance between the angles ·0030″. (Fig. 20.)

Hab. Singapore; obtained from shell-cleanings, by L. Hardman, Esq.

A striking and distinct species. The puncta are so remotely scattered that but few are situated within the portions of the valve which constitute the arms of the cross.

Triceratium quadricorne, n. sp., Grev.—Small, cruciform; lobes somewhat narrowed towards the rounded ends; surface covered with a faint cellulation, and a punctum in each cellule; a small cluster of minute puncta at the extreme end of the angles. Distance between the angles ·0016″ (Fig. 16.)

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

The cellulation of the valve is very delicate, (not hexagonal), and the punctum within each cellule minute. There is, in addition to the characters already given, a row of small marginal puncta, which are most conspicuous in the concavities.

Triceratium inglorium, n. sp., Grev.—Minute, 4-angled, with the angles rounded, the sides slightly concave and faintly striated at the margin; centre with a rather large circle of subclavate puncta; extreme ends of the angles with a cluster of minute puncta. Distance between the angles ·0008″. (Fig. 18.)

Hab. Manilla; obtained from shell-cleanings, by L. Hardman, Esq.

I have not been able to perceive any structure in the space between the circle of puncta and the margin.

Triceratium sexangulatum, n. sp., Grev.—Valve with six rounded angles, and concave sides; margin rather broad, continuous, with a row of puncta in the concave portions; surface filled with somewhat crowded circular cellules, which become gradually smaller towards the margin, and leave the angles smooth. Distance between the angles ·0013″. (Fig. 24.)

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

A fine diatom, beautifully marked with circular cellules, which pass into small puncta next the margin, and especially at the angles, where, however, they stop, leaving a roundish blank space, crossed by a shadowy line just within the apex.

The margin is strong, narrow, and destitute of puncta as it passes round the angles.

Triceratium reticulatum, n. sp., Grev.—Valve 6-lobed, with a narrow, striated margin; lobes or angles broadly rounded; surface filled with a large reticulate cellulation, radiating in fasciculi towards the spaces between the angles, and becoming smaller towards the circumference. Distance between the angles ·0019″. (Fig. 21.)

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

An exquisitely beautiful species. Cellules subquadrate, radiating from a single cellule in the centre.

Triceratium quadratum, n. sp., Grev.—Large; valve with 4 subobtuse angles and straight sides, from each of which project inwardly 4—5 short vein-like lines; surface filled with roundish subequal cellules, scattered in the centre, but soon radiating; angles with roundish pseudo-nodules. Distance between the angles ·0050″. (Fig. 19.)

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

All the specimens I have seen of this fine diatom are 4-angled. In the centre there is often a sort of umbilicus, or, at least, a somewhat irregular circle of smaller cellules, around which the ordinary cellules are often more or less scattered before they pass into radiating lines, in which they are 4—5 in ·001″. Generally, if not always, a few short central spines are present.

Triceratium parallelum (Ehr.), Grev.—Small; valve 4—6-angled; angles slightly rounded, the sides straight; centre widely and faintly reticulate, while a broad band of parallel, subremote lines of granules fills up the space between the reticulation and the narrow margin. Distance between the angles ·0018.″ (Figs. 22 and 23.)

Amphitetras parallela, Ehr., 'Leb. Kreideth.,' p. 63, fid. Kütz.; Kütz., 'Bacill.,' p. 135; 'Sp. Alg.,' p. 134; Ralfs, in Pritch. 'Inf.' (1861), p. 858; Rabenh., 'Fl. Eur. Alg.,' p. 318.

Hab. Greece (fossil); Moron deposit (fossil); Red Sea dredgings, L. Hardman, Esq.

The present diatom satisfactorily illustrates the transition from a four- to a six-angled valve. Both forms occur in slides prepared by Mr. Hardman from Red Sea dredgings, and it is impossible to deny their specific identity. The triangular valve, however, has not been observed. The quadrangular form being alone known to Ehrenberg, led him probably to refer it to the genus *Amphitetras;* but after our

more recent knowledge regarding the frequency of 4—6 angles in aberrant forms of genuine *Triceratia*, and in the absence of any structural peculiarity, I have no hesitation in placing these diatoms in the genus *Triceratium*.

Triceratium polygonium, n. sp., Grev.—Large; valve with 6 somewhat rounded angles and straight sides; surface filled with remote radiating lines of granules, except in the centre, which is faintly reticulate; margin strong, striated. Distance between the angles ·0022″. (Fig. 14.)

Hab. Among ballast, at Stoneferry, near Hull; George Norman, Esq.; cabinet of F. Kitton, Esq.

An interesting form, evidently allied to the preceding, but differing in its larger size, smaller and more distant granules, and especially in the strong, rather broad, striated border.

AMPHITETRAS.

Amphitetras nobilis, n. sp., Grev.—Valve very large, with broad, somewhat ovate lobes or angles, and concave sides; centre depressed; surface filled with large, roundish or roundish-quadrate, radiato-concentric granules; angles terminating in short tubular processes. Distance between the angles ·0052″. (Fig. 27.)

Hab. In dredgings from the Red Sea; L. Hardman, Esq.

A magnificent species, and one of many undescribed novelties contained in my friend Mr. Hardman's cabinet. The form of the lobes or angles, and short tubular apices, appear to be amply sufficient to separate it from *A. antidiluviana*, to which it is most nearly allied.

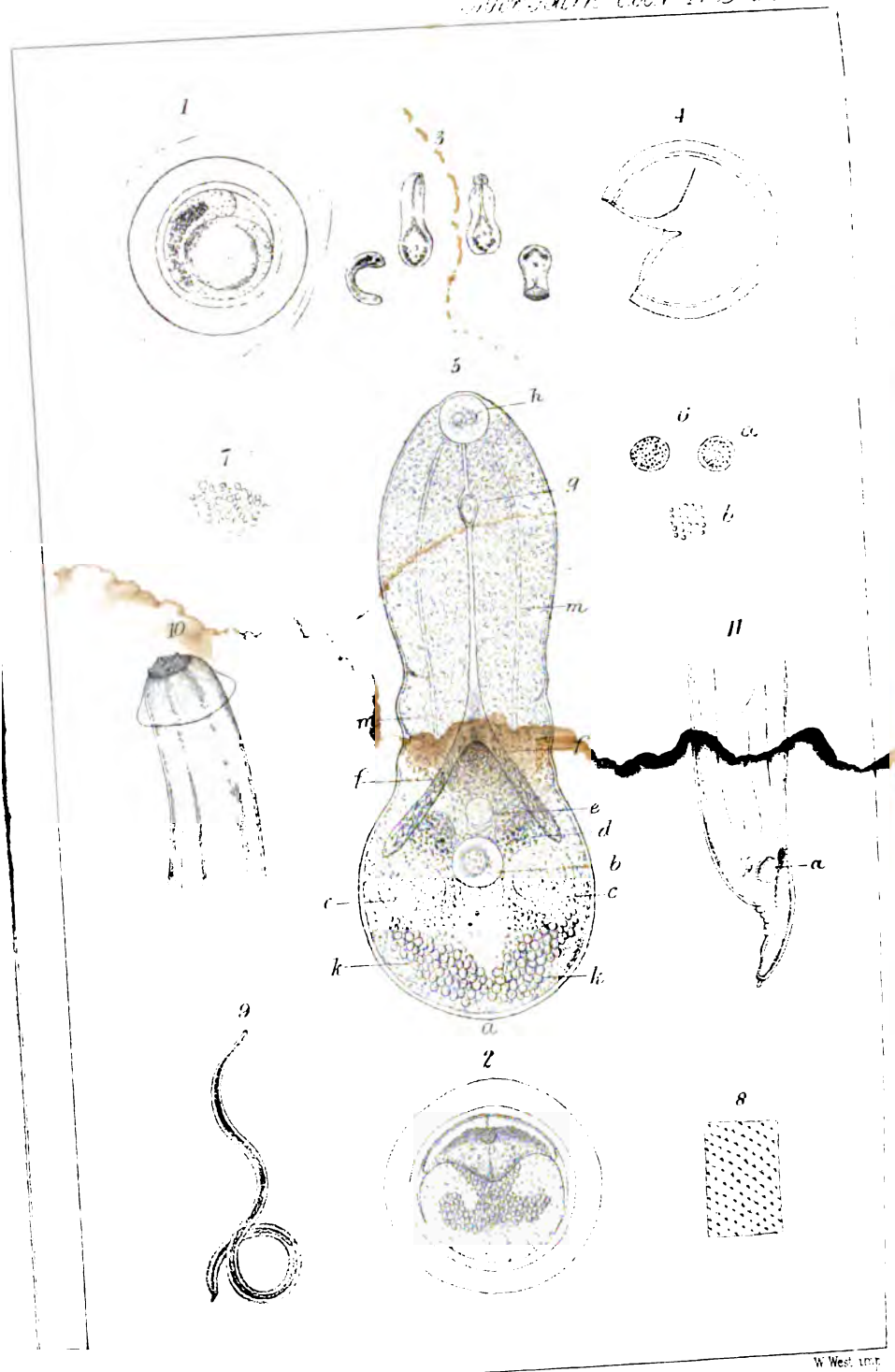
NOTES *on the* FRACTURE *of* POLISHED GLASS SURFACES.

By F. H. WENHAM.

(Read June 14, 1865.)

THE short communication which I submit to your notice scarcely merits consideration as a discovery; but as the microscope has in this case immediately detected the cause of a well-known phenomenon, I bring it forward as an example of the use of the instrument in practical investigations.

It is a fact known to the philosophical instrument makers, that if a metal wire be drawn through a glass tube, a few hours afterwards the tube will burst into fragments. The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DESCRIPTION OF PLATE VIII,

Illustrating Dr. McIntosh's paper on the Trematode Larva and Ascaris of the *Carcinus mœnas*.

Fig.

1.—Lateral view of the embryo, showing its coiled condition in the egg. ×180 diam.

2.—Front view of the embryo in the egg. ×180 diam.

3.—Various specimens of the extruded larva in different postures. Magnified by the high power of a dissecting lens.

4.—Egg-capsule after rupture. A delicate outer investment is in this case seen stretching across the rent.

5.—The trematode larva, ×180 diam. *a*, Pore at the posterior margin; *b*, ventral sucker; *c c*, large granular bodies; *d*, one of the circular granular masses anterior to the former; *e*, clear globule in front of ventral sucker; *f f*, alimentary cæca; *g*, dilatation of œsophagus (pharyngeal bulb?); *h*, oral sucker; *k k*, groups of large compound cells; *m m*, excretory (?) tubes.

6.—Portion of the investing tissue of the larva, showing the spikes. ×280 diam.

7.—The ascaris from liver of *Carcinus mœnas*. Magnified by high power of dissecting lens.

8.—The anterior extremity of the foregoing. ×80 diam.

9.—Posterior extremity of the same, ×80 diam. *a*. The granular rounded body most clearly observed.

DESCRIPTION OF PLATE IX,

Illustrating Dr. E. Perceval Wright's paper on Hartea.

Fig.

1.—*Hartea elegans*, fully expanded and greatly enlarged; '*a*', basal portion, thickly studded with spicula (*vide* fig. 4); '*b*', the swollen bases of the tentacles, crowded with elongated spicula (*vide* fig. 3).

2.—The same, twice the size of life, tentacles contracted.

3.—Spiculum from base of tentacle.

4.—Spiculum from base of the polype.

N.B.—The shell represented in fig. 1 is drawn from the imagination of the artist, as, in the examination of the specimens, they became detached from the *Cardium Norvegicum*.


b
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