

TRANSACTIONS.

DESCRIPTIONS of NEW and RARE DIATOMS. SERIES XII.

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

(Read Feb. 10th, 1864.)

(Plates X & XI.)

EUPODISCUS.

Eupodiscus scaber, n. sp., Grev.—Very large; disc with two large submarginal flat processes and a broad striated border; cellules very minute; whole surface rough, with scattered raised points. (Pl. X, fig. 1.)

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

The treasures of the Barbadoes earth really seem to be inexhaustible, and do not cease to reward the persevering research of my excellent friend Mr. Johnson. The subject is becoming exceedingly interesting—far beyond the mere publication of a few novel diatoms; for here is an extensive and truly fossil deposit, richer already in some extensive genera than any other known locality, while various genera of singular structure appear to be altogether peculiar to it. It will now be a matter of some importance to make our record of this wonderful deposit as complete as possible.

The present diatom is one of the finest and most distinct of its genus, attracting the eye instantaneously by the large, flat, circular *Auliscus*-like processes which project somewhat from the surface. The structure is dense, composed of very minute cellules, about 12 in '001". The little rough apiculi, which appear like so many dark specks remotely scattered in the middle of the disc, are more numerous towards the margin; striæ of the border 13 in '001". Diameter of disc '0075".

AULACODISCUS.

Aulacodiscus decorus, n. sp., Grev.—Large, coloured; disc with numerous (about six) submarginal processes; furrows open, defined by parallel lines of granules, terminating in very small blank spaces surrounding the processes; granules minute, irregularly disposed in the centre, soon passing into closely moniliform slender lines, with intermediate shorter ones. (Fig. 2.)

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

A fine large species, without any umbilical space, the centre being filled up with somewhat remote and irregularly scattered, minute, spherical granules, which soon arrange themselves into long slender lines, strongly marked by the brownish colour of the closely placed granules. As the lines proceed towards the margin there is no appearance of dichotomous division in order to fill up the increasing space; but shorter lines are introduced like the gills of many *Agarici*, and furnish a conspicuous character. This arrangement, however, is irregular, as several long lines are sometimes continued side by side to near the margin, while in other cases the shorter lines occur more frequently. In this character our present species is allied to *A. Kilkellianus*. The diameter of the disc is from '0060" to '0080".

AULISCUS.

Auliscus Normanianus, n. sp., Grev.—Very large; valve circular, with a large smooth umbilicus, and very fine, close, radiating, plumose lines; a row of submarginal puncta, and numerous apiculi scattered over the outer parts of the disc; processes 3, large. (Fig. 11.)

Hab. Deposit at Moron, province of Seville; George Norman, Esq.; C. Johnson, Esq.

A splendid, well-marked, and rare fossil species. It appears to be strictly circular, and may be distinguished at a single glance by the submarginal row of puncta, combined with the scattered apiculi which are considerably more numerous than those in the disc of *Aulacodiscus scaber*. The lines which converge from the centre to the processes are very numerous and delicate, but sharp and distinct; those which radiate to the circumference exceedingly fine and faint. In the example figured, the processes are situated at a considerable distance from the margin, but this is not a constant

character. The diameter of the valve varies from '0050" to '0073". My friend Mr. Norman, who was the first to examine the Moron deposit, well deserves that this magnificent species should bear his name.

Auliscus Moronensis, n. sp., Grev.—Large; valve broadly oval, with a circular smooth umbilicus; converging and radiating lines beset with numerous minute puncta, the lateral ones widely plumose, dichotomous; processes 2. (Fig. 6.)

Hab. Moron deposit; George Norman, Esq.; R. K. G.

This fine diatom is evidently allied to *Auliscus pruinus* of Bailey, from which, indeed, it is not easy to separate it in words, although it is abundantly distinct. The essential difference lies mainly in the radiating lines. These, in *A. pruinus*, are very fine and delicately scabrous, the latter effect being produced by the minute *jaggedness* of the lines themselves. In our new species the lines are far more robust, less exquisitely symmetrical, and the apparent roughness is caused by minute, distinct puncta occurring on their surface at short irregular intervals. *A. pruinus* is supposed to be always circular, but I do not venture to place much confidence on that character. Nevertheless it is worthy of remark that all the examples of *A. Moronensis* which have come under my observation are broadly oval. Long diameter about '0055".

BIDDULPHIA.

Biddulphia punctata, n. sp., Grev.—Side view elliptical-oval, the ends sub-obtuse, with short, obtuse, roundish processes and two transverse blank lines; structure uniform, composed of minute puncta. (Fig. 10.)

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

Of this species I have met with four or five examples, all agreeing so closely that I feel justified in regarding it as well-defined. The transverse lines do not appear to indicate any septum, but they are very conspicuous. The position they occupy towards each end of the valve is at about a third of its entire length. The short processes very much resemble those of *B. pulchella*. Longest diameter about '0055".

TRICERATIUM.

Triceratium zonatum, n. sp., Grev.—Small; valve with nearly straight sides, and obtuse angles, furnished with roundish pseudo-nodules; surface minutely punctate, with a circular blank umbilicus, and with the angles cut off by two broad blank lines. (Fig. 3.)

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

A handsome and striking little diatom. Pseudo-nodule filling up the external angle. Surface closely and minutely punctate, with a row also of minute puncta (15 in '001") along the margin. Umbilicus distinct, smooth, circular. Angles separated from the centre by two blank lines or bands; the first situated considerably nearer the centre than the apex; the second just beneath the angle itself, there being only a single row of puncta between them. Distance between the angles about '0030". The species to which this diatom is most nearly allied is *T. cellulosum*, ('Trans. Mic. Soc.,' vol. I, N. S. Plate iv, fig. 14.) At the same time the differences are so marked that it is quite unnecessary to point them out.

Triceratium pallidum, n. sp., Grev.—Small; valve with straight sides, subacute angles, 4—6 short vein-like lines given off from the margin, and the whole area filled with scattered puncta, larger in the centre, extremely minute towards the margin and in the angles. (Fig. 7.)

Hab. Barbadoes deposit, Cambridge estate.

I am not acquainted with any species to which the present one bears any affinity unless it be *T. areolatum*, which it somewhat resembles in outline and in the sharp vein-like marginal lines. In other respects the structure is totally dissimilar. The distance between the angles is '0030".

Triceratium definitum, n. sp., Grev.—Small; valve with the sides straight in the middle, the angles broadly ovate, with transverse lines of separation, which convert the interior into a nearly equal hexagon; pseudo-nodules large; surface filled with lines of minute radiating puncta, the margin with a row of larger puncta. (Fig. 8.)

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

This species approaches *T. insigne*, but differs in various essential particulars. That somewhat variable diatom, of which I have examined a considerable series, has the sides

invariably and decidedly concave. In the present species they are (apart from the trifling curve of the angle) perfectly straight. Then, I have never seen *T. insigne* with anything more than a row of puncta, cutting off the angles; whereas in *T. definitum*, an actual line is quite conspicuous. It may also be remarked that the angles are not rounded (to the extent of the segment of a circle) as *T. insigne*, but are rather ovate in outline. The distance between the angles is $\cdot 0028''$, and the marginal puncta 8 in $\cdot 001''$.

Triceratium unguiculatum, n. sp., Grev.—Large; valve with 4 angles, very concave sides, and rather large hexagonal cellules; angles somewhat obtuse, furnished with a minute claw-like process. (Fig. 9.)

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

Of this, one of the most distinct and constant species in the whole genus, I have examined a number of specimens. The hexagonal cellules (6 in $\cdot 001''$) are uniform in size, and form a delicate reticulation. The most remarkable feature, however, in the valve is the slender claw-like process which seems to occupy the place of pseudo-nodule, and to arise from a small callous base just within the angles. Distance between the angles $\cdot 0040''$.

Triceratium plumosum, n. sp., Grev.—Large; valve with nearly straight sides and broadly rounded angles; structure composed of a central large umbilicus, from which radiate plumose lines of hexagonal cellules; pseudo-nodules absent. (Fig. 4.)

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

An exceedingly beautiful species, and as distinct as the preceding. The radiating lines of cellules are very narrow as they originate from the umbilicus, and gradually increase in size until they are about 7 in $\cdot 001''$. As they proceed they keep giving off new lines to fill up the space, and near the margin the cellules again diminish in size, especially within the angles. Diameter between the angles $\cdot 0060''$.

ENTOGONIA.

Entogonia reticulata, n. sp., Grev.—Valve with nearly straight sides and obtuse angles with extremely prominent pseudo-nodules; compartments of the border minutely but distinctly reticulato-cellulate; central triangle with fine radiating costæ. (Fig. 5.)

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

The only species with which the present diatom can be compared is *E. amabilis* ('Mic. Journ.,' vol. III, N. S., Pl. X, fig. 21); but the structure of the border in the latter is very different, being composed of distant transverse rows of minute, distinct, and somewhat remote pore-like cellules. In the species under consideration, on the contrary, it is a uniform and continuous network of hexagonal cellules. In both, the pseudo-nodules are unusually developed, especially in *E. reticulata*, where they are so long as to make the valve, when seen obliquely, look like a low three-legged footstool. As in the other species of this genus, the costæ of the border are extremely variable in number. I have seen as many as nine on one side, without reckoning the short ones connected with the angles. The distance between the angles is about $\cdot 0035''$.
