

AFRICA

33

NOTES on DIATOMACEÆ found near GAMBIA, O. By Professor
HAMILTON L. SMITH, of Kenyon College, Gambia, O.

(Communicated by E. G. Lobb, Esq. Read Nov. 15, 1859.)

THE few slides sent herewith may be acceptable to the Society as representatives of aquatic genera and species common in the interior of the United States. The slides are numbered at the right-hand top; they are mostly balsam mounted, a few are mounted dry, and a few in distilled water.

1. *Meridion circulare*.—Exceedingly abundant, and always found attached to the same conferva; it has occurred also with very long stipes, say three or four times the length of frustule. Generally, quick-running streams. (doubtful species)

2. *Gomphonema anomalum*, n. sp.—This Gomp., to which I have attached the provisional name "anomalum," was found conjugating, single frustules producing single sporangia, contrary to the hitherto observed Gomphonema. The specimen was prepared by burning on the glass cover. It is same as No. 32.

3. *Gomphonema ovatum*, n. sp.—Found conjugating (same as No. 16), prepared by burning on the cover; double sp. I have given to this the provisional name "ovatum."

4. *Stauroneis*.—Supposed to be sporangia of *Phæocentera*; may be new, however, it is much coarser, and varies somewhat in outline.

5. *Surirella*, &c.

6. *Diatoma tenue*.—Prepared by burning.

7. *Cocconema cymbiforme*.—Found conjugating. (See after No. 40.)

8. *Gomphonema dichotomum*, &c.

9. *Gomphonema sarcophagus*? Greg.

10. *Eumotia*, &c.

11. *Collotonema vulgare*.—This is the diatom most abundant here, and is found in almost every stream. Striæ about 77 in '001"; prepared by burning. It sometimes forms thick skins of several layers, and when placed in quiet water throws out little tufts or "papillæ" towards the light, almost colourless except at their summit, which becomes almost black by the aggregated diatoms; these papillæ are from $\frac{1}{8}$ to $\frac{1}{3}$ in. in length. No. 22 is the same in fluid, showing the curious encysting which sometimes occurs. This encysting is quite common among the diatoms, but has no relation to conjugation, as supposed by Smith, in S. B. D. (remarks on *S. radians*). No. 21, *S. capitata*, will be found to contain

→ = *Frustulia vulgaris* (Thwaites) de Toni.

① Species undetermined (note)

bundles of once encysted masses, still adherent after boiling in acid. The phenomena attending this encysting I hope to present to the Society at some future period, and its significance.

12. *Cocconeis*, &c.

13. *Fragillaria capucina*.—Contains small distorted *Synedra*, and new *Pinnularia*; also *Gomphonema*, No. 2, and sp. frustules.

14. "Near centre run," five miles from Gambia.

15. *Synedra vitrea*, Kütz.?

16. *Gomphonema*.—Same as No. 3.

17. *Himantidium*, &c.

18. *Meridion circulare*.

19. *Pinnularia—nova?*—Resembles *Gibba* and *divergens*.

20. *Meridion constrictum*.—Found stipitate.

21. *Synedra captata*, &c.

22. *Collotonema vulgare*.—Encysted.

23. *Collotonema minutum*.—Fluid.

23* " " " " Dry.

This remarkable object is found in great abundance in an iron spring, forming thick skins; when fresh there is no difficulty in tracing tubular structure. The dry specimen, prepared by burning, will task the resolving powers of best objectives. I have been unable to "raise a ripple" on it; it is on sufficiently thin glass to use $\frac{1}{16}$ th; burnt on the cover itself. Have found it conjugating.

24. *Stauroneis acuta*, &c.

25. *Gomphonema olivaceum*.

26. *Nitzschia linearis*.

27. *Orthosira ovichalcea*.—Formed, not only with walls, like *Melosira varians*, but with internal cells, as mentioned by Smith, S. B. D., in connexion with *Mendior*. This formation of internal cells, which may be observed in No. 30, and which occurs in *Fragillaria capucina*, is undoubtedly interpreted right by Mr. Ralfs, 'Microscopical Journal,' vol. vi, p. 14.

28. *Mansfield*.—Contains *P. obturatum* of Sull.

29. *Gomphonema*, n. sp.—Found conjugating; it resembles No. 2, but is smaller, and has double sporangia; the specimen was prepared by burning, and a little circle scratched on the cover will point out conjugating specimens. I have named it provisionally "paradoxum."

30. *Meridion constrictum*.—Developed into a straight filament. Notice the nodules alternate at top and bottom.

31. *Meridion constrictum*.—Prepared by burning.

32. *Gomphonema*.—Same as No. 2.

33. *Meridion constrictum*.—Distorted.

34. *Epithem*

35. *Coccone*

36. *Cymbe*

37. "

38. *Fragilla*

39. "

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40. *Hyalodi*

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34. *Epithemia*, &c.
 35. *Cocconema cistula*, &c.
 36. *Cymbella Helvetica*, &c.
 37. " *maculata*.
 38. *Fragillaria constricta*.—Prepared by burning.
 39. " " " Balsam; on boiling in acid the filament is destroyed; truly fragile.
 40. *Hyalodiscus californicus*.—Simply enclosed as good test for one-fifth, and to fill box.

NOTE TO No. 7.

Within the small circle scratched on the cover will be found a very large and pretty Collotonema, as yet rare here, though abundant in gatherings made near Montreal, U. C., by my friend Dr. Wormley. I have found it in the tubes, and call it *C. Sullivantia*, in compliment to N. Sullivant, Esq., of Columbus, O. I regret that the limited time I have had to prepare these notes makes them so brief, but hope ere long to communicate more fully. I have little doubt that I have completely traced the passage from the sporangial frustule to the parent, thus completing the broken chain. Within the large sp. frustule, which lies apparently dead for awhile, like a resting spore, there forms a perfect individual, subsequently free by opening of the sp. shell; and in the three cases in which I have traced it, viz., *Coc. lanceolatum*, *Gomph. acuminatum*, and *Navicula cuspidata*, there was produced but a single frustule, just half size, from each sporangium. I am still investigating this point.

I forgot to say a beautiful *Amphiprora*, much larger and finer marked than the *A. paludosa* of Smith, occurs sparingly. I hope to send specimens soon. I think it is *A. ornata* of Bail.

— Frustule + homoboids var. *viridula*
 (Bréb) Cleve