West, William

On some freshwater algae from the West Indies.
On some Freshwater Algae from the West Indies. By Wm. West, F.L.S. assisted by C. S. West. (Read lst Feb. 1894)

Plates XIII. -XVI.: Through the kindness of Mr. George Murray, of the British Museum, I have been enabled to examine some Freshwater Algae which were collected by Mr. W. R. Elliott on the islands of Dominica and St. Vincent from the former in November and December 1892, and from the latter in May of the same year. The material was preserved in weak spirit, and has proved to be very interesting. The algae were in numbered bottles; these numbers are used throughout the paper, as both material and slides, with corresponding numbers, can be consulted in the Museum.

The strictly aquatic species were mostly from warm or hot streams. Three of the gatherings were from mossy trees; these latter must have been very moist, as several species of Desmidiaceae occurred amongst the various Cyanophyceae which formed the greater part of this material. Some of the species were very abundant, e. g. Symploca cuspidata, n. sp.; there were others intermingled with these, either in small patches or solitary, and very sparingly.


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Of the above, 11 species and 4 varieties are new
"Crass. fil." (as used in this paper) = the diameter of the sheath containing the trichomes.
"Crass. trich." = the diameter of the cells without the sheath.

Class Confervoidae Isogame.

Ord. Confervaceae.

1. Conferva bombycina, Ag., forma minor, Wille. (Om Hvileceller hos Conferva, p. 21, t. 1. figs. 36-40, t. 2. figs. 55, 56.)
Crass. fil. 6·5-7·5 μ.

*Hab.* In cold, warm, and hot streams, crater of Grande Soufrière, Dominica. Nos. 880, 883, 884, and 908.

Var. filamentis dense intricatis, tenuior, articulis diametro 2-3plo longioribus; membrana cellularum 1 μ crassitudine.

Crass. cell. veget. 9-10 μ.

*Hab.* In hot stream in crater of Grande Soufrière, Dominica. No. 880.

In the more densely intricate portions almost every cell emitted a short lateral branch, usually consisting of one cell.

Ord. Chroolepideae.

Crass. cell. veget. 12-20 μ; crass. zoogonidang. 33-37·5 μ.

*T. zoogonidangiis* lateralibus, interdum terminalibus, subglobosis, sessilibus (hinc inde pedicellatis).

*Hab.* On bark, Bow-wood Hills (1580 ft.), St. Vincent. (8-12-91.) No. 23.—On trees, Government House, St. Vincent, 900 ft. (10-12-91.) No. 27.

Crass. cell. veget. 18-23 μ.

*Hab.* On rocks, Soufrière, Dominica. (2-7-92.) No. 20.

LINN. JOURN.—BOTANY, VOL. XXX.
Class Conjugatae.
Ord. Zyg nemaceae.

5. Zyg nem a (Zyg gon i um) pachyder mum, nov. sp. (Pl. XIII. figs. 1-16.)

Z. cas pitibus intricatis; filis flexuosis (et interdum genu- flexuosis) dense intricatis, hinc inde ramulis brevibus irregu laribusque cellularum 2-6; cellulis vegetativis diametro 2-2½ plo (saepe 3 plo) longioribus (rarius aequalibus); membrana cellularum crassa vel crassissima; zygosporis in tubo conjugationis brevi inter cellulas sitis, subglobosis, subellipsoideis, plerumque irregularibus (saepe constrictis); membrana zyg sporarum crassissima, irregulariter lamellosa; azygosporis globosis subglobosisque, zygosporis similibus sed membrana tenuiore.

Crass. cell. veget. 16-23 μ (usque ad 26 μ et plerumque 20 μ); crass. membr. cellularum 1-5-5-5 μ; long. zygosp. 25'-5-33 μ (usque ad 40 μ); lat. zygosp. 19-26 μ (usque ad 30 μ); crass. membr. zygosp. 2-5-6-5 μ; diam. azygosp. 23-26 μ; crass. membr. azygosp. 1-9-3-8 μ.

Hab. In mud, warm stream, crater of Grande Soufrière, Dominica. No. 883; also in no. 908, and sparingly from no. 883. This also occurred, without zygospores, on old wall, Roseau, Dominica. (1-8-92.) No. 473.

This species has a thick membrane which at first sight reminds one of a Rhizocolonium or a large species of Conferva, the somewhat irregular filaments with short branches resembling the former especially. The many examples of conjugation examined were all scalariform, the zygospores completely filling the short conjugating-tube, their variability being remarkable. Spores were seen (figs. 9-10) which were undoubtedly azygosporae, and these were regular in shape. One example was noticed where the zygospore was double. The material was preserved in weak spirit; but the two chromatophores were in most examples distinct and in their normal position.

Var. confervoides, nov. var. (Pl. XIV. figs. 1-6.)

Var. cellulis tenuior, diametro plerumque 1-1½ plo (rarius 2½ plo) longioribus.

Crass. cell. veget. 10-13 μ.

Hab. In mud, warm stream, crater of Grande Soufrière, Dominica. No. 883. Intermingled with the typical form, but not so abundant.
This variety has the cells of the filaments often somewhat doliform, and closely resembles a Conferva; it does not, however, break up in the peculiar manner of any species of Conferva (vide fig. 6). The binate chromatophores also put it out of this genus. Fig. 4 probably represents an attempt at conjugation.

Two cells are figured (fig. 5) which show an attempt at longitudinal division.

**Ord. Desmidiaceæ.**


*Hab.* On trees among mosses, summit of Trois Pitons (4500 ft.), Dominica. Nos. 903 and 904.

8. Tetmemorus levis, Ralfs. (Brit. Desm. p. 147, t. 24. f. 2.)

*Hab.* In mud, warm stream, crater of Grande Soufrière, Dominica. No. 883.

9. Cosmarium pseudopyramidatum, Lund. (Desm. Succ. p. 41, t. 2. f. 18.)

*Hab.* On damp wall of dam, Sharp's River, St. Vincent. No. 477.

*Stenonotum, Nordst. in Wittr. et Nordst. Desm. et Cédog. in Ital. et Tyrol, p. 32, t. xii. f. 8. Forma minor, Racib. (Desmidya w podróży na oklo ziemi, p. 4, t. i. f. 32). (Pl. XIV. fig. 25.)

*Hab.* With the typical form, but much more abundant.

10. C. obliquum, Nordst. (Bidrag till känded. om Sydligare
Norges Desm. p. 23, t. 1. f. 8). Forma minor, Nordst. (l. c.).
(Pl. XIII. fig. 17.)
Long. 14·5 μ; lat. 11·5 μ; lat. isthm. 6·5 μ; crass. 9·5 μ.
Hab. Amongst Symploca cuspidata, n. sp., on trees, summit of
Trois Pitons (4500 ft.), Dominica. No. 904.
This interesting species seems to have a varied kind of habitat,
occurring in small upland tarns and pools, on dripping subalpine
rocks, and in the present instance on damp mossy trees.

t. 17. f. 7.)
Long. 40 μ; lat. 21 μ; lat. isthm. 19 μ.
Hab. On trees among mosses, summit of Trois Pitons (1500 ft.),
Dominica. No. 903.

Class Coenobieæ.

Ord. Volvocineæ.

12. Eudorina stagnale, Wolle. (Freshw. Alg. of U. S. p. 160,
pl. clii. figs. 11–21.)
Var. cellulis parvis et distantibus. (Pl. XVI. fig. 10.)
Diam. cell. 4·8–5·6 μ; diam. coenob. 63 μ.
Hab. Amongst mosses on trees, with Hapalosiphon intricatus,
n. sp., and Symploca cuspidata, n. sp., summit of Trois Pitons
(1500 ft.), Dominica. No. 903.

Class Protococcideæ.

Ord. Protococcaeæ (incl. Palmellaceæ).

13. Urococcus insignis, Kuetz. [Chlorococcus macrococcus,
Diam. cell. 23–31 μ; c. teg. 42 μ.
Hab. On mossy trees, summit of Trois Pitons (4500 ft.),
Dominica. Nos. 903 and 904.

14. Cerasterias staurastroides, nov. sp. (Pl. XIV. fig. 16.)
C. quadriradiata e corpore distincto, radiis elongatis sensim
attenuatis et minute granulatis, apice obtusis.
Diam. c. proc. 30–35 μ; diam. corpor. circ. 9–9·5 μ.
Hab. With Seytonema javanicum, Bornet, amongst mosses,
on lime-trees, Shantford Estate, Dominica. No. 901.
The rough arms of this species remind one very forcibly of a
small Staurastrum, and sufficiently characterize it.
Class Phycocromaceæ.

Subclass Nostochineæ.

Ord. Nostocaceæ.


Diam. cell. 2-3 μ; diam. heterocyst. 3-5 μ.


Diam. cell. 3-8 μ; diam. heterocyst. 5-5'7 μ; diam. thall. usque ad 10 mm.


Ord. Scytoneaceæ.

17. Microchete tenuissima, nov. sp. (Pl. XIV. figs. 7-11.)

M. inter alge varias alias reperta; filis tenuissimis, sub-intricatis, contortis; vaginis hyalinis, achoris, amplis; articulis elongatis, diametro 5-9plo longioribus, articulis junioribus bre-vioribus (circiter diametro duplo longioribus) et crassioribus; heterocystis intercalaribus, subquadratis vel oblongis.

Crass. fil. 4'4-5'1 μ; crass. trich. 1-1'8 μ; crass. heterocyst. 2-2'4 μ; long. heterocyst. 3'5-6'5 μ.

Hab. Amongst Symphoea cuspidata, n. sp., on trees, summit of Trois Pitons (4500 ft.), Dominica. No. 904.


Crass. fil. 13-16 μ; crass. trich. 8'5-11 μ.

Hab. On lime-trees, Shanford Estate, Dominica. No. 901.—Anguilla, W. Indies. (23-3-92.) No. 70.—On the walls, Roseau, Dominica. (9-7-92.) No. 236.

The above agrees well with this species, the most notable dif-
ference being in the branches not being aggregate. The hetero-
cysts vary from subquadrate to subrotund, and are rather
numerous.

19. SCYTONEMA AMPLUM, nov. sp. (Pl. XVI. figs. 14–16.)
S. strato parvo, pannoso, 3–5 mm. lato, fusco; filis dense in-
tricatis; pseudoramsis sparsis plerumque geminatis sed interdum
singulis, filo primario tenuioribus; vaguis amplissimis stratis
paralleligis formatis, in parte exteriori gelatinoso-achrois vel sub-
luteolis, in parte interiori abrupte luteo-fuscis; trichomatibus
angustis, luteo-viridibus, ad apicem pseudo-ramulorum crassior-
ibus et articulis brevioribus; articulis diametro 3½–6plo (ple-
rumque 4plo) longioribus; heterocystis oblongis, diametro 3–3½plo
(rarius 2plo) longioribus.

Crass. fil. prim. 19–24 µ; crass. ramul. 13·5–16 µ; crass. trich.
3·5–4 µ.

Hab. On trees, summit of Trois Pitons (4500 ft.), Dominica.
Nos. 903 and 901.—Growing about and upon the surface of
Symploca cuspidata, n. sp.

The nearest species to this with regard to the comparative
length and breadth of the cells is S. ambiguum, Kuetz., from
which it differs in its much larger size, stouter habit, compa-
ratively broader sheath, and in the more unfrequent branches.
The branches are usually geminate though not unfrequently
single, and they are always thinner than the primary filament.
The trichomes at the apices of the branches become almost
twice as thick, the cells becoming very much shorter. S. myo-
chrous, Ag., is somewhat similar though larger, and has not
such a comparatively broad sheath, and the latter is ocreate.

20. S. AMBIGUUM, Kuetz. (Species Algarum, p. 894; Tabulae
Crass. fil. 9·5–11·5 µ; crass. trich. 2–2·5 µ.

Hab. On trees, summit of Trois Pitons (4500 ft.), Dominica.
No. 903.—On the ground, mostly in old Diablotia holes, Morne

The figure given by Kuetzing (l. c.) is very indistinct; but the
specimens agreed well with the description given by Bornet and
Flahault (Révis. des Nostoc. Hétérocyst. p. 100), excepting that
the filaments were a little thicker (9·5–11·5 µ against 6–9 µ).
The trichomes were, however, the same. One of its chief
characters is its long and narrow cells, which get shorter
and thicker (up to 3·8 µ) towards the apices of the young
branches; the sheath also becomes hyaline. The cells often appeared like the section of a biconcave lens, owing to the contraction produced by the dilute spirit in which the material was preserved.


Crass. fil. 15-5-23 μ; crass. trich. 18-13-5 μ.

*Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.—On trees, summit of Trois Pitons (4500 feet), Dominica. Nos. 903 and 904.

22. *Scytonema*, sp.

Crass. fil. 28-36 μ; crass. trich. 5-5-5 μ.

*Hab.* Amongst *S. javanicum*, Bornet, on lime-trees, Shanford Estate, Dominica. No. 901.

Only a small quantity of this was seen, which was insufficient for accurate determination. The characters were those of *S. densum*, Bornet, and it probably is a small variety of this species.


Crass. fil. 7-7-7 μ; crass. trich. 5-7 μ; heterocyst. 7-7 × 5-7 μ.

*Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.

Ord. *Sirosiphoniaceae*.

24. *Hapalosiphon intricatus*, nov. sp. ([Pl. XV. figs. 16-23.])

*H. caespitibus parvis, aëriginosus*; filis densissimae intricatis et variabilibus, adultis vaginis arctis distinctis (interdum paullo indistinctis) e cellulis singulis formatis, sparsim ramosis; ramus singulis unilateralis flexuosis, filo primario subsimilibus, vaginis vel evaginatis; cellulis variabilibus, diametro 1-3 plo longioribus, sæpe æqualibus et subrotundis, interdum elongatis; heterocystis intercalaribus, subquadratis vel oblongis (diametro 1-3 plo longioribus).

Crass. fil. 4-7 μ; crass. heterocyst. 3-8-5-5 μ.

*Hab.* In little intricate tufts among the leaves of *Leucobryum*, on trees, summit of Trois Pitons (4500 ft.), Dominica. No. 903.
The nearest species to this hitherto described is *H. laminosus*, Hansg. ["Ueber den Polymorph. der Alg.," Botan. Centralb. 1885, p. 48 (cfr. Bornet et Flah. Révis. des Nostoc. Hétérocyst. p. 55)], from which it differs, however, in not being calcified in any way, in being a little larger, in having its single and unfrequent branches of a similar thickness to the primary filaments without any attenuation, and in its peculiar habitat. The heterocysts are of the same breadth as that of the cells (or narrower), whilst those of *H. laminosus* are often broader. Like the latter, the threads are very variable, being sometimes similar to an *Anabaena*, sometimes like a *Lynghya*, while at other times the cells are quite irregular and somewhat inflated. Some examples showed the rounded granulose bodies noted by Hansgirg in *H. laminosus* (Bemerkungen zur Systematik einiger Süßwasseralgien, p. 18). These bodies when fully formed appear to be thick-walled (figs. 23–28) and have a diameter of 6–13 \( \mu \).

The cell of the primary filament immediately under a branch always projects more or less into the sheath of the branch.


Crass. fil. 7–5–8.5 \( \mu \); crass. cell. 5.5–6 \( \mu \); long. cell. 4–4.5 \( \mu \).

*Hab.* In stream, Grande Soufrière, Dominica.  No. 884.

26. *H. arboresus*, nov. sp.  (Pl. XV. figs. 1–3.)

*H.* inter alias algas repertus; filis primariis flexuosis, passim ramosis uno latere ecellulis singulis formatis, cellulis diametro 1–1.5 \( \mu \) (rarius 2 \( \mu \)) longioribus, vagina arcta, tenui, et achroa; filis secundariis brevibus, crassitudine filis primariis similibus sed subtenuioribus, cellulis diametro subaequalibus; heterocystis quadrato-oblongis, intercalaribus.

Crass. fil. 7–10 \( \mu \); crass. cell. 7–9.5 \( \mu \); heterocyst. 6–9 \( \mu \) \( \times 9–11 \mu \).

*Hab.* On trees, summit of Trois Pitons (4500 ft.), Dominica. No. 903.

The nearest species to this is *H. flexuosus*, Borzi (*l. c.*), from which it differs in not possessing flexuose intricate branches on every side; it is also a rather larger species, with cells often a little longer than broad and never depressed.


Crass. fil. 9–13 μ.


Var. tenue, nov. var. (Pl. XV. figs. 4–8.) Var. minor, filis tenuioribus, 5·5–7 μ crassis.

*Hab.* With the typical form, but much more abundant. It was intermixed with *Symploca cuspidata,* n. sp., *Stigonema minuta,* Hass., *Scytonema ambiguia,* Kuetz., &c.


Crass. fil. 23–26 μ.

*Hab.* With the preceding. Another gathering from the same locality had abundant hyphae (an incipient lichen). No. 779. Crass. fil. 15–25 μ.


Crass. fil. 19–25 μ.

*Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.—On trees, summit of Trois Pitons (4500 ft.), Dominica, no. 903 ; and on lime-trees, Shanford Estate, Dominica, no. 901.

30. *S. informe,* Kuetz. (*Species Algar.* p. 319; *Tabulae phycolog.* ii. p. 11, t. 38. f. iii.)

Crass. fil. 44–52 μ.

*Hab.* On trees, summit of Trois Pitons (4500 ft.), Dominica. Nos. 903 and 904.

**Ord. Oscillariaceae.**

31. *Symploca cuspidata,* nov. sp. (Pl. XVI. figs. 1–7.)

*S. bryophila,* late expansa, griseo-lutea; fasciculis erectis, angustis subulatis, aggregatis (passim densis), 8–15 mm. altis, æruginescentibus; trichomatibus ærugineis, flexuoso-intricatis, in strato strictioribus, apicibus versus fascioulorum, 1–3 in lata vagina inclusis, sæpe interruptis, distincte articulatis; articulis diametro 2–4plo longioribus; vaginis amplis, achrois, pellucidis
vel interdum stratis parallelis formatis, in ambitu sēpe sub-
rugosis, apice angustioribus et sēpe ramosis.

Diam. trich. (s. vag.) 1·9–2·3 μ; crass. trich. c. vag. 13·5–25 μ.

Hab. On trees, summit of Trois Pitons (4500 ft.), Dominica. Nos. 903 and 904.

Var. luteofusca, nov. var.

Var. ferruginea, strato denso, 1–2 mm. alto, fasciculis brevi-
rioribus, 4–6 mm. (interdum 10 mm.) altis, articulis crassioribus.

Crass. trich. 2·5–3·5 μ; crass. vag. 15–40 μ.

This variety also often has two, three, or more threads in one
sheath.


The specimens preserved in liquid strongly reminded one
of Sphagnum cuspidatum; they occurred amongst mosses in
penicillate tufts which were subæruginoso towards the apices,
the sheaths, but not the trichomes, here becoming narrower.
Many of the sheaths in the stratum were without trichomes;
and in consequence of this, and the broader sheaths at the base,
the stratum was paler than the erect fasciculi.

32. Lyngbya penicillata, Kuetz. (Botan. Zeit. 1847, p. 194.)
[Leibleinia penicillata, Kuetz. Species Algar.; Tabulæ phycolog. i.
p. 46, t. 81. f. ii.]
Crass. fil. 3–3·5 μ.

Hab. On bed of stream in crater of Grande Soufrière, Dominica.
No. 881.

Crass. fil. 1·4 μ.

Hab. With the preceding.

34. Phormidium Lyngbyaceum, Kuetz. (Phycol. gener.
p. 194; Tabulæ phycolog. p. 33, t. 46. f. iii.; Rabh. Fl. Europ.
Alg. ii. p. 124.)
Crass. fil. 3·5–4 μ.

Hab. On damp wall of dam, Sharp's River, St. Vincent.
No. 477.—On old wall, Dominica. (1–8–92.) No. 473.

The cells were about as long as broad (sometimes a little longer).
35. Phormidium, sp.
Crass. fil. 1·2–1·5 μ.
Stratum dense, thin, and dark aëuginous.


Ord. Chroococcaceae.


Diam. cell. 2·8–4 μ; diam. fam. 11·5–30 μ.


Forma minima. (Pl. XVI. fig. 18.)

- Forma cellulis familisique minoribus quam forma typica.

Diam. cell. s. teg. 1–1·9 μ; diam. fam. 10–23 μ.

Hab. Along with the type from the above-named localities, and also on lime-trees, Shanford Estate, Dominica. No. 901.


Diam. cell. 3·8–6·5 μ (usque ad 7·5 μ); diam. fam. 30–173 μ.

Hab. Amongst other algae on trees, summit of Trois Pitons (1500 ft.), Dominica. No. 903.

This usually occurred in small families, but occasionally in very large ones, and now and then in solitary examples.


Diam. cell. s. teg. 7·5–10·5 μ, c. teg. 21–23 μ.


A rather small form.


Diam. cell. s. teg. 11·5–13 μ; diam. c. teg. 23–28 μ.

Hab. With the preceding species, but much more abundant.

Long. cell. s. teg. 5'5-7'5 μ; lat. cell. s. teg. 2'5-3 μ; diam. fam. 19-25 μ.


The cells were longer in relation to their breadth than those figured by Kuetzing (l. c.).

41. G. gigas, nov. sp. (Pl. XVI. figs. 11-13.)

G. familiis solitariis vel subaggregatis; cellulis magnis, subglobosis vel oblongis, 4-36 in familiis subglobosis consociatis, membrana cellularum læva vel subtiliter granulata (vide fig. 11), cytioplasmate æruginoso et granuloso; tegumentis subglobosis, ad exteriorem duris sæpe subrugosis, luteo-fuscescentis, lamellis extra cellulas indistinctis, paucis et pallide luteolis.

Diam. cell. s. teg. 9-15 μ (plerumque 11 μ); diam. fam. 44-115 μ.


This occurred amongst Nostoc sphaericum, Vauch., in no definite stratum; and it is sufficiently distinguished by its large cells and other characters.

42. Gléocapsa, sp.

Crass. cell. s. teg. 2-3 μ. Nos. 23 and 24.

43. Gléocapsa, sp.

Crass. cell. s. teg. 1'5 μ. No. 516.

44. Aphanocapsa elachista, nov. sp. (Pl. XV. figs. 9, 10.)

A. tegumento minutissimo, subgloboso, firmo, gelatinoso non lamelloso, aehroo; cellulis minutissimis, sphæricis, solitariis geminatisve, laxe dispositis; cytioplasmate homogeneo et æruginoso; tegumentis non aggregatis in thallo distincto.

Diam. cell. 1'5-1'8 μ (usque ad 2 μ); diam. teg. 26-38 μ.

Hab. On trees, summit of Trois Pitons (4500 ft.), Dominica. No. 903.—And in stream, Grande Soufrière, Dominica. No. 884.

This species seems characteristically distinct by reason of its minute cells in the very small globose colonies, which were scattered amongst other algæ.

Long. cell. sine teg. 5·5-6·5 μ, c. teg. 13·5 μ; lat. cell. sine teg. 1·8 μ, c. teg. 9·5-10·5 μ.

_Hab._ On damp wall of dam, Sharp's River, St. Vincent. No. 477.

Forma cellulis 5-6 plo longius quam latius. (Pl. XIV. fig. 26.)

Long. cell. s. teg. 11·5-13·5 μ, c. teg. 21 μ; lat. cell. s. teg. 2-2·3 μ, c. teg. 11·5-12·5 μ.

_Hab._ With the typical form.

46. _Gloeothece lunatum, nov. sp._ (Pl. XVI. fig. 9.)

(Pl. XV. fig. 26.)

G. cellulis 2-4 in familii consociatis, suberescensiformibus, 2 plo longius quam latius, apicibus acutis; tegumentis univalvis, ovalibus vel ellipticis; cytioplasmate aërugineo et homogeneo.

Lat. cell. 2·5-2·7 μ; apicibus cellularum 4·8-5·7 μ inter se distantibus; famil. 32·5 × 19 μ.

_Hab._ With _Gl. linearis_, Naeg., but very scarce.

47. _Aphanothece saxicola, Naeg._ (L. c. p. 59, t. 1 h. f. 2.)

Lat. cell. 1·4-1·8 μ.

_Hab._ In small masses of 70-120 μ in diameter, amongst mosses on trees, summit of Trois Pitons (4500 ft.), Dominica. Nos. 903 and 904. Rather scarce.

48. _A. microscopica, Naeg._ (L. c. t. 1 h. f. 1.)

Long. cell. 5·5-7·5 μ; lat. cell. 3·8-4·4 μ; diam. famil. 108-179 μ.

_Hab._ On damp wall of dam, Sharp's River, St. Vincent. No. 477.—Amongst _Symploca cuspidata_, n. sp., on trees, summit of Trois Pitons (4500 ft.), Dominica. No. 904.

49. _Tetrapedia trigona, nov. sp._ (Pl. XVI. fig. 8.)

T. cellule triangulares, lateribus concavis, angulis subrotundatis; a latere visæ ellipticæ; cytioplasmate pallide aërugineo et homogeneo.

Lat. cell. 7·2 μ; crass. 3·6 μ.

_Hab._ On damp wall of dam, Sharp's River, St. Vincent. No. 477.

Class _Diatomaceæ._

50. _Epithemia Westermannii, Kuetz._ (Pritch. Infus. ed. 1861, p. 760, t. 4, f. 2.)

_Hab._ In stream, crater of Grande Soufrière, Dominica. Nos. 881 and 908.
   
   *Hab.* In stream, crater of Grande Soufrière, Dominica. No. 908.

   
   *Hab.* Amongst mosses, on trees, summit of Trois Pitons (4500 ft.), Dominica. No. 903.

53. **Odontidium mutabile**, *W. Sm.* (*Brit. Diat.* ii. p. 17, t. 34. f. 290.)
   
   *Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.

54. **Desmogonium Rabenhorstianum**, Grun. (*Diat. ins. Banka*, p. 6, t. i. f. 1; *De Toni, Sylloge Algar.* vol. ii. p. 680.)
   
   *Hab.* Abundant in stream (hot and cold), crater of Grande Soufrière, Dominica. No. 908.

   
   *Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.

   
   Long. 33–44 μ; lat. 3°8–4°8 μ.
   
   *Hab.* In streams, Grande Soufrière, Dominica. Nos. 881 and 884.

   
   *Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.—And in streams, Grande Soufrière, Dominica. Nos. 881 and 908.

   
   *Hab.* In stream, Grande Soufrière, Dominica. No. 884.

59. **Navicula cryptocephala**, *Kuetz.* (*W. Sm. l. c.* p. 53, t. 17, f. 155.)
   
   *Hab.* On damp wall of dam, Sharp’s River, St. Vincent. No. 477.

_Hab._ With the preceding species.


_Hab._ On bed of stream in crater of Grande Soufrière, Dominica. No. 881.


_Hab._ In stream, crater of Grande Soufrière. No. 908.

_Var._ **saxonica, De Toni.** (L. e.) [Frustula saxonica, Rabh. Navicula crassinervia, Bréb. in *W. Sm. Brit. Diat._ i. p. 47, t. 31. f. 271.]

_Hab._ In streams (cold, warm, and hot), crater of Grande Soufrière, Dominica. Nos. 883 and 908.—Also amongst mosses on trees, summit of Trois Pitons (4500 ft.), Dominica. Nos. 903 and 904.

63. **Gomphonema tenellum, Kuettz.** (*W. Sm. Brit. Diat._ i. p. 80, t. 29. f. 243.)

_Hab._ On damp wall of dam, Sharp's River, St. Vincent. No. 477.

**EXPLANATION OF THE PLATES.**

**PLATE XIII.**

Figs. 1-4. **Zygnema** (§ *Zygoconomium*) _pachydermum_, n. sp. Conjugated specimens, 520/1.

5-8. Ditto. Four zygospores, 520/1.

9, 10. Ditto. Two specimens, with aszygospores, 520/1.

11-15. Ditto, sterile filaments; fig. 11, 520/1; figs. 12-15, filaments, showing short branches, 120/1.

Fig. 16. Ditto, showing conjugation between three filaments, 120/1.

Fig. 17. **Cosmarium obliquum**, Nordst., f. _minor_, Nordst., 520/1.

**PLATE XIV.**

Figs. 1-6. **Zygnema pachydermum**, n. sp., var. _confervoides_, n. var. Figs. 1 & 2, filaments without cell-contents; fig. 3, filament with contents delineated; fig. 4, attempt at conjugation?; fig. 5, cells showing longitudinal division. Figs. 1-5, 520/1; fig. 6, 830/1.

7-11. **Microchete tenuissima**, n. sp. 520/1.

12-15. **Scytonea javanicum**, Bornet. 520/1.
Plate XIV. (continued).

Fig. 16. *Cerasterias staurastroides*, n. sp. 520/1.


Fig. 25. *Cosmarium pseudopyramidatum*, Lund, *stenonotum*, Nordst., f. *minor*, Racib. 520/1.

Fig. 26. *Gloethece linearis*, Naeg., forma. 520/1.

Plate XV.

Figs. 1–3. *Hapalosiphon arboreus*, n. sp. 520/1.


9–10. *Aphanocapsa elachista*, n. sp. 520/1.


Plate XVI.

Figs. 1–7. *Symploca cuspidata*, n. sp. Fig. 1, natural size; fig. 2, a very small portion of one of the erect fasciculi, 120/1; fig. 3, a specimen showing three trichomes in one sheath, 120/1; figs. 4 & 5, examples with two trichomes in one sheath, 520/1; figs. 6 & 7, the apices of two filaments, showing in fig. 6 a broad sheath at the apex, and in fig. 7 a narrow one, 520/1.

Fig. 8. *Tetrapedia trigona*, n. sp. 830/1.

9. *Gloethece lunatum*, n. sp. 520/1.


Figs. 11–13. *Gloeocapsa gigas*, n. sp. 520/1. Fig. 11, an example having the cells with finely granulate walls; fig. 12, one where the lamellæ round the cells are not visible.


Fig. 17. *Chroococcus minor*, Naeg. 520/1.

18. " " " *f. minima*. 520/1.

FRESHWATER ALGAE OF WEST INDIES