Notes on Algæ from Lake Nyassa, E. Africa.

By GEORGE DICKIE, M.D., F.L.S.

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I AM indebted to Dr. Laws, of the Livingstonia Mission, Lake Nyassa, for the materials which yielded the organisms recorded here. Nearly all were attached to aquatic Phænogams; and a list of these may not be out of place, for which I owe to Professor Oliver assistance in naming them; most were imperfect, and therefore the genus only is stated in most cases. They are as follows:—*Vallisneria spiralis*, *Ceratophyllum* sp., *Potamogeton* sp., *Myriophyllum* sp., *Utricularia* sp., *Lagarosiphon muscoides*?, *Trapa bispinosa*?, and one of the Marsiliaceæ, viz. *Azolla pinnata*.

The list of Algæ is doubtless very meagre, with exception of the Diatoms; still, as the locality is of some interest, I have thought the species worthy of record in the meantime. I have to acknowledge assistance from the Rev. G. Davidson in compiling the list of Diatoms.

CONFERVA — ? A few fragments only; the joints six times longer than broad, the diameter = .001; colour pale green.

BULBOCHÆTE PARVULA, *Ktz.* There is no doubt about the genus; nearest to the species stated, if not identical.

SPIROGYRA PALLIDA, n. sp.? Pallide flavo-virescens, minus lubrica, articulis cylindricis, diametro (= .00125) 4plo longioribus, fructiferis?; fasciis spiralibus 3, angustis, nodulosis; zygo-sporis? Cytioderma cellulæ, utroque fine nec protensum nec replicatum.

From an island in Livingstonia Bay, Lake Nyassa.

COSMARIUM MARGARITIFERUM, *Turp.* The examples seemed quite identical with the European species.

OSCILLARIA — ? Trichomatibus strictis, distincte articulatis, articulis diametro (.00005) æqualibus; cytoplasmate pallide olivaceo.

LYNGBYA MARTENSIANA, *Menegh.*? The plant was attached to *Potamogeton*, and seems identical with, or nearly allied to, the species described by Meneghini, and found in thermal waters near Verona, also at Baden-Baden, and reported by Mertens as found at St. Helena.

CYLINDROSPERMUM NYASSÆ, n. sp. Trichomatibus rectis, in stratum cæruleum intricatis, articulis ellipticis, diametro (·00005) duplo longioribus; sporis?

It communicates to water a blue solution with dull-red fluorescence.

DIATOMACEÆ.

Cyclotella rotula, Ktz.
C. operculata, Ktz.
Epithemia ventricosa, Ktz.
E. zebra, Ehb.

Epithemia alpestris, Sm.
E. sorex, Ktz.
E. turgida, Ktz.

EPITHEMIA CLAVATA, n. sp. Medio-cris, plus minusve clavata, apicibus rotundato-obtusis, costis validis subparallelis, 15 in ·001; latere superiore (dorso) convexo, inferiore subrecto. Long. = ·001–·007 poll.

More or less plentiful on most of the Phænogams already noted, but especially so on the *Spirogyra*. The clavate form at once distinguishes it from any known species; at first sight it has a resemblance to *Suriella* (see woodcut). The striæ proper are not represented here; they are 30 in ·001.

Epithemia clavata: A. frontal, B. lateral view; C. small frustule in outline; all greatly magnified.

Eunotia tridentula, Ehrb.
Himantidium pectinale, Ktz.
Cocconema cymbiforme, Ehb.
C. cistula, Hemp.
Amphora ovalis, Ktz.
Encyonema prostratum, Berk.
Cocconeis placentula, Ehb.
Fragilaria undata, Sm.
Synedra ulna, Ehb.
S. acus, Ktz.
S. biceps, Ktz.
Navicula acrosphæria, Rabh.,
 var. *sandvicensis*, Schmidt.

Navicula gibberula, Sm.
N. gastrum, Ehb.
N. elliptica, Ktz.
N. rhomboides, Ehb.
N. gracillima, Pritch.
Stauroneis phœnicenteron, Ehb.
Diadesmis confervacea, Ktz.
Gomphonema dichotomum, Ktz.
G. intricatum, Ktz.
G. naviculoides, Sm.
G. turris, Ehb.

It will be observed that all the genera of Algæ enumerated here are well-known European &c. forms. Nearly all the species of Diatomaceæ are also very widely diffused elsewhere; the exceptions are few, *Diademsis* for instance, hitherto confined to the West Indies. The only peculiar form is the new *Epithemia*.

On the Symplocaceæ. By JOHN MIERS, F.R.S., F.L.S., &c.,
Dignit. et Commend. Ord. Imp. Bras.

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It is now 40 years ago, after a careful examination of the plants of the two families, that I became convinced that the groups of the *Styraceæ* and *Symplocaceæ* should be separated into two natural Orders; but it was not till 1851 that I gave publicity to this opinion¹, which I then supported under strong evidence. G. Don, it is true, first suggested this separation in 1837²; but the order which he then established consisted only of the genus *Symplocos*, which he divided into sections: (1) *Alstonia*, (2) *Lhodra*, (3) *Palura*—a very incomplete arrangement.

It is to Mr. Bentham that our best thanks are due for first elaborating the characters of true *Symplocos* in 1841³, a contribution rendered more valuable by an excellent analytical drawing. Besides this, he did much in that estimable memoir to explain the structures of *Alstonia*, *Hopea*, *Ciponima*, and *Lhodra*, thus laying the foundation of our real knowledge of the family. Following in the footsteps thus well marked out in this early stage of the inquiry, I have elaborated the present memoir under a long promise to that effect.

As a preliminary, it was necessary to adduce undeniable evidence in support of the *Symplocaceæ* as a natural order distinct from the *Styraceæ*. In addition to the facts already quoted from my contributions, I may refer to the summary offered in Lindley's 'Veget. Kingdom'⁴ and to another of my own showing⁵.

¹ Contrib. Bot. i. p. 22; Ann. Nat. Hist. 2nd ser. viii. p. 162 (Sept. 1851).

² Dict. iv. p. 1.

³ Linn. Trans. vol. xviii. p. 231, tab. 18.

⁴ Page 593 a (1853), with comparative analytical figures of the structures of *Symplocos* and *Strigilia*, adding the differential characters of the two groups.

⁵ Contrib. Bot. i. p. 159; Ann. Nat. Hist. 3rd ser. vol. iii. p. 129, Feb. 1859.