

## ART. XXXVII.—Notes on Fresh-water Algæ. By W. I. SPENCER, M.R.C.S.

[Read before the Hawke's Bay Philosophical Institute, 9th October, 1882.]

Plates XXVI. and XXVII.

IN continuation of the Catalogue of the Fresh-water Algæ occurring in the vicinity of Napier, which I laid before you last year,\* I beg this evening to call your attention to the following additions which have come to my notice since then.

*Draparnaldia* sp. ?. Fig 1.

Filament branched,  $\frac{1}{400}$ " in diameter, tapering towards apex, cells as long as, or twice as long as broad. Branchlets (ramuli) bipinnate  $\frac{1}{2268}$ " in diameter, cells slightly longer than broad, terminal ones pointed, tufted, near apex filament gives out a large number of elongated jointed processes, which are mostly simple, but sometimes branched. I am indebted for this plant to Mr. Hamilton, who discovered it in the Horokiwi stream. Possibly a variety of *D. glomerata*.

*Cladophora pacifica*, Kuch.

Montague (Voy. au Pôle Sud) mentions this as having been found in Lord Auckland's Group.

*Cladophora longiarticulata*, Kuch.

Found by Nordstedt in the Sandwich Islands.

*Staurocarpus*.*Spirogyra*, sp. n. Fig 2.

Cells square, very rarely twice or four times longer than broad, this probably only when on the point of dividing, ends slightly convex, never retracted. Endochrome arranged in three distinct straight bands at right-angles to wall of cell, and with no visible connection. Each band consisting of three or four minute round cellules, containing chlorophyll. Sporangium formed in parent cells, globular.

Cells.—Diameter,  $\frac{1}{700}$ "; length,  $\frac{1}{700}$ ", rarely  $\frac{1}{550}$ " or  $\frac{1}{75}$ ".

Zygospore  $\frac{1}{1400}$ " in diameter.

This little plant is easily recognized by the rigidity of the filament, the masonic regularity with which the cells are arranged—the convex ends of which just touch—and the singular arrangement of the endochrome.

Common.

*Zygnema*, sp. n. Fig. 3.

Ends of cells retracted. Contents consist of twin stellate masses of endochrome. Zygospore lodged in the filament, oval, filling but not bulging the cell. Spore bearing cell appears to be somewhat smaller than the others.

\* "Trans. N.Z. Inst.," vol. xiv., art. xliii.

Filament.—Diameter  $\frac{1}{500}$ ".

Length of cell.— $\frac{1}{350}$ " to  $\frac{1}{380}$ ".

Zygosporc.—Length,  $\frac{1}{412}$ "; breadth,  $\frac{1}{700}$ ".

Diameter of sporiferous cell,  $\frac{1}{700}$ ".

From Ruataniwha.

*Zygnema*, sp. n. Fig. 4.

Cells retracted at the ends. Eleven or twelve lines longer than broad. Zygosporc globular, lodged in the connecting tube, the length of which varies considerably.

Filament.—Diameter,  $\frac{1}{1400}$ ".

Cells.—Length,  $\frac{1}{107}$ " to  $\frac{1}{128}$ ".

Diameter of zygosporc,  $\frac{1}{1000}$ ".

Length of connecting tube from  $\frac{1}{350}$ " to  $\frac{1}{488}$ ".

Also from Ruataniwha—

*Bulbochæte setigera*.

*Edogonium princeps*.

*Vaucheria sessilis*.

*Rivularia iridis*.

*Oscillatoria* and *Vibrio*.

A series of the last-mentioned plants I found in samples of water from the hot springs at Taupo, growing in water the temperature of which varied from 105° F. to 136°. They all exhibited the motions peculiar to this class of Algæ.

Fig. 5. (a) *Oscillatoria* sp., contains a row of cells; diameter of filament,  $\frac{1}{5000}$ ". (b) *Vibrio*, alternate dark and light cells; diam.,  $\frac{1}{14000}$ "; temp., 105°. (c) *Oscillatoria*, diam.,  $\frac{1}{7000}$ "; temp., 116°. (d and e) probably the same although varying much in diameter, which is  $\frac{1}{2300}$ " and  $\frac{1}{3500}$ "; temp., 116° and 130°; (f) temp. 136°, diam.  $\frac{1}{14000}$ ". This plant is so unlike an *Oscillatorian* that had it not been for the movements, which consisted of both side-way motion and also progression and retrogression, I should not have recognized it. (g) *Oscillatoria*, diam.,  $\frac{1}{7000}$ "; striæ evident, close; temp., 136°.

I have found about 12 Desmids not hitherto discovered in this country, one of which is probably new. My time, however, has not permitted me to include them in these notes. Mr. Maskell, of Christchurch, has therefore undertaken their description, and they will be found in his paper.\*

*Fragillaria pectinalis*.

*Gomphonema acuminatum*.

*Gonium pectinale*.

\* Art. XXXI., supra.

## DESCRIPTION OF PLATES XXVI. AND XXVII.

Fig. 1. *Draparnaldia*.2. *Spirogyra*.

(a) filaments conjugating.

(b) zygospore.

(c) the same commencing to grow.

3. *Zygnema*.4. *Zygnema*.5. *Oscillatoria* from Taupo.ART. XXXVIII.—*A Description of four new Ferns from our New Zealand Forests.* By WILLIAM COLENZO, F.L.S.

[Read before the Hawke's Bay Philosophical Institute, 12th June, 1882.]

I. *Cyathea*, Smith.*Cyathea tricolor*, sp. nov.

*Plant*, arborescent; *trunk* stout, 5–12 feet high, bulky at base and at top, 1 foot diameter there, fibrous at base and for 2–3 feet up, thickly clothed with broken stipites at top; colour, light-brown.

*Fronde* numerous, 30–40, tri-pinnate, spreading, drooping, glabrous, shining, 7–8 feet long, 38–40 inches broad in widest part, oblong-lanceolate not acuminate, decreasing very gradually downwards, sub-membranaceous, dark-green above, white below.

*Stipes* very stout, 3–3½ inches girth at base, short, 3–4 inches long, obscurely triquetrous, flattish or a little rounded at top, and slightly channelled towards base, brittle, succulent, gummy, dark-olive green above, peculiar bluish-white below, prickly with small fine sharp black prickles, ½ inch long, recurved, scattered, in some places very closely set, 2 to a line, and sometimes running in irregular rows; *scales*, at base of stipes, very numerous, long, shining, dark-brown, 2 inches long, and 2 lines broad at base, flat, thin, very acuminate, finely striated longitudinally, margins entire, crumpled towards top, concave and transversely corrugated at base.

*Rhachis*, main and secondary, glabrous, bright golden-yellow above, finely and floccosely tomentose below with deciduous ferruginous tomentum, bluish-white underneath, subcylindrical not channelled below, (but channelled above in *dried* specimens), main rhachis (and stipe) marked longitudinally on both upper outer edges with a line of oblong-lanceolate brick-red scars, and having 2–3 of such red blotches at the base of each pinna, always nearer to the upper angle.

*Pinnæ*, distant (4–5 inches) on rhachis, alternate sometimes opposite, lowest two pairs opposite, the largest near the middle 18–19 inches long, 8–9 inches broad, drooping.