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**NOTES ON VICTORIAN HYDROIDA,  
With Descriptions of New Species.**

(WITH PLATES).

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The species referred to in this paper have been collected either in Port Phillip Bay, or at places along the coast between Queenscliff and Cape Otway. Most of the specimens have been collected by ourselves but a few have been given to us by other collectors to whom due credit is given. We have to thank Mr. W. M. Bale for his valuable assistance in the identification of species, especially during the earlier period of our study of these very interesting forms. In describing new species we proceed with a certain amount of diffidence on account of our inability to obtain some of the literature.

**FAM. PLUMULARIIDÆ.**

**SUB-FAM. ELEUTHEROPLEA.**

**PLUMULARIA BALEI**, Bartlett. Plate I., figs 1—3.

Geelong Naturalist (2nd. series) Vol. III. (fig.)

Hydrocaulus monosiphonic, unbranched, about one-third of an inch in height, bearing hydrothecæ as well as pinnæ; pinnæ alternate each borne towards the upper part of an internode, and springing from one side or the other of each stem-hydrotheca in the place of the peduncle; internodes of the pinnæ alternately long and short, only the former bearing hydrothecæ; hydrothecæ almost parallel with the pinnæ in their proximal portion, distal part curved outwards, front wall deeply inflected at about the middle, the inflection forming an intrathecal ridge extending a little more than half way across the cavity of the cell, margin undulated, peaked at back and front; sarcothecæ bithalamic, canaliculate; one below each hydrotheca, ~~short~~ at base, with aperture turned upwards towards base of cell; one, slightly smaller, fixed, on each short internode; one borne on

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a long slender peduncle on each side above hydrothecæ; and one, fixed, in the sinus behind the back of each hydrotheca. Gonothecæ—male, ovate slightly longer than hydrothecæ, bearing one sarcotheca near base; female, about twice as long as hydrothecæ and almost as broad as long, ovate, truncate, bearing four sarcothecæ near base, margin thickened, operculate.

This beautiful species was first described by Mr. G. C. Bartlett in G. Nat. (2nd ser.) vol. III, p. 65. Mr. Bartlett's description would place the species in the genus Halopteris, Allman. A careful examination, however, shows, that the supracalycine sarcothecæ are not adnate to the hydrothecæ, but each springs from a long tubular peduncle which is adnate and reaches almost to the margin of the hydrothecæ, the margin of the cell being raised into a tooth-like projection beyond the termination of the peduncle. The supracalycine sarcothecæ have the whole of one side open.

PLUMULARIA MICROSCOPICA, N. Sp., Plate I., fig 4.

Hydrocaulus a mass of matted tubes; shoot monosiphonic, erect, simple, slender, divided by non-oblique joints into internodes; internodes (with the exception of the lowest, which is short) long and slender; hydrothecæ borne on the upper half of the internode, and lying at an angle of about 30 degrees to it, tubular, margin plain and at about right angles to the stem; sarcotheca, bithalamic, canaliculate, with slender base, one immediately above the hydrotheca, and large in proportion to it.

Gontheca ?

Colorless and transparent.

Hab.—Bream Creek (Mr. G. C. Bartlett).

This is a remarkably minute species. The only specimen we have seen has but three internodes, the remainder having been broken off. The two lower internodes bear no appendages, and the most careful search reveals no trace of there ever having been more than one sarcotheca on the third internode. The

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length of the hydrotheca is about one four-hundredth of an inch only. The specimen is parasitic on Sertularella divaricata.

PLUMULARIA EVERTA, N. Sp., Plate I., fig. 5.

Hydrorhiza with transverse markings along the margins; hydrocaulus monosiphonic, unbranched, about one-third of an inch in height, bearing hydrothecæ as well as pinnæ; pinnæ alternate, recurved, springing one from the side of each stem-hydrotheca, divided into alternately long and short internodes, of which only the former bear hydrothecæ; hydrothecæ borne at about the centre of the internodes, tubular, rounded at base, which is swollen on distal side so as to make the diameter at the base twice that at the mouth, mouth constricted on the distal side, the constriction forming a slight intrathecal ridge, margin entire, sinuated and everted at back; sarcothecæ bithalamic, canaliculate; one stout at base, below each hydrotheca; one, with slender base on each side of hydrotheca above it; one slender at base and curved upwards, on the intermediate internode; two slender at base (one above the other) on each of the lower stem-internodes (which are otherwise destitute of appendages) and a number, slender at base, scattered over the hydrorhiza.

Gonothecæ ?

Color, pale yellowish brown.

Hab.—Torquay.

The hydrothecæ of this species are quite different from that of any other known to us. The sarcothecæ on the lower stem internodes are often missing.

PLUMULARIA CAMPANULIFORMIS, N. Sp.

Plate I., figs. 6, 9, & 10.

Hydrocaulus about one-eighth of an inch in height, monosiphonic, erect, simple, bearing hydrothecæ but no pinnæ; internodes slender, curving under hydrothecæ; hydrothecæ borne at the upper end of the internodes, large campanulate, constricted slightly at about the middle on proximal side; margin entire, free at back; sarcothecæ bithalamic, canaliculate; one immediately below hydrotheca, stout at base, its

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oblique aperture turned towards base of hydrotheca; one on each side above hydrotheca, pedunculate, somewhat stout at base; one, slender at base, midway between each two hydrothecæ on the same internode as the upper.

Gonothecæ: Female about twice as long as hydrothecæ, subglobular, somewhat flattened above, a circular operculum at summit, the border of aperture slightly elevated and thickened, bearing two sarcothecæ at base: male only slightly longer than hydrothecæ, ovate, with one sarcotheca only.

Hab.—Barwon Heads.

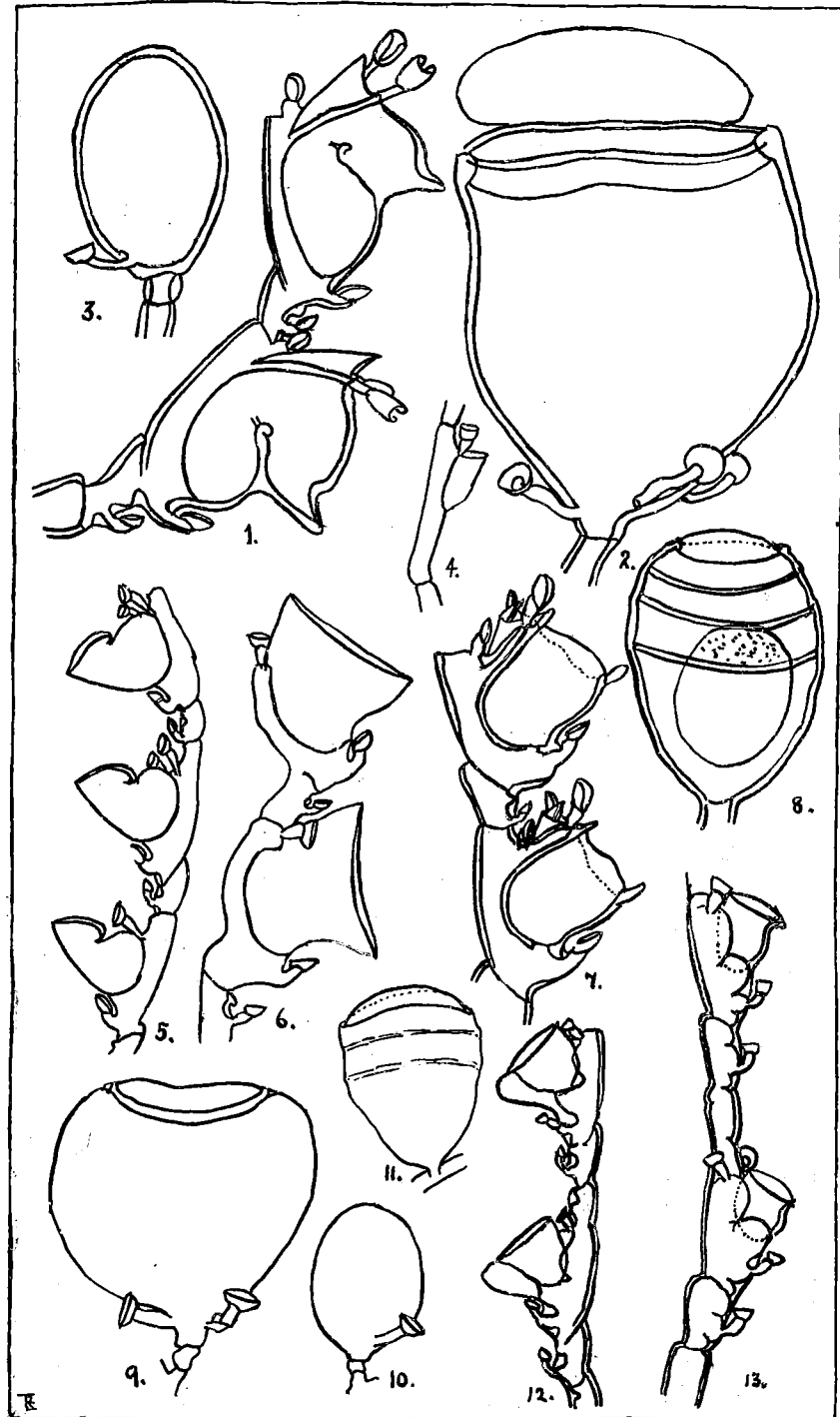
The gonothecæ of this species are not unlike those of *P. rubra* and *P. campanula*. The female of the present species, however, is much broader in proportion to its length and does not taper so decidedly below: the male is also much broader in proportion than in *P. rubra* and *P. campanula*. The lateral sarcothecæ are stouter at the base than in most of the *Eleutheroplea*, but not as stout as in *P. rubra* and *P. campanula*.

PLUMULARIA AGLAOPHENIAFORMIS, N. Sp.

Plate I., fig. 7.

Hydrocaulus monosiphonic, unbranched, about half-an-inch in height, bearing hydrothecæ as well as pinnæ; pinnæ alternate, divided into alternate long and short internodes of which only the former bear hydrothecæ; hydrothecæ large, close, campanulate, broad at the base, set at an angle of 45 degrees, margin sinuate, interrupted at each side by a prolongation of the peduncle; front of hydrotheca thickened, produced into a long, slightly curved spine rising well above the margin. Sarcothecæ bithalamic, canaliculate; one stout at base, fixed close in front of each hydrotheca and with mouth adpressed to it; one at each side of the hydrotheca on a long peduncle; one, fixed, in the sinus behind the back of the hydrotheca; one, slender at base, on each short internode of pinnæ; peduncle produced, past base of sarcotheca, into a spine which rises above the margin of the hydrotheca.

Gonothecæ?



Color, light brown.

Hab.—Torquay.

This species reminds one of *P. aglaophenoides*, Bale, by its closely-set calyces. It is however quite different from anything else we have yet seen. The spine at the front of the hydrotheca makes its general aspect more nearly approach that of an *Aglaophenia* than any other *Plumularia*. The most peculiar structure, however, is the peduncle to which each lateral sarcotheca is attached. It is produced onwards, past the base of sarcotheca, in the form of a spine which rises well above the margin of the hydrotheca. The margin terminates at the front of this, and at right angles with it, about half-way between the base of the sarcotheca and the top of the spine, and commencing again at the summit of the spine behind curves downwards and then upwards to the summit of the corresponding spine on the opposite side of the hydrotheca. The pinnæ are borne each in the place of a peduncle, one from the side of each hydrotheca of the stem. The supracalycine sarcothecæ have the whole of one side open.

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PLUMULARIA ALATA, Bale. Plate I., fig. 11. P.L.S., N.S.W., Vol, III. (2nd. ser.)

Gonothecæ, one or two borne on hydrocaulus near the base, large, about eight times as long as hydrotheca, ovate, slightly annulated; summit at first depressed, then again convex, thus forming a ring-like depression around the convex top.

Hab.—Bream Creek, Barwon Heads

The gonotheca is now described for the first time. Mr. Bale was uncertain whether the type specimen of this ~~series~~ was from New Zealand or Victoria.

species/

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PLUMULARIA SETACEOIDES, Bale. Plate I., figs. 12 and 13.

Several specimens from Spring Creek differ considerably from the typical form. The height is only a quarter of an inch; the hydrothecæ are about two-thirds the size of the typical form and have margin strongly everted. The calycle is free at the back only for a short distance. We were inclined to make a new species of this form, but *P. setaceoides* is somewhat variable, and in the absence of

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gonothecæ, we refrained from doing so.

A specimen from Barwon Heads has the front of the calyces very much thickened. The form is not unlike that figured by Mr. Bale in Proc. Linn. Soc. N.S.W., Vol. III. (2nd ser.) Plate XX., but the thickening in the front of the calycle is even more pronounced than in Mr Bale's figure, while at the back of the calycle it is scarcely thickened at all.

PLUMULARIA CALICULATA, Bale.

Spring Creek.—Mr. Bale described and figured this species in Proc. Linn. Soc., N.S.W., Vol III. (2nd ser.) and recorded same from Bondi B. and Port Jackson, N.S.W. It has not hitherto been recorded from Victoria.

PLUMULARIA TUBULOSA, Bale.

A specimen of this, without gonothecæ, from Spring Creek. Mr. Bale describes and figures this species in Proc. Roy. Soc. Vic. (1893) and records it from Port Phillip Bay.

PLUMULARIA FILICAULIS, Poeppig.

A specimen from Barwon Heads shows simple and pinnate forms growing from the same hydrorhiza. The intrathecal ridge in both is rudimentary as in the typical pinnate form, and the margin also resembles that of the same form, but in some calyces is slightly everted. Another specimen from the same locality has simple shoots only, and is identical with Mr. Bale's var. indivisa. The latter specimen bears gonothecæ.

KIRCHENPAUERIA MIRABILIS, Allman, Sp. Plate I., fig. 8.

A specimen from Torquay has gonothecæ somewhat different from the type which is described as "large, free, with rounded summit, and irregular, wide, transverse undulations, no distinct marginal ring or operculum, sporosacs two." This specimen has a distinct marginal ring and is slightly flattened at the summit. It has only one sporosac.

(TO BE CONTINUED).

EXPLANATION OF PLATES \*

PLATE I.

1. Plumularia Balei, Bartlett, x 40.

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2. Plumularia Balei, Gonotheca, female, x 40.
3. " " " male, x 40.
4. Plumularia microscopica, n. sp., x 120.
5. Plumularia everta, n. sp., x 80.
6. Plumularia campanulaformis, n. sp., x 80.
9. " " Gonotheca, female, x 80.
10. " " " male, x 80.
7. Plumularia aglaopheniaformis, n. sp., x 80.
8. Kirchenpaueria mirabilis, Allman, Gonotheca, x 40.
11. Plumularia alata, Bale, gonotheca, x 40.
12. Plumularia setaceoides, with thickened calyces, x 80.
13. Plumularia setaceoides, small variety, x 120.

\* All the figures have been drawn with the aid of a camera lucida, from specimens mounted in Canada balsam, and viewed as transparent objects.

