

## NOTES ON VICTORIAN HYDROIDA, With Description of New Species.

(CONTINUED.)

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Two typographical errors, which are somewhat misleading, occur in the first part of this paper. On p. 29, last line but two, "short at base" should read "stout at base." On p. 33, last line of note on *Plumularia alata*, "series" should read "species."

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SUB-FAM. ELEUTHEROPLEA. (Continued.)

PLUMULARIA CAMPANULIFORMIS, M. & T.

In "Geelong Naturalist," Vol. IV., p. 31, we described this species as having "hydrothecæ borne at the upper end of the internodes." This is incorrect. What appears to be a joint immediately above the hydrotheca proves on closer examination to be merely a constriction.

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P. CAMPANULIFORMIS, var. *dubia*, n. var.

(Plate II., fig. 6.)

This variety differs considerably in general appearance from the typical form. It is more robust; the hydrothecæ are larger and more expanding, are further apart, and the constriction on the proximal side is very slight or altogether absent; and the internodes do not curve under the hydrothecæ to such a great extent.

We have not seen the gonothecæ on this variety.

Hab.—Torquay.

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PLUMULARIA DELICATULA, Bale.

(Plate II., fig. 2.)

Gonothecæ large, (nine or ten times as long as hydrothecæ), obliquely truncated a little above the broadest part, transversely rugose; borne at the base of the pinnae, forming two rows, extending a considerable way up the stem.

Hab.—Torquay,

The gonothecæ of this species are practically the same,

both in appearance and manner of growth, as those of *P. setaceoides*.

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PLUMULARIA DELICATULA, var. *rotunda*, n. var.

(Plate II., fig. 2.)

This variety, although agreeing with the typical form in all the specific characters, differs considerably from it in appearance. It is more robust, the hydrothecæ are much larger, and are shorter in proportion to their length. The calycle does not rise clear of the pinna at the back, and is considerably thickened in front, especially towards the margin. This will possibly prove to be a distinct species; but, in the absence of gonothecæ, it will have to rank at present merely as a variety. In the specimen we have, one of the stem-internodes, is abnormally long, and has, in addition to the usual sarcotheca on the lower part, another at about the middle.

Hab.—Bream Creek.

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PLUMULARIA OBLIQUA, Saunders.

A very attenuated and fragile form from Bream Creek. Also a similar form from Corio Bay.

Another specimen from Corio Bay is abnormal in being slightly branched. The branch springs from the lower part of an internode, (a pinna springing from the upper), from the place usually occupied by the sarcotheca, which, on this internode, is placed a little higher up.

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PLUMULARIA EXCAVATA, N. Sp.

(Plate II., figs. 3 and 3a.)

Hydrothiza flat, with transverse markings along the margins; hydrocaulus monosiphonic, stout, annulated, unbranched, about half an inch in height; pinnae alternate, each borne near the summit of an internode, and supporting a single hydrotheca; distal part bent backwards and curved behind the hydrotheca, swollen at the summit on the inner side. Hydrothecæ campanulate, contracted in front towards the base, margin entire and raised well above the pinna. Sarcothecæ bithalamic, canaliculate; one at the base of each hydrotheca, stout at base; sometimes only very small, in the sinus at the back of hydrotheca, and one at each side along hydro-

theca, slender at base and with shallow terminal cup.

Gonothecæ?

Color, pale yellowish brown.

Hab.—Torquay, (Mr. G. H. Roebuck).

A most careful search reveals no trace of any sarcothecæ on the hydrocaulus.

The hydrocaulus generally springs from a point where the hydrorhiza radiates in four directions.

The aperture leading from the hydrotheca into the pinna is generally very noticeable. In one specimen there is a minute, rather rudimentary sarcotheca in the sinus behind the hydrotheca, but in others the most careful search reveals no sign of it.

PLUMULARIA SETACEOIDES, Bale.

(Plate III., figs. 3, 3a., and 3b).

Var. (a).

Several specimens from Point Lonsdale differ slightly from the typical form. The hydrothecæ are slightly constricted at the mouth and the margin is everted. Height, half-an-inch. A few sarcothecæ on the margins of the hydrorhiza.

Gonothecæ:—2 or 3 only on each stem, borne at the bases of pinnæ on lower part of stem; obliquely truncated a little above the broadest part, transversely rugose; containing a ring of small, slightly refractive granules near the top; base projecting past the stalk which joins the gonotheca to the hydrocaulus.

(Plate III., fig 6).

Var. (b).

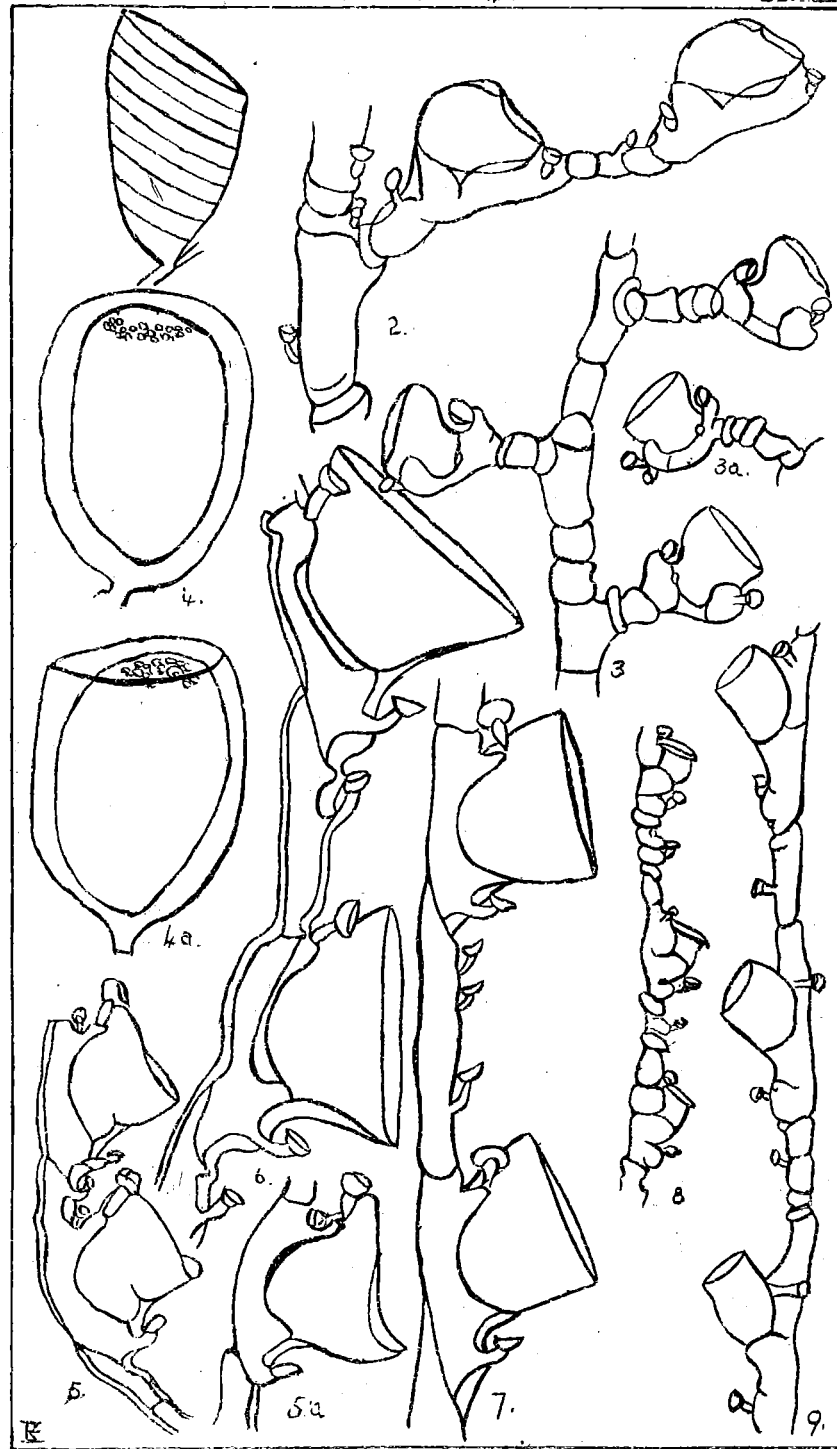
Numerous specimens from Corio Bay. Height, one inch. Some of the hydrothecæ are as in the typical form, but most of them are contracted at the mouth and slightly everted. Hydrothecæ not so closely set as in the last preceding variety.

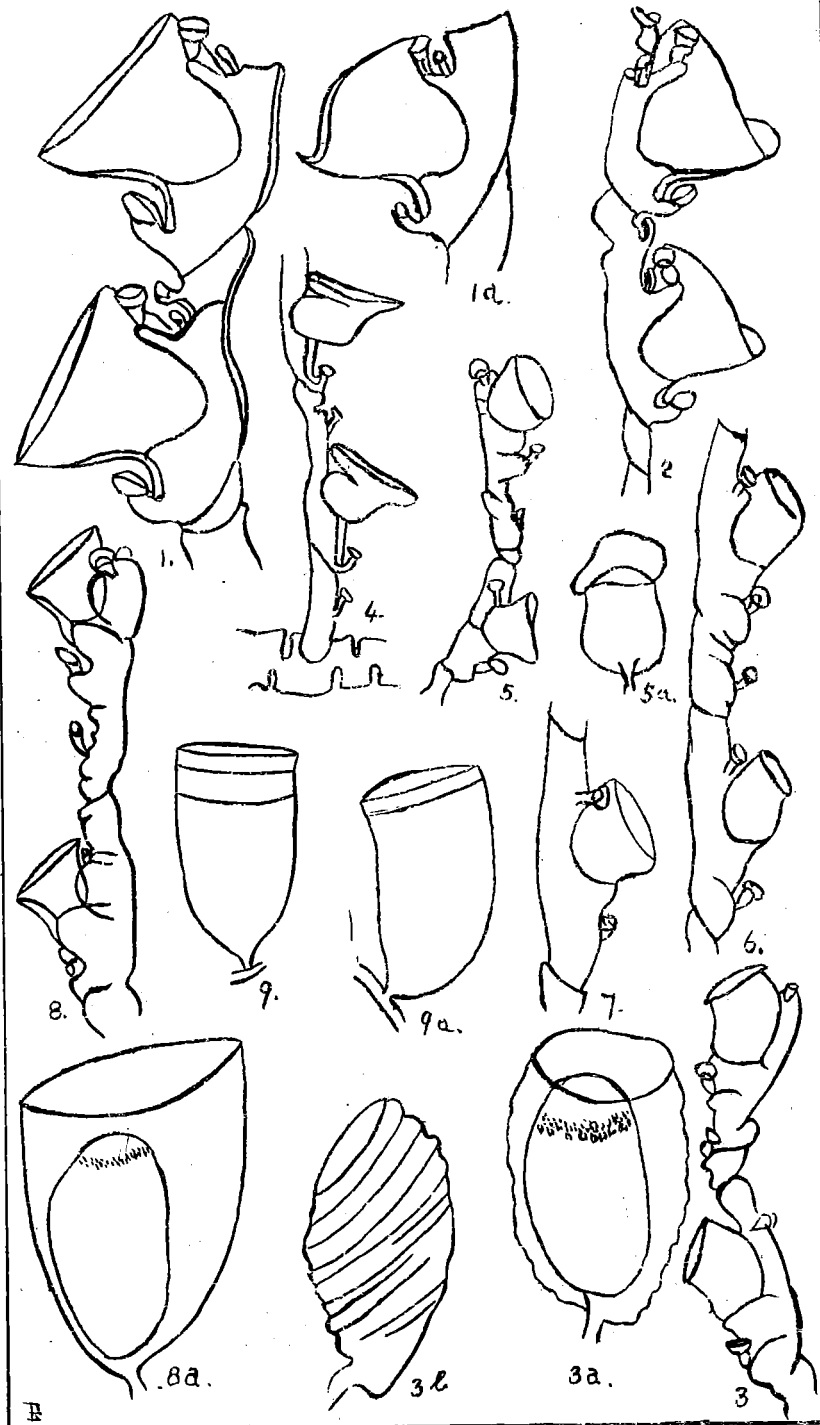
No gonothecæ present.

(Plate III., fig. 7).

Var. (c).

Another specimen from Corio Bay, differs from var. a,





and var, b., in having most of the hydrothecæ distinctly expanding upwards.

No gonothecæ present.

(Plate II., fig. 9).

Var. (d).

A slender, slightly branched variety from Torquay, has internodes very long, and, in addition to the usual sarcotheca on the lower part of each stem-internode, has, in most cases, another at about the middle and on the same side. The hydrocaulus terminates at the top in a long tendril. The specimen is a very beautiful one, and is about half-an-inch in height.

Colorless and transparent.

PLUMULARIA SETACEOIDES, var. CORRUGATA, n. var.

(Plate II., fig. 8.)

This variety agrees with the typical form of *P. setaceoides* in all its specific characters, but differs from it in its relatively smaller size. The hydrothecæ are about two-thirds the size of those of the typical form, and the other parts are proportionately small. The margin of the hydrotheca is strongly everted, and the whole hydrophyton is strongly annulated.

The specimen figured by us in "Geelong Naturalist," Vol. IV., (plate 1., fig. 13), is similar to the present variety, but not so strongly annulated.

Hab.—Torquay.

PLUMULARIA SETACEOIDES, var. crateriformis, n. var.

(Plate III, figs. 8 and 8a).

The shape of the hydrothecæ in this form differs so much from that of the type as to warrant its being named as a distinct variety.

Hydrorhiza anastomosing. Hydrocaulus half-an-inch in height. Hydrotheca expanding considerably. A few tubular sarcothecæ borne on the edges of the hydrorhiza.

The gonothecæ, one or two only on each stem, do not show any trace of annulation, but are quite smooth. They contain a ring of small, densely packed, slightly refractive granules.

Hab.—Bream Creek.

*Plumularia*  
 PLUMULARIA DUBIAFORMIS, N. Sp.

(Plate II., fig. 7).

Hydrothiza stout, matted, anastomosing; hydrocaulus monosiphonic, erect, simple, bearing hydrothecæ, but no pinnæ, internodes attenuated, straight; hydrothecæ borne at the lower ends of the internodes, set at an angle of about 45 degrees, large, campanulate, slightly expanding; margin entire, free at back. Sarcothecæ bithalamic, canaliculate, one immediately below each hydrotheca, fixed and stout at base; the remainder slender at base, one at each side of the hydrothecæ, pedunculate, and freely moveable; two and sometimes three, between every two hydrothecæ, on the same internode as the lower, and a few scattered over the hydrothiza; peduncles rather long, rising to one half the height of the hydrothecæ.

Gonothecæ?

Hab.—Queenscliff, Bream Creek, Torquay.

This species is very much like *P. campanula*, var. *indivisa*, Bale, but differs from it in several particulars. In *P. campanula* the lateral sarcothecæ are not freely moveable, and the peduncles on which they are situated, are short. In the present species the lateral sarcothecæ are situated at the apex of the peduncle, are freely moveable, and the terminal cups are large and shallow.

The number of medium sarcothecæ also serve to distinguish the two species, though in itself the difference would scarcely be sufficient to separate them. There is generally a slight constriction in the hydrocaulus just above each hydrotheca. Some specimens have the hydrothecæ more expanded than that figured.

Some specimens show an indication of the sarcothecæ in the sinus behind the calycle, but the presence of foreign matter makes it impossible to decide with certainty. Others show no trace of such a sarcotheca. If a sarcotheca is present in such position it means that this species will be closely related to *P. buskii*, and indeed, in many respects it more closely resembles that species than it does *P. campanula*.

PLUMULARIA HYALINA, Bale.

(Plate II., fig. 4 and 4a).

Gonothecæ, one or two borne on proximal part of

stem, large, ovate, very faintly rugose, containing a number of highly refractive granules; when mature flattened at top, and opening by a large, smooth-edged, circular aperture.

Hab.—Barwon Heads.

PLUMULARIA PULCHELLA, Bale.

A specimen from Torquay, (with gonothecæ) has a sarcotheca on the lower part of each stem internode as in *P. flexuosa*. On many of the shoots they are missing, but a careful examination generally reveals a tiny mark showing where they had been. They appear to be very easily broken off. This specimen is also curious inasmuch as one of the shoots is slightly branched.

Mr. Bale records specimens of *P. flexuosa* (which normally possesses inferior sarcothecæ on the stem internodes) from Bondi, New South Wales, in which they are absent, so that the presence or absence of them in itself is not much guide in identifying the species; and as some specimens of *P. pulchella* are slightly flexuous, and the pinnæ though normally springing from about the middle of an internode, are sometimes borne rather close to the top, thus resembling *P. flexuosa*, it is difficult, in the absence of gonothecæ, to decide with certainty to which species some specimens belong.

Another specimen from Torquay (without gonothecæ) has, in addition to the inferior sarcothecæ on the stem internodes, a number scattered over the hydrothiza.

PLUMULARIA OPPOSITA, N. Sp.

(Plate II., fig. 5).

Hydrocaulus monosiphonic, unbranched, bearing hydrothecæ as well as pinnæ; pinnæ opposite, divided into alternate long and short internodes, of which only the former bear hydrothecæ; hydrothecæ large, campanulate, slightly constricted below the middle on the proximal side, the constriction forming a faint rudimentary intrathecal ridge; margin slightly undulated, free at back. Sarcothecæ bithalamic, canaliculate, one immediately below each hydrotheca, stout at base, its oblique aperture turned upwards towards hydrotheca; the re-

mainder slender at base ; one at each side of hydrotheca, pedunculate ; one on each intermediate internode, curved ; two abreast on the corresponding position on the stem internode ; one in the sinus behind hydrothecæ, and one at the base of each pinna.

Gonothecæ ?

Hab.—Torquay.

This species is allied to *P. buskii*, but is easily distinguished from it by the constriction on the proximal side of the hydrothecæ. The intrathecal ridge is very faint, and in some cases is almost entirely absent. The constriction also varies in extent, in some cases being very slight. The most important feature, however, of the present species is its opposite pinnæ, which spring from the front of the hydrocaulus, one on each side of each stem hydrotheca.

(Plate 2., fig. 5a).

Var. (a).

This variety differs from the typical form in the shape of the hydrothecæ, which are decidedly peaked in front, and sinuate downwards at the back. The constriction is practically absent, and the rudimentary intrathecal ridge is to be made out only with difficulty.

In place of the two sarcothecæ abreast on the stem, there is only one ; sometimes two abreast on the internode immediately below the proximal hydrotheca on the stem.

Hab.—Torquay, Corio Bay.

PLUMULARIA ALTERNATELLA, N. Sp.

(Plate III., figs. 1, 1a, and 2).

*Thecocaulus*  
Hydrocaulus monosiphonic, unbranched, bearing hydrothecæ as well as pinnæ ; pinnæ alternate, divided into alternate long and short internodes, of which only the former bear hydrothecæ ; hydrothecæ large, campanulate, expanding upwards ; margin entire, raised well above the pinna, free at back, sometimes peaked in front, and sinuate downwards at the back. Sarcothecæ bithalamic, canaliculate, one immediately below each hydro-

thecæ, stout at base, its oblique aperture turned towards base of hydrotheca ; the remainder slender at base ; one on each side of hydrotheca, pedunculate ; one on each intermediate internode, curved, two abreast, (sometimes only one, or one above the other) on the corresponding position on the stem-internode, one in the sinus behind hydrothecæ, and one at the base of each pinna.

Gonotheca ?

Hab.—Barwon Heads.

This species differs very little from *P. opposita* except in that the pinnæ are alternate instead of opposite, and there is no trace of any rudimentary intrathecal ridge. It is very closely allied to *P. buskii*, and may eventually prove to be only a variety of it.

Fig. 1a. is taken from the same hydrophyton as fig 1, and serves to illustrate how variable is the shape of the calycles. Possibly the peak in the front of the hydrotheca is accentuated by distortion.

Fig. 2 shows a slender variety of the same species.

PLUMULARIA LUCERNA, N. Sp.

(Plate III., fig. 4).

Hydrorhiza broad, with transverse markings along the margins ; hydrocaulus monosiphonic, unbranched, bearing hydrothecæ, but no pinnæ. Hydrothecæ cup-shaped, shallow, deeply inflected at back, the inflection forming an intrathecal ridge which extends rather more than half way across the cavity of the cell ; sinus caused by the inflection filled up with homogeneous perisarc, portion of cell above intrathecal ridge very shallow, calycle lipped in front, aperture large. Sarcothecæ bithalamic, canaliculate, fairly slender at base, one immediately below each hydrotheca, one midway between each hydrotheca, and one on the proximal internode which is otherwise destitute of appendages. The front of the stem between the base of the calycle and the sarcotheca below it very much thickened.

Gonothecæ ?

Hab.—Bream Creek.

This is a remarkable species quite different from any-

thing else we have seen. The shape of the calyces reminds one somewhat of *P. filicaulis*, var. *indivisa*, Bale. We can find no trace of any lateral sarcothecæ.

PLUMULARIA CRATEROIDES, N. Sp.

(Plate III., figs. 5 and 5a).

Hydrorhiza very broad, with transverse marking along the margins; hydrocaulus monosiphonic, unbranched, about one-eighth of an inch in height; stem with about three transverse wrinkles on each internode; pinnae alternate, one borne close to the summit of each internode; pinnae divided into long and short internodes, of which only the former bear hydrothecæ; hydrothecæ cup-shaped, rather shallow, expanding upwards; margin entire, raised well above the pinna, sometimes slightly everted; sarcothecæ bithalamic, canaliculate, slender at base, one below each hydrotheca and one on each side above it, one between every two hydrothecæ, on the intermediate internode, one in each axil, one on the lower part of each stem-internode, and a few tubular ones on the hydrorhiza.

Gonothecæ, one on a stem, springing from close to the base, from eight to ten times as long as hydrotheca, somewhat flattened beneath, convex on top, obliquely truncated, aperture very large, margin everted.

Almost colorless.

Hab.—Queenscliff.

The hydrothecæ of this species somewhat resemble those of *P. setaceoides*, var. *crateriformis*, but the whole hydrophyton is much smaller in size, and the calyces does not rest on a projection from the hydrocaulus. The gonothecæ are quite distinctive. The pinnae generally bear only a single hydrotheca each, and in none of the specimens we have examined do they bear more than two.

PLUMULARIA SPINULOSA. *Bale*

(Plate III., fig. 9 and 9a).

A specimen from Barwon Heads. Several of the gonothecæ show two or three distinctive ridges near the

mouth, in all probability caused by an interruption in their growth.

(TO BE CONTINUED).

EXPLANATION OF PLATES.

PLATE II.

1. *Plumularia delicatula*, Bale, Gonotheca, x 30.
2. *Plumularia delicatula*, var. *rotunda*, n. var., x 80.
- 3, 3a. *Plumularia excavata*, n. sp., x 80.
- 4, 4a. *Plumularia hyalina*, Bale, Gonotheca, x 30.
5. *Plumularia opposita*, n. sp., x 80.
- 5a. " " var. a, x 80.
6. *Plumularia campanulaformis*, var. *dubia*, n. var., x 80.
7. *Plumularia dubiaformis*, n. sp., x 80.
8. *Plumularia setaceoides*, var. *corrugata*, n. var., x 80.
9. *Plumularia setaceoides*, var. (d), portion of pinna, x 80.

PLATE III.

- 1, 1a. *Plumularia alternatella*, n. sp., x 80.
2. " " slender var., x 80.
3. *Plumularia setaceoides*, var. (a), x 80.
- 3a. " " " gonotheca, x 40.
- 3b. " " " " side-view, x 40.
4. *Plumularia lucerna*, n. sp., x 80.
5. *Plumularia crateroides*, n. sp., x 80.
- 5a. " " gonotheca, x 40.
6. *Plumularia setaceoides*, var. (b), x 80.
7. " " var. (c), x 80.
8. *Plumularia setaceoides*, var. *crateriformis*, n. var., x 80.
- 8a. Gonotheca of same, x 30.
- 9, 9a. *Plumularia spinulosa*, Bale, Gonotheca showing lines of growth, x 40.