

1914 (A)

VICTORIAN HYDROIDA.

With Description of New Species.

PART III.

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Read February 23rd, 1914.

(With Plates I to III).

SERTULARIA ACANTHOSTOMA, Bale.

A specimen from Barwon Heads, with gonotheca as figured by Mr. Bartlett in "Geelong Naturalist," Vol. III (April 1907).

The gonotheca springs from the side of the hydrocaulus, immediately beneath a hydrotheca.

A specimen from Bream Creek has two unbranched stems, and of the three branched stems two have an unpaired pinna. The number of pairs of hydrothecæ on the stem between the pinnæ varies from three to four. In one there are five pairs below the first pair of pinnæ.

SERTULARIA BISPINOSA, Gray.

Mr. Bartlett (loc. cit.) states that he has not collected this species. We have specimens, with gonothecæ, from Queenscliff.

SERTULARIA GEMINATA, Bale.

The same refers to this species which we have collected with gonothecæ, at Queenscliff.

SERTULARIA BIDENS, Bale.

(Plate I, fig. 6, Plate III, figs. 2 and 3).

The proximal internode of the pinnæ occasionally bears an uneven number of hydrothecæ. A specimen from Point Lonsdale has an abnormally long hydrotheca.

In all our specimens the gonothecæ differ considerably from that figured by Mr. Bale in his Catalogue. They

more resemble that figured by Mr. Bartlett ("Geelong Naturalist," Vol. III), but are even more expanding upwards.

SERTULARIA RECTA, Bale.

Specimens from Queenscliff, with hydrocauli, and sometimes pinnæ, produced into a stolon. (Mr. G. C. Bartlett).

SERTULARELLA MCCALLUMI, Bartlett.

(Plate I, figs. 1, 2, and 3).

Hydrorhiza, anastomosing; hydrocaulus unbranched, divided into short internodes by conspicuously oblique joints, each bearing, towards the front, a hydrotheca. Hydrothecæ adnate for one-third of their height, tubular, curving outwards, ventricose below, gradually contracting towards the mouth. Mouth with two broad lateral teeth.

Gonothecæ, borne near the base of hydrocaulus, about three times as broad and five times as long as the length of a hydrotheca, obovate, strongly annulated (about twelve rings), operculate.

Mr. Bartlett's figure and description ("Geelong Naturalist," Vol. III, p. 62) are misleading. The hydrothecæ are borne, not on the upper part of the internodes, but on the lower part. Plate I, fig. 2, makes this plain.

The hydrothecæ stand well in front of the hydrocaulus, so much so, that, when mounted under a cover-glass, the tendency is for the stem to lie on its side, and thus give a side view, which shows the general structure admirably. Plate I, fig. 2, corresponds exactly with a mounted specimen given to us by Mr. Bartlett.

At the upper portion of the peristome, between the two teeth, there is a thickening of the perisarc, over which the mouth is slightly everted.

SERTULARELLA MICROGONA, Von Lend.

(Plate I, fig. 5).

Specimens from Corio Bay which correspond with the description by Mr. Bale (Proc. Linn. Soc., N.S.W., Vol. III), but have the hydrothecæ rather more closely together than in his figure, are covered with gonothecæ. One specimen, a quarter of an inch in height, has no less than five of them. Another specimen is slightly branched.

The gonothecæ do not correspond with Dr. Von Lendenfeld's Description or Plate (Proc. Linn. Soc., N.S.W., Vol. IX), one of which is obviously incorrect, as Plate and Description do not agree with each other.

The gonothecæ are about as broad and twice as long as the length of a hydrotheca, rather elongated, barrel-shaped, terminating in four tooth-like projections, and rather strongly annulated—about twelve rings.

One gonotheca is only one-half the size of the others.

SERTULARIA ELONGATA, Lx.

(Plate I, figs. 7 to 10).

A comparison of the robust and the small forms of this well-known species is interesting, and would almost lead one to the conclusion that they are two distinct species.

The differences between the two are well marked and constant. The "robust" form is more robust, both in general appearance and detail. The average height is from an inch and a quarter to two inches. It is seldom found growing on anything but the stems of *Cymodocea zosterifolia*. Compared with the gonothecæ of the small form, those of the robust form are much smaller and have shorter "spines," and the length of the spines varies considerably even on the same hydrophyton. On the robust form the gonothecæ almost invariably grow on the pinnæ.

The small form, on the other hand, is rarely found on anything but red algæ, over which it rambles. The hydrocaulus rarely exceeds a height of one inch, and is generally about three-quarters of an inch. The gonothecæ we have never found growing anywhere but on the hydrocaulus.

We have, however the following exceptions:—

(a) Two specimens from Bream Creek, robust form, each with gonothecæ on pinnæ and one gonotheca on hydrocaulus.

(b) A specimen of the "small form" (?) from Bream Creek, three inches in height. This has several gonothecæ on the hydrocaulus (none on the pinnæ), some of which have short "spines," and some practically no spines at all.

In the same colony is a smaller growth, the hydrorhiza of which climbs up the hydrocaulus of the larger for about half an inch. The hydrocaulus of the smaller

growth is only three-quarters of an inch in height, and bears a gonotheca without "spines." From the peculiar appearance of these gonothecæ, however, we think that they have met with a reverse at some time in their history. One of the calycles bears a double peristome with two rows of teeth.

Another specimen from Bream Creek (robust form, height, 2½ inches), without gonothecæ, has several of the pinnæ giving rise to secondary pinnæ. Each of the primary pinnæ referred to is normal in structure till it reaches nearly the length of its neighbouring pinnæ, which are quite normal, after which it assumes the character of a hydrocaulus, becomes zig-zag and gives rise to secondary pinnæ.

This habit of growth is not at all common, though Mr. Bale refers to it in his Catalogue.

SERTULARIA LOCULOSA, Bale.

A specimen from Queenscliff shows all the peculiarities mentioned by Mr. Bale in his description in Proc. Roy. Soc., Vic., 1913, p. 122, also some nodes single and conspicuously oblique and slender.

Gonothecæ with five annulations in all our specimens.

SERTULARELLA RENTONI, Bartlett.

(Plate I, fig. 4; Plate III, fig. 1).

The figure of this species in "Geelong Naturalist," Vol. III, opposite p. 42 does not show the details of the structure too well. We have numerous specimens from different places along the Victorian coast. The gonothecæ are as described and figured by Mr. Bartlett, but in our specimens the tubular neck is somewhat shorter.

THUIARIA SINUOSA, Bale.

An incomplete specimen from Queenscliff (?) with the hydrothecæ somewhat straighter than in that figured by Mr. Bale (Proc. Linn. Soc., N.S.W., Vol. IV, Pl. 18).

EUCOPELLA CAMPANULARIA, Von. L.

(Plate II, figs. 8 to 11).

Numerous specimens from Torquay and Bream Creek.

Many of the stems have one, two or three joints between the top of the peduncle and the spherule. None of our specimens have the perisarc as much thickened as those figured by Mr. Bale (Proc. Linn. Soc., N.S.W., Vol. III, Pl. 13), and the coenosarc tube corresponds more with the external shape of the perisarc.

Some of the gonothecæ are as figured (loc. cit.), while others are truncated before they attain such a length, many being quite short. These are probably immature. They are not broken, as their appearance might suggest.

EUCOPELLA UNDULATA, n. sp.
(Plate II, figs. 5, 5a, 6 and 7).

Hydrorhiza, broad, flattened; on each side a broad, thin flange adhering to leaf of seaweed; hydrorhiza giving off branches at right angles. Peduncles varying in length, undulating, stout, generally thickened at base; between peduncle and calycle a single spherule.

Hydrothecæ semi-ovate with one of the narrower sides cut down a little lower than the opposite one, and the broader sides elevated. Margin not everted or toothed. No cavity corresponding to the exterior shape of calycle, a considerable portion being filled up with a solid chitinous mass. Cavity of calycle shallow, basin-shaped, situated not in the centre of the hydrotheca, but nearer the lower side: the other side of the cavity being everted over the solid chitin; from the base of the cavity a tube, at first expanding and then contracting, leading to the cavity of the spherule.

Gonothecæ large, decumbent, sub-cordate, about as long as broad, attached to hydrorhiza by a short stem springing from sinus at the base; flat underneath, convex and transversely rugose above; aperture terminal, looking upwards.

Hab.—Barwon Heads, Bream Creek, Torquay. Numerous living specimens growing on *Oymodocea zosterifolia*.

The polyp, in life, leans over to one side as shown in the Plate. It is practically colorless, and has a single row of about from 15 to 21 filiform tentacles placed round a large cup-shaped proboscis.

With the exception of the base and summit the coenosarc of the stem is undulating, and generally corresponds in outline with the outside of the perisarc. The perisarc is usually thickened inwards near the summit of the peduncle but in this thickening, almost at the top, the tube abruptly enlarges as shown in Plate II, fig. 5a. Fig. 5 is an exception in this respect.

A few peduncles are jointed, as in the last preceding species.

The broad sides of the calycle are often so thin that they are difficult to detect when a polyp is contained.

This species differs from *E. campanularia*, Von. L., mainly in its undulating peduncle and its gonotheca.

CAMPANULARIA TRIDENTATA, Bale.
Specimens from Queenscliff and Bream Creek.

CAMPANULARIA AMBIPLICA, n. sp.
(Plate II, figs. 3 and 4).

Hydrocaulus simple, unbranched, undulating, usually, about the same length as hydrotheca; a spherule immediately below base of hydrotheca. Hydrotheca tubular, slightly expanding upwards, contracted just above the base, where there is an internal annular thickening. Half-way up the hydrotheca, on one side, a fold causing an internal ridge; on the other side of the hydrotheca, but a little further from the mouth, a similar fold. Peristome undulated, with about six blunt teeth.

Gonotheca (?)

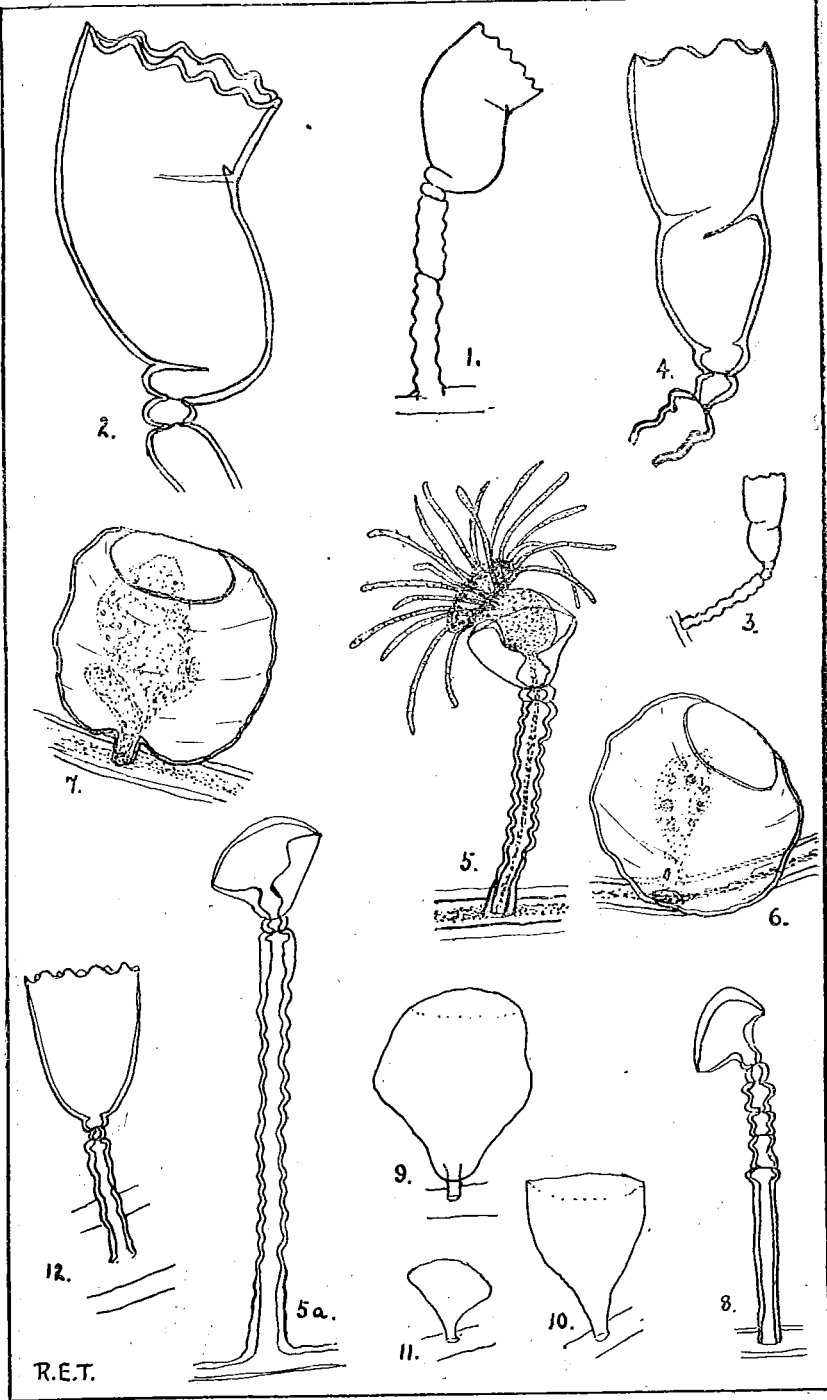
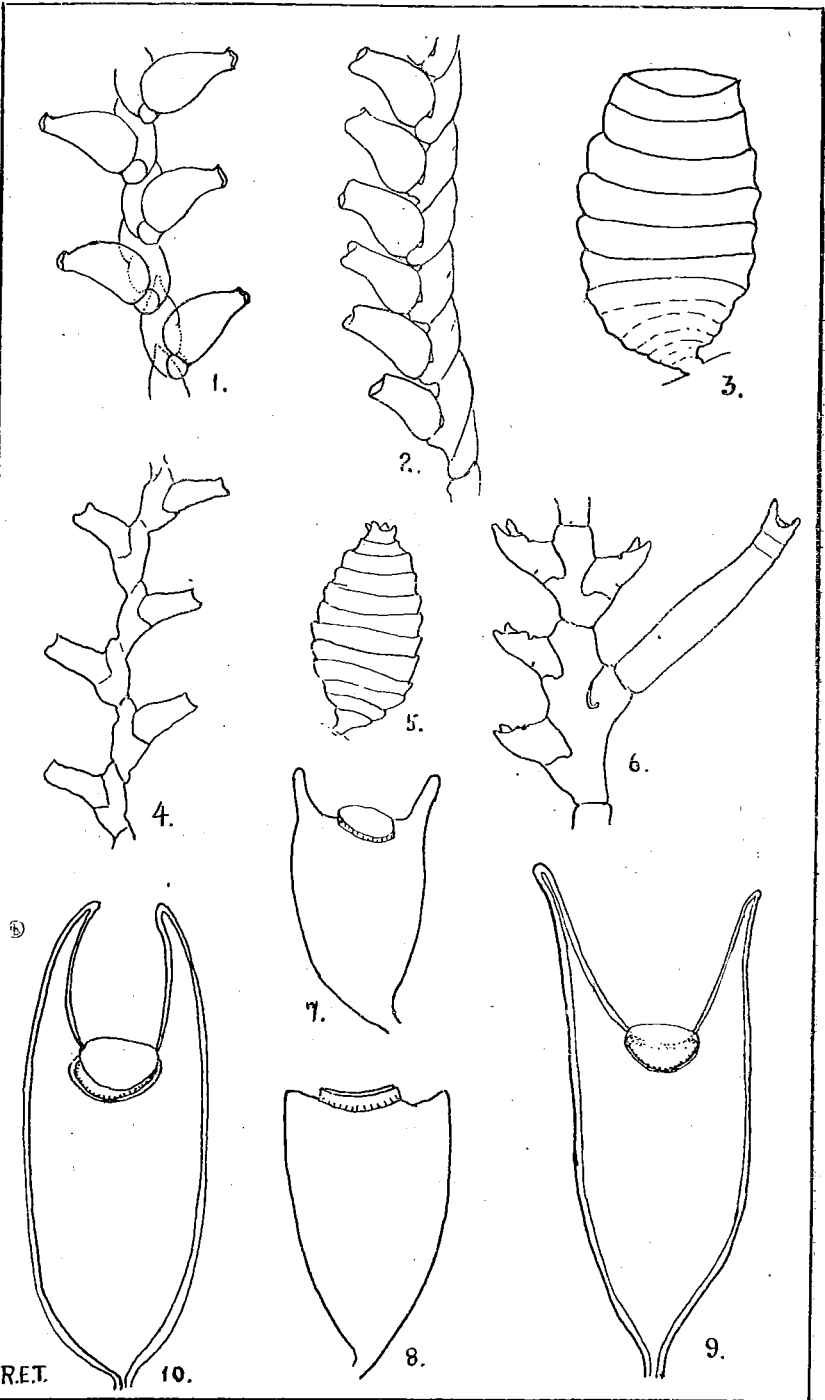
Hab.—Bream Creek, Torquay, Barwon Heads, Corio Bay. Numerous specimens, all growing on *Ballia callitricha*.

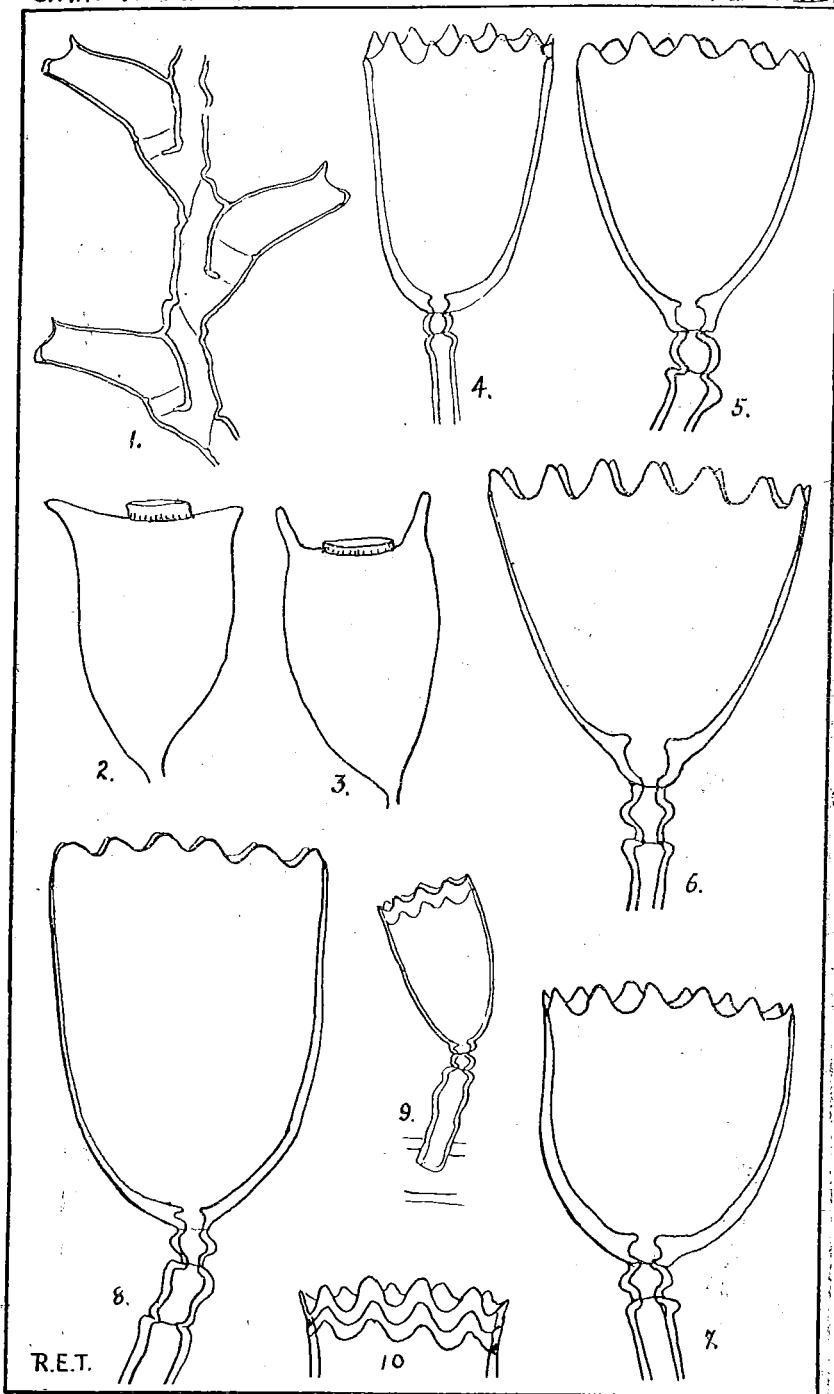
CAMPANULARIA PULCRATHECA, n. sp.
(Plate II, figs. 1 and 2).

Stem simple, undulated, varying from a little less than to more than three times the length of a hydrotheca. Between the summit of the stem and the base of the hydrotheca, a single spherule. Hydrotheca large, tubular, deeply folded on one side near the base, the fold forming an intrathecal ridge; rotund on the opposite side; about one-third of the length of the calycle from the peristome the calycle is bent at an angle of about 45 degrees from its original direction. On the same side of calycle as the fold first above referred to, the bending is very gradual, but on the opposite side the bend forms an angle of about 130 degrees; this forms an intrathecal ridge extending nearly half-way round the calycle; the lower part of the wall projects past the angle, and upwards into the cavity for a short distance, or occasionally the reverse, the upper part of the wall projects downwards. Peristome undulated, with about 12 teeth, slightly thickened.

Gonotheca (?)

Hab.—Torquay.





This species appears to be rare. It cannot be confused with anything else. The stem is sometimes slightly jointed.

CAMPANULARIA TINCTA, Hincks.

(Plate III, fig. 4).

This species is very variable; that is, if the whole of the specimens we have belong to one species, which we doubt. The calyces differ greatly both in size and shape, but they nearly all come within the description "large, tubular or slightly expanding upwards, contracted just above the base, where there is an internal annular thickening; aperture furnished with from six to ten small crenations." (Bale, Cat. Aust. Hydr. Zooph., p. 57).

Some of the forms differ so much from those figured by Mr. Bale (loc. cit., Plate I, figs. 4, 5, 6), that it is difficult to believe that they belong to the same species; yet, generally, intermediate forms can be found.

Of most of our varieties we have not seen the gonothecæ. What we have seen are usually similar to that figured by Mr. Bale (loc. cit., Plate XIX, fig. 29).

The calyces of all our specimens are nearly all more or less expanding, one considerably expanding, and none of them are as narrow and tubular as in Mr. Bale's figures.

We do not think it has ever been noted that the hydrorhiza has a flange on each side, adherent to the seaweed on which the colony grows. We do not know whether it occurs in all forms, as we have not seen the hydrorhiza of some of them, but in several forms it is very conspicuous. We think the reason it has not been noticed is that it has been mistaken for a general thickening of the perisarc of the hydrorhiza, which it is not. This flange also surrounds the gonothecæ, except at the base and the aperture.

The stems in nearly all our large varieties are straight, and show no sign of undulations.

Another thing that does not appear to have been noticed is that the calyces are laterally compressed. Again, we cannot say that this refers to all forms. We had often noticed it in dry specimens, and put it down to distortion caused by drying, and consequently attached no importance to it. However, on examining

some living specimens of one of the varieties in water, and not under pressure, we found they were all regularly flattened laterally. Since then we have not seen any unmounted specimens except that figured in Plate III, fig. 4, and var. (e), both of which are flattened.

The nearest approach we have to those figured by Mr. Bale is figured on Plate III, fig. 4. We have numerous specimens from various places along the coast. The calycle is flattened laterally. Crenations from 8 to 10.

Form (a.) (Plate III, fig. 5).

Far more expanding upwards than the last above-mentioned. Crenations, 10.

Gonotheca (?)

Hab.—Bream Creek.

Form (b.) (Plate III, fig. 6).

Still more expanding, and very much larger than form (a.). Crenations, 14. But for the intermediate variety form (a.) we would have no hesitation in saying that this belongs to a distinct species.

Gonotheca (?)

A single specimen from Bream Creek.

Form (c.) (Plate III, fig. 7).

A short, stout variety not expanding. Crenations, 14.

Gonotheca (?)

Hab.—Bream Creek.

Form (d.) (Plate III, fig. 8).

An enormous calycle, almost as large as that of *C. marginata*, expanding very little. Crenations, 12.

Gonotheca (?)

Hab.—Bream Creek.

C. TINCTA, var. (e.)

(Plate II, fig. 12; Plate III, figs. 9 and 10).

Hydrorhiza very broad, flat, with a broad flange of chitin on each side, and giving rise to branches at right angles; stem short, usually not longer than the peduncle, undulated, stout; between top of peduncle and base of calycle a single spherule; hydrotheca flattened laterally, slightly expanding upwards, contracted just above base where there is an internal annular thickening; aperture crenate, usually ten teeth.

Gonotheca large, decumbent, sub-cordate, attached to hydrorhiza by a short stalk springing from sinus at the base; flat beneath, convex and slightly rugose above; on each side, and adhering to the seaweed, a broad thin flange of chitin; aperture terminal, looking upwards.

Hab.—Barwon Heads, Torquay, Bream Creek; growing on *Cymodocea zosterifolia*.

The peristome with its row of teeth is sometimes doubled or trebled. The rugæ on the gonothecæ generally disappear when mounted in Canada balsam.

We think this will prove to be a distinct species from the above forms.

[TO BE CONTINUED].

EXPLANATION OF PLATES.

PLATE I.

- Fig. 1. *Sertularella McCallumi*, Bartlett, x 40.
 ,, 2. ,, ,, (side view) x 40.
 ,, 3. ,, ,, (Gonotheca) x 20.
 ,, 4. *Sertularella Rentoni*, Bartlett, x 40.
 ,, 5. *Srtularella microgona*, von Lend, (Gonotheca), x 20.
 ,, 6. *Sertularia bidens*, Bale, (with abnormal Hydrotheca) x 40.
 ,, 7. *Sertularia elongata*, Lx., robust form, normal Gonotheca, x 20.
 ,, 8. *S. elongata*, short-spined Gonotheca, x 20.
 ,, 9. *S. elongata*, small form, normal Gonotheca, x 20.
 ,, 10. *S. elongata*, Gonotheca from same hydrophyton as fig. 9, x 20.

PLATE II.

- Fig. 1. *Campanularia pulcratheca*, n. sp., x 40.
 ,, 2. ,, ,, x 80.
 ,, 3. ,, *ambiplica*, n. sp., x 40.
 ,, 4. ,, ,, x 120.
 ,, 5, 5a. *Eucopeella undulata*, n. sp. x 40.
 ,, 6 and 7. ,, ,, Gonothecæ, x 40.

- „ 8. *Eucopella campanularia*, von Lend, (with jointed stem), x 20.
 „ 9, 10, and 11. *E. campanularia*, Gonothecæ, x 20.
 „ 12. *Campanularia tincta*, var. (e), x 40.

PLATE III.

- Fig. 1. *Sertularella Rentoni*, Bartlett, x 80.
 „ 2 and 3. *Sertularia bidens*, Bale, Gonothecæ, x 20.
 „ 4. *Campanularia tincta*, Hincks, x 40.
 „ 5. *C. tincta*, form (a), x 40.
 „ 6. „ form (b), x 40.
 „ 7. „ form (c), x 40.
 „ 8. „ form (d), x 40.
 „ 9. „ var. (e), with double peristome, x 40.
 „ 10. „ „ with treble peristome, x 80.

MT. WELLINGTON AND LAKE KARNG.

CHAS. DALEY, B.A., F.L.S.

Read March 23rd, 1914.

In the year 1841, when Angus McMillan, the discoverer, opened up the rich province of Eastern Victoria to settlement, he named the chief natural features on his route, which led over the rich plains watered by the Avon, the Thompson, Macalister and tributary streams. To the North lie Southern spurs of the great Dividing Range, several peaks of which are above five thousand feet. Standing out prominently is the highest mountain, once known to the natives as Nap-nap-warra, 5363 feet in height, which McMillan named Mt. Wellington.

The range, or deeply dissected elevated plateau, of which this mount is such a striking feature, is well-timbered, rugged and stony, belonging to the Upper Palaeozoic formations which extend from about Iguana Creek and Briagalong through the main Divide as far North as the Mansfield district.

In some of the "Avon sandstones," *Lepidodendron* beds occur, which the late Professor McCoy was inclined to assign to the Lower Carboniferous period, and now the great mass of the measures in this interesting belt of country originally classed as Upper Devonian, consisting of sandstones, shales, grits and conglomerates, with remains of basic rocks, is regarded as Carboniferous.

The rugged nature of the country, its altitude, steep slopes, rough valleys, and general unsuitability for settlement as well as the great difficulty of access, have to a great extent isolated it from human occupation. In winter snow lies on the ranges for months, and falls occur even in summer. Thus the Mt. Wellington range has been little visited, and for the most part is in its primeval state.

In 1886, a Mr. Snowdon, whilst at Mt. Wellington, re-discovered a mountain tarn or lake embosomed among the steep slopes. This lake had been known to the blacks in 1848, but had only been seen by one white man subsequently. On the news of Mr. Snowdon's discovery in Dec., 1886, Mr. (afterwards Dr.) A. W. Howitt, the eminent scientist, with "Billy" Wood, the last survivor of the mountain blacks, Kutbuntaura tribe, made a special visit to the mountain and lake, describing the latter in an article in "The Australasian."

By the Aneroid barometer he calculated the height of the lake as 2987 feet above sea-level, and 1000 feet above the bend of the creek below the embankment which confines it. Its shape was somewhat like a shoulder of mutton. The length was 26 chains from East to West, and breadth 14 chains from North to South, its area about 26 acres, and greatest depth about 100 feet.

Dr. Howitt, after close examination, concluded that the lake had been caused either by a landslip or by glacial agency, but rather favoured the latter agency as to its origin.

In 1890, Dr. Howitt again visited the lake in company with Dr. Dendy and Mr. Lucas. Dr. Dendy adopted the theory of landslip origin in opposition to Dr. Howitt's opinion. Mr. Lucas differed from both