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DESCRIPTIONS OF VICTORIAN NUDIBRANCHIATE
MOLLUSCA, WITH A COMPREHENSIVE REVIEW OF
THE EOLIDACEA.

By Robert Burn.

Text figure 1-26.

SUMMARY.

This paper is divided into two parts, although they are not marked as such. The suborders DORIDACEA and DENDRONOTACEA are contained in the first part while the suborder EOLIDACEA comprises the whole of the second part. The species belonging to the first two suborders are largely odds and ends known only from one or two specimens which have recently been discovered or collected. In the second part the review of the EOLIDACEA is as comprehensive as is possible for the present time. A list of the previously known species is appended in order to show the paucity of past records. Victoria now has fifteen EOLIDACEAN species while from the remainder of Australia a further twelve species have been described or recorded.

The 22 species dealt with below bring the list of Victorian OPISTHOBRANCHIA, as recorded by the author (Burn 1957, 1958), to a total of 67 species divided among 45 genera. A further twenty species are known to occur along the Victorian coastline but from lack of material, these are not discussed at present.

All the type and paratype specimens, and representative specimens of new records, have been presented to the National Museum of Victoria, Melbourne. The numbers following the specimens collected at various localities indicate the registered numbers of the above-mentioned institution. Unless otherwise stated all specimens were collected by the author.

The author wishes to thank Mr. C. W. Brazenor and Miss J. H. Macpherson, respectively Director and Curator of Molluscs, National Museum of Victoria, for allowing him the privilege of examining the Museum nudibranch collection in search of new records or further material. To Mr. and Mrs D. I. Hartley, of the Malacological Society of Australia, Melbourne, go his thanks for making possible or available a number of collecting trips, literature, and nudibranch material.

List of species dealt with in this paper.

- Gymnodoris arnoldi* (Burn, 1957).
Tambja verconis (Basedow and Hedley, 1905), gen. nov.
Polycera janjukia sp. nov.
Trippa albata sp. nov.
Aphelodoris berghi Odhner, 1924.
Dendrodoris maugiana sp. nov.
Paratrilonia lutea Baba, 1949.
Coryphellina rubrolineata O'Donoghue, 1929.
Coryphellina poenicia (Burn, 1957).
Coryphellina poenicia aurantia var. nov.
Cuthona bractea sp. nov.
Catriona viridiana sp. nov.
Tergipes pauculus sp. nov.
Facelina newcombi (Angas, 1864).
Facelina hartleyi sp. nov.
Favorinus pannuceus sp. nov.
Cratena macphersonae sp. nov.
Cratena serrata (Baba, 1949).
Austracolis ornata (Angas, 1864), gen. nov.
Austracolis fucia sp. nov.
Echinopsole breviceratae sp. nov.
Aeolidiella faustina Bergh, 1900.
Aeolidiella macleayi (Angas, 1864).

DESCRIPTION OF SPECIES.

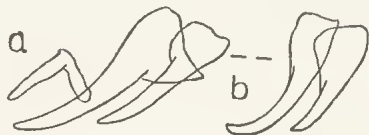
GYMNODORIS ARNOLDI (Burn).

Text fig. 1-2.

Nembrotha arnoldi Burn, 1957, *J. Malac. Soc. Aust.*, 1, p. 16, pl. 2, fig. 13-14.

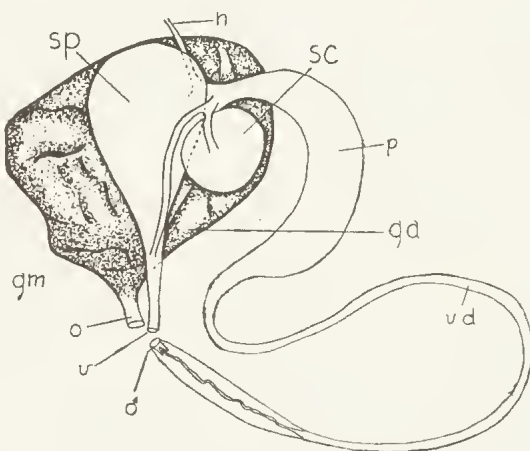
An examination of further material has made it necessary to transfer this species from *Nembrotha* Bergh, 1877 to *Gymnodoris* Stimpson, 1855. The absence of a rhachidian in the radula immediately separates this species from *Nembrotha*. A probable synonym of *Gymnodoris* is *Angasiella* Crosse, 1864, although in the past, authors including Bergh and O'Donoghue have united *Nembrotha* and *Angasiella*. The basis of this suggestion is the apparent similarity of *G. arnoldi* and *A. edwardsi* Angas, 1864, the type of *Angasiella*. Possibly *G. arnoldi* is a synonym of *A. edwardsi* in which case the latter name has nearly 100 years priority. However, until the latter species is again collected the author thinks it better to retain the 2 names.

The radula contains 40 rows of teeth of the formula 7.1.0.1.7. The inner lateral is very small, about half the size of the first marginal. All marginals simple, the inner marginal is by far the largest tooth in a row.



Text fig. 1.—*Gymnodoris arnoldi* (Burn). Half row of radula; a—inner lateral, b—outer laterals.

The inner lateral is simply hamate; the remaining teeth are shallowly curved. Labial armature chitinous, rather smooth but appears to be composed of very thin quadrangular and triangular plates.



Text fig. 2.—*Gymnodoris arnoldi* (Burn). Distal genital organs; ga—albumen gland, gm—mucus gland, h—hermaphrodite duct, o—oviduct, p—prostate, sc—spermatocyst, sp—spermatheca, v—vagina, vd—vas deferens, ♂—male aperture.

The genital organs are very similar to those figured by White (1951, p. 243) for *G. impudica* (Rüppell et Leuckart) from the Red Sea. Here however the prostate gland is not quite as large, and the vas deferens is very much longer and more slender. The spermatheca is very large and pear-shaped as usual; the uterine duct from the mucus gland is narrow and short, and the vagina is short and broad for it is little more than an extension of the lower part of the spermatheca. The spermatocyst is small and spherical; it debouches into the uterine duct close to its origin on the upper prostate gland. The oviduct is very short and in size nearly twice the diameter of the vagina. The vas deferens has, at its distal end, a strong elongate penial sheath but lacks an accessory or penial gland.

Locality: Torquay (1 specimen 7th January, 1958 F20,500; 1 specimen 27th January, 1958, F20,501; 1 specimen 30th October, 1958, F20,502). This last specimen was 20 mm. long in life and was the specimen in which the radula and genital organs were examined.

Station: Usually under stones at low tide but occasionally found crawling over stones covered by a few inches of water.

Remarks: The colour varies from pale pink to dark brown with the rhinophores either yellow or white. The spicules of the skin are always black tipped and give the body the appearance of a secondary colour skin over the body-colour.

Some remarks regarding the family GYMNODORIDIDAE follow after the description of the new genus proposed below.

TAMBJA gen. nov.

Diagnosis: Polycerids, without frontal or velar processes and with a vestigial frontal veil, with one pair of short extrabranial processes, having the body tuberculose. Body-colour monotone, with the tubercles of an opposite colour. Radula having 18 rows of teeth of the formula 3—4.1.1.1.3—4. rhachidian notched medianly (left side lower than right), first lateral bifid at tip. Jaws not present, replaced by a strong labial collar. Penis with fleshy knobs, each containing a minute calcareous centre. Without a prostate gland. Rhinophores without sheaths, contractile, with numerous laminae. Branchiae 3 or 5 in number.

Type species: *Nembrotha* (?) *verconis* Basedow and Hedley, 1905.

Remarks: A second species of *Tambja* is *Nembrotha sagamiana* Baba, 1955 from Japan. Although Baba does not describe his species as tuberculose or with extrabranial processes, his figures indicate these characters. The peculiar rhachidian of the radula at once separates the two species from *Nembrotha* Bergh, 1877, as does also the bifid first lateral. A point worthy of mention is that this new genus has few marginals while *Nembrotha* has between seven and twenty.

The relationship of *Tambja* to other polycerid genera has been carefully reviewed by the author. Odhner, 1941, placed *Nembrotha* and *Gymnodoris* in a new family, Gymnodorididae, to which should be added the genera *Analogium* Risbec, 1928, and *Paliolla* Burn, 1958. But here the author regards *Nembrotha* as the immediate relative of *Tambja* and places both genera in the family Polyceridae with *Tambja* near to the ancestral or archaic root from which all the other polycerid genera developed. *Nembrotha* should be regarded as an independent offshoot of this ancestral form that has developed along parallel lines to that of the Gymnodorididae, i.e., the degeneration and subsequent loss of velar and extrabranial processes. The remaining genera of the Polyceridae, following through from one genus to another, can be traced back to *Tambja*. It is only necessary to imagine the division through the notch of the rhachidian tooth of *Tambja* to obtain a typical *Polycera*

radula formula with the left side lower than the right. The acquisition of velar and extrabranchial processes, all simple in form, are the later development of the tubercles of *Tambja*, as opposed to the dendritic processes of the Triophidae with a Dendronotacean ancestry (Odhner, 1941, p. 12).

TAMBJA VERCONIS (Basedow and Hedley).

Nembrotha (?) *verconis* Basedow and Hedley, 1905, *Trans. roy. Soc. S.A.*, 29, p. 158, pl. 2, fig. 1-3.

A single specimen, in the collection of the National Museum of Victoria, is the basis for this record. It is a small specimen when compared with the dimensions of the type but agrees completely with the type description; the dimensions of the present specimen are 16.5 mm. long, 5.5 mm. broad and 9.5 mm. high. Unfortunately the specimen was allowed to die in strong sunlight and the colours have darkened considerably; however colour photographs of the living animal when first collected show it to be in agreement with Basedow and Hedley's figure of the type, e.g., bright yellow sparsely covered by dark blue spots.

The radula formula of the specimen is $12 - 13 \times 4.1.1.1.4$, this small number of rows bearing out the fact that the specimen is a juvenile. The type specimen had 18 rows of teeth. Except that the rhachidial tooth is stronger than is indicated in the type figure the shape of the teeth is exactly similar.

The vestigial frontal veil consists of three or four narrow ridges above the head, the lateral ridges skirt around the rhinophore bases and gradually fade out along the pallial line of tubercles.

Locality: South Channel Fort, Port Phillip Bay (1 specimen 8th December, 1957, F19,905, collected J. H. Macpherson).

Station: Collected from a rock and seaweed bottom in 10-12 feet of water (by skindivers).

Remarks: A more detailed examination of this specimen is to be undertaken in the future in connection with a review of the Australian Polyceridae.

POLYCERA JANJUKIA sp. nov.

Text figs. 3-4.

Diagnosis: A typical polyceridiform species with very large rhinophores. Length alive 8 mm. but in spirits it has contracted to 5 mm. Velar processes 6 (or 7), simple, not regular in size or shape. Back or pallial margin represented by a single row of raised coloured spots. A similar row of spots is present along the upper edge of the foot. Rhinophores immense in

comparison to the body—actual length about 3 mm., with 12-15 laminae and terminating in a small cylindrical cap. Branchiae 5 in number, contractile, bipinnate; anterior three larger than posterior two; anus protrudes between rear two plumes. Oral tentacles merely lobes of the head, indistinct. Foot very narrow and attenuated into a long tail.



Text fig. 3.—*Polycera janjukia* sp. nov. Half row of radula: a—inner laterals, b—outer laterals, c—first inner lateral in side view.

Jaws with posterior flange. Radula small, formula 7 x 3.2.0.2.3. The inner lateral is about half the length of its partner and as usual in the genus has a spur halfway along its inner side; the second lateral is strongly curved at the apex with a somewhat perpendicular flange towards the base. The marginals are thin, outer one vestigial, very small and in some rows non-apparent.



Text figure 4.—*Polycera janjukia* sp. nov. Dorsal view and detail of velum, head and anterior foot.

Body-colour bright pink, covered sparsely with medium sized ochraceous spots. Pallial and foot margin spots ochraceous; rhinophores and branchiae dirty yellow; foot, velum and head without spots, pink in colour. In spirits the spots have disappeared and the body is palest pink.

Locality: Torquay (1 specimen 27th April, 1958, F20,503).

Station: Under stone at low tide.

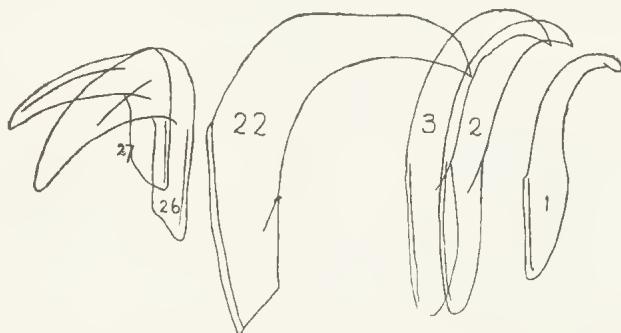
Remarks: A congener of this species is *Polycera parvula* (Burn, 1958) which was described as a species of the genus *Palio* Gray, 1857. This latter species is readily separable from *P. janjukia* in that its maroon body-colour is always present and that it has two velar processes instead of 6 or 7.

The specific name alludes to the Jan Juc Creek which enters the sea just south of the Torquay township.

TRIPPA ALBATA sp. nov.

Text fig. 5.

Diagnosis: Length about 10 mm. Body soft, rather broad, flat; mantle covered with low pustules all of about the same size, these in turn are beset by short white divergent spicules which in spirits are very nearly fully embedded in the pustules. A definite middorsal crest is present, extending from between the rhinophores to the branchial cavity. Branchial cavity with an irregular outline, branchiae unknown in number. Rhinophores with small raised sheaths, perfoliate. Foot not as long as mantle, rather broad and flat as in *Dendrodoris* sp. Oral tentacles stoutly digitiform, in fact nearly triangular.



Text fig. 5.—*Trippa albata* sp. nov. Half row of radula, the numbers refer to each tooth's position in the half row.

Buccal mass very small. Radula formula 15 x 27.0.27. The inner four laterals are minutely hooked and increase quickly in size; tooth 8 on either side of the bare rhachis are the largest teeth in a full row, and except for the two marginals little variation in size and shape occurs. The outer marginal is half as long as the antepenultimate tooth and the penultimate is midway between these two in the size of the cusp. All teeth simply hamate.

Colour pure white, sometimes cream on the mantle. Underside pure white.

Localities: Sutherlands Bay, Phillip Island (1 specimen 13th January, 1957, type, F20,504); Explosive Anchorage Buoy, off Altona, Port Phillip Bay (1 specimen, F19,908, in National Museum of Victoria, collected J. H. Macpherson); Westernport Bay, off Cowes, dredged (1 specimen, F18,828, in National Museum of Victoria, collected J. H. Macpherson).

Station: Under a mud stone at extreme low tide (type); dredged.

Remarks: Three specimens from diverse localities, all being very similar in every characteristic makes the species appear a constant one. The New South Wales species *T. intellecta* Kelaart, 1859, (= *Goniodoris erinaceus* Angas, 1864) is usually much larger than the above species and is of an ashy-brown colour; this is the only previous record of the genus from Australian waters. The genus *Trippa* Bergh, 1877, is very constant in radula characters, all species described have radula formulae within the scope of the representative generic formula of $15-30 \times 27-45.0.27-45$ and all teeth are simply hamate.

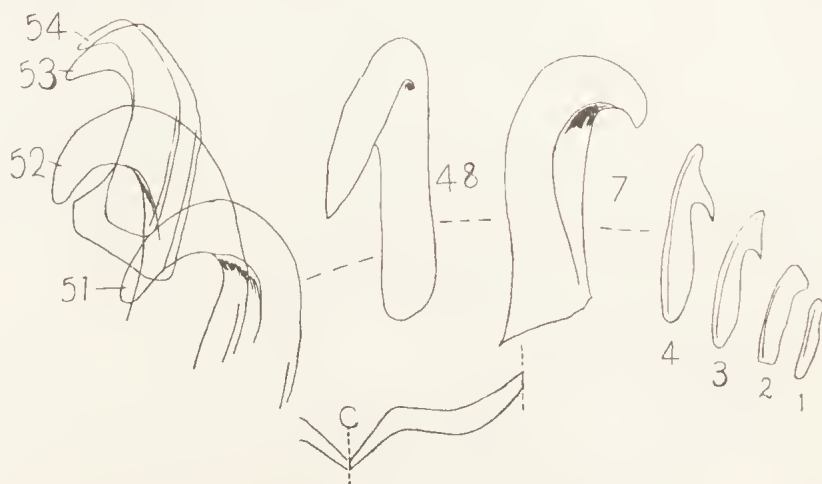
APHELODORIS BERGHI Odhner.

Text figs. 6-7.

Aphelodoris berghi Odhner, 1924, *Vidensk. Medd. naturh. Foren. Kjöb.*, 77, p. 53; nom. nov.,

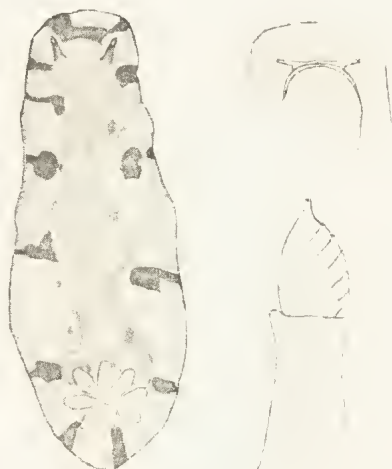
= *A. luctuosa* Bergh, 1905, *Semper's Reisen*, 9, Heft 2, p. 75, pl. 5, fig. 26-32, pl. 6, 1-2; non Cheeseman, 1882.

Diagnosis: Dimensions up to 30 mm. in length and 12 mm. in breadth; rather like a *Chromodoris* in shape, very convex with high sides. The body is extremely soft, the skin is thick and composed of many fibre-like spiculae; the surface of the skin is easily detached from the body and in some specimens large patches of colour are missing from rough handling. Along the mantle in two near parallel rows are two series of varying sized, soft, blister-like tubercles, arising behind the rhinophores and ending just in front of the branchial cavity with a single small tubercle. Rhinophores with five laminae, retractile within large cylindrical sheaths; when erected only the clavus protrudes above the sheath margin; in spirits, the sheaths do not contract. Branchiae eight in number; bipinnate surrounding the anus, retractile within a large sheathed cavity. Oral tentacles grooved on their upper anterior edges.



Text fig. 6.—*Aphelodoris berghi* Odhner. Half row of radula; the numbers refer to each tooth's position the half row; c—centre or rachis of radula in relation to the size and shape of a half row of the radula.

Radula formula 19 x 54.0.54. The inner lateral is very small and simple, and as with the subsequent three teeth is separated from its neighbour; all the succeeding laterals lie one upon the next. The largest tooth in a half row is about six from the margin; beyond this the teeth decrease a little in size but are still considerably larger than the inner laterals. All teeth except the inner two or three are simply hamate. Labial armature not smooth, consisting of short rods which lay towards the centre, i.e., inwards and downwards towards the radula.



Text fig. 7.—*Aphelodoris berghi*
Odhner. Dorsal view, detail of head,
and detail of rhinophore and sheath.

Colour is a good point upon which to identify the species whether alive or preserved providing the superficial colour skin is present. The body-colour is grey-fawn; a large irregular patch of maroon or purple-blue covers the median part of the dorsum. From this patch radiate 10-13 blue-grey rays, none of which are regular in shape. It is from between these blue-grey rays that the actual grey-fawn body-colour can be seen, i.e., the superficial skin is not pigmented between the blue-grey rays. Rhinophores and branchiae similar in colour to the median maroon patch. Underside of mantle and sides of foot spotted with maroon or blue-grey; sole of foot orange.

Locality: Torquay (1 specimen 25th October, 1957, F20,505; 2 specimens 7th January, 1958, F20,506; 1 specimen 17th January, 1959, F20,507).

Station: The first-mentioned specimen was collected from under a stone at extreme low tide, the other three were all crawling about over stones in shallow rock pools at low tide level.

Remarks: The rediscovery of this species removes from doubt another of those somewhat mysterious species described by Bergh from Tasmania. This species is closely related to the New South Wales and South Australian *A. varia* Abraham, 1877, but does not attain the dimensions of that species nor is it as light in colour; *A. varia* also does not have such large rhinophore sheaths as this species, in fact they sometimes appear to be non-existent.

DENDRODORIS MAUGEANA sp. nov.

Text fig. 8.

Diagnosis: Length up to 36 mm., body four times as long as broad, rather convex; mantle margin finely and intricately crenulate; rhinophores and branchiae very close to their respective ends of the body. Rhinophores with 12 laminae on a simple clavus, retractile within low-sheathed cavities. Branchiae 8 in number; tripinnate and bushy, surrounding the anus. Foot extends posteriorly beyond the mantle into a blunt tail; anteriorly it is thickened and notched. Orals small; leaf-like as usual in the genus.



Text fig. 8.—*Dendrodoris maugeana*
sp. nov. Dorsal
view.

Colour brilliant. Body-colour orange, mantle everywhere spotted with red; the spots are larger and closer together medianly than about the margins where they are also lighter in colour. The rhinophore clavi are dark brown; branchiae orange, sometimes red-tipped; the anus has a red spotted margin. Underside of mantle with a number of large brown spots, sole of foot clear yellow-orange.

Locality: Flinders (2 specimens 10th February, 1958, F20,509; 1 specimen 25th May, 1958, F20,508, type).

Station: Under stones at low tide. During the early part of 1958, this was a quite common find among the molluscan fauna of Flinders, but previous to that time it had not been noticed, nor has it been noticed since.

Remarks: *D. guttata* (Odhner, 1917) from Western Australia is, as far as the author knows, the only species with similarities to this but differences in colouring separate them. Other Victorian species of *Dendrodoris* lack red spotting upon the dorsum, nor do any of them have the rhinophores and branchiae so far separated and the mantle margin as crenulate as in the present species. The specific name is chosen to commemorate the occurrence of this species in the zoogeographical part of the Victorian coastline known as the Maugean Region.

PARATRITONIA LUTEA Baba.

Paratritonia lutea Baba, 1949, *Opisthobranchia of Sagami Bay*, p. 166, pl. 34, fig. 123, text fig. 104-106.

This record adds another family, genus and species to Victoria's short list of DENDRONOTACEA. The species is diagnosed as follows:—

DENDRONOTACEAN species of the family Tritoniidae with six pairs of dorso-lateral processes, beneath the first of which on the right side is the genital aperture and in front of the second are the anal and renal (nephroproct) apertures. The median tooth with a single cusp and three lateral denticles; the first lateral not much differentiated from the succeeding hamate laterals; marginalis needle-shaped and denticulate. The jaw plates having two or more rows of scales along the edge; velum with 3-4 short processes either side of a shallow median notch; head distinct with lobiform orals. Foot narrow except at the anterior end. The present specimen is pale pink in colour; in life the dorsal brim is reddish. The radula formula is 56 x 100.1.1.1.100, and the dimensions are 18 x 5 x 6 mm. in length, breadth and height respectively.

Locality: South Channel Fort, Port Phillip Bay (1 specimen 8th December, 1957, F19,906, in National Museum of Victoria, collected J. H. Macpherson).

Station: Collected alive on the gorgonian coral *Mopsella* sp. in 10-12 feet of water, taken by skindivers.

Remarks: The distribution of *P. lutea* appears to cover the whole of the western Pacific Ocean although it is of very recent description. The author has seen specimens collected in Sydney Harbour, N. S. W., about 1890 and others from the Great Barrier Reef in 1930. Many further species could be recorded from Australia, but except for Odhner, 1936, no DENDRONOTACEAN species have been described for many years.

NUDIBRANCHIA EOLIDACEA.

The fifteen species described below are well distributed among the major and minor divisions of the suborder EOLIDACEA. In fact they form a very sound and representative collection upon which to institute research when dealing with what may be termed a 'forgotten group' of Australian fauna. At present the species can be easily placed by reference to Odhner's classification of 1939. As further material becomes available it may be necessary to add to this classification.

As mentioned above the system of classification followed here is that of Odhner, 1939, modified by Marcus 1958. The position of the anus in relation to the liver system is the apparent solution to all the problems surrounding the EOLIDACEAN classification. Nevertheless certain difficulties can be experienced with some of the smaller species of

Coryphellids which belong to the superfamily Pleuroprocta. The Pleuroprocta nearly all have a mantle brim with the cerata above or dorsal and the anus below or lateral. But in *Coryphellina poenicia* (Burn 1957) this brim is rarely apparent in living specimens and never apparent in preserved material. A similar situation occurs in the northern European *Coryphella pedata* (Montagn 1815) but there the anus is further lateral than in the present species. Of the fifteen species here recorded for Victoria, ten of them have been collected at the one locality, Torquay. This should give some indication of the richness of a carefully searched area. Many more species should be found if similar careful collecting is carried out in other areas along the Victorian coastline.

For interest's sake a chronological list of the known Australian eolid species is here appended. This shows very well the paucity of past records. For comparison it should be remembered that in this paper the author has nearly doubled the number of species known and recorded from Australia.

1855 *Eolis cacaoatica* Stimpson.

1864 *Aeolis foulsi* Angas.

Aeolis macleayi Angas—described below.

Flabellina ianthina Angas.

Flabellina ornata Angas—described below.

Flabellina newcombi Angas—described below.

1884 *Rizzolia australis* Bergh.

1895 *Fiona marina* (Forskäl, 1775).

1900 *Aeolidiella faustina* Bergh—described below.

1903 *Glaucus atlanticus* Forster, 1777.

1940 *Glaucilla briareus* Bergh, 1864.

1947 *Bacolidia major* Eliot, 1903, (= *Beryhia amakusana* Baba, 1937, vide Marcus, 1958, p. 68).

1957 *Hervia poenicia* Burn—described below.

Superfamily PLEUROPROCTA.

EOLIDACEA which have a lateral anus below or outside the liver system. The families of this superfamily are regarded as archaic.

Family CORYPHELLIDAE.

Cerata numerous, crowded or in clusters. Nephroproct abanal (between anus and genital aperture). Radula triseriate.

Genus *CORYPHELLINA* O'Donoghue, 1929.

Pleuroproct Eolidacea, having the cerata in distinct clusters and the nephroproct just in front of the anus; rhinophores with rows of papillae along the posterior edge; radula triseriate, median tooth with a central cusp not markedly longer than the lateral denticles.

The genus is in need of further revision as it is very similar to *Coryphella* Gray, 1850. The two are separated because *Coryphellina* has papillae on portion of the rhinophores and is far more slender than its congener. The genital organs have yet to be investigated.

CORYPHELLINA RUBROLINEATA O'Donoghue.

Coryphellina rubrolineata O'Donoghue, 1929, *Trans. Zool. Soc. Lond.*, 22 (6), p. 798, text figs. unnumbered.

Diagnosis: Body very slender, length 10 mm. and breadth 1 mm. Sides high and straight, mantle brim present between the cerata groups; more apparent posteriorly than anteriorly. Foot corners narrowly tentaculiform, not very long. Cephalic tentacles long and slender. Rhinophores very large in proportion to the body, rear edge finely papillate, with many more and smaller papillae than the next species. Liver system with five branches on each side. Right liver and anterior branch of left liver each with four simple rows; the second, third and fourth branches of the left liver on either side contain two single rows each, and finally there is a single row each side. The cerata formula is 1.2.2.2—2.2—2.1—1, (see next species for explanation of cerata formula). The cerata are fusiform but not long, and are inserted singly in the simple rows. The anus is lateral just below the line of the mantle brim and in the middle of the interhepatic space, the nephroproct is just in front of and above the anus. The genital aperture is below the third row of the right liver.

The glans penis is conical and unarmed.

The colour of the body is transparent pale purple with a single longitudinal lateral line of crimson along either side of the body. The cerata are tipped with crimson, and each has an encircling band of crimson dots just below the tip, which is dull white. The sides of the head lack any distinctive colouring as is present in the next species. The digestive glands of the cerata are pale fawn.

Locality: Torquay (1 specimen 29th March, 1959, F20,756).

Station: Under stone at extreme low tide.

Remarks: This specimen was collected along with several examples of *C. poenicia* (Burn), from which it differed on the following characters, (i) the foot corners are not as produced, (ii) the rhinophores are larger and more finely papillate, (iii) the cerata are shorter and have rounded ends, and (iv) the body colour is transparent and without lateral colour patches on the head. Actually the specimen differs very little from the type description of 1929.

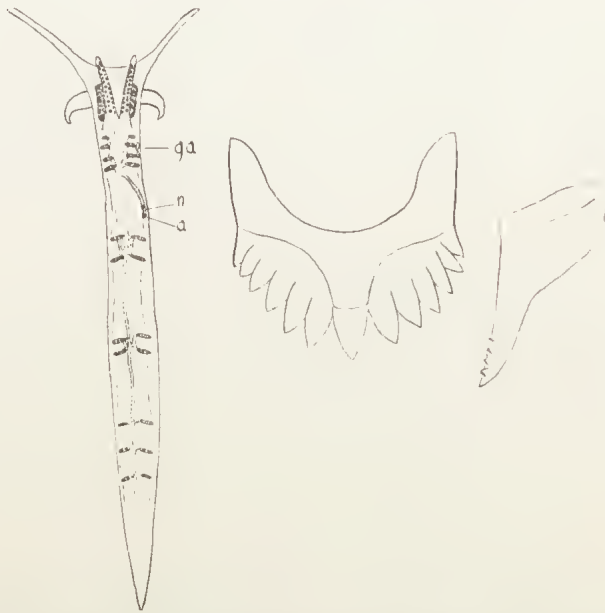
CORYPHELLINA POENICIA (Burn).

Text figs. 9-10.

Hervia poenicia Burn, 1957, *J. Malac. Soc. Aust.*, 1, p. 25, pl. 2, fig. 7-10.

Diagnosis: Body very long and slender, sides high and in some specimens separated from the dorsum by a shallow brim or flange. Dimensions up to

20 mm. in length and 2 mm. in breadth; usually specimens are about half this size. Foot corners long and narrowly tentaculiform. Cephalic tentacles long and slender. Rhinophores long, sometimes stout and sometimes slender, the posterior edge with three or more vertical rows of varying sized papillae. Liver system with four branches in the right liver and a similar number in the left partner. The second and third branches of the left liver on either side contain two single arms and finally there are three simple rows. The number of cerata in each row of the right side can be formulated as follows by counting from the anterior, 1.2.2.3—3.3—3.3—3—2—2, (the dots indicate the separate rows of each liver group, the dashes indicate the separate liver groups). The cerata are elongate fusiform in shape and are inserted singly in the simple rows. The anus is lateral in position emerging just in front of the second liver group on the right side. The nephroproct is just in front and a little dorsal of the anus. The genital apertures are below the second and third branches of the right liver.



Text figs. 9-10.—*Coryphellina poenicia* (Burn). 9—Liver system. 10—A median and a lateral tooth from the radula.

The radula has 34 series of teeth of the formula 1.1.1. The median tooth has a central cusp not markedly longer than its immediate lateral denticles; lateral denticles 6-7 in number, outer ones quite small. The lateral teeth have a broad base and slender cusp with four small denticles near the distal end of the cusp.

The penis is conical and unarmed.

The colour is distinct and striking to the eye. Body-colour pale purple or mauve without any markings; the cerata are bright red with white tips. The rhinophores are white or pale yellow-green. There is on either side of the head a dark purple kidney-shaped patch, this corresponds to the position of the buccal mass inside the body.

Localities: Portarlington (five specimens 28th October, 1956, F20,510); Torquay (three specimens 22nd November, 1957, F20,511; two specimens 7th December, 1957, F20,512; three specimens 27th April, 1958, F20,513; one specimen 30th October, 1958, F20,514). The type specimens were collected at Breamlea, Victoria. Others were taken at Blanket Bay, near Cape Otway.

Station: Under stones or crawling about on sea weed in rock pools at low tide level.

Remarks: Some variation takes place in the size and number of papillae on the rhinophores but they are never absent.

var. *aurantia* var. nov.

At Portarlington, 21st December, 1958, the author collected thirteen specimens of what appears to be a pure colour variety of *C. poenicia* (Burn).

Length of specimens 10 mm. Body-colour white with the purple patches either side of the head. The cerata are pale pink-orange in colour with white tips, in shape they are perhaps a little less elongate than in the typical form. The rhinophores showed the greatest amount of variation for some specimens had a similar number of large sized papillae as have typical specimens, and yet others had nearly bare rhinophores with only the slightest trace of papillation. The radula contains 28 series of teeth, the median tooth as usual, the laterals without the customary denticles. Because of the slight differences this form is here given the name *aurantia* var. nov.; the thirteen specimens are registered under the number F20,515.

This species and its colour variety are closely related to the type species of *Coryphellina*, *C. rubrolineata* O'Donoghue, 1929 but lack the strong body-colour and lateral markings, and have more cerata in each of the liver rows. This species is also larger. From the other eolids described below, this species is easily separated by the presence of papillae on the rear edge of the rhinophores and the very attenuated shape of the body.

Superfamily ACLEIOPROCTA.

EOLIDACEA which have the anus (and adanal nephroproct) emerging in the interhepatic space (i.e. between the first and second liver groups on the right side).

Family CUTHONIDAE.

Cerata in rows. Male and female genital apertures united or close together. Radula uniseriate, teeth with a projecting cusp (except in *Catriona*). Genital organs with an associated gland or sac on the male organ (except in the subfamily Tergipedinae).

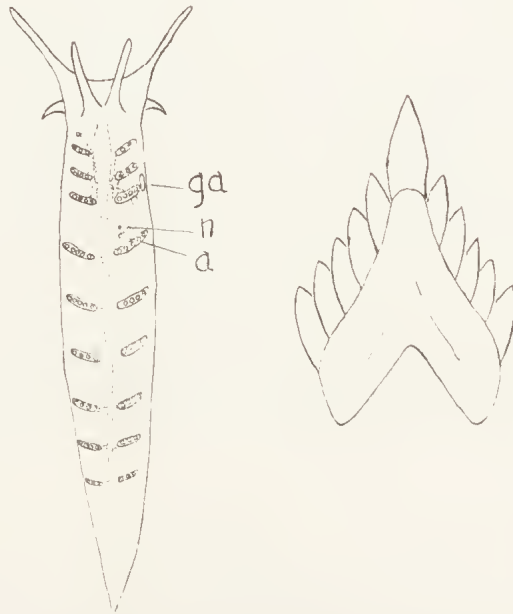
Genus *CUTHONA* Alder and Hancock, 1853.

Aeleioproet Eolidacea; with a uniseriate radula in which the teeth are arched and possess a central cusp markedly longer than the lateral denticles. having the jaw process denticulate; with the right liver containing at least three branches, with the cerata inserted in single rows; having simple rhinophores and the foot corners tentaculiform.

CUTHONA BRACTEA sp. nov.

Text figs. 11-12.

Diagnosis: Body long and slender, up to 12 mm. in length and 1.5 mm. in breadth. Foot corners produced into narrow tentaculiform processes. Cephalic tentacles long and slender. Rhinophores simple although they appear to be wrinkled in some specimens. The liver system contains three short simple branches in the right liver and either three or four in its left partner. The remaining branches of the left liver, number six on each side and are all short and simple. The cerata formula is 2.3.4-5-4-4-4-3-3. The cerata are all inserted in single rows upon the liver branches; they are elongate and attain their largest diameter very near the apex and then terminate in a blunt point. In the live animal the cerata are shallowly curved upwards from the body and are far enough apart that one row does not touch the next; in active specimens they have been observed to move within themselves, i.e., twist and turn. The anus is just in front of the fourth row of cerata on the right side and is near the dorsal end of that row, the nephroproct is in front of the anus. The genital apertures lie at the lateral end of the third or posterior row of the right liver.



Text figs. 11-12.—*Cuthona bractea* sp. nov. 11—
Liver system. 12—Radula tooth, dorsal view.

The radula has 27 series of teeth, each narrowly arched with an elongate spatuliform projection behind the central cusp. The central cusp is long, in actual fact about twice as long as the lateral denticles; these in turn are close together or over-lap one-another and are five in number.

The colour when alive is beautiful. The body is usually semi-transparent creamy-white; the cerata vary in colour from yellowish green (i.e. green gold) to burnished orange, always with a small white tip. Normally the rhinophores and cephalic tentacles are of the same colour as the body but in some specimens are white, while one specimen had a pale blue patch mid-way along the cephalic tentacles. Rarely pale blue patches may be present about the cerata bases.

Locality: Torquay (three specimens 22nd November, 1957, F20,518; six specimens 7th December, 1957, F20,519; two specimens 27th January, 1958; three specimens 27th April, 1958, type F20,516 and paratypes F20,517).

Station: Always under stones covered by fine sediment at low tide level. Many of the smaller specimens among the fine sediment on the underside of the stones, where they crawl about and feed.

Remarks: Unfortunately no trace of the beauty of the living animal remains in preserved material. The specific name was chosen because of the 'green gold' or gold-plated colouring of the cerata. This is the first record of this genus from Australia and the next genus is closely allied.

Genus *CATRIONA* Winckworth, 1941.

Acleioproct Eolidacea; with a uniseriate radula in which the teeth are arched, with a central cusp shorter than or not markedly longer than the lateral denticles; with the jaw process denticulate; with the rhinophores simple; having simple liver branches and at least three branches in the right liver, each with a single row of cerata; having the foot corners rounded.

CATRIONA VIRIDIANA sp. nov.

Text fig. 13.

Diagnosis: Body long and rather slender, length 8 mm. and breadth 1 mm. Foot corners rounded and expanded slightly beyond the width of the remainder of the foot. Cephalic tentacles short and claviform, the ends are rounded and a little swollen. Rhinophores simple, they appear to be slightly wrinkled but this may be muscular movement within themselves; bases close together. The liver system has three short simple rows in the right liver and its left partner. The remaining four branches of the left liver on either side are simple and short, all with the cerata inserted in a single row. The cerata are stoutly fusiform and terminate in a flattened tip; the formula is 3.4.5—5 (6)—4 (5)—4—3 (4), the figures enclosed in brackets indicate the number of cerata in the corresponding rows on the left side. The anus emerges in the interhepatic

space just in front of the dorsal end of the fourth liver row; the nephroproct is slightly in front of this again. The genital apertures are contiguous and are situated either side of the lateral end of the second right liver branch.



Text fig. 13. *Catriona viridiana* sp. nov.
Liver system.

The body is pale green-yellow and the rhinophores are yellow tipped. The cerata are dark green with white tips, all encased in a transparent yellowish skin.

Locality: Torquay (1 specimen 30th October, 1958, F20,520).

Station: Under stone at low tide level.

Remarks: The genus *Catriona* is distinguished from its congener *Cuthona* by the presence of rounded foot corners and a reduced central cusp on the radula teeth. The present specimen has retained much of the colour of the cerata but the body has become cream in tone. Without examining the radula, this species can easily be identified as a *Catriona* by the rounded foot corners and the position of the anus in the interhepatic space.

Subfamily TERGIPEDINAE.

This subfamily differs from the true Cuthonidae in that the right liver (and its left partner) contain at the most two branches. The genital organs do not have an associated gland or sac on the male organ. Probably the subfamily deserves family rank in the Aeleioprocta.

Genus *TERGIPES* Cuvier, 1805.

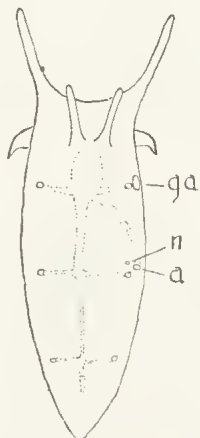
Acleioproct Eolidacea: with a uniseriate radula in which the teeth are arched with the central cusp longer than the lateral denticles, with a single row of denticles on the jaw processes; with the right liver (and left partner) containing a single row, each row terminating in a single ceras; with simple rhinophores and the foot corners rounded (? tentaculiform).

The other genus of this subfamily is *Embletonia* Alder and Hancock, 1851, which has a velum instead of cephalic tentacles. An internal examination of the present specimen may show that it should not be referred to *Tergipes* but to some other genus, possibly new. The presence of large tentaculiform foot corners substantiates this claim, although without internal examination little can be said.

TERGIPES PAUCULAS sp. nov.

Text fig. 14.

Diagnosis: Body short and plump, length 5 mm. and breadth 2 mm. In spirits, the foot corners are produced into stout tentaculiform processes. Cephalic tentacles very long and slender, much longer than shown in text figure 14, their actual length corresponds to that of the body, i.e., 5 mm. Rhinophores long and slender, simple, slightly wrinkled. The liver system is much reduced, the right liver and its left partner contains but one branch each and the posterior or left liver contains a further two simple branches either side. A single ceras surmounts the lateral extremity of each liver branch, thus the cerata formula is 1—1—1. The cerata are extremely elongate, fusiform, with the ends curled over; they tend to wave and move about when the animal crawls around. The anus emerges a little antero-lateral of the second liver branch and the nephroproct is a little above and in front of the anus. The genital aperture is large, and situated below the right liver.



Text fig. 14.—*Tergipes pauculas* sp. nov. Liver system.

The body-colour is transparent orange with the central liver duct showing as a pale blue mid-dorsal line. The rhinophores are orange with yellow upper ends. The cephalic tentacles are pale blue. The cerata have the digestive glands

coloured bright orange, all enclosed in a very pale blue skin. The foot and mouth are orange. In spirits a number of pale whitish longitudinal lines are present along either side of the body, otherwise the colour is dirty brown.

Locality: Portarlington (one specimen 20th March, 1955, F20.521).

Station: Under stone at extreme low tide, among seaweed.

Remarks: From an examination of the sketches made of the living animal, it can be stated that the foot corners are rounded in life and are expanded considerably beyond the remainder of the foot. Contrary to this the foot corners of the spirit specimen are definitely tentaculiform. Without further material it is perhaps better to accept the possibility of either rounded or tentaculiform foot corners in the specific (?) and generic diagnosis. The present specimen had lost all its cerata before being placed in spirits but should it be found again the paucity of cerata would at once provide the clue to its identity.

Superfamily CLEIOPROCTA.

Anus more or less within or behind the second group of cerata on the right side. Radula uniseriate.

Family FACELINIDAE.

Nephroproct abanal, generally separated from the anus by one or more rows of cerata. Right liver with three or more near-parallel branches and the left partner with a similar number. Radula teeth cuspidate.

Genus *FACELINA* Alder and Hancock, 1855.

Cleioproct Eolidacea: with a uniseriate radula in which the teeth are broadly arched with a central cusp, either denticulate or simple, and numerous lateral denticles; the jaw process with a single row of denticles; with five to fifteen parallel branches in the right liver, having the cerata inserted in single rows; with perfoliate or annulate rhinophores and tentaculiform foot corners.

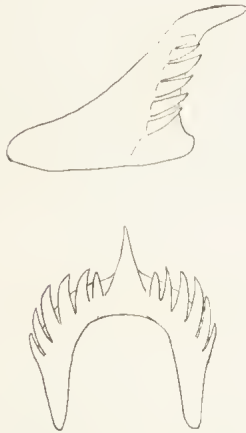
FACELINA NEWCOMBI (Angas).

Text figs. 15-16.

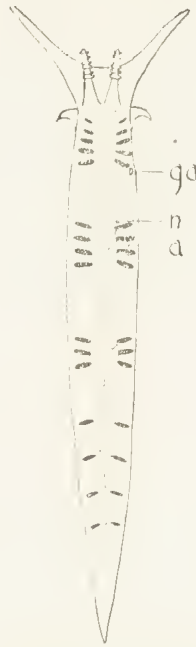
Flabellina newcombi Angas, 1864, *J. Conchylol.*, 12, p. 68, pl. 6, fig. 8.

Diagnosis: Body very slender and attenuated, length about 20 mm. and breadth 2 mm. Foot corners narrowly tentaculiform. Cephalic tentacles stout, often distally curled in towards each other. Rhinophores with 4-7 annulae, all near the distal end. The liver system contains a great many branches. The right liver and left partner have five short simple rows; in the remainder of the left liver the second branches have four, the third have three, and finally there are four single rows either side. The cerata formula is 2.3.4.5.5—4.4.4.4—4.4.4—3—3—2—2. The cerata are stoutly fusiform and bluntly pointed. The anus emerges in the midst of the second liver group on the right

side, i.e., with two rows separating it from the interhepatic space. The nephroproct is near the dorsal end of the first row of the second group. The genital apertures are below and behind the posterior row of the right liver.



Text fig. 15.—*Facelina newcombi* (Angas).
Lateral and dorsal views of a radula tooth.



Text fig. 16.—*Facelina newcombi* (Angas). Liver system.

The radula has nineteen series of teeth, each with a slender central non-denticulate cusp; most teeth have five strong lateral denticles but a few have a sixth below the normal five.

Body-colour pale cream maculated with large buff or fawn patches along the dorsum and laterally in front of the rhinophores. The rhinophore bases are brown, and usually the cephalic tentacles have a proximal and median brown patch. The cerata are black or dark brown internally, with white tips, the enveloping skin is sometimes spotted with silvery green dots.

Localities: Portarlington (one specimen 28th August, 1955, F20,522); Torquay (one specimen 9th March, 1957, F20,523; four specimens 22nd November, 1957, F20,524; three specimens 7th January, 1958, F20,525; two specimens 27th January, 1958, F20,526; one specimen 20th December, 1956, F20,527).

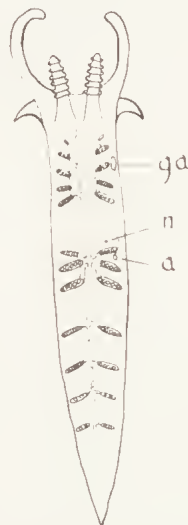
Station: Under stones or crawling on weed in rock pools left at low tide level.

Remarks: The maculated body and black or dark brown cerata immediately separate *F. newcombi* from all other species described here. The position of the anus and genital apertures separate this and the next species, *F. hartleyi* sp. nov.

FACELINA HARTLEYI sp. nov.

Text fig. 17.

Diagnosis: A very small species, slender and attenuated, length 5 mm. and breadth 1 mm. Foot corners broadly tentaculiform. Cephalic tentacles stout, and with the distal ends curled in towards each other as in *F. newcombi* (Angas). Rhinophores with 4—6 annulae, all near the top. The right liver and left partner contain five simple short rows, the second branches of the left liver three, and then there are four single rows either side. The cerata formula is 1.3.4.5.6—3.5.5—5—4—2—2. The cerata are rather elongate fusiform and attain their largest diameter just below the tip. The anus is behind the first row of the second liver branch; the nephroproct is in the interhepatic space a little more dorsal than the anus. The genital aperture is laterally below the third row of the right liver.



Text fig. 17.—
Facelina hartleyi
sp. nov. Liver
system.

Body-colour white with an orange patch either side of the head in front of the the rhinophores. Cerata very dark red with white tips.

Locality: Flinders (three specimens 25th May, 1958, type F20.528 and paratypes F20.529).

Station: Under a single stone at low tide level.

Remarks: This is a very pretty species when alive and much of the colour is retained in spirits. Named after Mr. Denzil Hartley of Melbourne, in whose company the three specimens were collected by the author.

Family FAVORINIDAE.

Comprises those genera in which the right liver (and left partner) are in the form of arches, or exceptionally are simple. The cerata are inserted in either single or double (multiple) rows upon the liver branches.

Subfamily FAVORININÆ.

The genera of this subfamily have the cerata inserted in single rows upon the liver branches.

Genus *FAVORINUS* Gray, 1850.

Cleioproct Eolidacea: with a uniseriate radula in which the teeth have a prominent central cusp, serrate along the edges and without lateral denticles; jaw processes with several rows of denticles or smooth; with the right liver and the more anterior branches of the left liver in the form of arches, cerata inserted in single rows; rhinophores smooth or wrinkled; with the foot corners produced into tentaculiform processes; having the penis short, conical and unarmed; with the nephroproct dorsal in front of the anterior limb of the adanal liver group.

FAVORINUS PANNUCEUS sp. nov.

Text fig. 18.

Diagnosis: A very small species, very slender, length 5 mm. Foot corners produced into narrow tentaculiform processes. Cephalic tentacles stout, ends curled in towards each other. Rhinophores long and slender, rear edge papillate; appear very large in comparison to the size of the body. Right liver and partner in the form of an arch. Second branches of the left liver on each side also arched and there are four posterior simple rows either side. The cerata in each group respectively number 5—3—2—2—1—1; in shape they are fusiform, short, sides more or less straight, the greatest diameter is attained about a third below the distal end and above this it terminates in a blunt point. The anus emerges a little behind the anterior arm of the second arch on the right side and the nephroproct is dorsal from the anus in the interhepatic space. The genital apertures are situated towards the anterior arm of the right liver.



Text fig. 18.—
Favorinus pan-
nuceus sp. nov.
Liver system.

Body-colour white, the buccal mass shows as a pink patch on either side of the head. The cerata are fawn with white tips.

Locality: Flinders (one specimen 25th May, 1958, F20,531).

Station: Under a stone at low tide level.

Remarks: When this species is collected again, the papillate rhinophores would enable quick identification. The presence of papillae on what should be simple rhinophores casts some doubt upon the correctness of placing *panuceus* in *Favorinus*. Further material will perhaps clarify the situation. The specific name is given in allusion to the wrinkled appearance of the rhinophores although they are papillate.

Genus *CRATENA* Bergh, 1864.

Cleioproct Eolidacea: with a uniseriate radula in which the teeth have a prominent central cusp and strong lateral denticles; with the jaw processes irregularly denticulate; with the anterior liver groups in the form of arches in which the cerata are inserted in single rows; having linear cephalic tentacles and usually smooth rhinophores, foot corners rounded or produced into tentaculiform processes; having the penis unarmed and with associated glands; with the nephroproct in front of the adanal group of cerata.

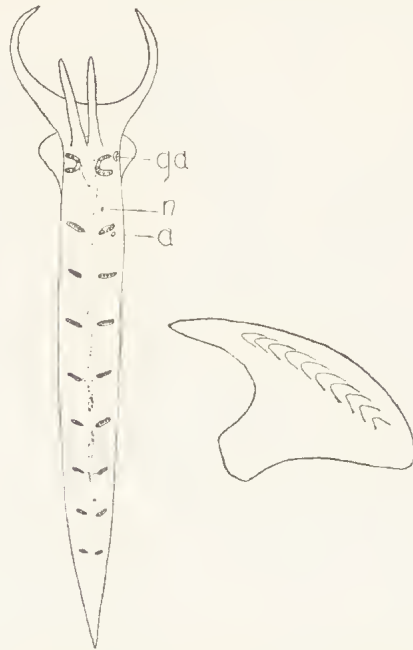
Remarks: The following two species necessitate the addition of this genus to the Australian list. Their remarkable colouring separate them from any others described here. The distribution of *Cratena* is world-wide but appears to be limited in the southern hemisphere to two or three species.

CRATENA MACPHERSONAE sp. nov.

Text figs. 19-20.

Diagnosis: Body very linear, tail narrow and long, length up to 20 mm. and breadth up to 2 mm. Foot corners expanded laterally and rounded in shape. Cephalic tentacles long and slender, distally curled upwards and inwards. Rhinophores long and smooth, bases approximating. The right liver and its left partner are in the form of narrow arches, the cerata are inserted in a single row on each arch. The remainder of the left liver is furnished with eight simple rows either side. The cerata in each group number respectively 7 (5)—5—6—5—5—4—4—3—2; in shape they are narrowly fusiform, pointed and strongly curved, so much so that they resemble sickles. The pericardium is very swollen and is much wider than the dorsal space between a pair of liver groups. The anus is at the rear of the most lateral ceras of the first simple liver branch on the right side; the nephroproct is dorsal about one-third the interhepatic space forward of the adanal liver row. The genital aperture is below the anterior arm of the right liver.

The radula contains 25 series of teeth, each with a prominent central cusp and 6—10 lateral denticles. In some aspects the teeth resemble those of *C. serrata*, in that viewed laterally the outermost denticles appear to be merely serrations of the upper edge of the tooth.



Text figs. 19-20.—*Cratena macphersona*
sp. nov. 19—Liver system, 20—Lateral
view of a tooth from the radula.

Body-colour pale green-tinted cream; cephalic tentacles and rhinophores yellow tipped. Cerata dark greenish-blue, each ceras with a yellow tip. Foot with a white sole.

Locality: Flinders (three specimens 16th May, 1959, collected J. H. Macpherson, type F20,790, paratypes F20,863).

Station: Collected from the weed growth on the piles of the jetty at the above locality.

Remarks: The beautiful blue and yellow cerata of this species at once distinguish it from any of the known Australian EOLIDACEA. The rounded foot corners are also a good character, but this species should not be confused with the smaller *Catriona viridiana* sp. nov. which has similarly rounded foot corners and green and white cerata. The species is named after Miss J. H. Macpherson of the National Museum of Victoria, to whom the author is indebted for much nudibranch material.

CRATENA SERRATA Baba.

Hervia serrata Baba, 1949, *Opisthobranchia of Sagami Bay*, p. 179, pl. 46, fig. 156-157, text fig. 142-143.

Diagnosis: Body rather plump, pinched in laterally near the rhinophores, length 15 mm. Foot broad, corners produced into short tentaculiform processes. Cephalic tentacles long and somewhat slender in comparison to the body. Rhinophores small, simple but wavy or wrinkled for most of their length. The liver has most of its branches in the form of arches; there are

six arches along either side including the right liver and left partner; two simple branches terminate the left liver posteriorly. The cerata are inserted in single rows upon the arches. The cerata are very elongate-fusiform, and terminate in a blunt point, they are capable of much movement within themselves. The anus is situated in the centre of the second arch on the right side with the nephroproct close by in the interhepatic space. The genital apertures are below the anterior arm of the right liver.

The radula of the present specimen contained only twelve series of teeth, each with about 25 small serrations along either edge of the cusp. The teeth are much crowded upon one another.

Body-colour cream, cerata pale pink with the digestive glands slightly darker.

Locality: Torquay (one specimen 7th January, 1958, F20,530).

Station: Under stone in a pool at low tide level.

Remarks: This record gives *C. serrata* a wide distribution in the western Pacific Ocean for its type locality is Japan. The pale pink colour of the cerata is without compare among the species tabulated here. The cream body and rather broad foot separate it from the greenish-bodied and narrow-footed *C. macphersonae*.

Subfamily FACALANINAE.

Favorinids with the cerata inserted in double rows upon the liver arches.

Genus *AUSTRAEOLIS* gen. nov.

Cleiproct Eolidacea: with a uniseriate radula in which the teeth have a prominent central cusp and 4—5 lateral denticles; the jaw processes denticulate. With most of the liver branches in the form of arches in which the cerata are inserted in double or multiple rows; with the nephroproct in front of the adanal liver group; having annulate rhinophores and tentaculiform foot corners; with a long finger-like penis, the glans of which is beset with a circlet of minute fleshy filaments.

Type species: *Flabellina ornata* Angas, 1864.

Remarks: This new genus is erected for what is probably the best known and most common of Australia's Eolidacea. The combination of the various characteristics given above separates *Austraeolis* from all other Eolidacean genera. The fleshy filaments of the glans penis are undoubtedly a mid-way development between those genera with an unarmed glans and those with a single hook or circlet of hooks on the glans. Specimens from the type locality, Sydney Harbour, have the filaments of the glans joined by a thin skin or web, much like the webbed foot of a duck.

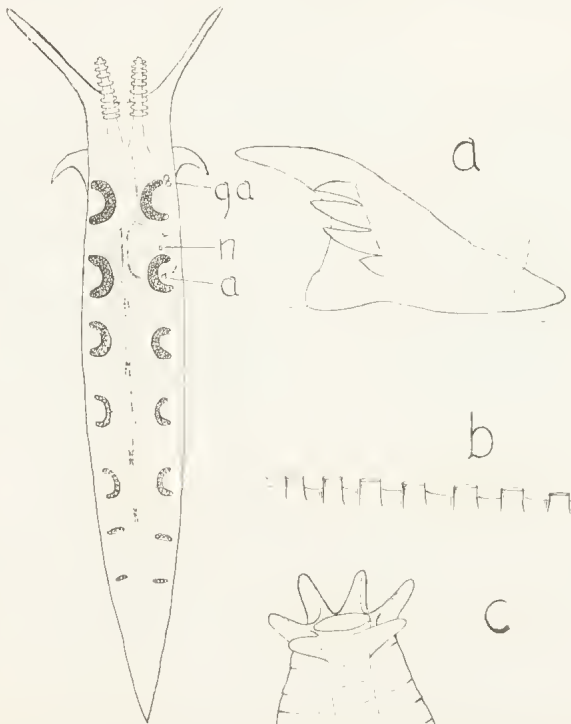
AUSTRAEOLIS ORNATA (Angas).

Text figs. 21-22.

Flabellina ornata Angas, 1864, *J. Conchylol.*, 12, p. 67, pl. 6, fig. 7.

Diagnosis: Body elongate, plump, length up to 35 mm. Foot corners narrowly tentaculiform. Cephalic tentacles long and slender. Rhinophores with 9 annulae. Liver system with the five anterior branches in the form of arches and the two posterior branches in the form of simple rows. The cerata are inserted in multiple rows in the anterior two arches, i.e., right liver and left partner and adanal group and partner; the third groups have the cerata inserted in double rows, beyond this they are in single rows. The cerata are far too numerous and close together to count accurately; they are very slender fusiform, rather short; the digestive gland appears as a series of transverse patches; they are contractile and can shrink or can elongate to half as much again as normal. The anus is in the centre of the second right arch of the liver and the nephroproct is in the interhepatic space in front of the adanal liver group. Genital apertures below the anterior arm of the right liver. Penis long, finger-like and curved forward, transversely demarcated by muscular ridges; glans beset with a circling of six minute fleshy filaments, without any trace of chitonous or spicular hooks. The seminal tube through the penis follows a defined path, very much convoluted towards the glans; the tube is orange-yellow in colour.

The radula contains 20—22 series of teeth, each tooth with a prominent central cusp and four lateral denticles, the outer of which is little more than a knob. The jaw processes have a single row of about twenty distinctive knob-like denticles along each masticatory edge.



Text figures 21-22.—*Austraeolis ornata* (Angas).
21—Liver system; 22—a Lateral view of a radula
tooth, b—Portion of the masticatory edge of the jaw,
c—Detail of the glans penis.

Body-colour pale orange flecked and maculated with yellow or white. The cerata are dark internally with white tips. The transparent skin enveloping the cerata is usually flecked or spotted with orange, red, yellow, brown, green and blue. Only one of these colour or any combination may be present in specimens from any one locality; when all colours are present the animal is most beautiful and showy.

Locality: Torquay (very many specimens, collected in the period from March 1956 to March 1958); Flinders (8 specimens 10th March, 1958, F20,532; two specimens 25th May, 1958, F20,533).

Station: Under stones and crawling on seaweed at low tide level.

Remarks: Little need be said concerning the present species other than to note its great variability of colour. *A. ornata* is very common along the eastern coastline of Australia, from Cape Otway, Victoria to Long Reef, New South Wales and possibly this range can be further extended westward and northward if collecting is undertaken.

AUSTRAEOLIS FUCIA sp. nov.

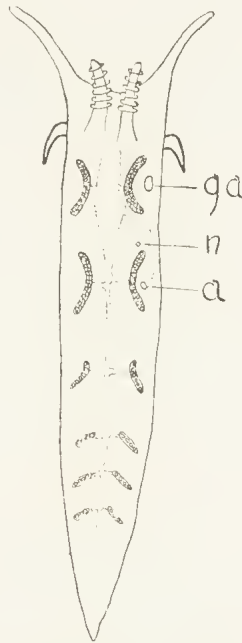
Text figs. 23-24.

Diagnosis: Body plump, rather high, length 9 mm. and breadth 2 mm. Foot corners very narrowly tentaculiform and close to the body. Cephalic tentacles long and slender. Rhinophores short, with six annulae. Liver system with the two anterior branches in the form of broad arches, the third branch on partial arches, and the remaining three branches simple and short. The arches of the third branches have very short or reduced anterior arms but are not simple as are the posterior branches. The cerata are elongate-fusiform, and are set in double rows upon the arches, the remaining branches have single rows of cerata. The anus is in the middle of the arch of the second liver group and the nephroproct is in the interhepatic space just above the anterior arm of the adanal liver group. The genital apertures are below the middle of the right liver arch.



Text fig. 23.—*Austraeolis fucia* sp. nov. Lateral view of a radula tooth.

The radula contains nineteen series of teeth, each tooth has a prominent central cusp and five lateral denticles, the outer three of which are somewhat shorter than the sequent two. In some teeth the outer denticle on either side is reduced to a mere knob.



Text fig. 24.—*Australis fucia* sp. nov.
Liver system.

Body-colour creamy-white. Cerata transparent, the digestive gland is dark red, with white tips.

Locality: Queenscliff (one specimen 20th November, 1956, F20,534).

Station: On seaweed in company with the Dendronotacean nudibranch *Melibe australis* (Angas), in rock pools at low tide level.

Remarks: No notes or sketches were made of this species other than it was collected with the nudibranch species mentioned above. From *A. ornata* (Angas) this species is separated by having fewer annulae on the rhinophores, fewer arches in the liver system, and five instead of four denticles on the radula teeth. The broad liver arches are probably a good specific character. In colour and type of rhinophores this species resembles *Facelina hartleyi* sp. nov. but the two species are separated by their very different liver systems.

Genus *ECHINOPSOLE* Macnae, 1954.

Cleioproct Eolidacea: with a uniseriate radula in which each tooth has a prominent central cusp with one or more denticles upon its lateral margins, and beyond this 3-4 lateral denticles; with the jaw processes denticulate; the right liver and most of the left liver in the form of arches in which the cerata are inserted in more than one row; with annulated rhinophores and the foot corners produced into tentaculiform processes; with an elongate finger-like penis, the glans of which is irregularly beset with a multiplicity of tiny spines; with an accessory gland entering the penial sheath; with the nephroproct dorsal in front of the anterior arm of the adanal liver group.

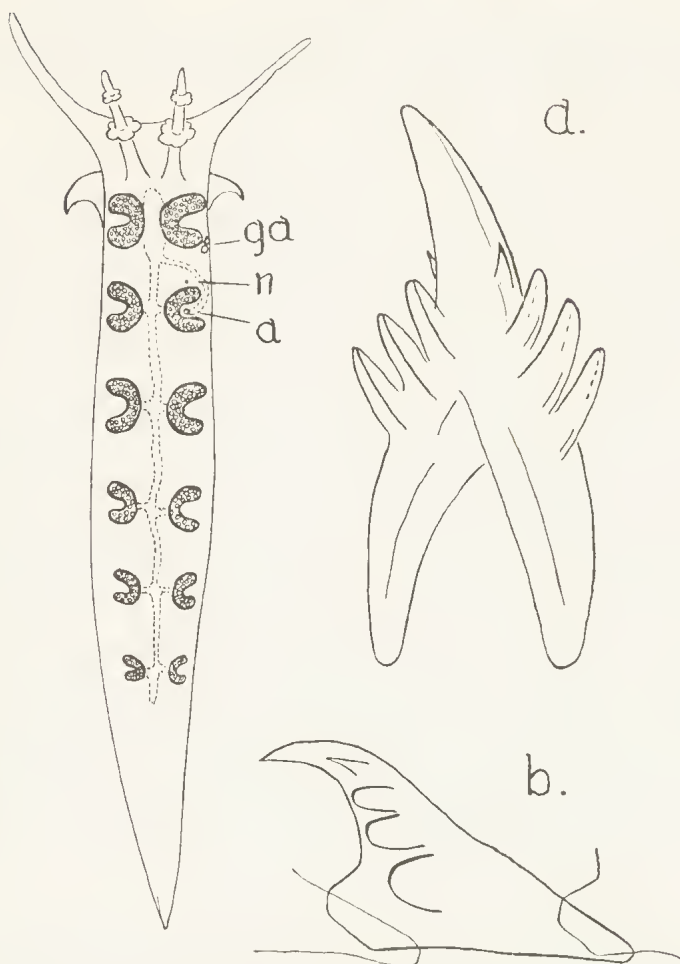
Remarks: This genus is here introduced into the Australian list for a single species which is somewhat dissimilar to the type *E. fulvus* Macnae, 1954. The very short, erect cerata of the present species are very much opposed to the long backward-lying cerata of *E. fulvus*. However the generic diagnosis accepts the present species, particularly in reference to the penial armature and the accessory gland.

ECHINOPSOLE BREVICERATAE sp. nov.

Text figs. 25-26.

Diagnosis: Body very long and slender, attenuating to a very fine tail, length up to 30 mm. and breadth up to 3 mm. Foot corners narrowly tentaculiform, at near right-angles to the body. Cephalic tentacles long and slender, stout at their bases; when alive these tentacles are always moving. Rhinophores have two large annulae, the shape of which is remarkable in that they are broadly crenulate about the edges, so much so that they resemble a flat flower with five or six round-ended petals. The liver system comprises six relatively narrow arches on either side in which the cerata are inserted in multiple rows anteriorly and double or single rows posteriorly. The anterior arches are broad in section and are elevated considerably above the surface of the body. The cerata are very short, fusiform; their bases are narrow and elongate so much so that they appear as stalks arising from the pedunculate liver arches; they stand erect and appear to be without endosacs in their distal ends. The anus emerges in the centre of the second liver arch of the right side, the nephroproct is in the interhepatic space in front of the adanal liver group. The genital apertures are below the rear arm of the right liver. The glans penis is beset with a double row of irregularly sized spicules or spines which are white in colour. A small accessory gland enters the penial sheath close to its aperture.

The radula contains only fourteen series of teeth but these are very large. The central cusp is rather long and bears a single small denticle on each side. The lateral denticles number three, they are short and strong. The masticatory edge of the jaws has a single row of irregularly sized and spaced denticles along its length.



Text figs. 25-26. - *Echinopsoc brevicornata* sp. nov. 25—Liver system. 26a—Foreshortened ventral view of a radula tooth. 26b—Lateral view of 26a.

The body-colour is consistent. Body bright pink with three lateral rows of red spots below the cerata. Cerata vary from pink to creamy-white without any cnidosacs colouring the tips. The foot is pale pink. Dorsally there may occasionally be present red and blue spots. In one specimen there were blue patches present about the head.

Locality: Torquay (three specimens 25th October, 1957, F20,536; one specimen 7th January, 1958, F20,537; 1 specimen 27th April, 1958 holotype F20,535); Flinders (one specimen 25th May, 1958, F20,538).

Station: The first three specimens from Torquay were collected together within a six inch square, crawling on weed at extreme low tide level in the late evening. The others were all collected under stones at low tide level.

Remarks: The bright pink colour, the pedunculate liver arches and the peculiar annulae on the rhinophores distinguish this species from any others described here. *Flabellina* Cuvier.

1830, to which Australian species have been attributed in the past, has similar pedunculate liver branches but differs in that the radula is triseriate.

Family AEOLIDIIDAE.

This family contains those Cleioproc genera in which the radula is furnished with pectinate teeth and the anus is situated behind the first posterior liver group on the right. The cerata are usually in rows which are directed antero-laterally. The masticatory edges of the jaws are smooth and the penis is unarmed.

Genus AEOLIDIELLA Bergh, 1867.

Cleiproct Eolidacea: with a uniseriate radula in which each tooth is pectinate, has a median cusp, and regularly graded lateral denticles; jaw processes, smooth; with the right liver either two rows in an elongate arch or with many rows; cerata inserted in single rows; having smooth rhinophores and short tentaculiform foot corners; with the penis unarmed, and the nephroproct pre-anal.

Remarks: Probably *Aeolidiella* should be divided into two subgenera on the basis of the right liver being either arched or many branched. The typical form is that with the right liver arched, and the author has in his possession a species from New South Wales which belongs to the second or many branched form. The species described below are typical forms.

AEOLIDIELLA FAUSTINA Bergh.

Aeolidiella faustina Bergh, 1900, *Zool. Jahrb.*, 13 (3), pp. 235-236, pl. 20, fig. 39-40.

Diagnosis: Body broad, plump, terminating in a blunt tail, length up to 30 mm. and breadth up to 6 mm. Foot as wide as if not wider than the body, edges very thin, corners short and tentaculiform. Cephalic tentacles long and slender. Rhinophores smooth but distinctly wrinkled into four folds which are lower on the rear edge than on the front. The liver system is very similar to that of *A. glauca* (Alder and Hancock, 1854) the type of the genus, in that the right liver is in the form of an elongate arch. The sequent four branches (left liver) are also in the form of elongate arches and posteriorly there are five simple rows each side. The cerata are stoutly fusiform, short, inserted very close together and hard to separate. The anus is behind the rear arm of the second liver group; the nephroproct appears to be between the two rows of that group. The genital apertures are separated and lie below and in front of the rear arm of the right liver.

The heart beats at the rate of 44 times per minute.

The radula contains some seventeen series of teeth, each of which has a small central cusp and 30-35 regularly graded lateral denticles. The inner denticles are short and broad but quickly lengthen and attain slenderness; the marginal denticles are short and slender.

Body-colour pale fawn or buff, sometimes greenish in hue. Occasionally the dorsum between the cerata is orange. Cerata vary from light brown to dark brown, with or without white spots, and always with white tips. One specimen from Torquay 17th January, 1959 had the pericardium coloured bright orange, in which it closely resembled *Proctonotus(?) affinis* Burn, 1958.

Localities: Torquay; Breamlea; Flinders; Sutherland's Bay, Phillip Island; Blanket Bay, Cape Otway.

Station: Very common under stones at or near low tide level.

Remarks: The drabness of colour and the closely packed cerata along either side of the body distinguish this species from the other species listed here. This is the first record of the species outside Tasmania where it was collected about the turn of the century. To the author's knowledge it has not been taken since that time.

AEOLIDIELLA MACLEAYI (Angas).

Eolis macleayi Angas, 1864, *J. Conchyliol.*, 12, p. 65, pl. 6, fig. 4.

This species closely resembles the last but differs considerably in the details of the general colouring of the living animal. The body-colour is palest pink with the dorsum, cephalic tentacles, rhinophores, head and pericardium heavily suffused with orange; both the rhinophores and cephalic tentacles are tipped with yellow. Cerata internally pale fawn, cnidosacs white, a broad band of yellow encircles each ceras near the tip and a secondary very much fainter and narrower band is generally present below the prominent distal one. Above, and on the anterior side only of the primary yellow band each ceras is suffused with orange. Behind the pericardium there is a little white speckling.

Other points of difference are (i) the rhinophores which are more strongly wrinkled on either side of an anterior median ridge, (ii) the narrower foot and relatively longer and sharper foot corners, (iii) the lesser number of cerata along either side of the body. The genital aperture opens in the area between the extremities of the right liver. The position of the anus at once separates this species from *A. faustina*, for it emerges in the space of the second liver arch on the right side, rather nearer the anterior arm than the centre. The nephroproct is preanal, separated from the anus by the preanal liver arm and situated very near the lateral end of that arm. As with *A. faustina* the right liver is in the form of a horseshoe, the succeeding three branches (left liver) of the right side are also horseshoes.

The dimensions of the present specimen are 14 mm. long and 4 mm. broad. The internal anatomy has not been examined.

Locality: Torquay (one specimen 31st December, 1959).

Habitat: Under stone at low tide.

Remarks: This single specimen agrees exactly with specimens from N.S.W. recently collected by the author which compared favourably with Angas' original description and figure. The brighter colouring of the body and the yellow banded and orange suffused cerata are the main pointers to be used in distinguishing this species from the drab *A. faustina*.

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