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PORT PHILLIP SURVEY 1957–1963.

MOLLUSCA.

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SUMMARY.

The Mollusca, other than Opisthobranchs, collected during the survey are listed with records of distribution within Port Phillip and where clarification is considered necessary, descriptions are enlarged upon and nomenclature discussed. A list of species previously recorded from Port Phillip but not taken on the present survey is appended.

INTRODUCTION.

The shelled Mollusca have a greater attraction for the amateur zoologist than any other group of marine organisms and therefore are as a rule the best known member of any invertebrate fauna. This is very much the case in Victoria where settlement is comparatively recent and the number of professional zoologists has been limited.

Thus the components of the molluscan fauna are known but the ecology, anatomy and even the distribution of many species is still in need of study. The intention of the survey is to give information on the distribution and ecology of the species collected. The main body of the paper records the stations (see Charts I and II and Table A at back of volume) at which each species was taken and gives brief notes on the ecology and if necessary the nomenclature, and a description of the less well known species. None are new.

Species previously recorded from Port Phillip but not taken on the survey are listed with their place of collection. Many of these are minute and most records are from south of the Nepean Bay bar so were probably casual visitors from Bass Strait. A few early records from the northern end of Port Phillip suggest that pollution by a large bayside population may have proved too much for some species. Many such still occur in the comparatively unaffected waters of Western Port.

Most of the collecting of the survey was done in waters of greater depth than one fathom but it is intended to extend its scope as time permits to cover the littoral. This has already been commenced and collections have been made at a number of intertidal stations. Thus it was thought desirable to include the known littoral species in this account and so give as complete a review as possible of the molluscan fauna of Port Phillip.

Class **AMPHINEURA.**

Order **Lepidopleurida.**

Family LEPIDOPLEURIDAE.

Terinochiton liratus (A. Adams and Angas).

Lepidopleurus liratus A. Adams and Angas, 1864. Proc. Zool. Soc., p. 192.

Terenochiton liratus Iredale and Hull, 1925. Aust. Zool., III. (8), p. 342, pl. 39, f. 4.; 1927. Monograph p. 44, pl. 6, f. 4.

MATERIAL: Port Phillip Survey: Area 58 (293). Nat. Mus. Coll:—Port Phillip Heads (Area 58).

Order **Chitonida.**

Family Lepidochitonidae.

Subterenochiton gabrieli (Hull).

Ischnochiton gabrieli Hull, 1912. Proc. roy. Soc. Vic., 25, p. 120, pl. 8, f. 1a–f.

MATERIAL: Port Phillip Survey: Areas 55 (147), 13 (92).

Family Mopaliidae.

Poneroplax albida (Blainville).

Chiton albida Blainville, 1825. Dict. Sci. Nat. (Levrault) 36, p. 547.

Poneroplax albida Iredale and Hull, 1926. Aust. Zool., IV. (3) p. 165, 2 text. fig., pl. 18, f. 1, 9, 10.

MATERIAL: Port Phillip Survey: Areas 55 (intertidal).

REMARKS: This is a common species of the lower littoral on rock platforms where it occurs on exposed surfaces in the "bare" zone of Bennett and Pope. Although an inhabitant of exposed ocean platforms it penetrates as far north in Port Phillip as Ricketts Point (Area 23).

Poneroplax costata (Blainville).

Chiton costatus Blainville, 1825. Dict. Sci. Nat. (Levrault) 36, p. 548.

Poneroplax costata Iredale and Hull, 1926. Aust. Zool. IV., (3) p. 165 text figs., pl. 18, f. 1, 9 and 10.

MATERIAL: Port Phillip Survey: Areas 55 (39); S. side Schnapper Point.

REMARKS: Of similar habitat to the previous species and occurring with it in Port Phillip.

Kopionella matthewsi (Iredale).

Plaxiphora matthewsi Iredale, 1910. Proc. Mal. Soc., 9, p. 99. Iredale and May, 1916. ibid. XII., p. 101, pl. 5, f. 4, 4a^{ii}, 4a^{iii}.

MATERIAL: Port Phillip Survey: Areas 42 (38); Nat. Mus. Coll.: Mornington (Area 55).

Family Cryptoplacidae.

Craspedoplax variabilis (H. Adams and Angas).

Hanleya variabilis H. Adams and Angas, 1864, p. 194, pl. 6, f. 3.

MATERIAL: Port Phillip Survey: Areas 48 (34); Nat. Mus. Coll.: Mornington (Area 55), Barwon Heads (Area 56).

Acanthochiton bednalli (Pilsbry).

Acanthochites bednalli Pilsbry, 1894. Proc. Acad. Nat. Sci. Philad., p. 81, pl. 2, f. 7–11.

MATERIAL: Port Phillip Survey: Area 42 (38); Nat. Mus. Coll.: Port Phillip Heads (Area 58).

Acanthochiton granostriatus (Pilsbry).

Acanthochites granostriatus Pilsbry, 1894. Nautilus, 8, p. 119; Proc. Acad. Nat. Sci. Philad., p. 81, pl. 2, f. 1–6; pl. 4, f. 37.

MATERIAL: Port Phillip Survey: Areas 55 (39); Gatliff Coll.: Black Rock (Area 14), Sandringham (Area 13).

Meturoplax retrojecta (Pilsbry).

Acanthochites retrojecta Pilsbry, 1894. Nautilus 7, p. 107.

Meturoplax retrojectus Iredale and Hull, 1925. Aust. Zool., IV. (2) p. 89, pl. 10, f. 26–30.

MATERIAL: Port Phillip Survey: Areas 13 (93, 94); 14 (95); 36 (77); 28 (285); 30 (280).

REMARKS: This is a cryptic reef dwelling species which occurs in suitable sheltered positions such as amongst *Galeolaria* or algae from the lower littoral to several fathoms.

Cryptoplax iredalei Ashby.

Cryptoplax iredalei Ashby, 1923. Trans. roy. Soc. S. Aust., 47, p. 238, pl. 19, f. 4.

MATERIAL: Port Phillip Survey: Areas 59 (36); 66 (292); 58 (293).

Cryptoplax striata (Lamarck).

Chitonellus striatus Lamarck, 1819. Anim. s. Vert. 6, p. 317.

Cryptoplax striata Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 13, f. 21.

MATERIAL: Port Phillip Survey: Area 61 (239).

Family ISCHNOCHITONIDAE.

Ischnochiton elongatus (Blainville).

Chiton elongatus Blainville, 1825. Dict. Sci. Nat. (Levrault), 36, p. 542.

Ischnochiton elongatus Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 14, f. 22.

MATERIAL: Port Phillip Survey: Area 55 (39); (Sunnyside beach intertidal); 13 (93, 94); 14 (95); 5 (53–4); 27 (41); 17 (170); 6 (137); 55 S. side of Schnapper Point; 30 (280); 63 (163).

Ischnochiton falcatus Hull.

Ischnochiton falcatus Hull, 1912. Proc. roy. Soc. Vict. 25, p. 121, pl. VIII.

MATERIAL: Port Phillip Survey: Areas 50 (230).

Ischnochiton lineolata.

Chiton lineolatus Blainville, 1825. Dict. Sci. Nat. (Levrault), 36, p. 541.

Ischnochiton lineolatus Macpherson and Gabriel, 1962. Marine Molluscs of Victoria p. 14, f. 23.

MATERIAL: Port Phillip Survey: Area 42 (38).

Ischnochiton variegata (H. Adams and Angas).

Lepidopleurus variegatus H. Adams and Angas, 1864. *Proc. Zool. Soc. Lond.* 1864, p. 192.

Ischnochiton atkinsoni Iredale and May, 1916. *Proc. Mal. Soc. Lond.*, XII., p. 110. pl. IV., f. 3.

Ischnochiton atkinsoni lincolnensis Ashby, 1920. Trans. roy. Soc. S. Aust., 44, p. 275, pl. XII., f. 5a, 5b.

Ischnochiton variegatus Iredale and Hull, 1927. *A Monograph of Aust. Loricates* p. 13, pl. 1, f. 2.

Ischnochiton atkinsoni, ibid. p. 20, pl. II., f. 33a, 33b.

MATERIAL: Port Phillip Survey: Areas 42 (38); 55 (intertidal S. side of Schnapper Point), 37 (40).

REMARKS: This is a variable species and there has been considerable confusion amongst authors in regard to its determination. Adams and Angas originally applied the name *variabilis* to specimens from

Yorke Peninsula, S. Australia and Iredale and May named the Tasmanian representative *atkinsoni*. Ashby considered some S. Australian and Victorian specimens to be distinct from *variegatus* and closer to the Tasmanian *atkinsoni* of which he made them a subspecies calling it *lincolnensis*.

Iredale and Hull disagreed with this and put *lincolnensis* into the synonomy of *variegata*. They still retained *atkinsoni* and distinguished between it and *variegata* by the size of girdle scales and number of slits, in *variegata* and in *atkinsoni*. As the Port Phillip material proved difficult to place satisfactorily the whole group came under review. The girdle scales were measured with a micrometer eye piece and in all three so called species were approximately the same size.

Three specimens from each of the type localities were examined to determine the formation for the slits and it was found that the number in the anterior valve varied between 9–12, and in the posterior between 9–13. Usually the number of slits in the anterior and posterior valves is the same but not always.

Heterozona cariosa (Dall).

Heterozona cariosa Dall, 1892. In Pilsbry Man. Conch., XIV., p. 66, pl. 24, f. 23.

MATERIAL: Port Phillip Survey: Areas 55 (Sunnyside beach intertidal); 13 (93, 94); 14 (95); 27 (41); 17 (170); 42 (38, 281); 28 (285); 16 (143). Nat. Mus. Coll.: Port Phillip Heads (Area 58).

Heterozona fruticosa (Gould).

Ischnochiton fruticosa Gould, 1846. Proc. Boston Nat. Hist. Soc., II, p. 142; Dall, 1892 in Pilsbry Man. Conch., XIV., p. 91, pl. 23, f. 78–80.

MATERIAL: Port Phillip Survey: Area 5 (53–4).

Ischnoradsia evanida (Sowerby).

Chiton evanidus Sowerby, 1840. Mag. Nat. Hist., (Charlesworth), IV., p. 291; Conch. Illust. (Chiton) 1840 f. 139.

MATERIAL: Port Phillip Survey: Areas 55 (S. side Schnapper Point).

REMARKS: This is a sublittoral species living under stones and so was not collected on the present phase of the survey, though it is known to be common in Port Phillip.

Aulocochiton cimolia (Reeve).

Chiton cimolia Reeve, 1847. Conch. Icon 4, pl. 21, f. 141.

MATERIAL: Port Phillip Survey: Area 36 (76) Nat. Mus. Coll.: Williamstown (Area 6).

Rhyssoplax tricostalis (Pilsbry).

Chiton tricostales Pilsbry, 1894. Nautilus VIII., p. 54.

Rhyssoplax tricostalis Macpherson and Gabriel, 1962. Marine Molluscs of Victoria p. 25, f. 37.

MATERIAL: Port Phillip Survey: Areas 13 (93, 94); 14 (95); 6 (65); 59 (36); 55 (147); 31 (10); 6 (137); 66 (292); 42 (281). Nat. Mus. Coll.: Port Phillip Heads (Area 58).

Family CHITONIDAE.

Rhyssoplax exoptanda Bednall.

Chiton bednalli Pilsbry, 1895. Nautilus 9, p. 90; Bednall, 1897. Proc. Mal. Soc. Lond., II., No. 4, p. 153, text. fig. and pl. 12, f. 8.

MATERIAL: Port Phillip Survey: Area 14 (175).

Class **GASTROPODA.**

Family HALIOTIDAE.

Notohaliotis ruber (Leach).

Haliotis ruber Leach, 1814. Zool. Misc., 1, p. 54, pl. 23.

MATERIAL: Port Phillip Survey: Areas 6 (137); 13 (93); 14 (175); 17 (172); 27 (41); 30 (10, 135); 31 (132); 55 (intertidal); 58 (150–2); 59 (24, 36, 79, 81); 61 (37); 63 (163); 64 (166). Nat. Mus. Coll.: Hobson's Bay (Areas 2 and 3), Geelong (Area 37–8); Brighton (Area 7); Beaumaris (Area 14); Mornington (Area 55); Mordialloc (Area 24); Point Lonsdale (Area 58); R. Burn Coll.: Portarlington (Area 29); Ocean Beach, Rye (Area 67).

REMARKS: This is the commonest and most widespread species of Haliotidae in south-eastern Australia, it occurs abundantly both in bays and on the open coast wherever reefs provide a suitable substratum for its attachment. In September, 1960, at stations 10 and 135 there was one adult specimen every two yards ranging in depths from 8 to 40 feet. Other reefs such as off Mornington (Area 55) and Pope's Eye (station 36) also carried dense populations.

Since the completion of this survey large scale commercial fishing of *Haliotidae* is being carried out and the Fisheries and Wildlife Department have supplied the following figures of the catch for 1964–65. Flesh weight of 68,088 lb. and shell weight of 204,267 lb.

Marinauris emmae (Reeve).

Haliotis emmae Reeve, 1846. Conch. Icon., 3, pl. 10, f. 29.

MATERIAL: Port Phillip Survey: Areas 58 (150–2); 64 (164); R. Burn Coll.: Portarlington (Area 29); Nat. Mus. Coll. Queenscliff (Area 58).

REMARKS: This is not a very common species in Victorian waters and the only two records in the present survey indicate that it favours open but sheltered water ranging in depth from 10 to 20 feet. As the substratum of the two localities is quite different, stations 150–2 being dune limestone and 164 granite, it would seem that it is hydrological conditions rather than type of rock that is the limiting factor in distribution.

It is not recorded further east than Western Port in Victoria.

Schismotis laevigata (Donovan).

Haliotis laevigatus Donovan, 1808. Rees Encyclopaedia, Conch. Series, pl. 6.

MATERIAL: Port Phillip Survey: Areas 30 (10, 135); 42 (38); 58 (150); 59 (23, 24, 36). Nat. Mus. Coll.: Hobson's Bay (Areas 2 and 3).

REMARKS: This species like *M. emmae* is at the end of its range eastward and is selective in habitat, selection seems to be based, as in that species, more on hydrological conditions than on substratum.

This species is fished commercially but, because of its comparative scarcity in Victorian waters, forms only a small proportion of the commercial fishery.

Family Fissurellidae.

Notomella candida (A. Adams).

Emarginula candida A. Adams, 1851. Proc. Zool. Soc. p. 85, No. 30; Reeve, 1873. Conch. Icon. vol. XIX., pl. 7, f. 45.

MATERIAL: Port Phillip Survey: Areas 13 (94); 55 (39, 149); 59 (36); Nat. Mus. Coll.: Port Phillip Heads (Area 58).

REMARKS: There has been some confusion as to the correct nomenclature for the common members of the genus *Notomella* in southern Australia. In order to clarify the matter specimens of the so called species *Emarginula candida* and *E. dilecta* A. Adams were sent to the British Museum for comparison with the type material. Mr. S. P. Dance's comments were as follows:

> "*Emarginula candida* A. Adams, 1851. The only specimens you have sent which match the type species of this species are those in lot F25270 (Port Phillip Heads). Those in lot F25271 (Port Jackson, N.S.W.) may come within the range of variability of the species but you are in the best position to judge this.
>
> *Emarginula dilecta* A. Adams, 1851. None of your species matches the type series of this species. I believe that this name must be deleted from the southern Australian list, however, for the following reason. The only well-localized lot in our collection which does match the type series is from Bombay. Other specimens in our collection labelled *dilecta* are quite unlike the types and I conclude therefore, that Adam's locality for the species given with the original description is erroneous. This would not be the first time that Adams gave a wrong locality for a species".

In regard to *E. candida*, as the present paper is not concerned with material other than from Port Phillip it seems best to leave discussion on the relationship of the Victorian and N. S. Wales forms until detailed examination of the animals can be carried out. The N. S. Wales form has already been separated from the South Australian shells as *N. hedleyi* Thiele.

Mr. Dance's comment on *E. dilecta* confirm the conclusions reached by Hedley (Proc. Linn. Soc. N. S. Wales, 28, 1913, p. 276; ibid., 48, 1923, p. 307) and as the same species appears to extend from N. S. Wales to Western Australia Hedley's name *bajula* will replace *dilecta* in the literature of this species.

Montfortula rugosa (Quoy and Gaimard).

Emarginula rugosa Quoy and Gaimard, 1834. Voy. "*Astrolabe*" Zool. 3., p. 331, pl. 68, f. 17–18.

MATERIAL: Port Phillip Survey: Areas 55 (intertidal); 59 (36); 42 (38, 108); Nat. Mus. Coll.: Sandringham (Area 13–4).

REMARKS: This is a shallow water species whose habitat is in shelter at and below low tide mark. It is common where *Galeolaria* and algae afford maximum shelter and so was only taken on the present survey at stations in very shallow water. However, it is known to be common on suitable rock platforms throughout the southern half of Port Phillip.

Amblychilepas javanicensis (Lamarck).

Fissurella javanicensis Lamarck, 1822. Anim. s. Vert., 6 (2), p. 14; Delessert 1841, *Recuiel. Coquilles* pl. 24, f. a. b. c.

MATERIAL: Port Phillip Survey: Area 66 (292). Pritchard and Gatliff Coll.: Portsea and Sorrento (Area 58–9); Nat. Mus. Coll. Dromana (Area 63–70).

REMARKS: This species lives in sand in open but sheltered water in depths from low water to at least 10 fathoms and on the present survey was not taken inside Port Phillip Heads.

Amblychilepas omicron (Crosse and Fischer).

Fissurella omicron Crosse and Fischer, 1864. Journ. de Conch., 12, p. 348; ibid. 13, p. 41, pl. 3, f. 4–6.

MATERIAL: Port Phillip Survey: Areas 59 (23); Gatliff Coll.: Portsea (Area 58–9).

REMARKS: This species lives amongst algae on rock platforms in shallow water. It seems to require sheltered but clear water and has not been taken north of Portsea.

Amblychilepas nigrita (Sowerby).

Fissurella nigrita Sowerby, 1834. Proc. Zool. Soc., p. 127; Sowerby 1835, *Conch. Ill.*, p. 6, No. 51, f. 47.

MATERIAL: Port Phillip: 42 (38); 64 (164).

REMARKS: This and the following species occur in shallow water under stones in bays and inlets that give sheltered clear water but it does not penetrate into the north half of Port Phillip.

Amblychilepas oblonga (Menke).

Fissurella oblonga Menke, 1834. P. 33.

Lucapinella pritchardi Hedley, 1895. *Proc. roy. Soc. Vic.* VII. (n.s.), pp. 198–9, pl. II., f. 3–7.

MATERIAL: Port Phillip: Area 64 (164); Gatliff Coll.: Port Phillip; Nat. Mus. Coll.: Brighton (Area 7).

REMARKS: Occurs under similar conditions to the species above.

Cosmetalolepas concatenatus (Crosse and Fischer).

Fissurella concatenata Crosse and Fischer, 1864. Journ. de Conch. 12, p. 348, pl. 3, f. 4–6.

MATERIAL: Port Phillip Survey: Area 59 (36); Gatliff Coll.: Port Phillip uncommon.

REMARKS: This species occurs under stones and in clear, shallow water, such a habitat is found within the perimeter of Pope's Eye Annulus (Station 36), the only station at which it was taken in the present survey.

Eligidion audax (Iredale).

Eligidion audax Iredale, 1924. *Proc. Linn. Soc. N. S. Wales*, 49, p. 220, pl. 35, f.5–6.

Fissurella lineata Hedley, 1900 (non Sowerby), ibid., 25 pt. 1, p. 95, pl. 3, f. 11, animal.

MATERIAL: Port Phillip Survey: Area 14 (175; off shore Ricketts Point); 30 (130); 31 (10); 55 (147, off Schnapper Point). Gatliff Coll.: Sandringham (Area 13–14), Mornington (Area 55), Sorrento (Area 59). Nat. Mus. Coll.: Williamstown (Area 6), Hobson's Bay (Areas 2 and 3), Mordialloc (Area 55).

REMARKS: This large keyhole limpet is common from shallow water (1 or 2 fathoms) to depth of 25 fathoms or more where reefs afford it a suitable substratum. In Port Phillip it is confined to the more open water

of the south eastern half of the bay where it is common on the platforms. In Bass Strait it has been dredged at 25 fathoms. The Isopod *Cymodoce gaimardii* has a similar distribution (see Naylor 1966, Mem. nat. Mus. Vict. No. 27, p. 194).

Family Patellidae.

Cellana tramoserica (Sowerby).

Patella tramoserica Sowerby, 1825. Cat. Tankerville Coll.: p. 30; Reeve 1854, *Conc. Icon.* VIII., pl. 13, f. 27a.

MATERIAL: Port Phillip Survey: Areas 55 (intertidal); 59 (36, 81). Nat. Mus. Coll.: Portsea (Area 58–9); Mornington (Area 55); Brighton (Area 7).

REMARKS: This is an intertidal rock dwelling species common on the open coast of south eastern mainland Australia from Southern Queensland to South Australia. It also penetrates bays where the salinity approximates ocean water and is common on intertidal platforms, even in Hobson's Bay at the northern end of Port Phillip.

Family Acmaeidae.

Patelloida alticostata (Angas).

Patelloida alticostata Angas, 1856. Proc. Zool. Soc., p. 56, pl. 2, f. 11.

MATERIAL: Port Phillip Survey: Areas 6 (118); 42 (38); 48 (34); 55 (jetty); 61 (37). Nat. Mus. Coll.: Hobson's Bay (Area 2 and 3); Williamstown (Area 6); Brighton (Area 7); Mornington (Area 55); Dromana (Area 63, 76); Portsea (Area 58–9).

REMARKS: This species like *Cellana tramoserica* is an inhabitant of open coast rock platforms at midtide level and occurs throughout the entire southerly Australian coast line from Geraldton, W. Australia to southern Queensland. It is found on reefs throughout Port Phillip.

Chiazacmea flammae (Quoy and Gaimard).

Patelloida flammae Quoy and Gaimard, 1834. Voy. "*Astrolabe*" Zool., 3, p. 354, pl. 71, f. 15, 16.

MATERIAL: Port Phillip Survey: Areas 55 (intertidal) 59 (23); Williamstown (Area 6); St. Kilda (Area 3, 7). Nat. Mus. Coll.:

REMARKS: An intertidal species of the lower littoral of sheltered platforms, it has a limited distribution in Port Phillip.

Actinoleuca calamus (Crosse and Fischer).

Patella calamus Crosse and Fischer, 1864. Journ. de Conch., p. 348; ibid. 1865, p. 42, pl. 3, f. 7, 8.

MATERIAL: Port Phillip Survey: Areas 5 (53, 56); 6 (65, 137); 7 (206); 10 (11); 11 (190); 13 (92–3); 14 (95, 175); 15 (284); 17 (173); 18 (59); 28 (285); 30 (130); 31 (10); 36 (77); 37 (40); 55 (39, 147); 62 (96, 99); 69 (97). Nat. Mus. Coll.: Rye (Area 68).

REMARKS: Occurs throughout the bay in localities which have bottom sediments of the sandy mud range and depths of less than 9 fathoms. In spite of its preference for areas of finer sediments it requires a hard substrate for attachment and so only occurs where reefs, pebbles or shell afford such a surface.

Notoacmea granosa (Macpherson).

Notoacmea granosa Macpherson, 1954. Proc. roy. Soc. Vict., 67, p. 252–3, pl. XVII., f. 3–4, text figs.

MATERIAL: Port Phillip Survey: Area 55 (S side of Schnapper Pt.). Nat. Mus. Coll.: Sandringham (Area 13–14); Mornington (Area 55).

REMARKS: Occurs on the sheltered side of vertical rock faces at mid-tide level on open coasts and penetrates Port Phillip as far north as Altona Pier.

Notoacmea mayi (May).

Notoacmea mayi May, 1923. Illust. Index. Tas. Shells, Append. and pl. 22, f. 3.

MATERIAL: Port Phillip Survey: Area 42 (108); Catliff Coll.: Port Phillip.

REMARKS: The single specimen of this open ocean species was found attached to the rocks in about five feet of water.

Notoacmea scabrilirata (Angas).

Acmea scabrilirata Angas, 1865. Proc. Zool. Soc., p. 154.

MATERIAL: Port Phillip Survey: Areas 55 intertidal. Nat. Mus. Coll.: Hobson's Bay (Area 2 and 3).

REMARKS: This species lives on open coasts under stones at low tide and is taken in similar positions in Port Phillip.

Family TROCHIDAE.

Herpetopoma aspersa (Philippi).

Trochus aspersus Philippi, 1846. Zeitchr fur Malak., III., p. 103; Conch. Cab. 1846, Bd. II., p. 173, t. 27, f. 13.

MATERIAL: Port Phillip Survey: Area 55 (147); 63 (163). Nat. Mus. Coll.: Brighton (Area 7).

REMARKS: This species ranges from low tide under stones to several fathoms but is more abundant in the warmer waters of the eastern part of Victoria.

Granata imbricata (Lamarck).

Stomatella imbricata Lamarck, 1822. Anim. s. Vert., 6 (2), p. 209. Reeve, 1874, Conch. Icon. XIX., pl. 2, f. 10

MATERIAL: Nat. Mus. Coll: Brighton (Area 7); Frankston (Area 48).

REMARKS: Lamarck, when he listed the members of the genus *Stomatella* put *imbricata* as the first species on his list and most authors have accepted it as the type species of the genus. However, Cotton 1957, pointed out that Anton 1839 designated *Stomatella auriculata* Lamarck, 1816, as the type species of *Stomatella* and erected *Granata* with *S. imbricata* as type species to replace it. Macpherson and Gabriel 1962 disagreed with this on the grounds that *imbricata* had line priority in Anton's text, however they had failed to note that Anton in his foreword stated "so bei den Gattungen (deren Typusart mit Versalbuchstaben gebruckt ist)". Thus Cotton was correct *Stomatella auriculata* Lamarck 1816 had been designated the type of *Stomatella* and it therefore must replace *Gena* Gray 1847, and *Granata* used in its stead for the *S. imbricata* series.

This species was not taken on the present survey because of the lack of collecting in the intertidal zone but previous records show it will probably occur when collecting is extended to the littoral.

Calliostoma (Fautor) allporti (Tenison Woods).

Zizyphinus allporti Tenison Woods, 1875. Proc. roy. Soc. Tas., p. 155.

Calliostoma (Fautor) allporti Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 57, f. 76.

MATERIAL: Port Phillip Survey: Areas 59 (36).

Cantharidella tiberiana (Crosse).

Trochus tiberiana Crosse, 1863. Journ. de Conch. 11, p. 381, pl. 13, f. 2.

MATERIAL: Port Phillip Survey: Areas 14 (95); 15 (284); 16 (143); 27 (41); 30 (130, 280); 31 (131); 39 (42–3, 313); 40 (101); 42 (281); 48 (34); 50 (238); 58 (88); 59 (25, 36). Gabriel Coll. off Point Cook (Area 5); Nat. Mus. Coll.: Corio Bay (Areas 25, 37–8); Hobsons Bay (Areas 2–3). R. Burn Coll.: Portarlington (Area 29).

REMARKS: Living on weed and confined to the *Caulerpa* and *Zostera* beds where it is associated with *Diala monile* and *D. lauta*.

Cantharidus pulcherrimus (Wood).

Trochus pulcherrimus Wood, 1828. Index Test. Suppl., p. 18, pl. 6, f. 45

MATERIAL: Port Phillip Survey: Areas 56 (295); 58 (88, 151). Gabriel Coll.: Point Nepean, Queenscliff (Area 58). Nat. Mus. Coll.: Brighton (Area 7); Point Lonsdale (Area 58).

REMARKS: A weed dwelling species which seems to be confined now to the rich algal beds around Port Phillip Heads.

Cantharidus ramburi (Crosse).

Trochus ramburi Crosse, 1864. Joorn. de Conch., p. 342, pl. 13, f. 3.

MATERIAL: Port Phillip Survey: Area 66 (292); Gabriel Coll.: Point Nepean (Area 38); Portsea (Area 58–9); Point Lonsdale (Area 58). Nat. Mus. Coll: Queenscliff (Area 58).

REMARKS: This species is found in similar locations to the previous one.

Phasianotrochus apicinus (Menke).

Monodonta apicina Menke, 1843, Moll. Nov. Holl., p. 15.

Trochus apicinus Philippi, 1846. Conch. Cab., p. 133, pl. 23, f. 5.

MATERIAL: Port Phillip Survey: Area 59 (23); (36); 58 (88); 68 (155); 50 (230); 51 (250); 30 (280); 42 (281); 42 (intertidal); R. Burn Coll: Portarlington (Area 29).

REMARKS: A weed dwelling species that is common on the algal beds of the south-western shore of the bay. Members of this genus seem to favour more sheltered conditions than *Cantharidus* s.s. and all the species recorded occur north of the Nepean bar in deeper water. It is interesting to note that because of lack of collecting except in the intertidal zones, previous records from Port Phillip are very sparse or non-existant.

Phasianotrochus eximius (Perry).

Bulimus eximius Perry, 1811. Conch., pl. 30, f. 2.

MATERIAL: Port Phillip Survey: Areas 27 (41); Gabriel Coll.: Point Nepean, Point Lonsdale (Area 58).

REMARKS: This weed dwelling species has a wide distribution in southern Australia.

Phasianotrochus irisodontes (Quoy and Gaimard).

Trochus irisodontes Quoy and Gaimard, 1834. Voy. "*Astrolabe*" Zool., 3, p. 246, pl. 63, f. 1–2.

MATERIAL: Port Phillip Survey: Areas 27 (41). R. Burn Coll: Portarlington (Area 29).

Phasianotrochus rutilus (A. Adams).

Elenchas rutilus A. Adams, 1851. Proc. Zool. Soc., p. 171.

Cantharidus rutilus Tryon, 1889. Man. Conch. XI.; p. 136, pl. 34, f. 8.

MATERIAL: Port Phillip Survey: Areas 5 (54); 10 (14–5); 50 (230–1).

Austrocochlea adelaidea (Philippi).

Trochus adelaidea Philippi, 1849. Conch. Cab., 2, p. 140, pl. 24, f. 1.

MATERIAL: Port Phillip Survey: Area 59 (23, 80). Nat. Mus. Coll.: Sorrento (Area 59).

REMARKS: This species is not so tolerant of silt as other Victorian members of the genus and is confined to areas south of the Nepean bar.

Austrocochlea constricta (Lamarck).

Monodonta constricta Lamarck, 1822. Anim. s. Vert. 7, p. 36.

Trochus constrictus Quoy and Gaimard, 1834. Voy. "*Austrolabe*", Zool., 3, p. 251, pl. 63, f. 23–27.

MATERIAL: Port Phillip Survey: Areas 42 (38); 38 (89); 49 (236). Nat. Mus. Coll.: Sorrento (Area 59), Brighton (Area 7); Hobsons Bay (Area 2 and 3); St. Kilda (Area 3); R. Burn Coll: Point Lonsdale (Area 58).

REMARKS: This species has a wide tolerance of habitat and salinity and occurs from the open coast to the extreme northern end of the bay where specimens become more stunted in the less favourable conditions.

Austrocochlea odontis (Wood).

Trochus odontis Wood, 1828. Index. Text. Supp., p. 17, pl. 6, f. 37.

MATERIAL: Port Phillip Survey: 42 (38, intertidal); 59 (23). Nat. Mus. Coll.: Hobsons Bay (Areas 2–3).

REMARKS: This weed dwelling species is like *A. constricta* able to tolerate a wide range of conditions.

Clanculus (*Euriclanculus*) *aloysii* (Tenison Woods).

Clanculus aloysii Tenison Woods, 1875. Proc. roy. Soc. Tas., p. 155.

Trochus (*Clanculus*) *aloysii* Tryon, 1889. Mar. Conch. XI., p. 59, pl. 14, f. 20–23.

MATERIAL: Port Phillip Survey: Areas 5 (52–4); 6 (137); 7 (206); 9 (178, 180); 10 (13–5); 11 (190); 13 (83, 92–3); 14 (117); 15 (284); 16 (143); 18 (59); 19 (179, 181); 27 (41); 28 (285); 30 (130); 31 (10); 34 (120); 36 (77); 37 (40); 40 (101); 42 (108); 50 (228, 230); 55 (147); 59 (25, 213); 68 (155). R. Burn Coll.: Portarlington (Area 29).

REMARKS: This species is confined to the finer sediments from low tide to approximately seven fathoms but only where dead shells, stones or reef provide it with a solid surface to which to attach itself. Its presence at station 120 within the 10 fathom line indicates that it is the availability of a hard surface for attachment rather than depth that limits the distribution.

Clanculus (*Mesoclanculus*) *plebejus* (Philippi).

Trochus plebejus Philippi, 1851. Zeits. f. Malak., 8, p. 41; Conch. Cab., p. 326, pl. 46, f. 10.

MATERIAL: Port Phillip Survey: Areas 5 (52–4); 6 (137); 7 (206); 9 (178, 180); 10 (15), 11 (190), 13 (92), 14 (117, 175); 15 (284), 16 (143), 17 (173); 18 (59), 19 (179, 181), 27 (41), 28 (141–2, 285), 30 (130, 135), 31 (10); 37 (40), 39 (313); 40 (101), 42 (108, intertidal), 50 (228, 230–1, 238), 55 (S. of Schnapper Pt. intertidal); 59 (25, 36), 63 (163), 68 (155). Nat. Mus. Coll.: Portarlington (Area 29), Brighton (Area 7), Hobsons Bay (Area 2–3).

REMARKS: Is common under stones just below low tide and also in deeper water where there are suitable solid objects for attachment. This species is very often associated with the previous species *C. aloysii* in the deeper parts of its range.

Clanculus (*Euclanculus*) *lumbatus* (Quoy and Gaimard).

Trochus lumbatus Quoy and Gaimard, 1834. Voy. "Astrolabe" Zool., 3, p. 245, pl. 63 f. 14–6.

MATERIAL: Port Phillip Survey: Area 16 (143). Nat. Mus. Coll.: Mornington (Area 55).

REMARKS: An uncommon species within Port Phillip.

Ethminola tasmanica (Tenison Woods).

Margarita (*Monodia*) *tasmanica* Tenison Woods, 1877. Proc. roy. Soc. Tas., p. 143, No. 33.

Minolia tasmanica Tryon, 1889. Man. Conch. XI, p. 263, pl. 61, f. 38–40.

MATERIAL: Port Phillip Survey: Areas 13 (94), 18 (59); 24 (122), 36 (77). R. Bunn Coll.: Portarlington (Area 29).

Stomatella impertusa (Burrow).

Haliotis impertusa Burrow, 1825. Elem. Conch., p. 162, pl. 24, f. 2.

MATERIAL: Port Phillip Survey: Area 59 (Portsea Pier).

REMARKS: Anton's designation of this species as the type of *Stomatella* Lamark, 1816, necessitates the use of this generic name and the suppression of *Gena* as a junior homonym. (See remarks under *Granata imbricata*, page 209).

Family TURBINIDAE

Subninella undulata (Solander).

Turbo undulata Solander, 1786. Cat. Portland Mus., p. 18.

Lunax undulatus Martyn, 1784. Univ. Conch. 1, t. 29.

MATERIAL: Port Phillip Survey: Areas 6 (118); 59 (23, 36, 80–1); 64 (164). Nat. Mus. Coll.: Hobsons Bay (Areas 2–3), Ricketts Point (Area 23); Sorrento, Portsea (Area 59), back beach Sorrento (Area 59–66).

REMARKS: This is a shallow water herbivorous species confined to rock platforms from low tide level to a few feet in depth where algal growth is strongest. At low tide level it is often very abundant.

Micrastraea aurea (Jonas).

Trochus aurea Jonas, 1844. Zeits., f. Malak.; p. 168.
Carinidea granulata Swainson, 1855. Proc. roy. Soc. Van Diemen's Land, 3, p. 40, pl. 6, f. 5, 6.

MATERIAL: Port Phillip Survey: Areas 6 (118, 137); 13 (93); 14 (175, off Quiet Corner); 27 (41); 28 (316); 30 (130. 135, 280); 39 (42, 313); 40 (101); 42 (281); 50 (238); 55 (148); 59 (23, 25, 213). Nat. Mus. Coll.: Portarlington (Area 29); Schnapper Point (Area 55); Portsea (Area 58).

REMARKS: This species occurs on reefs where algae or uneven surface such as small stones provide it with some shelter. Its range is from low tide to at least seven fathoms.

Phasianella australis (Gmelin).

Buccinum australe Gmelin, 1788. Syst. Nat., p. 3490, No. 173.
Phasianella australis Philippi, 1853. Conch. Cab. ( ), p. 2, pl. 1, f. 1–7 and pl. 2, f. 1.

MATERIAL: Port Phillip Survey: Areas 42 (38, low tide); 50 (230–1); 59 (23); Gatliff Coll.: Portsea Sorrento (Area 59); Corio Bay (Area 25, 37–38); Mud Island (Area 60); Barwon Heads (Area 56).

REMARKS: Occurs where algal covered rocks and sand are associated.

Phasianella ventricosa (Quoy and Gaimard).

Phasianella ventricosa Quoy and Gaimard, 1834. Voy. "*Astrolabe*" Zool., 3, p. 237, pl. 59, f. 8, 9.

MATERIAL: Port Phillip Survey: Area 58 (151). Nat. Mus. Coll.: Port Phillip Heads (Area 58).

REMARKS: Pritchard and Gatliff note that this species is relatively uncommon in Port Phillip and the above localities show its limited distribution at the southern end of the bay.

Family Neritidae.

Melanerita melanotragus (Smith).

Nerita melanotragus Smith, 1884. Voy. "*Alert*", Zool., p. 69.
Nerita atrata Reeve, 1855. Conch Icon., IX.; pl. 4, f. 16.

MATERIAL: Nat. Mus Coll.: Seaholme (Area 5); Hobson's Bay (Area 2–3).

REMARKS: This is an upper littoral inhabitant of rock platforms so was not taken on the present phase of the survey but it occurs throughout Port Phillip in suitable locations.

Family Littorinidae.

Melarapha unifasciata (Gray).

Littorina unifasciata Gray, 1826. King's Survey of Aust., 2, App., p. 483.
Littorina diemenensis Quoy and Gaimard, 1833. Voy. "*Astrolabe*" Zool. 2, p. 479, pl. 33, f. 8–11.

MATERIAL: Nat. Mus. Coll.: Portarlington (Area 29); Brighton (Area 7); Ricketts Point (Area 23).

REMARKS: This is a supralittoral species of the splash zone of reefs so was not taken on the present survey but it occurs in suitable locations in the southern and eastern portion of the bay.

Melarapha praetermissa (May).

Littorina praetermissa May, 1908. Proc. roy. Soc. Tas., p. 57, pl. 6, f. 3.

MATERIAL: Nat. Mus. Coll.: Portarlington (Area 29); Ocean beach Sorrento (Area 59, 66).

REMARKS: Like the previous species, this is an inhabitant of the supra-littoral of rock platforms and it occurs in suitable locations at the southern end of Port Phillip.

Bembicium auratum (Quoy and Gaimard).

Trochus auratum Quoy and Gaimard, 1834. Voy. "*Astrolabe*". Zool., 3, p. 276, pl. 62, f. 15–16.

MATERIAL: Port Phillip Survey: Area 26 (Limeburners Bay, shallow salt marsh), Area 55 (intertidal Schnapper Pt.). Nat. Mus. Coll.: Ricketts Point (Area 14, 23); Seaholme (Area 5); Williamstown (Area 6); Hobson's Bay (Area 5 and 3).

REMARKS: An upper littoral inhabitant of rock platforms in quiet water, this species occurs both in bays and on open coasts where suitable conditions prevail.

Bembicium melanostomum (Gmelin).

Trochus melanostomum Gmelin, 1791. Syst. Nat., p. 3581, No. 90.

Risella melanostoma Crosse, 1864. Journ. de Conch.; p. 229, pl. XI., f. 1.

MATERIAL: Nat. Mus. Coll.: Altona (Area 5); Brighton (Area 7).

REMARKS: An inhabitant of areas where conditions of extreme shelter prevail, it occurs in the upper littoral of bays, estuaries and salt marsh wherever there is a firm substrate, such as pebbles, shell or mangrove roots for its attachment.

Bembicium nanum (Lamarck).

Trochus nanum Lamarck, 1822. Anim. s. Vert., 7, p. 30; Quoy and Gaimard 1834, Voy. "*Astrolabe*" Zool., 3, p. 276, pl. 62, f. 5–7.

MATERIAL: Nat. Mus. Coll.: Ricketts Point (Area 23); Point Lonsdale Jetty (Area 58); Ocean beach Sorrento (Area 59, 66).

REMARKS: The open coast representatives of the genus *Bembicium*, this species does not occur in the very sheltered waters of Hobson's Bay (Areas 2 and 3).

Family Assiminidae.

Assiminea brazieri (Tenison Woods).

Rissoina (Setia) brazieri Tenison Woods, 1876. Proc. roy. Soc. Tas., p. 146.

Rissoa brazieri Tryon, 18. Man. Conch., IX., p. 335, pl. 71, f. 97.

MATERIAL: Port Phillip Survey: 49 (236). Nat. Mus. Coll.: Brighton (Area 7); Black Rock (Area 14).

REMARKS: This estuarine species occurs in the shallow land-locked area at the south end of Swan Bay which although close to Port Phillip Heads, is probably the most sheltered part of Port Phillip.

Assiminea tasmanica Tenison Woods.

Assiminea tasmanica Tenison Woods, 1876. Proc. roy. Soc. Tas., p. 79.

Syncera tasmanica May, 1923. Illustrated Index Tas. Shells, pl. 25, f. 25.

MATERIAL: Port Phillip Survey: 49 (236). Nat. Mus. Coll.: Mordialloc Creek (Area 24).

REMARKS: Occurs with the proceeding species in Swan Bay.

Family VERMETIDAE.

Serpulorbis sipho (Lamarck).

Serpula sipho Lamarck, 1818. Anim. s. Vert., 5, p. 367.

Serpulorbis sipho Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 100, f. 127.

MATERIAL: Port Phillip Survey: Areas 13 (93); 30 (130, 135); 31 (10); 42 (108); 56 (23); 59 (23); 63 (22). Nat Mus. Coll.: Altona (Area 5), St. Kilda (Area 3 and 7), Frankston (Area 48); Portsea (Area 59).

REMARKS: This species is common on rock platforms particularly where the finer sediments and dense weed growth provide the fine particles of organic matter on which it feeds.

Family POTAMIDIDAE.

Velacumantus australis (Quoy and Gaimard).

Cerithium australis Quoy and Gaimard, 1835. Voy. "*Astrolabe*" Zool., 3, p. 131, pl. 55, f. 7.

MATERIAL: Nat. Mus. Coll.: Williamstown (Area 6); Altona (Area 5); Hobson's Bay (Area 2 and 3).

REMARKS: Inhabits the shallow waters of mud flats in areas of extreme shelter.

Zeacumantus diemenensis (Quoy and Gaimard).

Cerithium diemenense Quoy and Gaimard, 1834. Voy. "*Astrolabe*", Zool., 3, p. 128–9, pl. 55, f. 11–13.

MATERIAL: Port Phillip Survey: Area 6 (65–6); 40 (101); 49 (236); 58 (89). Nat. Mus. Coll.: Altona (Area 5); Port Melbourne (Area 2); Swan Bay (Area 49, 50).

REMARKS: Has a similar habitat to the previous species and they are often found living together.

Diala lauta (A. Adams).

Diala lauta A. Adams, 1862. Ann. Mag. Nat. Hist. (3), 10, p. 298, No. 5.

Litiopa (Diala) lauta Tryon, 1887. Man. Conch. IX., p. 282, pl. 53, f. 83.

MATERIAL: Port Phillip Survey: Areas 27 (41); 39 (42); 30 (280); 40 (101); 49 (236); 15 (284); 39 (313); 42 (intertidal). R. Burn. Coll.: Brighton (Area 7), Portarlington (Area 29); Rye (Area 68). Nat. Mus. Coll.: Portsea (Area 59); Point Henry (Area 26); Portarlington (Area 29).

REMARKS: Associated with *Canthariedella tiberiana* and *Diala montile*, the latter always being in much larger numbers than the two associated species.

Diala monile (A. Adams).

Alaba monile A. Adams, 1862. Ann. Mag. Nat. Hist. (3), 10, p. 296, No. 17.

Diala monile Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 107, f. 134.

MATERIAL: Port Phillip Survey: Areas 27 (41); 30 (280); 40 (101); 48 (32); 39 (313); Gabriel Coll.: Portarlington, Altona. Nat. Mus. Coll.: Point Henry (Area) 26); Portarlington (Area 29).

REMARKS: This species may occur in very large numbers attached to weed in the Corio Bay arm of Port Phillip. It is always associated with *Diala lauta* and *Candhariedella tibertiana* but these species are never as abundant.

Diala pagodula (A. Adams).

Alaba pagodula A. Adams, 1862. Ann. Mag. Nat. Hist. (3), 10, p. 297, No. 15.
Diala pagodula Hedley, 1913. Proc. Linn. Soc. N. S. Wales, 38, pt. 2, p. 287, pl. 18, f. 60.

MATERIAL: Port Phillip Survey: Area 50 (238). Nat. Mus. Coll.: Portarlington (Area 29); Brighton (Area 7).

Diala pulchra (A. Adams).

Alaba pulchra A. Adams, 1862. Ann. Mag. Nat. Hist., (3), X., p. 296, No. 15.
Diala pulchra Hedley, 1913. Proc. Linn. Soc. N. S. Wales, 38, p. 286, pl. 18, f. 57.

MATERIAL: Port Phillip Survey: Area 49 (236). Nat. Mus. Coll.: Portarlington (Area 29); Portsea (Area 58).

Cacozeliana granaria (Kiener).

Cerithium granarium Kiener, 1842. Coq. Vic., p. 72, pl. 19, f. 5.

MATERIAL: 9 (178, 180); 10 (14); 16 (143); 19 (179, 181); 26 (126); 27 (41); 37 (40); 39 (42, 44); 40 (101); 42 (108); 55 (39); 61 (37); 62 (96); 68 (155). Nat. Mus. Coll.: Clifton Springs (Area 29); Portarlmgton (Area 29).

REMARKS: This species lives on sandy mud banks very often in association with *Zostera*.

Eubittium lawleyanum (Crosse).

Bittium lawleyanum Crosse, 1863. Journ. de Conch. 9, p. 87, pl. 1, f. 4.

MATERIAL: Port Phillip Survey: Areas 58 (89). Nat. Mus. Coll.: Corio Bay (Areas 25, 26, 37, 38); Brighton (Area 7).

REMARKS: On *Zostera* at the head of Swan Bay. This is an area of sheltered water and a substrata of fine sediments but with the clean water conditions not found higher up the Bay.

Hypotrochus monachus (Crosse and Fischer).

Cerithium monachus Crosse and Fischer, 1864. Journ. de Conch., p. 347; ibid., p. 45, pl. 3, f. 17, 18.

MATERIAL: Port Phillip Survey: Areas 10 (11, 14, 15); 11 (190); 50 (230–1); 58 (88). Gabriel Coll.: Point Nepean (Area 58). Nat. Mus. Coll.: Hobson's Bay (Areas 2 and 3).

REMARKS: Occurs on the areas of finer sediments and when present often occurs in considerable numbers.

Ataxacerithium serotinum (A. Adams).

Cerithium serotina A. Adams, 1855. Theo. Conch., 2, p. 861, pl. 180, f. 102.

MATERIAL: Port Phillip Survey: Area 59 (36).

REMARKS: The single specimen from the Pope's Eye (Station 36) and no previous Port Phillip record suggest that it is an infrequent visitor to the Bay.

Family Triphoridae.

Notosinister maculosa Hedley.

Tryphora maculosa Hedley, 1903. Proc. Linn. Soc. N. S. Wales, 27, p. 614, pl. 32, f. 32–34.

MATERIAL: Port Phillip Survey: Area 59 (36).

Family Pyramidellidae.

Cingulina spina (Crosse and Fischer).

Turritella spina Crosse and Fischer, 1864. Journ. de Conch., 12, p. 347, 1865 ibid., 13, p. 44, pl. 3, f. 13, 14.

MATERIAL: Port Phillip Survey: Area 55 (jetty).

Family Hipponicidae.

Hipponyx conicus (Schumacher).

Amalthea conica Schumacher, 1817. Essai. nov. syst. Test, p. 81, pl. 21, f. 4.

MATERIAL: Port Phillip Survey: Areas 59 (23, 25) on *Pleuroploca australis*; 61 (37) on *Notohaliotis ruber*; 64 (166). Nat. Mus. Coll.: Brighton (Area 7); Mornington (Area 55).

REMARKS: Lives attached to other shells.

Antisabia foliacea (Quoy and Gaimard).

Hipponyx foliacea Quoy and Gaimard, 1835. Voy. "Astrolabe" Zool., p. 439, pl. 72, f. 41–45.

MATERIAL: Nat. Mus. Coll.: Sorrento (Area 59).

Family Capulidae.

Capulus violacea Angas.

Capulus violaceus Angas, 1867. Proc. Zool. Soc., p. 114, pl. 13, f. 23.

MATERIAL: Port Phillip Survey: Area 30 (280) attached to *Micrastrea aurea*.

Family Calyptraeidae.

Sigapatella calyptraeformis (Lamarck).

Trochus calyptraeformis Lamarck, 1822. Anim. s. Vert., 7, p. 12, No. 7, Delesert 1841, Recueil Coquilles, pl. 34, f. 7, a, b, c.

MATERIAL: Port Phillip Survey: Areas 6 (137); 7 (206); 11 (190); 13 (83, 92); 15 (284); 31 (276); 49 (236); 50 (230–1); 55 (37, 147); 58 (88); 61 (37); 64 (164). Gabriel Coll.: Point Cook (Area 5). Nat. Mus. Coll.: Mentone (Area 24).

REMARKS: This species prefers areas with a silty substratum but needs a solid object on which to rest, thus it is common on the areas where there is skeletal material such as dead shell (Beasley, Mem. nat. Mus. No. 27, fig. 2) to which it can attach itself.

Zeacrypta immersa (Angas).

Crepidula immersa Angas, 1865. Proc. Zool. Soc., p. 57, pl. 2, f. 12.

MATERIAL: Port Phillip Survey: Areas 6 (65–6, 137); 13 (94); 14 (117). Nat. Mus. Coll.: Hobson's Bay (Area 2 and 3); Brighton (Area 7); Queenscliff (Areas 50, 59).

REMARKS: A sedentary species that attaches itself to other molluscs and occasionally to stones. Specimens collected at Station 117 in November, 1959, were brooding egg masses.

Family Naticidae.

Conuber conicum (Lamarck).

Natica conica Lamarck, 1822. Anim. s. Vert., 6, p. 198; Reeve 1855, Conch. Icon., IX. (Natica), pl. 12, f. 48; Finlay and Marwick 1937 Palaeont. Bull. N. Z., 15, p. 53; Murray 1962, Journ. Malac. Soc. Aust., No. 6, p. 49–58.

MATERIAL: Port Phillip Survey: Areas 42 (38); 59 (36); 61 (37). Nat. Mus. Coll.: Portarlington (Area 29); Mentone (Area 24); Cheltenham (Area 13); Sorrento (Area 59).

REMARKS: This is a shallow water species of the sand flats ranging from low tide to approximately two fathoms. Because of this it was taken infrequently on the survey although very common in suitable habitats throughout Port Phillip Bay.

Finlay and Marwick 1937 erected the subgenus *Conuber* for this southern and eastern Australian species, because it differs from *Polinices* s.s. in its consistently high conical shape, the course of its growth lines and the peculiar way in which the parietal callus ends abruptly, leaving exposed a narrow umbilicus and half of the funicle.

Later authors gave it full generic status but Macpherson and Gabriel, 1961, did not consider this warranted.

However recent work by F. M. Murray (1963) has shown that this species, together with *P. sordidus* Swainson, *P. melastoma* Swainson, and *P. incei* Philippi, has the egg mass in the form of a jelly (or sausage collar) from which hatch veliger larvae, instead of the sand collar and crawling young known to be the form of reproduction in most species of Naticidae.

It is therefore suggested that *Conuber* should be used for those species of Naticid which produce their eggs in a jelly mass from which hatch veliger larvae. This would also require that Finlay and Marwicks description of the genus be widened to include broader, more flattened shells, with the umbilicus nearly or completely filled by the parietal callus such as *melastoma* and *incei*.

Glossaulax aulacoglossa (Pilsbry and Vanatta).

Polinices aulacoglossa Pilsbry and Vanatta, 1908. Proc. Acad. Nat. Sc. Phil., 55, p. 558, pl. 29, f. 1, 2, 3.

MATERIAL: Port Phillip Survey: Areas 42 (38); 55 (35), 61 (37); Nat. Mus. Coll.: Hobson's Bay (Area 2 and 3); Mentone, Mordialloc (Area 24); Portsea (Area 59).

REMARKS: This sand dwelling shallow water species lays its egg mass as a typical naticid sand collar. In view of the different types of development now known to occur in the Naticids, it seems advisable to show these differences by the separation of *Polinices* s.l. into restricted genera and I therefore advocate the use of *Glossaulax* for the Indo–Pacific species with a grooved umbilical callus.

Sigaretotrema umbilicata (Quoy and Gaimard).

Natica umbilicatum Quoy and Gaimard, 1833. Voy. "*Astrolabe*" Zool., 2, p. 234, pl. 66, f. 22–3.

MATERIAL: Port Phillip Survey: Area 10 (14). Nat. Mus. Coll.: Sorrento (Area 59); Ocean Beach Sorrento (Area 59); Mud Is. (Area 60).

REMARKS: This species also lives in shallow water but occurs on muddy sand in similar situations to and therefore in association with plant growth such as *Caulerpa* or *Zostera*.

Ectosinum zonale (Quoy and Gaimard).

Cryptosoma zonale Quoy and Gaimard, 1833. Voy. "*Astrolabe*", Zool., 2, p. 221, pl. 66, f. 1–3.

MATERIAL: Port Phillip Survey: Area 6 (118); 42 (289). Nat. Mus. Coll.: Port Melbourne (Area 2); Hobson's Bay (Area 2 and 3); Dromana (Area 63, 70); Swan Bay (Area 49–50); Portsea (Area 59).

REMARKS: This like the previous species, is a dweller of muddy sand flats ranging from shallow water to several fathoms in depth.

Family LAMELLARIIDAE.

Lamellaria sp.

MATERIAL: Port Phillip Survey: Areas 59 (36, 213); Area 27 (138–9). Nat. Mus. Coll.: Portarlington (Area 29); Portsea (Area 59); Pope's Eye (Area 59).

REMARKS: Several species of this genus were taken in association with sponges and Ascidians, during the course of the survey. However, it has been realized for some time that a revision of the Australian species is necessary and, as Mrs. Slack–Smith is at present working on the group, it is thought inadvisable to discuss the Port Phillip material alone.

Family CYPRAEIDAE.

Notocypraea angustata (Gmelin).

Cypraea angustata Gmelin, 1791. Syst. Nat. 6, p. 3421; Reeve 1846, Conch. Icon., 3, pl. 17, f. 91.

MATERIAL: Port Phillip Survey: Area 59 (36); Nat. Mus. Coll.: Portsea, Sorrento (Area 59).

REMARKS: The *Notocypraea* are inhabitants of clear water and so were only taken in the vicinity of Port Phillip Heads.

Notocypraea comptoni (Gray).

Cypraea comptoni Gray, 1847. Juke's Voy. H. M. S. "*Fly*" 2, p. 356, pl. 1, f. 3.

MATERIAL: Port Phillip Survey: Area 66 (292). Nat. Mus. Coll.: Altona (Area 5); Portsea (Area 59), Port Phillip Heads (Area 58).

Family CASSIDIDAE.

Xenogalea pyrum (Lamarck 1822).

Cassis pyrum Lamarck, 1822. Anim. s. Vert., 7, p. 226; Reeve 1848, Conch. Icon., 5, pl. 11, f. 29.

MATERIAL: Port Phillip Survey: Area 59 (36). Nat. Mus. Coll.: Sorrento, Portsea (Area 59); Queenscliff (Area 58).

REMARKS: A sand dwelling species found only on the sandy bottom of the southern part of Port Phillip Bay.

Family CYMATIIDAE.

Cymatiella verrucosa (Reeve).

Triton verrucosa Reeve, 1844. Conch. Icon., 2, pl. 17, f. 71.

MATERIAL: Port Phillip Survey: Area 42 (38, 108); 58 (151); 59 (23, 36); Gatliff Coll.: Sorrento (Area 59). Nat. Mus. Coll.: Point Cook (Area 5); Geelong (Area 37); Portarlington (Area 29), Sorrento (Area 59).

REMARKS: This small species occurs amongst algae on reefs and because it is difficult to see, is probably more common than records suggest.

Cymatiella lesueuri Iredale 1929.

Cymatiella lesueuri Iredale, 1929. Rec. Aust. Mus., 17, p. 175, pl. 40, f. 11

MATERIAL: Port Phillip Survey: Area 42 (108). Burn Coll.: Portarlington (Area 29); Sorrento (Area 59).

REMARKS: Like the previous species it lives on reefs. It is apparently very common on off-shore ocean reefs, as shown by the number of beach specimens that occur along the coast.

Cabastana spengleri (Perry).

Septa spengleri Perry, 1811. Conchology, pl 14, f 3.

MATERIAL: Port Phillip Survey: Areas 59 (79); 63 (163); 64 (—). Nat. Mus. Coll.: Altona (Area 5); Portsea, Sorrento (Area 59); Point Lonsdale (Area 58); Mordialloc (Area 24).

REMARKS: A common shell on the rock platforms of the south-eastern coast of Australia, it comes into shallow water in early spring to spawn.

Specimen from station 79 is elongate in form, a feature Iredale suggests is more typical of deep water specimens whereas perhaps it is a feature of quiet waters whether due to depth or shelter.

Cabestana waterhousei (Adams and Angas).

Triton waterhousei Adams and Angas, 1864. Proc. Zool. Soc., p. 35.
Cabastana waterhousei Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 160, f. 193.

MATERIAL: Port Phillip Survey: Area 42 (109); 51 (271); 64 (164). Nat. Mus. Coll.: Mud Is. (Area 60); Sorrento (Area 59). Burn Coll.: Portarlington (Area 29)

REMARKS: A species with similar habit to the previous one.

Family Muricidae.

Pterynotus triformis (Reeve).

Murex troformis Reeve, 1845. Conch. Icon., 3, pl. 13, sp. 53.

MATERIAL: Port Phillip Survey: Areas 9 (178, 180); 19 (179, 181); 28 (140, 285); 30 (130, 135); 55 (22). Nat. Mus. Coll.: Brighton (Area 7); Mordialloc (Area 24); Beaumaris (Area 14); Mud. Is. (Area 60).

REMARKS: Common living amongst brown algae on reefs, particularly in the northern section on the finer bottom type sediments.

Bedeva paivae (Crosse).

Trophon paivae Crosse, 1864. Journ. de Conch., 12, p. 278, pl. 11, f. 7.

MATERIAL: Port Phillip Survey: Areas 3 (202); 5 (52, 166); 6 (137); 7 (206); 10 (11); 13 (15, 92–3); 14 (175); 16 (283); 19 (304–6); 24 (122); 28 (316); 39 (42, 45); 42 (38); 50 (238); 55 (147); 62 (96, 244); 63 (16–20, 163); 64 (164). Nat. Mus. Coll.: Hobson's Bay (Areas 2 and 3). Brighton (Area 7).

REMARKS: An uncommon shell in the early records possibly because collectors either took strand-line specimens or did not collect at extreme low tide. The survey has shown it to be very common in Port Phillip.

Lepsiella vinosa (Lamarck).

Buccinum vinosa Lamarck, 1822. Anim. s. Vert., 7, p. 273.
Lepsiella vinosa Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 178, f. 214.

MATERIAL: Port Phillip Survey: Area 42 (38). Nat. Mus. Coll.: Port Phillip.

REMARKS: This is a carnivorous species usually living intertidally and feeding on other less active molluscs such as limpets and mussels.

Dicathais textilosa (Lamarck).

Purpura textilosa Lamark, 1822. Anim. s. Vert., 7, p. 242; Quoy and Gaimard, 1833. Voy. "*Astrolabe*" Zool., vol. 2, p. 552, pl. 37, f. 1–3.

MATERIAL: Port Phillip Survey: Area 59 (23, 24, 36, 79, 213). Nat. Mus. Coll.: Mordialloc (Area 24); Mud Is. (Area 60); Sorrento (Area 59).

Family COLUMBELLIDAE.

Dentimitrella (Ludbrook, 1958).

The members of the genus *Dentimitrella* are all small, less than 25 mm. in length and the colour patterning of red-brown flames, streaks, spots &c., on a usually white background is very variable within a species and may be very similar in several species. This has led to the introduction of a large number of names for a comparatively small number of species and of the lumping of valid species with similar colour patterns.

In fresh specimens living in sheltered waters the colour pattern may be partly obscured by a very fine periostracum which gives the shell a uniform horn or brown appearance. In many mature specimens and in all beach material this periostracum becomes completely eroded away.

Also it is unfortunate that Gaskoin named twenty species mainly without locality or figure. However, his descriptions are very detailed and Reeve implies that he has used actual specimens from the Gaskoin collection for his figures of the species. It is on this assumption that the following classification of the Victorian shells is made.

1. Shell large, stout, more than 16 mm. long—*semiconvexa*.
   Shell 15 mm. or less—2.

2. Shells approximately 15 mm.—3.
   Shells approximately 11 mm. or less—4.

3. Shell tapering.
   Whorls flattened aperture $\frac{1}{3}$ length = *menkeana*.
   Shells ovate whorls convex aperture $\frac{2}{3}$ = *pulla*.

4. Shells approximately 11 mm.—5.
   Shells 11 mm. or less—6.

5. Shell white solid with flesh coloured band on body whorl, whorls convex *austrina*.
   Shells tapering, width $\frac{2}{3}$ the length *lincolnensis*.

6. Shells broad width $\frac{2}{3}$ length *nubeculata*.
   Shell very small less than 4 mm. long = 7.

7. Spire very short less than length of body whorl *franklinensis*.
   Spire longer than body whorl = *tenisoni*.

Dentimitrella semiconvexa (Lamarck).

Buccinum semiconvexum Lamarck, 1822. Anim. s. Vert. VIL., No. 33
Columbella semiconvexa Sowerby, 1847. Thes. Conch. I, pl. 38, figs. 103, 104.
Columbella strigata Reeve, 1859. Conch. Icon., XI., Species 154.

MATERIAL: Port Phillip Survey: Areas 6 (137); 13 (92–3); 27 (41); 58 (88, 151 intertidal Point Lonsdale); 59 (25, 36). Nat. Mus. Coll.: Portarlington (Area 29); Sorrento (Area 59).

Shell ovate, stout, white and usually flamed with longitudinal red-brown zigzag markings but the pattern shows great variation and may be lacking entirely. The periostracum is pale straw coloured when present, interior of mouth is usually pale mauve. Whorls usually 6 plus the protoconch, convex sculptured with fine encircling lirae. Aperture oblong nearly half the length of the shell and with 8 to 9 denticles on the inner side of the outer lip.

Average dimensions: 20 mm. by 9 mm.

REMARKS: This is the commonest Victorian species and its large size and stout form make it easily recognized. *C. australis* Gaskoin has been considered to be a smaller form of this species but comparison of typical *australis* from Sydney, the type locality with Victorian *semiconvexa* shows them to be distinct species.

Dentimitrella menkeana (Reeve).

Columbella acuminata Menke, 1843 (non Nuttal). Moll. Nov. Holl., p. 20, No. 87.
Columbella menkeana Reeve, 1858. Conch. Icon., XI., Species 69, f. a, b.
Columbella xavierana Tenison Woods, 1876. Proc. roy. Soc. Tas., p. 134.

MATERIAL: Port Phillip Survey: Areas 39 (313); 58 (88).

Shell narrow acuminate, smooth, white and usually encircled beneath the suture with a brown band which may be either almost continuous or broken into chevrons. Shells with a continuous band are usually uniform yellow brown in colour while broken banded specimens often show additional brownish flames and spots. Periostracum is pale yellow in colour. Whorls, flat, 8 or 9 plus the protoconch which is small and continues the shell taper. Aperture short, narrow, approximately one third the length of the shell, denticulate within.

Average dimensions—16 mm. by 6 mm.

REMARKS: Similar in shape to *lincolnensis* but a larger shell with more whorls and slightly stouter form, also the predominant colour pattern aids identification.

Dentimitrella pulla (Gaskoin).

Columbella pulla Gaskoin, 1851. Proc. Zool. Soc. Lond., p. 6; Reeve 1858, Conch. Icon., XI., Species 106.
Columbella saccharata Reeve, 1858. Ibid.; Species 187.
Columbella tenebrica Reeve, 1859. Ibid.; Species 204.
Columbella nux Reeve, 1859. Ibid.: Species 227.
Columbella badia Tenison Woods, 1875. Proc. roy. Soc. Tas., p. 151.

MATERIAL: Port Phillip Survey: Areas 10 (11); 13 (92–3); 27 (41); 30 (280, 303) juveniles; 40 (101); 42 (108); 50 (230–1); 59 (36); 68 (155). R. Burn Coll.: Portarlington (Area 29).

Shell ovate, white or pale straw coloured and variously patterned with red-brown, (one form is uniform white or cream except for a red-brown band just below the suture).

Whorls 6 or 7 slightly convex, tapering to a small bulbous brown protoconch. Periostracum corn coloured. Aperture rather broad $\frac{3}{5}$ length of shell, denticulate on inner edge of both inner and outer lips, denticles on outer lip 8 to 10 and reaching almost to posterior end. Interior of mouth often pinkish-mauve tinted.

Average dimensions: 14 mms. by 6 mms.

REMARKS: Close in size to *menkeana* this species is immediately separated by its stouter form, convex whorls and less tapering appearance. Some examples of this species have been called *C. tenuis* Gaskoin, but no Victorian specimens in the National Museum collections correspond to Gaskoin's description nor Reeve's figure (224).

Dentimitrella austrina (Gaskoin).

Columbella austrina Gaskoin, 1851. Proc. Zool. Soc. Lond., p. 9; Reeve 1859 Conch. Icon., XI., Species 100.

Columbella annulata Reeve, 1858. Ibid.: Species 101.

? *Columbella rosacea* Reeve 1859. Ibid.: Species 183.

MATERIAL: It was not taken in the present survey but Pritchard and Gatliff list it from Corio Bay (Areas 25, 30).

Shell oblong-ovate, ivory white, shining, last whorl encircled with a broad flesh coloured band extending from the periphery to a line level with the top of the columella. This colouring may be obscured by the very fine, horn coloured periostracum.

Whorls 5 to 6 plus the protoconch, flattened, tapering with slightly impressed sutures. Aperture squarely ovate, wide about half the length of the shell, notched at the posterior outer lip, conspicuously denticulate within, columella reflected and showing a few fine denticles.

Average dimensions 12 mms. by 5 mms.

REMARKS: This species is easily separated by its squat solid form and distinctive colouring.

Dentimitrella lincolnensis (Reeve).

Columbella lincolnensis Reeve, 1859. Conch. Icon., XI., Species 184 a. b.

MATERIAL: Nat. Mus. Coll.: Sorrento (Area 59).

Shell acumately solid, smooth, white variously streaked striped or checked with chestnut and when uneroded covered with a fine straw coloured periostracum.

Whorls 6 or 7 plus the protoconch which is small and continues the taper of the shell. Aperture elongate, third the length of the shell and bearing 6 to 8 denticles on the inner side of the outer lip.

Average dimensions: 12 mm. by 4 mm.

Victorian specimens are smaller than those from South Australia.

REMARKS: This species is very similar in form to *menkeana* but is smaller and more delicate with fewer whorls.

Dentimitrella nubeculata (Reeve).

Columbella nubeculata Reeve, 1859. Icon., XI., Species 234.
Columbella dictua Tenison Woods, 1878. Proc. roy. Soc. Tas., p. 34.
Columbella vincta Tate, 1893. Trans. roy. Soc. S. Aust., XVII., p. 190, pl. 1, f. 11.

MATERIAL: R. Burn Coll.: Portarlington (Area 29).

Shell oblong, ovate smooth, variously mottled with yellow orange and brown and showing great variation in the colour pattern, apex violet tinged. Whorls convex, 6 plus the protoconch. Aperture narrow less than half length of shell, outer lip prominently toothed, teeth usually six but may be one or two small additional teeth at the anterior end.

Average dimensions: 10 mms. by 4 mms.

REMARKS: Some colour forms of this species may be confused with *pulla* but its smaller size fewer whorls and denticles on the outer lip separate the two species. Juveniles of this species seems to be very similar in form and colouring to *D. axiarata* Verco. Comparison was with a specimen in the Gatliff Collection presented by the author.

Dentimitrella franklinensis (Gatliff and Gabriel).

Columbella franklinensis Gatliff and Gabriel, 1910. Proc. roy. Soc. Vict., 23 (n.s.), pt. 1., p. 83, pl. XVIII., fig. 3.

MATERIAL: Was not taken on the present survey but the original description lists it from Point Franklin and Portsea which are in Area 59.

The author's description is as follows: " Shell small, smooth acuminate, of six whorls; the body whorl is inflated, and is rather more than half the length of the shell. Whorls convex, suture well defined. Fine ascending striae encircle the base, and cease at the columella; base somewhat restricted with slightly reverted snout. Outer lip thickened, shouldered at its junction with the body whorl, smooth interiorly. Mouth lanceolate. Colour yellowish white, somewhat translucent ".

Length 3 mm.

Dentimitrella tensoni (Tryon).

Columbella minuta Tenison Woods, 1875 (non Gould). Proc. roy. Soc. Tas., p. 152.
Columbella tensoni Tryon, 1883. Man. of Conch., V., p. 128, pl. 49, fig. 10.

MATERIAL: Not recorded from Port Phillip but the description is included here to make this review of the Victorian *Dentimitrella* complete.

Tryons description is as follows: " Shell ovate, sub-biconical, smooth, shining; pale chestnut very thickly ornamented with chestnut longitudinal lines, sometimes with two revolving bands of white spots; whorls 5, somewhat flatly tumid, aperture ovate, acute posterior outer lip thickened, dentate within ".

Length 3 mill.

Macrozafra angasi (Brazier).

Columbella interrupta Angas 1865 (non Gaskoin). Proc. Zool. Soc., p. 56, pl. 2, f. 9, 10.
Columbella angasi Brazier, 1871. Ibid., p. 322.

MATERIAL: Port Phillip Survey: Areas 27 (41); 30 (280). Nat. Mus. Coll.: Outer Geelong Harbour (Areas 26, 38); Portarlington (Area 29), Brighton (Area 7).

Family Buccinidae.

Austrosipho grandis (Gray).

Fusus grandis Gray, 1839. Beechey's Voy. Zool., p. 116.

Austrosipho grandis Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 187–8, f. 223.

MATERIAL: Port Phillip Survey: Area 58 (151); Gatliff Coll.: Frankston (Area 48); Portsea (Area 58–9); Sorrento (Area 59); Mordialloc (Area 34).

REMARKS: A deep water inhabitant of Bass Strait which is only occasionally found in Port Phillip Bay.

Cominella eburnea (Reeve).

Buccinum eburnea Reeve, 1846. Conch. Icon., 3, pl. 12, sp. 93.

MATERIAL: Port Phillip Survey: Areas 5 (168); 6 (118); 7 (206); 10 (106); 13 (92); 42 (38); 58 (89). Nat. Mus. Coll.: Portarlington (Area 27); Port Melbourne (Area 2).

REMARKS: This species lives in shallow areas of sandy mud and is common where *Zostera* bed provide shelter for the bivalve population on which it feeds.

Cominella lineolata (Lamarck).

Buccinum lineolata Lamarck, 1809. Encly. Meth., pl. 400, f. 8.

MATERIAL: Port Phillip Survey: Areas 42 (38); 48 (32); 55 (35); 58 (89); 59 (23); 63 (163). Nat. Mus. Coll.: Port Phillip, material was not localized.

REMARKS: This species is an inhabitant of reefs in shallow water occurring from mid-tide level down to several fathoms. On the open coast it is commonly found at mid-tide level feeding on the mussel *Brachidontes rostratus*. In Port Phillip it rarely penetrates above low water level.

Family Nassidae.

Parcanassa pauperata (Lamarck).

Buccinum pauperata Lamarck, 1822. Anim. s. Vert., 7, p. 278.

Nassa pauperata Reeve, 1853. Conch. Icon., 8, pl. 5, f. 27.

MATERIAL: Port Phillip Survey: Areas 6 (118); 9 (84); 10 (106); 42 (38); 58 (89); 61 (37).

REMARKS: An inhabitant of the sandy mud areas feeding on bivalves.

Parcanassa burchardi (Philippi).

Buccinum burchardi Philippi, 1851. Abbild. Beschr. Conch., 3, p. 69, pl. 2, f. 14.

MATERIAL: Port Phillip Survey: Area 21 (115); Gabriel Coll.: Port Phillip.

REMARKS: Previously recorded from but not localized within Port Phillip this was a rare shell on the survey only being taken at the one station in the central mud basin.

Tavaniotha optata (Gould).

Nassa optata Gould, 1860. Proc. Boston Nat. Hist. Soc. VII., p. 331; Hedley 1915. Proc. Linn. Soc. N. S. Wales 39, pt. 4; p. 736–7, pl. 83, fig. 78.

MATERIAL: Port Phillip Survey: Areas 3 (202); 5 (58); 7 (206, 208); 17 (173); 19 (181, 304–6); 27 (49); 31 (—); 36 (76); 42 ( ); 43 (303); 50 (228, 230); 55 ( ) 58 (88); 59 (36); 61 (240); 62 (96); 63 (16–20); 68 (158).

REMARKS: This species is an inhabitant of the shallower water sands and muddy sands from low tide down to approximately nine fathoms. It is not found within the central mud basin.

Niotha pyrrhus (Menke).

Buccinum pyrrhus Menke, 1843. Moll. Nov. Holl., p. 21; No. 93.
Niotha pyrrhus Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 195, f. 233.

MATERIAL: Port Phillip Survey: Areas 6 (118); 9 (62); 37 (40, 296); 39 (313); 40 (101); 42 (38, 107–8); 55 (—); 59 (36); 61 (37). Nat. Mus. Coll.: St. Kilda (Area 3); Brighton (Area 7); Mordialloc (Area 24); Portsea (Area 59); Portarlington (Area 29). Hobson's Bay (Area 2 and 3).

REMARKS: This species tends to favour areas of sandy mud with weed growth and therefore its distribution is more restricted than the previous species.

Family Fasciolariidae.

Pleuroploca australasia (Perry).

Pyrula australasia Perry, 1811. Conch., pl. 54, f. 4.

MATERIAL: Port Phillip Survey: Areas 6 (63); 13 (92); 16 (137); 17 (170); 29 (174, 317); 28 (140); 30 (130, 132); 37 (40); 40 (101); 42 (38); 55 (35); 58 (151–2); 59 (23, 25); 61 (37); 64 (164); 68 (157). Nat. Mus. Coll.: Mordialloc (Area 24); Frankston (Area 48); Portsea (Area 59); Altona (Area 5).

REMARKS: A specimen at Station 35 was feeding on *Notocallista kingii*.

Microcolus dunkeri (Jonas)?

Fusus dunkeri Jonas, 1844. Malak. Beitrog., p. 129.
Microcolus dunkeri Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 201–2, f. 240.

MATERIAL: Port Phillip Survey: Area 39 (313). Nat. Mus Coll.: Sandringham (Area 13–4).

REMARKS: A single immature specimen which matches other Victorian specimens very well except that the protoconch is smaller and lacks the characteristic smokey blue colour of most specimens.

Family Olividae.

Alocospira marginata (Lamarck).

Ancillaria marginata Lamarck, 1810. Ann. das. Mus., vol. XVI., p. 304.
Ancillaria marginata Reeve, 1864. Conch. Icon., vol. XV., pl. 3, f. 8 a. b.

MATERIAL: Port Phillip Survey: Area 58 (151). Gabriel Coll.: Mornington (Area 55); Dromana (Area 63, 70); Point Nepean (Area 58–9); Point Lonsdale (Area 58).

REMARKS: Lives in sand but was only taken at one station on the present survey, possibly due to the fact that most collecting was done in daylight and a grab was not used. These shells tend to bury themselves just below the surface in daylight, emerging at night to feed.

Family Mitridae.

Austromitra tasmanica (Tenison Woods).

Mitra tasmanica Tenison Woods, 1875. Proc. roy. Soc. Tas., p. 139.
Austromitra tasmanica Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p 209, f. 249.

MATERIAL: Port Phillip Survey: Areas 59 (36); 58 (88); 39 (42).

Mitra australis (Swainson).

Mitra australis Swainson, 1822. Zool. Illust., 1, 1st series, pl. 18.

MATERIAL: Port Phillip Survey: Area 39 (44). Gabriel Coll.: Sorrento (Area 59); Point Nepean (Area 58); Queenscliff (Area 58).

Eumitra glabra (Swainson).

Mitra glabra Swainson, 1821. Exotic Conch., 1, pl. 24.

MATERIAL: Port Phillip Survey: Area 66 (292).

Family Volutidae.

Amorena undulata (Lamarck).

Voluta undulata Lamarck, 1804. Ann. du. Mus., vol. V., p. 157, pl. 12, f. 1, a. b.

MATERIAL: Port Phillip Survey: Areas 59 (23); 68 (157). Gabriel Coll.: Frankston (Area 48); Queenscliff (Area 58); Sorrento (Area 59).

REMARKS: This species lives in sand and bulldozes through just beneath the surface in search of food.

Family Marginellidae.

Cryptospira pygmaeoides (Singleton).

Marginella pygmaeoides Singleton, 1937. Proc. roy. Soc. Vic., 49, p. 393, pl. 23, f. 2.

MATERIAL: Port Phillip Survey: Areas 59 (36). Nat. Mus. Coll.: Portsea, Sorrento (Area 59).

REMARKS: A sand dwelling species which was found in large numbers on the sand bottom within the comparative shelter of the annulus of artificial reef that form the Pope's Eye (Station 36).

Austroginella johnstoni (Petterd).

Marginella johnstoni Petterd, 1884. Journ. of Conch., 4, p. 143; May, 1923. An Illustrated Index of Tasmanian Shells, pl. 31, fig. 2.

MATERIAL: Port Phillip Survey: Areas 59 (36); 62 (96). Nat. Mus. Coll.: Brighton (Area 7); Mornington (Area 55); Sandringham (Area 13); Sorrento (Area 59). F. Murray Coll.: Rosebud (Area 69).

REMARKS: Lives in sand and was very common at station (36) and at Rosebud.

Family Turridae.

Mitraguraleus mitralis (A. Ads. and Angas).

Bela mitralis Adams and Angas, 1863. Proc. Zool. Soc., p. 420, No. 8.

MATERIAL: Port Phillip Survey: Areas 59 (36).

Family Conidae.

Floroconus anemone (Lamarck).

Conus anemone Lamarck, 1810. Ann. du Mus., 15 p. 272; Reeve 1843, Conch. Icon., vol. 1, pl. 25, f. 139, a. b.

MATERIAL: Port Phillip Survey: Areas 42 (38); 59 (23, 24). Nat. Mus. Coll.: Geelong (Area 30); Mt. Martha (Area 63); Mud. Is. (Area 60); Schnapper Point (Area 55); Brighton (Area 7); Portarlington (Area 29).

REMARKS: Is an inhabitant of reefs from low tide to approximately one fathom where it often occurs under stones in quite large numbers. For this reason although common round the shores of Port Phillip it was not a prominent species in the present survey.

Family Amphibolidae.

Salinator fragilis (Lamarck).

Ampullaria fragilis Lamarck, 1822. Anim. s. Vert., 6, p. 179.

MATERIAL: Port Phillip Survey: Area 26 (Limeburners Bay, shallow salt marsh). Nat. Mus. Coll.: St. Kilda (Area 3); Sandringham (Area 18); Hobsons Bay (Area 2 and 3); Altona (Area 5); Frankston (Area 48).

REMARKS: This species occurs in the lower littoral of salt marshes and estuaries and is known to be common in such suitable positions around the shores of Port Phillip. Their actual distribution, and that of the allied species *S. solida* (van Martens) will be plotted in detail when the survey is extended to the shoreline.

Siphonaria diemenensis (Quoy and Gaimard).

Siphonaria diemenensis Quoy and Gaimard, 1833. Voy. "*Astrolabe*" Zool., 2, p. 327, pl. 25, f. 1–12.

MATERIAL: Port Phillip Survey: Area 42 (38); 59 (36); 61 (37). Nat. Mus. Coll.: Portarlington (Area 27); Williamstown (Area 6); Mt. Eliza (Area 55); Brighton (Area 7); Rye (Area 68).

REMARKS: This is a very common species in the intertidal area on rock platforms and it is found in all such locations in Port Phillip occurring on the artificial breakwaters of Areas 2 and 3.

Class **BIVALVIA.**

Family Nuculidae.

Leionucula obliqua (Lamarck).

Nucula obliqua Lamarck, 1819. Anim. s. Vert., 6, p. 59.

Leionucula obliqua Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 270, f. 307.

MATERIAL: Port Phillip Survey: Areas 12 (111–3); 13 (210); 23 (71); 31 (—); 43 (263); 53 (253); 55 (146); 61 (240); 63 (163). Gabriel Coll.: Brighton (Area 7); off Beaumaris (Area 23); Point Cook (Area 5). Nat. Mus. Coll.: Hobson's Bay (Area 2 and 3); Point Cook (Area 5); Mornington (Area 55).

REMARKS: Lives in sandy mud at approximately 3 to 10 fathoms in depth.

Family Arcidae.

Anadara trapezia (Deshayes).

Anadara trapezia Deshayes, 1840. Mag. Zool., pl. 21.

MATERIAL: Port Phillip Survey: Areas 12 (114); 26 (126); 27 (41); 28 (285); 37 (40); 39 (40, 42, 313).

REMARKS: This species was thought for a long time to be extinct in Port Phillip but the present survey has shown it to be in quite large numbers on the north-western side of the Bay and in particular in the Corio Bay arm. The Quaternary beds of the Yarra delta contain large numbers of this shell and it has been suggested that climatic changes caused its disappearance. However, in view of the evidence from the present survey, it seems more likely that its disappearance from this particular section is due to ecological changes as a result of pollution

and dredging. *Anadara* is a heavy shell which would remain unaffected by solution and erosion and so the delta beds would be built up readily over a period. Also size of living specimens from the present survey do not indicate that these shells are stunted in comparison with the quaternary specimens of the Yarra delta.

Barbatia pistachia (Lamarck).

Arca pistachia Lamarck, 1819. Anim. s. Vert., 6, p. 41.

Barbatia pistachia Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 276, f. 314.

MATERIAL: Port Phillip Survey: Areas 6 (65, 137, 167); 10 (11–2); 14 (175); 18 (60); 23 (3); 55 (148–9); 61 (37); 63 (163); 64 (164). Nat. Mus. Coll.: St. Kilda (Area 3–7); Mordialloc (Area 24); Frankston (Area 48); Portsea (Area 58–9); Geelong (Area 37).

REMARKS: A common species at and below low tide on reefs.

Barbatia squamosa (Lamarck).

Arca squamosa Lamarck, 1819. Anim. s. Vert., 6, p. 45.

Barbatia squamosa Macpherson and Gabriel 1962. Marine Molluscs of Victoria, p. 277, f. 315.

MATERIAL: Port Phillip Survey: Areas 50 (230); 55 (intertidal). Nat. Mus. Coll.: Brighton (Area 7).

REMARKS: A shallow water species living under stones from low tide to several fathoms.

Family Mytilidae.

Modiolus cottoni (Laseron).

Modiolus cottoni Laseron, 1956. Aust. Zool., XII, pt. 3, p. 270, f. 25–8.

MATERIAL: Port Phillip Survey: Area 58 (—); 59 (23). Gabriel Coll.: Mornington (Area 55); Point Nepean (Area 58); Portsea (Area 58–9).

REMARKS: This species is found in small clumps on rock platforms at and below low tide. It appears to like clear water and is not very common in Port Phillip.

Modiolus inconstans (Dunker).

Volsella inconstans Dunker, 1856. Proc. Zool. Soc., p. 363.

Modiolus inconstans Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 286, f. 326.

MATERIAL: Port Phillip Survey: Areas 58 (89).

REMARKS: There are three species of intertidal and shallow water dwelling *Modiolus* (*M. inconstans*, *M. pulex* Lamarck, and *M. vexillum* Reeve) along the coast and penetrating the inlets of southern Australia. Because they are shallow water species they will not be considered in detail until the survey is extended to the littoral.

Dr. B. R. Wilson has made a detailed study of these species in the Swan River Estuary, W. Australia and indications are that the ecological conditions at the head of Hobson's Bay will make for a similar distribution.

Brachidontes rostratus (Dunker).

Mytilus rostratus Dunker, 1856. Proc. Zool. Soc., p. 358.

Brachidontes rostratus Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 289, f. 331.

MATERIAL: Nat. Mus. Coll.: Point Lonsdale, Queenscliff (Area 58); Point Nepean (Area 58); Portsea (Area 58–59); Sorrento (Area 59).

REMARKS: This species was not taken in the present survey as it is a littoral species living at mid-tide level. Also it is an inhabitant of open rocky coasts and does not penetrate Port Phillip beyond the Nepean Bay Bar.

Lanistina ulmus (Iredale).

Musculus ulmus Iredale, 1936. Rec. Aust. Mus., 19, p. 271, pl. 21, f. 10.

MATERIAL: Port Phillip Survey: Areas 11 (190); 31 (131); 39 (42); 58 (88). Nat. Mus. Coll.: Black Rock (Area 14); Brighton (Area 7); Frankston (Area 48).

REMARKS: This species lives in association with the Tunicate *Pyura praeputialis*.

Mytilus planulatus (Lamarck).

Mytilus planulatus Lamarck, 1819. Anim. s. Vert., 6, p. 125. Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 293, f. 335.

MATERIAL: Port Phillip Survey: Areas 3 (202); 5 (52–8, 165–9); 6 (63–7, 118, 137); 7 (123, 206, 208); 9 (62, 84, 178–80); 10 (11, 13–15, 103–4, 106); 11 (125); 12 (110–4); 13 (82, 92–4); 14 (175); 16 (142–3); 17 (170–1, 173); 18 (61, 308); 19 (179, 181, 306); 20 (124); 21 (115); 22 (119); 23 (68–70); 24 (122); 26 (127–8); 27 (41, 49, 138–9); 28 (140–1); 29 (174, 317), 30 (130, 132); 31 (10, 134–5); 35 (71–3); 36 (74–7); 37 (40–1); 39 (45–50); 42 (38, 107–9); 47 (29–30); 48 (34); 50 (230–1); 55 (144, 149); 56 (295); 59 (23, 79, 213); 61 (37); 62 (96); 63 (16–9, 21–2, 159–64); 68 (157).

REMARKS: Occurs in sheltered waters around the whole of the southern coast of Australia and in Tasmania. Like all members of the genus *Mytilus*, the larva require a solid substratum to settle on, this may be natural or man placed rock or wharf piling. Where such substratum is not available, advantage may be taken of even small solid objects such as stones, shells &c.

At stations where fine bottom sediments occur, adjacent to reefs and wharfs, clumps comprising a few large mussels are often found scattered over the sea floor. The individuals of these clumps are always large (individuals of one clump measured up to 7 inches in length) and obviously old. It is suggested that, as the shells become large and heavy they can no longer be supported by the byssus and so drop off to lie on the sea floor. Their large size enables them to lie on the top of the sediments and so survive under less favourable conditions.

Settlement of larva takes place at and below low water and only in areas where there is not excessive turbulence. In fact *Mytilus planulatus* is an inhabitant of bays and inlets and is not found on open coasts subject to the full force of oceanic conditions; though its ability to take advantage of even small areas of shelter is shown by its presence in the very small bay used as a boat loading at Wilson's Promontory lighthouse.

Family PTERIIDAE.

Electroma georgiana (Quoy and Gaimard).

Avicula georgiana Quoy and Gaimard, 1835. Voy. "*Astrolabe*". Zool., 3, p. 457, pl. 77, f. 10, 11.

MATERIAL: Port Phillip Survey: Areas 3 (202); 5 (168–9); 6 (137); 7 (208); 9 (178–80); 10 (13); 11 (190); 13 (92); 14 (175); 16 (142–3); 17 (170); 18 (59–60, 187, 306–7); 19 (178, 181); 20 (124); 22 (119); 26 (126–8); 27 (41); 28 (140); 29 (317); 31 (10, 132, 310); 34 (120); 37 (40); 39 (42–6, 311); 40 (101); 42 (108–9); 50 (230–1); 59 (36); 61 (37); 68 (156–7).

REMARKS: A widely distributed species in Port Phillip wherever algae or seaglasses occur to provide it with a suitable habitat and support. It seems likely that breeding occurs over most of the year as juveniles are always present on suitable attachment. In June 1959 at station 101 the *Cystophora uvifera* was covered with examples ranging in size from 1 to 10 mm. in width.

Family PECTINIDAE.

Propeamussium thetidis (Hedley).

Amusium thetidis Hedley, 1902. Mem. Aust. Mus., 4, p. 304, f. 49.

MATERIAL: Port Phillip Survey: Area 42 intertidal; Gabriel Coll.: Ocean beach Point Nepean (Area 58).

Pecten alba (Tate).

Pecten alba Tate, 1886. Proc. roy. Tas., p. 114, Macpherson and Gabriel, 1962. Marine Mollusca of Victoria, p. 300, f. 341.

MATERIAL: Port Phillip Survey: Areas 5 (52, 166); 6 (63–4), 7 (207); 10 (11–13); 11 (125); 12 (111–2); 13 (92–3); 14 (175); 16 (142); 17 (170–1); 18 (59–61, 187–9, 306–8); 19 (304–6); 20 (124); 21 (176); 22 (119); 23 (68–70); 25 (129); 27 (47–8); 28 (315); 29 (174, 287, 317); 30 (130); 31 (10, 273, 276); 33 (177); 34 (120); 35 (71–2); 39 (45–8, 314); 43 (274); 47 (28–9, 31); 55 (144, 146, 255–6); 59 (25); 61 (242); 62 (96, 190–1, 243); 63 (159, 245–9); 68 (219); 69 (97, 100, 221–2).

REMARKS: Since the completion of the field studies of the present survey a commercial scallop fishery has commenced operation in Port Phillip. As stated in the introduction this was not a quantitative survey and this is not the place to try to assess the value or extent of the fishery. However, it is interesting to note that there are ecological differences in the occurrence of *Pecten meridionalis* in Tasmania and *Pecten alba* in Port Phillip, the only place where its ecology has been studied so far.

Pecten meridionalis occurs in the D'Entrecasteaux Channel in southern Tasmania as a pure community on a sandy bottom. Other animals and plants are few in species and those that do occur are very sparse. This is not the case in Port Phillip where *Pecten alba* is only one member of a rich community of which the other co-dominant species are the Ascidian *Pyura praeputialis* and, the Holothurian *Stichopus mollis*. Frequently the Ascidian *Microcosmos spiniferus* is found growing on the upper flat valve of the shell.

The exact relationships of the various so-called species round the southern Australian coast is not known, but they are in the process of being studied by A. M. Olsen and the present author and it is hoped to be able to discuss them in detail in a later paper.

It is interesting to note that the Fisheries and Wildlife Department estimate that approximately 94 million scallops have been taken from Port Phillip during the period September, 1963 to November, 1964.

Chlamys asperrimus (Lamarck).

Pecten asperrimus Lamarck, 1819. Anim. s. Vert., 6, p. 174.

Chlamys asperrimus Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 303, f. 344.

MATERIAL: Port Phillip Survey: Area 10 (14); 55 (148); 59 (24, 213); 64 (164). Nat. Mus. Coll.: Mordialloc (Area 24); Frankston (Area 48); Queenscliff (Area 58); Sorrento (Area 59).

REMARKS: This is a common species throughout Bass Strait and its occurrence in Port Phillip is practically limited to the southern end of the bay.

Family Ostreidae.

Ostrea angasi (Sowerby, 1871).

Ostrea angasi Sowerby, 1871. In Conch. Icon. (Reeve), 18, pl. 13, f. 27.

MATERIAL: Port Phillip Survey: Areas 5 (51–8, 166–9); 6 (63–4, 67, 118, 137); 7 (123); 10 (11, 12, 15, 103–4); 11 (125, 190); 12 (—); 13 (82, 92–4); 14 (117, 175); 16 (142–3); 17 (170, 172–3); 18 (59, 183, 187, 189, 307–8); 19 (306); 21 (115); 24 (122); 27 (41, 138–9); 28 (140–1, 315); 30 (130); 31 (10, 310); 34 (120); 35 (121); 36 (76–7); 39 (45–7); 40 (101); 42 (38, 107–9); 47 (29, 30); 48 (32); 55 (145–7); 61 (37); 62 (96); 63 (19, 21–2, 159, 161–4); 68 (158), 69 (97).

REMARKS: This species can withstand and cope with a considerable amount of suspended matter in the water. Though requiring a solid object for the spat to settle on initially, the object can be extremely small and is quickly outgrown by the oyster which then comes to lie directly on the soft sediments. It occurs in areas of silty sand and silty clay from low water to approximately eleven fathoms but is not found on the true clay of the southern central basin.

Family Cardiidae.

Venericardia bimaculata (Deshayes).

Cardita bimaculata Deshayes, 1852. Proc. Zool. Soc., p. 102, pl. 17, f. 4–5.

MATERIAL: Port Phillip Survey: Areas 13 (92); 14 (175); 51 (250). Nat. Mus. Coll.: Port Phillip.

Family Cardiidae.

Fulvia tenuiscostata (Lamarck, 1819).

Cardium tenuicostatum Lamarck, 1819. Anim. s. Vert., VI., pt. 1, p. 5, No. 5. Reeve 1844. Conch. Icon., 11, pl. 10, f. 50.

MATERIAL: Port Phillip Survey: Areas 9 (62); 10 (11); 11 (125, 190); 13 (92); 18 (61, 307); 20 (124); 23 (2, 7); 25 (128); 27 (49); 30 (130); 31 (135); 36 (77); 37 (40, 297); 39 (314); 55 (147, 256); 59 (36); 68 (147, 158); 69 (221–2). Nat. Mus. Coll.: Brighton (Area 7); Point Cook (Areas 5 and 11).

REMARKS: This species is common on the silty sand areas from approximately 2 to 5 fathoms in suitable habitats.

Family Veneridae.

Subfamily Dosiniinae.

Phacosoma coerulea (Reeve 1850).

Artemis coerulea Reeve, 1850. Conch. Icon., 6, pl. 4, f. 25.

MATERIAL: Port Phillip Survey: Area 36 (76). Nat. Mus. Coll.: Point Nepean; Queenscliff (Area 58).

REMARKS: The occurrence of this species north of the Nepean bay bar is worthy of note as it had previously only been recorded from the Heads area.

Phacosoma circinaria (Deshayes).

Dosinia circinaria Deshayes, 1853. Brit. Mus. Cat., p. 9–10, No. 14.

Phacosoma circinaria Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 340–1, f. 390.

MATERIAL: Nat. Mus. Coll.: South Melbourne (Area 2); Altona (Area 5); Mordialloc (Area 24); Frankston (Area 48); Dromana (Area 63); Portsea (Area 59); Queenscliff (Area 58).

REMARKS: This species is an inhabitant of shallow water sandy areas from approximately low tide to just over 1 fathom. Valves are fairly frequently washed up along the beaches of the above localities, but it was not taken in the present survey, which as already explained, has not yet been extended to the shallow water of less than 1 fathom.

Subfamily Meretricinae.

Notocallista kingii (Gray, 1827).

Cytherae kingii Gray, 1827. King's Survey Aust., 2. Appendix p. 476.

Notocallista kingii Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 343, f. 393.

MATERIAL: Port Phillip Survey: Areas 7 (206); 13 (92); 55 (35). Nat. Mus. Coll.: St. Kilda (Area 3); Brighton (Area 7); Frankston (Area 48); Dromana (Areas 63 and 70).

REMARKS: Lives below low tide to approximately 2 fathoms on a sandy substratum. A specimen from station 35 was being eaten by *Pleuroploca australasia.*

Subfamily Venerinae.

Chioneryx cardioides (Lamarck, 1818).

Erycina cardioides Lamarck, 1818. Anim. s. Vert., 5, p. 486.

Chioneryx cardioides Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 346, f. 397.

MATERIAL: Port Phillip Survey: Areas 3 (202); 7 (206, 208); 11 (190); 13 (94); 14 (175); 19 (304–6); 20 (124); 24 (122); 27 (139); 31 (131); 36 (76–7); 61 (240). Nat. Mus. Coll.: St. Kilda (Area 3); Sandringham (Areas 13–14); Frankston (Area 48); Off Point Cook (Areas 5 and 11).

REMARKS: Occurs where reef and sandy mud intermix so that the reef only protrudes slightly in patches above the soft sediments.

Tawera gallinula (Lamarck, 1818).

Venus gallinula Lamarck, 1818. Anim s. Vert., 5, p. 592.

Tawera gallinula Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 347, f. 398.

MATERIAL: Port Phillip Survey: Areas 3 (202); 59 (36); 64 (164). Nat. Mus. Coll.: Frankston (Area 48); Dromana (Area 63); Sorrento (Area 59); Portsea (Area 58).

Callanaitis disjecta (Perry, 1811).

Venus disjecta Perry, 1811. Conchology, pl, 58, f. 3.

MATERIAL: Port Phillip Survey, Area 10 (12); 11 (125); 12 (114); 13 (83, 92); 14 (175); 18 (307); 20 (309); 21 (115); 29 (174). Nat. Mus. Coll.: Port Melbourne (Area 2); Frankston (Area 48); Rosebud (Area 69); Rye (Area 68).

REMARKS: This species is an inhabitant of sandy mud from just below low tide approximately the 10-fathom line.

Eumarcia fumigata (Sowerby, 1853).

Venus fumigata Sowerby, 1853. Thes. Conch., 2, p. 737, pl. 159, f. 152–155.

MATERIAL: Port Phillip Survey: Areas 3 (202); 7 (206, 208); 9 (84); 10 (106); 48 (32). Nat. Mus. Coll.: South Melbourne (Area 2); St. Kilda (Area 3); Mordialloc (Area 24); Dromana (Area 103).

REMARKS: This is a shallow water species ranging from low tide to several fathoms but most common in less than 1 fathom where it occurs in great numbers in suitable locations. It is probably the most abundant species in the shallows of areas 2 and 3 and after storms, is washed up in great numbers.

Katelysia scalarina (Lamarck, 1818).

Venus scalarina Lamarck, 1818. Anim. s. Vert., 5, p. 599.

Katelysia scalarina Nielsen, 1964. Mem. Nat. Mus. Vict. No. 26, p. 222, pl. 1, f. 1–3.

MATERIAL: Port Phillip Survey: Areas 5 (167); 42 (38); 58 (89); 63 (163).

REMARKS: Occurs in areas of sand from low tide to several fathoms.

Katelysia rhytiphora (Lamy, 1935).

Katelysia rhytiphora Lamy, 1935. Bull. du Mus. Nat. d'Hist. Natur. Paris ser. 2, T. 7, No. 6, p. 357; Nielson 1964, Mem. Nat. Mus. Vict., No. 26, p. 233, pl. 2, f. 4–6.

MATERIAL: Port Phillip Survey: Areas 5 (56, 168); 6 (118); 9 (84); 10 (106); 17 (173); 19 (179); 27 (41); 37 (40); 42 (38, 108); 61 (37); 3 (202).

REMARKS: This species is an inhabitant of sandy mud, living buried in areas where creeping plants such as *Zostera* or *Caulerpa* bind the fine sediments. A few specimens of each species may overlap into the habitat of the other but these individuals are the exceptions.

Pullastra galactites (Lamarck, 1818).

Venus galactites Lamarck, 1818. Anim. s. Vert., 5, p. 599.

Pullastra galactites Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 356, f. 413.

MATERIAL: Area 5 (57–8); 6 (118); 9 (84); 13 (83); 27 (41); 30 (130); 37 (40); 42 (38); 47 (30); 68 (155). Nat. Mus. Coll.: St. Kilda (Area 3); Brighton (Area 7); Mordialloc (Area 24); Sorrento (Area 59).

REMARKS: Lives in coarse sand where stones or reef afford it some shelter.

Pullastra fabagella (Deshayes, 1853).

Tapes fabagella Deshayes, 1853. Brit. Mus. Cat., p. 182.

Pullastra fabagella Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 358, f. 414.

MATERIAL: Port Phillip Survey: Areas 7 (206); 9 (178, 180); 16 (143, 283); 19 (179, 181); 27 (41); 28 (285); 51 (250).

REMARKS: This species is less associated with reefs than the previous one and appears to favour slightly finer sediments.

Family Donacillidae.

Donacilla nitida (Deshayes, 1854).

Mesodesma nitida Deshayes, 1854. Proc. Zool. Soc., p. 338.

Donacilla nitida Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 362, f. 420.

MATERIAL: Port Phillip Survey: Areas 10 (106); 48 (32). Nat. Mus. Coll.: South Melbourne (Area 2); Elwood (Area 7); Mordialloc (Area 24); Mornington (Area 55).

REMARKS: An inhabitant of sand banks at and below low tide mark. This species is very common on the sand banks at the sheltered northern end of the bay.

Family Mactridae.

Notospisula trigonella (Lamarck, 1818).

Mactra trigonella Lamarck, 1818. Anim. s. Vert., V., p. 479.

Gnathodon parva, Petit, 1853. Journ. de Conch., 4, p. 358, pl. 13, f. 9, 10.

Spisula trigonella Lamy, 1917. Ibid., 63, p. 310–13.

MATERIAL: Port Phillip Survey: Area 3 (202); 7 (206); 9 (84); 10 (106); 11 (201); 16 (283). Nat. Mus. Coll.: Port Melbourne (Area 2); St. Kilda (Area 3).

REMARKS: This species is an inhabitant of sandy mud areas of still water and is very common at and below low water in Hobson's Bay. There has been considerable confusion in regard to the name to be applied to this species and authors have used both *trigonella* and *parva*. Iredale 1930 applied *trigonella* to the Western and retained *parva* for the eastern shells. However Lamy (1914), had already discussed the matter and stated that he had compared the Lamarck and Petit types and found that they were con-specific. Further, both Iredale and Cotton were mistaken in the type locality of *trigonella* which Lamarck records as "la baie des chiens marins" and is the original French designation for Shark Bay*. A review of literature and specimens available suggests that *trigonella* is a northern and eastern species ranging as far south as Port Phillip and in the west to Shark Bay.

* Voyage de L'Astrolabe 1826–29, D'Urville—Atlas. "Historique, Cart pour L'intelligence du Mémoire de M. le Capitaine D'Urville sur les Iles du Grand Ocean (Océanie)".

Notospisula cretacea (Angas, 1867).

Spisula cretacea Angas, 1867. Proc. Zool. Soc., p. 909, pl. 44, f. 4.

MATERIAL. Port Phillip Survey. Area 9 (84). Nat. Mus. Coll. Port Melbourne (Area 2), St. Kilda (Area 3).

REMARKS: This species occupies a similar habitat to the previous one and occurs in association with it in south-eastern Australia. It is the southern representative of the genus and its range as indicated by the material available, is from northern N.S.W. to Perth in Western Australia. Cotton and Godfrey (Molluscs of South Australia, pt. 1, p. 275–6, 1938) misapplied the name *M. trigonella* to the elongate shell and also misquoted the type locality of *M. trigonella* as King George Sound. Lamarck records it as coming from Shark Bay, Western Australia.

Electromactra antecedens (Iredale).

Electromactra antecedens Iredale, 1930. Rec. Aust. Mus., 17, p. 401, pl. 44, f. 1–3.

MATERIAL. Port Phillip Survey. Area 9 (84). Nat. Mus. Coll. South Melbourne (Area 2), St. Kilda (Area 3), Mordialloc (Area 24), Dromana (Area 63), Queenscliff (Area 58).

REMARKS. Lives in shallow water usually in less than 2 fathoms so was not taken on the present stage of the survey. Beach material indicates that it is common below low tide on the northern and east sides of the bay.

Soletellina biradiata (Wood).

Solen biradiata Wood, 1815. General Conch., p. 135, pl. 33, f. 1.

MATERIAL. Port Phillip Survey. Areas 63 (163), 64 (164). Nat. Mus. Coll. Mornington (Area 55), Rosebud (Area 69), Sorrento (Area 59).

REMARKS: Lives buried in silty sand in shallow water from low tide to approximately 2 fathoms.

Soletellina donacioides (Reeve).

Soletellina donacioides Reeve, 1857. Conch. Icon., 10, pl. 3, f. 11.

MATERIAL. Port Phillip Survey. Area 63 (163). Nat. Mus. Coll. Port Melbourne (Area 2), St. Kilda (Area 3), Sandringham (Area 13), Frankston (Area 48), Rosebud (Area 69).

REMARKS: Occupies a similar habitat to *biradiata* but material in the collection indicates that it may prefer a more sheltered and muddier situation to that species. The inshore survey will give more data on this.

Family SEMELIDAE.

Theora fragilis (A. Adams).

Neaera fragilis A. Adams, 1855. Proc. Zool. Soc. Lond., p. 226.

Theora fragilis Macpherson and Gabriel 1962, Marine Molluscs of Victoria, p. 374–5, f. 438.

MATERIAL. Port Phillip Survey. Area 20 (124); 26 (126), 39 (42); 40 (101). Nat. Mus. Coll. Off Point Cook (Area 5 and 11).

REMARKS: Occurs in sandy mud and when present is usually in large numbers.

Family TELLINIDAE.

Pseudarcopagia victoriae (Gatliff and Gabriel).

Tellina victoriae Gatliff and Gabriel, 1914. Vict. Nat., 31, p. 83.
Pseudarcopagia victoriae Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 375, f. 439.

MATERIAL: Port Phillip Survey: Areas 6 (118); 27 (41). Nat Mus. Coll.: Mordialloc (Area 24); Frankston (Area 48); Point Lonsdale (Area 58).

Homalina deltoidalis (Lamarck, 1818).

Tellina deltoidalis Lamarck, 1818. Anim. s. Vert., 5, p. 532.
Homalina deltoidalis Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 377, f. 440.

MATERIAL: Port Phillip Survey: Areas 9 (84); 10 (106); 37 (40 296–7); 55 (end of Mornington jetty); 58 (89); 61 (37). Nat. Mus. Coll.: South Frankston (Area 48); Geelong (Area 37).

REMARKS: This species is an inhabitant of silt in very still water where it occurs in large numbers. It occurs in Port Phillip in small restricted communities in suitable locations.

Homalina mariae (Tenison Woods).

Tellina mariae Tenison Woods, 1876. Proc. roy. Soc. Tas., 1875, p. 162.
Homalina mariae Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 377–8, f. 441.

MATERIAL: Port Phillip Survey: Area 58 (89). Nat. Mus. Coll.: Portarlington (Area 29); Geelong (Area 37); off Point Cook (Area 5 and 11).

REMARKS: Occurring under similar conditions as *H. deltoidalis* and often associated with it.

Hiatella australis (Lamarck).

Corbula australis Lamarck, 1818. Anim. s. Vert., 5, p. 643.
Hiatella australis Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 379, f. 444.

MATERIAL: Port Phillip Survey: Areas 18 (61); 55 (14); 56 (295); 58 (88); 59 (23, 36). Nat. Mus. Coll.: Sorrento (Area 59).

REMARKS: A crypt dwelling species found buried in softer rocks such as limestone and iron stones.

Family GASTROCHAENIDAE.

Gastrochaena tasmanica (Tenison Woods).

Gastrochaena tasmanica Tenison Woods, 1876. Proc. roy Soc. Tas., 1875, p. 159; Macpherson and Gabriel 1962, Marine Molluscs of Victoria, p. 383, f. 448.

MATERIAL: Port Phillip Survey. Area 5 (54); 30 (130); 55 (147); 69 (off Macrae).

REMARKS: This species occurs in areas where the sand and shell bottom provide it with suitable means of attachment and material for cementing into the protective flask with which each animal surrounds itself. Apart from station 54, all specimens were taken in depth ranging from 33 to 40 feet.

Family Pholadidae.

Pholas australasiae (Sowerby).

Pholas australasiae Sowerby, 1849. Thes. Conch., 2, p. 488, pl. 106, f. 73.

MATERIAL: Port Phillip Survey: Area 25 (129). Nat. Mus. Coll.: St. Kilda (Area 3); Point Cook (Area 5 and 10); Sandringham (Area 13 and 14); Queenscliff (Area 58).

REMARKS: This burrowing species is found wherever soft rock affords it a suitable substratum and it occurs from the sublittoral to approximately 2 fathoms. At station 129 it is present in large numbers, a single haul with a Peterson grab collected the siphons of about a dozen specimens. The grab only penetrated about 3 inches into the stiff consolidated mud and therefore cut the siphons off just above the buried shells. They are also common on the dipping offshore platforms of older basalt in Area 10.

Family Myochamidae.

Myadora brevis (Sowerby).

Pandora brevis Sowerby, 1829. App. Stutchbury's Cat., p. 3, f. 2.

MATERIAL: Port Phillip Survey: Area 22 (119). Nat. Mus. Coll.: Port Melbourne (Area 2); St. Kilda (Area 3); Sandringham (Area 13); Altona (Area 5). Gabriel Coll.: Point Cook (Area 5 and 11).

REMARKS: This shell was only taken at the one station on the present survey but Gabriel records that he took it in large numbers in 8 fathoms off Point Cook.

Family Cleidothaeridae.

Cleidothaerus albidus (Lamarck).

Chama albidus Lamarck, 1819. Anim. s. Vert., 6, p. 96.

Cleidothaerus albidus Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 395, f. 463.

MATERIAL: Port Phillip Survey: Area 5 (53); 14 (117, 175); 18 (59–60); 28 (141); 30 (130); 31 (10); 55 (148); 59 (36); 64 (164).

REMARKS: Previously only known as an infrequent wash up from deeper water the survey has shown it to be a common shell on the reefs in deeper water.

Family Laternulidae.

Offadesma angasi (Crosse and Fischer).

Periploma angasi Crosse and Fischer, 1864. Journ. de Conch., 12, p. 349.

Offadesma angasi Macpherson and Gabriel, 1962. Marine Molluscs of Victoria, p. 399, f. 469.

MATERIAL: Port Phillip Survey: Area 13 (210); 43 (263). Nat. Mus. Coll.: Frankston (Area 48), Portarlington (Area 29); Off Point Cook (Area 5 and 11).

Laternula creccina (Reeve).

Anatina creccina Reeve, 1860. Conch. Icon., 14, pl. 2, f. 12.

MATERIAL: Port Phillip Survey: Area 9 (84); 61 (241). Nat. Mus. Coll.: Frankston (Area 48); Portarlington (Area 29); Off Point Cook (Area 5 and 11); Dromana (Area 63).

Class **CEPHALOPODA.**

On this present phase of the survey the cephalopods collected were mainly benthic living forms such as *Octopus*. However as a number of pelagic species are known to be quite common in Port Phillip it seems advisable to record them and so make the list as complete as possible.

Order **Decapoda.**

Family SEPIIDAE.

Amplisepia apama (Gray).

Sepia apama Gray, 1849. Ceph. Antep. Brit. Mus., p. 103; McCoy, 1888. Prodromus Zool. Vic., XIX., pl. 188, 189, 190.

MATERIAL: Nat. Mus. Coll.: Mordialloc (Area 24); Corio Bay (Area 25–6, 37–8); Point Lonsdale (Area 58); Portarlington (Area 39).

REMARKS: This is the largest and commonest squid in Victorian waters and is taken frequently by nets, long lines and when fishing from jetties. Because it is well known and used commercially as bait and as food particularly by the section of the population with a southern European origin, it is rarely brought into the museum and so the collections give no idea of its prevalence.

Euprymna tasmanica (Pfeffer).

Pl. I, figs. 1–4.

Euprymna tasmanica Pfeffer, 1884. Ceph. Hamburg. Mus., p. 6, f. 7; Allan 1950, Australian Shells, p. 452.

MATERIAL: Port Phillip Survey: Area 37 (296–8); 59 (214). Nat. Mus. Coll.: Williamstown (Area 6); Altona (Area 5); Carrum (Area 36); Dromana (Area 63); Mordialloc (Area 24); Portarlington (Area 29); Point Henry (Area 26).

REMARKS: Allan suggests that this species and *E. stenodactyla* may be conspecific but appears to base her conclusions on overall appearance rather than specific constant characters. Because of this doubt as to whether the southern species was separable from the Indo–Pacific *E. stenodactyla*, Port Phillip specimens were considered in the light of Voss 1963 (Smithsonian Institution W. S. Nat. Mus. Bull. 234, p. 52–56), discussion of *E. stenodactyla*. He states that he has found that in malas "If one, . . . centres upon the size and arrangement of the arm suckers, some cohesion becomes apparent. I have examined specimens of *E. morsei* and *berryi* from Japan, and find that they consistently conform to the illustration and description given by Sasaki". It was found that in the Port Phillip specimen also, the size and arrangement of the arm suckers of the males was constant and fortunately the single specimen on which Pfeffer based his species was a male and he gave a detailed description of the suckers of the arms. The constant distinguishing feature as stated by Pfeffer and which occurs in the Port Phillip specimens is that there are two enlarged suckers 2 mm. ring diameter on the ventral side of the second and third pair of arms (Pl. I., fig. 3). This arrangement of suckers also occurs in all males in the Museum collection taken from Victorian waters outside Port Phillip. Thus it seems likely that this is the only representative of this genus in Victoria.

Family Idiosepiidae

Idiospeus notoides (Berry).

Idiosepius notoides Berry, 1921. Rec. South Aust. Mus., vol. 1, p. 301–2, f. 67, Chart II.

MATERIAL: Port Phillip Survey: Area 42 (—), Area 68 (1956). Nat. Mus. Coll.: Altona (Area 5), Portarlington (Area 29), Swan Bay (Areas 49–50), Rye (Area 68).

REMARKS: This small species originally described from Goolwa, S. Aust. has been overlooked and not recorded as an element of the Port Phillip fauna until now. However it is not uncommon and a check of the museum collections show that it was collected at Altona by Mrs. Freame in 1933 but was not identified and so not recorded.

Family Ommastrephidae.

Nototodarus sloanii gouldi (McCoy).

Ommastrephes gouldi McCoy, 1888. Prodromus of Zoology of Victoria, Decade 17, pp. 255–257, 10 pls.

Nototodarus sloanii (in part) Pfeffer, 1912. In Ergebnisse . . . der Plankton Exped. Humboldt and Stiftung, vol. 2, p. 000.

Nototodarus gouldi Berry, 1918. Biological Results . . . F.I.S. Endeavour 1909–14, vol. 4, pt. 5, p. 000.

Nototodarus sloanii gouldi Dell, 1952. Dominion Mus. Bull. Wellington, No. 16, pp. 117–9.

MATERIAL: Nat. Mus. Coll. Hobson Bay (Areas 2 and 3). Holotype and Paratype.

REMARKS: McCoy described *N. gouldi* from a specimen collected in Port Phillip and pointed out its close relationship to *Ommastrephes insignis* Gould (and *sloanii* Gray). Pfeffer also realizes the synonymy of *sloanii* but Berry (1918) retained its separate identity. Then Dell (1952) described the New Zealand form in detail and has shown that it is *sloanii* s.s., he distinguished it from the Australian form which he called *N. sloani gouldi*. Voss (1963) (Smithsonian Institution Bull., 234, pp. 129–1) discussed *sloanii* and its subspecies and recorded *sloanii gouldi* as the southern Australian form. He states: "there appears to be a distinct cline with the species *N. sloanii* following a curve from New Zealand through Australia, Philippines and Hawaii".

Family Loliginidae.

Sepioteuthis australis (Quoy and Gaimard).

Sepia australis Quoy and Gaimard, 1832. Voy. Astrolabe Zool., 2, p. 70, pl. 5, f. 3–7.

MATERIAL: Nat. Mus. Coll.: Corio Bay (Areas 25–6 and 37–8), Limeburner Point (Area 37).

REMARKS: This species together with *N. gouldi* and *L. etheridgei* are fished commercially in Victorian waters and are sold for food and bait.

Loligo sp.

Loligo etheridgei Berry, 1918. Biological Results. F. I. S. Endeavour, 1909–14, vol. 4, pt. 5, p. 243–249, pls. 67–68, 69, f. 1–2.

REMARKS: From time to time large numbers of small "squid" occur in Port Phillip. In general appearance they are very close to *L. etheridgei* but as all specimens so far examined are either female or immature males without the hectocotylized arm developed, I prefer to just record their presence until they can be studied further.

Order **OCTOPODA.**

Family Octopodidae.

Octopus pallidus (Hoyle).

Octopus bosci var. *pallida* Hoyle 1885, Ann. Mag. Nat. Hist., (5), XV., p. 222; Pritchard and Gatliff, 1898, Proc. roy Soc. Vict., n.s., X., p. 241.

Polypus variolatus Berry, 1918. Biol. Res., F. I. S. "Endeavour", 1909–14, (Commonwealth of Australia) IV., pt. 5, p. 278, pls. 79, 80, 81, f. 2, 3, 82, f. 1–4.

Octopus pallida Robson, 1929. A Monograph of the Recent Cephalopoda, pt. 1, Octopodinae, p. 126–128.

MATERIAL: Port Phillip Survey: Areas 23 (—); 24 (—); 31 (10); 36 (74); 64 (164). Nat. Mus. Coll.: Hobsons Bay (Area 3 and 4); Carrum Creek, (Area 36); Portarlington (Area 29); Beaumaris (Area 14); Queenscliff (Area 58–9); Port Melbourne (Area 3).

REMARKS: This species has been described in detail by Berry (1918) and Robson (1929). It is common on the shallow coastal waters of south-eastern Australia and inhabits the reefs of Port Phillip. Large specimens may be as much as 350 mm. in length. The body is stout and the impression is of a solidly built animal with thick arms and a rough textured skin. The texture is due to the closely set rosette-shaped tubercles which cover the body surface. Round the eyes some of the tubercles are prolonged into branched cirrhus.

Octopus australis (Hoyle).

Octopus australis Hoyle, 1885. Ann. Mag. Nat. Hist. (5), XV., p. 224; Hoyle 1886, Report . . . H.M.S. "Challenger" Zoology, vol. 16, pt. 44, p. 88, pl. 111, f. 4–5.

Octopus australis Pritchard and Gatliff, 1898. Proc. roy Soc. Vic., X., p. 241.

Polypus cf. australis Berry, 1918. Biol. Res. F. I. S. "Endeavour" 1909–14 (Commonwealth of Australia), IV., pt. 5, p. 276, pl. 78, f. 1–2, pl. 81, f. 1.

Octopus australis Robson, 1929. A Monograph of the Recent Cephalopods, pt. 1, Octopodinae, p. 144–145.

MATERIAL: Port Phillip Survey: Areas 23 (1); 31 (273); 55 (35). Nat. Mus. Coll.: Hobsons Bay (Area 2 and 3); Brighton Beach (Area 7); Cheltenham (Area 24); Mordialloc (Area 24); off Mt. Martha (Area 63); South Melbourne (Area 3); Beaumaris (Area 14).

REMARKS: This species is less common than *O. pallida* but has a similar habitat. It is a smaller species, the largest specimen taken in Port Phillip being 250 mm. The arm length is slightly greater than in *pallida* being about 75 per cent. in proportion to total length. The surface is covered with granular tubercles but unlike *pallida* they are simple and usually not as large. There are cirrha round the eyes. The living animal is greyish-fawn in colour and the ink red-brown.

Octopus flindersi (Cotton).

Pl. II., figs. 1–3.

Octopus flindersi Cotton, 1932. Records S. Australian Museum, vol. IV., No. 4, p. 543–544, f. 4–6.

MATERIAL: Nat. Mus. Coll.: Geelong (Area 37); Newport Power House (Area 2); Williamstown (Area 60); Mt. Martha (Area 63); Mordialloc (Area 24); Carrum (Area 36); Hobsons Bay (Area 2 and 3).

REMARKS: This species was not taken during the present survey of Port Phillip and as the few specimens (six) in the National Museum collection were collected over a long period from 1888 to 1956, it seems

likely that it is an infrequent visitor to Port Phillip. Cotton in the original description states "Common in south-east of South Australia during the summer", and this is borne out by the present specimens which were all collected between December and May. As Cotton described only the female, a description based on specimens from Port Phillip follows and in Table 1 measurements of these specimens and the Holotype are given.

The measurements of the latter were made by Dr. Helene Laws, Curator of Invertebrates at the South Australian Museum. Because of the great difference in size between the Holotype and the Port Phillip specimens it is difficult to draw an exact comparison but the figures correspond closely enough to leave no doubt as to their relationship.

Description: Body sack-like, narrowest towards the junction with the head which is narrower than the body. The arms are long probably 80 per cent. of total length and in the order of 1234. The suckers are small averaging about 10 per cent. of mantle length. The web is shallow, usually about 15 per cent of arm length, the sectors subequal A and E usually being the shallowest.

Colour of preserved specimens dirty cream patterned with widely scattered small reddish granules.

The small series of specimens make it impossible to draw any conclusions on size differences between males and females. The hectocotylized arm is much shorter than its pair and the ligula which is between 7–9 per cent. of its length is deep and spoon-like. (Pl. II., fig. 3.)

Fig. 1.– Penis of *O. flindersi*, No. F 1516. x 3.

The penis has a flash-shaped distal tube and a long thin diverticulum running to the left side of the animal. (Fig. 1). As all the female specimens, apart from the type, are immature and poorly preserved, it is considered only misleading to describe the female organs. Cotton states that the funnel organ is W shaped but it was not definite in any of the National Museum specimens although glandular tissue was present.

TABLE I.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Registered Number and Sex	Total Length	Mantle Length	Width Index Percentage of 2	Interocular ndex Percentage of 2	Arm Formula	Arm Length Percentage of 2	Number of Gill Filaments	Diameter of Suckers Percentage of 2	Web Formula	Web Depth Percentage of Arm	Hectocotylus Length of Ligula as Percentage of Arm
	mm.	mm.									
F1516 ♂	350	51	49	49	1234	83	9	9	Damaged equal	8	9
F5101 ♂	160	25	72	56	1234	70·5	..	12	BCDAE	14	5 immature
F24488	156	22	77	68	1234	82	..	7	BCDAE	15	..
F24505 ♂	275	55	43·5	34·5	1234	65·5	10	3	ABCDE	15	6.75 immature
D10169 ♀ (Holotype, S. Australian Museum.)	980	175	64	34	1234	77	..	14	..	21	..

Measurements of *Octopus flindersi* Cotton.

Octopus superciliosus (Quoy and Gaimard).

Pl. III., figs. 1–2; Pl. IV., figs. 1–4; Pl. V., figs. 1–4.

Octopus superciliosus Quoy and Gaimard, 1832. Voyage de l'Asbrolabe, Zoology, t. 2, p. 88, pl. 6, f. 4; d'Orbigny 1840, in Ferussac and d'Orbigny. Hist. Nat. des Cephalopodes, p. 41–2, pl. 10, f. 3, pl. 28, f. 9.

Octopus westerniensis d'Orbigny, 1840. Ibid., pl. 10, f. 3, legend of figures which are stated in explanation of figures in text to be "copie de la figure donée par Mr. Quoy, in le Voyage de l'Astrolabe" and which comparison shows to be correct.

Octopus superciliosus Robson, 1929. A Monograph of the Recent Cephalopoda, pt. 1, Octopodinae, p. 165–166

MATERIAL: Port Phillip Survey: Areas 37 (4); 47 (29); 58 ( ). Nat. Mus. Coll.: Hobsons Bay; Area 2 and 3, Brighton (Area 7); Mentone (Area 26); Elwood (Area 7); Black Rock (Area 14); Williamstown (Area 6); Chelsea (Area 24); Kerford-road Pier (Area 7); South Melbourne (Area 3); Queenscliff (Area 58–9), Cheltenham (Area 14), off Dromana in scallop beds (Area 62–3); Indented Heads (Area 42); Rosebud (Area 69); 2 miles S. W. of Mordialloc Pier (Area 24); Portsea Pier (Area 59); Western Beach, Corio Bay (Area 37); Newport Power House, Williamstown (Area 6); Western Port, Victoria.

REMARKS: The commonest Octopus collected in Port Phillip occurred on sandy mud bottoms between 2 and 5 fathoms in association with *Ostraea angasi* and *Pecten alba*. It was unlike any species recently recorded from South-eastern Australia but juvenile specimens appeared to resemble Quoy and Gaimard's description and figure of *O. superciliosus* from Western Port Bay.

According to Robson, the only record of this species is the type in the Museum Nationale d'Histoire Naturalle, Paris and this a juvenile female. In actual fact the "Astrolabe" collected three specimens and d'Orbigny selected the largest as type.

Two specimens of batch F24439 were sent to Paris for comparison with the "Astrolabe" material and later, Dr. J. Gaillard very generously made available first the smaller paratype and later the holotype for comparison with the Port Phillip specimens and with live specimens collected recently from Western Port by Mr. A. Gilmour of the Fisheries and Wildlife Department.

As this species has been known previously only from three juvenile, it was felt desirable to give a more detailed description of adult females and of the male and a table of measurements of a series to show the variations encountered. It will be seen from Table 2, individuals show considerable variation in body shape, tentacle length, etc., but viewed as a series they have the appearance of a homogeneous group.

Description: Living specimens are rich earth-brown in tone with a distinct colour pattern (Pl. III., figs. 1–2) which is lost completely on death. The response to stimulus such as a light flash is very rapid the body and tentacles contract instantly, the whole animal becomes darker in colour and the skin appears to be pustulose.

In preserved specimens the body is elongate oval, the width being approximately 50 per cent. of the mantle length. Well preserved specimens or those killed by immersion in formalin or rectified alcohol tend to be more contracted and therefore have a shorter body than relaxed or less well preserved specimens. The head is well defined but narrower than the body to which it is attached by a distinct neck, the eyes are prominent in most juveniles and less so in adults and also in relaxed specimens whether adult or juvenile.

TABLE 2.

Registered Number and Sex	1. Total Length	2. Mantle Length	3. Width Index Percentage of 2	4. Interocular Index Percentage of 2	5. Arm Formula	6. Arm Length Percentage of 1	7. Number of Gill Filaments	8. Diameter of Suckers Percentage of 2	9. Web Formula	10. Web Depth Percentage of Arm	11. Hectocotylized Length of Ligula of Arm
	mm.	mm.									
F24439 (1)	90	32	53	42	Equal	67	..	6	C DBEA	22	..
(2)	110	39	56	41	Abnormal	64	..	6	Abnormal	26	..
(3)	68	22	50	31·5	Equal	57	..	5·5	CDBEA	27	..
(4) .	137	45	60	46	4321	53	8	8	DECBA	30	..
(5)	132	41	52·5	46	4321	64	8	7	DECBA	25	..
(6) .	195	47	50	36	Equal	61·5	..	6·25	CDBEA	23·0	..
(7) .	175	42	54·5	38	Sub-equal	71·5	9	7	CDBEA	21·5	..
(8) ♂	200	58	53	34·5	Sub-equal 4321	60	8	7·75	CDEBA	17·5	13
(9) ♂	210	55	49	34·5	Sub-equal 4321	66	..	7	CDBEA	25	13
F24437 .	250	87	34	24	4321	65	8	..	CDEBA	25	..
F24438 ♂	230	74	48	29	4321	60	..	..	CDBEA	32	17
F24441 .	260	78	43·5	34	Sub-equal	62	8	..	DCEBA	24·5	..
F24442	72	27	50	40	Sub-equal	57	8	..	DCEBA	34	..
F24438	210	58	45	45	Equal	66	8	..	DCEBA	23	..

Measurements of a series of specimens of *Octopus superciliosus* Hoyle in collection of National Museum of Victoria and the Holotype and Paratype III. Holotype. Paratypes and F 25228 from Western Port, Victoria, d'Orbigny mistakenly stated that the Holotype was a male.

TABLE 2.—*continued.*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Registered Number and Sex	Total Length	Mantle Length	Width Index Percentage of 2	Interocular Index Percentage of 2	Arm Formula	Arm Length Percentage of 1	Number of Gill Filaments	Diameter of Suckers Percentage of 2	Web Formula	Web Depth Percentage of Arm	Hectocotylized Length of Ligula of Aarm
F24486 ♂	210	47	59	44	Equal	69	8	. .	CBDEA	24	15
F21911 ♂	240	62	48	29	3214 damaged	71		6	DCBEA	22	16
F24489	355	103	51	33	Equal	66	8	6	DECBA	22	. .
F25228	640	133	45	28·5	Sub-equal 4321	78	. .	7 13 (enlarged)	CBDAE	21	. .
F25245	178	44	66	41	2314	64	.	7	BCDAE	20	. .
Holotype ♀	100	21	66	47	4213 Sub-equal	74	8	9	DCBEA	21	. .
Paratype III ♀	40	11	63	54	2341	80	-	9	DCBEA	28	. . (NL 4)

The arms are approximately equal in length and measurement is difficult without breaking the fine tips but the slight differences in lengths are usually in the order of from longest to shortest 4321, and are approximately 65 per cent. of total length. The suckers are evenly and widely spaced with an index of about 70 per cent. of mantle length. The typical pattern of the oral surface is shown in the Paratype (Pl. IV., fig. 5)

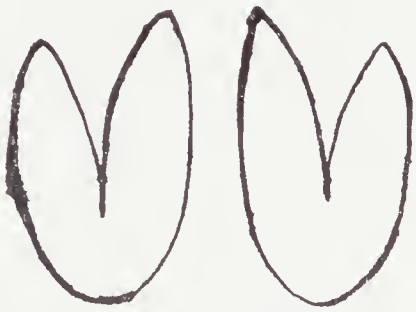

Fig. 2.—Funnel organ of *O. superciliosus*, No. F 21911. × 3.

and only one specimen, the largest (F 25228) from Western Port shows a gradation in the size of the sucker of each arm-pair, the largest being on the first pair. The web varies between 18–32 per cent. of arm length, sectors B. C. D. being approximately equal and E. and A. shallower in that order.

Fig. 3.—Ligula of hectocotylized arm of *O. superciliosus*, No. F 21911. × 3.

The body surface has a smooth appearance in life but preserved specimens, when viewed with a lens, may show simple small pustules in the head and neck region. A few cirrhi are scattered over the dorsal surface and there is usually a row of three on the dorsal side of each eye. The visibility of the cirrhi varies considerably from specimen to specimen,

in some specimens they stand up as much as a millimetre from the surface while in others they are only indicated by dimple from which they can be made to protrude by pressure. The form of individual cirrhus also varies some are simple, while others are branched.

Fig. 4.—Penis of *O. superciliosus*, No. F 21911. × 3.

The colour in preserved specimens varies considerably, in many it is grey with a mauve tint on the dorsal surface fading to pale grey on the ventral side. In others the dorsal surface may be purple black.

Fig. 5. Oviduct and gland of immature ♀ of *O. superciliosus*, No. F 24439. × 3.

The pallial-aperture is moderately wide (B B–C). The funnel extends half-way up the web and is free for half its length. The funnel organ is either absent or very faint in most specimens so that only portion of it is discernible as a suggestion of differentiated glandular tissue. In

specimens where it is complete (Fig. 2) it is in the form of two closely situated V's with broad petalshaped limbs, the laterals being the shorter. There are 8 or 9 gill filaments.

The radula has a rhadchidian tooth with a long sharp central cusp with two or three small ectocones on each side. In F 25228, which has three ectocones, they did not appear to be in series and are symmetrical. The other four radulae examined were all asymmetrical and the position and number of the ectocones was not constant. Specimen No. F 2444I had the Robson formula B_1 two teeth had two ectones followed by two teeth with only one.

In contrast to the variation in the rhachidian teeth, the laterals and marginals appeared to be very constant in form. The first lateral has a straight base with a high pointed ectocone and a small cusp on the inner side. The second lateral has a slightly curved base with a large mesocone arising from the inner margin of the tooth and a small entocone on the outer margin. The third lateral is long strong and slender with a stout curved base. The marginal is oblong with a curved inner margin that appears to correspond to the curved head of the third lateral.

Fig. 6. Oviduct and gland of gravid ♀ of *O. superciliosus*, No. F 25245. x 3.

There is no external differentiation of males and females apart from the hectocotylized arm which is slightly shorter than its pair, the ligula Fig. 3) being 13–15 per cent. of its length, leaf-shaped without an obvious groove. The penis (Fig. 4) has a large bent diverticulum and a thick distal tube.

The paired oviducts are long and thin (Fig. 5) in most specimens with the oviduct gland showing as only a slight distension towards the coiled basal portion of the duct. In gravid females the oviduct becomes swollen and the basal coils unwind so that the gland which also distends and darkens in colour is very well differentiated from the white duct (Fig. 5). The eggs are laid in clusters in an opened oyster or scallop shell (Pl. III., fig. 2) and the female broods them. They are sausage-shaped with one end of each capsule drawn out into a stalk and knotted with those of the other capsules to form a tassel-like cluster. The eggs are large 12 mms. long by 5 mm. wide.

Hapalochlaena maculosa (Hoyle).

Octopus pictus Brock, 1882, (non Blainville, 1828). Anatomie und Systematik de Cephalopoden Z. Wiss. Zool., Leipzig, 36, p. 603, pl. 37, f. 3.

Octopus maculosus Hoyle, 1883. Proc. Phys. Soc. Edn., VII., p. 319, pl. VI.

Haplochlaena maculosa Robson, 1929. A Monograph of the Recent Cephalopoda, pt. 1, Octopodinae, p. 211–214.

MATERIAL Port Phillip Survey: Area 64 (164), Area 55 (147); Area 30 (135).

REMARKS: A small Octopus immediately separated from any other southern species by the distinctive coloration of a yellowish ochre ground patterned with dark maculation on which there are rings of brilliant irridescent deep blue.

It occurs in Port Phillip from low tide to approximately 5 fathoms and prefers a habitat with a sandy bottom where small rocks or larger shells such as scallops and oysters provide shelter. The eggs are laid in shells and brooded by the female. It has come into prominance in the last few years because of its quite potent venom which causes paralysis in man. Fortunately it is a rather sluggish species and not easily aroused, so bites are infrequent. Dr. S. and W. Freeman of University of Melbourne are currently making a study of the venom and hope to be able to elucidate its components.

Family ARGONAUTIDAE.

Argonauta nodosa (Solander).

Argonauta nodosa Solander, 1786. Cat. Portland Mus., p. 96; Macpherson and Gabriel 1962, Marine Molluscs of Victoria, p. 417–8, f. 486.

MATERIAL Nat. Mus. Coll. Brighton (Area 7), Altona (Area 5, 10).

REMARKS: Schools of this open ocean species occasionally drift into Port Phillip and become stranded on bayside beaches.

SPECIES RECORDED FROM PORT PHILLIP BUT NOT TAKEN ON THE PRESENT SURVEY.

There are approximately 260 species recorded from Port Phillip but not taken on the present survey. Of these 80 species were recorded without locality other than Port Phillip and 129 are only known from south of the Nepean Bay Bar, most localities being in the vicinity of Port Phillip Heads. The remaining 51 species are either small and rare and therefore easily missed or are littoral forms not within reach of the present collecting methods.

Class AMPHINEURA.

Family LEPIDOPLEURIDAE.

Paracluton profundis (May, 1923), off Point Cook in 8 fathoms (Areas 5 and 11). Bednall recorded *Terenochiton luratus* from Hobson's Bay but it seems likely that he misidentified this species.

Family LEPIDOCHITONIDAE.

Acutaplax rufa (Ashby, 1900), Port Phillip Heads (Area 58).

Family Cryptoplacidae.

Craspedoplax cornuta (Toor and Ashby, 1898), Sorrento (Area 59).
Notoplax speciosa H. Adams, 1861.
Notoplax rubrostratus (Torr, 1913), Sorrento 5 fathoms (Area 59).
Bassethullia matthewsi (Pilsbry, 1894), Port Phillip Heads (Area 58).
Bassethullia glypta (Sykes, 1896), Port Phillip Heads (Area 58).
Acanthochiton gatliffi Ashby, 1919, Port Phillip.
Acanthochiton pilsbryi Sykes, 1896, Portsea Pier (Area 59).
Acanthochiton sueruii (Blainville, 1825), Hobsons Bay (Area 2 and 3).
Acanthochiton wilsoni Sykes, 1896, Port Phillip Heads (Area 58).

Family Ischnochitonidae.

Autochiton torei (Iredale and May, 1924).
Autochiton wilsoni (Sykes, 1896), Port Phillip Heads (Area 58).
Haploplax pura (Sykes, 1896), Port Phillip Heads (Area 58).
Stenochiton longicymba Blainville, 1825, Port Phillip Heads (Area 58).
Stenochiton pallens Ashby, 1900, Port Phillip Heads (Area 58).

Family Chitonidae.

Rhyssoplax bednalli (Pilsbry, 1895), Port Phillip Heads.

Class GASTROPODA.

Family Scissurellidae.

Schismope atkinsoni (Tenison Wood, 1876), Portarlington (Area 29).
Scissurella remota Iredale, 1924, Point Nepean (Area 58).

Family Fissurellidae.

Scutus antipodes Montfort, 1810, Sorrento (Area 59), Portsea (Area 58), Queenscliff (Area 58).
Tugali parmophoidea (Quoy and Gaimard, 1834).
Tugali cicatricosa A. Adams, 1857, Half Moon Bay (Area 24).
Notomella dilecta (A. Adams, 1851), see comments under *N. candida*, in body of paper.
Macroschisma tasmaniae Sowerby, 1866, Portsea (Area 58–9).
Macroschisma producta A. Adams, 1850, Sorrento (Area 59).

Family Patellidae.

Patellanax peroni (Blainville, 1825), Sorrento (Area 59).
Patellanax chapmani Tenison Woods, 1876.

Family Acmaeidae.

Patelloida latistrigata Angas, 1865.
Notoacmea petterdi (Tenison Woods, 1876), Popes Eye (Area 59 (36).)

Family Trochidae.

Herpetopoma scabriuscula Angas, 1867.
Gibbula (Notogibbula) coxi Angas, 1867, Portsea (Area 58–9).
Minopa brazieri (Angas, 1871).
Minopa petterdi (Crosse, 1870).
Leiopyrga octona Tate, 1891, Frankston (Area 48).
Astele subcarinatum Swainson, 1854, off Portsea. Area 58–9.
Austrocochlea concamerata (Wood, 1828), Point Nepean (Area 58) Queenscliff Area 58).
Clanculus (Macroclanculus) undatus (Lamarck, 1816), Sorrento (Area 59), Point Nepean (Area 58), Point Lonsdale (Area 58).
Spectomen philippiensis (Watson, 1881), off Port Phillip (Area 58).
Nanula tasmanica (Petterd, 1877).
Cirsonella translucida May, 1915, Portsea (Area 58–9).
Cirsonella weldii (Tenison Woods, 1877), Sorrento (Area 59).
Lodderena minima (Tenison Woods, 1878).
Elachorbis harriettai (Petterd, 1884).
Callomphala lucida (Ads. and Angas, 1864), Ocean beach Point Nepean (Area 58).
Crossea concinna Angas, 1867.

Family Cyclostrematidae.

Zalipais inscripta Tate, 1899.
Brookula nepeanensis (Gatliff, 1906), Port Phillip Heads (Area 58).
Cithna flexuosa (Gould, 1861).

Family Turbinidae.

Munditia australis (Kienen, 1839), Sorrento (Area 59).
Argilista rosea (Tenison Woods, 1876), Sorrento (Area 59).
Subninella gruneri (Philippi, 1846), Sorrento (Area 59).
Phasianella variegata Lamarck, 1822.
Gabrielona nepeanensis Gatliff and Gabriel, 1908, Point Nepean (Area 58).

Family Littorinidae.

Laevilitorina mariae (Tenison Woods, 1875).

Family Rissoidae.

Lironoba agnewi (Tenison Woods, 1876), Portsea (Area 58–9).
Pisinna bicolor (Petterd, 1884), Portsea (Area 58–9).
Pisinna frenchiensis (Gatliff and Gabriel, 1908), Sorrento (Area 59).
Pisinna olivacea (Frauenfeld, 1867), Sorrento (Area 59).
Pisinna subfusca (Hutton, 1873), Portsea (Area 58–9).
Notoscrobs petterdi (Brazier 1894), Sorrento (Area 58–9).
Merelina cheilostoma (Tenison Woods, 1876).
Merelina hulliana (Tate, 1893).
Rissoina d'orbignyi (A. Adams, 1851).
Rissoina elegantula Angas, 1880.
Rissoina rhyllensis Gatliff and Gabriel, 1908, ocean beach, Point Nepean (Area 58).
Anabathron contabulatum Frauenfeld, 1867, Sorrento (Area 59).
Eatoniella flammae (Frauenfeld, 1867), Portsea (Area 58–9).
Eatoniella melanchroma (Tate, 1899).
Tatea rufilalabris (A. Adams, 1862), Frankston Creek (Area 48).

Family Tornidae.

Cochliolepas angasi (A. Adams, 1863), Portsea (Area 58–9).
Cochliolepas vincentiana (Angas, 1880), Portsea (Area 58–9).
Pseudoliotia micans (A. Adams, 1850).

Family Rissoellidae.

Jeffreysiella wilfredi Gatliff and Gabriel, 1911, ocean beach, Point Nepean (Area 58).

Family Turritellidae.

Gazameda gunni (Reeve, 1849), Point Nepean (Area 58).

Family Solariidae.

Philippia lutea (Lamarck, 1822), Barwon Heads (Area 56); Portsea (Area 58–9).

Family Siliquariidae.

Pyxipoma weldii (Tenison Woods, 1875).
Siliquaria australis (Quoy and Gaimard, 1834), Point Nepean (Area 58).

Family Caecidae.

Caecum amputatum Hedley, 1893, ocean beach, Point Nepean (Area 58).

Family Cerithiidae.

Diala magna Tate, 1891, deep water, Port Phillip.
Cacazeliana icarus Boyle, 1880, Portsea (Area 59).
Eubittium insculptum Reeve, 1865.
Batillariella estuarina (Tate, 1893).

Family Cerithiopsidae.

Seila crocea (Angas, 1871).
Seila albosuturas (Tenison Woods, 1876).
Joculator cessicus Hedley, 1905.
Seilarex attenuatus Hedley, 1900, ocean beach, Point Nepean (Area 59).

Family Triphoridae.

Notosinister ampulla (Hedley, 1903), Portsea (Area 59).
Notosinister armillata (Verco, 1909), ocean beach, Portsea (Area 66).
Notosinister festiva (A. Adams, 1851), Portsea (Area 59).
Notosinister mammillata (Verco, 1909), Portsea (Area 59).
Notosinister pfeifferi (Crosse and Fischer, 1865), Sorrento (Area 59).
Notosinister robusta Laseron, 1954, Portarlington (Area 29).
Eutriphora cana (Verco, 1909), Portsea (Area 59).
Eutriphora tasmanica (Tenison Woods, 1876), Sorrento (Area 59).

Family Epitonidae.

Granuliscala granosa (Quoy and Gaimard, 1834), Frankston (Area 48); Dromana (Area 63, 70); Portsea (Area 58–9); Queenscliff (Area 58).
Opalia australis (Lamarck, 1822), distribution same as previous species.
Clathrus jukesiana (Forbes, 1852), Portsea (Area 59).
Propescala translucida (Gatliff, 1906), Portsea (Area 59).

Family Aclididae.

Coenaculum minutulum (Tate and May, 1900).

Family Melanellidae.

Melanella augur (Angas, 1865).
Melanella mucronata Reeve, 1866.
Melanella schontonica (May, 1915), Portsea (Area 59).
Melanella tenisoni Tryon, 1886.
Melanella tyroni Tate and May, 1900, Frankston (Area 48); Dromana (Area 63, 70).
Strombiformis acutissima (Reeve, 1866).
Strombiformis joshuana (Gatliff and Gabriel, 1910), Portsea (Area 58–9).

Family Pyramidellidae.

Syrnola tincta Angas, 1871, Barwon Heads (Area 56).
Syrnola bifasciata Tenison Woods, 1875.
Puposyrnola harrisoni (Tate and May, 1900), Portsea (Area 58, 59).
Agatha australis (Angas, 1871).
Agatha laevis (Angas, 1867), Dromana (Area 63, 70).
Odostomea occultidens May, 1915, Portsea (Area 58, 59).
Egilia mayii (Tate, 1898), Portsea (Area 58, 59)
Linopyrga portseaensis (Gatliff and Gabriel, 1911), Portsea (Area 58, 59).
Miralda suprasculpta (Tenison Woods, 1877), Portsea (Area 58, 59).
Cinctiuga diaphana Verco, 1906, ocean beach, Point Nepean (Area 58, 59, 66).
Chemnitzia acicularis (A. Adams, 1853), Portsea (Area 58–9).
Chemnitzia hofmani Angas, 1877, Barwon Heads (Area 56).
Chemnitzia mariae Tenison Woods, 1876.
Pyriguscus fusca (A. Adams, 1853).
Eulimella moniliformis Hedley and Musson, 1891, Swan Bay (Area 49, 50).
Eulimella birrita (Petterd, 1884), Swan Bay (Area 49, 50); Portsea (Area 59).
Oscilla tasmanica (Tenison Woods, 1876), Portsea (Area 58–9).
Pseudorissoina tasmanica (Tenison Woods, 1876), Portsea (Area 59).

Family Stiliferidae.

Stilifer lodderae Petterd, 1884.
Stilifer auricula (Hedley, 1907), ocean beach, Point Nepean (Area 59, 66).

Family Vanikoridae.

Vanikoro quoyiana A. Adams, 1853, Hobsons Bay (Area 2, 3).

Family Hipponicidae.

Antisabia foliacea (Quoy and Gaimard, 1835).

Family Calyptraeidae.

Sigapatella calyptraeformis (Lamarck, 1822), Point Cook (Area 5).
Crepidula aculeata (Gmelin, 1791). This New South Wales species seems a doubtful record as the more intensive collecting of recent years has failed to find it again.

Family Naticidae.

Conuber sordidum (Swainson, 1821). This species like *C. conicum* is an inhabitant of intertidal flats and shallow water but prefers quieter water with sandy mud substratum such as Hobson's Bay (Area 2 and 3).
Tanea sagittata (Menke, 1843).

Family Lamellariidae.

Mysticoncha wilsoni (Smith, 1886), Port Phillip Heads, dredged (Area 58–9).

Family Cypraeidae.

Notocypraea piperita (Gray, 1825).
Ellatrivia merces (Iredale, 1924).
Ellatrivia oryza (Lamarck, 1810). The single MacGillivray record of this species from Port Phillip has not been confirmed and the record seems very doubtful.

Family Cassididae.

Antephalium semigranosum Lamarck, 1822, Mornington (Area 55); Sorrento (Area 59); Portsea (Area 58); Queenscliff (Area 58). Although once not uncommon in Port Phillip neither the Port Phillip survey nor recent active collecting by skin divers have produced specimens of this species.
Xenogalea spectabilis Iredale, 1929, Queenscliff (Area 58).

Family Cymatiidae.

Ratifusus mestayerae (Iredale, 1914).
Ratifusus bednalli (Brazier, 1875).

Family Muricidae.

Tornamurex denudatus (Perry, 1811), Port Melbourne (Area 2); Port Phillip Heads (Area 58). This species is uncommon in Port Phillip and was not taken on the present survey. The Port Melbourne record is an early one, it has not been taken at the northern end of the bay for many years.
Murexsul brazieri (Angas, 1817), Port Melbourne (Area 2).
Pterynotus angasi (Crosse, 1863), dredged off Altona (Area 5).
Litozamia brazieri (Tenison Woods, 1875), Sandringham (Area 13).
Litozamia goldsteini (Tenison Woods, 1875), Port Phillip Heads (Area 58–9).
Benthoxystus petterdi (Crosse, 1870).
Typhis philippensis (Watson, 1886), off entrance to Port Phillip (Area 58).
Lepsiella reticulata (Blainville, 1832).
Agnewia tritoniformis (Blainville, 1832).
Dicathais baileyana (Tenison Woods, 1881), Mornington (Area 55).

Family Magilidae.

Liniaxis wilsoni (Pritchard and Gatliff, 1898), Point Lonsdale (Area 58).

Family Columbellidae.

Zela beddomei (Petterd, 1884), Barwon Heads (Area 56).
Zela atkinsoni (Tenison Woods, 1875), Outer Harbour Geelong (Area 25–6).

Family Buccinidae.

Phos senticosus (Linne, 1758), dredge Port Phillip Heads (Area 58).
Cominella kingicola Tate and May, 1900, Queenscliff (Area 58.
Tasmenthria clarkei (Tenison Woods, 1875).

Family Nassidae.

Alectrion particeps Hedley, 1915, Portarlington (Area 29).
Recticunassa compacta (Angas, 1865).

Family Fasciolariidae.

Propefusus pyrulatus Reeve, 1847, South Melbourne–St. Kilda (Area 3); Frankston (Area 48); Point Nepean (Area 58–9); Outer Harbour Geelong (Area 26, 38).

Family Olividae.

Cupidoliva nympha (Adams and Angas, 1863).
Alocospira edithae (Pritchard and Gatliff, 1898), Rosebud (Area 69); Sorrento (Area 59).

Family Mitridae.

Austromitra legrandi (Tenison Woods, 1875).
Austromitra schomburgki (Angas, 1878).
Austromitra tatei (Angas, 1878).
Eurmitra badia (Reeve, 1845), Frankston (Area 48); Sorrento (Area 59); Point Nepean; Queenscliff (Area 58).
Eumitra perksi (Verco, 1908).

Family Volutidae.

Lyrea mitraeformis (Lamarck, 1804), Point Nepean, Point Lonsdale (Area 58–9).
Ericusa sowerbyi (Kiener, 1839), Point Nepean, Point Lonsdale (Area 58–9).

Family Cancellariidae.

Sydaphera granosa (Sowerby, 1832), Point Nepean, Point Lonsdale (Area 58–9).

Family Marginellidae.

Cryptospira agapeta Watson, 1886, Portsea (Area 59).
Cryptospira subbulbosa Tate, 1878, Portsea (Area 59).
Cloisia whani (Pritchard and Gatliff, 1900), Carrum (Area 36).
Microginella cymbalum (Aate, 1878).
Euliginella angasi (Crosse, 1870).
Mesoginella turbinata (Sowerby, 1846).
Deviginella victoriae (Gatliff and Gabriel, 1908), Portsea (Area 59).
Austroginella tasmanica (Tenison Woods, 1875).

Family Turridae.

Austrodrillia beraudiana (Crosse, 1863).
Etrema denseplicata (Dunker, 1871).
Guraleus cuspis (Sowerby, 1896).
Guraleus incrustus (Tenison Woods, 1876).
Guraleus vincentinus (Crosse and Fischer, 1865).
Eguraleus lallemantianus (Crosse and Fischer, 1865).
Marita bella (Adams and Angas, 1863).
Marita compta (Adams and Angas, 1863), Sorrento (Area 59).
Paramontana modesta (Angas, 1877).
Paramontana tincta (Reeve, 1846).
Paramontana trachys (Tenison Wood, 1877), Brighton (Area 7).
Macteola anomala (Angas, 1877).
Asperdaphne desalesii (Tenison Wood, 1876), Sorrento (Area 59).
Eximilus teleoscopealis (Verco, 1896), Portsea (Area 58–9).
Nepotilla excavata (Gatliff 1906), ocean beach Portsea; Point Nepean (Area 58–9).

Family Conidae.

Floroconus segravei (Gatliff, 1890), off Portsea (Area 58–9).

Family Terebridae.

Nototerebra albida (Gray, 1834), Point Lonsdale; Nepean (Area 58), Portsea (Area 58–9).
Pervicacia ustulata (Deshayes, 1857), Point Lonsdale, Point Nepean (Area 58); Portsea (Area 58–9).
Pervicacia kieneri (Deshayes, 1859).
Pervicacia bicolor (Angas, 1867), Portsea (Area 58–9).

Family Ellobiidae.

Marinula zanthostoma H. and A. Adams, 1854, Frankston (Area 48).
Ophicardelus ornatus (Ferussac, 1821), Williamstown (Area 2, 6).
Leuconopsis pellucidus (Cooper, 1814), Frankston (Area 48); Portsea (Area 58–9).

Family Gadiniidae.

Gadinia conica Angas, 1867, Portsea (Area 58–9).

Family Siphonariidae.

Siphonaria tasmanica (Tenison Woods, 1876), Sorrento (Area 59).
Siphonaria funiculata Reeve, 1856.
Siphonaria baconi Reeve, 1856, Sorrento (Area 59).
Pugillaria stowae (Verco, 1906), Portsea (Area 58–9).

Family Onchidiidae.

Onchidella patelloides (Quoy and Gaimard, 1832).

Class **BIVALVIA.**

Family Ledidae.

Scaeoleda crassa (Hinds, 1843), off Port Phillip 33 faths. (Area 58).
Propeleda ensicula (Angas, 1877), off Port Phillip 33 faths. (Area 58).

Family Glycymeridae.

Tucetilla striatularis (Lamarck, 1819).
Tucetilla radians (Lamarck, 1819), Point Nepean, Portsea (Area 58–9).

Family Limopsidae.

Philobrya fimbriata (Tate, 1898), Port Phillip Heads (Area 58).
Notomytilus rubra (Hedley, 1904), Portsea (Area 58–9).
Micromytilus crenatuliferus (Tate, 1892), Barwon Heads (Area 56).

Family Mytilidae.

Modiolus albicostus (Lamarck, 1819), Point Lonsdale (Area 58); Portsea (Area 58–9).
Gregariella barbatus Reeve, 1858, Frankston (Area 48); ocean beach, Portsea (Area 58–9).

Family Vulsellidae.

Vulsella spongiarum Lamarch, 1819.

Family Pinnidae.

Atrina tasmanica (Tenison Woods, 1875), Queenscliff–Point Lonsdale (Area 58); Sorrento (Area 59).

Family Pectinidae.

Cyclopecten favus Hedley, 1902, Point Nepean (Area 58).
Camptonectes famigerator (Iredale, 1925), off Portsea (Area 58).
Chlamys atkinos (Petterd, 1886), Sorrento (Area 59).
Mesopeplum caroli Iredale, 1929, ocean beach, Point Nepean (Area 59, 66).
Mesopeplum tasmanicum (A. Adams and Angas, 1863).

Family Limidae.

Limatula strangei (Sowerby, 1872), Portsea (Area 59).
Promantellus orientalis (A. Adams and Reeve, 1850), ocean beach, Point Nepean (Area 59, 66).

Family Trigoniidae.

Neotrigonia margaritacea (Lamarck, 1804), dredged off Point Nepean (Area 58).

Family Carditidae.

Cardita crassicostata Lamarck, 1819, ocean beach, Sorrento (Area 66).
Cardita excavata Deshayes, 1852 (= *C. calyculata* of authors non Linné) ocean beach, Sorrento (Area 66).

Family Condylocardiidae.

Carditellona angasi (Smith, 1885), Port Phillip Heads (Area 58).
Condylocardia crassicostata Bernard, 1896, Frankston (Area 48).
Benthocardiella chapmani (Gatliff and Gabriel, 1912), Portsea (Area 59); ocean beach Point Nepean (Area 58).

Family Cyamiidae.

Cyamiomactra balaustina (Gould, 1881), Portsea (Area 58–9).
Cyamiomactra mactroides (Tate and May, 1900).

Family Gaimardiidae.

Neogaimardia rostellata (Tate, 1888), Barwon Heads (Area 56).
Neogaimardia tasmanica (Beddome, 1882), Portsea (Area 59).

Family Ungulinidae.

Diplodonta globularis (Lamarck, 1818), off Point Cook (Area 5 and 11).
Diplodonta globulosa A. Adams, 1855, off Portsea (Area 59); off Point Cook (Area 5 and 11).
Diplodonta sublateralis A. E. Smith, 1884, off Point Cook (Area 5 and 11).
Numella adamsi (Angas, 1867).

Family Lucinidae.

Myrtea botanica (Hedley, 1917), Frankston (Area 48).
Myrtea mayi (Gatliff and Gabriel, 1911), off Point Cook (Area 5 and 11).
Divalucina cumingi (A. Adams and Angas, 1863).
Wallucina assimilis (Angas, 1867), Frankston (Area 48; Point Nepean (Area 58).
Epicodakia minima (Tenison Woods, 1875), Point Nepean (Area 58).
Epicodakia perobliqua (Tate, 1892), Point Nepean (Area 58).

Family Erycinidae.

Kellia australis (Lamarch, 1818), off Portsea, Queenscliff (Area 58).
Melliteryx helmsi Hedley, 1915.
Bornia trigonale (Tate, 1879).
Lepton australis Angas, 1878, Sorrento (Area 59).
Lepton ovatum Tate, 1886, Portsea (Area 59).
Notolepton antipodium (Filhol, 1880), Port Phillip Heads (Area 58).
Notolepton sanguineum (Hutton, 1884), ocean beach, Point Nepean (Area 58).
Myllita deshayesi d'Orbigny and Reculz, 1850, Sorrento (Area 59).

Family Montacutidae.

Mysella anomala Angas, 1875, off Point Cook (Area 5 and 11); off Mornington (Area 55).
Mysella dromanaensis (Gatliff and Gabriel, 1912), Dromana (Area 63 and 70).
Montacuta semiradiata Tate, 1889.

Family Cardiidae.

Regozara cygnora (Deshayes, 1854), Carrum (Area 36); Portsea (Area 58–9).
Pratulum thetidis Hedley, 1902, Portsea (Area 58–9).

Family Veneridae.

Kerria victoriae (Gatliff and Gabriel, 1914), off Portsea (Area 58).
Notocallista disrupta (Sowerby, 1853), Port Phillip Heads (Area 58).
Tawera lagopus (Lamarck, 1818), Portsea (Area 58).
Placemen placida (Philippi, 1844), Portsea (Area 58).
Gomphina undulosa (Lamarck, 1818). Portsea–Point Lonsdale (Area 58).
Venerupis crevata (Lamarck. 1818), Portarlington (Area 29).
Venerupis exotica Lamarck, 1818.

Family Petricolidae.

Velargilla rubiginosa (Adams and Angas, 1863), Frankston (Area 48); off Portsea (Area 59).

Family Donacillidae

Donacilla erycinaea (Lamarck, 1818), Mentone (Area 24).

Family Mactridae

Nannomactra jacksonensis (Smith, 1885), off Point Cook (Area 5 and 11), Portsea (Area 59).

Family Donacidae

Deltachion chapmani (Gatliff and Gabriel, 1923), Portsea (Area 59).

Family Sanguinolariidae

Gari livida Lamarck, 1818, Hobsons Bay (Area 2 and 3), Frankston (Area 48).
Gari kenyoniana (Pritchard and Gatliff, 1904), off bank of Symonds' Channel (Area 52), Portsea (Area 59); Rye (Area 68).

Family Semelidae

Semelangulus tenuiliratus (Sowerby, 1867).

Family Tellinidae

Homalina diemenensis (Deshayes, 1854), Corio Bay (Areas 25, 26, 37, 38).
Tellina albinella Lamarck, 1818, Point Nepean (Area 58), Sorrento (Area 59).

Family Solenidae

Solen vaginoides (Lamarck, 1818), Altona (Area 5), Portarlington (Area 29); Portsea (Area 59).

Family Hiatellidae

Hiatella subalata (Gatliff and Gabriel, 1910), off Point Cook (Area 5 and 11), Frankston (Area 48); Dromana (Area 63); Portsea (Area 59)
Panopea australis Sowerby, 1833, off Portsea (Area 59).

Family Teredinidae

This family is represented by several species which cause damage to wooden shore structures and at the present time a detailed study is being made of prevalence of attack and the species involved in Victoria.

Family Myochamidae

Myadora pandoriformis (Stutchbury, 1830).

Family Thraciidae

Eximothracia speciosa (Angas, 1869), Frankston (Area 48).
Eximothracia lincolnensis (Verco, 1907), Frankston (Area 48); Dromana (Area 63).
Thraciopses elongata (Stutchbury, 1835).

Family Clavagellidae

Humphryeia strangei A. Adams, 1852.

PLATE I.

FIG. 1.

FIG. 2.

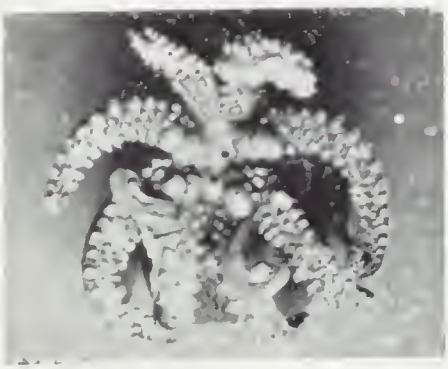

FIG. 3.

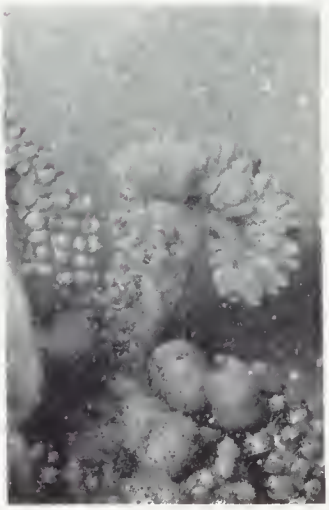

FIG. 4.

Euprymna tasmanica Pfeffer.

FIG. 1. Dorsal view ×.

FIG. 2. Ventral view ×.

FIG. 3. Oral region showing enlarged suckers.

FIG. 4. Hectocotylized arm of ♂.

PLATE II.

FIG. 1.

FIG. 2.

FIG. 3.

Octopus flindersi Cotton.

FIG. 1. General view of ♂ Nat. Mus. No. F 1516.

FIG. 2. Buccal region.

FIG. 3. Tip of hectocotylized arm showing Ligula.

PLATE III.

FIG. 1.

FIG. 2.

Octopus superciliosus Quoy & Gaimard.

FIG. 1. Living specimen from Port Phillip Bay.

FIG. 2. Oyster shell containing ♀ brooding eggs. Elongated eggs and tentacles of female can be distinguished.

PLATE IV.

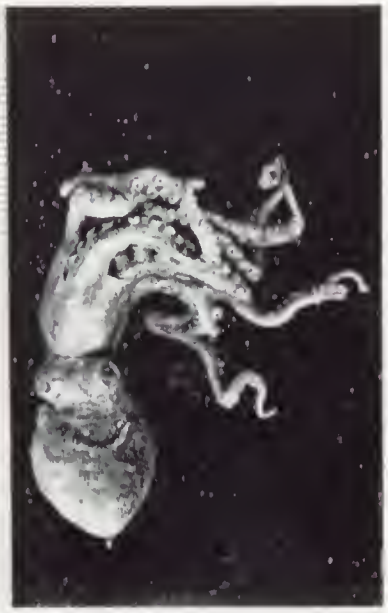

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

Octopus superciliosus Quoy & Gaimard.

FIG. 1. Dorsal view of Holotype Museum Nationale d'Histoire Naturelle Paris.

FIG. 2. Ventral view of Holotype.

FIG. 3. Ventral view of Paratype 1.

FIG. 4. Oral surface of Paratype 1.

PLATE V.

FIG. 1.

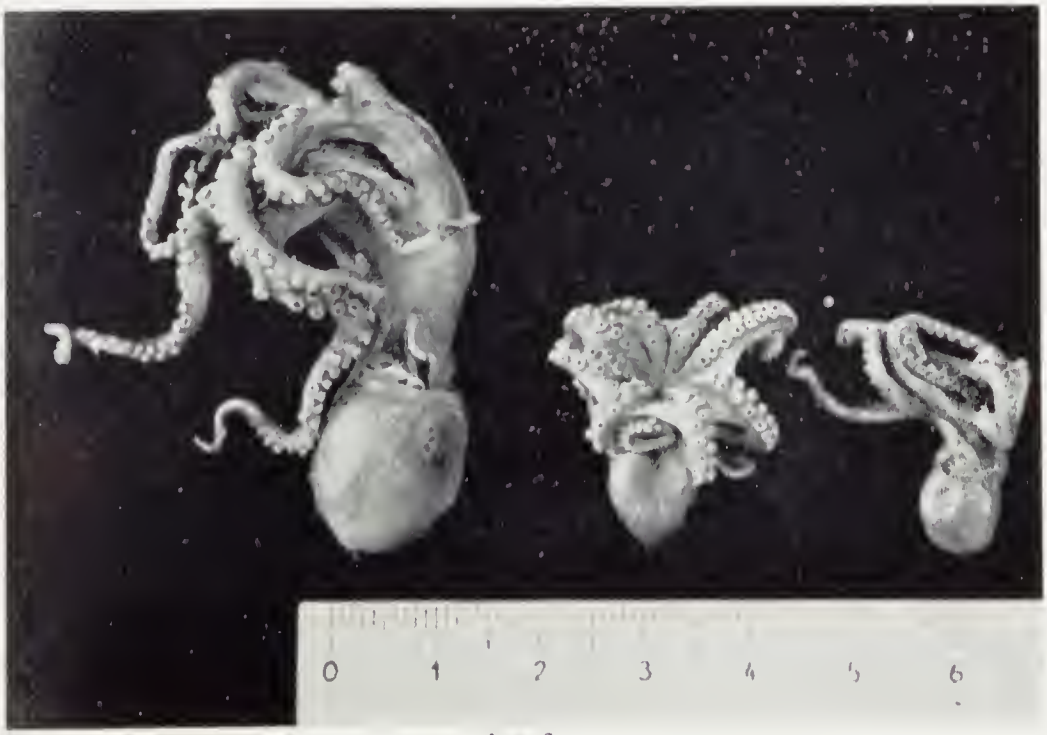

FIG. 2.

Octopus superciliosus Quoy & Gaimard.

FIG. 1. Dorsal view of Holotype (left) and Paratypes I. and II.

FIG. 2. Ventral view of Holotype (left) and Paratypes I. and II.