

PART 9  
DECAPOD CRUSTACEA

By  
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# DECAPOD CRUSTACEA

BY

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(Plate iii and Fig. 1-16.)

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Thirty-two species of Decapod Crustacea were secured at thirty-four of the one hundred and fifteen stations of the British Australian and New Zealand Antarctic Research Expedition; in addition, seven Australian species are discussed. The following symbols have been employed in this report: D R L, large rectangular dredge; D R S, small rectangular dredge; N 200 H, net of two metres diameter towed horizontally, the estimated depth of the length of warp paid out being mentioned; O T L, large otter trawl; T M L, large Monegasque trawl.

The localities and species taken thereat are as follows:

## FIRST EXPEDITION (1929-1930)

- Sta. 5. 49° 33' 00" S., 69° 49' 45" E. Port Jeanne d' Arc, Royal Sound, Kerguelen, D R S, 20 metres, 16th November, 1929; also coll. 567, 16th November, 1929; coll. 707 and 708, 8th and 9th February, 1930, in fish traps; coll. 713, 10th February, 1930, 9 metres; coll. 793, 10th February, 1930, under stones at low tide; coll. 721, 11th February, 1930, in fish trap; coll. 761 and 792, 15th and 16th February, 1930, under stones at low tide. *Halicarcinus planatus* Fabricius.
- Sta. 6. Approx. 49° 29' 24" S., 69° 47' 30" E., beyond north-west end of Long Island, Kerguelen, 19th November, 1929, D R S, 4-5 metres. *Halicarcinus planatus* Fabricius.
- Sta. 7. Near head of Bras Bossière, Kerguelen, 20th November, 1929, between tide marks. *Halicarcinus planatus* Fabricius.
- Sta. 8. One mile below station 7, Bras Bossière, Kerguelen, 20th November, 1929, D R S, 5 metres. *Halicarcinus planatus* Fabricius.
- Sta. 27. 64° 32' S., 75° 55' E. Off Enderby Land, 17th December, 1929, N 200 H, 1000 metres (estimated). *Pasiphaea longispina* Lenz and Strunck.
- Sta. 29. 66° 28' S., 72° 41' E. Off Enderby Land, 25th December, 1929, T M L, 1266 metres. *Nematocarcinus lanceopes* S. Bate.
- Sta. 30. 66° 48' S., 71° 24' E. Off Enderby Land, 27th December, 1929, T M L, 540 metres. *Notocrangon antarcticus* Pfeffer.
- Sta. 31. 66° 11' S., 65° 10' E. Off Enderby Land, 31st December, 1929, N 200 H, 1000 metres (estimated). *Petalidium foliaceum* S. Bate.
- Sta. 33. 66° 30' S., 61° 8' E. Pack Ice, off Enderby Land, 5th January, 1930. Coll. 593, from stomach of *Pagodroma nivea*. *Pasiphaea longispina* Lenz and Strunck.

- Sta. 40. 66° 12' S., 49° 37' E. Off Enderby Land, 17th January, 1930, T M L, 300 metres. *Chorismus antarcticus* Pfeffer.
- Sta. 41. 65° 48' S., 53° 16' E. Off Enderby Land, 24th January, 1930, O T L, 209-180 metres. *Chorismus antarcticus* Pfeffer.
- Sta. 45. 63° 51' S., 54° 16' E. Off Enderby Land, 28th January, 1930, N 200 H, 2000 metres warp. *Pasiphaea longispina* Lenz and Strunck; *Hymenodora gracilis* S. I. Smith.
- Sta. 48. Approx. 49° 32' 30" S., 69° 46' 40" E., Swains Bay, Kerguelen, 9th February, 1930. Shore collection. *Halicarcinus planatus* Fabricius.
- Sta. 49. 49° 30' S., 69° 48' E., western end of Long Island, Royal Sound, Kerguelen, 10th February, 1930, D R S, 2-20 metres. *Halicarcinus planatus* Fabricius.
- Sta. 50. 49° 32' 00" S., 69° 48' 15" E., Grotto Bay, Royal Sound, Kerguelen, 12th February, 1930, D R S, 10 metres. *Halicarcinus planatus* Fabricius.
- Sta. 52. Approx. 49° 36' 45" S., 70° 07' 30" E. Bras Bolinder, Kerguelen, 13th February, 1930. shore collection and D R S, 20-30 metres. *Halicarcinus planatus* Fabricius.
- Sta. 53. Approx. 49° 35' 30" S., 70° 03' E. Near mouth of Peace River, Bras Bolinder, Kerguelen, 14th February, 1930, D R S, 20-30 metres. *Halicarcinus planatus* Fabricius.
- Sta. 54. Approx. 49° 37' S., 70° 09' E. Head of Greenland Harbour, Kerguelen, shore collection. *Halicarcinus planatus* Fabricius.
- Sta. 55A. Approx. 49° 29' 30" S., 69° 48' 45" E. Colbeck Passage, off Long Island, Kerguelen, 19th February, 1930, D R S, 15-20 metres. *Halicarcinus planatus* Fabricius.
- Sta. 67. 45° 53' S., 84° 33' E. 7th March, 1930, N 200 H, 2000 metres warp. *Gennadas kempi* Stebbing; *Petalidium foliaceum* S. Bate; *Pasiphaea longispina* Lenz and Strunck; *Parapasiphae sulcatifrons* S. I. Smith; *Acanthephyra haeckeli* von Martens; *Acanthephyra quadrispinosa* Kemp.
- Sta. 69. 43° 19' S., 93° 56' E. 10th March, 1930, N 200 H, 3000 metres warp. *Acanthephyra haeckeli* von Martens.
- Sta. 71. 41° 59' S., 98° 59' E. 12th March, 1930, N 200 H, 4200 metres warp. *Acanthephyra haeckeli* von Martens.
- Sta. 76. 35° 18' S., 118° 15' E. Off south-western Australia, 21st March, 1939, O T L, 62 metres. *Crangon villosus* Olivier; *Synalpheus bakeri stormi* de Man; *Upobegia (Calliadne) australiensis* de Man; *Clibanarius strigimanus* White.

## SECOND EXPEDITION (1930-1931)

- Sta. 80A. 54° 28' S., 158° 53' E. North-east of Macquarie Island, 1st December, 1930, D R L, 120 metres. *Lithodes murrayi* Henderson.
- Sta. 83. 54° 42' 30" S., 158° 54' 30" E. Off Macquarie Island, 5th December, 1930, D R L, 69 metres. *Sympagurus arcuatus mawsoni* subsp. nov.
- Sta. 90. 66° 21' S., 138° 28' E. Off Adelie Land, 7th January, 1931, D R L, 640 metres. *Spirontocaris antarcticus* sp. nov.
- Sta. 93. 64° 21' S., 116° 02' E. Off Knox Land, 18th January, 1931, T M L, 2260 metres. *Nematocarcinus lanceopes* S. Bate.
- Sta. 103. 67° 03' S., 74° 29' E. Off Enderby Land, 10th February, 1931, D R L, 437 metres. *Notocrangon antarcticus* Pfeffer.

- Sta. 105. 67° 46' S., 67° 03' E. Off Enderby Land, 13th February, 1931, D R L, 163 metres. *Chorismus antarcticus* Pfeffer.
- Sta. 107. 66° 45' S., 62° 03' E. Off Enderby Land, 16th February, 1931, O T L, 219 metres. *Chorismus antarcticus* Pfeffer; *Notocrangon antarcticus* Pfeffer.
- Sta. 111. 44° 11' S., 143° 36' E. West of Tasmania, 17th March, 1931, N 200 H, 10-0 metres. *Pasiphaea rathbunae* Stebbing. N 200 H, 1710-0 metres. *Acanthephyra haeckeli* von Martens; *Glaucothoe peronii* H. M. Edwards.
- Sta. 112. 43° 40' S., 146° 50' E. (mean position). West of Tasmania, 18th March, 1931, O T L, 99-84 metres. *Eupagurus lacertosus nana* Henderson.
- Sta. 113. 42° 40' S., 148° 27' 30" E. Off Maria Island, east of Tasmania, 23rd March, 1931, O T L, 122 metres. *Alpheopsis trispinosus* Stimpson; *Nauticaris marionis* S. Bate; *Rhynchocinetes australis* sp. nov.; *Scyllarus mawsoni* (Bage); *Clibanarius strigimanus* White; *Eupagurus lacertosus nana* Henderson; *Petalomera lateralis* Gray; *Pseudocarcinus gigas* Lamarek. D R L, 178-155 metres. *Munida haswelli* Henderson.
- Sta. 115. 41° 03' S., 148° 42' E. East of Tasmania, 24th March, 1931, D R L, 128 metres. *Clibanarius strigimanus* White; *Sympagurus arcuatus johnstoni* subsp. nov.; *Dromidiopsis excavata* Stimpson; *Latreillopsis petterdi* Grant; *Scyramathia fultoni* Grant; *Chlorinoides spatulifer* Haswell.

## Tribe PENEIDEA

## FAMILY PENEIDAE

GENNADAS S. Bate.

GENNADAS KEMPI Stebbing.

*Gennadas kempi* Stebbing, Tr. Roy. Soc., Edinburgh, 50, 1914, 283, pl. xxvii; Burkenroad, Bull. Bingham Oceanogr. Coll., New Haven, 5 (2), 1936, 64, fig. 54.

Both sexes are represented in a good series of this species.

Locality: Sta. 67, 2000 metres warp (13).

## FAMILY SERGESTIDAE

PETALIDIUM S. Bate.

PETALIDIUM FOLIACEUM S. Bate.

(Fig. 1-2.)

*Petalidium foliaceum* S. Bate, Ann. Mag. Nat. Hist., (5), 8, 1881, 194, and Rep. Zool. "Challenger", 24, 1888, 349, pl. lx; Hansen, Pr. Zool. Soc., 1903, 54, pl. xi, fig. 1a-g; Illig, Deutsche Südpolar Exped. 1901-1903, 15, 1914, 372, fig. 31-34; Stebbing, Tr. Roy. Soc., Edinburgh, 50, 1914, 284, pl. xxviii; Burkenroad, Zoologica, 22, 1937, 326-327.

Five specimens were taken from two widely separated localities. They agree closely with the *Challenger* material. The eye-stalk in all bears two tubercles, the cervical groove is well marked (fig. 1a) and there are no supraorbital spines. The hepatic spine is present, however, but is so minute that it could easily be overlooked. Cardiac-branchial and antennal ridges are prominent.

All individuals in hand are imperfect, but are able to muster between them three undamaged telsons and three unmutated rostra. Fig. 1b-g shows the variation; the plumose setae are omitted in the drawings of the apex of the telson.

One of the examples is a female about 35 mm. in length. In this the thelycum (fig. 2a) is very like that of Burkenroad's *P. suspiriosum* (*ut supra*, p. 325, fig. 8).

Fig. 2b illustrates the petasma of a submature male, 28 mm. in length. The organ is apparently fully developed in a specimen 30 mm. in length (fig. 2e); the carapace and telson of this

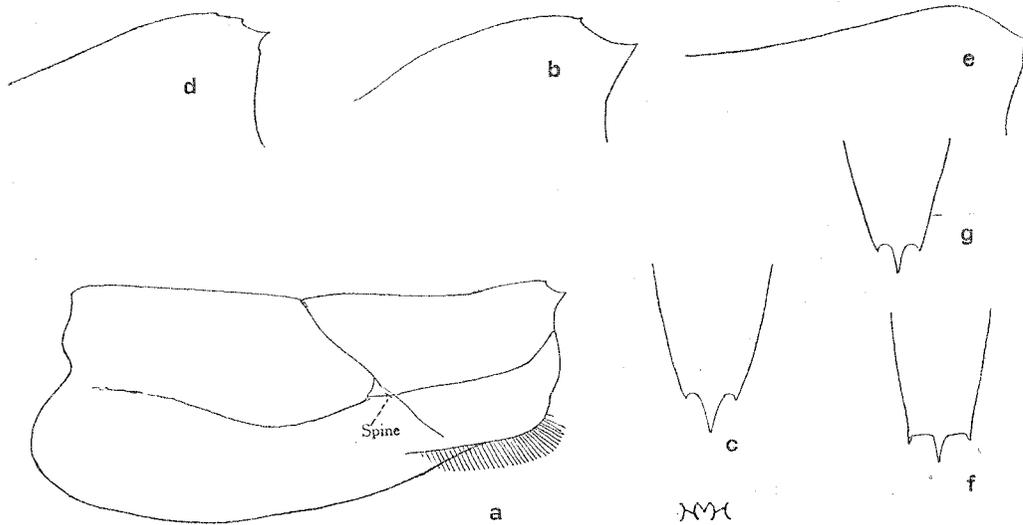


Fig. 1. *Petalidium foliaceum*. a, Carapace; b, rostrum and c, apex of telson of adult male. d, Rostrum of female. e and f, Rostrum and tip of telson of a male. g, Apex of telson of juvenile male (a,  $\times 6\frac{1}{2}$ ; b, d and e,  $\times 18$ ; c, f and g,  $\times 42$ ).

male are shown in fig. 1a, b and c. In a male 40 mm. in length, taken much further south than the other material, the petasma is less advanced (fig. 2c, d); this appears to be at the stage of development drawn by Illig (1914, fig. 34).

Localities: Sta. 31, 1000 metres (estimated) (1); Sta. 67, 2000 metres warp (4).



Fig. 2. *Petalidium foliaceum*. a, Thelycum of female. b, Dorsal view of left half of petasma of 28 mm. male. c, Ventral view of right half and d, dorsal view of distal portion of left half of petasma of 40 mm. male. e, Ventral view of right half of petasma of 30 mm. male (all  $\times 17$ ).

## Tribe CARIDEA

## FAMILY PASIPHAÆIDAE

## PASIPHAÆA SAVIGNY.

## PASIPHAÆA RATHBUNAE Stebbing.

(Fig. 3.)

*Phye rathbunae* Stebbing, Tr. Roy. Soc. Edinburgh, 50, 1914, 295, pl. xxxi.

A single example of this species, 45 mm. in length, is in a very soft condition and seems to have passed an ecdysis not long before its capture; the rostrum and some of the peracopods are broken. It has been flattened by lateral pressure in the net, but even allowing for this distortion, it is apparent that a dorsal carina is moderately well developed in the second to fifth pleon somites and is sharply defined on the anterior four-fifths of the sixth somite; on the last-named (as in *P. tarda* Kröyer) there is also a lateral carina which is not mentioned or figured by Stebbing. The cleft apex of the telson is armed with six spines on one side and seven on the other.

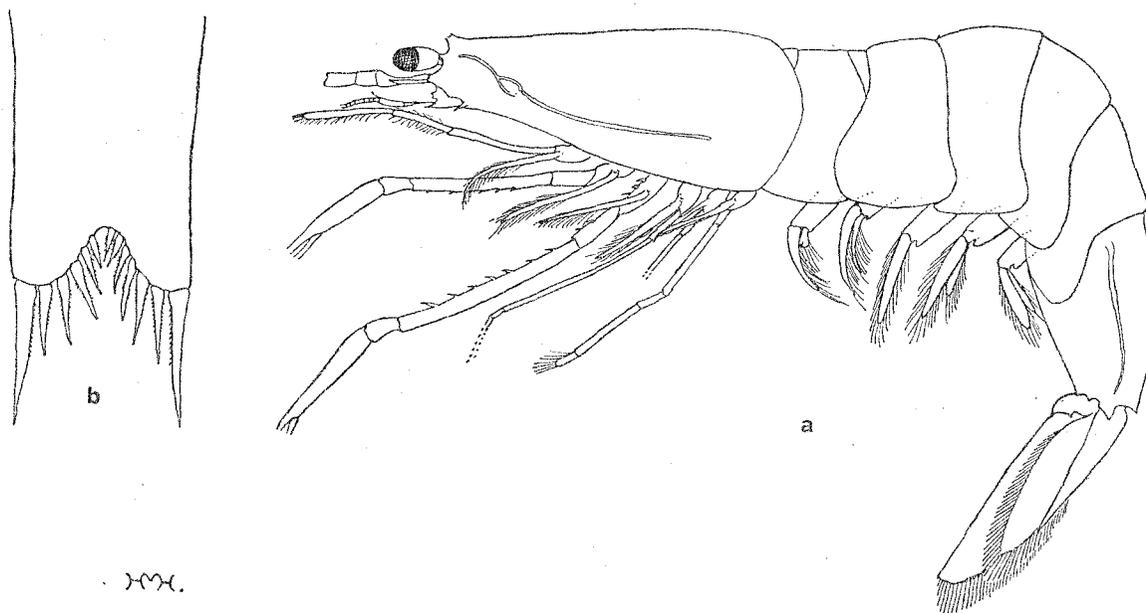


Fig. 3. *Pasiphaea rathbunae*. a, Lateral view ( $\times 2\frac{1}{2}$ ); b, tip of telson ( $\times 38$ ).

As mentioned by Stebbing, this species is very close indeed to *P. tarda*, but the proportions of the peracopods are different.

The type of *P. rathbunae* was captured to the south-west of South Africa in the latitude of Kerguelen (Lat.  $48^{\circ} 00' S$ , Long.  $9^{\circ} 50' W$ ). The individual now recorded was netted south-west of Tasmania at Sta. 111, Lat.  $44^{\circ} 11' S$ , 1710-0 metres.

## PASIPHAÆA LONGISPINA Lenz and Strunck.

*Pasiphaea longispina* Lenz and Strunck, Deutsche Südpolar Exped., 1901-1903, 15, 1914, 315, taf. xix, fig. 1-11; Borradaile, Brit. Antarct. "Terra Nova" Exped., Zool. 3, 1916, 83; Balss, Wiss. Ergebn. D. Tiefsee-Exped., 20 (5), 1925, 238, fig. 11.

Localities: Sta. 27, 1000 metres (estimated) (1); Sta. 33, Coll. 593, Pack ice off Enderby Land (1, from stomach of the snow petrel, *Pagodroma nivea*); Sta. 45, 2000 metres warp (1); Sta. 67, 2000 metres warp (1).

## PARAPASIPHAE S. I. Smith.

## PARAPASIPHAE SULCATIFRONS S. I. Smith.

*Parapasiphae sulcatifrons* S. I. Smith, Rep. U.S. Fish. Comm. (1882), 1884, 384, pl. v, fig. 4 and pl. vi, fig. 1-7; and *loc. cit.*, (1885) 1886, 683; Kemp, Fish. Ireland Sci. Invest., 1, (1905) 1906, 7; Hansen, Crust. Malacost., 1, in Danish Ingolf-Exped., 3, 1908, 79; Kemp, Fish. Ireland Sci. Invest., (1908) 1910, 47, pl. v, fig. 1-21; Coutière, Compt. rend. Acad. Sci., 152, 1911, 157; Stebbing, Ann. South Afr. Mus., 15, 1914, 33, Stephensen, Danish Oceanog. Exped. 1908-1910, 2, Biol., part D, 3, 1923, 40; Balss, Wiss. Ergebn. D. Tiefsee-Exped. ("Valdivia"), 20 (5), 1925, 236, pl. xx and text fig. 10.

A single example 74 mm. in length was collected at Sta. 67, 2000 metres warp, in company with *Acanthephyra haeckeli*. Many specimens have been recorded from the north Atlantic and the species has been secured once off Cape Colony (Stebbing, 1914). The taking of the present specimen extends considerably the known distribution of the species.

## FAMILY NEMATOCARCINIDAE

## NEMATOCARCINUS A. M. Edwards.

## NEMATOCARCINUS LANCEOPES S. Bate.

*Nematocarcinus lanceopes* S. Bate, Rep. Zool. "Challenger", 24, 1888, 804, pl. cxxxi; Stebbing, Tr. Roy. Soc., Edinburgh, 50, 1914, 298, pl. xxxii b; and Ann. South Afr. Mus., 15, 1914, 44; Calman, Rep. Fish. Mar. Biol. Survey, Cape Town, 4, 1925, 15.

*Acanthephyra antarctica* Bage, Sci. Rep. Austr. Antarct. Exped., 1911-1914, Ser. C, 2, 1938, 6, pl. iv, fig. 1.

Most of the available material is much damaged or fragmentary; only one example has the rostrum intact and another has it almost intact. The latter has five teeth on the lower margin of the rostrum. The complete rostrum is one-fourth as long again as the carapace, and has seven ventral teeth.

These specimens were taken close to the type locality, and there seems no doubt as to the validity of the identification or to the fact that Bate's figure showing the scaphocerite as very much longer than the rostrum (in contradiction to his text description) is incorrect.

Miss Bage's figure, quoted above, shows that her *Acanthephyra antarctica* is referable to *Nematocarcinus*. Through the kindness of the Director of the Australian Museum, I have examined two of the syntypes of *A. antarctica* and find them identical with the material now identified as *N. lanceopes*. Miss Bage states that the telson has no lateral spines, but these are present in her specimens seen by me.

Localities: Sta. 29, 1266 metres (13); Sta. 93, 2260 metres (1).

## FAMILY OPLOPHORIDAE

## ACANTHEPHYRA A. M. Edwards.

## ACANTHEPHYRA HAECKELI von Martens 1868.

*Acanthephyra sica* Bate, Rep. Zool. "Challenger", 24, 1888, 739, pl. cxxv, fig. 1.

*Acanthephyra rectirostris* Riggio, Mon. Zool. Ital., 11, 1900, 20.

*Acanthephyra multispina* Coutière, Bull. Mus. Oceanog, Monaco, 48, 1905, 10, fig. 4.

*Acanthephyra parvamultidens* Coutière, *loc. cit.*, 1905, 15, fig. 5.

*Acanthephyra hacckeli* Kemp, Ann. Mag. Nat. Hist. (11), 4, 1939, 575; Chace, Zoologica, New York, 25, 1940, 140, fig. 18.

As usual, the vivid colouration of this species attracted the attention of the collector, who recorded that three examples were "deep scarlet" (Sta. 69); and a small specimen (Sta. 71) was "scarlet, deeper on back".

Localities: Sta. 67, 2000 metres warp (3); Sta. 69, 3000 metres warp (3); Sta. 71, 4200 metres warp (1); Sta. 111, 1710-0 metres (1).

ACANTHEPHYRA QUADRISPINOSA Kemp.

*Acanthephyra quadrispinosa* Kemp, Ann. Mag. Nat. Hist. (11), 4, 1939, 576.

Kemp gives the southern limit of his species as 42° S. A single specimen now available comes from Sta. 67, 45° 53' S., 2000 metres warp.

HYMENODORA G. O. Sars.

HYMENODORA GRACILIS S. I. Smith.

*Hymenodora gracilis* S. I. Smith, Rep. U.S. Fish. Comm., (1885) 1886, 680, pl. xii, fig. 6; Stephensen, Danish Oceanog. Exped., 1908-1910, 2, Biol. part D. 3, 1923, 60 (synonymy); Chace, Zoologica, New York, 25, 1940, 175, fig. 46.

A specimen, 53 mm. in length, taken at Sta. 45, Lat. 63° 51' S., 2000 metres warp, extends considerably the known distribution of this species.

FAMILY SYNALPHEIDAE

CRANGON Weber.

CRANGON VILLOSUS Olivier.

*Alpheus villosus* H. M. Edwards, Hist. Nat. Crust., 2, 1837, 354; Haswell, Cat. Austr. Crust., 1882, 187; Miers, Zool. "Alert", 1884, 290; Ortmann, Denks. med.-nat. Ges., Jena, 8, 1894, 14; Nobili, Ann. Mus. Genova, (2a), 20, 1900, 233; Balss, K. Svenska Vetensk. Akad. Handl., 61, 1920, 9.

*Crangon villosus* Hale, Crust. South Austr. (Brit. Sci. Guild, South Austr. Branch, Handbook), 1927, 46, fig. 37.

Locality: Sta. 76, 62 metres (1).

SYNALPHEUS S. Bate.

SYNALPHEUS BAKERI STORMI de Man.

*Synalpheus bakeri* Coutière var. *stormi* de Man, "Siboga" Exped., Monogr., 39a<sup>1</sup>, 1911, 195 and 253, pl. ix, fig. 40a-f.

A number of specimens was secured in a sponge taken in 62 metres at Sta. 76 off southwestern Australia. Although I have referred these examples to de Man's variety, they really serve to bridge the gap between it and Coutière's South Australian specimens. As in the latter, the merus of the third legs is stouter than in the variety, being 3.5 to 3.8 times as long as wide, whereas in the variety it is four times as long as wide (*fide* de Man). On the other hand, the palm of the large chela of adult specimens now before me terminates in a small conical tooth as in the variety.

In a juvenile 7 mm. in length, the distal tooth of the large chela is not developed, but in a 9 mm. individual there is a very small tubercle on the site. A couple of examples about 14 mm. in length have the tubercle rather more developed than in larger ovigerous females.

The lateral frontal spines reach almost to the level of the apex of the rostrum in the adult; in the smallest example (7 mm.) they reach to about the middle of its length.

In one of the ovigerous females, the telson has three spines on one side and the normal two on the other.

ALPHEOPSIS Coutière.

ALPHEOPSIS TRISPINOSUS Stimpson.

(Fig. 4.)

*Alpheus trispinosus* Stimpson, Pr. Acad. Nat. Sci., Philad., 1860, 32.

*Alpheopsis* sp. de Man, "Siboga" Exped., Monogr. 39a<sup>1</sup>, 1922, 24 pl. iii, fig. 12-12e.

A single ovigerous female taken in 122 metres at Sta. 113, east of Tasmania, agrees quite closely with the juvenile example, 8.2 mm. in length, described by de Man (*ut supra*); the example

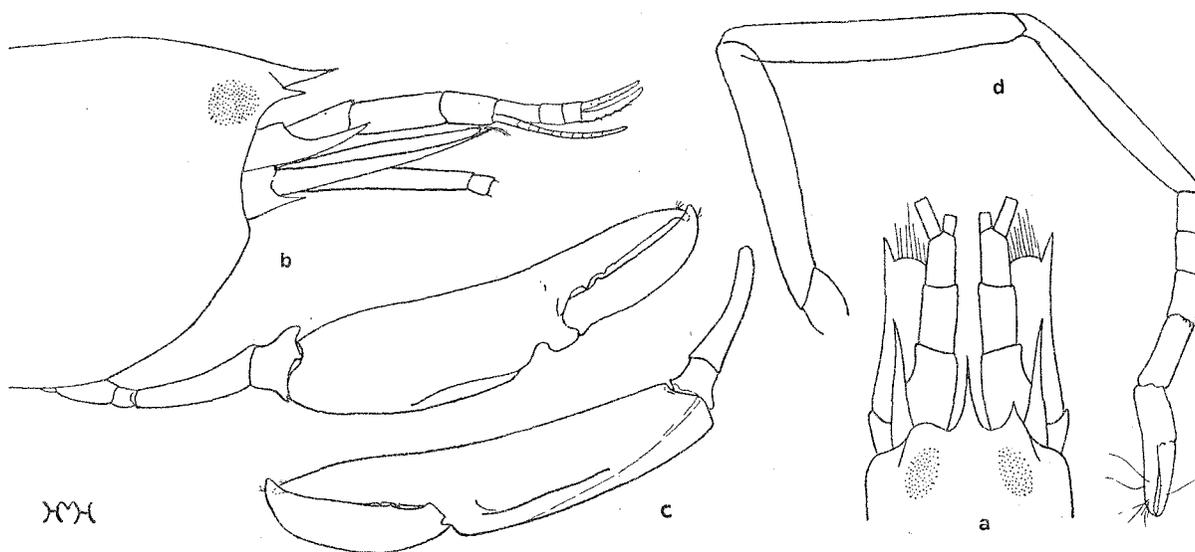


Fig. 4. *Alpheopsis trispinosus*. Ovigerous female; a, dorsal view of frontal and antennal regions; b, side view of anterior portion of carapace and first leg of right side; c, first leg of left side (all  $\times 18$ ).

before me is 17 mm. in total length; carapace 7 mm. The eggs are eyed, large, and elongate, 0.9 mm. by 0.5 mm. The eye hood of the left side lacks a spine; that of the right is normal (fig. 4a). As shown in fig. 4b and c, the chelae of the first peracopods are of almost equal size; the fingers are about five-eighths as long as the palm. Although this female and the example described by de Man may be separable from *A. trispinosus*, one hesitates to propose a new name because of the paucity of material.

FAMILY HIPPOLYTIDAE

NAUSICARIS S. Bate.

NAUSICARIS MARIONIS S. Bate.

*Nauticarisc marionis* S. Bate, Rep. Zool. "Challenger", 24, 1888, 603, pl. cviii; Lenz, Zool. Jahrb. Syst., Suppl. Bd. 5, 1902, 735; Calman, Ann. Mag. Nat. Hist. (7), 17, 1906, 31.

*Hippolyte stewarti* Thomson, Tr. N.Z. Inst., 21, 1888, 259, pl. xiii, fig. 1.

*Merhippolyte australis* Hodgson, Rep. Nat. Hist. "Southern Cross", 1902, 233, pl. xxix.

*Nauticarisc stewarti* Thomson, Tr. Linn. Soc., (2), 8, 1903, 445, pl. xxix, fig. 1.

Thomson (1903) suggests that *N. stewarti* is a variant of *N. marionis*. The single type specimen of *N. stewarti* has the upper margin of the rostrum cut into six teeth and the lower into two, whereas in *N. marionis* there are from seven to twelve upper and two or three inferior teeth.

Fourteen of the twenty-one specimens now available from Sta. 113, 122 metres, have the rostrum intact, with from seven to ten upper teeth (two individuals have seven, eight have eight, three have nine, and one has ten), but with only two incisions in the lower margin; in some, one or both of the inferior teeth are exceedingly small.

Apparently all of Spence Bate's numerous specimens of *N. marionis* have three inferior rostral teeth, and the lesser number in *N. stewarti* seems to constitute the only difference between the two forms.

CHORISMUS S. Bate.

CHORISMUS ANTARCTICUS Pfeffer.

*Hippolyte antarcticus* Pfeffer, Jahrb. Hamburg. Wiss. Anst., 4, 1887, 51, pl. i, fig. 22-27.

*Chorismus antarcticus* Calman, Rep. Nat. Antaret. Exped. 1901-1904, 2, Crust. Decap., 1907, 1; Lenz and Strunck, Deutsche Südpolar Exped. 1901-1903, 15, 1914, 318; Borradaile, Brit. Antaret. "Terra Nova" Exped., Zool. 3, 1916, 85; Coutière, Deux. Exped. Antaret. Française (1908-1910), Sci. Nat., Crust. Schizop. et Decap., 1917, 6; Bage, Austr. Antaret. Exped. 1911-1914, Ser. C, 2, 1938, 8.

Localities: Sta. 40, 300 metres (1); Sta. 41, 209-180 metres (2); Sta. 105, 163 metres (1); Sta. 107, 219 metres (9).

SPIRINTOCARIS S. Bate.

SPIRINTOCARIS ANTARCTICUS sp. nov.

(Fig. 5-6.)

*Male*. Length 28 mm. Carapace robust, with a dorsal carina on anterior half; anterior margin with, on each side, a strong supra-orbital spine, a large antennal spine and a small antero-

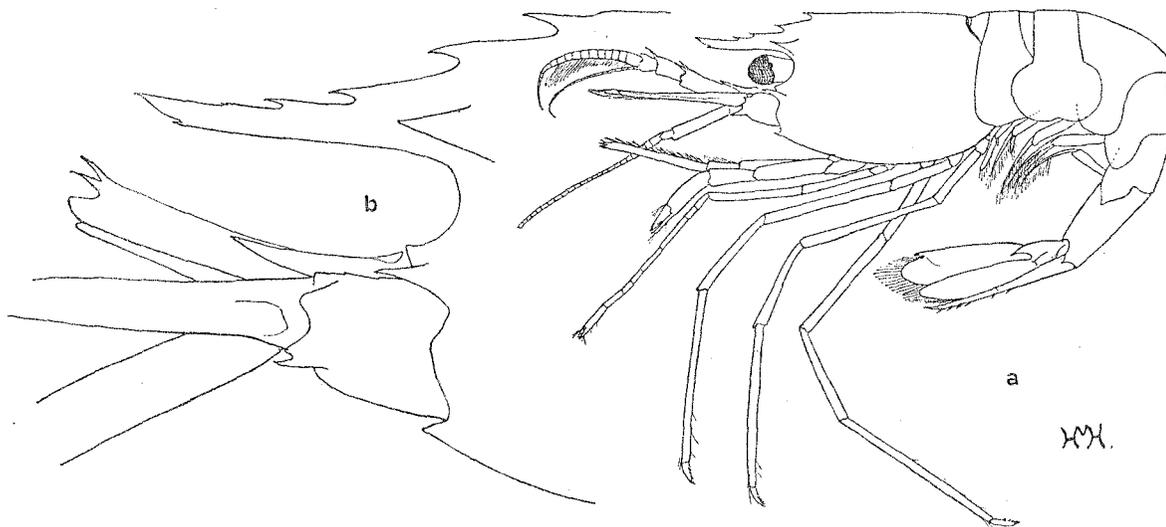


Fig. 5. *Spirintocaris antarcticus*. Type male; a, lateral view ( $\times 4$ ); b, anterior portion of carapace ( $\times 13\frac{1}{2}$ ).

lateral spine. Rostrum half as long as rest of carapace, slender, almost horizontal and not quite reaching to end of the first segment of peduncle of first antennae; with four dorsal teeth (two of which are on the carapace) and one small inferior tooth near the acute tip; between the tip and the first dorsal tooth are two inconspicuous spinules.

Posterior margin of third pleon somite scarcely backwardly produced medianly; sixth somite three-fourths as long as telson which is armed with six pairs of lateral spines (so spaced that the gap between second and third pairs is longer than any of the other intervals) and eight terminal spines, the outer pair of which is larger than the others.

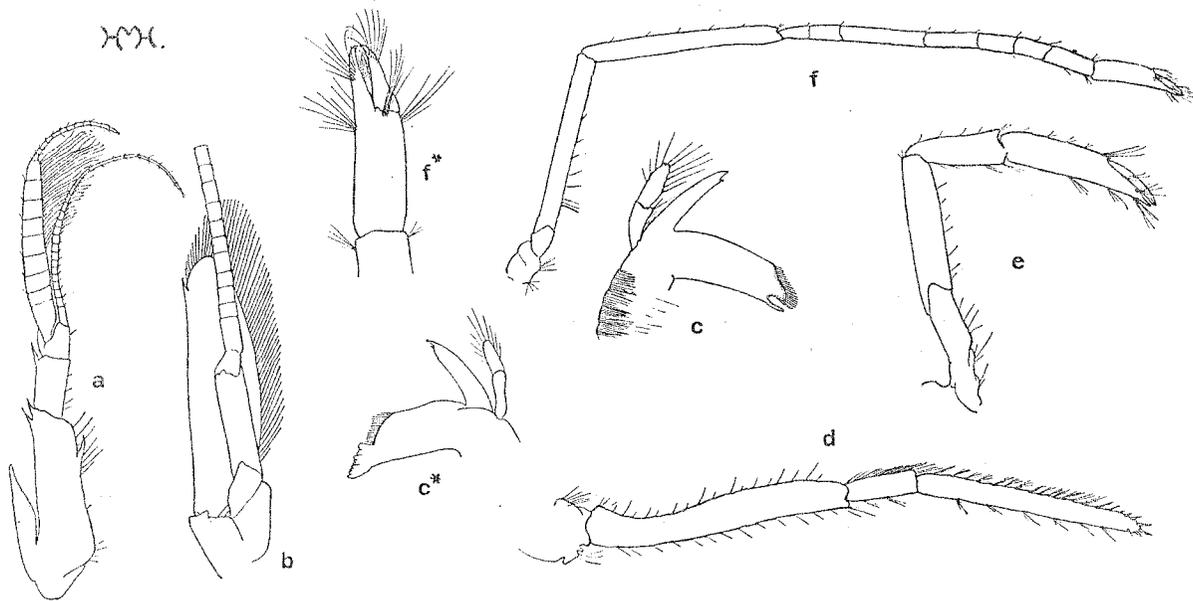


Fig. 6. *Spirontocaris antarcticus*. Type male; a and b, first and second antennae; c and c\*, one of the mandibles; d, third maxilliped; e and f, first and second legs; f\*, chela of second leg (a-b and d-f,  $\times 6\frac{1}{2}$ ; c-e\*,  $\times 28$ ; f\*,  $\times 13\frac{1}{2}$ ).

First antennae with peduncle about as long as scale of second antennae; first segment three times as long as second, with a prominent double spine near outer angle and a single large spine on inner side at about two-thirds of length; scale reaching to two-thirds of length of first segment; second segment about twice as long as third and with a single spine at outer angle; flagella subequal in length. Second antennae with scale nearly half as long as carapace, including rostrum, and with peduncle reaching a little beyond middle of length of scale; flagellum damaged. Mandibles with rather long incisor process and with two-jointed palp. Third maxillipeds reaching a little beyond scale of second antennae; without exopod. First peraeopods attaining end of scale of second antennae, with carpus five-eighths as long as propodus which is subequal in length to merus; dactylus more than half as long as palm. Second peraeopods slender; fingers more than half as long as palm; wrist seven-jointed, the third segment longer than any of the others, almost as long as the chela; ischium and merus subequal in length. Third to fifth peraeopods long and slender, reaching forward well beyond first antennae.

Locality: Sta. 90, 640 metres (1).

According to the description, *S. antarcticus* is extremely close to *S. washingtoniana* Rathbun\* but differs in having only one inferior rostral tooth (instead of three teeth), in the proportions of the segments of the peduncle of the first antennae, in the relatively longer second to fifth peraeopods, and in having the sixth pleon somite much more than half as long as the telson.

\* Rathbun, Pr. U.S. Nat. Mus., 24, 1902, 895; and Alaska, x, 1904, 76, fig. 30.

## FAMILY RHYNCHOCINETIDAE

RHYNCHOCINETES H. Milne-Edwards.

A few small specimens taken by the B.A.N.Z.A.R.E., together with Dr. Isabella Gordon's recent paper (1936) on the genus, led me to re-examine the material in the Australian and the South Australian Museums. It has been ascertained that specimens from the southern coast of Australia, previously referred to *R. rugulosus* Stimpson, represent a new species.

RHYNCHOCINETES RUGULOSUS Stimpson.

(Fig. 7.)

*Rhynchocinetes rugulosus* Stimpson, Pr. Acad. Nat. Sci., Philad., 12, 1860, 36; Haswell, Cat. Austr. Crust., 1882, 180; McCulloch, Rec. Austr. Mus., 7, 1909, 310, pl. lxxxix, fig. 1-8; Gordon, Pr. Zool. Soc., 1936, 85 and 88, fig. 6c-d.

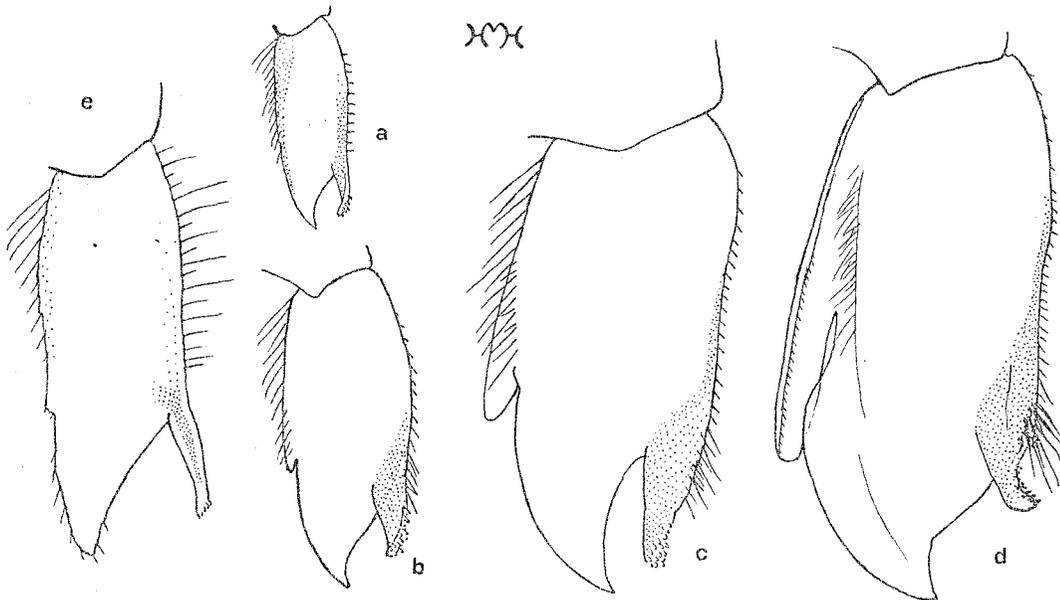


Fig. 7. First pleopod of males of *Rhynchocinetes rugulosus*, showing development of appendix interna and outer marginal lobe (all  $\times 24$ ).

I have now seen over fifty examples from the Australian Museum. They were taken in New South Wales at localities ranging from Port Jackson in the north, to a locality east from Green Cape, near the southern border of that State.

All agree in having no arthrobranch at the base of the fourth peraeopod (but present at bases of the second and third peraeopods). The appendix interna of the first pleopod of the male is elongate and tapering with distinct coupling hooks. The lobule near the middle of the external edge of the first male pleopod is always present in the adult, but the character is variable with age. Fig. 7a-d, shows the endopod of first pleopods of males 25 mm., 30 mm., 35 mm. and 45 mm. in length; in the 25 mm. male (fig. 7a) the lobule has not commenced to separate from the margin; its first indication is a small nick (fig. 7b) which lengthens with age. In occasional fairly large subadult males (up to 35 mm.) there is still merely an indication of the lobule (fig. 7e). Old males develop abnormally large first legs and maxillipeds.

## RHYNCHOCINETES BALSSI Gordon.

*Rhynchocinetes balssi* Gordon, Pr. Zool. Soc., 1936, 85 and 88, fig. 7a-b.

In redescribing *R. rugulosus*, McCulloch (*ut supra*, 1909) used material from New South Wales. After his description, however, he states (p. 312) that "there are specimens in the Australian Museum . . . from Lord Howe Island". These specimens, eight in all, prove to be referable to *R. balssi*.

## RHYNCHOCINETES AUSTRALIS sp. nov.

(Fig. 8.)

*Rhynchocinetes rugulosus* Hale, Crust. South Austr. (Brit. Sci. Guild, S. Austr. Branch, Handbook), 1927, 55, fig. 49 (not Stimpson).

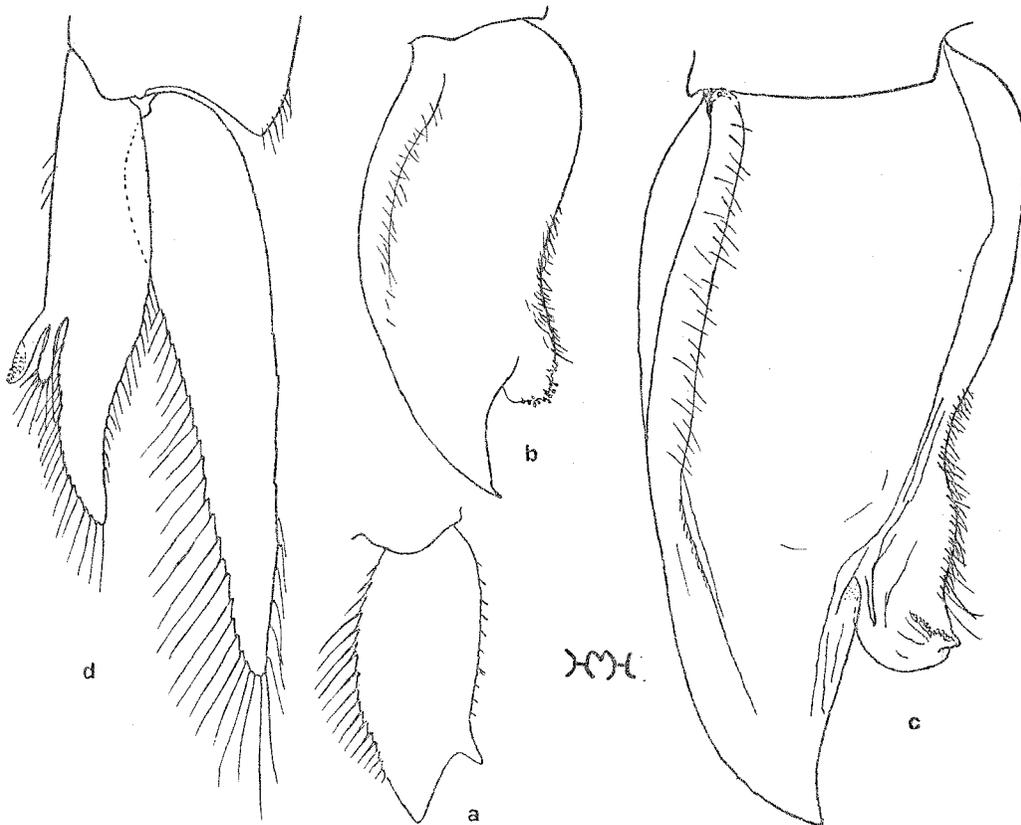


Fig. 8. *Rhynchocinetes australis*. a to c, first pleopod of males, showing development of appendix interna; d, second pleopod of male (all  $\times 24$ ; c and d are from holotype).

*Adult male*. Length 59 mm. The carapace and pleon are conspicuously striate. The distal spine of the basal segment of the antennule reaches to the distal end of the ultimate segment. There is an arthrobranch at the base of the second peracopods (xi) but none at bases of third or fourth (xii-xiii). The endopod of the first pleopod is subtriangular, has no lobe on the outer margin, and bears a stout and rather short appendix interna. The appendix masculina of the second pleopod is very little shorter than the appendix interna. Type in South Australian Museum, Reg. No. C 557.

Localities: Tasmania: off Maria Island, Sta. 113, 122 metres (8); and East of Schouten Island, 80–90 fathoms (1). Victoria: Port Phillip and west-southwest from Gabo Island, 70 fathoms (3). South Australia: St. Vincent Gulf at Marino, Port Willunga, and the type locality, Edithburgh (9); South-east coast at Robe (1).

The largest available example is a female 100 mm. in length. In males 25–30 mm. in length, the appendix interna of the first pleopod is poorly developed (fig. 8a), but in examples 40 mm. in length it has become characteristic (fig. 8b); the endopod of the first pleopod of the 59 mm. type is shown at fig. 8c.

Description of the colour of a living example is given in the handbook quoted above.

In Gordon's key to the species of the genus (Pr. Zool. Soc., 1936, 88) *R. australis* would fall into section 1B which includes the closely related *R. rugulosus* and *R. balssi*. It may be noted, however, that the appendix masculina of the second male pleopod is not markedly shorter than the appendix interna in *R. australis* (fig. 8d); also, that in the largest example, there are fourteen teeth on the lower border of the rostrum, but the most anterior is minute and can be regarded as trivial.

The three Australasian species are separated as follows:

- a. Arthrobranch absent on xiii, present on xi and xii. First pleopod of adult male with portion of outer margin of endopod incised to form a lobe (fig. 7d) - - - *rugulosus*.
- aa. Arthrobranch absent on xii and xiii, well developed, rudimentary or absent on xi. First pleopod of male with outer margin of endopod entire.
  - b. Arthrobranch absent or rudimentary\* on xi. Striae of carapace and pleon very fine - - - - - *balssi*.
  - bb. Arthrobranch well developed on xi. Striae of carapace and pleon conspicuous, as in *rugulosus* - - - - - *australis*.

## FAMILY CRAGONIDAE

### CRAGO Lamarck.

#### Subgenus NOTOCRANGON Coutière.

#### NOTOCRANGON ANTARCTICUS Pfeffer.

*Crangon antarcticus* Pfeffer, Jahrb. Hamburg. Wiss. Anst., 4, 1887, 45, pl. i, fig. 1–21; Ortmann, Pr. Acad. Nat. Sci., Philad., 1895, 177, 181, 190; Coutière, Bull. Mus. Paris, 16, 1900, 240; Calman, Rep. Nat. Antarct. Exped. 1901–1904, 2, Crust. Decap., 1907, 3; Lenz and Strunck, Deutsche Südpolar Exped. 1901–1903, 15, 1914, 324.

*Notocrangon antarcticus* Coutière, C.R. Acad. Sci., Paris, 130, 1900, 1640; and Deux. Exped. Antarct. Française (1908–1910) Sci. Nat., Crust. Schizop. et Decap., 1917, 2, fig. 1–17.

*Notocrangon antarcticus* var. *gracilis* Borradaile, Brit. Antarct. "Terra Nova" Exped., Zool. 3, 1916, 89; Bage, Austr. Antarct. Exped. 1911–1914, Ser. C, 2, 1938, 8.

The material now available slightly extends the known distribution of the species; it corresponds to the slender form named *gracilis* by Borradaile.

Most of the specimens are juveniles, taken at Sta. 107. The largest example secured at the other localities was 104 mm. in length.

Localities: Sta. 30, 540 metres (2); Sta. 103, 437 metres (8); Sta. 107, 219 metres (67).

\* Gordon, *ut supra*, p. 87.

Tribe **PALINURA**FAMILY **SCYLLARIDAE**.

SCYLLARUS FABRICIUS.

SCYLLARUS MAWSONI Bage.

(Plate iii, fig. 1-2.)

*Arctus mawsoni* Bage, Austr. Antaret. Expedition 1911-1914, Ser. C, 2, 1938, 10, pl. iv, fig. 2-2a.

A series of specimens (12) was taken in 122 metres at the type locality, Sta. 113, off Maria Island, Tasmania. The largest, a male, is 90 mm. in length; an ovigerous female is 65 mm.

As stated by Bage, the sculpture of this species is pronounced and distinctive; the illustrations of the adult reproduced herewith (pl. iii) show it in greater detail than do Bage's figures. There are two large teeth in the midline of the carapace, the posterior one more prominent than the anterior; between the last-named and the rostral spine there is always a prominent tubercle, or tuberculate spine. The area in front of this is studded with small tubercles. The anterior end of the sternum has a deep triangular notch behind which are a pair of blunt spines.

The tuberculated central ridge of pleon segments two to five is not elevated on segment two. The sculpture is squamiform on the terga, but appears more as separate tubercles on the pleura. There is an oblique sulcus on each side of terga two to five.

The third antennal segment has the outer (or posterior) margin cut into three teeth; the inner margin is irregularly serrate but always with two teeth more prominent than the others. A strong ridge runs from the base of the segment to the tip of the distal, or largest, spine; near the outer margin a second ridge runs from the base of the segment to the base of the outermost tooth.

In a juvenile 19 mm. in length, there is merely a slight tumidity between the anterior large median tooth of the carapace and the rostral projection, which is minute. The sulci of the pleon are distinct, but the terga bear small independent tubercles, which later run together to form a squamiform pattern.

Tribe **ANOMURA**FAMILY **LITHODIDAE**

LITHODES LATREILLE.

LITHODES MURRAYI Henderson.

(Plate iii, fig. 3-4.)

*Lithodes murrayi* Henderson, Rep. Zool. "Challenger", 27, 1888, 43, pl. iv.

Two females, taken off Macquarie Island, Sta. 80A, 120 metres, are available. The carapaces measure 96 mm.  $\times$  78 mm. and 91 mm.  $\times$  71 mm.; the smaller specimen, which is carrying eggs, is illustrated, together with the pleon of the other.

In these individuals, the larger spines of the carapace are shorter than shown in Henderson's fig. 1, and in addition have a wider base, so that, being more gradually elevated, they appear much less acute. The sub-median pair of spines on the posterior border are vertical in the smaller female, but are directed slightly backwards in the larger, and the largest lateral spines tend to an upwards tilt. The tubercles are apparently less conspicuous, but in all essential features the specimens agree closely with those of the author of the species.

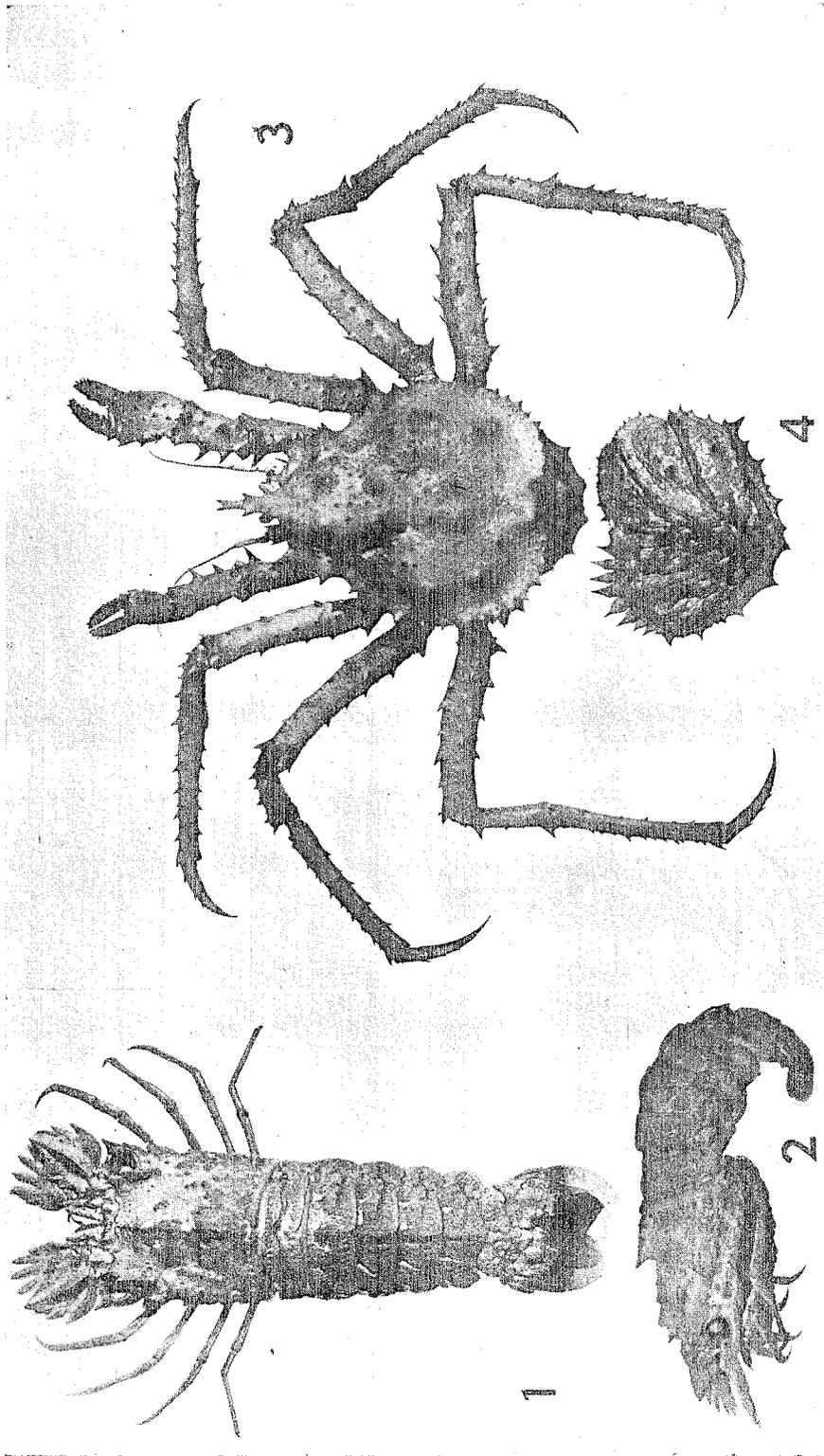


Plate III. 1-2. Dorsal and lateral views of *Scyllarus macdoni*. 3-4. Dorsal view of female and abdomen of female of *Lithodes murrayi*.

## FAMILY GALATHEIDAE

## MUNIDA Leach.

## MUNIDA HASWELLI Henderson.

*Munida haswelli* Henderson, Rep. Zool. "Challenger", 27, 1888, 139, pl. iii, fig. 5; Whitelegge, Mem. Austr. Mus., 4, 1900, 193; Hale, Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 80, fig. 76.

This is the long armed species identified by Whitelegge as *M. haswelli*; the cheliped is longer and more slender than in *M. subrugosa* White. The rostrum also is longer, being about four-fifths as long as the carapace.

A few of the specimens now available from Sta. 113, 178–155 metres, are larger than those examined by Henderson or Whitelegge, or any that I have seen previously. They attain a total length of about 60 mm., with the carapace 35 mm. and the cheliped 100 mm. in length.

## FAMILY CALLIANASSIDAE

## UPOGEBIA Leach.

## Subgenus CALLIADNE Strahl.

The securing of a species of this subgenus by the Expedition has stimulated a closer examination of some of the Australian material.

Two of the forms occurring off southern Australia live in the interior of sponges, but there is no evidence that the third (*C. bowerbankii*) has this habit.

## CALLIADNE AUSTRALIENSIS de Man.

(Fig. 9.)

*Gebia hirtifrons* Haswell, Cat. Austr. Crust., 1882, 164 (not White).

*Calliadne octoceras* var. *australiensis* de Man, Capita Zoologica, 2, 1927, 14, fig. 7-7c; and "Siboga" Exped., Monogr., 39a<sup>4</sup>, 1928, 49.

Two ovigerous females were secured in 62 metres at Sta. 76, off Western Australia, by the B.A.N.Z.A.R.E. from the canals of a large white sponge. I am indebted to the Director of the Australian Museum for the opportunity of comparing these with a few of de Man's eastern Australian syntypes, recorded by Haswell as *Gebia hirtifrons* in 1882. The hairy clothing, not shown in the illustrations herewith, is prominent on the rostrum, first peraeopods, etc.

The distinctly longer, and less semicircular, rostrum and the larger eggs seem to justify separating specifically these Australian specimens from the Red Sea *C. octoceras*. De Man notes that in females 44 mm. to 48 mm. long, the ova are 1.5 mm. in diameter, whereas in *C. octoceras* they are only about one-half of this diameter. In de Man's material, the ova are hardened and shrunk, and in the Western Australian females about 27 mm. in length, they are relatively larger, about 1.9 mm. in diameter, and under the pleon of one female is a newly hatched juvenile in the form of the adult.

De Man stated correctly in his original designation of the Australian specimens that the rostrum bears four to six tubercles (or "teeth") on each lateral border. In his "Siboga" key, however, he places *C. octoceras australiensis* in the section of his key (g2) with three or four lateral tubercles (p. 49).

De Man records differences in the first antennae of *C. octoceras* and *C. australiensis* as follows:

*C. octoceras*. Lower lash  $1\frac{1}{2}$  times as long and only  $\frac{2}{5}$  as wide as upper, and composed of seventeen joints, all longer than wide.

*C. australiensis*. Lower lash almost  $1\frac{1}{2}$  times as long, and  $\frac{2}{3}$  as wide as upper, and composed of thirty joints, not all of which are longer than wide.

The B.A.N.Z.A.R.E. females have: Lower lash about  $1\frac{1}{3}$  times as long, and  $\frac{2}{5}$  as wide, as upper, and composed of fifteen to sixteen joints, all of which are longer than wide (fig. 9c).

The Australian specimens considered by de Man in connection with these antennae were larger than the B.A.N.Z.A.R.E. females and the differences cited may be due to age. In any case, the proportions of the joints are not consistent even in the two B.A.N.Z.A.R.E. individuals.

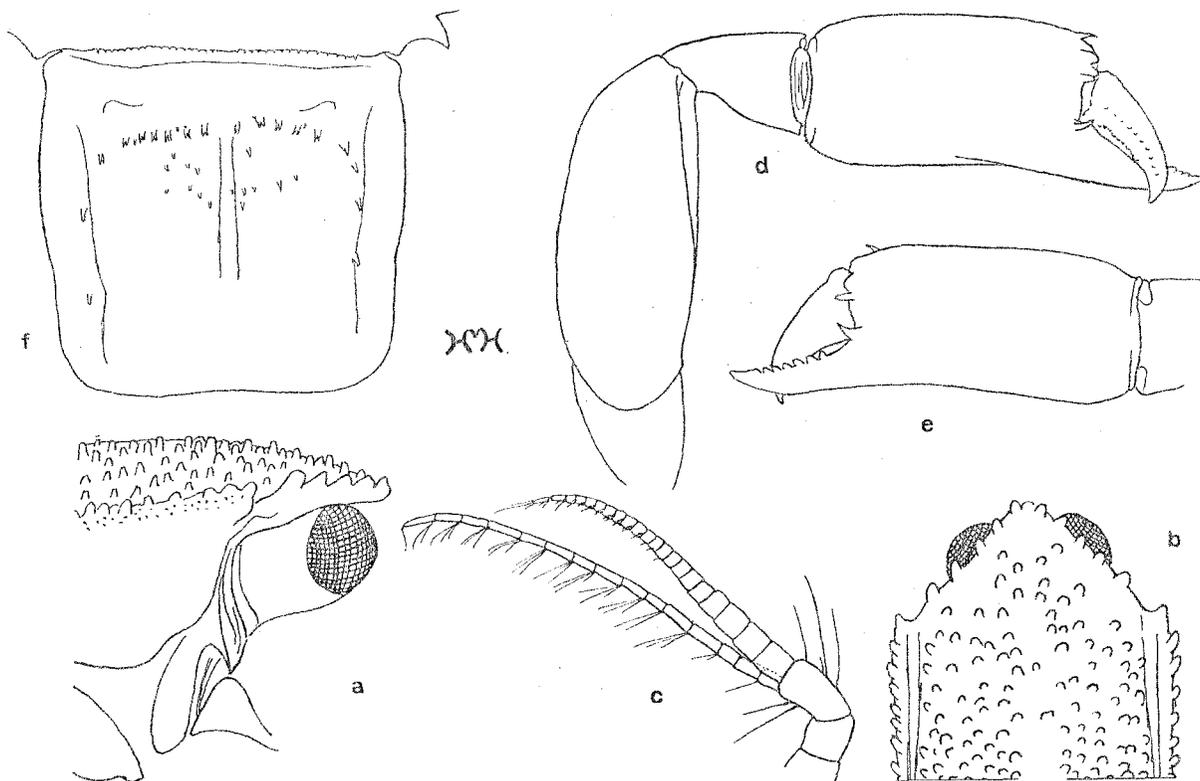


Fig. 9. *Calliadne australiensis*. Ovigerous female; a and b, lateral and dorsal views of frontal region ( $\times 13\frac{1}{2}$ ); c, first antenna ( $\times 14$ ); d, outer face of right cheliped, and e, inner face of chela of same ( $\times 10$ ); f, telson ( $\times 10$ ).

The absence of a tooth on the upper border of the merus of the first peraeopods, the presence of a continuous line of denticles on the hinder border of the sixth pleon somite (fig. 9f) separate *C. australiensis* from the very closely related *C. caryadensis* Borradaile. *C. bowerbankii* has the rostrum longer and narrower, with spines instead of blunt or subtruncate tubercles, and with the lateral lobes wider; also in that species the merus and lower border of the palm of the first peraeopods are not normally smooth.

#### CALLIADNE BOWERBANKII Miers.

(Fig. 10.)

*Gebiopsis bowerbankii* Miers, Zool. "Alert", 1884, 282.

*Upogebia* (*Gebiopsis*) *bowerbankii* Hale, Tr. Roy. Soc. South Austr., 48, 1924, 69; and Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 85.

*Upogebia (Calliadne) bowerbankii* de Man, *Capita Zoologica*, 2, 1927, 9, pl. i, fig. 4-4f; and "Siboga" Exped., Monogr., 39a<sup>4</sup>, 1928, 48.

The examples before me agree substantially with the descriptions of de Man, but the following differences may be noted. The second marginal spine of the rostrum is not normally thinner and shorter than the others; the spines vary in different individuals in thickness and in number from four to six, but rarely are there more or less than the normal number of five on both margins of the same rostrum. The spinules on the lower border of the merus of the first peracopods may be irregular or may be arranged in a double row, and may extend along the greater part of the length of the lower margin. The spines at the distal end of the palm (one on the outer side and two on the inner) near the articulation of the movable finger, are smaller. The spinules on the lower proximal part of the palm are often arranged in a double row, with a further row of minute denticles above them on the inner surface; these are absent in some examples. The largest of the score of examples dealt with above are 27 mm. to 28 mm. in length; none of the females is ovigerous.

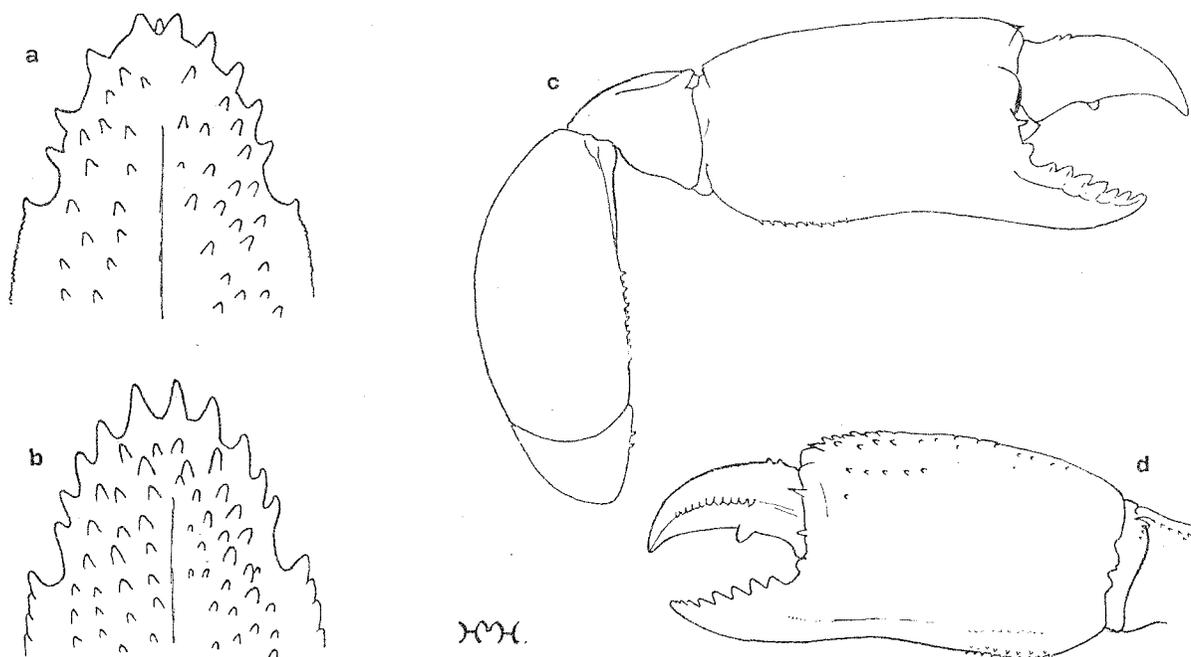


Fig. 10. *Calliadne bowerbankii*. a and b, rostra ( $\times 14$ ); c, outer view of right cheliped and d, inner view of chela of same ( $\times 6$ ).

In another series, females up to 38 mm. in length have the spines of the lower borders of the merus and palm of the first peracopods very tiny, although they are larger in the accompanying males. The ova of females about 38 mm. in length are 1.3 mm. in diameter.

An obviously aged male, 45 mm. long, "found in an oyster shell" at Denial Bay, South Australia, in company with a smaller and less senile companion, has lost some of the characters which de Man details. There are no spines on the chela of the first legs; the palm is smooth and polished, carinate above and below; the carpus of this limb also lacks spines while the carinate lower border of the merus has small tubercles instead of denticles; the usual long hairs are reduced to short tufts. The sixth pleon somite has a thickened hinder margin, with no trace of the usual denticles and its lateral portions, while emarginate, have no subacute lobule. The telson is relatively wider at the base than is normal and lacks all spines; the posterior margin has a small median projection.

The reference to this species as "Sponge Shrimp" by the writer in the abovementioned handbook is possibly a misnomer.

Localities: South Australia: Investigator Strait, Backstairs Passage and St. Vincent Gulf (J. C. Verco, 1893, 28 examples); St. Vincent Gulf (W. H. Baker, 1 example); Smoky Bay (F. Wood Jones, 3 examples); Denial Bay (J. Tait, 1894, 2 examples).

*CALLIADNE TRACTABILIS* sp. nov.

(Fig. 11.)

*Ovigerous female.* Length 21 mm. Anterior portion of carapace and first two pairs of peracopods hairy, but clothing not concealing sculpture. Rostrum about twice as wide as long, with four to five spiniform tubercles on each side; separated by a wide interspace from lateral lobes, which bear about a dozen small spines anteriorly, followed by a few inconspicuous denticles. Dorsum of rostrum and gastric regions with small and somewhat scattered spiniform tubercles leaving a smooth median area. Eystalks reaching beyond level of apex of rostrum.

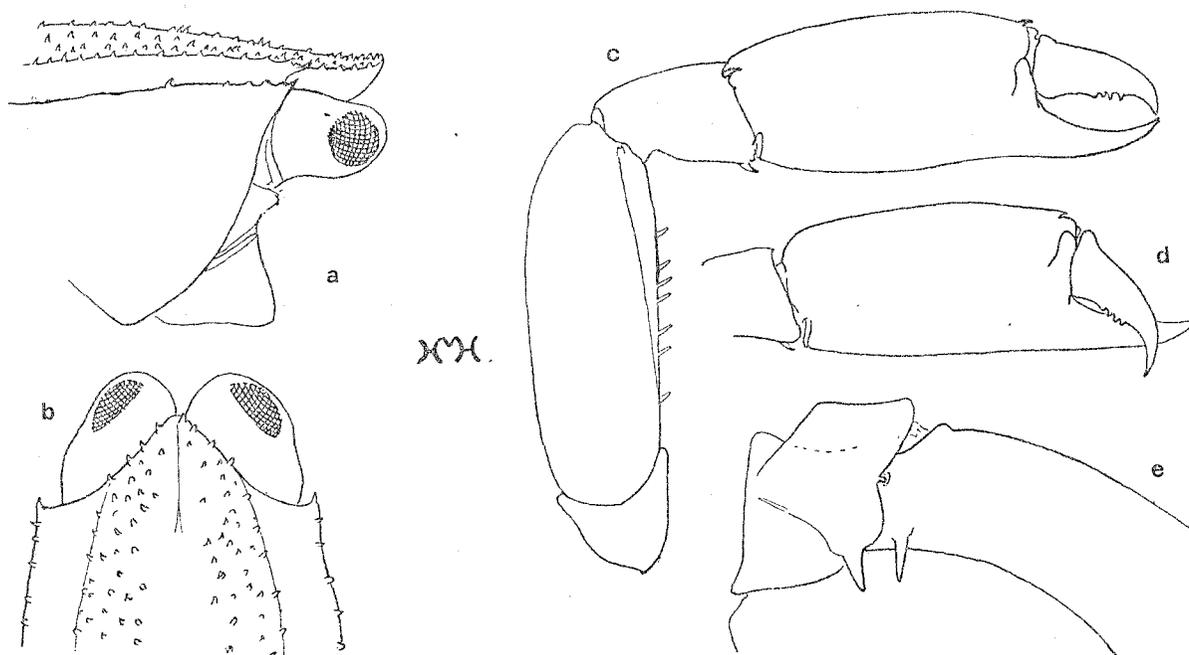


Fig. 11. *Calliadne tractabilis*. Paratype female; a and b, lateral and dorsal views of frontal region ( $\times 22$ ); c, outer view of right cheliped ( $\times 13$ ); d, inner view of left chela ( $\times 13$ ); e, protopod and bases of rami of uropod ( $\times 38$ ).

Chelipeds equal; palm without spines near articulation of dactylus and with a single, small, depressed spine at distal end of upper border; movable finger dentate at about middle of length, but immobile finger quite smooth; carpus with a spine at distal end of both upper and lower borders; merus with five spines on lower border, the anterior ones set further towards the inner face than the others; upper border of merus smooth.

Telson a little wider (at base) than long, without denticles. Uropod with exopod longer and wider than endopod; protopod with a spine overhanging base of endopod; just lateral to this is a second spine emanating from the exopod (fig. 11e).

Type female in South Australian Museum (Reg. No. C888).

Locality: South Australia: St. Vincent Gulf, 8 fathoms (H. M. Hale, 7 examples); St. Vincent Gulf (type locality, W. H. Baker, 40 examples).

All available specimens were taken from sponges. Most of the ovigerous females are considerably smaller than the example described above; the eggs are very large, averaging 1.2 mm. in diameter.

The anterior lateral ridges of the carapace usually have five or six spines, more rarely ten to twelve are present. The spines on the lower border of the merus of the first pereopods are always prominent, and vary in number, as many as seven being present.

This small species is the "small variety" from South Australia previously referred to by the writer under *Upogebia bowerbankii*.\*

*C. tractabilis* appears to be closely related to *C. savignii* Strahl† but differs in having fewer spines on the lateral lobes of the carapace, and notably in having spines (usually slender, sometimes thorn-like) on the lower border of the merus of the chelipeds, and two spines on the carpus of that limb. According to Gurney‡ the ova of *C. savignii* are relatively smaller.

## FAMILY PAGURIDAE

### CLIBANARIUS Dana.

#### CLIBANARIUS STRIGIMANUS White.

*Pagurus strigimanus* White, Pr. Zool. Soc., 1847, 121.

*Pagurus aculeatus* H. M. Edwards, Ann. Sci. Nat., Zool., (3), 10, 1848, 62.

*Clibanarius strigimanus* Miers, Zool. "Erebus" and "Terror", Crust. 1874, 3, pl. ii, fig. 4; McCulloch, Rec. Austr. Mus., 9, 1913, 348; Hale, Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 91, fig. 87.

Localities: Sta. 76, 62 metres (4; one in shell of *Cabestana spengleri* Perry); Sta. 113, 122 metres (1); Sta. 115, 128 metres (1).

#### CANCELLUS H. M. Edwards.

#### CANCELLUS TYPUS H. M. Edwards.

(Fig. 12.)

*Cancellus typus* H. M. Edwards, Ann. Sci. Nat., (2), Zool., 6, 1836, 287; and Hist. Nat. Crust., 2, 1837, 243; Whitelegge, Pr. Roy. Soc., N.S. Wales, 23, 1889, 232; and Rec. Austr. Mus., 3, 1899, 156; Hale, Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 94, fig. 91-92.

*Gryllopagurus lithodomus* Zietz, Tr. Roy. Soc. South Austr., 10, 1888, 298, pl. xiv.

Opportunity is taken to describe an early stage of this species, the brood young previously briefly recorded by the writer (1927, 95). Zietz's material is dried, and his types had been eviscerated and filled with cotton wool. Only one of the females carries juveniles beneath the pleon, but these make possible a discussion of some of the superficial growth changes.

The eye stalks of the young are relatively much stouter (two and one-fourth times as long as wide) than in the adult (more than four times as long as wide); the length in relation to the carapace remains about the same. A minute point at the apex of the rostral projection is present in the juvenile and persists throughout life. The rostral projection in the young extends forward well in advance of the level of the antero-lateral angles of the carapace; as is usual in the genus, it is shorter and much more obtuse in the adult (fig. 12b and e). The anterior margin of the carapace of the juvenile is slightly elevated, but the low smooth tumidities, divided on each side at the base of the rostral projection in the adult, are absent.

\* Hale, Crust. South Aust. (Brit. Sci. Guild S.A. Handb.), 1927, 85.

† De Man, Capita Zoologica, 2, 1927, 5; and "Siboga" Exped., Monogr., 39a4, 1928, 47.

‡ Gurney, Pr. Zool. Soc., Ser. B, 1937, 98.

The anterior peraeopods are relatively much larger and more massive in the adult. A series of sharp spines on the upper edge and oblique upper portion of the palm, on the movable finger of the large chela, and on the upper portion of the carpus become stout compound or low tubercles (fig. 12c and f); spines on the second peraeopods become similarly modified. These tubercular areas, forming the outer face of the operculum, simulate the surface of the rock fragments in which the animal lives.

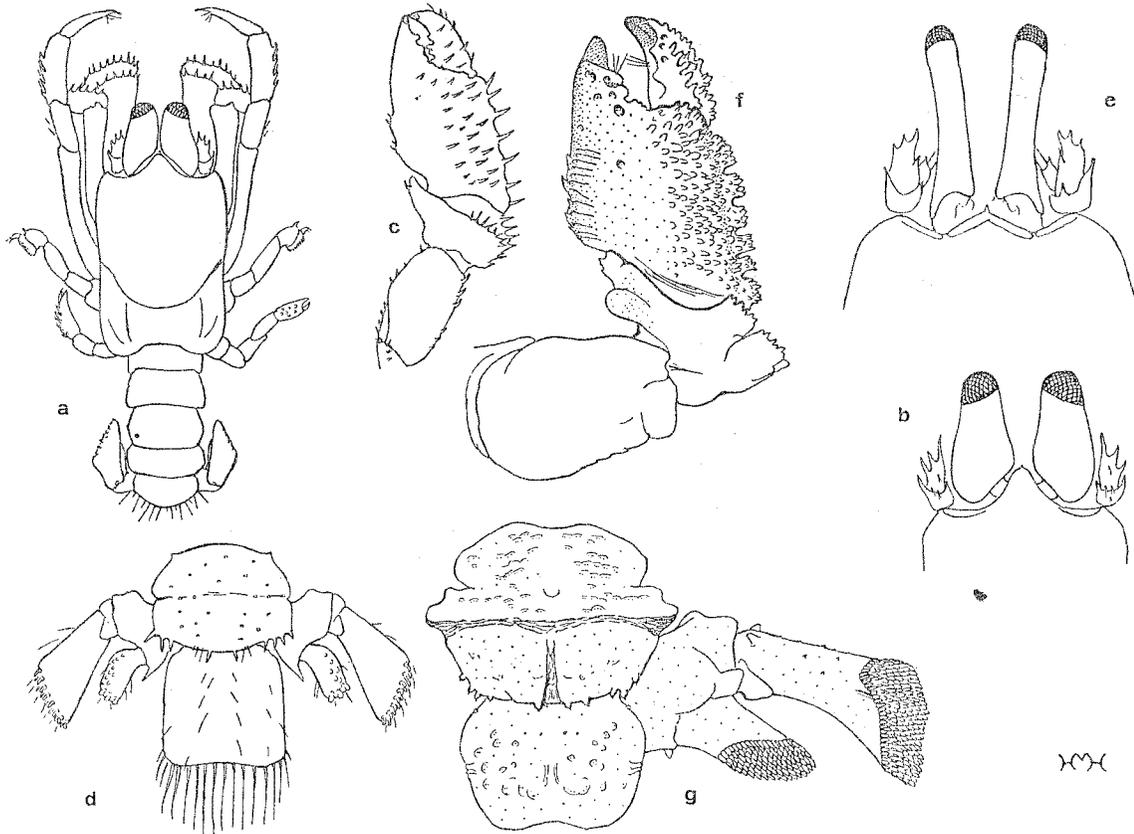


Fig. 12. *Cancellus typus*. a, Dorsal view of brood juvenile ( $\times 14$ ); b, frontal area ( $\times 22$ ); c, first leg ( $\times 22$ ); d, sixth pleon segment, telson and uropods ( $\times 22$ ). Adult; e, frontal area ( $\times 3$ ); f, first leg ( $\times 3$ ); g, sixth pleon segment, telson and uropods ( $\times 5$ ).

The pleon remains about as long as the carapace throughout life. In the young, the telson is as long as wide and a trifle longer than the sixth pleon somite; the sides are almost straight, slightly diverging, while the hinder margin is a little concave and fringed with long hairs; the sixth pleon somite has two to four slender acute spines (usually three) at the postero-lateral angles, and a pair of similar spines at the middle of the hinder margin. These spines have become swollen and tubercular in mature examples, although the acute tip may persist while the telson becomes relatively shorter, wider than long, shorter than the sixth pleon somite and with the lateral margins converging posteriorly (fig. 12d and g).

The uropods of the juvenile are not as stout as in the adult, and the hard imbricate tubercles on both branches and on the last two pairs of peraeopods are scanty.

Average length of young 4.5 mm. Length of parent 23 mm. Lengths taken with material relaxed.

## EUPAGURUS Brandt.

## EUPAGURUS LACERTOSUS NANA Henderson.

*Eupagurus lacertosus* var. *nana* Henderson, Rep. Zool. "Challenger", 27, 1888, 64, pl. vii, fig. 1; Whitelegge, Mem. Austr. Mus., 4, 1900, 169.

Two small examples agree with Henderson's description of the variety in that the lateral projections of the front are not tipped with spines; the chelae are much as in his figure and description of New Zealand specimens of *E. lacertosus*. *E. crenatus* Borradaile\* does not seem to be very satisfactorily separated from *E. lacertosus*.

Localities: Sta. 112, 99–84 metres (1); Sta. 113, 122 metres (1).

## GLAUCOTHOE H. M. Edwards.

## GLAUCOTHOE PERONII H. M. Edwards.

*Glaucothoe peronii* H. M. Edwards, Ann. Sci. Nat. Zool. 19, 1830, pl. viii, fig. 1–13; Gurney, Brit. Antart. "Terra Nova" Exped., Zool., 8, 1924, 183, fig. 72.

Two perfect examples, each a little under 13 mm. in length, were discovered in a bottle containing *Acanthephyra haeckeli* taken in the same haul, at Sta. 111, 1710–0 metres. The proportion of carapace to pleon in both is 3:8; in one, the large right cheliped is 7.5 mm. in length, in the other 8 mm.

## FAMILY PARAPAGURIDAE

## SYMPAGURUS S. I. Smith.

## SYMPAGURUS ARCUATUS DIOGENES Whitelegge.

*Sympagurus diogenes* Whitelegge (Mem. Austr. Mus., 4, 1900, 172), described from New South Wales, seems, as remarked by that author, to be very closely related to *S. arcuatus* Edwards and Bouvier (Mem. Mus. Comp. Zool., 14 (3), 1893, 67, pl. v, fig. 21–28) and is here regarded as a subspecies of that form. It may be noted that Whitelegge's illustration is a mirror image.

The B.A.N.Z.A.R.E. obtained specimens from Tasmania and Macquarie Island respectively, which are recorded as further subspecies because of the differences exhibited by the right chela. In both of these, the chelipeds are densely pilose, and it is necessary to remove the clothing before the sculpture of the outer surfaces can be examined.

## SYMPAGURUS ARCUATUS JOHNSTONI subsp. nov.

(Fig. 13.)

Length of carapace of adult 10 mm. Chela of right side with immovable finger moderately well defined. Palm with small tubercles all over inner surface; outer surface with subspiniiform tubercles on median area, but with small or obsolete granules on most of lower half and near upper margin. Upper surface of palm with a coarsely denticulated distal crest, with distinct spines on outer edge and with inner edge ill-defined (fig. 13c). Lower margin of palm slightly sinuate and serrate. Inner and outer surfaces of movable finger with subspiniiform tubercles.

Locality: Sta. 115, 128 metres (over 50).

The specimens are inhabiting shells of *Cabestana spengleri* Perry, all covered with an encrusting sponge. There is considerable variation in the shape of the right chela. In the largest examples it is elongate, approximately twice as long as wide (fig. 13d), but in smaller specimens it is almost as wide as long (fig. 13a). The characters mentioned above are constant, however.

\* Borradaile, Brit. Antart. "Terra Nova" Exped., Zool. 3, 1916, 95, fig. 8.

In *S. arcuatus diogenes* the size is much larger (length of carapace 17 mm.) while the right chela differs as follows: (a) the immovable finger is scarcely defined; (b) the whole outer surface of the palm is covered with tubercles; (c) the distal crest of upper surface of palm is minutely instead of strongly denticulate; (d) the lower margin of the hand is strongly and evenly convex.

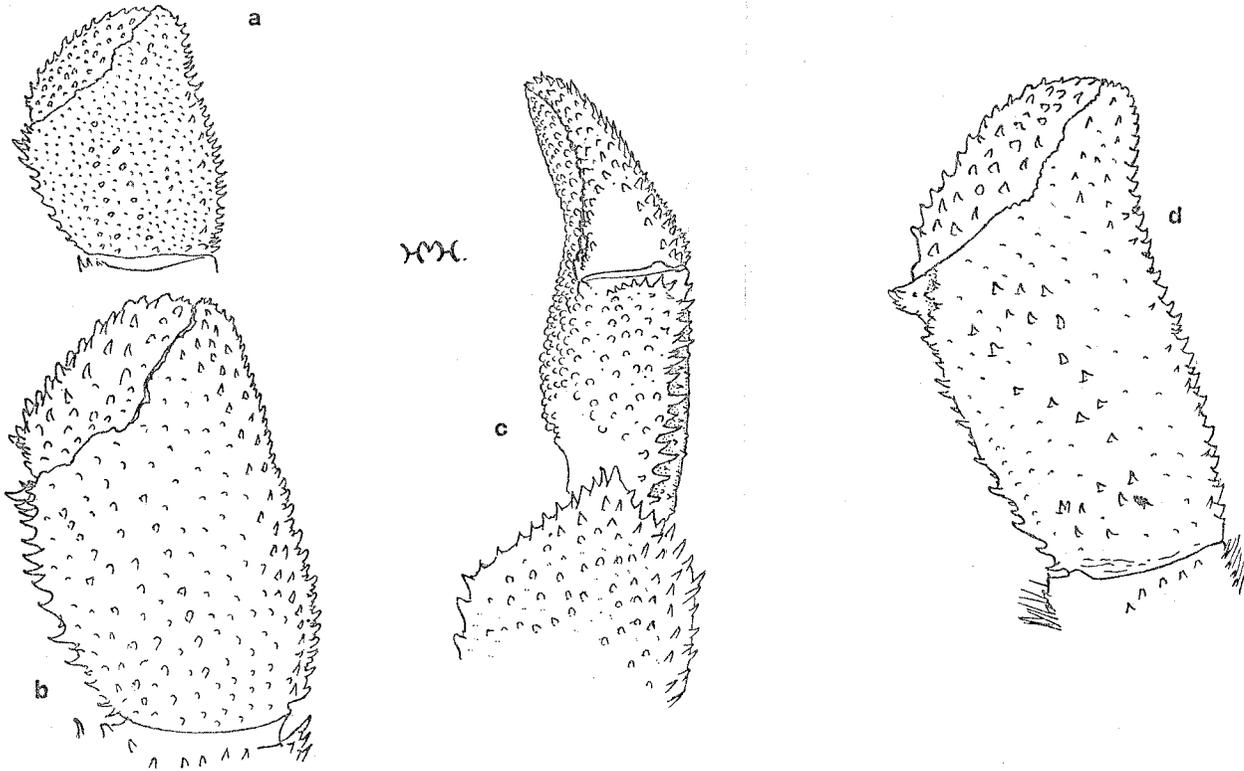


Fig. 13. *Sympagurus arcuatus johnstoni*. a, b and d, Outer surface of right chela of three individuals showing elongation with age; c, upper surface of chela shown at b (all  $\times 4\frac{1}{2}$ ).

*SYMPAGURUS ARCUATUS MAWSONI* subsp. nov.

(Fig. 14.)

Length of carapace of adult 17 mm. Chela of right side with immovable finger scarcely defined. Palm with small tubercles over inner surface; outer surface with tubercles confined to upper half. Upper surface of palm with a coarsely denticulated distal crest, with large spines on outer edge and with inner edge well defined by a curved row of tubercles (fig. 14b). Lower margin of palm evenly and strongly convex, or curved and slightly sinuate (in a single female). Surfaces of movable finger with tubercles obsolete.

Locality: Sta. 83, 69 metres (5).

The shells inhabited have been identified by Mr. B. C. Cotton as those of *Cominella adspersa* Bruguière.

This subspecies differs from *S. arcuatus johnstoni* in: (a) the larger size of the adult; (b) the shape of the right hand with lower margin more convex, and with the immobile finger very ill-defined; (c) the defined inner edge of upper surface of palm; (d) the almost smooth surfaces of the movable finger.

In *S. arcuatus diogenes*, the right chela has: (a) outer surface of palm wholly covered with tubercles, and with an indistinct longitudinal central row of granules; (b) distal crest of the upper surface of palm minutely (not strongly) denticulate; (c) outer edge of upper surface of palm with small subspiniiform granules (not distinct spines); (d) surfaces of mobile finger apparently distinctly granulate.

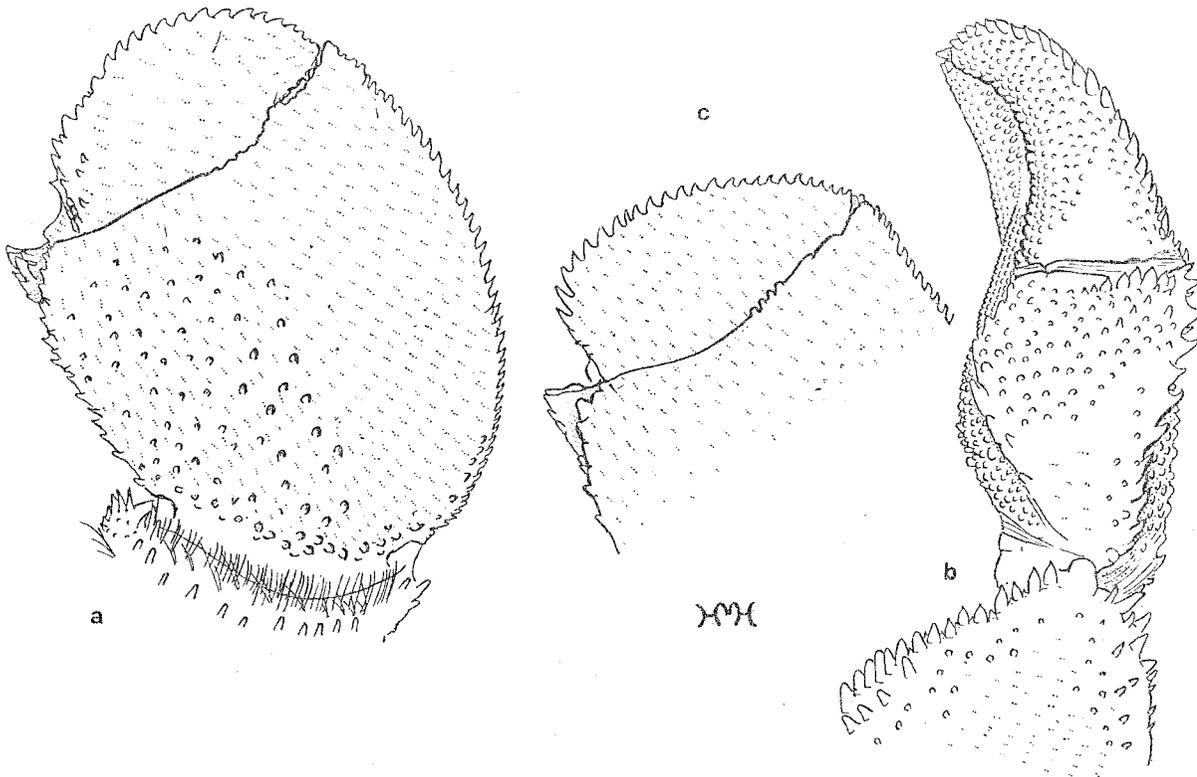


Fig. 14. *Sympagurus arcuatus mawsoni*. a and b, Outer and upper surfaces of right chela of a male; c, mobile finger of right chela of a female ( $\times 5$ ).

### Tribe DROMIACEA

### FAMILY DROMIIDAE

#### DROMIDIOPSIS Borradaile.

#### DROMIDIOPSIS EXCAVATA Stimpson.

(Fig. 15-16.)

*Dromidia excavata* Stimpson, Pr. Acad. Nat. Sci., Philad., 10, 1858, 239 (77).

*Dromia excavata* Haswell, Cat. Austr. Crust., 1882, 140.

*Dromia ciliata* Henderson, Rep. Zool. "Challenger", 27, 1888, 3, pl. i, fig. 1-1e.

*Dromidiopsis excavata* Rathbun, Biol. Res. "Endeavour", 5, 1923, pl. 146, pl. xxxviii; Hale. Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 110, fig. 106.

Rathbun notes that this species produces eggs "about 2 mm." in diameter. In July, 1931, a living female was captured at Kangaroo Island, South Australia. This example (with carapace 36 mm. in length and 39 mm. in width) was laden with eggs 1.9 mm. in diameter and rich ruby red.

The large eggs suggest an abbreviated metamorphosis, and this is proved to be the case by a female captured by the B.A.N.Z.A.R.E. This has the carapace 25 mm. long and 28 mm. wide, and carries under the pleon eighty young, with the carapace 2.5 mm. long and 2.6 mm. wide. The apron of the mother stands out 20 mm. or so from the adpressed position, and, as in some other species\*, the exopods of the pleopods form the sides of a brood pouch. The juveniles are clinging to the hairs of the pleopods of the mother with the large chelipeds, or have some of the legs folded around these hairs or linked with the peraeopods of brood companions.

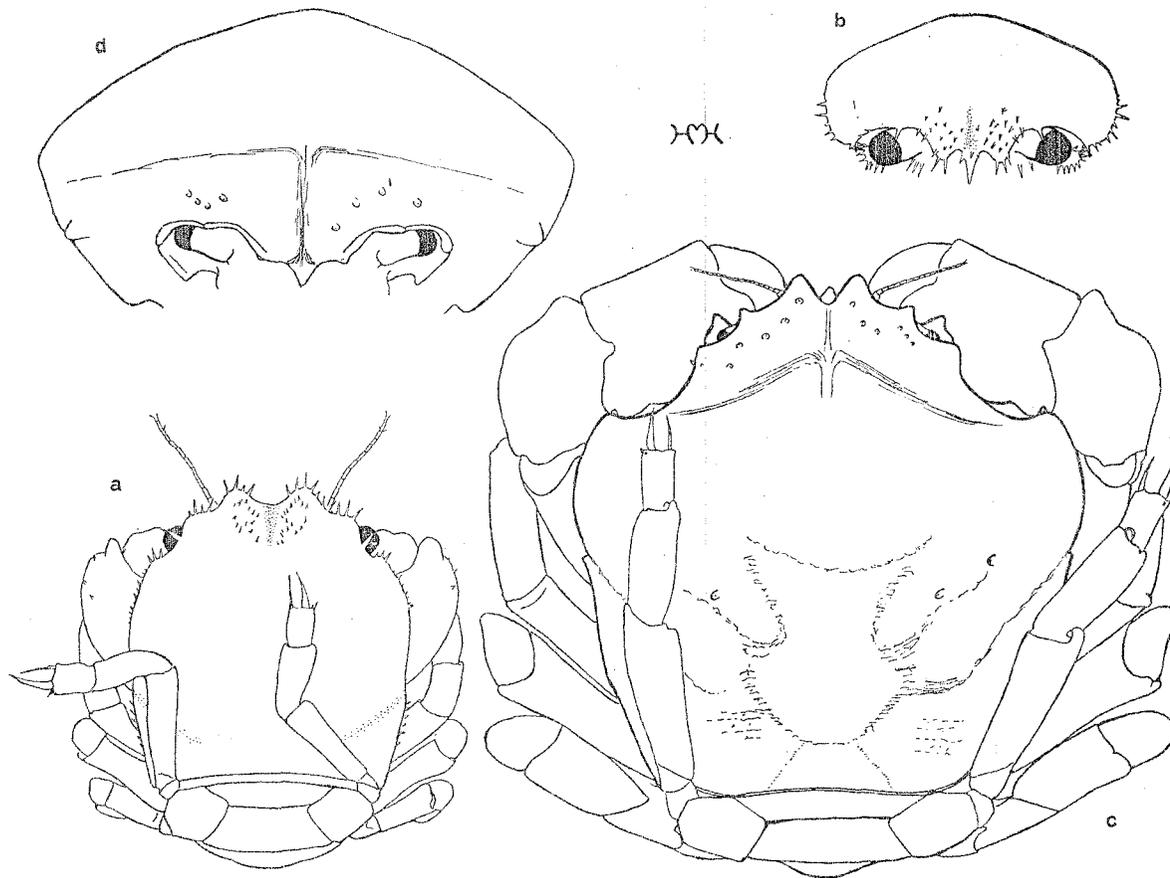


Fig. 15. *Dromidiopsis excavata*. a and b, Dorsal and frontal views of brood juvenile ( $\times 13$ ). c and d, Dorsal and frontal views of adult ( $\times 2$ ).

The young are clothed with plumose "hairs" sparsely placed as compared to the adult; the hairs do not form a dense mat-like covering, and there is no thick transverse frontal fringe; the hairs vary in length on the carapace (0.2–0.35 mm.) and are shorter on the pleon (0.1–0.15 mm.). The hairs hold a good deal of algal and flocculent material. In all of the accompanying drawings (fig. 15–16) the "hairy" covering has been entirely removed in order to expose contours and armature.

It would appear that growth changes are very similar in broad outlines to those which the writer has detailed for two other species of the family with direct development.\* In the brood young, the eyes are relatively large (one-fifth as long as carapace, one-eighth as long in adult); the second antennae are proportionately twice as long as in the adult, and the flagellum consists

\* Hale, Pr. Linn. Soc., N.S. Wales, 50, 1925, 405–413.

of about half the number of segments; the frons is wide, and measured between the outer angles of the orbits is almost four-fifths of greatest width of carapace (slightly more than one-half in adult). The carapace width in relation to length increases very slightly with age, but apparently throughout life remains just a little greater than the medial length. The rostral projection is acute and usually bears a few spinules; it is downbent, and is not visible in dorsal view (in the adult it is

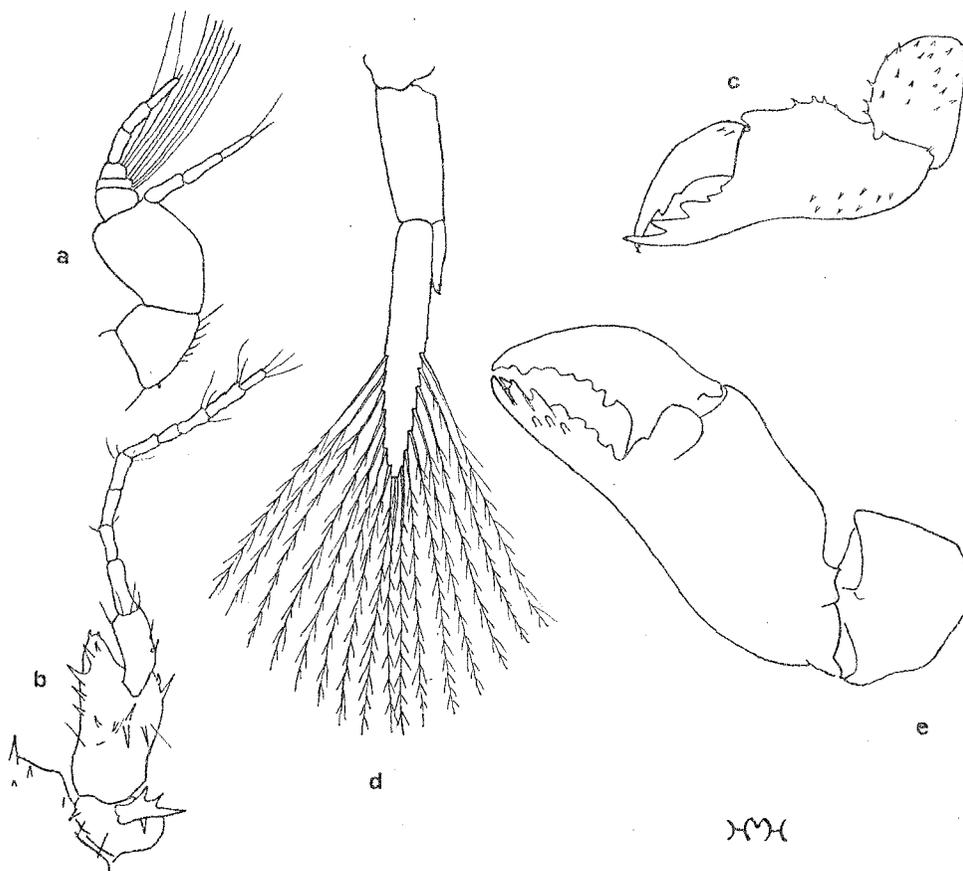


Fig. 16. *Dromidiopsis excavata*. Brood juvenile; a and b, first and second antennae ( $\times 40$ ); c, first leg ( $\times 23$ ); d, pleopod and second pleon somite ( $\times 40$ ). e, First leg of adult ( $\times 2\frac{1}{2}$ ).

blunt and is sometimes visible from above). The outer lobes of the trifold front are broadly rounded and capped with spines. The supraorbital "tooth" of the adult, and the suborbital tooth also, are similarly represented by rounded spine-capped lobes. The antero-lateral angles of the carapace are not defined as in the adult, are close to the outer orbital angle, and bear spinules. The lateral margins of the branchial regions are armed with a few rather thorn-like spines, while the frontal regions carry spinules. In the adult, the carapace has rudiments of these spines on the frontal regions only. The second antennal base, the limbs and the pleon bear more or less scattered spinules.

There are more or less irregular spines on the second antennal base, the limbs and the pleon. The latter has the telson rounded as in the adult, and pleopods are present on the second to fifth segments. The pleopods are stout and natatory, very similar to those of the brood young of *Cryptodromia octodentata*.\*

Localities: Sta. 113, 122 metres (4); Sta. 115, 128 metres (1 female with young).

\*Hale, Pr. Linn. Soc., N.S. Wales, 50, 1925, 405-413.

## DROMIA Fabricius.

## DROMIA BICAVERNOSA Zietz.

*Dromia bicavernosa* Zietz, Tr. Roy. Soc. South Austr., 10, 1888, 299, pl. xiv, fig. 5-6; Hale, Crust. South. Austr. (Brit. Sci. Guild S. Austr. Handb.), 1927, 110, fig. 107.

In 1927 the writer noted that only males of this species were known. Seven years later (early in 1934) an ovigerous female was secured from the type locality, its carapace being 52 mm. wide and 38 mm. long, and the eggs relatively very large, 2.8 mm. in diameter. This specimen bears on the back a packed mass of algae and *Posidonia*, evidently freshly gathered; but all other examples secured to date have borne no mask.

In May, 1934, a living male was received from Cape Jervis, South Australia. During life, the clothing is not "chocolate brown" as it becomes after drying or preservation in alcohol, but is brick red, so that the curious red-bordered frontal cavities are not so sharply conspicuous as in Museum material. The bare tips of the large chelae are pale salmon in life.

## PETALOMERA Stimpson.

## PETALOMERA LATERALIS Gray.

*Dromia lateralis* Gray, Zool. Misc., 1831, 40.

*Cryptodromia lateralis* Stimpson, Pr. Acad. Nat. Sci., Philad., 10, 1858, 226 (64).

*Petalomera lateralis* Borradaile, Ann. Mag. Nat. Hist., (7), 11, 1903, 301; Montgomery, Pr. Zool. Soc., 1922, 193, fig. 1-3; Rathbun, Biol. Res. "Endeavour", 5, 1923, 153 (synonymy); Hale, Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 111, fig. 108-109.

*Paradromia lateralis* Balss, Zool. Anz., 52, 1922, 178; Hale, Pr. Linn. Soc., N.S. Wales, 50, 1925, 410, pl. xl, B.

Locality: Sta. 113, 122 metres (2).

## FAMILY LATREILLIIDAE

## LATREILLOPSIS Henderson.

## LATREILLOPSIS PETTERDI Grant.

*Latreillopsis petterdi* Grant, Pr. Linn. Soc., N.S. Wales, 30, 1905, 317, pl. x, fig. 2, 2a and 2b; McCulloch, Rec. Austr. Mus., 6, 1907, 353, pl. lxxv; Rathbun, Biol. Res., "Endeavour", 5, 1923, 140, pl. xxxvi.

Locality: Sta. 115, 128 metres (1).

## Tribe BRACHYGNATHA

## FAMILY HYMENOSOMATIDAE

## HALICARCINUS PLANATUS Fabricius 1775.

*Halicarcinus planatus* Rathbun, Austr. Antaret. Exped. 1911-1914, Ser. C, 5, 1918, 3; and Bull. U.S. Nat. Mus., 129, 1925, 563, pl. cccii, fig. 5, pl. cclxxxiii (synonymy).

Localities: Sta. 5, 20 metres (9) and Coll. 567 (2); Sta. 6, 4-5 metres (on kelp, 3); Sta. 7, (between tide marks, under stones, 5); Sta. 8, 5 metres (4); Sta. 48, Coll. 1677 (shore collection, 9) Sta. 49, 2-20 metres ("colour tending to change with algal background", 27); Port Jeanne d'Arc, Royal Sound, Kerguelen; Coll. 707, 708 and 721 (in fish traps, 3); Coll. 713, 9 metres (5); Coll. 793, 761 and 792 (under stones at low tide, 15); Sta. 50, 10 metres (10); Sta. 52 (under boulders on beach, 4), 20-30 metres (4); Sta. 53, 20-30 metres (3); Sta. 54 (between tide marks, 1); Sta. 55A, 15-20 metres (1).

## FAMILY MAJIDAE

SCYRAMATHIA A. M. Edwards.

SCYRAMATHIA FULTONI Grant.

*Hyastenus fultoni* Grant, Pr. Linn. Soc., N.S. Wales, 30, 1905, 313, pl. xi, fig. 1.*Scyramathia fultoni* Rathbun, Biol. Res. "Endeavour", 1918, 14, pl. v.

Locality: Sta. 115, 128 metres (4).

CHLORINOIDES Haswell.

CHLORINOIDES SPATULIFER Haswell.

*Paramithrax spatulifer* Haswell, Pr. Linn. Soc., N.S. Wales, 6, 1882, 540; and Cat. Austr. Crust., 1882, 14.*Chlorinoides coppingeri* Miers, Rep. Zool. "Challenger", 17, 1886, 63, pl. vii, fig. 3, 3a-3b (not Haswell, 1881).*Chlorinoides spatulifer* Miers, *loc. cit.*, p. 52; Rathbun, Biol. Res. "Endeavour", 5, 1918, 24; Hale Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 137, fig. 138.

Locality: Sta. 115, 128 metres.

## FAMILY XANTHIDAE

PSEUDOCARCINUS H. M. Edwards.

PSEUDOCARCINUS GIGAS Lamarek.

*Cancer gigas* Lamarek, Hist. Anim. sans Vert., 5, 1818, 272.*Pseudocarcinus gigas* H. M. Edwards, Hist. Nat. Crust., 1, 1834, 409; McCoy, Prodr. Zool. Victoria, 2, 1889, 293, pl. clxxix, clxxx; McNeill, Rec. Austr. Mus., 13, 1920, 180; Rathbun, Biol. Res. "Endeavour", 5, 1923, 104; Hale, Crust. South Austr. (Brit. Sci. Guild S.A. Handb.), 1927, 157, fig. 158.

Two young males with the carapace 22 mm. and 33 mm. in breadth, and 16.5 and 18 mm. in length. The sculpture is much as described by Rathbun but the spines of the carapace and legs are less acute in the smaller example than in the other.

Locality: Sta. 113, 122 metres (2).