

FIG. 59. *Isocladus reconditus* n.sp., mature ♂ except E, F (immature ♂♂) and G (♀): A, whole animal; B, epistome; C, penes; D, pleopod 2, inner ramus; E-G pleon, dorsal view.

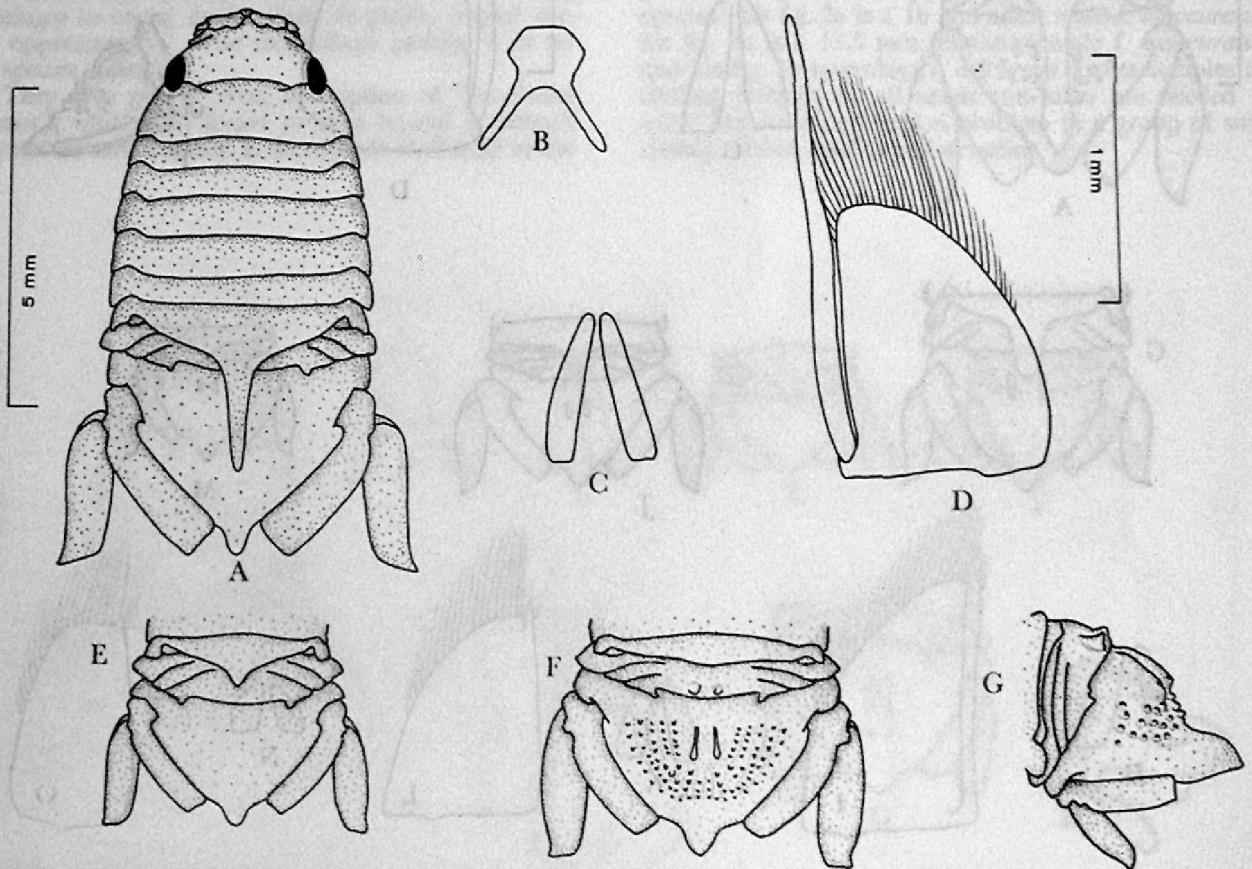


FIG. 60. *Isocladus spiculatus* n.sp., mature ♂ except E (immature ♂) and F, G (♀): A, whole animal; B, epistome; C, penes; D, pleopod 2, inner ramus; E, F, pleon, dorsal view; G, pleon, side view.

Isocladus spiculatus n.sp. (Fig. 60)

DIAGNOSIS

Isocladus with uropod outer ramus narrow-lanceolate; ramus apex moderately acute, turned outwards, has moderately sigmoid outer margin. Pereonite 7 spine in adult males without apical expansion, about half pleotelson length, lacking teeth each side of spine base.

TYPE MATERIAL

Holotype: NZOI Type No. 136 [Z2309, ♂, 9 mm].
Paratypes: NZOI Type No. P193 [Z2309, 15 juvs, 3-6 mm; 20 ♀♀, 5-8 mm; 7 ♂♂ 5-9 mm].

TYPE LOCALITY: Otago Harbour.

MATERIAL EXAMINED

Otago Harbour: [133] 2 ♀♀ (6-7 mm), 1 ♂ (9 mm); [43] 2 juvs (4-5 mm), 4 ♀♀ (6-7 mm), 4 ♂♂ (6-8 mm); [Z2309] 15 juvs (3-6 mm), 20 ♀♀ (5-8 mm), 8 ♂♂ (5-9 mm). Also: [Z2310] 40-50 spp; [Z2293] 4 spp.

OTHER RECORDS: None.

HABITAT: Sandbanks. Taken in shallow-water plankton at night.

DEPTH RANGE: Intertidal, subtidal.

Pseudosphaeroma* Chilton, 1909

Pseudosphaeroma Chilton, 1909: 653-4. Monod, 1931a: 73-8.
TYPE-SPECIES: *Pseudosphaeroma campbellensis* Chilton, 1909.

DIAGNOSIS

Hemibranchiate Sphaeromatidae with outer ramus of pleopod 3 indistinctly or incompletely divided into two segments; pleopod 4 outer ramus thickened on inner side; pleopod 5 outer ramus thickened on proximal part of inner side. Mature males have well developed appendix masculina on pleopod 2 inner ramus. Maxilliped palp last three segments have prominent lobes; female mouthparts not metamorphosed. Uropod rami well developed in both sexes. Broodplates overlap in midline. Sexes more or less similar.

KEY TO NEW ZEALAND AND SUBANTARCTIC SPECIES OF PSEUDOSPHAEROMA

Body flattened; pleotelson smooth, apex rounded with minute, median emargination; uropod outer rami with serrated inner margin and excavate posterior lateral angle **CALLIDUM**

Body convex; posterior pereonites and pleon tuberculate; pleotelson apex entire, upturned, most prominently in mature males, in which pleotelson also has transverse pair of prominent, bifid tubercles or paired longitudinal ridges, separated by a deep gap; uropod rami smooth **CAMPBELLENSIS**

*Although some authors have treated the name *Sphaeroma* and its derivatives as feminine nouns, the gender is in fact neuter, and specific names should be in agreement. What is implicit in the 1962 International Rules and Appendices was spelt out in the 1953 Copenhagen Decisions (Art. 13, item 84, no. 7(c)): "The following names are to be treated as neuter in gender. . . (ii) Names with the final term obviously derived from Greek words of neuter gender ending with the letter alpha (Examples: "-soma", "-stigma", "-oma)".

Pseudosphaeroma callidum n.sp. (Fig. 61)

DIAGNOSIS

Pseudosphaeroma with body flattened and smooth. Pleotelson apex rounded and minutely notched medially. Uropod rami equally developed, outer ramus with outer margin excavate distally, posterior margin serrate. Pleopod 3 outer ramus completely but indistinctly divided into two segments.

TYPE MATERIAL

Holotype: NZOI Type No. 133 [Sta. C758, TAL, ♂, 6 mm].
Paratype: NZOI Type No. P190 [Sta. C758, 1 ♂, 5 mm].

TYPE LOCALITY: Three Kings Rise.

MATERIAL EXAMINED

Three Kings Rise: [C758] 2 ♂♂ (5-6 mm).

OTHER RECORDS: None.

HABITAT: Shelf benthos, muddy sand.

DEPTH RANGE: 205 m (one record only).

REMARKS: Although this species is rather different in aspect from *P. campbellensis*, it has been included in *Pseudosphaeroma* because of its pleopods. Monod (1931a: 80-1) included an equally dissimilar species, *P. barnardi*, apparently mainly on the form of the outer rami of pleopods 4 and 5: "Pleopods: . . . IV . . . outer ramus . . . with a respiratory area occupying the inner half of the ramus; V . . . outer ramus . . . respiratory area occupying the inner proximal region of the ramus".

Pseudosphaeroma campbellensis Chilton, 1909 (Fig. 62)

Pseudosphaeroma campbellensis Chilton, 1909: 654-7, figs 15-16. Stephensen, 1927: 368, fig. 26b. Monod 1931a: 67-8, figs 67e, 72-3; 1931b: 25, figs 16d-e, 17. Nierstrasz, 1931: 211. Hurley, 1961: 270-1. Jansen, 1971: 270.

DIAGNOSIS

Pseudosphaeroma with convex body; posterior pereonites raised in transverse ridges, pleonite 1 tuberculate. Pleotelson apex entire, turned upwards, most prominently in mature males; also in mature males pleotelson has transverse pair of prominent, bifid tubercles, or a pair

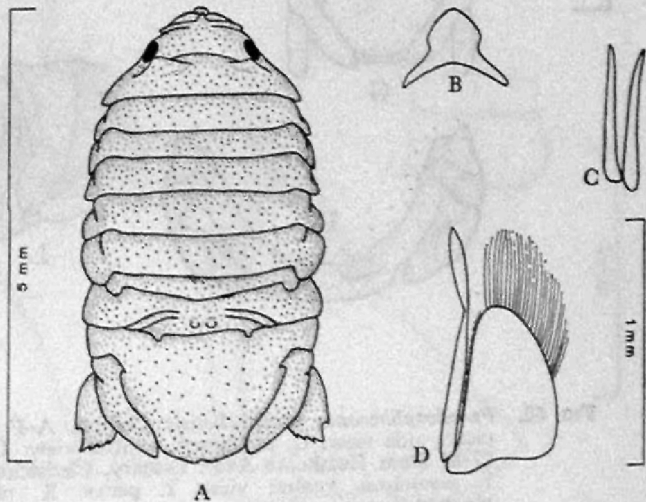


FIG. 61 *Pseudosphaeroma callidum* n.sp., mature ♂: A, whole animal; B, epistome; C, penes; D, pleopod 2, inner ramus.

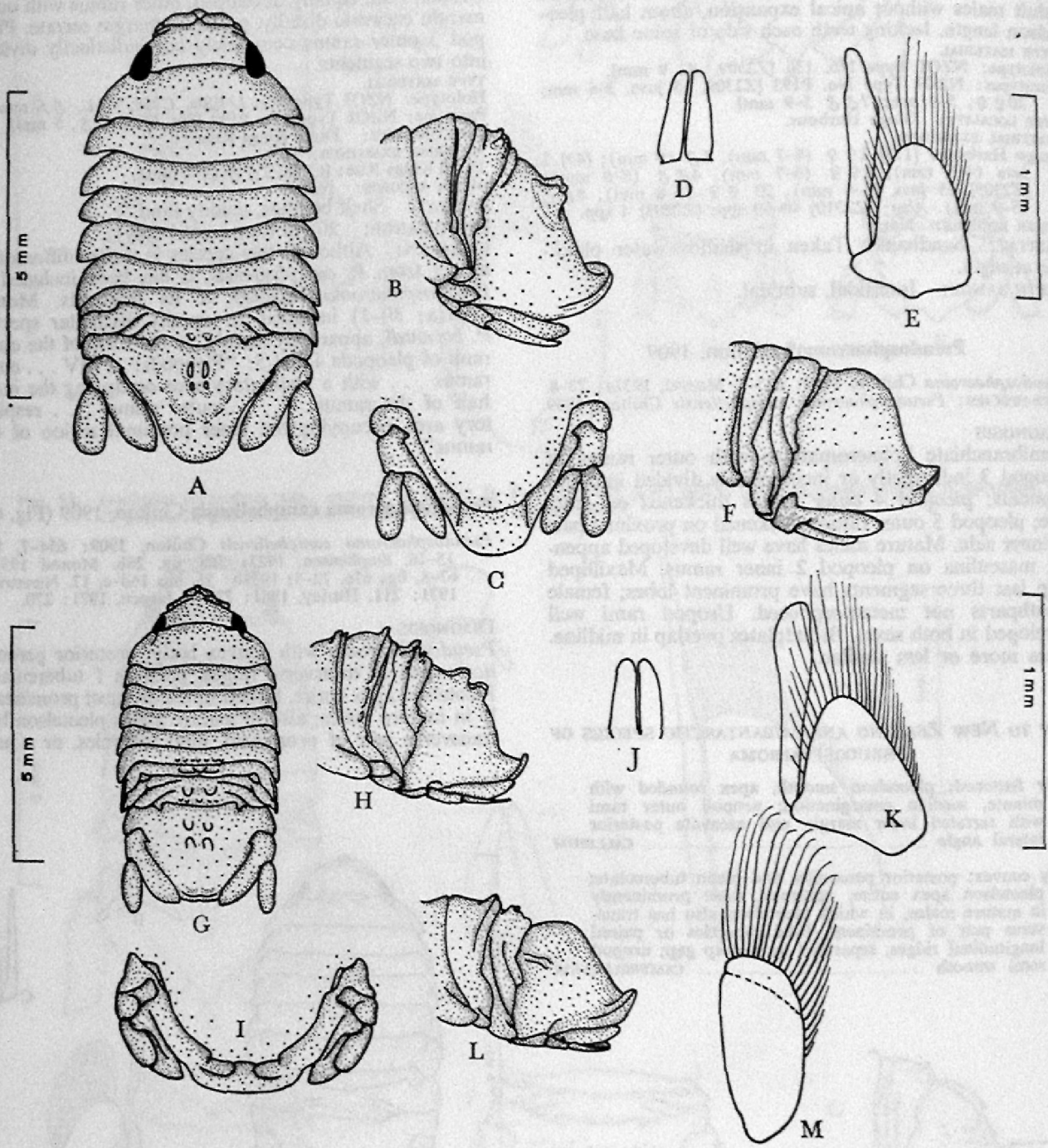


FIG. 62. *Pseudosphaeroma campbellensis* Chilton. A-F from Campbell I. A-E, mature ♂. A, whole animal; B, pleon, side view; C, pleotelson, ventral view; D, penes; E, pleopod 2, inner ramus; F, ♀, pleon, side view. G-M from Heathcote-Avon Estuary, Christchurch. G-K mature ♂. G, whole animal; H, pleon, side view; I, pleotelson, ventral view; J, penes; K, pleopod 2, inner ramus; L-M, ♀: L, pleon, side view; M, pleopod 3, outer ramus.

of longitudinal ridges divided by a variable gap, or is separated into two separate tubercles. Pleopod 3 incompletely and indistinctly divided into two segments. Uropod rami subequal, ovate, margins smooth.

TYPE LOCALITY: Perseverance Harbour, Campbell Island.

MATERIAL EXAMINED

Raglan: [E948] 2 juvs (3 mm), 4 ♂♂ (3-4 mm), 1 ♂ (4 mm).

Auckland: [E95] 1 ♀ (4 mm), 2 ♂♂ (4-5 mm).

Christchurch: [118-120] 10 juvs (2-4 mm), 16 ♀♀ (4-6 mm), 14 ♂♂ (4-5 mm). Also: [122] 6 spp; [123] about 14 spp; [124] many spp.

Milford Sound: [Gal. 604] 2 ♂♂.

Stewart I: [75, 76, 81] 9 juvs (2-5 mm), 4 ♀♀ (3-4 mm), 9 ♂♂ (4-5 mm). Also: [75, 76, 81] 15 spp; [141] 10 ♀♀ (2.5-4.5 mm), 2 ♂♂ (3.5-4.5 mm); [142] 30 spp (up to 4 mm).

Snares Is: [72, 73] 6 juvs (2-3 mm), 11 ♀♀ (3-4 mm), 3 ♂♂ (4-5 mm).

Auckland Is: [49, 53, 60] 17 juvs (2-5 mm), 17 ♀♀ (4-6 mm), 9 ♂♂ (5-8 mm). Also: [2] 4 spp; [6] about 16 spp; [12] about 20 spp; [D190] 1 sp.

Campbell I: [20] 2 ♂♂ (7-9 mm); [140] 260 ♀♀, 22 ♂♂ (Chilton 1909: 653-7).

OTHER RECORDS: Auckland Is: coll. L. Cockayne, July 1903; Port Ross, on the coast under stones at low tide, 27 Nov. 1914 (Stephensen 1927: 368).

HABITAT: Under stones, in pools, on algae; often in or near fresh water.

DEPTH RANGE: Intertidal.

REMARKS: *P. campbellensis* shows considerable variation in the shape of the appendix masculina and in the tuberculation of the pleotelson in mature males. This may indicate the existence of geographic races or sub-

species, or of separate species. The different forms nowhere overlap in the distribution of the material examined, which appears to vary continuously from the extremes seen at Campbell Island (Fig. 62A-F) and in the Heathcote-Avon Estuary (Fig. 62G-M), through a variable intermediate from Stewart Island. Until more extensive collection and more detailed study of this species or species-complex is undertaken, it seems advisable to include all the forms in the one species.

Sphaeroma* Latreille, 1802

Sphaeroma Hansen, 1905: 102-3, 115-17. Monod, 1931a: 9-20.

TYPE-SPECIES: *Sphaeroma serratum* (Fabricius, 1787).

DIAGNOSIS

Hemibranchiate Sphaeromatidae with posterior margin of pleotelson lacking notch. Pleopod 3 outer ramus unsegmented. Maxilliped palp last three segments with poorly developed or rudimentary lobes. Pereopods 1-3 with long, plumose setae on segments 3-4. Mature males - pleopod 2 inner ramus has well developed appendix masculina. Broodplates overlap in midline. Sexes similar, no metamorphosis of mouthparts in female.

*See footnote to *Pseudosphaeroma*, p. 67.

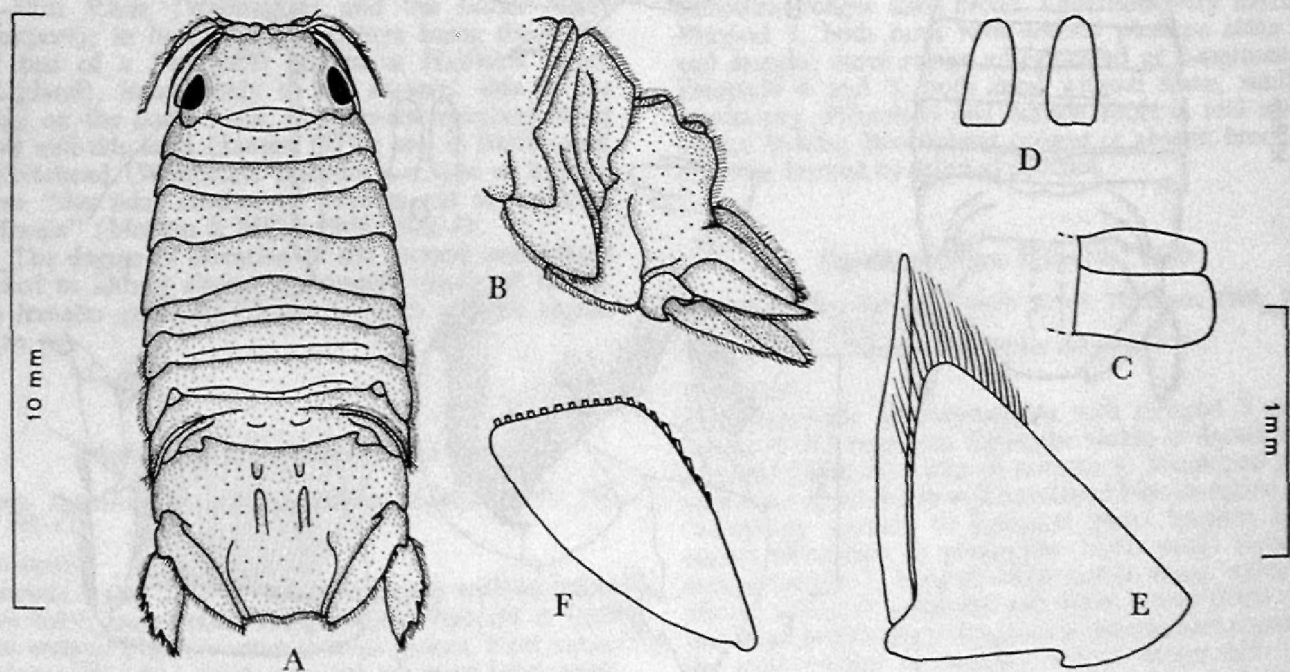


FIG. 63. *Sphaeroma laurensi* n.sp., mature ♂: A, whole animal; B, pleon, side view; C, mandible, incisor process; D, penes; E, pleopod 2, inner ramus; F, pleopod 3, outer ramus (without setae).

KEY TO NEW ZEALAND AND SUBANTARCTIC SPECIES OF
SPHAEROMA

Pleotelson with longitudinal row of 4-5 tubercles each side of midline, apex broadly rounded; mandible incisor processes formed by large, central tooth with small tooth each side QUOYANUM

Pleotelson with longitudinal ridge each side of midline, end margin concave each side of median apex; mandible incisor processes formed by two very large, broad teeth LAURENSI

Sphaeroma laurensi n.sp. (Fig. 63)

DIAGNOSIS

Sphaeroma with posterior margin of pleotelson concave each side of median apex, longitudinal ridge each side of pleotelson midline. Uropod rami of equal length, narrow-lanceolate, outer serrate with four teeth on outer margin (excluding apex). Mandible incisor processes with two large blunt teeth.

TYPE MATERIAL

Holotype: NZOI Type No. 134 [E982, ♂, 10 mm].

Paratypes: NZOI Type No. P191 [E982, 4 juvs, 1 ♀].

TYPE LOCALITY: Gisborne.

MATERIAL EXAMINED

Gisborne: [E982] 4 juvs (5-6 mm), 1 ♀ (10 mm), 1 ♂ (10 mm).

OTHER RECORDS: None.

HABITAT: Among algae.

DEPTH RANGE: Intertidal.

REMARKS: This species is named after Dr J. L. Barnard, who collected the specimens.

Sphaeroma quoyanum Milne Edwards, 1840 (Fig. 64)

Sphaeroma Quoiana Milne Edwards, 1840: 206.

Sphaeroma quoyanum (and *quoyana*). Heller, 1868: 137-8. Chilton, 1912: 134; 1919: 11-15, fig. 12. Nierstrasz, 1917: 105-6, figs 38-9; 1931: 192. Paradise, 1926: 319, pl. 42. Hale, 1929: 273-4, figs 270-1. Hurley, 1956: 717; 1961: 269. Morton & Miller, 1968: 240, 396, 403, 538, figs 82.3, 149. Jansen 1971: 270.

Sphaeroma verrucauda? White [sic]. Dana, 1853: 779, pl. 52, fig. 6. Miers, 1876: 111. Hutton, 1904: 263. Hansen, 1905: 116.

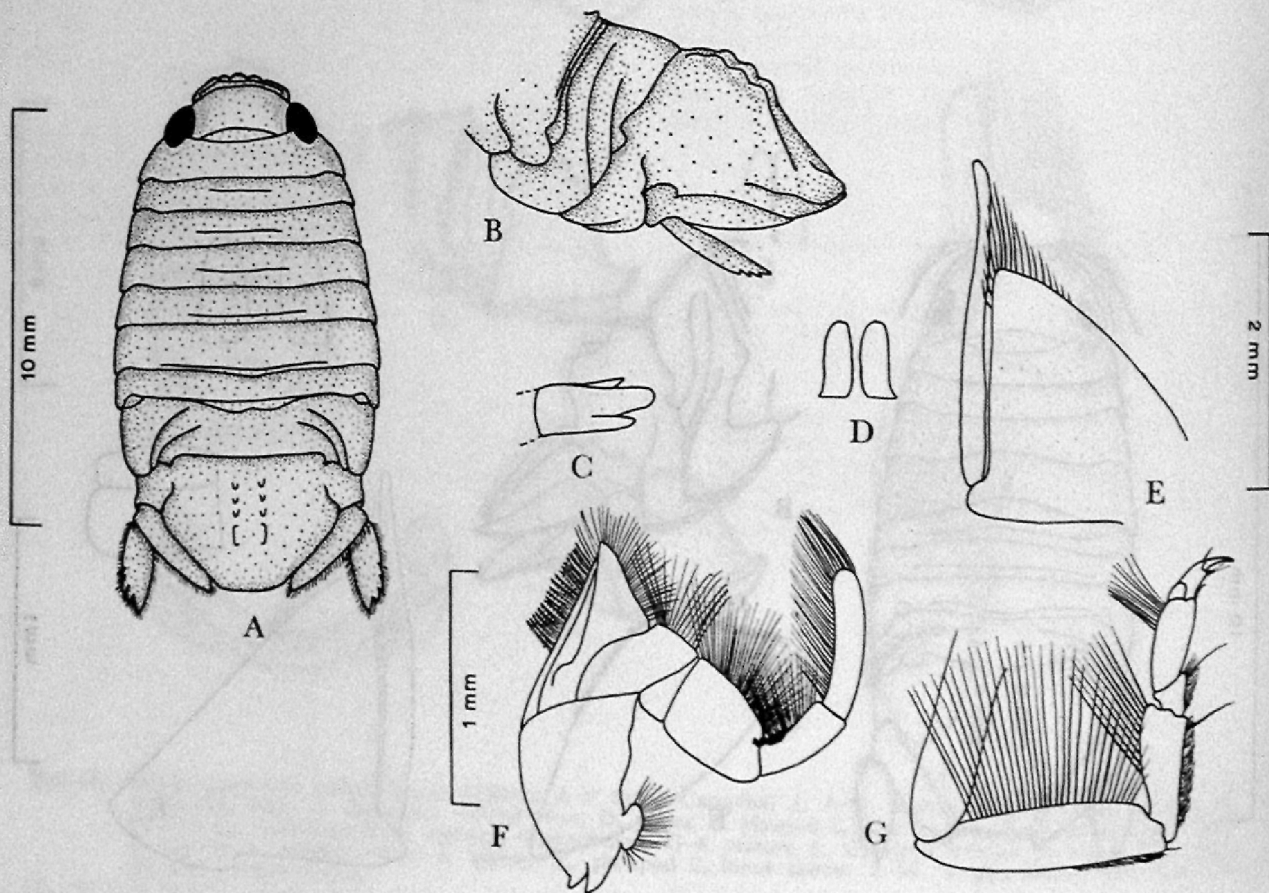


FIG. 64. *Sphaeroma quoyanum* Milne Edwards, mature ♂: A, whole animal; B, pleon, side view; C, mandible, incisor process; D, penes; E, pleopod 2, inner ramus; F, maxilliped; G, pereopod 1.

DIAGNOSIS

Sphaeroma with granulate body; pleotelson apex broadly rounded, without notches, but longitudinal row of 4-5 tubercles each side of midline. Uropod rami of equal length, inner ramus fixed, narrow-lanceolate, outer ramus serrated with 3-4 teeth on outer margin (excluding apex). Mandible incisor process a large, central tooth with small, short tooth each side (often eroded in specimens from sandstone).

TYPE LOCALITY: Coasts of Tasmania.

MATERIAL EXAMINED

Auckland: [126] 6 juvs (4-9 mm), 17 ♀♀ (10-13 mm), 9 ♂♂ (11-13 mm); [42] 1 ♀ (13 mm). Also: [42] 2 spp.

Wellington: [36] 2 juvs (6-11 mm), 3 ♀♀ (14 mm), 3 ♂♂ (8-13 mm).

Westport: [22303] 11 ♀♀ (11-15 mm), 11 ♂♂ (11-16 mm).

OTHER RECORDS: Tasmania (Milne Edwards 1840); Sydney (Heller 1868, Paradise 1926); Victoria (Chilton 1912); Bay of Islands (Dana 1853); Hobsons Bay, Auckland (Miers 1876); Narrow Neck, Auckland (Chilton 1919); Hawkes Bay (Chilton 1919); Wanganui (Chilton 1919); Kenepuru and Queen Charlotte Sounds (Chilton 1919); Beachhaven and Riverhead, Waitemata Harbour (Morton & Miller 1968).

DEPTH RANGE: Intertidal.

HABITAT: Burrows in soft sandstone, mudstone, papa rock, and timber, usually between tide marks.

REMARKS: Morton & Miller (1968: 240) describe *S. quoyanum* as boring short pits above mean tide level, and lying at the end of the shaft rolled into a compact ball. The pits also provide homes for many secondary occupants, including *Modiolus*, *Onchidella*, anemones, polychaetes, and gastropods.

Paradise (1926) believed *S. quoyanum* was most prolific where the salinity of the water was periodically reduced by large quantities of rainwater and mud, and noted, "the more the sunlight is excluded from any portion of an embankment, the more damage will be done there by this crustacean". This is borne out in the New Zealand situation: occurrences are noted in mud flats (Wanganui); 1.6 km upstream from the mouths of the Hutt River (Wellington) and the Buller River (Westport); in burrows in sandstone lining the banks and bed of a freshwater stream at Hatfields Beach (Auckland), immediately to the seaward side of the bridge on the north bank, the greatest numbers being above mid-tide level (Jansen 1971); and in friable rock at Riverhead (Waitemata Harbour), a type of locality where "the tidal reaches of streams cut across hard platforms" (Morton & Miller 1968: 402-4).

The degree of serration of the uropod varies from marked to almost absent, apparently unrelated to sex. The females generally appear to have a more rugose telson.

Subfamily PLATYBRANCHIATINAE

Group *Sphaerominae platybranchiatae* Hansen, 1905: 101, 109-15.

DIAGNOSIS

Pleopods 4 and 5, both rami completely without transverse folds, outer rami unsegmented. Pleopod 4, both rami without plumose setae in most genera, inner ramus at most with a few short, terminal, plumose setae, outer ramus rarely with numerous long, plumose setae (*Tecticeps*). Pleopod 5, both rami without plumose marginal setae, outer ramus with squamiferous protuberances in

low relief, in rare instances lacking spines or even missing altogether. Pleopod 3 sometimes has plumose marginal setae on both rami, as in pleopod 2, sometimes has inner ramus nearly naked, sometimes both rami naked. Pleopod 1 inner ramus rarely broad, usually narrow. (Pleotelson rounded, or acute.)

REMARKS: Hansen (1905) divided the *Platybranchiatae* into four sections: *Campecopeini*, *Monolistrini*, *Cassidinini*, and *Ancinini*. These should now be considered as tribes.

Cassidina is the only recorded New Zealand platybranchiate. *Paravireia*, which was originally considered by Chilton as resembling *Vireia*, is excluded from *Sphaeromatidae* by having more than two free, separate pleon segments. (Of the two species of *Vireia* listed by Hansen (1905), *Vireia burgunda* (Dollf) is now treated by European workers as *Caecosphaeroma (Vireia) burgundum*, and *Vireia berica* (Fabiani) as *Monolistra (Typhlosphaeroma) bericum*—cf. Daum, 1954; Sket, 1964, 1965).

Tribe Cassidinini Hansen, 1905

Section *Cassidinini* Hansen, 1905: 110, 112-13.

DIAGNOSIS

Body greatly flattened. Pereon strongly expanded; margins of pereon, anterior part of pleon, uropods, and sometimes the two proximal segments of antenna I forming a nearly continuous border with a more or less continuous fringe of short, protruding hairs. Eyes well developed. Antenna I, first two segments of peduncle with their anterior part protruding so that almost their whole length, at least, is visible from above, frequently greatly expanded in front, depressed. Mandibles, molar process well developed. Anterior legs without prehensile hand. Pleopods, inner ramus of pleopod 1 at least somewhat longer than broad, sometimes very narrow. Pleopod 3, both rami with several plumose setae on end margin; outer ramus unsegmented or 2-segmented. Pleopods 4 and 5, both rami without setae, similar, respiratory. Pleotelson end margin short, a real notch always lacking. Broodplates present or absent; brood in chamber formed by external pouches.

Cassidina Milne Edwards, 1840

Cassidina Milne Edwards, 1840: 223-4. Thomson, 1889: 263. Stebbing, 1900: 558-62.

TYPE-SPECIES: *Cassidina typa* Milne Edwards, 1840.

DIAGNOSIS

Platybranchiate *Sphaeromatidae* with pleopod 3 outer ramus of two segments. Epistome visible in dorsal view between expanded bases of antenna I. Maxilliped palp segment 5 produced in well developed lobe alongside and resembling segment 6. Epimeral plates forming large lateral extensions of pereonites. Head partly recessed into pereonite 1. Uropod outer ramus small, movable, almost vestigial; peduncle and inner ramus fused into one large article lying alongside pleotelson and completing oval outline of animal. Mature males with well developed appendix masculina on pleopod 2 inner ramus. Female mouthparts not metamorphosed. Broodplates present, overlapping in midline. Sexes similar.