

TRANSACTIONS
OF THE
ROYAL SOCIETY of NEW ZEALAND
ZOOLOGY

VOL. 1.

No. 2.

JUNE 26, 1961.

[Continued from Volume 88, Part 4.]

Some Isopoda from the Chatham Islands, Including Two
Species of *Cirolana* New to New Zealand Waters

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[Received by Editor, May 5, 1960; read by title before meeting of Biology Section, Wellington Branch, July 7, 1960.]

Summary

DESCRIPTIVE notes are given for eight species of marine isopods from the Chatham Islands. Two species of *Cirolana* are new for the Islands and for New Zealand waters.

INTRODUCTION

PROFESSOR H. BAUMANN, of the Ubersee-Museum, Bremen, recently sent to me some unnamed marine isopods collected by Dr. H. H. Schauinsland, mainly in 1896 and 1897. The collection includes material from Brazil, Hawaii, Hong Kong, and Cook Strait, New Zealand, but most of the specimens were collected on the Chatham Islands. The last group of Islands is of particular interest owing to its isolated position some 560 miles east of New Zealand and some aspects of its flora and fauna have recently been discussed by Knox (1954, 1957). The most recent list of isopods from the Chatham Islands is given by Young (1929), and it includes most of the species represented here. There are, however, two species of *Cirolana* in the collection which appear to be new to the Islands and to New Zealand waters. Moreover, since there are few descriptive notes with the records of isopods from the Chatham Islands (see Chilton, 1905, 1925), and since many of the original descriptions are inadequate, it seems worthwhile to give brief descriptive notes of the species represented here.

SPECIES LIST

The species represented in the collection from the Chatham Islands are as follows:

FLABELLIFERA: SPHAEROMATIDAE

Exosphaeroma gigas (Leach)

E. chilensis (Dana)

Isocladus spiniger (Dana)

I. armatus (Milne-Edwards)

Dynamella huttoni (Thomson)

FLABELLIFERA: CIROLANIDAE

Cirolana arcuata Hale

Cirolana australiense n.sp.

ASELLOTA

Iais pubescens (Dana)

The only species recorded by Young (1929) from the Chatham Islands which are not represented in the present collection are *Idotea peronii* Milne-Edwards, *Paridotea unguolata* Pallas and three terrestrial forms. On the other hand, neither *Cirolana arcuata* nor *C. australiense* has previously been recorded from the Chatham Islands or from the mainland of New Zealand. The occurrence of *Iais pubescens* in the Chatham Islands' collection is of particular interest since it was listed amongst some "species inquirendae" for the Islands by Menzies and Barnard (1951) and by Hurley (1956).

DESCRIPTIVE NOTES

Exosphaeroma gigas (Leach)

Spheroma gigas (Leach). Dana, 1852.

Exosphaeroma gigas (Leach). Stebbing, 1900.

Specimens refer to the genus *Exosphaeroma* Stebbing, following Hansen (1906). Pleopods 4 and 5 each have a fleshy endopod with deep transverse folds and an exopod of two joints. Further, the telson has no terminal notch, the joints of the maxilliped palp are lobed, pereopods 1-3 have no natatory setae, pleopod 3 is two-jointed, the last thoracic segment has no medial spine, and the telson is not acutely produced.

The material agrees closely with the descriptions of the species given by Dana (1852) and Stebbing (1900). The telson is fairly sharply pointed and the uropods hardly project beyond the posterior border of the telson (Fig. 1a), though these features are not so evident in the figures given by Stebbing.

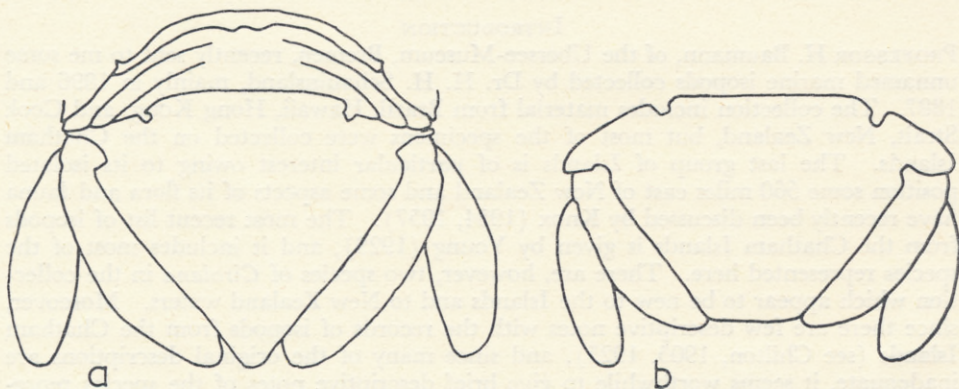


FIG. 1.—Adult male telson and uropods of (a) *Exosphaeroma gigas* and (b) *E. chilensis*.

MATERIAL. Thirty-six specimens, the largest male measuring 17 mm in length, the largest female measuring 13.5 mm.

DISTRIBUTION. The species is recorded from rock pools in the Chatham Islands by Chilton (1925), and it is stated to be common there by Young (1929). Chilton (1925) records it as "common on all sub-antarctic islands".

Exosphaeroma chilensis (Dana)

Spheroma gigas var. *chilensis* Dana, 1852

Exosphaeroma chilensis (Dana). Young, 1929.

Following Hansen (1906) the genus is the same as for the previous species. The specimens agree with Dana's (1852) description of the type material and it may be compared with *E. gigas* as follows: *Body* relatively broader than that of *E. gigas*.

Sides of head and first thoracic segment expanded laterally so that, unlike *E. gigas*, the eyes are not visible from below. *Appendix masculina* similar to that of *E. gigas*, of similar size and extending for about $\frac{1}{4}$ of its length beyond the second pleopod in the adult male. *Telson* with posterior border blunt and with uropods projecting slightly beyond the telson (Fig. 1b).

MATERIAL. Two specimens: one male, 14 mm in length, and one juvenile, 6 mm in length.

DISTRIBUTION. The type material came from Chile (Dana, 1852). On the Chatham Islands (and presumably elsewhere) the species has been confused with *E. gigas*; Young (1929) records only one or two specimens from the Islands.

Isocladus spiniger (Dana)

Sphaeroma spinigera Dana, 1852

The genus *Isocladus* is fairly close to *Exosphaeroma* (see Hansen, 1906) and present material agrees with the description given above for the latter genus except that the last thoracic has a backwardly directed medial spine and the telson is acutely produced, with a pronounced groove on the underside of the projection. At the specific level specimens agree in general with the original description (Dana, 1852), though this figures only a ventral view of the abdomen. The descriptions of this species and *I. armatus* appear to be in need of some revision, particularly since Tattersall (1921) included them both under one specific name, *Isocladus armatus* (see below).

MATERIAL. Nine specimens, all male, measuring 7.5–16.0 mm in length.

DESCRIPTION: *Body* appearing wider posteriorly than *I. armatus* owing to the relatively larger size of the uropods. *Thorax* of adult males with a median, long, narrow, "arrow-headed" spine projecting backwards from the last thoracic segment and extending almost to the tip of the telson (Fig. 2a). In smaller males, the median spine may be shorter and is not "arrow-headed". Also in smaller males, there is a small tooth on each side of the base of the median spine about half way towards the lateral borders of the segment (Fig. 2b). *Peraeopods* of adult males all bearing dense pads of spinous hairs on the more distal segments (Fig. 2c). *Appendix masculina* projecting well beyond the inner ramus of the second pleopod (Fig. 2d); similar in males of body length 8 and 16 mm, respectively. *Uropods* large and well developed; projecting well beyond the tip of the telson in small specimens (Fig. 2b) and just beyond in large males (Fig. 2a).

DISTRIBUTION. New Zealand (Dana, 1852); Chatham Islands (Young, 1929). Material which closely resembles this species is recorded from Australia as *Isocladus howensis* (Baker, 1926).

Isocladus armatus (Milne-Edwards)

Sphaeroma armata Milne-Edwards, 1840

Sphaeroma armata (Milne-Edwards). Dana, 1852.

? nec *Isocladus armatus* Tattersall, 1921.

The generic diagnosis is as for the previous species. At the specific level the specimens agree with the descriptions given by Milne-Edwards (1840) and Dana (1852) but they conflict with Tattersall's description of this species.

MATERIAL. Nine specimens: 6 females, 6.0–12.5 mm in length, and 3 males, 7.5–13.5 mm in length.

DESCRIPTION. *Body* appearing narrower posteriorly and less flattened than *I. spiniger*. *Thorax* of males having a blunt spine projecting backwards from the posterior border of the last thoracic segment (Fig. 2e); spine relatively shorter in small males and present only as an obtuse point in adult females. *Peraeopods* of adult males with pads of spinous hairs much less dense than in *I. spinigera* (Fig. 2f). *Appendix masculina* apparently not separate from the endopod of the second pleopod in the two undamaged males in the collection (body length 7.5 and 13.5 mm respectively) and hardly projecting beyond the pleopod (Fig. 2g). *Abdomen* more domed than in *I. spiniger*; small specimens particularly with two small dorsal protuberances. *Uropods* shorter and narrower than in *I. spiniger* of smaller size and not projecting beyond the posterior border of the telson in any of the material (Fig. 2e).

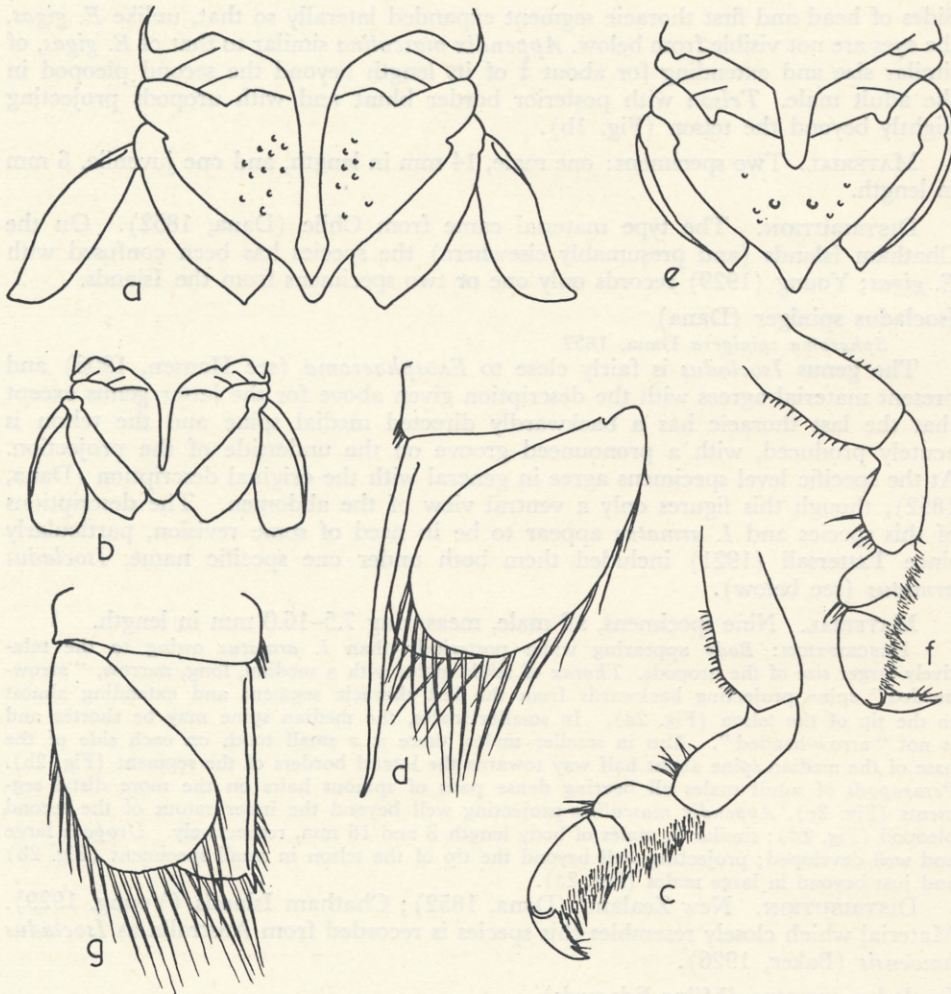


FIG. 2.—*Isocladus spiniger*, male, 16 mm in length: (a) posterior part of body, from above, (c) Peraeopod 1, and (d) pleopod 2 and appendix masculina, (b) dorsal view of posterior part of a small male, 8 mm in length.

Isocladus armatus, male, 13.5 mm in length: (e) posterior part of body, from above, (f) peraeopod 1 and (g) pleopod 2 and appendix masculina.

DISCUSSION. Tattersall (1921) considers that *I. armatus* and *I. spiniger* constitute a single species. He suggests that sexual and developmental differences have led to confusion and that “*armatus*” males are really young males of the “*spiniger*” form. This cannot be strictly true because in the present collection the smallest “*spiniger*” males are equal in size to the smallest “*armatus*” males and each form is clearly distinguishable. Small male “*spiniger*”, unlike small and large “*armatus*” males, possess a small tooth on each side of the base of the median spine on the last thoracic segment (Fig. 2b). Males of the “*spiniger*” form range from 7.5–16.0 mm in length and those of “*armatus*” from 7.5–13.5 mm.

It is still possible, however, that the two forms do belong to the same species, particularly since females of only one form (“*armatus*”) are present in the collec-

tion. Moreover, Dr. D. E. Hurley informs me that he is unable to recognize two forms of females amongst material in his possession which includes both "armatus" and "spiniger" males. If there is only one species, then the males are dimorphic, with "armatus" males perhaps being non-breeding or inter-sexes. The latter suggestion might be borne out by the presence of only rudimentary secondary sexual characters in the "armatus" male form. Here the appendix masculina is not separate from pleopod 2 (Fig. 2g) and would appear to be non-functional, the pads of spinous hairs on the pereopods (Fig. 2f) are less dense than in the "spiniger" form and the terminal thoracic spine is small. In addition, the uropods of male "armatus" do not project beyond the telson; their appearance resembles that of female "armatus" and not that of male "spiniger". For convenience the two forms are here regarded as separate species, but it is clear that with more material they would be worthy of further investigation.

Dynamella huttoni (Thomson)

Dynamena huttoni Thomson, 1879.

Dynamella huttoni (Thomson). Young, 1929.

Following Hansen (1906) specimens refer to the genus *Dynamella* in the eubranchiate Sphaerominae. Both rami of pleopods 4 and 5 are fleshy and have transverse folds. In addition, pleopod 5 is 2-jointed and pleopods 3 and 4 are not so. Finally, the basal joint of the antennule is not expanded into a free plate and the uropod rami are subequal in length. There are no adult males and females in the collection so the similarity of the sexes cannot be confirmed. However, the presence of an appendix masculina on pleopod 2 of a small male, together with the similarity in appearance of the two rami of each uropod, preclude related genera in Hansen's key. The original figure of this species was unfortunately badly reproduced and the description (Thomson, 1879) is rather limited.

MATERIAL. Four specimens: 2 juveniles, 1 small male (6.7 mm in length) and 1 immature female (8.0 mm in length).

DESCRIPTION. *Body* smooth in small specimens (Fig. 3a) but surface granular in the largest (Fig. 3b). *Eyes* bulbous, particularly in the large specimen. *Antennule* with 3-jointed peduncle (Fig. 3f). *Maxilliped palp* with lobes on joints 1, 2 and 3 (Fig. 3e). *Pereopods* with the small spine on each dactylus bearing a pair of accessory, flange-like spines (Fig. 3c, d). *Pleopods* 1, 2 and 3 with setae; 4 and 5 without. Endopod of first pair thickened medially, but thin where overlapped by exopod (Fig. 3g). Young male with *appendix masculina* projecting well beyond the endopod of pleopod 2 (Fig. 3h). *Abdomen* composed of 4 segments, the last three of which are partially fused. *Telson* triangular and separated from last three abdominal segments by a complete suture. Telson sides extend ventrally towards each other to form a tube, the sides of which project posteriorly as teeth in small specimens (Fig. 3a). In the largest specimen, a young female, the sides of the tube coalesce so that a hole is formed on the upper surface of the telson (Fig. 3b).

DISTRIBUTION. Chatham Islands (Young, 1929); all New Zealand coasts (Chilton, 1906, as *Cymodoce huttoni*). The Schauinsland collection includes material from Cook Strait, as well as from the Chatham Islands. Material which appears to resemble this species is recorded from New South Wales as *Dynamella rubida* Baker (Baker, 1926).

Cirolana arcuata Hale, 1925

One male is present in the Chatham Islands' collection. It agrees closely with the species described from Australia by Hale (1925), though the shape of the frontal lamina does differ slightly from Hale's description.

DESCRIPTION. *Body* about three times longer than greatest width (Fig. 4a). *Antennule* extending beyond the peduncle of the antenna, reaching halfway along the first thoracic segment (Fig. 4a, h). *Antenna* reaching posterior margin of 3rd thoracic segment (Fig. 4a). *Eyes* fairly large. Ventral surface of head with *frontal lamina* not pentagonal, much longer than wide, with anterior border somewhat rounded and sides narrowing posteriorly (Fig. 4e). *Maxilliped* narrow and elongate. *1st pereopod segment* embracing base of head, with anterolateral corner obtusely rounded (Fig. 4b). *Pereopods* stout, armed with spines and setae.

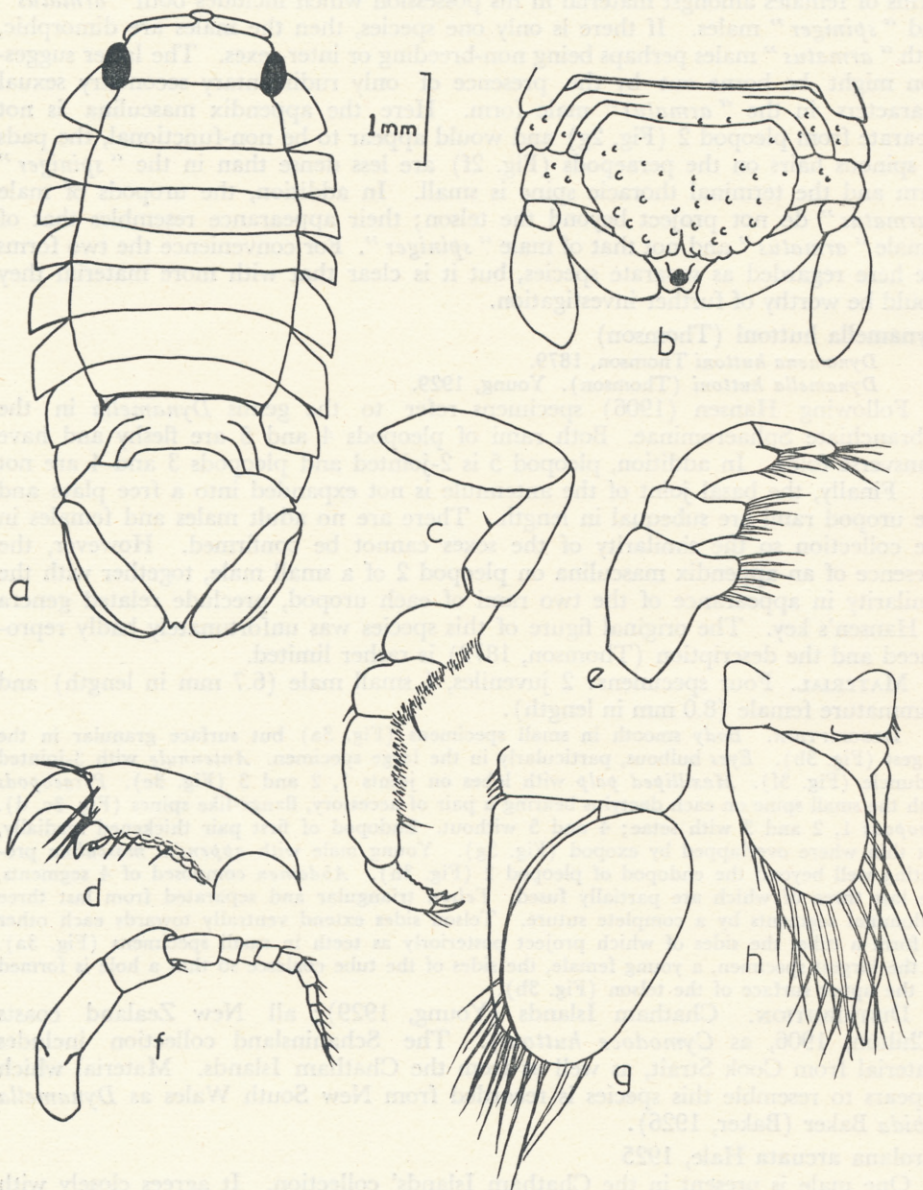


FIG. 3.—*Dynamella huttoni*, small male, 6.7 mm in length: (a) dorsal view of whole animal, (c) peraeopod 2, (d) tip of peraeopod 2, (e) maxilliped palp, (f) antennule, (g) pleopod 1 and (h) pleopod 2 and appendix masculina. (b) Dorsal view of abdomen of a larger specimen (an immature female).

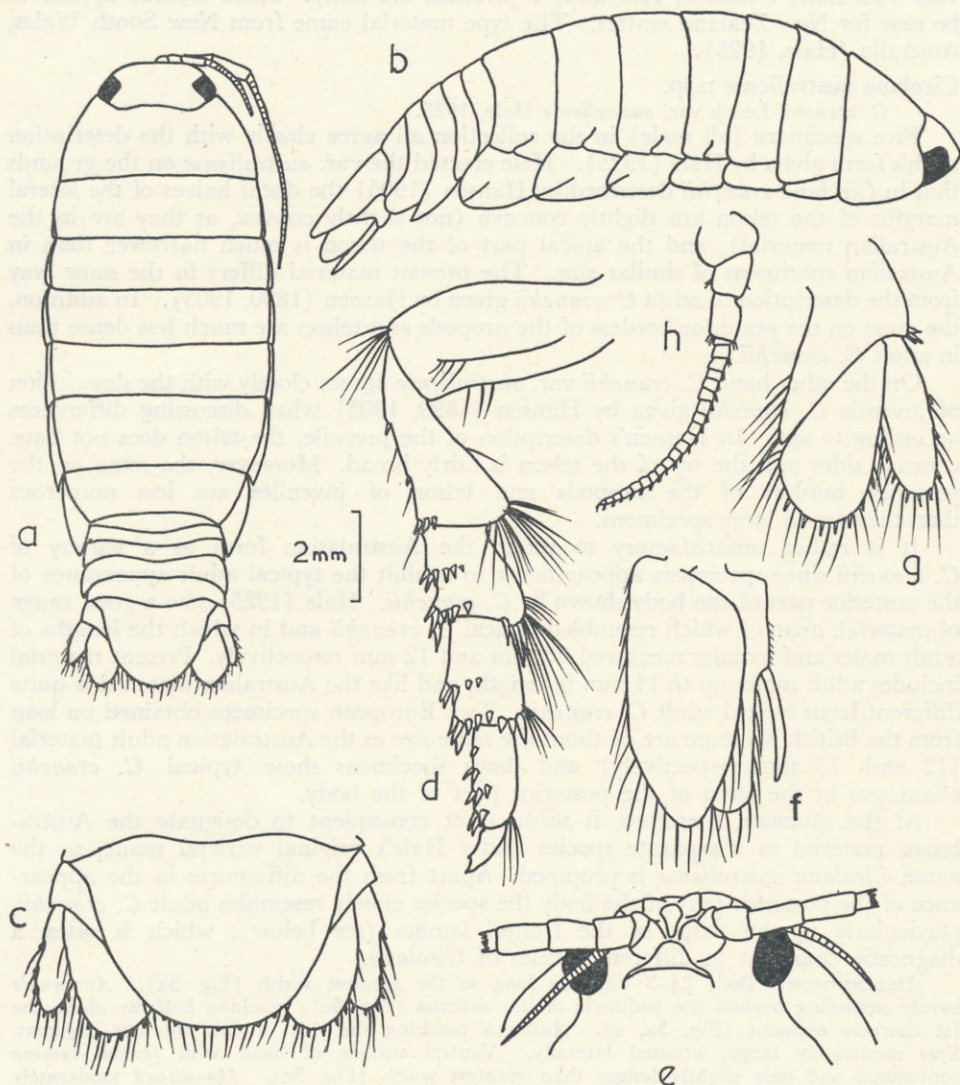


FIG. 4.—*Cirolana arcuata*, male, 13.5 mm in length: (a) dorsal view of whole animal, (b) lateral view, (c) telson, (d) peraeopod 7, (e) ventral view of head, (f) pleopod 2 and appendix masculina, (g) uropod and (h) antennule.

7th peraeopod with basal segment setose on antero-distal angle; only slightly setose on posterior and lateral borders (Fig. 4d). *Abdomen* with all five segments and telson completely visible; *telson* with posterior border broadly rounded, beset with small spines and longer setae (Fig. 4c). *Uropods* extending slightly beyond posterior border of telson. Basal segment with spines on outer angle; inner angle produced, extending for more than half the length of the endopod. Exopod narrow and sub-oval in shape; endopod longer, wider and similarly rounded posteriorly; both with spines and setae on posterior border (Fig. 4g). *Appendix masculina* fairly blunt and not reaching posterior border of inner ramus of 2nd pleopod (Fig. 4f).

MATERIAL. One male (body length 14.5 mm) from Red Bluff, Chatham Island. Also in the Schauinsland collection from Cook Strait, New Zealand (5 males, length

10.5–14.5 mm; 1 female, 10.5 mm; 1 juvenile, 8.0 mm). These records appear to be new for New Zealand waters. The type material came from New South Wales, Australia (Hale, 1925).

Cirolana australiense n.sp.

C. cranchii Leach var. *australiense* Hale, 1925.

Five specimens (all male) in the collection all agree closely with the description of this form given by Hale (1925). Hale erected the var. *australiense* on the grounds that in *Cirolana cranchii* described by Hansen (1905) the distal halves of the lateral margins of the telson are slightly concave (not slightly convex, as they are in the Australian material), and the apical part of the telson is much narrower than in Australian specimens of similar size. The present material differs in the same way from the description of adult *C. cranchii* given by Hansen (1890, 1905). In addition, the setae on the posterior borders of the uropods and telson are much less dense than in adult *C. cranchii*.

On the other hand *C. cranchii* var. *australiense* agrees closely with the description of juvenile *C. cranchii* given by Hansen (1890, 1905) when discussing differences according to age. In Hansen's description of the juvenile, the telson does not have concave sides and the tip of the telson is fairly broad. Moreover, the setae on the posterior borders of the uropods and telson of juveniles are less numerous than they are in large specimens.

It is rather unsatisfactory to retain the Australasian form as a variety of *C. cranchii* since specimens appear never to exhibit the typical adult appearance of the posterior part of the body shown by *C. cranchii*. Hale (1925) saw a good range of material, none of which resembled typical *C. cranchii* and in which the lengths of adult males and females measured 13 mm and 12 mm respectively. Present material includes adult males up to 14 mm in length, and like the Australian material is quite different from typical adult *C. cranchii*. Two European specimens obtained on loan from the British Museum are of about the same size as the Australasian adult material (12 and 13 mm respectively) and both specimens show typical *C. cranchii* characters in the form of the posterior part of the body.

At the moment, therefore, it seems most convenient to designate the Australasian material as a separate species under Hale's original varietal name, so the name *Cirolana australiense* is proposed. Apart from the differences in the appearance of the posterior part of the body the species closely resembles adult *C. cranchii*, particularly in the shape of the frontal lamina (see below), which is often a diagnostic character in different species of *Cirolana*.

DESCRIPTION. Body $2\frac{1}{2}$ –3 times as long as the greatest width (Fig. 5a). *Antennule* hardly extending beyond the peduncle of the antenna (Fig. 5e); reaching halfway along the 1st thoracic segment (Fig. 5a, e). *Antenna* reaching the 4th or 5th thoracic segment. *Eyes* moderately large; situated laterally. Ventral surface of head with *frontal lamina* pentagonal and only slightly longer than greatest width (Fig. 5e). *Maxilliped* moderately stout. *1st peraeon segment* embracing base of head to a considerable extent, with anterolateral corner acute (Fig. 5b). *Peraeopods* fairly slender; last four pairs armed with spines but not setae (Fig. 5d). *Abdomen* with 1st segment concealed beneath last thoracic segment; only segments 2–5 and telson visible. Medial length of 5th thoracic segment long, owing to the recurvature forwards of the posterior border of the 4th segment (Fig. 5a). *Telson* smooth, with lateral borders almost straight, converging to a fairly narrowly rounded apex (appearing rather short in Fig. 4 owing to the flexure of the body when the preserved specimen was drawn). *Uropods* extending beyond the posterior border of the telson. Basal segment with inner angle produced, reaching halfway along the endopod. Endopod and exopod each somewhat pointed and slightly bifid at the tip (Fig. 5g). Telson and uropods armed with setae and spines. *Appendix masculina* slender, narrowing at the tip, and extending for about $\frac{1}{4}$ of its length beyond the inner ramus of pleopod 2.

MATERIAL. Five males (body length 6.0–14.0 mm) in the Schauinsland collection all come from the Chatham Islands. This record appears to be new for New Zealand waters.

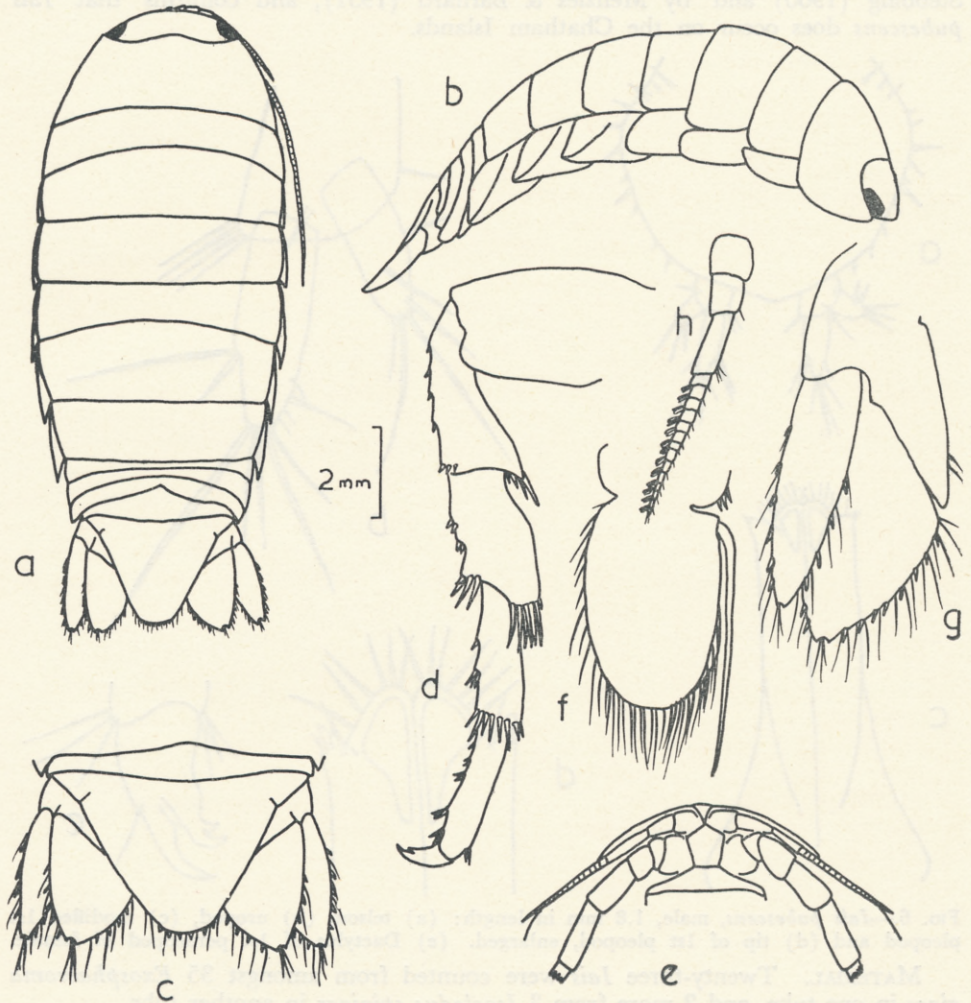


FIG. 5.—*Cirolana australiense*, male 13.5 mm in length: (a) dorsal view of whole animal, (b) lateral view, (c) telson, (d) peraeopod 7, (e) ventral view of head, (f) pleopod 2 and appendix masculina, (g) uropod and (h) antennule.

Iais pubescens (Dana)

Jaera pubescens Dana, 1852.

Iais pubescens (Dana). Stebbing, 1900.

Iais pubescens (Dana). Menzies and Barnard, 1951.

Iais is a genus of small asellote isopods which are found associated with certain sphaeroids. *I. pubescens* was recorded from *Exosphaeroma gigas* with *Isocladus spiniger* on the Chatham Islands by Chilton (1925) and Young (1927), but Menzies and Barnard (1951) suggested that these records were in need of confirmation since no descriptive notes accompanied them. More recently, Hurley (1956) has definitely confirmed only *Iais californicus* Richardson from New Zealand though he does suggest that two other species, including *I. pubescens*, may be present there. The present material agrees with the description given by

Stebbing (1900) and by Menzies & Barnard (1951), and confirms that *Iais pubescens* does occur on the Chatham Islands.

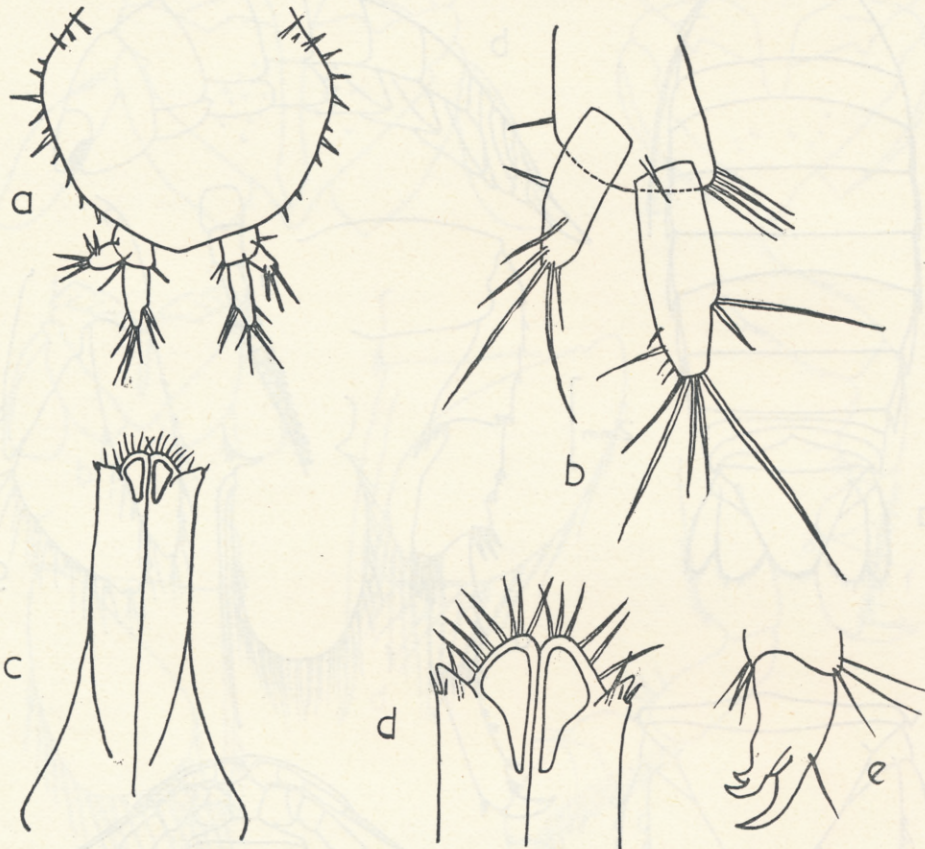


FIG. 6.—*Iais pubescens*, male, 1.8 mm in length: (a) telson, (b) uropod, (c) modified 1st pleopod and (d) tip of 1st pleopod, enlarged. (e) Dactylus of 1st pereopod of female.

MATERIAL. Twenty-three *Iais* were counted from amongst 35 *Exosphaeroma gigas* in one tube, and 2 more from 3 *Isocladus spiniger* in another tube.

DESCRIPTION. *Maxilliped* with two coupling hooks. *1st pereopod* with inferior claw of dactylus bifid (Fig. 6e). *Uropod* with exopod considerably shorter than endopod (Fig. 6a, b). *Modified 1st pleopod of male* with subapical processes diverging and with triangulate median processes (Fig. 6c, d). Specimens differ slightly from the description given by Menzies & Barnard since there are more than four marginal setae on the medial processes of the modified 1st pleopod. **Size:** The body length of 6 males averaged 1.6 mm ($\pm .3$). Four ovigerous females measured 1.5, 1.8, 1.9 and 2.4 mm respectively. The male of a pair is smaller than the female and may be recognised by the modified 4th pereopod, which is usually flexed beneath the body when the others are widespread. One female 1.5 mm long carried one young specimen .6 mm long in the brood pouch.

DISTRIBUTION. Menzies & Barnard (1951) regard *Iais pubescens* as an Antarctic circumpolar species. The present confirmed record for the Chatham Islands fills in a gap in the distribution pattern.

ACKNOWLEDGMENTS

My thanks are due to Dr. Isabella Gordon for facilities at the British Museum and for the loan of material. I am grateful also to Dr. D. E. Hurley, who has read the manuscript and offered much helpful discussion.

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