

with a marsupium they are prolonged posteriorly into wing-shaped protuberances directed medially. Each projection is provided in the middle of its posterior margin with a small spine directed backwards.

Fifth to seventh pereion segments. Each segment with a transverse row of large spines, consisting of six on the tergum (dorsally, dorso-laterally and laterally situated), and of a large spine on each of the subrectangular coxal plates. Additional small spines occur laterally on the segments and on the coxal plates.

Abdomen. Its length is subequal to that of the four preceding segments together. Three anterior segments are indicated by grooves, these segments taken together being somewhat shorter than the pleotelson. The groove between the third segment and the pleotelson is faint and almost absent dorsally. The three anterior segments are provided each with a transverse row of eight spines, there being in addition some small irregularly situated spines laterally. One lateral spine on each side at the junction of the third segment with the pleotelson is larger than the others.

The pleotelson is covered with spines, somewhat irregularly situated but approximately corresponding to eight longitudinal rows. There are two larger apical spines directed backwards and upwards on each side of the tip. The small tip of the pleotelson is situated somewhat lower than the rest of pleotelson; it is subtriangular, has its distal margin rounded, and is devoid of spines.

Body and spine-armature of the male.

The males differ from the females in having a smaller number of small spines and in having the fourth pereion segment, as a rule, longer than the third. They also differ in being devoid of the wing-shaped protuberances of the fourth pair of coxal plates, which in the ovigerous female support the marsupium. As a rule, the spinules around the large pleural spines on the second and third pereion segments are absent. The fourth pereion segment has spine-armature similar to that in the female, but some of the small spines found in the female are wanting. Thus anteriorly on the segment there are only four spines, and behind the pleural spines only two, one of them as in the female situated at the postero-lateral angle.

Variation of the spine-armature.

The small spines laterally on the segments are very variable in number and in situation, but the spines are as a rule, larger and more numerous in large specimens. The four dorsal spines on the head vary in length. In some of the specimens there are, on either side, laterally from the posterior pair of large dorsal spines on the head, two or three additional spines or tuberculae. In one specimen there were two spines, instead of only one between the posterior dorsal spine-pair on the second segment. In another specimen there was a spine in the middle even on the first pereion segment. The spines are sometimes slightly »hairy» distally. The coxal plates are smooth in some specimens, in others provided with small spines.

Appendages.

Antennulae (Fig. 32 b). Reach approximately two-thirds the length of the third peduncular joint of the antennae. The first three joints are subequal in length. The first peduncular joint is, as usual in the genus, broad and three-sided, having an upper, an inner and outer ventral surface; dorsally near the inner distal angle it is usually provided with a spine. Flagellum (in female) not quite as long as the last two peduncular joints together and furnished with eight groups of sensory filaments and setae.

Antennae. Somewhat longer than the body. First peduncular joint very short and devoid of spines. Second peduncular joint three-sided, having a dorsal and slightly caudal, a caudal-ventral and a rostral-ventral surface; dorsal surface provided with two spines; there is a spine at each of the distal-rostral and the distal-caudal angles. Third peduncular joint caudally (laterally) with a row of about five spines, and ventrally with three or four; distal end of the fourth peduncular joint provided with a spine; fifth peduncular joint devoid of spines. The proportion between the lengths of the peduncular joints was in a female (16.5 mm in length): 0.4: 2.3: 5: 6.7: 5.7. Flagellum about as long as two-thirds of the last peduncular joint, consisting in adult specimens of about 10 joints.

Mandibles (Fig. 32 c and d). Normal.

First pair of maxillae. Normal.

Second pair of maxillae. Normal. The two lappets of the outer lobe are proximally together subequal in width to the inner lobe; each of the lappets is provided with three apical setae. The apical setae on the inner lobe are situated in three rows, one marginal row on the distal margin and one submarginal row on either side. Two setae at the inner distal angle are the largest.

Maxillipeds (Figs. 32 e and f). Normal. In the female with a marsupium (Fig. 32 f) the coxopodite and the proximal epipodite are expanded and the inner margin of the coxopodite is furnished with a row of plumose setae.

First pair of pereopods. Normal. Propodus and dactylus provided with dense, two-pointed setae, those on the propodus furnished with two rows of short triangular sub-branches. Dactylus with two claws and between the claws a claw-like seta. The dorsal claw is about twice as long as the ventral one and not quite one-third as long as the dactylus.

Second pair of pereopods. Dorsal side of the basipodite provided with a large proximal spine and two additional spines more distally. Ischium and merus each with a spine distally on the dorsal side. Carpal joint with three spines on the dorsal side at about equal distances from each other; one of the spines is situated at the distal end. Propodus with two spines dorsally. Length of dactylus rather more than two-thirds the length of the propodus. Dactylus provided with two claws and a slender seta between the claws. The length of the dorsal claw is about one-fourth of the length of the dactylus (the proportion being 7.5: 32). The ventral claw is very short being only one-fifth the length of the dorsal one.

Third pair of pereopods. Basipodite with four dorsal spines, ischium and merus with one, carpus with four, propodus with two, dorsal spines. Length of the dactylus rather more than two-thirds the length of the propodus. Dactylus with two claws, the dorsal one being about three times as long as the ventral. Between the claws there are three slender setae.

Fourth pair of pereopods. Basipodite with two spines on the anterior side and five dorsally. Carpus with three dorsal spines, one of them situated at the distal end. Dactylus subequal in length to the propodus, furnished with two claws and between the claws two slender setae, the dorsal claw being about four times as long as the ventral one.

Fifth to seventh pairs of pereopods. Basipodite with three or four spines and some tuberculae on the upper margin. Dactylus with two claws, the ventral one very short. Between the claws are two setae.

First pair of pleopods (Fig. 32 g). Coxopodite¹ rectangular, about three times as long as broad. Lateral margin of the basipodite provided with 7 or 8 rather strong spines, those in the middle being the strongest. Inner margin of the basipodite with 6—8 coupling-setae. Exopodite in the male very slightly decreasing in width towards the distal end; inner margin very slightly convex, almost straight; outer margin concave; diagonal furrow rather broad and wide at its mouth. Distally from the furrow there is a faintly marked rounded lobe at the lateral margin. Laterally from the proximal end of the furrow there is a distinct cavity. Distal margin and distal part of the inner margin of the exopodite furnished with plumose setae; lateral margin with branchless setae.

Uropods (Fig. 32 h). Lateral surface of the sympodite provided with small dense spines directed backwards. Lateral ramus subtriangular, distally rounded, not fully twice as long as the »secondary» ramus. »Secondary» ramus distally and somewhat ventrally rounded, but with five distinct incisions; in each incision there is a branchless seta. For further details see the figure.

Remarks. The variety *spinulosus* differs from the main species only in being still more spinous. The third pereion segment is furnished dorsally in the middle with one or two spines and on the fourth pereion segment there are 2 or 4 additional spines in the middle, which are missing in the main species. The dorso-lateral spine-pair on the fourth segment is represented by two spines on either side. The pereopods are more spinous, the carpus having a large distal spine and 2—3 additional dorsal spines. In BEDDARD's² figure of one of the anterior pereopods in the main species the carpus is provided with a single distal spine. The abundance of small spines in the variety *spinulosus*, compared with the main species, is found in all specimens up to a length of 12 mm., though, as has been shown above, there is a considerable individual variation in their size and number.

In other respects the variety *spinulosus* quite well agrees with BEDDARD's description and figures of *A. brunneus* (1886). It is of the same size as *A. brunneus* and has a slightly brownish colour, from which the name *brunneus* is derived.

A species which stands very near to *Antarcturus brunneus* var. *spinulosus* is *A. hodgsoni* RICHARDSON (1913), which is provided with a still larger number of small spines in addition to the three usual large pair of spines. The difference in spine-armor between *brunneus* var. *spinulosus* and *hodgsoni* is in itself scarcely marked enough to justify a separation of species, but *A. hodgsoni* differs also in having its body covered with long »hairs»³. Moreover *A. hodgsoni* is a somewhat larger species, attaining a length of 27 mm.; the greatest length in *brunneus* var. *spinulosus* is 17.5 mm.; in the main species 19 mm. (BEDDARD, 1886).

Localities and Material.

St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. 53° 34' S., long. 43° 23' W. 160 m. Bottom temp. + 2.05°. Gravel and sand. 19/4 1902. 3 specimens (male and 2 females). Length of the two largest specimens 14 mm. (a male, and a female with semi-developed oostegits).

St. 22. South Georgia, off May Bay, lat. 54° 17' S., long. 36° 28' W. 75 m. Bottom temp. + 1.5°. Clay and some algae. 18/3 1902. 5 specimens, males and females. Length of largest specimen 17.5 mm. (ovigerous female).

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54° 11' S., long. 36° 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. 18/4 1902. 6 specimens, males and females. Length of the largest specimens (types): male 14 mm, female with fully developed marsupium 16 mm.

¹ Not shown in Fig. 32 g.

² BEDDARD, 1886, Pl. XXII, Fig. 3.

³ In *brunneus* var. *spinulosus* the spines are sometimes short-haired (see p. 141).

Distribution. Shag Rock Bank (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.).

The var. *spinulosus* was obtained at depths of 75—310 m. The main species is known only from a considerably greater depth, having been collected by the Challenger Expedition at a depth of 1,600 fathoms, off Prince Edwards Islands.

Antarcturus franklini (HODGSON, 1902).

Pl. I, Fig. 8; Text. figs. 33 a—e.

Arcturus franklini. HODGSON, 1902, p. 250—251.

Antarcturus franklini. HODGSON, 1910, ♀, nec. ♂, p. 38—40, Pl. V, Fig. 3; RICHARDSON, 1913, p. 10—11; TATTERSALL, 1921 ♀, nec. ♂, p. 240—241.

Diagnosis. Head with a pair of dorsal spines anteriorly and with a small spine at the antero-lateral angle. First four pereion segments each with six large spines, situated dorsally, dorso-laterally and laterally. Last three pereion segments, as well as abdomen, granulate; pleotelson with a pair of terminal spines. Fifth pereion segment, as a rule, with a spine ventrally (sometimes wanting in the male). Seventh pereion segment, ventrally with a spine directed backwards. Dactylus of the second, third and fourth pairs of pereiopods subequal in length to the propodus (about $\frac{1}{12}$ shorter); dorsal claw on the same pairs of pereiopods short, being one-fourth to one-fifth times as long as the dactylus. Lateral margin of the basipodite of the first pleopod with a row of nine short spines; exopodite of first pleopod in the male tapering towards the rounded end; its outer margin concave, and inner margin convex; diagonal furrow narrowing towards the end; lateral margin of the male exopodite distally from the mouth of the furrow with a rather indistinct lobe. Lateral ramus of the uropod subtriangular, with distal margin rounded; »secondary» ramus of the uropod more than half as long as the lateral ramus, suboval, slightly tapering towards the end and furnished with six setae on its distal and lateral margins.

Supplementary Description.

Body and spine-armature of the adult female.

Head. Somewhat broader than long. Front margin sinuate. Anterio-lateral angles of the head rounded and furnished with a small spine. Lateral margins straight. Eyes large and protruding, subtriangular with rounded angles. Between the eyes there are two stout spines, directed upwards and slightly outwards and forwards.

Pereion. The segments increase in length and width up to the third, which is the largest, afterwards decreasing to the seventh segment. The first four segments are provided with six large spines, situated dorsally, dorso-laterally and laterally. The segments, with the exception of the first, are laterally protracted into subtriangular »pleurae».

First segment with a small spine anteriorly from the large lateral spine. Lateral margin posteriorly from the pleural spine with a small incision. Anterior dorsal area usually smooth.

Second segment with a small spine anterior to the large pleural spine. Between the dorso-lateral and the lateral spines there is a small spine, but it is situated further back. Anterior dorsal area often provided with a pair of small dorsal tuberculae. Coxal plates with a deep ventral incision. They are furnished with small spines and protracted anteriorly into a spine-like triangular prolongation.

Spine-armature of *the third segment* subequal to that of the second. Anterior dorsal area usually with two, sometimes with four, tuberculae.

On the *fourth segment* the projecting triangular pleurae comprise about four-fifths of the lateral part, anteriorly. Posteriorly from the pleurae the segment is constricted and narrowed. The two large dorsal spines are situated more laterally than on the third segment, and between them there are often two small tuberculae, one on either side of the middle line. One distinct but small spine, in contradistinction from the other segments, is situated at the postero-lateral angle of the segment. Coxal plates spinous; their anterior parts are spine-like and prolonged. In the ovigerous female the coxal plates are posteriorly elongated into broad processes directed medially, which support the marsupium. Each process carries a small spine directed backwards.

The last three pereion segments have large subtriangular spinous and tuberculated coxal plates with their postero-lateral ends broadly rounded. All three segments dorsally provided with a transverse row of spines and tuberculae, whilst laterally they are irregularly tuberculated. In many specimens one of the dorsal and dorso-lateral spines on either side are somewhat larger than the others.

Fifth segment ventrally with a tuberculum¹. Seventh segment ventrally with a tuberculum directed backwards¹.

Abdomen. Three anterior segments are indicated by shallow grooves. The first three segments are anteriorly smooth, posteriorly they are provided with a transverse row of small spines. A dorsal portion anteriorly in the middle of the third segment is separated by longitudinal grooves from the lateral parts. There is a rather large spine laterally on each side of the third segment at its junction with the pleotelson.

The pleotelson is longer than the first three anterior segments together. Its tip between the terminal spurs is situated lower than the rest of the pleotelson. The pleotelson, except for the tip, is covered with small spines directed backwards; as a rule, there is one row of such spines along each of the lateral margins; otherwise they are more irregularly situated. A pair of dorso-lateral spines, at a distance from the distal end of one-third the length of pleotelson, are sometimes much larger than the others.

Body and spine-armature of the male (Pl. I, Fig. 8).

The males are very similar to the females. They differ in having the fourth segment longer than the third; on the fourth segment the pleurae occupy only somewhat more than half of the lateral parts, anteriorly. The spine-armature is similar to that in the female, but there are fewer small spines and tuberculae. Thus the spines between the dorso-lateral and lateral pair and the spines anterior to the lateral spines on segments 2—4 are lacking in the male, as is also the spine at the postero-lateral angle of the fourth pereion segment. A pair of small tuberculae between the dorsal spine-pair on the fourth segment is often found. The anterior dorsal areas of the second, third and fourth segments, as in the female, are frequently furnished with two more or less distinct tuberculae.

The coxal plates on the second, third and fourth segments have no spines and are not protracted anteriorly into spine-like prolongations.

¹ Sometimes absent in immature specimens and in the males.

Appendages.

Antennulae (Fig. 33 a). Extend approximately to half the length of the third peduncular joint of the antennae. First peduncular joint, as is usual in the genus, broad, being triangular in a transverse section. In the female, the flagellum is slightly shorter than the second and third peduncular joints together; in the male, it is subequal in length to these

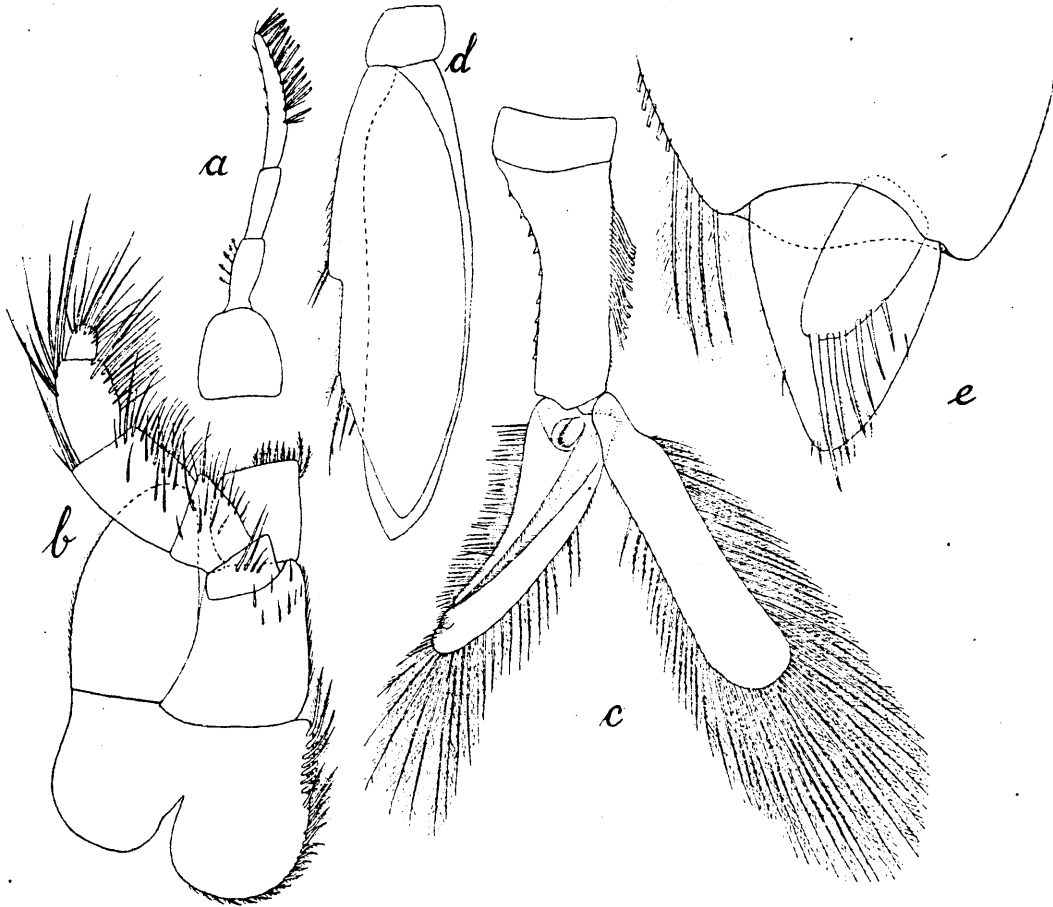


Fig. 33. *Antarcturus franklini* (Hodgs.). a. Left antennula, female, 17 \times . b. Right maxilliped of a female with a marsupium, 25 \times . c. Left first pleopod in an adult male, from the caudal side, 17 \times . d. Right third pleopod, female, 17 \times . e. Tip of the left uropod seen from the inner side (female), 80 \times .

joints together. It is provided in the adult female with 10 or 11 groups of pedunculated sensory filaments and ordinary setae, in the male with 17 or 18 groups.

Antennae. Third peduncular joint furnished on its caudal margin with a varying number of small spines and tuberculae. Flagellum slightly shorter than the last peduncular joint, consisting in adult females of about 10 joints, in adult males of about 12 joints, the first joint very long, being equivalent to two or three joints.

Mandibles. Normal.

First pair of maxillae. Outer lobe with about eleven apical »spines», in two rows. Inner lobe with three apical penicillated setae.

Second pair of maxillae. Outer lappet of outer lobe with five or six apical setae, inner lappet of the same lobe with three apical setae. The two lappets of the outer lobe vary greatly in different specimens; sometimes the outer, sometimes the inner lobe is the largest.

Maxillipeds (Fig. 33 b). Distal epipodite reaching to about the middle of the third joint of the palp. Coxopodite as well as proximal epipodite in the ovigerous female expanded, the coxopodite furnished with plumose setae on its inner and distal margins. Endopodite with two plumose setae on the inner margin near the distal margin.

Pereiopods. Dactylus of the first pair provided with a long dorsal and a short ventral claw, and between them a claw-like seta. Propodus and dactylus densely fringed with setae; most of the setae on the propodus, and a few on the carpus, are furnished with two rows of short triangular sub-branches and terminate in two points.

On the second, third and fourth pereiopods the dactylus is subequal in length to the propodus (approximately $\frac{1}{12}$ shorter), and the dorsal claw is one-fourth to one-fifth as long as the dactylus. Between the claws are one long and one short seta.

On the fifth, sixth and seventh pereiopods the dorsal claw is about one-fifth the length of the dactylus.

First pair of pleopods (Fig. 33 c). Anterior surface of the basipodite vaulted, posterior, surface flattened, its lateral margin with nine small spines, inner margin with about 11 coupling-setae.

Exopodite in the male decreasing in width towards the rounded end; lateral margin concave, inner margin convex; diagonal furrow on the exopodite narrowing towards the end, its distal half provided with dense, short »hairs». Inner proximal angle of the exopodite rounded and furnished with »hairs». Laterally from the proximal end of the furrow there is a distinct cavity. Distally from the mouth of the furrow there is a faint lobe on the lateral margin. Lateral and distal margins of the exopodite with plumose setae, inner margin with branchless setae.

Endopodite in the male slightly longer than the exopodite. In the female both the rami are similar and subequal in length.

Second pair of pleopods. Coxopodite very short, forming a border proximally from the basipodite. Basipodite shorter than in the first pair of pleopods, subquadrate, somewhat broader than it is long; its lateral margin furnished with four plumose setae, inner margin with 6 or 7 coupling-setae. Penial filament in the male extending beyond the distal margin of the exopodite by almost one-third of its length.

Third pair of pleopods (Fig. 33 d). Coxopodite not distinguishable; endopodite oval, somewhat pointed, its margins without setae. Exopodite subequal to the endopodite, its lateral margin provided with a varying number of plumose setae and with an incision near the middle.

Fourth pair of pleopods. Basipodite short. Exopodite and endopodite thin, subequal, the exopodite on the inner margin near the distal end provided with a few setae equipped with sparse sub-branches; the lateral margin with about four short non-typical plumose setae almost lacking sub-branches.

Fifth pair of pleopods. Much as the fourth.

Uropods (Fig. 33 e). Lateral surface of the sympodite with scattered small spines. Secondary ramus more than half as long as the lateral branch; the proportion between the lengths of the rami being about 5:3. Inner ramus suboval, tapering towards the broadly

rounded end, distally and laterally with six conspicuous setae, the three more distally situated provided with short sub-branches.

Remarks. The females of this species agree in detail, even as regards the spine-armature, with the figure by HODGSON (1910, Pl. V, Fig. 3). I have also compared the

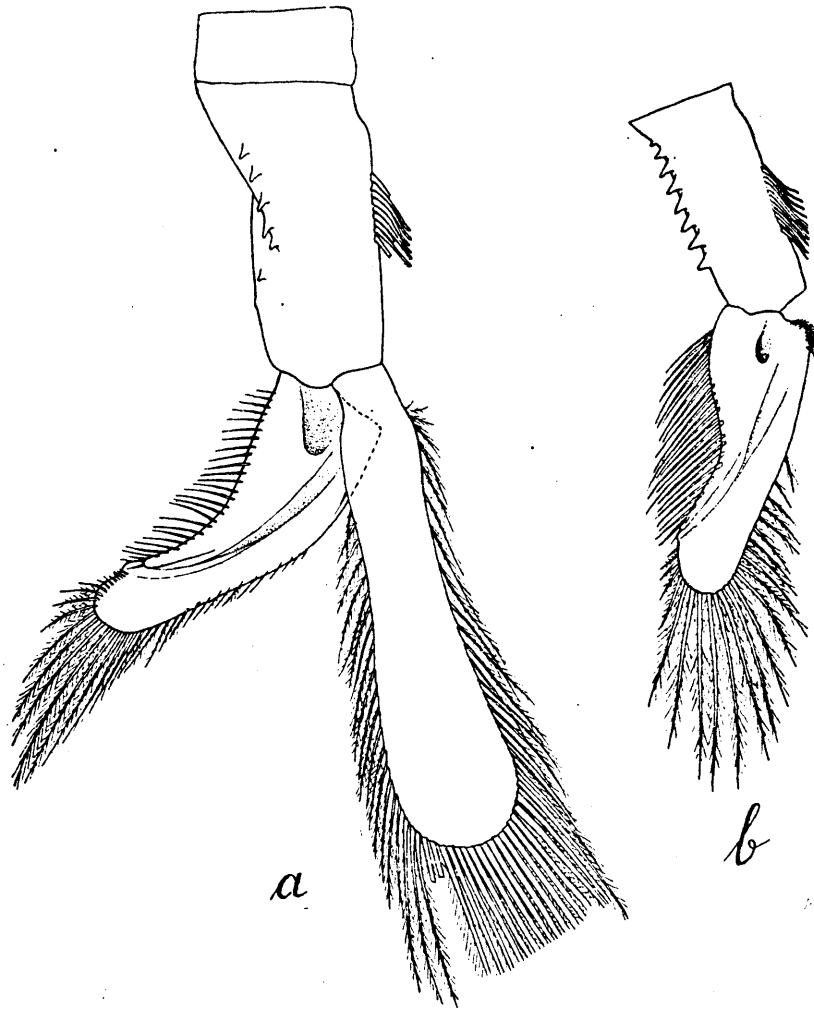


Fig. 34. *Antarcturus adaraneus* (HODGS.) a. Left pleopod of an adult male, from the caudal side, 20 \times . b. First pleopod of an adult male from the caudal side, specimen assigned by HODGSON (1910) to *Antarcturus franklini*, 20 \times .

species with a female specimen from the Museum in Paris, determined by RICHARDSON, and sent to me for investigation, but I found only the usual minor differences in the size and number of the small spines. Both HODGSON (1910) and TATTERSALL (1921) state that the males differ considerably from the females in being devoid of spines on the pereion. Finding that the males of *Antarcturus franklini* collected by the Swedish Ant-

at the Expedition had almost exactly the same spine-armature as that of the females, I first surmised that there were two distinct races of the species differing in the spine-armature of the male sex (cf. p. 125). But after examining¹ material collected by the National Antarctic (Discovery) Expedition 1901—1904 and by the British Antarctic (Terra Nova) Expedition 1910, determined as *Antarcturus franklini* by HODGSON (1910) and TATTERSALL (1921), I came to the conclusion that the males previously referred to *A. franklini* are another closely allied species. Though their uropods and pereopods scarcely differ, the first male pleopods are very dissimilar to those characteristic of *A. franklini*. The first male pleopod in the supposed *A. franklini* (see Fig. 34 b)² agrees with that which I found to characterize *A. adaraneus* (HODGSON) (see Fig. 34 a), a species of which I was able to study a few specimens at the British Museum. The males previously referred to *A. franklini* belong therefore in all likelihood to *A. adaraneus*. The spine-armature also bears out the correctness of this supposition (cf. HODGSON 1910, Pl. V, Figs. 1 and 2 and HODGSON 1902, Pl. XXXIII, Fig. 1).

Localities and Material.

St. 16. Between Falkland Islands and South Georgia (near Falkland Islands), lat. 51° 40' S., long. 57° W. 150 m. Sand. 11/4, 1902. Immature specimen, length 12.2 mm.

St. 58. South of West Falkland, lat. 52° 29' S., long. 60° 36' W. 197 m. Bottom temp. + 4.1°. Sand and gravel. 11/4, 1902. 31 specimens, males and females (10 specimens collected on hydroids). Length of the two largest specimens, a male and a female, about 25 mm.

Distribution. Falkland Islands (Sw. Ant. Exped.), Graham Region (RICHARDSON 1913), Victoria Land (HODGSON 1902 and 1910, TATTERSALL 1921).

The species is not previously known from the Falkland Islands or from any other subantarctic locality.

Antarcturus antarcticus BOUVIER, 1910.

Text. figs. 35 a—e.

For synonymy and literature see MONOD, 1931, p. 27.

Diagnosis. Body granulate. Head devoid of spines except, a small one at the anterio-lateral angle. Dorsal area on the first four pereion segments anteriorly elevated and ridge-like, leaving a distinct furrow between the anterior ridge-like part and the posterior ridge. Abdomen with two short terminal spines. Seventh pereion segment with a small spine ventrally. Dactylus of the first pereopods about two-thirds the length of propodus; dactylus of the second, third and fourth pairs about half as long as propodus. Dorsal claw of the second pereopod slightly less than one-third as long as the propodus; dorsal claw of the third and fourth pereopods about one-third as long as that joint. Lateral margin of the basipodite of the first pleopod with four conspicuous spines. Exopodite of first pleopod in the male narrowest in the middle, and thence slightly increasing in width towards the broadly rounded end; inner margin slightly convex, lateral margin slightly concave; diagonal furrow proximally wide, but distally narrowing to a tube; distally from the mouth of the furrow there is a distinct rounded lobe on the lateral margin, marked off by a distinct incision. Lateral ramus of the uropod sub-

¹ At the British Museum.

² The figure illustrates the first male pleopod of a specimen determined by HODGSON (1910) as *Antarcturus franklini*.

triangular with distal end broadly rounded; »secondary» ramus one-fifth longer than half of the lateral ramus; its distal margin obliquely truncate and furnished with six ciliated setae.

Supplementary Description.

Head. Dorsally with a distinct transverse groove and an indistinct longitudinal groove. Eyes large, black, protruding, subtriangular with rounded angles. At the antero-lateral angles of the head there is a small spine.

Pereion. Segments both anteriorly and posteriorly with a faint ridge-like elevation, dorsally with a distinct groove between the anterior and the posterior ridge. This groove bifurcates laterally, thus demarcating on each side a triangular area. Pleurae subtriangular, faintly marked off medially by longitudinal grooves, which traverse the triangular lateral elevated areas.

The *first segment* differs from the others in having the anterior dorsal ridge divided into two ridges by a transverse groove. Pleurae on the first segment subtriangular, but indistinct; furnished with a small spine. Posteriorly from the pleurae there is a lateral incision.

Pleurae of the *second, third and fourth segments* distinct, with broadly rounded lateral margins. On the first segment they occupy about half the length of the segment, anteriorly; on the second segment the whole lateral side, on the third segment about two-thirds, on the fourth only about half of the lateral sides anteriorly.

Coxal plates on the second and third segment in the ovigerous female posteriorly somewhat produced into short subtriangular prolongations¹, following the outline of the marsupium. Posterior parts of the fourth coxal plates in the ovigerous female prolonged into broad wing-shaped processes, the ends of which almost meet behind the marsupium. In the male these broad processes are missing and the coxal plates are posteriorly coalesced with the sternite, leaving no trace of any suture.

Coxal plates of the *last three segments* large, subrectangular, not visible from above.

Abdomen. The last of the three anteriorly indicated segments is faintly divided by longitudinal grooves into a more anteriorly situated middle area, provided with about four small spines, and two larger lateral areas. The tip of pleotelson between the terminal pair of spines is situated lower than the rest of pleotelson; its distal end is somewhat concave.

Antennulae. Flagellum about as long as the second, third and half of the first peduncular joints together, furnished with 14 or 15 groups of sensory filaments and setae. The proportion between the lengths of the joints is, in both male and female, about 20 : 11 : 13 : 37.

Antennae. First joint very short. The second joint is also short, being about as long as it is broad. The third peduncular joint is about twice as long as the second, having on its caudal margin a varying number of small spine-like tuberculae. Fourth peduncular joint more than twice as long as the third, the fifth subequal in length to the fourth, but narrower.

Flagellum about one-fourth shorter than the last peduncular joint, consisting of 10 or 11 joints, the first being the longest and corresponding to three of the other joints.

Mandibles and maxillae. Normal.

¹ These small prolongations are missing in the male.

Maxillipeds (Fig. 35 a). Normal. Palp densely setiferous, some of the setae provided with short hair-like sub-branches. Coxopodite in the ovigerous female expanded backwards into a thin, rounded lobe.

First pair of pereopods. Densely setiferous; many of the setae provided with two rows of short triangular sub-branches. Dactylus about two-thirds as long as the pro-

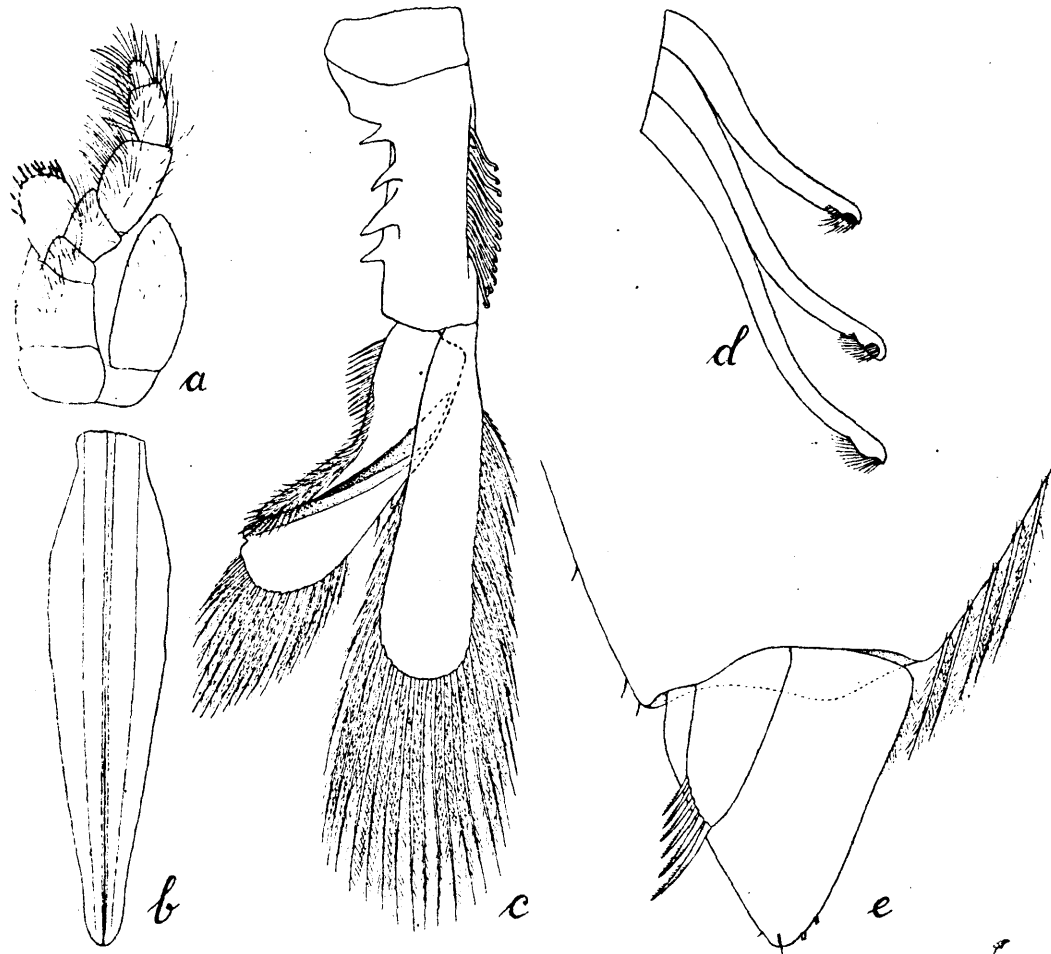


Fig. 35. *Antarcticururus antarcticus*, Bouv. a. Left maxilliped in a male, 17 \times . b. Penis, 30 \times . c. Left first pleopod in an adult male, from the caudal side, 17 \times . d. Coupling-setae from the inner margin of the basipodite of the first pleopod, 140 \times . e. Tip of the right uropod, seen from the inner side (female), 80 \times .

podus, furnished with two claws; the dorsal claw is about twice as long as the short ventral one, the lower margin of which is dentated. Between the claws there is a claw-like seta. The length of the dorsal claw is about two-fifths the length of the dactylus.

Second pair of pereopods. Dactylus about half as long as the propodus, furnished with two claws and a seta between the claws; the long dorsal claw is not quite one-third as long as the dactylus.

Third and fourth pairs of pereopods. Similar to the second. Length of the dorsal claw about one-third the length of the dactylus. In one specimen the dactylus of the fourth pereopod was furnished with four claws, two long dorsal and two short ventral ones, the most dorsally situated one being about one-fifth longer than the other dorsal claw.

Fifth to seventh pairs of pereopods. On the last three pereopods the dactylus is about two-thirds the length of the propodus. It is furnished with a long dorsal and a very short ventral claw, the dorsal claw being not quite one-third as long as the propodus and four and a half times as long as the ventral claw.

Penis (Fig. 35 b). Normal.

First pair of pleopods. (Fig. 35 c). Coxopodite subrectangular. Lateral margin of the basipodite provided with four large spines; inner margin with about 13 coupling-setae (cf. Fig. 35 d).

Exopodite in the male narrowest in the middle and thence slightly increasing in width towards the broadly rounded end; inner margin slightly convex; lateral margin markedly concave, and provided with short branchless setae. The same kind of setae also cover the caudal surface, distally, close to the lateral margin. Inner proximal angle of the exopodite provided with short «hairs»; distal margin and distal part of the inner margin furnished with plumose setae; diagonal furrow wide proximally, but narrowing distally to a tube; distally from the mouth of the furrow there is a distinct incision, so that a rounded lobe is formed on the lateral margin; laterally from the proximal end of the furrow the caudal surface of the exopodite is slightly hollowed.

Endopodite of the usual shape.

Second pair of pleopods. Lateral margin of the basipodite provided with plumose setae, inner margin with about six coupling-setae. Endopodite slightly longer than the exopodite. Penial filament in the male somewhat longer than the endopodite; its distal end hook-like.

Uropods (Fig. 35 e). Lateral surface of the sympodite provided with small pointed tuberculae. «Secondary» ramus one-fifth longer than half the length of the lateral ramus, slightly tapering towards the end, distally obliquely truncate and furnished with six ciliated setae.

Remarks. The species somewhat resembles *A. coppingeri* (MIERS, 1881), *adaraneus* (HODGSON, 1910), and *lilliei* TATTERSALL (1921).

The first two species differ from *antarcticus* in their sculping on the pereion, the dorsal area of the first four pereion segments not being elevated into a ridge; *adaraneus* is moreover furnished with spines on the head. In the latter species the first male pleopods (Fig. 34 a) have an exopodite which differs from that in *A. antarcticus* in being shorter, more strongly curved and tapering towards the end; *A. adaraneus* differs also in having the dactylus of the second, third and fourth pereopods subequal in length to the propodus.

A. lilliei TATTERSALL is closely allied to *A. antarcticus*; it is similarly sculptured on the first four pereion segments; the length of the dactylus of the second, third and fourth pereopods is subequal to that in *A. antarcticus*, but it differs especially in having two cephalic horns anteriorly on the head as well as in its smaller size.

Localities and Material.

- St. 5. Graham Region, S. E. of Seymour Island, lat. $64^{\circ} 20' S.$, long. $56^{\circ} 38' W.$ 150 m. Sand and gravel. 1902. 7 specimens, males and females. Length of the largest specimen, about 25.7 mm. (male).
- St. 6. Graham Region, Admiralty Sound, lat. $64^{\circ} 36' S.$, long. $57^{\circ} 42' W.$ 125 m. Stones and gravel. 1902. 7 specimens, one adult male, females and immature specimens. Length of the largest specimen, 23.1 mm. (female with marsupium).
- St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. $53^{\circ} 34' S.$, long. $43^{\circ} 33' W.$ 160 m. Bottom temp. $+ 2.05^{\circ}$. Gravel and sand. 1902. Immature specimen, length about 9 mm.

Distribution. Shag Rock Bank (Sw. Ant. Exped.), South Georgia (MONOD 1931), South Sandwich Islands (BOUVIER 1910, 1911), Graham Region (Sw. Ant. Exped.).

The species has not previously been recorded from Shag Rock Bank or Graham Region.

Antarcturus granulatus n. sp.

Pl. I, Figs. 9, 10; Text. figs. 36 a—c.

Diagnosis. Body granulate; two dorsal spines anteriorly on the head. The first four pereion segments, each with a pair of dorsal and a pair of dorso-lateral small tuberculae. Ventral surface of the pereion, as a rule, smooth. Pleotelson with a pair of short and obtuse terminal spines. Antennae about half as long again as the body, the flagella about two-thirds as long as the last peduncular joint. Length of dactylus of second, third and fourth pereopod about half the length of the propodus; length of their dorsal claw about two-thirds the length of dactylus. Basipodite of the first pleopod with about six small spines on its lateral margin. Exopodite of the first male pleopod subrectangular, slightly tapering towards the broadly rounded end; both the lateral and inner margins slightly convex; diagonal furrow rather broad, narrowing towards the end; a small but distinct triangular lobe at the lateral margin distally from the mouth of the furrow. Lateral ramus of the uropods subtriangular, with distal margin rounded. »Secondary» ramus of the uropods somewhat more than half as long as the lateral ramus, subrectangular, slightly tapering towards the end and furnished with three apical setae.

Description.

Types. Mature female with young about 11 mm. in length and male about 14.2 mm in length.

Body and sculpturing of the female.

Body (Pl. I Figs. 9, 10), granulate. First three pereion segments in the mature female slightly increasing in length and width, the third being the largest.

Head. Broader than it is long; front margin sinuate; antero-lateral angles rounded; lateral margins straight. Eyes dark, protruding, almost rounded, about one-third as long as the lateral side of the head. Between the eyes there is a pair of short curved spines with their front margins strongly concave.

Pereion. The pereion segments are furnished with a posterior transverse elevation which widens out laterally to comprise the whole of the segments; the pleurae are subtriangular and distinct on the second, third and fourth segments, being distinctly marked off from the medial parts by longitudinal grooves. The anterior dorsal area is elevated in the middle into a low and broad ridge, which on the first segment is indistinctly divided into two parts by a transverse groove. The four anterior segments have their posterior ridge provided with four small tuberculae, two of them dorsally

situated and two dorso-laterally. Elsewhere the segments are granulate, especially on the posterior ridge and on the anterior ridge-like elevation, which traverses the anterior dorsal area.

On the *first segment* the four tuberculae on the posterior elevation are very indistinct. The lateral margins are bent down, whence »pleurae» are lacking. Ventral margin of the tergum with a minute spine-like tip, posteriorly from which there is a small incision.

The pleurae of the *second, third and fourth segments* occupy anteriorly about two-thirds of the lengths of their segments; the coxal plates on these segments are provided with a faint ventral incision; they are in the mature female prolonged posteriorly into short triangular lobes, following the outline of the marsupium. On the fourth segment the anterior dorsal area is only very slightly elevated in the middle; its elevated part is often provided with a pair of minute dorsal tuberculae, one on either side of the middle line. The segment is sharply constricted by a lateral incision (behind the pleurae). The coxal plates are provided with a distinct ventral incision; they are posteriorly prolonged into triangular pointed elongations, the points of which meet behind the marsupium.

Last three segments decreasing in length and width from the first to the last. Posterior transverse elevation distinct and granulate. Anterio-lateral angles of fifth segment somewhat projecting triangularly and pointed. Coxal plates subrectangular, broadly rounded posteriorly.

Abdomen. Three anterior segments are distinctly indicated by transverse grooves. The three segments together are shorter than the pleotelson. Laterally they are markedly granulate, dorsally almost smooth. The third segment has its postero-lateral angles somewhat triangularly prolonged. Its dorsal part in the middle is separated by slight grooves from the more laterally situated parts.

The pleotelson is markedly granulate, and is provided with a pair of short and obtuse terminal spines. The small tip of the pleotelson between the two terminal spines is situated lower than the rest and is almost devoid of granules; its posterior margin is truncate.

Body and sculpturing of the male.

The adult male differs from the female in having the four anterior pereion segments subequal in width, and in having much fainter sculpturing. The posterior and anterior transverse elevations on the first four pereion segments in the male are very faint and the tuberculae on the posterior elevations are almost indistinguishable.

Moreover the male differs from the female in having the fourth segment of the pereion longest, about one-fourth longer than the third¹.

The pleurae of the second, third and fourth segments are smaller than in the female and comprise on the fourth segment only about half the length of the segment, anteriorly. The fourth segment in the male is only indistinctly constricted posteriorly from the pleurae.

On the coxal plates of the second, third and fourth segments the posterior projecting triangular lobes are wanting.

As in the female, the body is covered with granules, most distinctly on the pleotelson.

¹ The length of the third and fourth segments was in a male specimen 2 mm. and 1.5 mm. respectively.

Appendages.

Antennulae. Reaching the middle of the third joint of the antennae. The first peduncular joint is broader than the others and, seen from above, subrectangular. The flagellum is longer than the last two peduncular joints together and is provided with about ten groups of sensory filaments and setae. The proportion between the lengths of the peduncular joints and the flagellum is (in a female) 10 : 9 : 7.5 : 19.2.

Antennae. About half as long again as the body. First peduncular joint small and not visible from above. Second peduncular joint with a spine at its postero-distal angle.

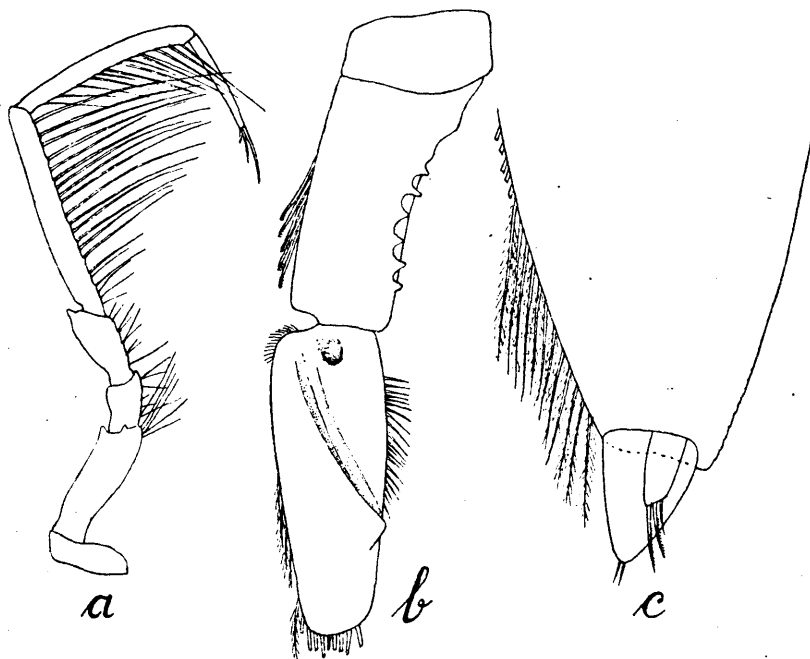


Fig. 36. *Antarcticurus granulatus* n. sp. a. Second pereopod of a female, from the rostral side, 20 ×. b. Right first pleopod (except the endopodite) in the adult male, seen from the caudal side, 35 ×. c. Tip of the left uropod, seen from the inner side, 90 ×.

Third peduncular joint about twice as long as the second and provided with a row of small spines or tuberculae along its caudal margin. Fourth peduncular joint slightly more than twice as long as the third. The fifth is about one-fifth longer than the fourth. The flagellum is about two-thirds the length of the last peduncular joint and consists (in a young specimen about 8.5 mm. in length) of six joints. The long first joint of the flagellum is longer than the two following together, but shorter than the three following joints together. In the adult male the flagellum consists of eight or nine joints.

Mandibles and maxillae. Normal.

Maxillipeds. Distal epipodite with distal margin broadly rounded. Coxopodite in females possessing a marsupium, expanded and prolonged into a thin lobe of the same shape as in *A. brunneus* var. *spinulosus*¹; inner margin of the coxopodite furnished with ten

¹ Cf. Fig. 32 f.

plumose setae, distal margin provided with »hairs» devoid of a setal canal, and with short setae.

First pair of pereiopods. As usual in the genus, very setiferous. The setae are long, as a rule two-pointed, and often (especially those on the propodus and carpus) provided with two rows of short triangular sub-branches. The dactylus is about one-third shorter than the propodus (the proportion being 14 : 10), and is provided with two very short claws, the ventral claw being about two-thirds the length of the dorsal one. The length of the dorsal claw is only about one-seventh of the length of the dactylus.

Second pair of pereiopods (Fig. 36 a). Dactylus about half as long as propodus, furnished with two claws and a strong seta between the claws. Length of the dorsal claw approximately five times larger than that of the ventral one and about two-thirds the length of the dactylus. The proportion between the lengths of the joints and the dorsal claw is 20: 9.5: 12: 39: 35: 18.5: 11.

Third and fourth pairs of pereiopods. Similar to the second pair, but the basipodite increases in length, being longest on the fourth pair. On the fourth pair the posterior margin of the basipodite is granulate.

Fifth, sixth and seventh pairs of pereiopods. Upper margin of the basipodite provided with small spines and tuberculae. Propodus almost twice as long as the dactylus, which is provided with two claws, and between the claws two setae. Length of the dorsal claw about one-fourth the length of the dactylus. The ventral claw is minute.

First pair of pleopods (Fig. 36 b). Coxopodite short, subrectangular. Lateral margin of the basipodite with a row of six small spines; inner margin with eight coupling-setae. Exopodite and endopodite subequal in length. Exopodite in the male subrectangular, slightly tapering towards the broadly rounded end; outer and inner margins almost straight; inner proximal angle rounded and furnished with short »hairs»; lateral margin proximally from the mouth of the diagonal furrow with branchless setae; distal margin and distal half of the inner margin with plumose setae; diagonal furrow rather broad proximally, but narrowing towards the end; posterior surface laterally from the proximal end of the furrow slightly hollowed; distally from the mouth of the furrow there is a projecting triangular lobe at the lateral margin of the exopodite.

Penis. Normal.

Uropods (Fig. 36 c). Lateral surface of the sympodite granulate, with a longitudinal row of somewhat larger granules along the middle line. »Secondary» ramus slightly more than half as long as the lateral ramus, slightly tapering towards the end and provided with three apical setae. For other details see the figure.

Remarks. The species is very similar to *Antarcturus spinifrons*¹, (BEDDARD), from which species it differs in having a pair of terminal spines on the pleotelson, one on either side of the tip, instead of only one terminal spine in the middle, as in *A. spinifrons*; in having the pleotelson more markedly granulated; and in having the fourth pereion segment in the male longer than the third. These differences, which mainly relate to the sculpturing are not quite reliable. The uropods and first male pleopods, which are characteristically shaped in *A. granulatus* have, however, not been investigated in *Antarcturus spinifrons*. *A. granulatus* was found at South Georgia, whilst *spinifrons* was obtained from Kandavu

¹ Cf. BEDDARD, 1886, Pl. XXV, Figs. 9—12.

Islands (off Fidji Islands). It is therefore most probable that a more thorough examination of *spiniifrons* will disclose differences in the uropods and the first male pleopods; otherwise *granulosus* in my opinion should be regarded merely as a variety of *spiniifrons*.

From *A. lilliei* TATTERSALL (1921) *granulosus* differs especially in its much longer antennae.

Localities and Material.

St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. $53^{\circ} 34' S.$, long. $43^{\circ} 23' W.$ 160 m. Bottom temp. $+ 2.05^{\circ}$. Gravel and sand. $19/4$ 1902. Immature specimen, 6 mm. in length, having the tuberculae on the pereion segments more distinct than in the specimens from st. 34 (South Georgia); in the specimen there is also a pair of minute tuberculae behind the frontal spines on the head.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. $54^{\circ} 11' S.$, long. $36^{\circ} 18' W.$ 252—310 m. Bottom temp. $+ 1.45^{\circ}$. Gray clay with a few stones. $5/8$ 1902. 6 specimens, males and females. Length of the largest specimen 14.5 mm. (adult male, type); its antennae are about 20 mm. in length. Female with young (type), length about 11 mm.

Distribution. Shag Rock Bank (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.).

Genus **Microarcturus** n. gen.

For diagnosis see p. 128.

Microarcturus stebbingi (BEDDARD, 1886).

Pl. II, Figs. 12, 13; Text. figs. 37 a—g.

Arcturus stebbingi. BEDDARD, 1886, p. 105—106, Pl. XXIV, Figs. 1—4; ZUR STRASSEN, 1902, p. 686.

Diagnosis. Dorsal surface of the head with four tuberculae or spines, situated in such wise as to form the points at the angles of a square. The first four pereion segments posteriorly with six tuberculae or spines, two dorsally, two dorso-laterally and two laterally situated. Fourth segment in the female shorter, in the male longer than the third. Last three pereion segments and abdomen tuberculated. Pleotelson about as long as the three anterior abdominal segments together. Tip of pleotelson triangular and obtusely pointed, with lateral margins straight. Second and third pereiopods with dactylus about half as long as propodus, the dorsal claw one-third as long again as the joint itself; dorsal claw of the fourth pereiopod about half as long as the dactylus. First pair of pleopods much narrower and slightly shorter than the others, lateral margin of the basipodite with 6—9 spines, increasing in size towards the distal end; endopodite in both male and female small, suboval, one-third to two-thirds as long as the exopodite and lacking plumose setae; exopodite in the male, distally from the mouth of the diagonal furrow, tapering towards the rounded end and having its distal margin furnished with a few plumose setae; diagonal furrow proximally broad but distally narrowing almost to a tube, its mouth surrounded by two slightly projecting lobes, the rostral one with convex margin, the caudal one subtriangular and pointed. Lateral ramus of the uropods subtriangular with distal end rounded; »secondary» ramus of the uropods about two-thirds as long as the endopodite, tapering towards the end, distally truncate and provided with three apical setae (exceptionally two).

Supplementary Description.

Body and spine-armature of the female (Pl. II, Fig. 12).

Head. Frontal margin sinuate, antero-lateral angles rounded and often furnished with a small submarginal tuberculum or spine. Lateral margins straight. Eyes protru-

ding, rounded, of brownish colour, of a length about one-third of that of the lateral side of the head. Dorsal surface with four tuberculae or spines, situated in such wise as to form the points at the angles of a square.

Pereion. In the female the third segment is the longest; in females with marsupium it is also the broadest. The first four segments are sculptured in the usual way by a posterior transverse elevation, which widens out laterally to comprise the whole segment. The pleurae are triangular; on the first segment they are small and indistinct. The posterior transverse elevation on the first four segments is always provided with three pairs of spines or tuberculae, situated dorsally, dorso-laterally and laterally. There are also additional spinules or tuberculae on these segments. The spines or tuberculae are in varying degrees covered with short hairs.

On the *first segment* the dorsal pair of spines or tuberculae on the posterior elevation are the largest. Often there is a tuberculum between the dorso-lateral and the pleural process, but situated further back. The anterior dorsal area is often provided with a pair of dorsal tuberculae. The lateral side of the tergite is provided with a faint ventral incision. Coxal plates not distinguishable.

On the *second segment* the triangular pleurae are distinct and occupy almost the whole lateral side of the segment. The sculpturing of the segment is much the same as that of the first segment, but on either side there is a small spine at the anterior margin of the pleurae. These small spines are directed anteriorly and project beyond the posterior margin of the first segment. Coxal plates with a slight ventral incision. They are elongated posteriorly into small triangular pointed lobes following, in the mature female, the outline of the marsupium.

On the *third segment* the pleurae occupy about three-fourths of the lateral side of the segment. Sculpturing and coxal plates as on the second segment.

On the *fourth segment* the pleurae occupy about two-thirds of the lateral side of the segment. On either side there is a deep and broad furrow posteriorly from the pleurae. The anterior dorsal area is often smooth. The tuberculae between the dorso-lateral and the pleural processes are usually missing. The small spines at the anterior margin of the pleurae are directed antero-laterally. Otherwise the sculpturing corresponds with that of the second and third segments. The coxal plates are prolonged posteriorly into broad protuberances directed medially, having a rounded distal end and being more or less tuberculated.

The last three segments decrease in length and width from the fifth to the seventh; the posterior elevation is distinctly tuberculated. On the fifth segment there is a pair of small spines, directed laterally, and situated dorso-laterally close to the anterior margin. Dorsal area on the fifth, sixth and seventh segments smooth. Ventral surface of the fifth segment tuberculated, of the sixth and seventh almost smooth.

Abdomen. Short, not longer than the last three segments of the pereion together. Three anterior tuberculated segments are indicated by transverse grooves; the third segment and the pleotelson are broader than the first two segments, and the third segment is also slightly longer than each first or second segment.

Pleotelson subequal in length to the three anterior segments together, dorsally, except on the tip, it is tuberculated. Tip of pleotelson smooth, subtriangular with lateral

margins straight and meeting at the apex in a right or obtuse angle. In some specimens a pair of tuberculae anteriorly from the tip are the largest.

Body and spine-armature of the male (Pl. II, Fig. 13).

The body of the male differs from that of the ovigerous female in having the first four pereion segments much narrower (the second and third are subequal in width, the fourth is slightly narrower than the third). It also differs in the fourth pereion segment being distinctly the longest. The pleurae are somewhat smaller and occupy a smaller part of the segments, anteriorly; on the fourth segment they only comprise approximately the anterior half of the lateral side of the segment. The lateral grooves behind the pleurae on this segment are broader and shallower than in the female. The small spines at the anterior margin of the pleurae, which occur in the female on the second, third and fourth segments, are missing in the male.

Variation of the spine-armature.

In their spine-armature the different specimens vary to a large extent. On examining a large amount of material, slightly tuberculated individuals can be found, on the other hand there are individuals which are very spinous. *Microarcturus stebbingi* affords a good example of the great individual variation in spine-armature occurring in the genus, as also in *Antarcturus* and *Arcturus* (see p. 125). As regards these genera an equally great variation in spine-armature has previously been found only in *Microarcturus similis* by BARNARD (1925) and in *Arcturus baffini* by OHLIN (1895).

The four dorsal processes on the head are either spines or mere tuberculae. Sometimes the anterior pair are the largest¹, sometimes the posterior pair, or they are subequal in length. The small process at the antero-lateral angle of the head occurs as a spine or tuberculum and in some cases is entirely wanting. The processes on the posterior elevation of the first four pereion segments are either spines or mere tuberculae. The small processes which are situated between the dorso-lateral and pleural processes, but further back, on these segments are spine-like, tuberculiform or entirely missing. In other specimens, however, these processes are distinct and spine-like.²

Though the spine-armature in *Microarcturus stebbingi* varies greatly in both males and females, most male specimens are only tuberculated, whilst spinous specimens are commonly found in the females. Most of the female specimens are at any rate furnished with a pair of dorsal spines on the posterior elevation of the first four pereion segments, often also with a pair of dorso-lateral spines on this elevation, whilst the large pleural processes as well as the other processes on the pereion are generally tuberculiform.

Appendages.

Antennulae (Fig. 37 a). Reaching to the distal margin of the second joint of the antennal peduncle. Third peduncular joint one-half to one-third as long as the second. Flagellum about one-fifth as long again as the second and third peduncular joints together.

Antennae (Figs. 37 b and c). Shorter than the body. First peduncular joint short, only visible from below, second and third increasing in length, the third being about one-third longer than the second. The second joint is triangular in transverse section,

¹ This is the case in the specimen figured by BEDDARD (1886, Pl. XXIV, Figs. 1 and 2).

² These processes occur more often as spines in female specimens. In male specimens I never found a spine-like process between the dorso-lateral and pleural processes on the first four pereion segments, but often there are distinct tuberculae on this spot in the males.

with the postero-distal, the upper distal and the lower anterior distal angles produced and pointed; distal margin between the points somewhat concave. Third peduncular joint about one third longer than the second, often provided with two tuberculae on its caudal margin (one tuberculum at about the middle of the joint and one near the distal margin). Fourth joint about twice as long as the third and somewhat increasing in width distally. Fifth peduncular joint one-fourth to one-fifth as long again as the fourth.

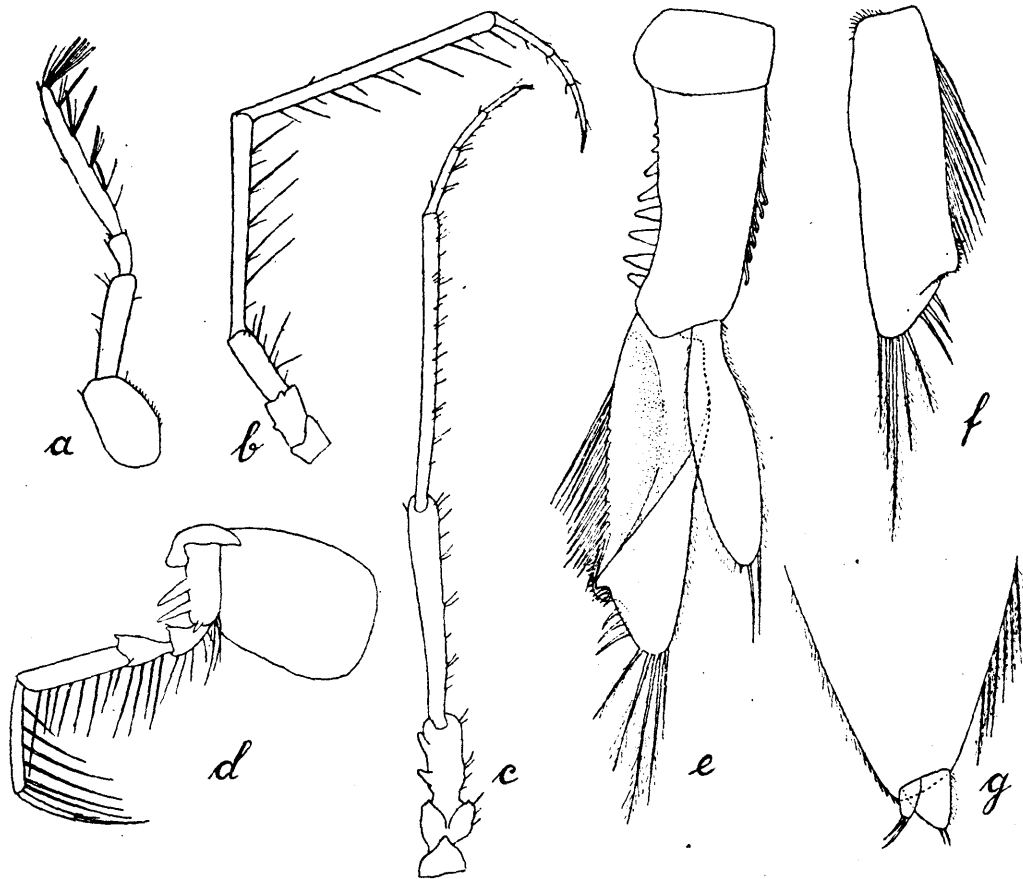


Fig. 37. *Microarcturus stebbingi* (BEDD.). a. Right antennula of a male, 140 \times . b. Right antenna, from above (female), 17 \times . c. Antenna of a male, from below, 17 \times . d. Left second pereiopod of a female with marsupium, 17 \times . e. Left first pleopod of an adult male; from the caudal side, 80 \times . f. Exopodite of the first pleopod in an adult male; from the rostral side, 80 \times . g. Tip of the right uropod, seen from the inner side, (male), 80 \times .

The three-jointed flagellum is slightly more than half as long as the last peduncular joint, its terminal joint is provided with a short «claw», traversed by a setal canal.

Mandibles and maxillae. Normal.

Maxillipeds. Distal epipodite with distal margin broadly rounded in the female, narrowly rounded in the adult male. In the male the epipodite is sometimes undivided. Coxopodite in the female with a marsupium elongated into a thin and rounded lobe directed backwards and having its inner margin furnished with plumose setae.

First pair of pereopods. Setae on the propodus and dactylus two-pointed and provided with two rows of short triangular sub-branches. Dactylus about two-thirds as long as the propodus, furnished with a long dorsal and a short ventral claw, and between the claws a claw-like seta. Dorsal claw about one-third as long as the dactylus and about twice as long as the ventral claw.

The carpus is about half as long again as it is broad, the proportion being, in an adult male 30: 21, in a female 32: 19; it is thus slightly broader in the adult male than in the female.

Second to fourth pairs of pereopods. Basipodite, as is usual, increasing in length from the second to the fourth pereopod, its upper margin on the second pereopod, as a rule with two, on the third with three, on the fourth with four spines or tuberculae. Upper distal angles of the ischium and the merus often prolonged into short spines. On the second pereopod (Fig. 37 d) the carpus and propodus are subequal in length, on the third the propodus is slightly shorter, on the fourth about one-third shorter than the carpus (24: 17). The dactylus is about half as long as the propodus and is furnished with a very long dorsal claw and a minute ventral one. On the second and third pereopods the dorsal claw is about one-third as long again as the dactylus, the proportion being 30: 23; on the fourth it is only about half as long as the dactylus. The minute ventral claw on the second pereopod is not quite one-tenth as long as the dorsal one.

Fifth to seventh pairs of pereopods. Basipodite more or less tuberculated. Dactylus about two-thirds as long as the propodus (the proportion being 10: 18), furnished with a dorsal claw about two-fifths the length of the dactylus and a very minute ventral claw; between the claws there are two setae.

First pair of pleopods (Fig. 37 e). Smaller than the other pleopods. Lateral margin of the basipodite provided with 6—9 spines, increasing in length towards the distal end of the basipodite; inner margin with 5—7 coupling setae.

Exopodite, in the female of the usual shape; its distal margin is provided with some short branchless setae. The exopodite in the male (Figs. 37 e and f) is straight and of a uniform width, except that it narrows at the distal end. Its outer and inner margins are almost straight, except distally from the mouth of the diagonal furrow, whence the exopodite tapers towards the broadly rounded end. The lateral margin of the exopodite is furnished with strong branchless setae, three setae of this kind being situated distally from the mouth of the diagonal furrow. The distal margin of the exopodite is furnished with five short-branched setae. The inner proximal angle of the exopodite is rounded and «hairy». The diagonal furrow is very wide proximally but contracts distally almost to a tube. Its mouth is surrounded by two projecting lobes, the posterior lobe (Fig. 37 e) being triangular and pointed, the anterior one (Figs. 37 e and f) rounded. The margins of the anterior lobe, and to a slight extent those of the posterior lobe, are provided with minute spines.

The endopodite is reduced in size, being in the female about half as broad and one-third to two-thirds as long as the exopodite; greatly varying in size in different specimens. Its distal margin is smooth in the female. In the male the endopodite is subequal in shape to that in the female; its length varies from a half to two-thirds the length of the exopodite, its distal margin is provided with a few, as a rule, branchless setae.

Second pair of pleopods. Exopodite and endopodite of about equal size, their distal margins provided with long plumose setae, their lateral margins with shorter plumose setae. Penial filament in the adult male somewhat longer than the exopodite.

Third and fourth pairs of pleopods. Basipodite small. The endopodite is somewhat longer than the exopodite. The margins of the branches are devoid of setae, except one short, branchless seta on the lateral margin of the exopodite near the distal margin.

Fifth pair of pleopods. Exopodite and endopodite similar in shape and size, their margins devoid of setae.

Uropods (Fig. 37 g). Lateral surface of the sympodite spinous, tuberculated or almost smooth. "Secondary" ramus from one-half to two-thirds as long as the lateral ramus, tapering towards the end; distal margin with three (exceptionally two) setae.

Remarks. The species has been described by BEDDARD (1886) from a single female specimen¹, (13 mm. in length), obtained off Kerguelen by the Challenger Expedition. It has since been collected likewise off Kerguelen by the German Deep-Sea Expedition 1898—99 (see ZUR STRASSEN, 1902, p. 686). The specimens obtained by the Swedish Antarctic Expedition are from South Georgia and Shag Rock Bank. Though I have examined a large amount of material, I found no specimen of a greater length than 9 mm., whereas BEDDARD (1886) states that the length of his examined specimen was 13 mm. In all other features than this slight difference in length my specimens agree exactly with *stebbingi* as described and figured by BEDDARD (1886). In the figure by BEDDARD (1886, Pl. XXIV, Fig. 1) the antennae of the species have been given a greater length than the body. In his description BEDDARD, however, states that the lengths of the antennae in his 13 mm. long specimen are only 9 mm.

Microarcturus stebbingi approaches most closely to *Microarcturus patagonicus* (OHLIN), *hirticornis* (MONOD) and *rugosus* n. sp. It differs from *patagonicus* in having smaller eyes, in being less spinous on the pereion, and in having the dorsal claw of the first three pereopods of much greater length. It differs from the two allied species *hirticornis* and *rugosus* in the absence of hair-like small spines on the body and in a different shape of pleotelson. It differs distinctly from *rugosus* in that the first pleopods both in the male and the female have a different shape and have a different length of the dorsal claw of the fourth pereopods.

Localities and Material.

St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. 53° 34' S., long. 43° 23' W. 160 m. Bottom temp. + 2.05°. Gravel and sand. 19/4 1902. 14 specimens, males and females, all specimens spinous. Length of the largest specimen 8 mm. (female with marsupium). The specimens were obtained together with *Microarcturus rugosus*.

St. 21. South Georgia, mouth of Possession Bay, lat. 54° 8' S., long. 37° 3' W. 200 m. Bottom temp. + 1.3. Clay. 9/5 1902. 6 specimens. Length of the largest specimen about 8 mm.

St. 22. South Georgia, off May Bay, lat. 54° 17' S., long. 36° 28' W. 75 m. Bottom temp. + 1.5°. Clay and also some algae. 14/5 1902. A large spinous male specimen, length about 9 mm.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54° 11' S., long. 36° 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. 2/6 1902. About 125 specimens, males and females. Length of largest specimens, males about 9 mm., females 8.5 mm.

¹ The type specimen of *Microarcturus stebbingi* is preserved at the British Museum. When visiting the British Museum I asked for the specimen, but it could not be found and has perhaps been lost. I have thus been unable to compare the characteristic pleopods and uropods of my specimens with those of the type specimen of *Microarcturus stebbingi*.

Distribution. Shag Rock Bank (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.), Kerguelen (BEDDARD 1886, ZUR STRASSEN 1902).

The species has previously been found only at Kerguelen.

Microarcturus rugosus n. sp.

Pl. II, Fig. 14; Text figs 38 a—e.

Diagnosis. Body densely covered with short-haired spines and »hairs», the largest spines being: four on the dorsal surface of the head, six (a dorsal, a dorso-lateral and a lateral pair) on the posterior transverse elevation of the first four pereion segments and a pair, one on either side of the tip of the pleotelson. Pleotelson with lateral margins slightly convex, converging towards the tip, where they meet in an acute angle. Fourth pereion segment in the male subequal in length to the third. First two peduncular joints of the antennulae, as well as the peduncle of the antennae (except the distal part of the last peduncular joint), dorsally more or less covered with small spines, varying from the usual type down to needle-like points. Length of the dactylus of the second pereopod two-fifths the length of the propodus, length of the dactylus of the third pereopod about half that of the propodus; dactylus of fourth pereopod three-fourths the length of the propodal joint. Dorsal claw of the second and third pereopods about one-third as long again as the dactylus, of the fourth subequal in length to this joint. Basipodite of first pair of pleopods with a lateral row of 11—16 small and obtuse spines. Exopodite and endopodite in the female linguiform, of uniform width and furnished with one or two long plumose setae on the broadly convex distal margins; the endopodite is slightly shorter than the exopodite, but only about half as broad. Exopodite of the first pleopod in the male sub-rectangular and of a uniform width; distal margin almost straight, provided with a few rather short plumose setae; diagonal furrow proximally broad, but narrowing towards the distal end; mouth of the furrow forming a deep incision in the lateral margin of the exopodite. Lateral ramus of the uropod subtriangular, with a convex distal margin; »secondary» ramus of the uropod about two-thirds as long as the lateral ramus, tapering towards the end and provided with three setae on its distal margin.

Discription.

Types. Male about 7 mm. in length, female with marsupium about 8.5 mm. in length.

Body (Pl. II, Fig. 14). Covered, dorsally and laterally, with spines of varying size and »hairs». The large spines are, as a rule, covered with short »hairs», the small spines are often distally divided into a number of acute points (Fig. 38 b). Ventral surface of the pereion devoid of spines.

Head. Frontal margin concave; antero-lateral angles rounded; lateral margins straight. Eyes small, dark and rounded, with a length subequal to one-fourth of the length of the lateral side of the head. Dorsal surface of the head with four spines, situated in such wise as to form the points at the angles of a square. The anterior pair of spines are directed slightly forwards and are somewhat longer than the posterior pair. At the antero-lateral angle of the head there is a long spine. The head is, moreover, covered with small spinules of varying size.

First pereion segment. Fused with the head but separated by a transverse groove. Lateral parts of the segment not projecting, directed ventrally. Lateral margin of the tergite with a small ventral incision. Posterior transverse elevation, as a rule, with a pair of large dorsal and another of large dorso-lateral spines; sometimes also a pair of laterally situated spines are longer than the others. In some of the adult specimens the segment is covered with numerous small spines of uniform length, situated approximately in four transverse rows, two of these rows being on the transverse elevation.

Second, third and fourth pereion segments. In the female the third segment is the longest, in the male the third and fourth segments are subequal in length. Lateral parts of the segments subtriangular and forming horizontally situated »pleurae», those on the fourth segment occupying about the anterior three-fourths of the lateral side of the segment. Posteriorly from the pleurae of the fourth segment as in *Microarcturus stebbingi*, there is, a deep transverse furrow on the lateral side. In small specimens, a dorsal, a dorso-lateral and a pleural pair of spines are always the largest. In some adult females the pleural pair of spines only are longer than the others, the posterior elevation being densely covered with small spines, practically uniform in length, forming, though indistinctly, two dorsal transverse rows and three or four lateral rows; the anterior dorsal area is moreover furnished with a transverse row of spines. In most of the adult specimens, the dorsal, dorso-lateral and pleural pairs of spines on the posterior elevation are larger than the others, and the anterior dorsal area is provided with only one pair of dorsally situated spines. In very small specimens the anterior dorsal area is smooth.

Coxal plates devoid of incisions; those of the second and third segments in the female with marsupium posteriorly prolonged into short triangular projections closely following the outline of the marsupium. Coxal plates of the fourth segment in females with marsupium prolonged into long triangular obtusely pointed processes, directed inwards, the points of which almost meet behind the marsupium. Posterior margins of the processes provided with a small spine.

Fifth, sixth and seventh pereion segments. Decrease in length and width, from the fifth to the seventh. Anterior dorsal area smooth. Posterior elevation covered with spines, dorsally forming two indistinct transverse rows. Coxal plates spinous.

Abdomen. About as long as the last three pereion segments together. Three anterior segments are indicated by very faint transverse grooves; each segment with a transverse row of spines; as a rule, one lateral spine on each side of the third segment is the largest.

Pleotelson about as long as the anterior part of the abdomen covered with spines, of which one pair of terminal spines — one spine on either side anterior to the tip of pleotelson — are always longer than the others. Lateral margins of pleotelson slightly convex meeting at the tip at an acute angle. The part of the pleotelson which is situated posteriorly from the terminal pair of spines is shorter than in *Microarcturus stebbingi*.

Antennulae (Fig. 38 a). Reaching the distal margin of the third peduncular joint of the antennae. First and second peduncular joints with a sparse covering of small spines and setae. Flagellum in the male, as a rule, with six groups of sensory filaments and setae, in the female with only two groups, situated distally.

Antennae (Figs. 38 b and c). Much shorter than the body. Second, third, fourth and, in a minor degree, the proximal part of the fifth joint covered with short and slender spines and »hairs». Third peduncular joint somewhat less than twice as long as the

second, as a rule, with one spine larger than the rest at its antero-distal angle. Fourth peduncular joint about twice as long as the third, increasing in width towards the distal end and provided with a large spine at the antero-distal angle. Fifth peduncular joint about one-sixth longer and somewhat narrower than the fourth, increasing in width towards the distal end. Flagellum about one-third shorter than the last peduncular joint, consisting, as a rule, of three joints, the last joint being furnished with a terminal claw. Exceptionally there are four joints in the flagellum.

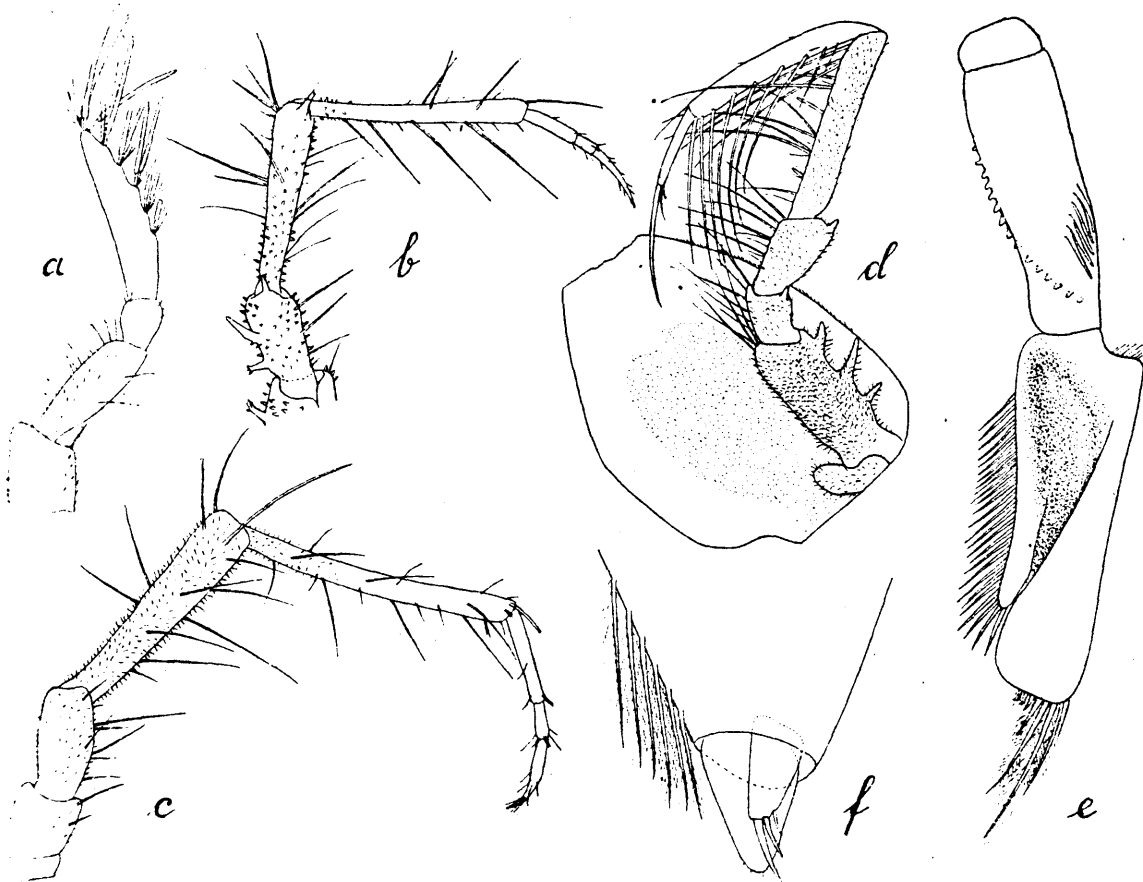


Fig. 38. *Microarcturus rugosus* n. sp. a. Left antennula, in a male, 50 \times . b. Right antenna, from above, 17 \times . c. Left antenna, from below, 30 \times . d. Second pereopod of a female with marsupium, 25 \times . e. Left first pleopod (except the endopodite) of an adult male; from the caudal side, 80 \times . f. Tip of the right uropod, seen from the inner side, (adult female), 140 \times .

Mouth-organs. Normal. In the maxillipeds the distal margin of the distal epipodite is broadly rounded. The ovigerous female has the coxopodite expanded into a lobe directed backwards; the inner margin of this lobe is furnished with plumose setae.

First pair of pereopods. Setae on the propodus and dactylus of the usual type, long, two-pointed and furnished with two rows of short triangular sub-branches. Propodal joint about half as long as the dactylus. Dorsal claw about half as long as the dactylus and more than three times as long as the short ventral claw.

Second pair of pereiopods (Fig. 38 d). Upper margin of the basipodite spinous, often with three spines longer than the rest; ischium and merus with a spine at their upper distal angles (frequently larger than in the figured specimen), propodus slightly shorter than the carpus and about two and a half as long as the dactylus; dorsal claw about one-third as long again as the dactylus, ventral claw extremely minute and setiform; between the claws there is a seta.

Third pair of pereiopods. Similar to the second, except that the basipodite is longer and the propodus shorter. Propodus not fully twice as long as the dactylus. Length of the dorsal claw about one-third as long again as the dactylus.

Fourth pair of pereiopods. Basipodite longer than that of the third pereiopod, with upper margin spinous; ischium and merus with a spine at its upper distal angle. Propodus only about half as long as the carpus. Dactylus about one-fourth shorter than the propodus; dorsal claw subequal in length to the dactylus.

Fifth, sixth and seventh pairs of pereiopods. Upper margin of the basipodite more or less spinous. Propodus about two-thirds as long as the dactylus, which is furnished with two claws, and a seta between the claws. Length of the dorsal claw about two-fifths that of the dactylus. Ventral claw minute.

First pair of pleopods, female. Lateral margin of the basipodite with about 10 small obtuse spines. Exopodite and endopodite linguiform, slightly tapering towards the end and furnished with setae only on their distal margins. Distal margin of the exopodite provided with two long plumose¹ setae. Endopodite slightly shorter and only about half as broad as the exopodite; its distal margin provided with one or two plumose¹ setae.

First pair of pleopods, male (Fig. 38 e). Basipodite with a lateral row of 11—16 small obtuse spines; inner margin with 5 coupling-setae. Exopodite broad, not curved, of uniform width; its outer and inner margins almost straight, distal margin almost truncate and provided with about eight short plumose setae, three of them longer than the rest; outer margin with a row of stout branchless setae; inner margin devoid of setae proper but with some short «hairs» at the inner proximal angle; diagonal furrow proximally broad but narrowing considerably towards the end; the mouth of the furrow forms a deep incision in the lateral margin.

Uropods. Lateral surface of the sympodite short-haired. "Secondary" ramus about two-thirds as long as the lateral ramus, tapering towards the end, its distal margin furnished with three branchless setae.

Remarks. It is possible that the species is identical with *Microarcturus hirticornis*², a species of which a single, probably non-adult, specimen was obtained by the Belgian Antarctic Expedition (1897—99). The specimen was figured, but not described, and provisionally given the name of *hirticornis* by MONOD (1926). From the figure by MONOD (1926, Fig. 30) it will be seen, however, that *hirticornis* differs in having the distal end of the pleotelson cleft, owing to the pair of terminal spines being situated near each other on the distal margin of the pleotelson; the triangular and pointed tip of the pleotelson between the two terminal spines, which is characteristic of *rugosus*, is thus entirely lacking in *hirticornis*. This difference may perhaps be due to variation within the same species.

¹ The setae have only sparse sub-branches.

² MONOD, 1926, p. 33, Fig. 30.

Localities and Material.

St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. $53^{\circ} 34' S.$, long. $43^{\circ} W.$ 160 m. Bottom temp. $+ 2.05^{\circ}$. Gravel and sand. $19/4$ 1902. 32 specimens, males, females, and immature. Length of the largest specimen 9 mm. (female with young); colour whitish. Length of the type specimens, male about 7, female about 8.5 mm.

St. 94. Graham Region, north of Joinville Island, lat. $62^{\circ} 55' S.$, long. $55^{\circ} 57' W.$ 104 m. Gravel mingled with stones. $21/12$ 1902. One male specimen, length about 5.5 mm. (Pl. II, Fig. 14); colour grayish-brown.

Distribution. Shag Rock Bank (Sw. Ant. Exped.), Graham Region (Sw. Ant. Exped.).

Microarcturus digitatus n. sp.

Pl. II, Figs. 15, 16; Text figs. 39 a—e.

Diagnosis. Head with four large dorsal spines, situated in such wise as to form the points at the angles of a square. First four pereion segments each with a transverse row of six large spines, one dorsal, one dorso-lateral and one lateral on either side of the middle. Last three pereion segments each with a pair of large dorso-lateral and a pair of large lateral spines, the lateral spines being situated on the coxal plates (fifth segment with a pair of dorsal tuberculae). Pleotelson pointed, lacking the usual pair of terminal spines. Second, third and fourth pairs of pereopods with dactylus slightly longer than the propodus, its dorsal claw on second and third pereopods being about $1/8$, on the fourth $1/12$ — $1/13$ as long as the dactylus. Last three pairs of pereopods with dactylus about two-thirds as long as the propodus. Basipodite of the first pair of pleopods with 7—10 small spines on its lateral margin; exopodite and endopodite subequal in length, but the endopodite narrower than the exopodite; endopodite furnished with sparse plumose setae only on its distal margin. Exopodite in the male of a uniform width, slightly curved, with inner margin convex and lateral margin concave; diagonal furrow of the male exopodite contracted into a tube, except at its proximal end. Uropod provided with a subtriangular, distally rounded lateral ramus, but with no trace of a "secondary" ramus.

Description.

Types: Female with marsupium, length 9 mm., length of its antennae 8 mm.; male, length 12.5 mm., length of the antennae 11.5 mm.

Body and spine-armature of the female.

Head. Frontal margin sinuate. Anterio-lateral angles pointed. Lateral margins, when viewed laterally, straight, showing a small point behind the eyes when seen from above. Eyes protruding and circular, about one-third the length of the head. In the middle they are dark-brown in colour but colourless peripherally. Dorsal surface of the head with four large spines, situated in such wise as to form the points at the angles of a square.

Pereion. Segments of the pereion sculptured in the usual way in a posterior transverse elevation, which widens out laterally to comprise the whole segment. The second, third and fourth segments are protracted laterally into subtriangular pleurae, occupying anteriorly on the second and third segments about three-fourths, on the fourth segment about two-thirds of the length of the segment. Pereion traversed by six longitudinal rows of large spines, situated dorsally, dorso-laterally and laterally on the posterior transverse elevation of the segments, and forming on each of the first four segments a dorsal, a dorso-lateral and a lateral pair of spines; the lateral spines on segments 2—4 are formed by the prolonged tips of the pleurae. A similar spine arrangement occurs on

the other segments, too, though some of the spines are small or missing. The large lateral spines of the last three segments are formed by the tips of the coxal plates.

The first segment is fused with the head, but separated by a groove. The lateral parts of the segment are not protracted into pleurae, but are furnished with a small but distinct spine, directed laterally and corresponding to the pleurae on the second, third, and fourth segments. Posteriorly from the lateral spine there is a small ventral incision in the lateral margin. Posterior transverse elevation provided with a pair of dorsal and a pair of dorso-lateral spines. The dorso-lateral spines are the largest. Coxal plates absent.

The second segment is longer than the first and is furnished with six large spines, increasing in size from the dorsally situated spines to the pleural ones. There is a small spine on each side between the dorso-lateral and the lateral (pleural) spine, but situated further back, and a small spine anteriorly on the pleurae.

Coxal plates in female with a marsupium posteriorly prolonged into slight triangular projections.

The third segment is subequal in length to the second but broader. It is sculptured in the same way as the second.

Coxal plates as on the second segment.

The fourth segment is narrower than the third and about as broad as the second. It is shorter than both the third and second segments and about as long as the first segment. Its sculpturing is similar to that of the other anterior segments.

Coxal plates in female with a marsupium prolonged into posterior processes directed medially, the points of which almost meet behind the marsupium. The posterior margin of these processes, approximately on the middle, is furnished with a small spine directed downwards and outwards.

The last three segments decrease in length and width from the fifth to the seventh. Each segment is provided with a pair of dorso-lateral and a pair of lateral spines, the latter, situated on the coxal plates (see p. 124), being the longest. Fifth segment furnished with a pair of dorsal tuberculae. It has on each side a small spine, which is situated between the dorso-lateral and the lateral spine but further back, and a small spine anteriorly on each coxal plate; there is also a small spine antero-laterally on the segment (this spine perhaps corresponding to the large lateral [pleural] spine on the anterior segments). Sixth and seventh segments similar to the fifth, but the small additional processes — except the one anterior on each coxal plate — are mere tuberculae. Ventral surface of seventh segment with a small tuberculum in the middle.

Abdomen. Slightly longer than the last four pereion segments together. First three segments distinctly indicated by transverse grooves. First segment posteriorly with a pair of dorso-lateral and a pair of somewhat larger lateral spines; its ventral surface furnished anteriorly in the middle with a small spine. Second segment with two small dorsal and two larger dorso-lateral spines. Third segment with two small dorsal and two somewhat longer lateral spines.

Pleotelson about one-third longer than the three anterior segments together, with lateral margins slightly convex. Tip of pleotelson ending in an acute point. The pleotelson, with the exception of the tip, is sparsely covered with short tooth-like spines; there are two parallel rows of these spines on either side along the lateral margin, each

row consisting of three spines. In the more lateral row the spines are small and tuberculiform.

Body and spine-armature of the male.

The male differs from the mature female in its body being somewhat less broad anteriorly, owing to the absence of marsupium. The lengths of the segments are the same

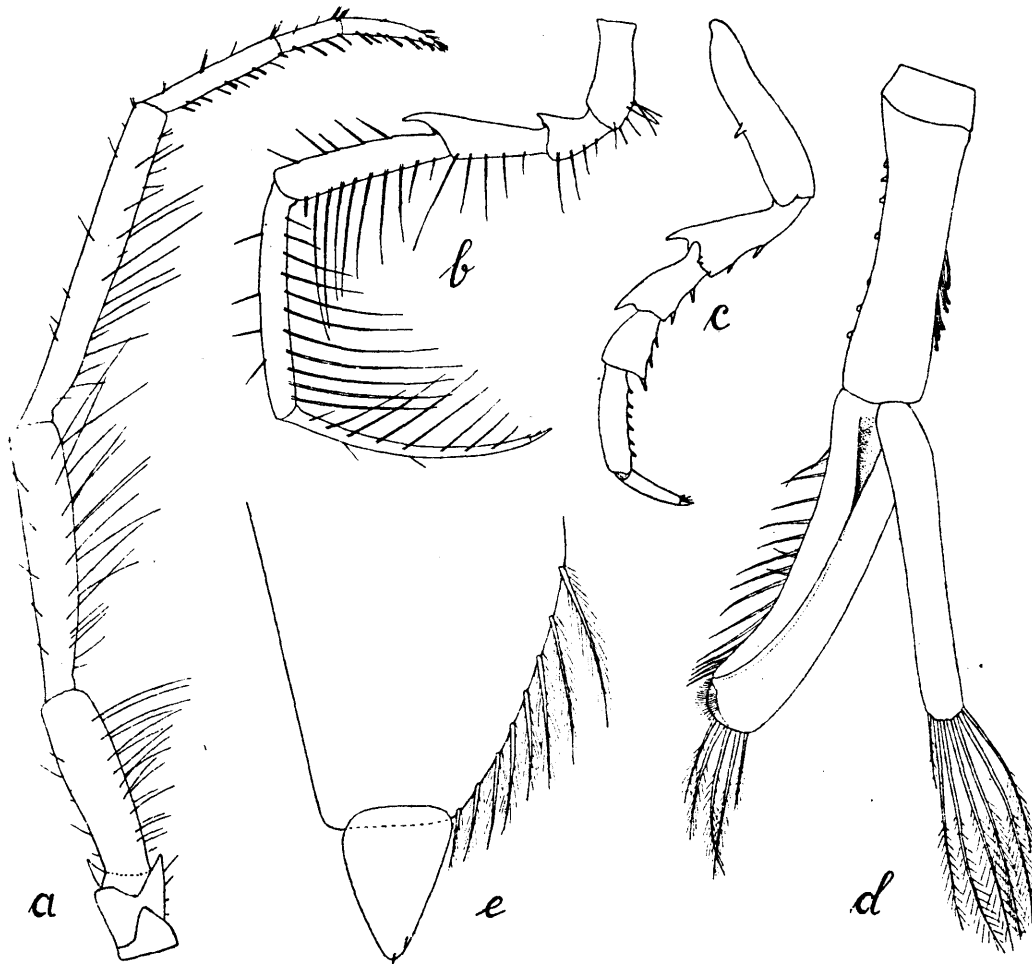


Fig. 39. *Microarcturus digitatus* n. sp. a. Antenna from above, 17 \times . b. Right second pereopod, 17 \times . c. Right sixth pereopod, 17 \times . d. Left first pleopod of an adult male; from the caudal side, 45 \times . e. Tip of the right uropod, seen from the inner side, (female), 80 \times .

as in the female, the fourth segment in the male being likewise shorter than the third. As in the female, the fourth pair of coxal plates are prolonged into processes, directed inwards, which in the middle are provided with a spine, but these processes are firmly fused with the sternum. The characteristic spine-armature dorsally and laterally on the body is the same in both males and females. In its spine-armature the adult male differs from the female only in having the ventral surface of the fifth pereion segment provided with a spine situated anteriorly in the middle.

Appendages.

Antennulae. Reaching approximately the distal margin of the third peduncular joint of the antennae. The proportion between the lengths of the three peduncular joints and the flagellum is 7.9: 5: 3.5: 18 (in a female). The flagellum is thus slightly longer than the peduncle. Its length varies slightly in different specimens.

Antennae (Fig. 39 a). Shorter than the body. Second peduncular joint provided with a spine at its lower-distal and anterio-distal angles. The last peduncular joint is the longest.

The flagellum is about four-fifths as long as the last peduncular joint and consists, as a rule of three joints, the last joint provided with a claw, in which a distinct setal canal can be seen. In one large female with marsupium the flagellum consisted of four joints, the first two joints corresponding to the usual first joint.

Mandibles and maxillae. Normal.

Maxillipeds. Epipodite ovate with distal margin broadly rounded. The suture between the proximal and the distal epipodite is faint in males. In females with a marsupium this suture is distinct, and the coxopodite extends backwards into a thin sub-rectangular lobe in the usual way, the lobe being furnished on its inner margin with plumose setae.

First pair of pereopods. Dactylus subequal in length to the propodus, furnished with two very short claws near each other, the claws being almost equal in size. All setae on the pereopod are single-pointed, without sub-branches.

Second, third and fourth pairs of pereopods (Fig. 39 b). Basipodite of the second pereopod, as a rule, with a small spine¹ on its upper margin; on the third pereopod the upper margin of the basipodite, as a rule, has two, on the fourth pereopod, three spines. Ischium and merus with their upper distal angles prolonged into spine-like projections. The propodus and dactylus are extremely long, the dactylus being somewhat longer than the propodus. On the second and third pereopod the dactylus is furnished with a dorsal claw, which is about one eighth as long as the dactylus, and a minute slender ventral claw. Between the claws there is one seta. The dactylus of the fourth pereopod is provided with two claws, both strong, but the ventral one is about two-thirds the length of the dorsal; between the claws there is one slender seta; the dorsal claw is about $\frac{1}{12}$ — $\frac{1}{13}$ as long as the dactylus.

Fifth, sixth and seventh pairs of pereopods (Fig. 39 c). Upper margin of the basipodite provided with a small spine. Upper distal angle of the ischium and merus prolonged into a spine. Lower margin of the ischium, merus, carpus, and propodus, with small spines. Dactylus about two-thirds as long as propodus, furnished with two claws, a small dorsal claw about one-seventh the length of the dactylus, and a minute ventral one, about one-third as long as the dorsal claw.

Penis. Normal.

First pair of pleopods (Fig. 39 d). Basipodite with 7—10 minute tooth-like spines along its lateral margin; inner margin with about seven coupling-setae. Exopodite in the male almost of uniform width, slightly curved; outer margin concave and provided with branchless setae, inner margin slightly convex; distal margin convex and furnished with five plumose setae; inner proximal angle rounded, smooth. The diagonal furrow

¹ The spine is missing in the specimen figured.

of the male exopodite is broad proximally, but for the greater part of its length it is contracted into a tube; the postero-distal angle of the mouth of the tube is pointed. For further details see the figure. Endopodite in the male always narrower than the exopodite, its width in some specimens being two-thirds the width of the exopodite; in other specimens it is broader.

The exopodite and endopodite in the female are long and narrow, the endopodite being very slightly shorter and narrower than the exopodite. Both are furnished with plumose setae on their distal margins; the exopodite is provided with four such setae, the endopodite with five. In one female with marsupium the exopodite was transformed in exactly the same manner as in the adult male.

Uropods (Fig. 39 e). Lateral surface of the sympodite with a longitudinal ridge along the middle bearing about six small tooth-like spines. Lateral ramus subtriangular and broadly rounded distally. "Secondary" ramus completely absent in all specimens.

Remarks. *Microarcturus digitatus* is allied to *M. acanthurus* (MONOD, 1926). The spine-armature of the head and the pereion resembles that of *acanthurus*. The length of the joints of the pereopods and the antennae is similar in both species, but *digitatus* differs in having the pleotelson pointed, not as in *acanthurus* elongated into a cleft prolongation, as well as in many other details. Whether or not the "secondary" ramus of the uropod is lacking in *acanthurus*, as is the case in *digitatus*, was not indicated by MONOD (1926).

The spine-armature in *Microarcturus digitatus* is very similar to that in *Arcturus parvus* RICHARDSON (1910) from the Phillipine Islands (see RICHARDSON, 1910 a).

Localities and Material.

St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. $53^{\circ} 34' S.$, long. $43^{\circ} 23' W.$ 160 m. Bottom temp. $+ 2.05^{\circ}$. Gravel and sand. $29/4$, 1902. Immature specimen, found on a sponge. Flagellum of one of the antennae consisting of only two joints. Seventh pair of pereopods only semi-developed. Spine-armature in its main features as in adult specimens. Thus there is a transverse row of six spines posteriorly on the first four pereion segments, but the small additional spines are absent or minute. Length of the specimen about 3.2 mm.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. $54^{\circ} 11' S.$, long. $36^{\circ} 18' W.$ 252—310 m. Bottom temp. $+ 1.45^{\circ}$. Gray clay with a few stones. $5/6$, 1902. 11 specimens, males and females, found on a sponge. Length of largest specimens (types), male 12.5 mm, female possessing a marsupium 9 mm.

Distribution. Shag Rock Bank (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.).

SECTION V.

Sub-Order Asellota.

I. Fam. Parasellidae.

A. Group *Ianirini* HANSEN, 1916.

Genus *Ianira* LEACH, 1813.
HANSEN 1916, TATTERSALL 1921.

Subgenus *Iathrippa* BOVALLIUS, 1886.

Syn. *Notasellus*. PFEFFER, 1887.
Jorina. NIERSTRASZ, 1918.

Diagnosis. Eyes protruding, situated laterally. Uropods broad and flattened, the width of the peduncle increasing towards the distal end. First pair of pleopods (in the male) with the latero-distal angles of the sympodite triangular and protruding freely, rami triangular distinctly marked off from the sympodites. Exopodite of third pleopod two-jointed, differently shaped in male and female, being large in the male and widening towards the end, in the female small and narrow and tapering towards the end. Endopodite of third pleopod oblong-ovate furnished with three plumose setae on its distal margin. Otherwise as in *Ianira*.

In 1886, BOVALLIUS referred the species *Ianira longicauda* CHILTON to a new genus *Iathrippa*, characterized by having lamellar uropods. As will be shown below, *Ianira (Iathrippa) longicauda* CHILTON is identical with *Notasellus trilobatus* RICHARDSON (1910). Consequently, the name *Notasellus* PFEFFER must be abandoned and replaced by the older name *Iathrippa*.

BOTH HODGSON (1902), and TATTERSALL (1921) point out that *Ianira (Iathrippa) sarsi* (PFEFFER) comes very close to a typical species of *Ianira*. Still more is this the case with the second species *Ianira (Iathrippa) longicauda*. But as there still remain some features characteristic of both species, as shown in the diagnosis, I prefer to retain *Iathrippa* as a separate subgenus. The value of the subgenerical characters cannot be shown without a revision of *Ianira* and allied genera.

The shape of the first pleopods in the male is characteristic and exactly similar in both the known species. This characteristic thus applies to the subgenus, but it is however, to be remarked that the shape of the first male pleopods within the group *Ianirini* sometimes varies rather considerably in different species of the same genus. (e. g. the closely allied species *Jaera albifrons* LEACH and *Jaera nordmanni* RATHKE).

According to HANSEN (1905, p. 329—330) and STEBBING (1905, p. 49) *Stenetrium inerme* HASWELL (1881) should probably be referred to *Ianira*. In its laterally situated eyes and broad uropods it agrees with the subgenus *Iathrippa* (see HASWELL, 1881, Pl. 19, Figs. 2 and 2 x).

***Ianira (Iathrippa) longicauda* CHILTON, 1884.**

Text. figs 40 a—h.

Ianira longicauda. CHILTON, 1884, p. 250, Pl. 18, Fig. 2 a; TATTERSALL, 1921, p. 200, Pl. I, Fig. 6.*Iathrippa longicauda*. BOVALLIUS 1886, p. 32—33.*Notasellus trilobatus*. RICHARDSON, 1910, p. 649—650, Figs. 1 a, b, and c; GIAMBIAGI, 1925, p. 16—17, Pl. V.*Jorina chilensis*. NIERSTRASZ, 1918, p. 134—137, Figs. 74—85.

For additional literature see TATTERSALL (1921).

Supplementary Description.

Colour. Whitish to slightly yellow or brownish; some specimens with brownish dots of pigment on the dorsal surface.

Head. Sub-rectangular, antero-lateral angles rounded. Rostrum extending to about the distal end of the third peduncular joint of the antennae, its dorsal surface concave. Eyes laterally situated, protruding, semi-spherical. Lateral margins with short spine-like setae which, in large specimens, are found, as a rule also on the dorsal surface, mingled with longer ones.

Pereion. In large specimens more or less covered with setae. Coxal plates as described and figured by RICHARDSON (1910).

Abdomen (Fig. 40 a). With one short free segment anteriorly. Pleotelson semi-circular, more or less covered with short and long setae, most thickly on the margins.

Antennulae (Fig. 40 b). Most of the setae on the peduncular joints are two-pointed and of the appearance shown in Fig. 40 c. Flagellum consisting of about 28 joints.

Antennae. Slightly longer than the body. In most of the specimens they are broken between the fourth and fifth peduncular joints. Peduncle furnished with the same kind of setae as the peduncle of the antennulae. First, second and third joints short, subequal in length. Third peduncular joint about twice as long as the first, with well developed and articulated squama, which is furnished with apical setae. The sixth peduncular joint (in a free antenna lacking the first four joints of the peduncle) is longer than the fifth. The long flagellum consists of about 90 (91) joints, the first very long and corresponding to several joints.

Mandibles. Of typical Ianiridian structure, almost as in *Ianira maculosa*¹ LEACH. Incisive part in both mandibles five-pointed. Lacinia (on the left mandible) with five points. Row of setae consisting of 14—16 large setae; they are furnished with a row of spinelike sub-branches, except 1—3 of the posterior setae. Between the large setae occur some hair-like additional ones.

First and second pairs of maxillae, upper and lower lips. Almost as in *Ianira maculosa*¹ LEACH. Each lappet of the outer lobe of the second pair of maxillae is provided with three apical setae.

Maxillipeds (Fig. 40 d). Same in males and females. Third palp joint narrow. Some of the setae on the distal margin of the endite are illustrated in Fig. 40 e.

First pair of pereopods, female. See Fig. 40 h.

First pair of pereopods, male². See Figs 40 f and g. Meral joint with six two-pointed distal setae. Carpal joint strong, with lower surface very broad and somewhat hol-

¹ Cf. G. O. SARS, 1899, Pl. 40.

² Cf. RICHARDSON (1910, Fig. 1 b) and GIAMBIAGI (1925, Pl. V, p₁ and p₁x).

lowed. On both the rostral and the caudal margin of the lower surface there is a row of densely situated setae, having between them a longitudinal furrow in the middle. Most of the setae are slender and hair-like, but in the caudal row they are mingled with stout

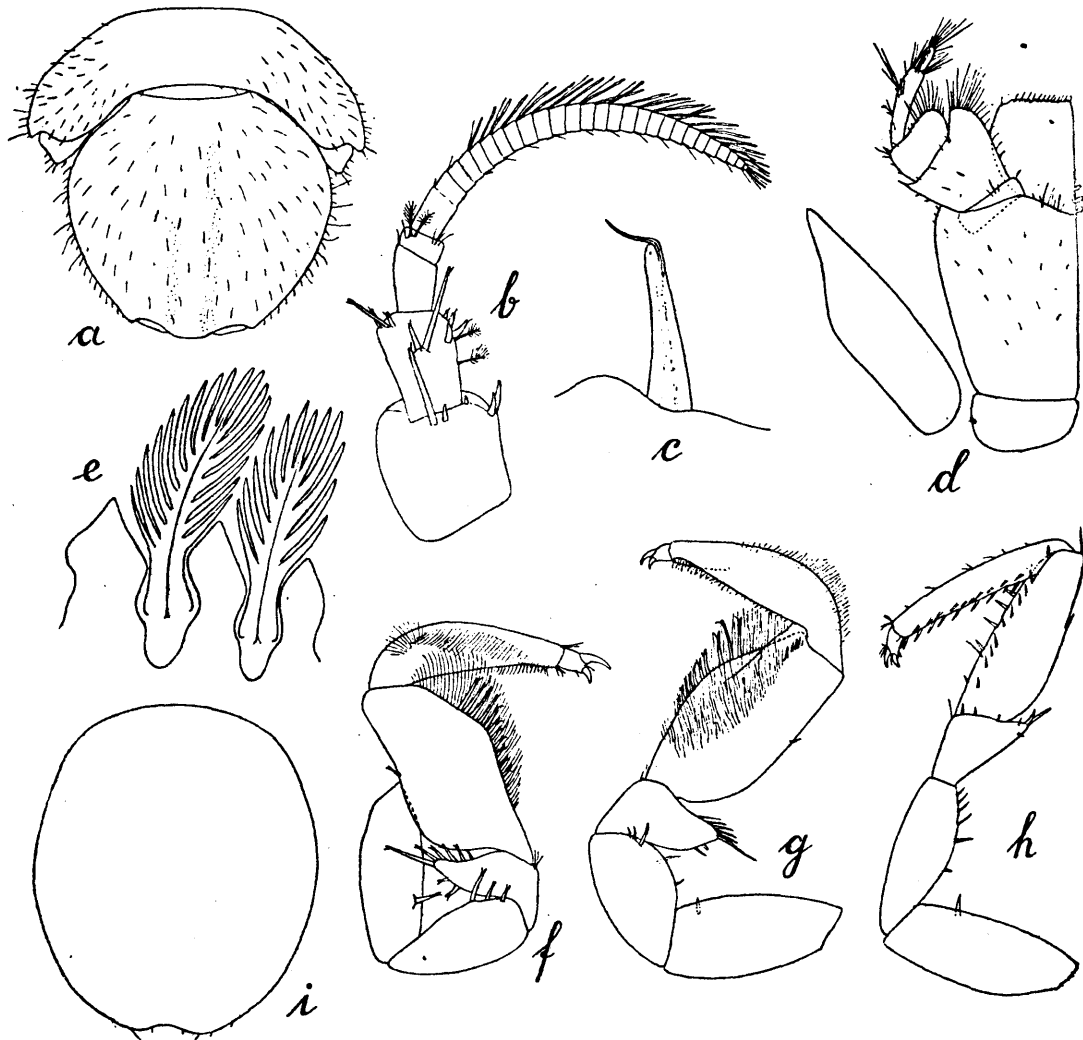


Fig. 40. *Ianira (Iathrippa) longicauda* CHILT. a. Last pereion segment and abdomen, 13 ×. b. Right antennula, male, 35 ×. c. Seta from the second penduncular joint of the antennula, 240 ×. d. Right maxilliped, (non-ovigerous female), 30 ×. e. Setae from the distal margin of the endite of the maxilliped, 670 ×. f. Right first pereopod of an adult male; seen from the caudal side, 17 ×. g. Right first pereopod of an adult male; seen from the rostral side, 20 ×. h. Right first pereopod, in a female, 25 ×. i. Female operculum, 25 ×.

two-pointed ones. The propodus is ventrally hollowed and carries one longitudinal row of hair-like setae on both the rostral and caudal margins of its lower surface.

The figures by GIAMBIAGI (1925, Pl. V, p_1 and p_1^N) illustrate the first pereopod of an immature male specimen, in which this appendage resembles the first pereopod of the female.

The other pereopods. Dactylus provided with three claws.

First pairs of pleopods, male. First pleopods much broader proximally than figured by RICHARDSON¹ (1910) and agreeing with the same appendages in *Ianira (Iathrippa) sarsi*.

Operculum, female. With distal margin somewhat concave in the middle.

Third pair of pleopods. In the female the exopodite is slightly longer than the endopodite, narrow, two-jointed, its second joint small; lateral margin of the exopodite exhibiting an incision between its first and second joint. Endopodite oblong-ovate; its distal margin provided with three plumose setae, two of which are situated close to each other near the outer distal angle.

In the male² the two-jointed exopodite is much larger and longer than in the female. The endopodite is similar to that in the female.

Uropods, Broad and flattened; exopodite about half as long as the endopodite.

Remarks. With the above described species, previously known only from New Zealand, the Patagonian form *Notasellus trilobatus* described by RICHARDSON (1910) must be identical. I have compared some sub-adult and immature specimens from the Campbell Islands with specimens subequal in size from the Falkland Islands and could find no differences. The rostrum of *Ianira (Iathrippa) longicauda* is somewhat longer than as figured by TATTERSALL (1921). The antero-lateral angles of the head are slightly more rounded than shown in the figures by RICHARDSON (1910) and GIAMBIAGI (1925), but not so much rounded as figured by TATTERSALL (1921). The pleotelson (Fig. 40 a) is almost circular in outline (as it is figured by TATTERSALL, 1921), though occasionally it is somewhat trilobate distally, as shown in the figure by GIAMBIAGI (1925), but not so much trilobate as it is figured by RICHARDSON (1910). The lateral margins and the dorsal surface of the body are covered with setae, but sometimes nearly all the setae are missing.

The species described by NIERSTRASZ (1918) under the name of *Jorina chilensis* is certainly identical with *Ianira (Iathrippa) longicauda* CHILTON. The figures by NIERSTRASZ show that it agrees in detail with the latter species. His description is, however, incomplete in some points which certainly is due to his defective material, consisting of a single female specimen. The characteristic five-pointed incisive part, as well as the lacinia, of the left mandible is illustrated by NIERSTRASZ in his Fig. 77, but it is stated to be that of the right mandible. On all the pereopods, except the first, I found three claws; NIERSTRASZ (1918) states that the fifth pereopod is provided with three claws.

Localities and Material.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54° 11' S., long. 36° 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. ⁵/₈, 1902. Male specimen of a length of about 9 mm.

St. 40. Falkland Islands, Berkeley Sound, lat. 51° 33' S., long. 58° 0' W. 16 m. Bottom temp. + 2.75°. Gravel and shells with algae. ¹⁹/₇, 1902. 2 immature specimens male and female.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ³/₈, 1902. 6 specimens, males and females; length of the two largest specimens about 9.5 mm. (males).

St. 52. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 44' W. 17 m. Sand. ³/₈, 1902. Female broken into two parts.

¹ See RICHARDSON, 1910, Fig. 1 b.

² See RICHARDSON, 1910 Fig. 1 c.

St. 55. Falkland Islands, Port Albemarle, lat. $52^{\circ} 11' S.$, long. $60^{\circ} 26' W.$ 40 m. Sand with algae. $8/10$, 1902. In a rotten root of kelp. Female with marsupium; the specimen covered with dots of brown pigment dorsally; length about 7 mm.

St. 58. South of West Falkland, lat. $52^{\circ} 29' S.$, long. $60^{\circ} 36' W.$ 197 m. Bottom temp. $+ 4.1^{\circ}$. Sand and gravel. $11/10$, 1902. 4 specimens (3 males with lengths of about 4.7, 4.7 and 7.9 mm.; ovigerous female, length about 6.5 mm.).

St. 59. South of West Falkland, on the Burdwood Bank, lat. $53^{\circ} 45' S.$, long. $61^{\circ} 10' W.$ 137—150 m. Broken shells with stones. $12/10$, 1902. 2 male specimens; length of the largest specimen about 9.5 mm.

St. 60. Fuegian Archipelago, eastern mouth of the Beagle Channel, lat. $55^{\circ} 10' S.$, long. $66^{\circ} 15' W.$ 100 m. Bottom temp. $+ 5.0^{\circ}$. Broken shells. $15/10$, 1902. 5 specimens, male and 4 females, one of the females with about 16 eggs in the marsupium. Largest specimen, female with small oostegits, about 8 mm. in length.

Swedish Magellanian Expedition. Tierra del Fuego, Fitzroy Channel, between Otway and Skyring. 13—14 m. Strong current. Gravel. Female with marsupium; dorsal surface with dots of pigment; length about 6.8 mm.

Swedish Expedition to Tierra del Fuego. Magellan Straits, Cape Valentyne. 150 fms. Shells. $12/10$, 1896. Male specimen, with a few scattered dots of pigment dorsally; length about 7.2 mm.

Magellan Straits, Martha Bank, 100 fms. Pebbles and gravel. $14/10$, 1896. Male, damaged; with dots of pigment; length about 6.9 mm.

Distribution. West Chile (NIERSTRASZ 1918), Patagonia (RICHARDSON 1910); Tierra del Fuego (GIAMBIAGI 1925), Magellan Straits (Sw. Mag. Exped., Sw. Exped. to Tierra del Fuego), Fuegian Archipelago (Sw. Ant. Exped.), Burdwood Bank (Sw. Ant. Exped.), Falkland Islands (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.), Campbell Islands (S. WALLIN legit 1924), New Zealand (CHILTON 1884, TATTERSALL 1921).

Not previously recorded from Falkland Islands, Burdwood Bank, South Georgia or Campbell Islands.

Ianira (Iathrippa) sarsi (PFEFFER, 1887).

Notasellus Sarsii. PFEFFER, 1887, p. 125—134, Pl. VII, Figs. 5—28; TATTERSALL, 1921, p. 201—202. For further synonymy and literature, see TATTERSALL, 1921, p. 201.

As this species has been described in detail by PFEFFER (1887), I merely add a few supplementary notes. The mandibles are of typical Ianiridian structure and resemble those in *Ianira (Iathrippa) longicauda*. The maxillipeds have their epipodites somewhat broader than figured by PFEFFER (1887), and their distal margins broadly convex. The third joint of the palp decreases in width distally; interio-distally this joint is somewhat concave, as also figured by PFEFFER. The first pereopods, as stated by PFEFFER, are alike in males and females. First and second pairs of pleopods in male as in *Ianira (Iathrippa) longicauda*. The exopodite of the third pleopod in the female is subequal in length to the endopodite and has no lateral incision between its first and second joints; exopodite in the male (PFEFFER, 1887, Taf. VII, Fig. 2) smaller than in *Ianira (Iathrippa) longicauda*, subequal in width to, and slightly longer than, the endopodite. Endopodite of third pleopod in both male and female as in *Ianira (Iathrippa) longicauda*.

Localities and Material.

South Georgia, Grytviken. From roots of *Macrocystis* taken on the shore at low tide, 9 specimens; from roots of *Macrocystis* taken at a depth of three to four fathoms by net, 11 specimens. 22, 23 and 24 May 1902. Length of the largest specimen 8.4 mm. (female with young). Colour of the specimens grayish yellowish to brownish.

South Georgia, Cumberland Bay, May Bay. Haul at 1—2 m. among algae on a stony bottom. $9/10$, 1902. 2 females, one of them small of a length of only about 2.6 mm. The antero-lateral angles of the head in this specimen are somewhat pointed but not projecting as in the adult specimen; rostrum in the young specimen very short.

St. 5. Graham Region, S. E. of Seymour Island, lat. $64^{\circ} 20' S.$, long. $56^{\circ} 38' W.$ 150 m. Sand and gravel. $14/10$, 1902. Fragment of a female specimen.

St. 17. Between Falkland Islands and South Georgia, on the Shag Rock Bank, lat. $53^{\circ} 34' S.$, long. $43^{\circ} 23' W.$ 160 m. Bottom temp. $+ 2.55^{\circ}$. Gravel and sand. $^{19}/_4$ 1902. Female with small oostegits, colour slightly yellowish. Length about 6.4 mm.

St. 22. South Georgia, off May Bay, lat. $54^{\circ} 17' S.$, long. $36^{\circ} 28' W.$ 75 m. Bottom temp. $+ 1.5^{\circ}$. Clay with some algae. $^{14}/_5$ 1902. 4 specimens (male and 3 females). Length of the largest specimen, a female, about 8 mm. Colour of specimens slightly yellowish.

St. 32. South Georgia, Sydjord, off the Nordenskjöldglacier, lat. $54^{\circ} 24' S.$, long. $36^{\circ} 22' W.$ 195 m. Bottom temp. $+ 1.45^{\circ}$. Clay with stones. $^{20}/_5$ 1902. Immature male specimen of a yellowish-brownish colour and of a length of about 3.8 mm.

St. 34 b. Atlantic Ocean, east of Patagonia and north of Falkland Islands, lat. $44^{\circ} 49' S.$, long. $57^{\circ} 34' W.$ 700—500 m. $^{27}/_{12}$ 1901. 2 specimens, male and female, of a grayish-brown colour. Largest specimen, a male, about 6.5 mm. in length.

St. 94. Graham Region, north of Joinville Island, lat. $62^{\circ} 55' S.$, long. $55^{\circ} 57' W.$ 104 m. Gravel and stones mingled with clay. $^{21}/_{12}$ 1902. Male specimen of a slightly yellowish colour. Length, about 6.7 mm.

Distribution. South Atlantic Ocean E. of Patagonia N. of Falkland Islands (Sw. Ant. Exped.), Shag Rock Bank (Sw. Ant. Exped.), South Georgia (PFEFFER 1887, TATTERSALL 1921), Kerguelen (VANHÖFFEN 1914), South Shetland Islands (RICHARDSON 1913), Graham Region (RICHARDSON 1906, 1908, 1913), Victoria Land (HODGSON 1902 and 1910, TATTERSALL 1921).

New localities for the species are Shag Rock Bank and South Atlantic Ocean (St. 34 b, Swedish Antarctic Expedition). In contradistinction from *Ianira (Iathrippa) longicauda*, it is not only distributed in the subantarctic but also widely in the Antarctic Region. It has been found at different depths, varying from shallow water up to 700—500¹ m.

Genus *Iais* BOVALLIUS, 1886.

STEBBING, 1900.

Diagnosis. Coxae visible from above and marked off by dorsal sutures on the last three pereion segments. Eyes small, situated dorsally. Antennulae short, consisting of one broad peduncular joint and a five-jointed flagellum. Antennae about half as long as the body, with very small but distinct squama and a six-jointed peduncle. Mandibles as in *Ianira*. Maxillipeds with first and second joints of the palp expanded and about as broad as the endite; third joint of the palp about half as broad as the second. Pereiopods all about equal, each with four claws. First pleopods of male with the branches subtriangular; endopodites distally rounded; exopodites² somewhat diverging from the endopodites, but with only their distal parts protruding freely. Female operculum broadly rounded with a small apical tip. Third pleopod with exopodite two-jointed, tapering towards the end. Fourth pleopod with exopodite narrow, about half as long as the endopodite and furnished with one conspicuous apical seta. Uropods short, one-third to one-fourth as long as the pleotelson; the endopodite about as long as the peduncle.

The two genera *Ianthopsis* BEDDARD and *Iolella* RICHARDSON were cancelled by HANSEN (1916) and referred to the genus *Ianira* LEACH. In a tabular view however, he divided the genus *Ianira* into three groups according to the development of the epimeral plates. TATTERSALL (1921) is of the opinion that these three groups correspond to *Ianira*, *Ianthopsis* and *Iolella* and that the last two genera should be retained. It should be noted, however, that if *Iolella* RICHARDSON is regarded as a separate genus with the definition given by HANSEN (1916), some of the species referred to *Iolella*

¹ St. 34 b, Swedish Antarctic Expedition.

² See p. 179.

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by RICHARDSON (1905) must instead, to judge from the figures, be assigned to *Ianira*. The development of the coxae in *Iais* is exactly as in the group C. of *Ianira* HANSEN (1916), or as in *Iolella* according to TATTERSALL (1921); but, as compared with *Iolella*, *Iais* is especially characterized by its short uropods, the narrow third joint of the palp of the maxilliped, and the four claws on the pereopods. The fourth pleopod in *Iais* is very characteristic (see diagnosis). In *Iolella* this appendage has not been described.

***Iais pubescens* (DANA, 1852).**

Text figs. 41 a—c.

Jaera pubescens. DANA, 1852, p. 744, Pl. 49, Fig. 9 a—9 d; BEDDARD, 1886, p. 19—20, Pl. II, Fig. 6—10.
Iais pubescens. STEBBING, 1900, p. 549—551, Pl. XXXVIII; TATTERSALL, 1913, p. 890; BARNARD, 1914 a, p. 435—436, Pl. XXXVII C; GIAMBIAGI, 1925, p. 17, Pl. III, Fig. 2; MONOD, 1926, p. 13—14; STEPHENSEN, 1927, p. 356; MONOD, 1931, p. 11; 1931 a, p. 1.

This list is by no means complete, but the complete synonymy can be obtained by comparing the synonymous lists of the above-named authors and their discussion of the synonymy.

Supplementary Description.

Coxae. Visible from above and marked off by dorsal sutures on the last three pereion segments.

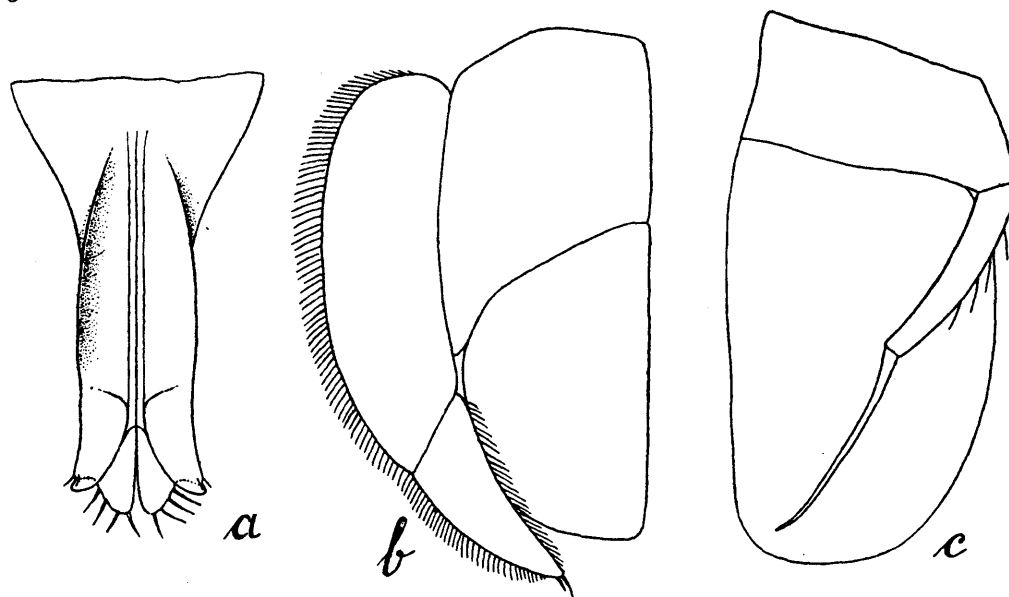


Fig. 41. *Iais pubescens* (DANA). a. First pleopods, male, 225 \times . b. Third pleopod, 225 \times . c. Fourth pleopod, 300 \times .

Mouth-organs. As figured by STEBBING (1900)¹. The figures of the mandible and maxilliped by BARNARD (1914 a)² differ considerably from the corresponding figures by STEBBING. Thus in BARNARD's figure of the mandible the palp is only about half as long as figured by STEBBING (1900). As BARNARD's figures of the first male pleopods and the female operculum tally perfectly with my observations on *Iais pubescens*, it seems probable, that also the specimens examined by him were from the same species.

¹ STEBBING, 1900, Pl. XXXVIII.

² BARNARD, 1914 a, Pl. XXXVII C, mand. and mxp.

First pair of pleopods, male (Fig. 4I a). See also BARNARD¹ (1914 a). The latero-distal parts of the sympodites are marked off by incomplete sutures. It may thus be assumed that these parts correspond to the exopodites, whilst the medially situated rami are the endopodites.

Second pair of pleopods, male. See BARNARD (1914 a).² I did not find any setae on the distal margin of the sympodite.

*Operculum, female*³. With a characteristic distal tip.

Third pair of pleopods (Fig. 4I b). Both branches subequal in length. Exopodite tapering towards the end, two-jointed. Endopodite broadly oval, distally non-setiferous.

Fourth pair of pleopods (Fig. 4I c). Exopodite narrow, almost of uniform width, about half as long as the endopodite and provided with one long and stout apical seta, the proximal part of which is almost as broad as the distal part of exopodite. Endopodite broadly oval.

Fifth pair of pleopods. Exopodite missing. Endopodite oblong-ovate, non-setiferous.

Remarks. It is supposed by MONOD (1926) that *Janiropsis californica* RICHARDSON is identical with this species. This supposition seems probable enough, but must be verified by an examination of the Californian specimens, especially of their maxillipeds.

Localities and Material.

Falkland Islands, Hookus Point. Pools, at low water between rocks of quartz. ²⁶/₂ 1902. About 45 specimens, males and females, of whitish colour. Collected together with *Exosphaeroma gigas* (LEACH).

Falkland Islands, on the north beach of Port Louis, in the ebb-region below stones. ⁹/₃ 1902. 26 specimens, mostly females. Collected together with three specimens of *Exosphaeroma gigas* (LEACH).

Staten Island, (New Year Island). Below stones on the beach at low tide. 9 whitish specimens, collected together with 5 specimens of *Exosphaeroma gigas* (LEACH).

Fuegian Archipelago, Ushuaia. March 1902. In the forest 10 female specimens of a brownish-yellow colour, many of them with embryos. Largest specimen 2.2 mm. in length. A damaged specimen of a terrestrial Isopod was collected at the same time and place.

Swedish Expedition to Tierra del Fuego. Magellan Straits, Punta Arenas. On the shore at low tide. Sand and large stones. ²⁵/₁₁ and ¹/₁₂ 1895. Plenty of specimens, males and females, of a whitish colour, collected together with *Exosphaeroma gigas* (LEACH).

Fuegian Archipelago, Ushuaia Bay. On the rocky shore at low tide. ²²/₅ 1896. 2 specimens, collected together with *Exosphaeroma gigas* (LEACH).

Fuegian Archipelago, Lennox Cove. ⁵/₂ 1896, 10—20 fms. Red algae. 2 specimens, collected together with *Exosphaeroma gigas* (LEACH).

Eugenie Expedition. Magellan Straits, York Bay, ¹⁵/₂ 1852. On the shore at low tide. A great many specimens of a whitish colour. Some few specimens of a dark-brown colour were collected below stones at the surface, in 1852, presumably in Febr. or March. Length of the largest female specimen 2.8 mm.; largest male 1.7 mm. Most of the specimens were collected together with *Exosphaeroma gigas* (LEACH), a few together with *Dynamenella eatoni* (MIERS); some others were collected alone at the surface.

Magellan Straits, St. Nicholas Bay, ⁵/₂ 1852. Some specimens collected together with *Exosphaeroma gigas* (LEACH).

Distribution. Staten Island (Sw. Ant. Exped.), Fuegian Archipelago (Sw. Ant. Exped., Sw. Exped. to Tierra del Fuego), Tierra del Fuego (DANA 1852), Magellan Straits (BOVALIUS 1886, GIAMBIAGI 1925), Falkland Islands (STEBBING 1900), Tristan d'Acunha (BARNARD 1914 a), South Africa (BARNARD 1914 a), Kerguelen (SMITH 1876, BEDDARD 1886), Auckland Islands (CHILTON 1909, STEPHENSEN 1927), Campbell Islands (CHILTON 1909, MONOD 1931), New Zealand (CHILTON, fide STEPHENSEN 1927), Chatham Islands (CHILTON 1906), Tasmania (CHILTON, fide STEPHENSEN 1927), Ceylon (STEBBING 1904), Cameroon (MONOD 1931 a), (?) California (MONOD 1926).

¹ BARNARD, 1914 a, Pl. XXXVII C, plp. 1.

² BARNARD, 1914 a, Pl. XXXVIII C, plp. 2.

³ BARNARD, 1914 a, Pl. XXXVII C, operc. ♀.

Genus *Ianthopsis* BEDDARD, 1886.

Ianthe. BOVALLIUS, 1885, part., nec 1881' STUDER, 1884. *Iolanthe*. BEDDARD, 1886; HANSEN, 1895; VANHÖFFEN, 1914.

Diagnosis¹. Head usually with a long rostrum. Eyes situated dorsally, minute or missing. Antennulae with a flagellum consisting of comparatively few joints. Antennae with a six-jointed peduncle, a distinct squama and a many-jointed flagellum. Mandibles as in *Ianira*. Thoracic segments without coxal plates, with lateral margins often cleft and produced into lappets. Palp of maxilliped with second and third joints about half as broad as the endite. First pereopods not subchelate, equal in males and females. Dactylus of the pereopods furnished with two subequal claws. First pleopods in male tapering towards the distal end. Female operculum elongated into a distal tip. Uropods long (usually subequal in length to the pleotelson) and provided with two branches.

The most characteristic feature of the genus *Ianthopsis* is that coxal plates are missing on all thoracic segments² (cf. TATTERSALL 1921, p. 199). This feature distinguishes the genus from the allied genera *Ianira* LEACH, *Iolella* RICHARDSON, *Acanthaspidea* STEBBING, and *Iais* BOVALLIUS. HANSEN (1916) considers that *Ianthopsis* BEDDARD and probably also *Iolanthe* BEDDARD should be cancelled as genera and united with *Acanthaspidea* STEBBING. I do not share his opinion, as these genera differ from *Acanthaspidea* in such an essential character as the absence of coxal plates. *Ianthopsis* moreover differs from *Acanthaspidea* in the pereopods, which are furnished with two subequal claws. The close connection of *Acanthaspidea* with *Ianthopsis* is shown especially by the similarity of the maxillipeds, which, in both genera, have the second joint of the palp narrow and only about half as wide as the endite. The two species previously referred to *Iolanthe* have their maxillipeds exactly shaped as in *Ianthopsis* and *Acanthaspidea*. In the figures of «*Iolanthe acanthonotus*» by BEDDARD³ (1886) and VANHÖFFEN⁴ (1914) no coxal plates are to be seen. HANSEN (1895) states that «*Iolanthe decorata* is devoid of coxal plates. Thus the distinction between *Iolanthe* and *Ianthopsis* is reduced to a slight difference in the shape of the head and the spine-armature of the pereion. These minor dissimilarities cannot be regarded as generic distinctions.

In the two species of *Ianthopsis* examined by me, *I. bovallii* (STUDER) and *nasicornis* VANHÖFFEN, the third pairs of pleopods (Figs. 42 d and 43 j) are similarly shaped, the exopodite being two-jointed, increasing in width distally, its distal margin being furnished with seven to nine penicillated or plumose setae. Having examined only two species of *Ianthopsis* I have not included these characters in the diagnosis, but it seems fairly probable that the peculiar shape of the third pleopod in *Ianthopsis bovallii* and *nasicornis* is characteristic of the whole genus.

¹ Cf. BEDDARD, 1886, p. 15.

² The coxae are developed as basal rings fused with the sternum and surrounding the proximal ends of the basipodites of the pereopods.

³ BEDDARD, 1886, Pl. IV, Fig. 9.

⁴ VANHÖFFEN, 1914 Fig. 65 a.

***Ianthopsis bovallii* (STUDER, 1884).**

Text. figs. 42 a—d.

Ianthe Bovallii. STUDER, 1884, p. 10—12, Pl. I, Figs. 2 a, b, c, d.*Ianthe bovallii*. BOVALLIUS, 1886, p. 36.*Ianthopsis Bovallii*. BEDDARD, 1886, p. 14—15.*Ianthopsis* sp. VANHÖFFEN, 1914, p. 544—545, Fig. 70; TATTERSALL 1921, p. 200—201, Pl. I, Figs. 7—10.***Supplementary Description.***

Eyes. Colourless, minute, in small specimens difficult to detect.

Pereion. In adult specimens with three longitudinal rows of tuberculae, of which the two lateral rows are faint and indistinct; in young specimens only the row along the middle line is distinct.

*Antennulae*¹. The flagellum in an ovigerous female, about 7.3 mm. in length, consists of six joints, the first of which is very long. STUDER (1884) assigns this joint to the peduncle.

*Antennae*¹. First four joints of the peduncle short; first and second together about as long as the third, which is furnished with a distinct squama; the fourth joint is about half as long as the third; fifth and sixth joints long, somewhat widening towards their distal ends. The flagellum consists of sixteen joints, the first of which is very long, being almost as long as the remaining joints together. STUDER (1884) does not figure the suture between the first and second peduncular joints or that between the third and fourth joint but assigns the long first joint of the flagellum to the peduncle.

*Mandibles*². Molar tubercle slightly tapering towards the distal denticulated end. Incisive part with four points. Lacinia (on the left mandible) with three points. Setal row on the left mandible with eleven setae, on the right with twelve.

Second pair of maxillae. Lappets of outer lobe each with four apical setae.

Maxillipeds (Fig. 42 a). Second joint of the palp only about half as broad as the endite.

Pereiopods. All similar and with a row of setae (most of them two-pointed) along the lower margin of the carpus and propodus. The two-pointed setae are of the usual shape; they terminate in one stout and one hair-like point. The dactylus of all pereiopods is furnished with two subequal claws.

First pair of pleopods. See BEDDARD³ (1886). One female or perhaps hermaphroditic specimen was furnished with a minute first pleopod (Fig. 42 b); in the specimen the fused second pleopods were quite normal and had the usual form of the female operculum. As seen in the figure the first pleopods in this specimen are fused into an operculum which is cleft distally. They differ rather considerably in shape from the first pleopods in the male³ and all setae are missing.

Operculum female (Fig. 42 c). Distally triangularly elongated.

Third pair of pleopods (Fig. 42 d). Exopodite increasing somewhat in width towards the distal end, two-jointed; its distal margin provided with nine setae, some of them plumose, others penicillated, having irregularly situated sub-branches. Endopodite broadly oval, its distal margin furnished with plumose setae.

¹ Cf. STUDER, 1884, Pl. I, Fig. 2 b.

² STUDER, 1884, Pl. I, Fig. 2 c.

³ BEDDARD, 1886, Pl. V, Fig. 6.

Fourth pair of pleopods. Exopodite subtriangular, much smaller than endopodite, provided with some short hair-like setae distally. Endopodite broadly oval; its margins devoid of setae.

Fifth pair of pleopods. Exopodite missing. Endopodite oval, without setae.

*Uropods*¹. In a small specimen, about two mm. in length, the peduncle was about twice as long as the endopodite, which was about twice as long as the exopodite.

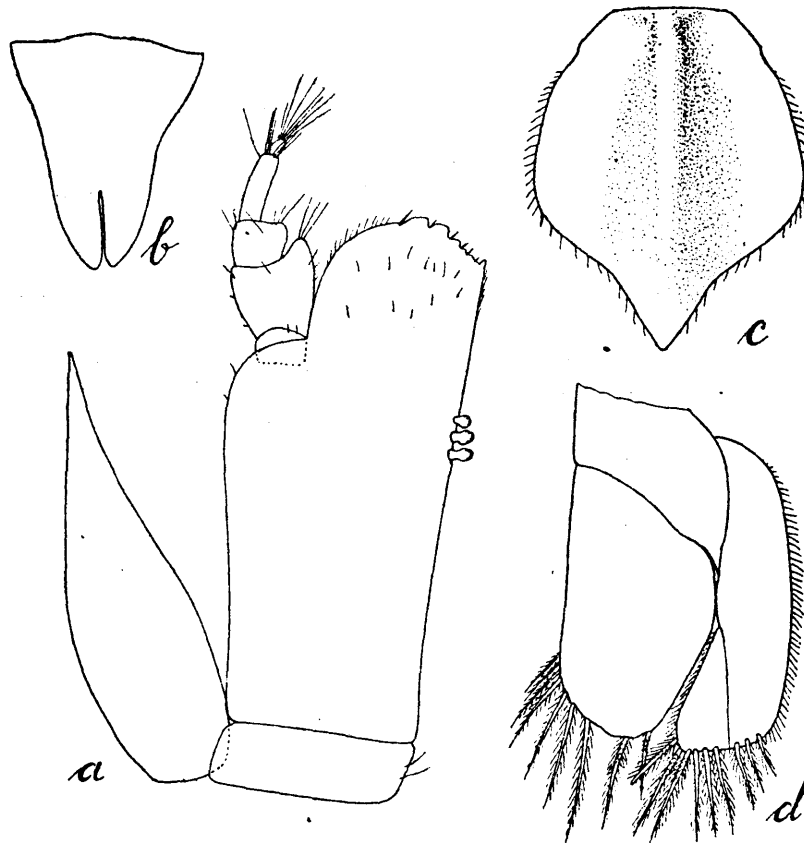


Fig. 42. *Ianthopsis bovalii* (STUD.). a. Right maxilliped, male, 55 ×. b. Vestigial first pleopods from a female specimen, 55 ×. c. Operculum, female, 23 ×. d. Right third pleopod, female, 45 ×.

Remarks. A large specimen, 10 mm. long, of this characteristic species was figured by STUDER (1884). TATTERSALL (1921) figures a small specimen of *Ianthopsis*, of which he says (p. 200) that «it is very closely allied to if not identical with, *I. bovalii*, STUDER». He supposes that his figured specimen belongs to the same species as an unnamed small *Ianthopsis* figured by VANHÖFFEN (1914). The material from the Swedish Antarctic Expedition, which contains an ovigerous female and numbers of young specimens, shows that the latter exactly resemble the unnamed *Ianthopsis* figured by TATTERSALL (1921). Young specimens, about 2.5 mm. in length, differ from adult ones in the following characters: —

¹ See BEDDARD, 1886, Pl. V, Fig. 8.

1. The projections in front of the eyes on the anterior margin of the head are only slightly indicated, the frontal margin being only slightly convex anteriorly from the eyes.

2. The pleotelson is narrower.

3. The projections on the posterior margin of the pleotelson laterally from its apical tip are short or indistinct.

In the fully grown specimen (about 7.3 mm. in length) the projections of the anterior margin of the head in front of the eyes are somewhat shorter and broader than figured by STUDER (1884), but otherwise it corresponds exactly with his figure.

Localities and Material.

St. 28. South Georgia, mouth of Grytviken, lat. $54^{\circ} 22' S.$, long. $36^{\circ} 28' W.$ 12—15 m. Sand and algae. $24/8$, 1902. 5 immature specimens; length of the largest specimen about 4.2 mm.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. $54^{\circ} 11' S.$, long. $36^{\circ} 18' W.$ 252—310 m. Bottom temp. $+ 1.45^{\circ}$. Gray clay with a few stones. $5/8$, 1902. Female specimen about 5 mm. in length.

St. 58. South of West Falkland, lat. $52^{\circ} 29' S.$, long. $60^{\circ} 36' W.$ 197 m. Bottom temp. $+ 4.1^{\circ}$. Sand and gravel. $11/8$, 1902. 2 females; length of largest specimen about 7.3 mm. (ovigerous female).

Distribution. Patagonia (BOVALLIUS 1886), Falkland Islands (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.), Kerguelen (STUDER 1884, BEDDARD 1886), Gauss Station (VANHÖFFEN 1914), Victoria Land (TATTERSALL 1921).

The species is here recorded for the first time from South Georgia and Falkland Islands.

***Ianthopsis nasicornis* VANHÖFFEN, 1914.**

Text. figs. 43 a—j.

Ianthopsis nasicornis. VANHÖFFEN, 1914, p. 539—541, Figs. 66 a—g; nec MONOD, 1926.

Supplementary Description:

Head. Lateral margins straight or slightly concave. Eyes vestigial, colourless.

Pereion. First segment with lateral margins straight. Second, third and fourth segments laterally divided into two short lappets of about equal length; the lateral margins of the lappets are almost straight. On the second segment the posterior lappet is slightly larger than the anterior one, on the third the two lappets are subequal, on the fourth the anterior lappet is the largest. Last three segments with lateral margins slightly convex.

Antennulae and antennae (Figs. 43 a and b). Much as in *Ianthopsis bovalli* (STUDER). The antennae are furnished with distinct squamae.

Upper and lower lips (Figs. 43 c and d). Normal.

Mandibles¹. **Left:** Molar tubercle sub-cylindrical, of a uniform width; its distal margin approximately straight, but furnished with some teeth. Incisive part and lacinia each provided with four points. Setal row with twelve setae. Second joint of the palp with a row of about seven setae on the distal part of its lower margin. Third joint with setae on the distal part of its lower margin and distally.

Right: Incisive part with five points. Lacinia absent. Setal row with thirteen setae. Otherwise as in the left mandible.

¹ VANHÖFFEN, 1914, Fig. 66 f.

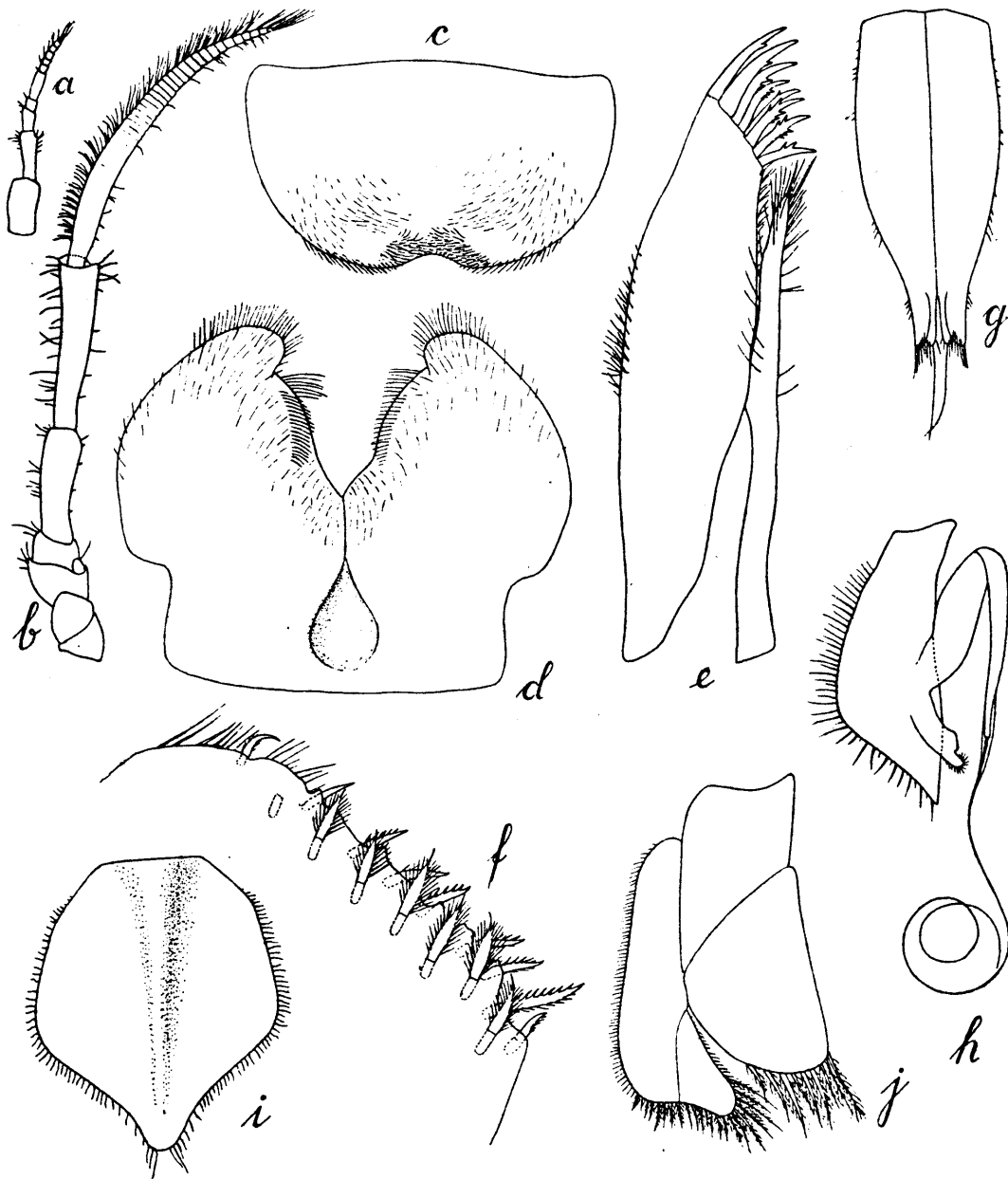


Fig. 43. *Ianthopsis nasicornis* VANHÖFF. a. Antennula, 17 ×. b. Antenna, 17 ×. c. Upper lip, 80 ×. d. Lower lip, 80 ×. e. Right first maxilla, female, 95 ×. f. Distal part of the endite of the maxilliped, seen from below, 240 ×. g. First pleopods, male; seen from the rostral side, 17 ×. h. Left second male pleopod, seen from the caudal side, 17 ×. i. Female operculum, 17 ×. j. Right third pleopod, male, 30 ×.

First and second pairs of maxillae. Inner lobe of the first maxilla (Fig. 43 e) very narrow, somewhat tapering towards the end. Each lappet of the outer lobe of the second maxilla is provided with four apical setae.

*Maxillipeds*¹. Endite with five coupling-hooks. The distal part of the endite is illustrated in Fig. 43 f. Close to the distal margin are two rows of submarginal setae, one row on either side; those in the ventral row are somewhat thicker and have more slender sub-branches than the setae in the dorsal row. Dorsally, near the distal margin, there are a large number of fine »hairs²», lacking a setal canal.

Pereiopods. All alike and carrying a row of setae along the lower margin of the carpus and propodus, some of them of the usual two-pointed shape (cf. Fig. 40 c). The dactylus has two claws of which the upper is the longest.

*First pair of pleopods, male*³ (Fig. 43 g). Exopodite⁴ slightly broader than endopodite. Distal margin of endopodite not concave as figured by VANHÖFFEN (1914). The posterior chitinous folds, illustrated in VANHÖFFEN's Fig. 66 d, are not seen in my figure, which shows the pleopods in an anterior view.

*Second pair of pleopods, male*⁵ (Fig. 43 h). Exopodite small, cleft distally. Endopodite distally elongated into a spiral thread.

Operculum, female (Fig. 43 i). As in *Ianthopsis bovalli* with an apical tip but more obtuse than in the latter species.

Third pair of pleopods (Fig. 43 j). Much as in *Ianthopsis bovalli*; the exopodite however, is slightly different in shape.

Fourth pair of pleopods. Exopodite narrowly oval, more than twice as narrow and about three-fourths as long as the endopodite. Endopodite broadly oval. Margins of the branches without setae.

Fifth pair of pleopods. Exopodite absent. Endopodite oval, lacking setae.

Uropods. Narrow. Exopodite about two-thirds the length of the endopodite.

Remarks. A great many specimens of this species were obtained by the Swedish Antarctic Expedition, at South Georgia. They agree well with the figures by VANHÖFFEN (1914) Figs. 66 a—g).

MONOD (1926) figures a species of *Ianthopsis*, which, though it differs in some respects from *I. nasicornis* he refers to this species of VANHÖFFEN, regarding the differences from the figure⁶ of *I. nasicornis* by VANHÖFFEN (1914) as due to immaturity of Vanhöffens specimens. My material shows that differences of this kind between young and adult specimens do not exist in the species. Full-grown specimens, about 10 mm. in length, agree with immature specimens in all characters, except that in very young examples the last segment of the pereion is narrower⁶, i. e. the usual difference between young and adult individuals. The species described and figured by MONOD (1926)⁷,

¹ See VANHÖFFEN, 1914 Fig. 66 g.

² In Fig. 43 f, which illustrates the distal part of the endite in a ventral view, only a few of these hairs are seen.

³ VANHÖFFEN, 1914, Fig. 66 d.

⁴ I consider that the latero-distal parts of the sympodites correspond to the exopodites, exactly as is the case in *Iais pubescens*. See p. 179.

⁵ VANHÖFFEN, 1914, Fig. 66 e.

⁶ Cf. VANHÖFFEN, 1914, Fig. 66 a.

⁷ MONOD, 1926, p. 14, Figs. 3, 4 and 5.

consequently, is not *Ianthopsis nasicornis* VANHÖFFEN. As will be seen from MONOD's figure of this species (MONOD 1926, Fig. 3), it differs from *Ianthopsis nasicornis* VANH. especially in the following characters:—1. The rostrum and the anterio-lateral projections of the head are longer and more pointed. 2. The first, fifth, sixth and seventh pereion segments are prolonged into lateral spine-like projections. (In *Ianthopsis nasicornis* VANH. the lateral margins of the first segments are straight or almost straight and the lateral margins of the sixth and seventh segments slightly convex). 3. The pleotelson is posteriorly broader than in *Ianthopsis nasicornis* VANH.

For MONOD's species I propose the name of *Ianthopsis Monodi*.

Localities and Material.

St. 22. South Georgia, off May Bay. lat. $54^{\circ} 17' S.$, long. $36^{\circ} 28' W.$ 75 m. Bottom temp. $+ 1.5^{\circ}$. Clay and some algae. $14/5$ 1902. Male specimen about 7.5 mm. in length.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. $54^{\circ} 11' S.$, long. $36^{\circ} 18' W.$ 252—310 m. Bottom temp. $+ 1.45^{\circ}$. Gray clay with a few stones. $5/8$ 1902. 9 specimens, males and females. Length of largest specimen about 10 mm. (ovigerous female).

Distribution. South Georgia (Sw. Ant. Exped.), Gauss Station (VANHÖFFEN 1914).

Not previously recorded from South Georgia.

Genus **Ectias** RICHARDSON, 1906.

For diagnosis see RICHARDSON (1906, p. 13—14). To the diagnosis may be added that the coxae are visible from above and are marked off by dorsal sutures on the last three thoracic segments, and that the third pleopod has an oblong-ovate endopodite and a narrow two-jointed exopodite, tapering towards the end and subequal in length to the endopodite.

In the genus the mandibles are of the typical Ianiridean structure. As the coxae are visible from above and are delimited by dorsal sutures on the last three thoracic segments, the genus comes close to *Iolella* RICHARDSON and *Iais* BOVALLIUS. It differs from these genera especially in its very long and narrow body, in its characteristically built first pereopods in the male (the female is unknown), and in its long and narrow first male pleopods. The last three pleopods are characteristic; the third is similar to that in *Iolella laciniata*¹ (G. O. SARS), except that the exopodite is two-jointed.

Ectias turqueti RICHARDSON, 1906.

Ectias Turqueti. RICHARDSON, 1906, p. 14—15, Pl. I, Fig. 5, Text figs. 14—19; RICHARDSON, 1913, p. 18; TATTERSALL, 1921, p. 202.

Supplementary Description.

As there is only one specimen in my material, a male of a length of about 3.9 mm., I shall only give a few brief notes.

Coxae. On the last three thoracic segments they are situated at the postero-lateral angles of the segments. They are small but visible from above and marked off from the segments by dorsal sutures.

¹ Cf. G. O. SARS, 1899, Pl. 41, plp².

Mandible (right). Of typical Ianiridian type. Incisive part with five points. Setal row with ten setae. Molar tubercle sub-cylindrical, widening towards the distal end, directed somewhat forwardly. Palp long and slender with the last two joints somewhat expanded.

First pair of maxillae. Normal.

Second pair of maxillae. Lappets of outer lobe narrow, about as long as the inner lobe, each provided with three apical setae.

Maxillipeds. First, second and third joints of the palp broad and expanded, somewhat broader than the endite, second joint broadest. Endite with two coupling-hooks. Epipodite reaching approximately to the middle of second joint of the palp, obtusely pointed distally and with outer margin angular.

Third pair of pleopods. Exopodite about as long as, but narrower than, the endopodite, two-jointed, tapering towards the end. Its inner margin is almost straight, its outer margin convex. The second joint of the exopodite is subtriangular and about half as long as the first; the distal part of its outer margin is provided with plumose setae. Outer margin of first joint, proximal part of outer margin of second joint as well as inner margin of second joint furnished with fine «hairs». Endopodite oval, its distal margin with three plumose setae, of which two are situated near each other at the outer distal and one at the inner distal angle.

Fourth pair of pleopods. Exopodite about half as long as the endopodite, subtriangular, its distal end provided with a seta. Endopodite oval, tapering towards the end, with inner margin almost straight, and outer margin markedly convex.

Fifth pair of pleopods. Exopodite missing. Endopodite subtriangular with inner margin straight and outer margin convex.

Locality and Material.

St. 28. South Georgia, mouth of Grytviken, lat. $54^{\circ} 22' S$, long. $36^{\circ} 28' W$. 12—15 m. Sand and algae. $24/5$ 1902. Male about 3.9 mm. in length.

Distribution. South Georgia (Sw. Ant. Exped.), Booth Wandel and Petermann Islands off Graham Land (RICHARDSON 1906, 1913), Victoria Land (TATTERSALL 1921). Not previously found at South Georgia.

Genus *Neojaera* n. gen.

Diagnosis. Body oblong, at least three and a half times as long as it is broad. Thoracic segments without coxal plates. Eyes small, situated dorsally. Antennulae very short, consisting of one very broad peduncular joint and a five-jointed flagellum. Antennae not quite one-third the length of the body; peduncle six-jointed; squama small but distinct. Maxilliped with second and third joints about as broad as the endite, epipodite very long with lateral margin angular. Pereiopods all similar, generally with two subequal claws. First male pleopods with very broad endopodite and narrow styliform exopodite. Third pair of pleopods with exopodite two-jointed and somewhat tapering towards the end. Uropods very short, fitted in incisions of the pleotelson.

The genus is closely allied to *Jaera* LEACH. As pointed out by BARNARD (1914, a, p. 434), the distinct squama on the antennae, the shape of the maxillipeds and first pleopods of male justify the generic separation of his species *serrata* from *Jaera*. Having found that *N. antarctica* (PFEFFER) likewise differs in all these characters from *Jaera* in the same manner as *N. serrata* (BARNARD), I consider that these two species should be referred to a separate genus.

***Neojaera antarctica* PFEFFER, 1887.**

Text. figs. 44 a and b.

Jaera antarctica. PFEFFER, 1887, p. 134—136, Pl. VII, Figs. 1—3; VANHÖFFEN, 1914, p. 529—530, Fig. 58; NORDENSTAM 1930, p. 550, Fig. 12.

Supplementary Description.

Abdomen. With a short free segment anterior to the pleotelson; pleotelson with a slightly marked longitudinal elevation along the middle line.¹

Mandibles. Molar tubercle subcylindrical and of uniform width.

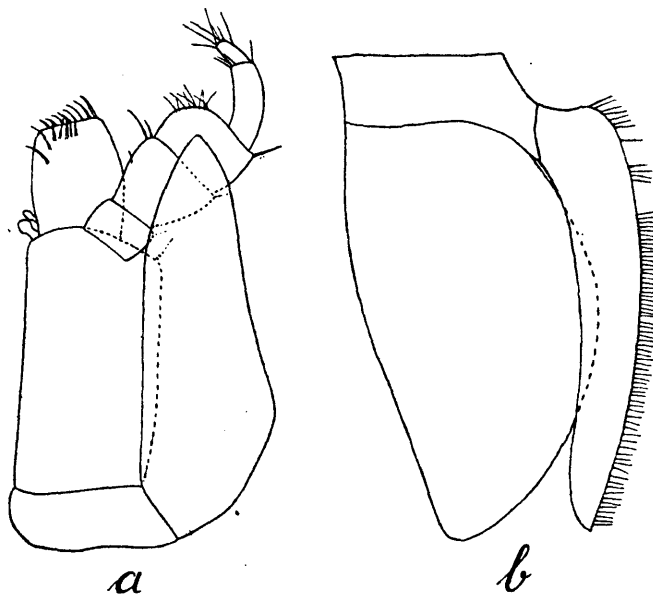


Fig. 44. *Neojaera antarctica* (PFEFF.). a. Right maxilliped, 160 ×. b. Fourth pleopod, 180 ×.

Maxillipeds (Fig. 44 a). Epipodite long, distally pointed, reaching to the middle of the third joint of the palp; lateral margin of the epipodite angular. Endite with two coupling-hooks.

Pereiopods. All similar. Dactylus with two subequal claws. Carpus and propodus with a longitudinal row of setae on the lower margin, most of them two-pointed.

First pair of pleopods, male². Exopodites and endopodites of about equal length. Posterior surface of the endopodites more or less concave.

¹ Not with a furrow as was stated by PFEFFER (1887).

² See NORDENSTAM, 1930, Fig. 12.

Second pair of pleopods, male. Much as in *Neojaera serrata* (BARNARD), see BARNARD (1914 a, Pl. XXXVIII A, plp. 2).

*Operculum, female*¹. Almost circular, distal margin provided with setae.

Third pair of pleopods. Much as in *Neojaera serrata* (BARNARD)². Exopodite two-jointed, tapering towards the end, with a lateral incision between the first and the second joint; the second joint is slightly longer, and broader proximally than in *Neojaera serrata*; lateral margin of second joint furnished with hair-like setae. Distal margin of the endopodite provided with three plumose setae, one at the inner distal angle, one at the outer distal angle, and one seta on the distal margin; the latter seta is situated closer to the outer distal angle than to the inner distal angle.

Fourth pair of pleopods (Fig. 44 b). Branches subequal in length. Exopodite single-jointed, tapering towards the end, about one-fourth as broad as the broadly oval endopodite.

Fifth pair of pleopods. Exopodite missing. Endopodite oblong-ovate.

Remarks. *Neojaera antarctica* (PFEFFER) is closely allied to *Neojaera serrata* (BARNARD), from which species it is distinguished by lacking the tip on the distal margin of the pleotelson between the uropods, by having the first male pleopods broader, with shorter exopodites, and by having the exopodites of the fourth pleopods longer (about as long as the endopodites).

Localities and Material.

St. 22. South Georgia, off May Bay, lat. 54° 17' S., long. 36° 28' W. 75 m. Bottom temp. + 1.5°. Clay with some algae. ¹⁴/₈ 1902. 2 specimens, female with young, about 3.5 mm. in length, and male about 3.1 mm. in length.

St. 23. South Georgia, off the mouth of Morain Bay, lat. 54° 23' S., long. 36° 26' W. 64—74 m. Bottom temp. + 1.65°. Gray clay with gravel and stones. ¹⁸/₈ 1902. 2 females, washed out from algae. Length of the largest specimen about 2.5 mm.

St. 28. South Georgia, mouth of Grytviken, lat. 54° 22' S., long. 36° 28' W. 12—15 m. Sand and algae. ²⁴/₈ 1902. 2 specimens. Length of largest specimen, a male, about 3.5 mm.

St. 34 b. Atlantic Ocean, east of Patagonia and north of Falkland Islands, lat. 44° 49' S., long. 57° 34' W. 700—1000 m. ²⁷/₁₂ 1901. Female with embryos; length about 3.8 mm.

St. 47. Falkland Islands, Port Louis, mouth of the Carenage Creek, lat. 51° 32' S., long. 58° 7' W. 3—4 m. Shells and stones. ⁹/₈ 1902. 2 female specimens. Length of the largest specimen about 3.3 mm.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ³/₈ 1902. 3 specimens, (male and two females); length of the largest specimen about 2.3 mm. (male).

St. 60. Fuegian Archipelago, eastern mouth of the Beagle Channel, lat. 55° 10' S., long. 66° 15' W. 100 m. Bottom temp. + 5.0°. Broken shells. ¹⁵/₈ 1902. 2 males; length of the largest specimen about 2 mm.

Distribution. Juan Fernandez (NORDENSTAM 1930), South Atlantic Ocean E. of Patagonia N. of Falkland Islands (Sw. Ant. Exped.), Fuegian Archipelago (Sw. Ant. Exped.), Falkland Islands (Sw. Ant. Exped.), South Georgia (PFEFFER 1887), Kerguelen (VAN-HÖFFEN 1914).

In spite of its name *antarctica*, the species has not been found in the Antarctic Region but is widely distributed in subantarctic waters. It was collected by the Swedish Antarctic Expedition at the following new localities: South Atlantic Ocean (st. 34 b), Fuegian Archipelago, and Falkland Islands. The species occurs from shallow water up to a depth of 700—500 m.

¹ See PFEFFER, 1887, Pl. VII, Fig. 2.

² See BARNARD, 1914 a, Pl. XXXVIII A, plp. 3.

B. Group *Jaeropsini*, new group.

Diagnosis. Mandible with the incisive part widening towards the end, divided distally into five points; molar process long and slender, tapering towards the obtuse end, directed somewhat backwards; lacinia missing. Thoracic segments without coxal plates and with their lateral margins not continuous. Antennulae situated above the antennae, very short and consisting of few joints. Antennae with a six-jointed peduncle; squama lacking; first joint of the flagellum longer than the other joints of the flagellum together, which are small and few. First maxillae with the inner lobe short. Second maxillae with the inner lobe much shorter than both lappets of the outer lobe. Maxilliped with the palp at its broadest part about half as wide as the endite; epipodite short, pointed, not reaching the proximal margin of the first joint of the palp. Pereiopods all similar. Uropods inserted in incisions of the distal margin of the pleotelson and provided with two very short branches.

Jaeropsis was referred by HANSEN (1916) to the group *Ianirini*. It differs, however, in some important features from the *Ianirini* as defined by HANSEN, so that I find it necessary to establish a new group for the genus. The most striking character in *Jaeropsis* is the structure of the mandibles, which have a narrow molar process tapering towards the end and directed slightly backwards; thus the mandibles in *Jaeropsis* have almost the type peculiar to the group *Nannoniscini* HANSEN, which, according to HANSEN (1916), comprises creatures »in general aspect somewhat similar to species of *Ianira*, but they differ from all *Ianirini* in several important features, above all in the mandibles» (HANSEN 1916, p. 84). In the group *Ianirini*, the mandibles are especially characterized by having the »molar process well developed, directed a little forwards, with the end cut off» (HANSEN 1916, p. 12), whilst in the *Nannoniscini* the mandibles have a molar process which »tapers strongly to the narrow, obtuse setiferous end, and is directed somewhat backwards» (HANSEN 1916, p. 83). In *Jaeropsis*, the molar process most resembles the one in the *Nannoniscini*, but it is considerably longer and it is only slightly directed backwards. Another similarity between the *Jaeropsini* and the *Nannoniscini* is seen in the front part of the head, which has the appearance of a small posteriorly delimited lobe, thus forming a »front area», just as in the *Nannoniscini*. Both the groups have small uropods.

In other features, however, *Jaeropsis* differs from the *Nannoniscini*. Thus the antennae have no trace of squama, and the maxillipeds have a narrow palp, with the second joint only about half as broad as the endite. In *Jaeropsis* the eyes are small but distinct; in the *Nannoniscini*, which are related to the *Desmosomatini*, eyes are absent. In view of the above-mentioned differences from the *Nannoniscini*, *Jaeropsis* cannot be referred to that group.

As shown above, the *Jaeropsini* display some important features, which give the group a place between the *Ianirini* and the *Nannoniscini*. This intermediate stage of *Jaeropsis* is noticeable especially in the mandibles, which limbs have been shown by HANSEN (1916) to be of a very essential value for the classification of all Parassellids. The transformation and reduction of the molar process is more advanced in the *Nannoniscidean* genera than in the *Jaeropsini*.

Genus *Jaeropsis* KOEHLER, 1885.

STEBBING 1905, RICHARDSON 1905, VANHÖFFEN 1914.

For diagnosis see RICHARDSON (1905, p. 476—477). In regard to the antennae RICHARDSON'S diagnosis must be amended. They consist of a six-jointed peduncle and a well-developed flagellum with a large proximal joint and a small number of minute additional distal joints. See Fig. 45 c. The proximal joint of the flagellum has previously been referred to the peduncle. This would, however, result in the aberrant number of seven peduncular joints. The arrangement of the setae in groups along the rostral margin on the proximal joint of the flagellum, as well as the fact that the small joints are sometimes marked off by incomplete sutures at the distal end of the large first joint, make it evident that this joint is a part of the flagellum.

Jaeropsis patagoniensis RICHARDSON, 1909.

Text. figs. 45 a—f.

Jaeropsis patagoniensis. RICHARDSON, 1909, p. 421—422, one fig.

Diagnosis. Front area trapezoidal with a small tip in the middle of the distal margin. Lateral margins of the head and the pereion almost smooth. Pleotelson with a small lateral incision on each side anterior to the uropods. Eyes dorsal, at a distance from the lateral margin equal to one eye's width. First joint of antennulae with the inner distal angle projecting, but rounded. Inner distal angle of the second peduncular joint of the antennae prolonged into a forward-directed projection. Endite of the maxilliped with the inner part of the distal margin only slightly concave, the inner distal angle of the second joint of the palp very little produced. Peduncle of uropods almost ovate, longer than broad, inner distal angle with a short hook-like projection. Female operculum obtusely pointed.

Supplementary Description.

Colour. The colour is laterally slightly yellowish; generally there is a broad brownish streak along the middle of the pereion and abdomen. On the dorsal side of the head there is, as a rule, a more or less markedly brown-coloured spot of the same form as in *Jaeropsis brevicornis*¹ KOEHLER and *paulensis*² VANHÖFFEN. The colouring is somewhat different in different specimens. One of the examined specimens, a female 2.9 mm. in length, differed in having the short fifth pereion segment uncoloured. Another specimen, a female 4.2 mm. in length, had the pereion and abdomen of a uniformly slight-yellowish colour; the head had a faint brownish spot of the usual form. My largest specimen, a male 6.5 mm. in length, has the same slightly yellowish colour, but the brownish spot on the head in that specimen is more distinct.

Head, pereion, abdomen. As in all other species of *Jaeropsis*, the head, thoracic segments, and abdomen, have their lateral margins not continuous, and there is a broad rounded longitudinal elevation along the middle line. Lateral margins of the head smooth. Lateral margins of the pereion segments smooth and convex. On the first and second and, in a minor degree, also on the third pereion segment, the antero-lateral angles of the segments are somewhat projecting; the same is the case with the postero-

¹ KOEHLER, 1885, Pl. I, Fig. 1.² VANHÖFFEN, 1914, p. 532.

lateral angles of the fifth, sixth and seventh segments. All the abdominal segments are coalesced, but a rather long anterior segment is faintly marked off by a narrow groove. The lateral margins of the pleotelson are smooth, with the exception of the two marked incisions, one on each lateral margin, which are characteristic of the species.

Antennae. As in *Jaeropsis intermedius* (cf. Fig. 46 c) the antero-distal (inner distal) angle of third peduncular joint is produced into a long forward-pointing projection reaching to about the distal end of the third joint. The number of joints in the flagellum is seven, including the very large first joint (in a female 2.9 mm. in length). In a male 3.8 mm. in length the number of small joints in the flagellum was 10; the large first joint of the flagellum had three incomplete distal sutures, distinct in the middle of the joint only, but not developed marginally.

Mandibles. Incisive part of the right mandible divided into five points, that of the left mandible likewise with five strong points, but, in addition, with two minute points on the rostral margin. Setal row on the left mandible with eleven, on the right with ten setae.

First pair of maxillae. Typical of the genus. Inner lobe with three stout and a few slender apical setae.

Second pair of maxillae. Typical of the genus. Inner lobe with four apical setae; each lappet of outer lobe with four apical setae.

Maxillipeds (Fig. 45 a). Inner part of the distal margin of the endite only slightly concave, denticulated. The second joint of the palp is the broadest, about half as wide as the endite and having its inner distal angle very little produced. Number of coupling-hooks three or four.

Pereiopods. Dactylus of the first pair provided with two strong claws of about equal size; on the other pereiopods there are three claws of which the intermediate one is smallest. Lower margin of propodus with a row of two-pointed setae of the usual type. On the lower margin of the carpus there is a row of single-pointed setae.

First pair of pleopods, male (Fig. 45 b). Outer distal angles of the sympodites (exopodites) triangular, about as long as the endopodites. Distal margin of the endopodites convex and setiferous.

Second pair of pleopods, male. See Fig. 45 c.

Operculum, female (Fig. 45 e). Distal end obtusely pointed.

Third pair of pleopods (Fig. 45 d). Exopodite two-jointed, longer than the endopodite; second joint tapering towards the obtusely pointed end. Endopodite oval; distal margin provided with three plumose setae, one at the inner distal angle and two near each other close to the outer distal angle.

Uropods (Fig. 45 f). The peduncular joint is approximately semi-cylindrical, tapering towards the end, the dorsal surface being vaulted, the ventral almost flat; the lateral margin is convex, the inner margin almost straight (slightly convex). The inner distal angle is prolonged into a hook-like projection. The branches are minute; the endopodite is a little larger than the exopodite.

Remarks. RICHARDSON (1909) points out that the species has an anteriorly broadly rounded, almost straight, front area (rostrum) with a small apical tip anteriorly in the middle, and that there are two incisions, one on each lateral margin of the pleotelson,

anterior to the uropods. In 1912 CHILTON stated that in adult specimens of *Jaeropsis curvicornis* (NICOLET), just as in *Jaeropsis patagoniensis* RICHARDSON, there is only one incision on each lateral margin of the pleotelson, whilst young specimens have the lateral margins of the pleotelson denticulated throughout. Moreover, the front area in *Jaeropsis curvicornis* (NICOLET) has been differently figured by NICOLET (1849) and STEBBING (1905). CHILTON (1912) is therefore of the opinion that *Jaeropsis patagoniensis* RICHARD-

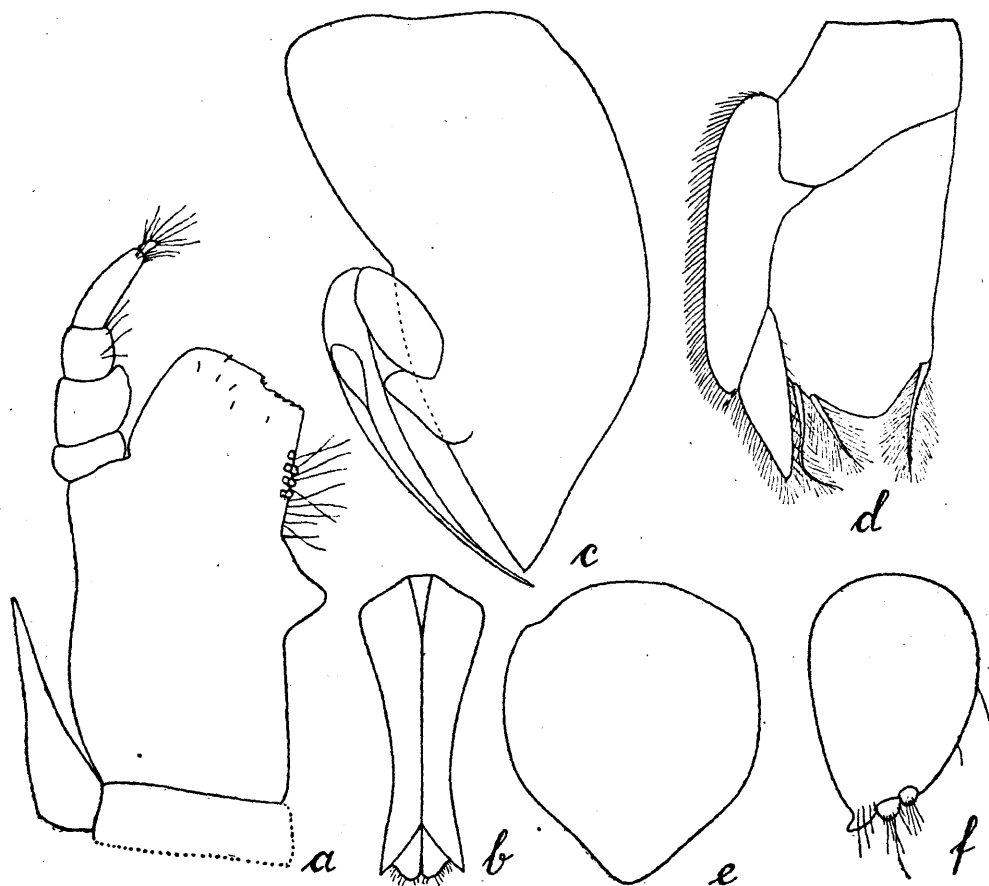


Fig. 45. *Jaeropsis patagoniensis* RICH. a. Right maxilliped, male, 95 \times . b. First pleopods, male, 30 \times . c. Right second male pleopod, seen from the caudal side, 155 \times . d. Right third pleopod, male, 115 \times . e. Female operculum, 45 \times . f. Right uropod, seen from above, (male), 65 \times .

SON is identical with *Jaeropsis curvicornis* (NICOLET). This, I could state to be incorrect. I found even in immature specimens of *Jaeropsis patagoniensis* RICHARDSON always the two incisions on the pleotelson and the small tip on the front area exactly as figured by RICHARDSON (1909)¹. Besides, there are other characteristic differences in the uropods, and especially in the maxillipeds, which, in contrast to *Jaeropsis curvicornis* (NICOLET)²

¹ In a large male, 5.8 mm. in length the small tip on the front area was indistinct.

² Cf. STEBBING, 1905, Pl. IX C, mxp.

and *Jaeropsis intermedius* n. sp. (cf. p. 196), have not the inner distal angle of the second joint of the palp elongated into a forward-pointed projection. *Jaeropsis patagoniensis* is a comparatively large species, larger than the two above mentioned species. There are no females with a marsupium in my material, but the largest specimen, a male, attains a length of 6.5 mm. The smallest specimen of this species in the collection has a length of only 2.9 mm., but the characteristic small tip on the front area and the incisions on the lateral margins of the pleotelson can be seen quite clearly.

Jaeropsis patagoniensis RICHARDSON is closely allied to *Jaeropsis paulensis* VANHÖFFEN, but there are differences in the maxillipeds, the uropods and the shape of the distal part of the pleotelson. The lateral margins of the pleotelson in *Jaeropsis paulensis* VANHÖFFEN are quite smooth and have no incisions anterior to the uropods. The shape of the front area has not been described in this species.

A revision of the southern species of *Jaeropsis* is very much needed. It cannot for example be considered quite certain that the Chilean species *Jaeropsis curvicornis* (NICOLET) is identical with the species from the Gulf of Manaaar described by STEBBING (1905) under the same name. The trapezoidal form and anteriorly almost truncate front area and the brownish colour in *Jaeropsis curvicornis*, as figured by NICOLET (1849), render it possible that the species of NICOLET is the same as *Jaeropsis patagoniensis* RICHARDSON.

Localities and Material.

St. 53. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 47' W. 12 m. Sand and gravel. ³/₁, 1902. Male about 3.8 mm. in length. Colour, brownish in the middle, slightly yellowish at the margins.

St. 55. Falkland Islands, Port Albemarle, lat. 52° 11' S., long. 60° 26' W. 40 m. Sand with algae. ⁸/₁, 1902. Female without oostegits, length about 2.9 mm. Colour, brownish in the middle, at the margins and on the whole fifth pereion segment; elsewhere slightly yellowish.

St. 59. South of West Falkland, on the Burdwood Bank, lat. 53° 45' S., long. 61° 10' W. 137—150 m. Broken shells with stones. ¹²/₁, 1902. Female without oostegits, of slightly yellowish colour, and lacking brownish spot on the head; length about 4.2 mm.

St. 60. Fuegian Archipelago (off Tierra del Fuego), eastern mouth of the Beagle Channel, lat. 55° 10' S., long. 66° 15' W. 100 m. Bottom temp. + 5.0°. Broken shells. ¹⁵/₁, 1902. Male specimen of a slightly yellowish colour but with a faint brownish spot on the head; length about 6.5 mm.

Eugenie Expedition. Straits of Magellan, York Bay. 4—6 fathoms; on Echinids. Male specimen; length about 5.8 mm. Colour yellowish. The specimen differs in having the tip of the anterior margin of the front area indistinct.

Distribution. Patagonia (RICHARDSON 1909), Magellan Straits (Eug. Exp.), Fuegian Archipelago (Sw. Ant. Exped.), Burdwood Bank (Sw. Ant. Exped.), Falkland Islands (Sw. Ant. Exped.).

The species has been previously recorded only from Patagonia.

Jaeropsis intermedius n. sp.

Text. figs. 46 a—g.

Diagnosis. Front area pointed. Lateral margins of head and abdomen generally serrate, those of pereion smooth. Eyes dorsal, at a distance from the lateral margin of the head equal to the width of one eye. First joint of antennulae with the inner distal angle somewhat projecting, and pointed. Inner distal angle of the second joint of the antennal peduncle produced into a long forward-pointing projection. Maxilliped with the inner part of the distal margin of the endite deeply concave; second joint of the palp elongated into a projection directed forwards, which reaches to the distal margin of the third

joint of the palp. Peduncles of uropods deeply inserted in the distal margin of pleotelson, increasing in width towards the distal end and with its inner distal angle elongated into a hook-like point. Operculum in female apically pointed.

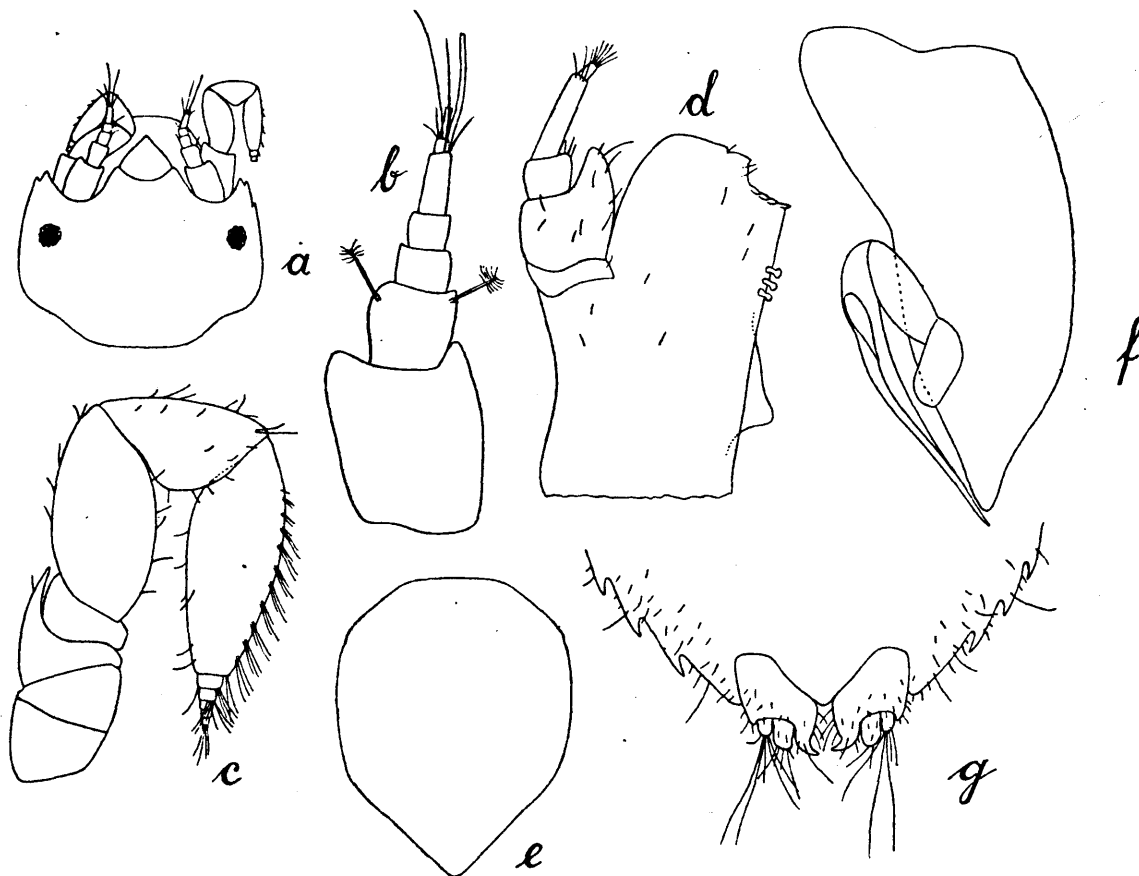


Fig. 46. *Jaeropsis intermedius* n. sp. a. Head, female, 45 \times . b. Left antennula, female, 160 \times . c. Right antenna, female, 115 \times . d. Distal part of the maxilliped, 115 \times . e. Female operculum, 65 \times . f. Right second male pleopod, from the caudal side, 115 \times . g. Tip of pleotelson with the uropods, 115 \times .

Description.

Types. Male, about 2 mm. in length; female, about 3 mm.

Colour. Light yellowish, in some specimens slightly brownish; some of the specimens with indication of a faint brownish-marbled spot on the head.

Head (Fig. 46 a). Front area (rostrum) triangular and pointed, fitting into an emargination of the anterior margin of the head. Lateral margins of the head slightly serrate, anteriorly.

Pereion. Lateral margins of the pereion segments smooth. The fifth pereion segment is the shortest, but only a little shorter than the fourth.

Abdomen. Subtriangular, lateral margins with about eight denticulations and with short setae.

Antennulae (Fig. 46 b). First peduncular joint very large, its inner distal angle is elongated and pointed. Second joint only about half as long and about twice as narrow as the first joint. The third and fourth joints are short, together slightly longer than the second. The flagellum consists of two joints each carrying one sensory filament. The second joint of the flagellum is only about one-third as long as the first.

Antennae (Fig. 46 c). Inner distal angle of the second joint prolonged into a forward-pointing projection reaching to the distal margin of the third joint. Flagellum in specimens with a length of 3 to 3.5 mm. consisting of 5—7 small joints in addition to the very large proximal joint.

Mandibles. Typical of the genus. On the left mandible the incisive part is divided into five teeth, but on the rostral margin there is a row of three additional very small teeth. Setal row on the left mandible with nine setae.

First pair of maxillae. Typical of the genus. Inner lobe with four stout and some slender apical setae.

Second pair of maxillae. Typical of the genus. Outer lappet of outer lobe with three or four apical setae; the inner lappet of the same lobe is furnished with three apical setae, and the inner lobe with four.

Maxillipeds (Fig. 46 d). Inner part of the distal margin of the endite markedly concave and furnished with a row of teeth. Second joint of the palp about half as broad as the endite, its inner distal angle is elongated and reaches to the distal margin of the third joint. The number of coupling hooks is three (in a specimen about 3.5 mm. in length).

Pereiopods. As in *J. patagoniensis*.

First pair of pleopods, male. As in *J. patagoniensis* (cf. Fig. 45 b).

Second pair of pleopods, male (Fig. 46 f). The short branch slightly tapering towards the end.

Operculum, female (Fig. 46 e). More pointed than in *J. patagoniensis*.

Third pair of pleopods. As in *J. patagoniensis* (cf. Fig. 45 d). Exopodite two-jointed.

Fourth and fifth pairs of pleopods. Normal. Fourth pleopod with oblong-ovate endopodite and a small exopodite of about the same shape; fifth pleopod with oblong-ovate endopodite and exopodite missing.

Uropods (Fig. 46 g). Almost as broad as they are long. Peduncles inserted in deep incisions in the margins of pleotelson; only their distal parts project freely. The inner distal angle of the peduncle is prolonged into a hook-like projection, much longer than in *J. patagoniensis*. The free lateral margin of the peduncle is sometimes denticulated. Rami small; exopodite about half as large as the endopodite.

Remarks. Though it is not impossible that this species is identical with one of the previously described species, either *J. marionis* BEDDARD or *J. curvicornis* (NICOLET), there remain differences, which make it necessary to describe it as a new species. It differs from *J. marionis* BEDDARD in having a more pointed front area, in having broader antennae with another shape of the second and third peduncular joints, in having the lateral margins of the pereion segments smooth and the seventh pereiopods furnished with three claws. It is very similar to *Jaeropsis curvicornis* (NICOLET) as described by STEBBING (1905); especially there is a marked similarity in the maxillipeds; the front area,

however, is not rounded anteriorly, but triangular and pointed. *Jaeropsis paulensis* VANHÖFFEN, in which the second joint of the palp of the maxilliped is not produced into a forward-pointing projection, approaches more closely to *Jaeropsis patagoniensis* (cf. p. 194). *Jaeropsis intermedius* is a smaller species than *patagoniensis*. It attains a length of up to 3.5 mm. (see below), but even at the length of 3 mm. we find females with embryos.

Localities and Material.

St. 2. Coast of North Argentina, lat. 37° 50' S., long. 56° 11' W. 100 m. Gravel mixed with sand. ²³/₁₂ 1901. 2 specimens, male and female (types), of a slightly yellowish colour; length of the largest specimen about 3 mm. (female), length of the male 2 mm.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ³/₁, 1902. Small male specimen, about 1.6 mm. in length and almost colourless.

St. 55. Falkland Islands, Port Albemarle, lat. 52° 11' S., long. 60° 26' W. 40 m. Sand with algae. ⁸/₁, 1902. Female with embryos, colour slightly yellowish, length about 3.5 mm.

St. 59. South of West Falkland, on the Burdwood Bank, lat. 53° 45' S., long. 61° 10' W. 137—150 m. Broken shells and stones. ¹²/₁, 1902. A small male specimen of a slightly yellowish colour, but with a touch of brownish; length about 2.8 mm.

St. 60. Fuegian Archipelago, Eastern mouth of the Beagle Channel, lat. 55° 10' S., long. 66° 15' W. 100 m. Bottom temp. + 5.0°. Broken shells. ¹³/₁, 1902. 6 specimens of a very slightly yellowish colour; length of the largest specimen about 3.2 mm.

Distribution. Argentina (Sw. Ant. Exped.), Fuegian Archipelago (Sw. Ant. Exped.), Burdwood Bank (Sw. Ant. Exped.), Falkland Islands (Sw. Ant. Exped.).

Group *Munnini* HANSEN, 1916.

Fam. *Munnidae* G. O. SARS, 1899.

For diagnosis see HANSEN (1916, p. 33—34). The family *Munnidae* of G. O. SARS was divided by VANHÖFFEN (1914) into three families, *Munnidae*, *Paramunnidae* and *Dendrotionidae*. VANHÖFFEN founded this division on characters based on the shape of the body and the length of the uropods. HANSEN (1916) united the families of VANHÖFFEN into his group *Munnini*, but he points out that in reality some of the genera, as *Munna* and *Dendrotium*, differ much from each other in a number of features (p. 33), and expresses the opinion that the group may be divided satisfactorily, when the southern, not very well-known, genera have been more closely investigated. As regards the classification of the family *Parasellidae* it has been shown by HANSEN (1916) that the mandibles are of essential importance. Having been able to examine these appendages in a number of southern genera, such as *Austrosignum* HODGSON, *Antias* RICHARDSON, *Pleurosignum* VANHÖFFEN, *Antennulosignum* n. gen. and *Coulmannia* HODGSON I came to the conclusion that the mandibles are essentially of two different types, the one characterized by its broad, anteriorly cut-off molar tubercle, which widens out towards its distal end, the other by its very narrow molar tubercle distally obliquely truncate or rounded. The generally very marked difference between these two types of mandibles can be seen by comparing the two figures 65 c and 68 b showing the mandible of *Paramunna dentata* n. sp. and *Pleurosignum magnum* VANHÖFFEN. To these two types of mandibles may be added a third, not so well marked as the two others, which is characterized by having a strong molar tubercle tapering towards the end and distally truncate. This type of mandible, which, however, most resembles the one characteristic

of *Munna* and *Paramunna*, is found for instance in *Dendrotium*¹ G. O. SARS and *Antias* (Fig. 49 b). Taking into consideration also other marked differences which are found in the antennulae, the antennae, the maxillipeds, and the uropods, the group *Munnini* HANSEN may be divided into four sub-groups. The two genera *Neasellus* BEDDARD, 1885, and *Acanthomunna* BEDDARD, 1886, cannot be arranged under the following division, since their mouth-organs are unknown.

1. *Antiasini*, new sub-group.
(comprises the genus *Antias*.)

Diagnosis. Mandibles with molar tubercle strong and broad, distally truncate but somewhat tapering towards the end. Antennulae consisting of a four-jointed peduncle, of which the first two joints are stout, and a short flagellum composed of one or two joints, only the last joint furnished with sensory filaments. Antennae not provided with squama. Maxilliped with a narrow palp, the palp being $\frac{1}{3}$ — $\frac{1}{2}$ as wide as the endite; epipodite with distal end pointed. Uropods of medium length, being from a-fourth of the length of to subequal in length to the pleotelson.

Antias RICHARDSON, 1906, has previously been referred to the group *Ianirini*. Its shape of body, which is sometimes very similar to that characteristic of the genus *Munna*², its broad eye-peduncles and the composition of the antennulae, indicates, that the genus comes close to *Munna* and *Paramunna*.

2. *Munnini*, new sub-group.
(comprises *Munnidae* VANHÖFFEN and *Paramunnidae* VANHÖFFEN p. p.)

Diagnosis. Mandibles with a broad molar tubercle directed somewhat forward, increasing in width towards the distal end and anteriorly abruptly truncated. Antennulae with the peduncle and the flagellum of about equal length; peduncle consisting of four joints, the first two stout, the following two very small; flagellum consisting of few joints (1—4), the last two joints (exceptionally only the last) provided with a long sensory filament. Antennae without squama. Maxillipeds with first three joints of the palp broad, second joint of the palp $\frac{1}{3}$ — $\frac{1}{4}$ narrower than the endite; epipodite with distal margin broadly rounded. Uropods very small, with peduncle minute or missing.

Comprises the genera: *Munna* KROEYER 1839, *Paramunna* G. O. SARS 1866, *Coulmannia* HODGSON 1910, *Notoxenus* HODGSON 1910, *Austrosignum* HODGSON 1910, *Echinomunna* VANHÖFFEN, 1914.

The genus *Astrurus* BEDDARD, 1885, whose shape of body somewhat resembles that of *Coulmannia*, may perhaps be referred to this sub-group. It differs, however, in having a narrow palp of maxilliped. As its mandibles are unknown, its systematical position is doubtful.

3. *Dendrotiini*, new sub-group.
(= Fam. *Dendrotionidae* VANHÖFFEN.)

Diagnosis. Mandibles with molar tubercle broad and strong, similar to the molar in sub-group *Munnini*, but tapering towards the end. Antennulae with flagellum longer than

¹ See G. O. SARS, 1899, Pl. 49, M. sin.

² Cf. *Antias marmoratus*, Pl. II Fig. 17 and VANHÖFFEN (1914, Fig. 61 a).

the peduncle, its last three — as a rule more than three — joints, furnished with short sensory filaments. Antennae with squama missing or small. Palp of maxilliped narrow, with second joint about half as wide as the endite; epipodite pointed. Uropods very long, always longer than the pleotelson; peduncle of uropods long.

Comprises the genera: *Dendrotium* G. O. SARS 1871, *Mormomunna* VANHÖFFEN 1914, and *Pseudomunna* HANSEN 1916.

4. *Pleurogoniini*, new sub-group.

(comprises *Paramunnidae* VANHÖFFEN p. p.)

Diagnosis. Mandibles with a long and narrow molar tubercle, slightly forward-directed, very slightly widening or tapering towards the end, which is obliquely truncated or rounded. Antennulae as in sub-group *Munnini*, except that the penultimate joint of the flagellum is never provided with a sensory filament. Maxillipeds as in sub-group *Munnini*. Uropods very short with peduncle minute or missing.

Comprises the genera: *Pleurogonium* G. O. SARS 1899, *Pleurosignum* VANHÖFFEN 1914, and *Antennulosignum* n. gen.

Synopsis of the genera.

- I. Mandibles with a broad subcylindrical molar tubercle widening towards the distal end and distally cut off. (Uropods minute.)

Sub-group *Munnini*.

1. Eye-peduncles broad.
 - a. Pleotelson bulbous, coxae visible from above and marked off by dorsal sutures on the second to seventh pereion segments.
 - α . Body smooth. *Munna* KROEYER.
 - β . Body strongly spinous. *Echinomunna* VANHÖFFEN.
 - b. Pleotelson flattened, coxae not visible from above. *Paramunna* G. O. SARS.
2. Eye-peduncles slender.
 - a. Pereion flattened, coxae visible from above and marked off by dorsal sutures on the last three pereion segments. *Austrosignum* HODGSON.
 - b. Pereion vaulted, coxae not visible from above.
 - α . Mandibles with palp. *Notoxenus* HODGSON.
 - β . Mandibles without palp. *Coulmannia* HODGSON.
- II. Mandibles with molar tubercle stout, but tapering towards the truncate end. (Uropods long to mediumly long).
 - A. Antennulae with a very short flagellum composed of only a few joints. Uropods of medium length not exceeding that of the pleotelson.

Sub-group *Antiasini*.

- B. Antennulae with a very long flagellum consisting of many joints. Uropods very long. *Antias* RICHARDSON.

Sub-group *Dendrotiini*.

- 1. Coxal plates spine-like. *Dendrotium* G. O. SARS.
 - 2. Coxal plates rounded.
 - a. Each of the first male pleopods distally cleft. *Pseudomunna* HANSEN.
 - b. First male pleopods uncleft, distally rounded. *Mormomunna* VANHÖFFEN.
- III. Mandibles with a narrow molar tubercle with obliquely truncate or rounded end.

Sub-group *Pleurogoniini*.

- 1. Eyes on long eye-peduncles.
 - a. Second peduncular joint of the antennula distally prolonged into a spine-like projection longer than the flagellum. *Antennulosignum* n. gen.
 - b. Second peduncular joint of the antennula not prolonged distally. *Pleurosignum* VANHÖFFEN.
- 2. No eyes, no eye-peduncles. *Pleurogonium* G. O. SARS.

Sub-group *Antiasini*, new sub-group.

For diagnosis see p. 198.

Genus *Antias* RICHARDSON, 1906.

RICHARDSON, 1913; VANHÖFFEN, 1914.

Diagnosis.¹ Body short, sometimes with the four first pereion segments slightly marked off from the last three segments. Eye-peduncles broad furnished with a tooth in front of the eyes. Abdomen narrower than the pereion, with dorsal surface vaulted and sometimes slightly swollen. Antennulae consisting of a four-jointed peduncle having the first two joints stout, the last two small, and an 1—3-jointed flagellum; last joint of flagellum furnished with one or more long sensory filaments. Mandible with a strong subcylindrical molar tubercle with the end cut off and directed forwards. Maxilliped with a narrow palp, the joints not differing much in width; second joint of the palp only one-third to one-half as wide as the endite. Pereiopods with first pair in both sexes slightly subchelate, all with two claws. Uropods never exceeding the length of the abdomen.

This genus was referred by RICHARDSON (1906) and VANHÖFFEN (1914) to the *Ianiridae* G. O. SARS. Its affinity to *Munna* and *Paramunna* is indicated especially by its distinct eyepeduncles, its comparatively narrow, sometimes slightly swollen, abdomen, its antennulae, which consist of very few joints and have the last joint furnished with one or more sensory filaments, its mandibles and its occasionally very short uropods (cf. *Antias marmoratus* VANHÖFFEN). The general shape of body is similar to that of *Paramunna* G. O. SARS. The eye-peduncles resemble those in the genus *Munna*. Owing to its comparatively flattened body and, as a rule, rather long uropods, the genus comes closest to the *Ianirini* of all the genera of the group *Munnini*. In the three species of *Antias* examined by me, the small coxae are visible from above and separated by dorsal sutures from the tergum on the last three pereion segments.

¹ Cf. RICHARDSSON (1906, p. 16—17).

Antias hispidus VANHÖFFEN, 1914.

Text figs 47 a—g.

Antias hispidus. VANHÖFFEN, 1914, p. 533—534, Fig. 60; STEPHENSEN, 1927, p. 356—357, Fig. 24 (1, 2, 3).

Supplementary Description.

General shape of body. Flattened, oval; body about two and a third times as long as its greatest width.

Head. About as long as the first and second pereion segments together. Rostral part projecting, with rostral margin strongly convex, reaching about to the middle of the penultimate joint of the antennal peduncle. Eyes of a reddish-brown colour and consisting of twenty ocelli. In the antero-lateral angle of the head, there is a forward-directed tooth-like projection in front of the eyes.

Pereion. Segments approximately equal in length. First four segments approximately equal in width; the fourth segment very slightly broader than the others. Lateral margins of the first four segments almost straight, of the last three convex. Dorsally and laterally the segments are furnished with sparse setae.

Coxae visible from above and marked off from the tergites by faint dorsal sutures on the last three pereion segments.

Abdomen. Narrower than pereion. Anteriorly is one free segment. Pleotelson with lateral margins very slightly convex (almost straight), laterally with two marked incisions for the uropods. Distal margin between the uropods convex.

Antennulae (Fig. 47 a). Short, about two-thirds the length of the head. Peduncle composed of four joints; the first two joints are stout, the second and third joints much smaller. Flagellum single-jointed, about as long as the third and fourth peduncular joints together; it is furnished apically with one long sensory filament and some setae.

Antennae (Fig. 47 b). Short, but about twice as long as the antennulae, lateral margin of the third joint provided with a large seta. The flagellum consists of about eleven joints.

Mandibles. Incisive part with five points. Molar tubercle subcylindrical and forward-directed, very slightly tapering towards the truncate denticulated end. Lacinia (on the left mandible) with three points. Setal row (on the left mandible) with four setae, (on the right) with five.

First pair of maxillae (Fig. 47 c). Outer lobe about twice as broad and one-fourth again as long as the inner lobe; distal margin straight furnished with about ten stout setae; inner margin provided distally with a row of slender setae. Inner lobe distally decreasing in width, with four apical setae.

Second pair of maxillae (Fig. 47 d). Inner lobe provided with setae on the inner margin and at the tip. Lappets of outer lobe with three apical setae each.

Maxillipeds (Fig. 47 e). Palp narrow, its second joint being not fully half as wide as the endite; distal margin of the endite furnished with a row of setae; near the same margin there is also a submarginal row of setae. There are two coupling-hooks. The epipodite is distally pointed, its outer margin is markedly convex, its inner margin almost straight.

First pair of pereiopods (Fig. 47 f). Slightly subchelate and shorter than the other pereiopods. The basipodite is slightly longer than the ischium and merus together. The ischium is slightly longer than the propodus. Merus and carpus are subequal in length. The setal armature is illustrated in the figure. Some of the setae are stout and two-pointed. Dactylus with one long and one short claw.

The other pereiopods. All with one long and one short claw.

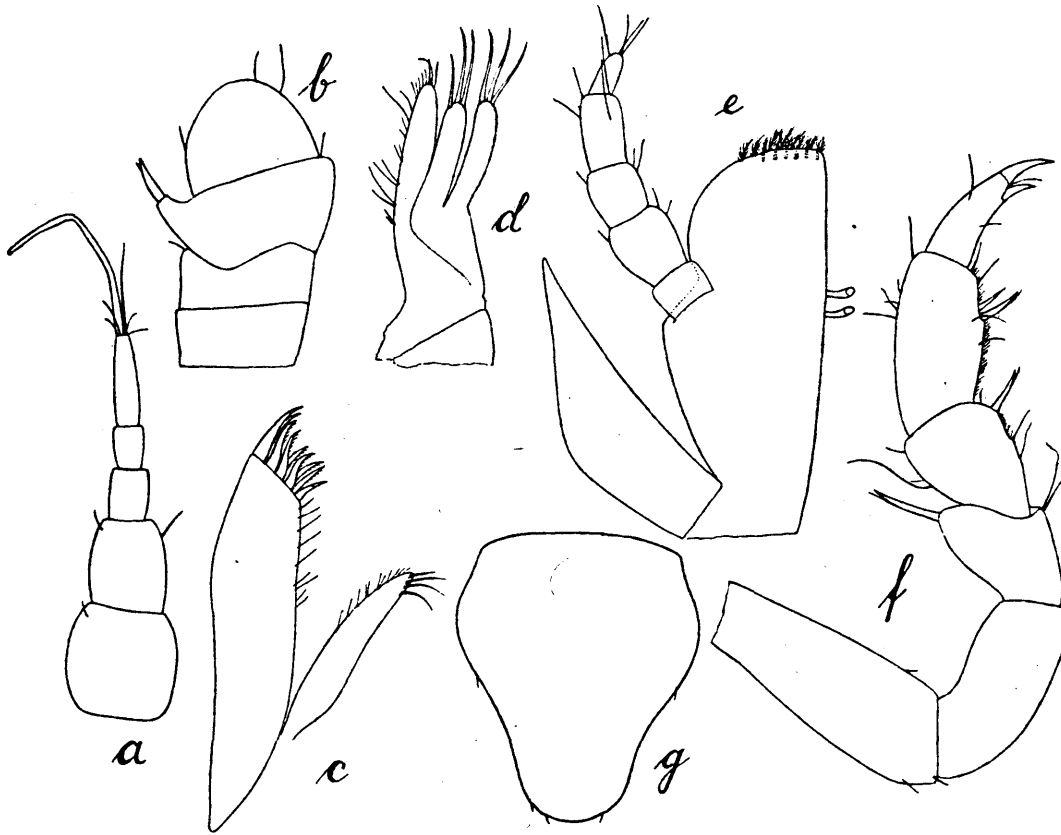


Fig. 47. *Antias hispidus* VANHÖFF. a. Right antennula, female, 235 ×. b. Proximal joints of the right antenna, female, 315 ×. c. Right first maxilla, female, 235 ×. d. Right second maxilla, 235 ×. e. Right maxilliped, female, 235 ×. f. Right first pereiopod, female, 200 ×. g. Female operculum, 200 ×.

Operculum, female (Fig. 47 g). Slightly tapering towards the broadly rounded end, being distally not quite one-third as broad as its greatest width. Lateral margins proximally convex, distally somewhat concave. Distal margin convex.

Uropods. About as long as the pleotelson. Peduncle about half as long as and somewhat broader than the rami. The rami are of about equal length, half as long again to twice as long as the peduncle. Each of the rami with two strong spine-like apical setae, forming an angle of about 60° with each other.

Localities and Material.

St. 49. Falkland Islands, Berkeley Sound, lat. 51° 35' S., long. 57° 56' W. 25—30 m. Shells and stones. ¹⁰/₈ 1902. 2 specimens 1.4 and 1.2 mm. long respectively.

St. 95. Graham Region, North of Astrolabe Island, lat. 63° 9' S., long. 58° 17' W. 95 m. Bottom temp. — 1.0°. Sand mixed with clay, algae, and stones. ²⁸/₁₁ 1902. Female specimen with empty marsupium; length about 1.5 mm.

Distribution. Falkland Islands (Sw. Ant. Exped.), St. Paul (VANHÖFFEN 1914), Auckland Islands (STEPHENSEN 1927), Graham Region (Sw. Ant. Exped.).

The species thus has a wide distribution. It has not previously been found at the Falkland Islands or the Graham Region.

Antias marmoratus VANHÖFFEN, 1914.

Pl. II Fig. 17; Text figs. 48 a—g.

Antias marmoratus. VANHÖFFEN, 1914, p. 534—535, Figs. 61 a—d.

Supplementary Description.

General shape of body. In the fully grown female (Pl. II, Fig. 17) oval, in males and immature females, oblong, narrowing backwards¹. The greatest width in adult females is across the third pereion segment; in males and young specimens the anterior five pereion segments are subequal in width; the last two pereion segments decrease in width.

Colour. Varying between grayish and brownish. The first four pereion segments are often brownish-marbled, whilst the last three pereion segments and the abdomen have a marbled grayish-brown colour, which is generally of a lighter tinge of gray in the middle of the last three pereion segments. The head is either marbled grayish or brownish. In some specimens the body is marbled brown throughout, except for a lighter tinge in the middle of the last three pereion segments.

Head. Frontal margin straight. Eyes small, often without pigment.

Pereion. First four segments subequal in length, but the third slightly longer than the others. Last three segments curved backwards; elevated and of a paler tinge in the middle. Lateral margins of all the pereion segments rounded.

Coxae visible from above and marked off by dorsal sutures on the last three segments.

Abdomen. About as long as the last four pereion segments together, anteriorly with a distinct free segment. The pleotelson is somewhat swollen, having the dorsal surface vaulted, but it is more depressed in a dorso-ventral direction than in the genus *Munna*. The greatest width of the pleotelson is near the anterior margin, whence it tapers towards the distal end. Its lateral margins are convex, its distal margin between the uropods is broadly rounded and often setiferous. The dorsal surface of the pleotelson, in the middle, exhibits a faint longitudinal elevation.

Antennulae (Fig. 48 a). Reaching approximately to the distal margin of the penultimate joint of the peduncle of the antennae. First and second peduncular joints are large and subequal in size. Second and third joints small, approximately equal in length and together about as long as the second joint. Flagellum single-jointed, about as long as the second and third peduncular joints together.

Antennae. From one-half to one-third as long as the body. The first four joints

¹ See VANHÖFFEN, 1914, Fig. 61 a.

of the peduncle are short, of about equal length and together slightly longer than the fifth joint, which is about as long as the sixth. Squama missing. The flagellum is somewhat shorter than the peduncle and consists (in a female 1.7 mm. long) of eleven joints, of which the first is as long as the two following joints together.

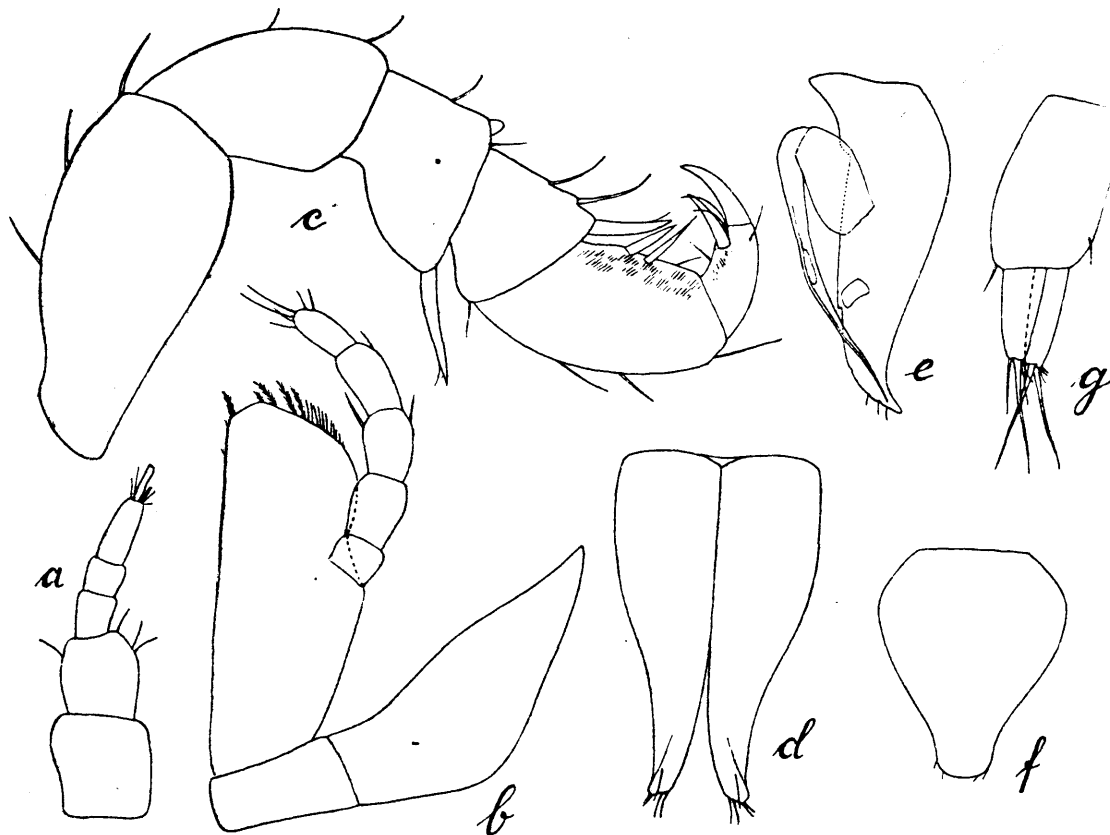


Fig. 48. *Antias marmoratus* VANHÖFF. a. Right antennula, female, 160 ×. b. Left maxilliped, 200 ×. c. Right first pereopod, male, 200 ×. d. First male pleopods, 160 ×. e. Right second male pleopod, seen from the caudal side, 160 ×. f. Female operculum, 65 ×. g. Right uropod, female, 235 ×.

Mandibles. Incisive part with five points. Lacinia (on the left mandible) with three points. Setal row (on the left mandible) with three or four setae, (on the right) with five setae. Molar tubercle very slightly tapering towards the truncate and denticulated end. Palp short, three-jointed.

First pair of maxillae. Much as in *Antias hispidus*. Inner lobe weak, shorter than the outer lobe and furnished with four setae at the tip (situated somewhat towards the inner margin).

Second pair of maxillae. Lappets of outer lobe about as long as inner lobe, each with four apical setae. Inner lobe not much broader than each of the lappets of outer lobe, provided with setae distally.

Maxillipeds¹ (Fig. 48 b). The epipodite is apically pointed; outer margin strongly

¹ See also VANHÖFFEN, 1914, Fig. 61 b.

convex, inner margin almost straight. The palp is narrow; its joints are approximately equal in width, the second joint being approximately two-fifths the width of the endite. Each maxilliped is provided with three coupling-hooks.

Pereiopods. Increasing somewhat in length from the first to the seventh. First pereiopod (Fig. 48 c) alike in male and female. Meral joint with a strong seta at its upper distal angle. Carpal joint with three setae on its lower margin, of which the largest is situated at the lower distal angle. Propodal joint with two setae near each other on its lower margin. For other details see the figure.

First and second pleopods in the male. See Figs. 48 d and e and cf. VANHÖFFEN (1914, Figs. 61 c and d).

Opeculum, female (Fig. 48 f). Approximately cordate; distally not quite one-third as broad as its greatest width; lateral margins near the distal end somewhat concave; distal margin sub-truncate.

Uropods (Fig. 48 g). Situated in incisions on the margin of the pleotelson. They are only one-third to one-fourth as long as the pleotelson. The short rami are fairly equal in length.

Remarks. My specimens of this species correspond in essentials with the figures and description by VANHÖFFEN (1914). VANHÖFFEN figures, in his Fig. 61 a, a female specimen, apparently an immature female. The ovigerous female (Pl. II, Fig. 17) is more oval in outline. The specimens described above differ slightly in colour from those described by VANHÖFFEN. The colour of the species appears, however, to vary considerably in different specimens.

The general aspect of *Antias marmoratus* VANHÖFFEN is fairly similar to that of a *Munna*.

Localities and Material.

South Georgia, Cumberland Bay, May Bay. Haul among algae above a stony bottom. 1—2 m. $\frac{1}{2}$, 1902. About 29 specimens, males and females. Length of the largest specimen. 2.2 mm. (female).

South Georgia, Cumberland Bay, May Bay. Haul among algae in and below the low-tide region. 26 specimens, males and females, collected together with *Antias Hofsteni*. $\frac{1}{2}$, 1902. Largest specimen, a female, about 2 mm. in length.

South Georgia, Cumberland Bay, May Bay. $\frac{1}{2}$, 1902. In a rock-hollow in the low-tide region. Washed off from a colony of Bryozoa. One small male specimen.

Distribution. St. Paul, (VANHÖFFEN 1914), South Georgia (Sw. Ant. Exped.), Kerguelen (VANHÖFFEN 1914).

Not previously recorded from South Georgia.

***Antias Hofsteni* n. sp.**

Pl. II, Fig. 18; Text figs. 49 a—i.

Diagnosis. Head with broad eye-peduncles furnished at its anterio-lateral angles with an acute point directed anteriorly. Pleotelson of fairly uniform width, but broadest slightly anterior to the middle; its distal margin with well-marked incisions for the uropods; distal tip between the uropods short and with a convex margin. Antennulae consisting of a four-jointed peduncle and a two-jointed flagellum. First pereiopods very

slightly subchelate. Distal half of the fused first male pleopods of a uniform width, subrectangular and not tapering towards the end. Female operculum distally about two-fifths as wide as its width across the middle; distal margin subtruncate.

Description.

Types. Male 1.5 mm. in length and female with an empty marsupium 2 mm. long.

General shape of body. In the male (Pl. II, Fig. 18) the body is oblong, the pereion segments being almost of equal width. In the female with a marsupium it is more oval in outline, being broadest across the third pereion segment. Laterally and dorsally there are short scattered setae.

Colour. Yellowish, slightly marbled with brown, especially on the head and the abdomen.

Head. About three-fourths as long as it is broad, and about as long as the first and second pereion segments together. Front part between the antennulae projecting, divided by two faint parallel and transverse lines into one proximal trapezoidal part and one anterior lobe with distal margin convex. Eyes small without pigment. Anterior-lateral angles of the head forward-directed and pointed.

Pereion. The first four segments are subequal in length. The last three segments are short and somewhat curved backwards.

Coxae small, visible from above and marked off by dorsal sutures on the last three pereion segments.

Abdomen. Short, approximately as long as the last three pereion segments together, anteriorly with a free segment. The pleotelson is somewhat swollen, with dorsal surface slightly vaulted; lateral sides slightly convex. The greatest width of the pleotelson is somewhat anteriorly to the middle. The incisions for the uropods are distinct. The posterior part of the pleotelson between the uropods is somewhat triangularly prolonged; its distal margin is convex. The dorsal surface of the pleotelson is furnished with a slight light-coloured longitudinal elevation along the middle line.

Antennulae (Fig. 49 a). The four-jointed peduncle has stout first and second joints; the third and fourth joints are small. The flagellum consists of two joints.

Antennae. Short, about as long as the head and the first pereion segment together. The first four peduncular joints are short and of about equal length; together they are about as long as the fifth joint, which is subequal in length to the sixth. The latter joint differs from the others in being narrow proximally and increasing in width towards the distal end. The flagellum is about as long as the last two joints of the peduncle together and consists of eight joints, which decrease in length and width from the first to the last.

Left mandible (Fig. 49 b). As in *Antias marmoratus*. Incisive part with five teeth. Lacinia with three teeth. Setal row with four setae. Molar tubercle slightly tapering towards the truncate, denticulated end. Palp short, three-jointed.

First pair of maxillae (Fig. 49 c). Of the usual type in the genus. Inner lobe weak, provided with five slender setae at the tip.

Second pair of maxillae (Fig. 49 d). The two lappets of the outer lobe are each provided with four apical setae.

Maxillipeds (Fig. 49 e). Typical of the genus. Second joint of the palp about half as wide as the endite. There are two coupling-hooks.

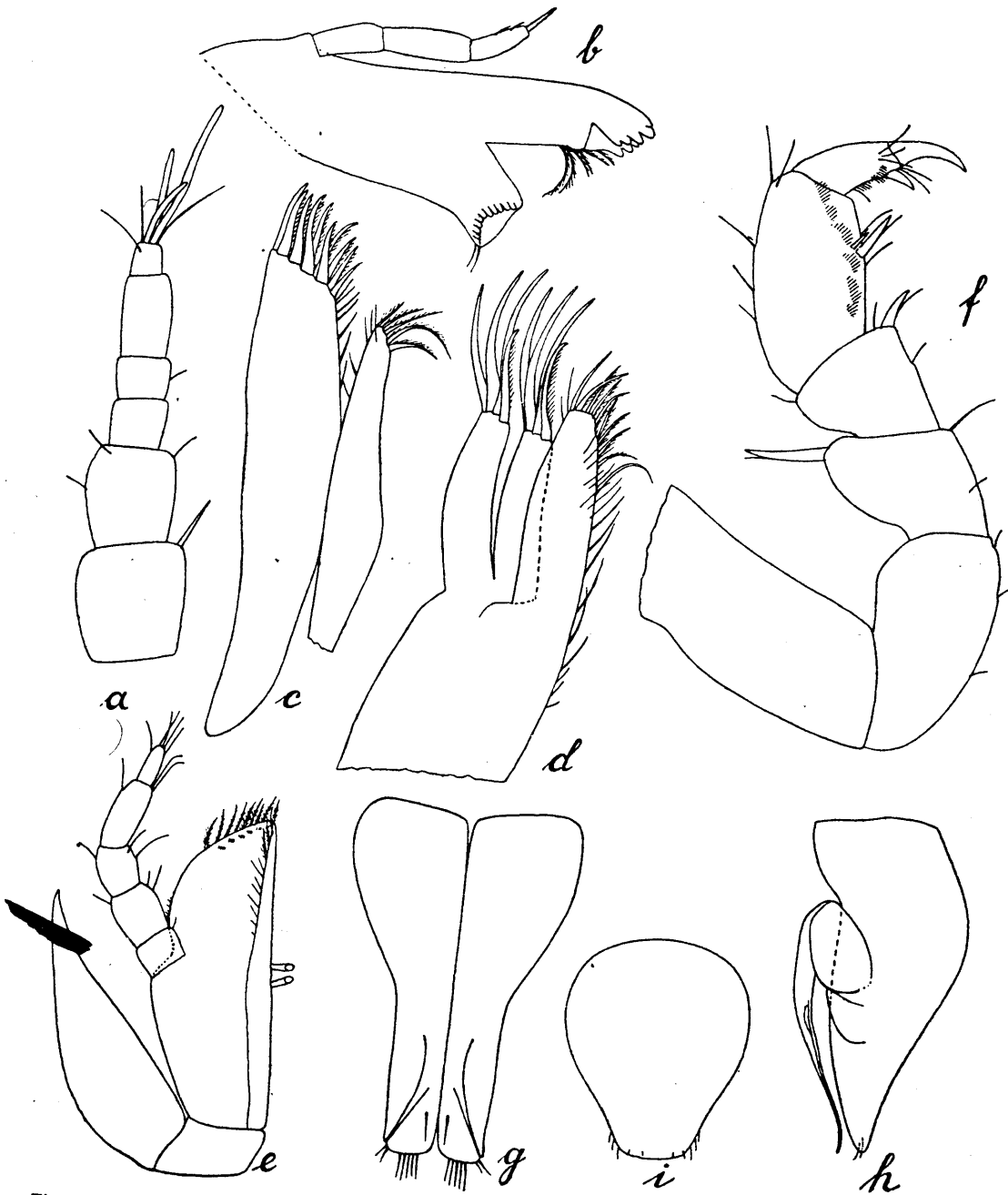


Fig. 49. *Antias Hofsteni* n. sp. a. Right antennula, female, 200 \times . b. Left mandible, female, 200 \times . c. First maxilla, 315 \times . d. Second maxilla, 315 \times . e. Left maxilliped, in a female with embryos, 160 \times . f. Left first pereopod, female, 235 \times . g. First pleopods, male 160 \times . h. Second male pleopod, seen from the caudal side, 160 \times . i. Female operculum, 95 \times .

First pair of pereopods (Fig. 49 f). Very similar to those in *Antias marmoratus*.

The other pereopods. Much as in *Antias marmoratus*.

First and second pleopods male (Fig. 49 g and h). They differ from the same appendages in *Antias marmoratus* in the way shown in the figures. The fused first pleopods are thus much broader distally than in *Antias marmoratus*.

Operculum, female (Fig. 49 i). It is much broader distally than in *Antias marmoratus*, being about two-fifths as wide at the distal margin as across the middle. The distal margin is subtruncate.

Uropods. Broken in all the specimens.

Remarks. In its general aspect the species somewhat resembles *Antias marmoratus*, from which species it is easily distinguished by a different shape of the pleotelson, the female operculum and the first male pleopods.

The species is named after Professor N. v. HOFSTEN of Upsala.

Localities and Material.

South Georgia, Cumberland Bay, May Bay. Haul among algae in and below the low-tide region. $\frac{5}{3}$, 1902. 4 specimens (2 males, 2 females), collected together with *Antias marmoratus*. Length of the specimens: Female with empty marsupium (type) 2 mm.; female with embryos, 2 mm.; male (type), 1.5 mm.; male, 1.2 mm.

Distribution. South Georgia (Sw. Ant. Exped.).

Sub-group **Munnini** new sub-group.

For diagnosis see p. 198.

Genus **Munna** KROEYER, 1839.

For diagnosis see G. O. SARS (1899, p. 106—107) and HANSEN (1916, p. 34).

Munna maculata BEDDARD, 1885.

Text fig. 50.

Munna maculata. BEDDARD, 1886, p. 25—26, Pl. XI, Fig. 14; VANHÖFFEN, 1914, p. 563—564, Figs. 92 a and b; MONOD, 1931, p. 18 and 20, Figs. 7 a and b.

The Swedish Antarctic Expedition collected only a single specimen of this species, viz. an ovigerous female about 2.6 mm. long, found off the Falkland Islands. I have compared it with a female specimen from the German Antarctic Expedition, determined by VANHÖFFEN as *Munna maculata* BEDDARD and sent to me for examination from the Berlin Museum. These two specimens are similar in almost every detail, the only difference being in the colour. The Falkland Islands specimen was paler in colour; the pigment spots on the pereion were sparse and entirely absent on the abdomen. The specimen has no setae on the pereion, but the pleotelson is furnished laterally with some small spines. The body is ovoid in shape, and the first pereion segment is the shortest of the anterior four segments.

Coxal plates subrectangular, with lateral margins convex in a dorsal view. Uropods (Fig. 50) with outer margin slightly convex and inner margin almost straight; distal margin provided with three small triangular lobes.

Localities and Material.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W., 22 m. Sand. 3/8, 1902. Female with an empty marsupium; length about 2.6 mm.; collected together with *Munna pallida* BEDDARD.

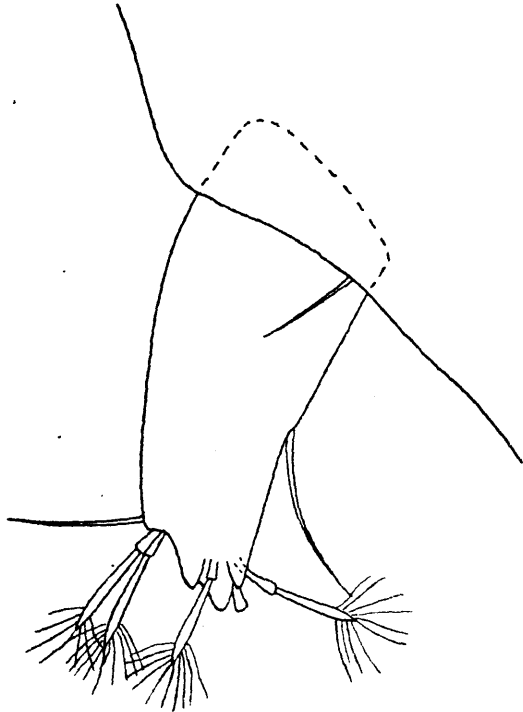


Fig. 50. *Munna maculata* BEDD. Left uropod (of an ovigerous female), 340 x.

Distribution. Falkland Islands (Sw. Ant. Exped.), Kerguelen (BEDDARD 1886, VAN-HÖFFEN 1914, MONOD 1931).

The species has not previously been recorded from the Falkland Islands.

***Munna pallida* BEDDARD, 1886.**

Text figs. 51 a—g.

Munna pallida. BEDDARD, 1886, p. 26—27, Pl. XI, Fig. 15; MONOD, 1931, p. 22.

Supplementary Description.

General shape of body (Fig. 51 a). Body very oblong, about three times as long as it is broad.

Colour. Whitish to slightly yellowish.

Head (Fig. 51 a). Almost as long as the first two pereion segments together. Frontal margin straight. Eye-peduncles broad, of uniform width, with a small anteriorly directed tooth in front of the eyes. The eyes are not very large and of a dark colour.

Pereion (Fig. 51 a). Sublinear, with the pereion segments only slightly differing in width. The first four segments are subequal in length and somewhat longer than the last three segments, which are likewise about equal in length. Lateral margins of all the pereion segments rounded.

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Coxal plates subrectangular, with their lateral margins rounded.

Abdomen (Fig. 51 a). About as long as the last four pereion segments plus half the fifth segment, anteriorly with a distinct free segment.

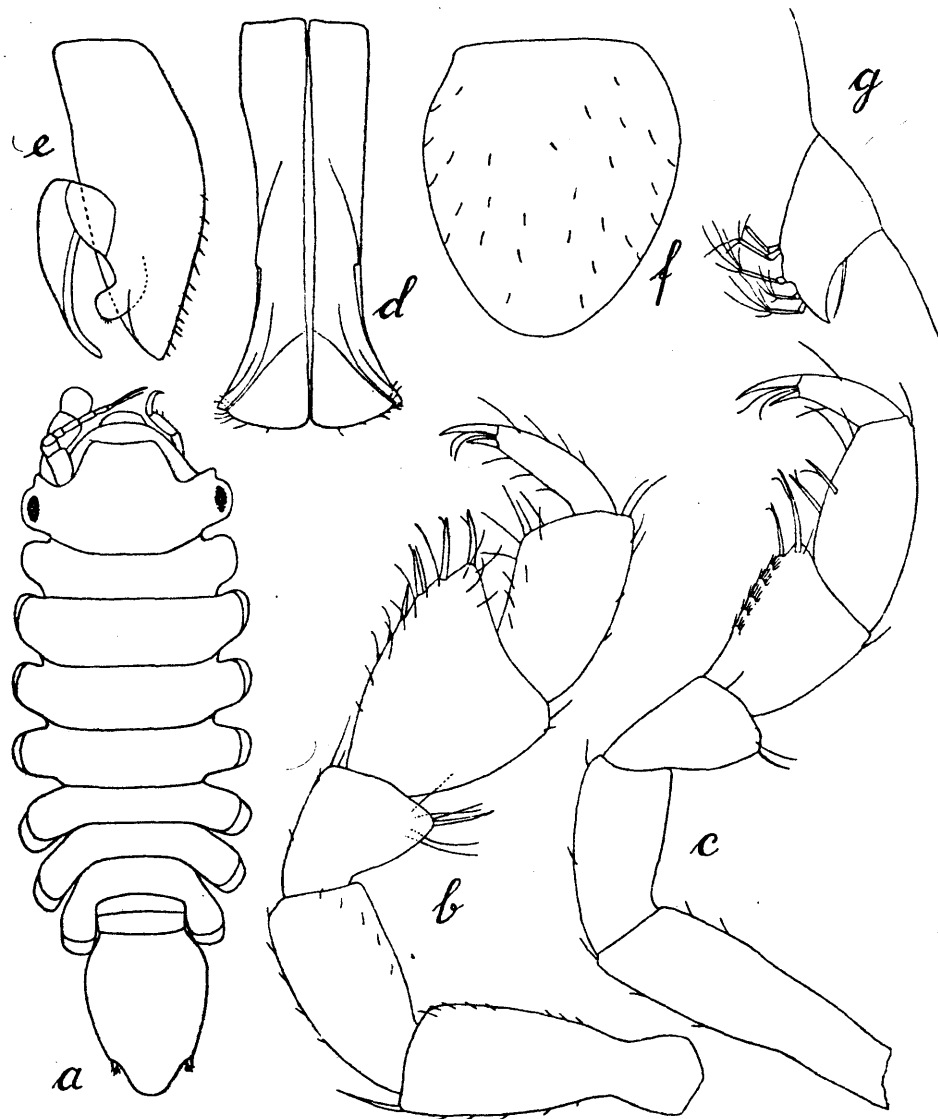


Fig. 51. *Munna pallida* BEDD. a. Male, 27 \times . b. First pereopod, male, 100 \times . c. First pereopod, female, 235 \times . d. First male pleopods, seen from the caudal side, 115 \times . e. Right second pleopod, from the caudal side, male, 115 \times . f. Female operculum from the rostral side, 135 \times . g. Left uropod, female, 320 \times .

Pleotelson not very swollen, greatest width near its base. Lateral sides slightly convex. Insertions for the uropods large and distinct. The tip between the uropods with its margin almost semicircularly rounded. Longitudinal elevation along the middle line slightly indicated. Dorsally and laterally the pleotelson has a few minute scattered setae.

Antennulae. Of the usual shape in the genus *Munna*, with third and fourth joints of the peduncle very short. The flagellum consists of four joints, of which the last is small. The last two joints of the flagellum are each provided with a long sensory filament.

Antennae. Broken. The four proximal joints are small.

Maxillipeds. Typical of the genus, having the second and third joints of the palp expanded and broader than the others. Distal margin of the epipodite broadly rounded. Coupling-hooks, three.

First pair of pereopods, male (Fig. 51 b). Carpal joint broad, subtriangular, widening considerably towards its distal end; lower margin provided with four stout two-pointed setae and a number of more slender bristles. Propodal joint subrectangular, about as long as the carpus, but much narrower. Dactylus narrow, furnished with one long and one short claw.

First pair of pereopods, female (Fig. 51 c). Much more slender than those of the male (especially the carpus and propodus), but otherwise similar. Carpal joint with only two double-pointed setae on its lower margin. Propodus close to its lower margin with two double-pointed setae. The propodus is somewhat longer than the carpus.

The other pereopods. In most of the specimens examined not preserved. They are not quite so long as is generally the case in the genus *Munna*. The fifth pereopod is somewhat shorter than the body.

First pair of pleopods, male (Fig. 51 d). Widening towards their distal ends. Distal margins convex.

Second pair of pleopods, male. See Fig. 51 e.

Operculum, female (Fig. 51 f). Its anterior surface provided with short scattered setae.

Uropods (Fig. 51 g). Somewhat hook-like. For details see the figure. They differ from the description by MONOD (1931) in lacking the «3—4 petites protubérances apicales».

Localities and Material.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ²/₁, 1902. 7 specimens, of which four are very small. Of the three large specimens one is a male, the two others are indeterminable as to sex, having lost their operculums and first pereopods; one specimen of slightly more ovoid shape of body than the others is probably a female. Of the four young specimens three are females; one of them has no operculum. Almost colourless. Length of largest specimen, a male, about 3 mm. The specimens were found together with one specimen of *Munna maculata*.

Falkland Islands, Port Louis, Greenpatch. From algae and roots of kelp thrown up on the shore by storm. Male specimen about 2.4 mm. in length. It differs slightly from the above-mentioned specimens in having the pleotelson not quite so tapering towards its distal end and in its slightly brownish colour, the body being faintly marbled with brown pigment.

Distribution. Falkland Islands (Sw. Ant. Exped.), Kerguelen (BEDDARD 1886, MONOD 1931).

Previously found only at Kerguelen.

Munna antarctica (PFEFFER, 1887).

Text figs. 52 a, b.

Haliacris antarctica. PFEFFER, 1887, p. 137—143, Pl. VI, Figs. 28—46; HODGSON, 1910, p. 58—61; TATTERSALL, 1921, p. 203—205, Pl. I, Figs. 15, 16, Pl. II, Figs. 1—3.

(?) *Munna antarctica.* VANHÖFFEN, 1914, partim., p. 562—563.

*Diagnosis*¹. Anterior margin of the head with a distinct spine-like projection in front of the eyes. First, second and third segments of the pereion laterally pointed, fourth trun-

¹ Cf. MONOD, 1931, p. 15.

cate, fifth, sixth and seventh with lateral margins convex. Coxal plates (on the second to seventh segments) all pointed. First male pereopod with ischium longer than merus; in the adult male with the free distal edge of carpus furnished with a tooth, lower distal angle of the propodus tooth-like, projecting, and lower margin of propodus crenulate. Uropods sub-conical, tapering towards the broadly rounded and setiferous end.

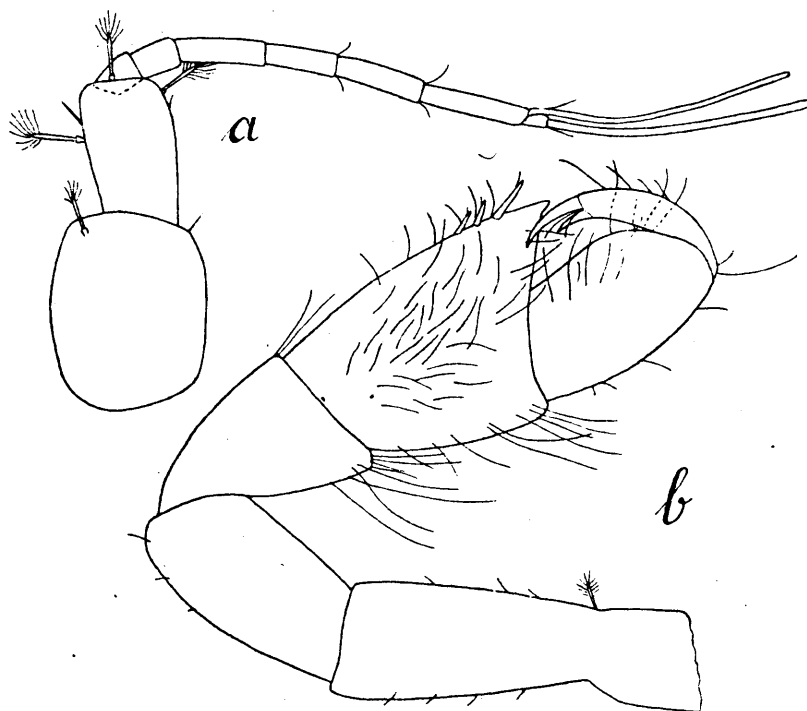


Fig. 52. *Munna antarctica* (PFEFF.). a. Antennula, female, 100 \times . b. Right first pereopod of a sub-adult male 3.1 mm. in length, 75 \times .

Supplementary Description.

Antennulae (Fig. 52 a). First and second joints of the peduncle very stout; third and fourth very small. The flagellum consists of five joints, of which the last is small; each of the last two joints of the flagellum — as is usual in the genus *Munna* — are furnished with one large sensory filament.

Mandibles. Incisive part with five teeth, of which two are situated on the frontal and three on the inner margin. Lacinia (on the left mandible) with four teeth. Setal row on the left mandible with four setae, on the right with five. Second joint of the palp provided at its distal end with two long setae, each seta furnished with two rows of sub-branches; third joint distally with three setae of the same kind.

*First and second pairs of maxillae*¹. Normal. Inner lobe of first maxilla provided distally with four stout and about five slender setae. Lappets of outer lobe of the second maxilla each provided with three long apical setae.

¹ Cf. HODGSON, 1902, Pl. XXXIV, Figs. 1 a and 1 b.

*Maxillipeds*¹. Epipodite with distal margin broadly rounded. Coupling-hooks, about six.

*First pair of pereopods, young male*² (Fig. 52 b). Ischium, somewhat longer than merus. Carpal joint on the lower margin near its distal end with three setae. The free distal margin of the carpus and the lower margin of the propodus are not denticulated.

First pair of pleopods, male Cf. TATTERSALL (1921)³. Distal margin almost straight.

*Uropods*⁴. Sub-conical. Outer margin slightly convex; inner margin almost straight; distal margin broadly rounded and setiferous, not concave as figured by TATTERSALL⁵ (1921).

Remarks. The names *Munna antarctica* (PFEFFER) and *Haliacris antarctica* PFEFFER are often met with in the literature and used by several authors. But, as has been pointed out by TATTERSALL (1921), it is doubtful how far their statements actually refer to the true species. TATTERSALL (1921) examined the first male pereopod of *Munna antarctica* (PFEFFER) in specimens of different ages from the type locality (South Georgia), and found that this leg in all his specimens examined differed from that figured by RICHARDSON (1906) under the name of *Haliacris australis* HODGSON. He accordingly presumes that *Munna australis* (HODGSON) perhaps is a species distinct from *Munna antarctica* (PFEFFER). He points out, however, that this matter cannot be cleared up until fully adult males from Antarctic waters are available. According to TATTERSALL (1921), the first male pereopods in *Munna antarctica* (PFEFFER) are characterized by having the ischium longer than the merus, the lower margin of the propodus smooth and the free distal margin of the carpus furnished with a single tooth, distinct in adult but faint in sub-adult specimens, whereas the figure by RICHARDSON (1906, Fig. 20, illustrating one of the first male pereopods in »*Haliacris australis*» HODGSON) shows a pereopod with the meral joint longer than the ischium and with the lower margin of the propodus and the distal edge of the carpus denticulated throughout.

The material of the species from the Swedish Antarctic Expedition was collected at South Georgia and agrees very well with the figures and description of the true *Munna antarctica* given by PFEFFER (1887). It consists only of three specimens, but contains one sub-adult male (length 3.1 mm.) with its first pereopods preserved. The first pereopod in that specimen, which is illustrated in Fig. 52 a, agrees almost completely with the same appendage in a young male specimen, 3.5 mm. long, figured by TATTERSALL⁶ (1921). The only difference is that the free distal margin of the carpus is quite smooth. This difference is perhaps due to the somewhat smaller size of my specimen. The differences from the first pereopod of »*Munna australis*» as illustrated by RICHARDSON (1906, Fig. 20) are more marked (see above). This different structure of the first male pereopods is, however, the single difference of any importance between *Munna australis* (HODGSON) and *Munna antarctica* (PFEFFER). I therefore consider »*Munna australis*» to be merely a variety of *Munna antarctica* (PFEFFER).

In 1910 HODGSON referred his *Haliacris australis*, which in 1902 he regarded as

¹ Cf. HODGSON, 1902, Pl. XXXIV, Fig. 1 d.

² See also TATTERSALL, 1921, Pl. I, Fig. 15.

³ TATTERSALL, 1921, Pl. II, Fig. 3.

⁴ See PFEFFER, 1887, Pl. VI, Fig. 46.

⁵ TATTERSALL, 1921, Pl. II, Fig. 2.

⁶ TATTERSALL, 1921, Pl. I, Fig. 15.

distinct from *Munna antarctica*, to the synonymous list of *Munna antarctica* (PFEFFER). In describing the first male pereopod, HODGSON states that the ischium is longer than the merus, which agrees with TATTERSALL's and my own observations on *Munna antarctica*. The statement indicates that his specimens were probably the true *Munna antarctica* (PFEFFER).

The specimens from the German Antarctic Expedition, which have been referred to *Munna antarctica* (PFEFFER) by VANHÖFFEN (1914), are dubious. VANHÖFFEN (1914) says of his *Munna antarctica* that it is »gekennzeichnet durch spitze Epimeren». But in his Fig. 90 the epimera are drawn with rounded lateral margins. I have had the opportunity of re-examining two small specimens from the German Antarctic Expedition, sent to me for investigation from the Zoological Museum in Berlin, and have found that their coxal plates have the lateral margins rounded and are quite different from the pointed coxal plates in *Munna antarctica* (PFEFFER). These two specimens, at any rate, do not belong to *Munna antarctica* (PFEFFER).

STEBBING (1919) describes a *Munna* from the Falkland Islands, which he names *Munna antarcticus*. In his figure of the species the coxal plates are rounded, and there is no trace of the projecting spines in front of the eyes which are characteristic of *Munna antarctica* (PFEFFER). The first male pereopod, however, is similar to that of *Munna antarctica* (PFEFFER) as figured by TATTERSALL (1921). STEBBING's specimens was referred by MONOD in 1931 to his new species *Munna neglecta*. MONOD presumes that the specimens assigned by TATTERSALL to *Munna antarctica* also was in fact *Munna neglecta*. This, however, is not correct, as my specimens of *Munna antarctica* (PFEFFER) from the type locality agree with *Munna antarctica* as described both by PFEFFER (1887) and TATTERSALL (1921). MONOD's figure of the first male pereopod in *Munna antarctica* (MONOD 1931, Fig. 11 b) agrees with *Munna antarctica* var. *australis*, as figured by RICHARDSON (1906, Fig. 20). Accordingly his specimens which were found in the Antarctic, have presumably been this variety of *Munna antarctica* (PFEFFER). There are no specimens of *Munna antarctica* var. *australis* in the collections of the Swedish Antarctic Expedition. The synonymy of the variety *australis* should apparently be as follows:

(?) *Haliacris australis* HODGSON, 1902.

Haliacris australis RICHARDSON, 1906, 1908.

Munna antarctica MONOD, 1931.

The rather large species *Munna antarctica* (PFEFFER) is recognizable by its characteristic pointed coxal plates. The figures of the species by PFEFFER, HODGSON and MONOD give a good idea of its general structure. HODGSON (1910, p. 58) points out that the shape of the pleotelson varies with the age in the male sex, being modified in very large male specimens (see also MONOD, 1931, Figs. 6 a and b, Fig. 10 b). In all my specimens the shape of pleotelson is the same, in complete correspondance with PFEFFER's¹ illustration. The pleotelson has a broad, flattened, longitudinal, white-coloured elevation along the middle line. This ribbon-like elevation is often traversed by a transversal white streak, thus forming a distinctly marked white cross on the dorsal surface of the pleotelson². The colour of the head and the pereion is yellowish to brownish. Colour of the eyes brown to black.

¹ PFEFFER, 1887, Pl. VI Fig. 46.

² See MONOD, 1931, Figs. 6 a, 6 b and 10 b.

Localities and Material.

South Georgia, Grytviken. From kelp thrown up on the shore. ²²/₈, 1902. 2 specimens, male 3.1 mm. long and female 4.2 mm. in length. Eyes dark. Pleotelson in both specimens typically coloured.

St. 22. South Georgia, off May Bay, lat. 54°, 17' S., long. 36°, 28' W. 75 m. Bottom temp. + 1.5°. Clay with some algae. ¹⁴/₈, 1902. One damaged specimen about 5 mm. in length, having dark eyes with a touch of brownish; without the whitish colouring on the pleotelson.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54°, 11' S., long. 36°, 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. ⁵/₈, 1902. One damaged male specimen with the head almost missing. The transverse whitish ribbon-like streak on the pleotelson is absent.

Distribution. South Georgia (PFEFFER 1887, TATTERSALL 1921), Victoria Land (HODGSON 1910, TATTERSALL 1921), (?) Kerguelen (VANHÖFFEN 1914).

According to VANHÖFFEN (1914) it occurs at Kerguelen. The material determined by VANHÖFFEN (1914) as *Munna antarctica* consists, however, at least only partly of the actual *Munna antarctica* (PFEFFER). The species has been found at a depth of 2—5 m.,¹ but occurs also at a depth about of 300 m.² Its variety *australis* HODGSON is common in the Antarctic, but has never been recorded from South Georgia.

Munna neglecta MONOD, 1931.

Text figs. 53 a, b.

Munna neglecta. MONOD, 1931, p. 14—15, Fig. 3, 4 a and c, 5 a—b, 10 a and c, 11 a, 12 a—c, 13 a—i, 14 a, 16 a—b

(?) *Haliacris antarctica*. RICHARDSON, 1913, p. 19—20.

Munna antarcticus. STEBBING, 1919, p. 336—337, Pl. V.

For diagnosis see MONOD (1931, p. 15).

Supplementary Description.

(Sub-adult male about 3.2 mm. in length, greatest width about 1.2 mm.).

General shape of body. Oblong, narrow, almost three times as long as it is wide. Segments of the pereion only slightly differing in width; greatest width across the fourth pereion segment. Dorsal surface smooth.

Colour. Grayish-yellowish with scattered dots of brown pigment.

Head. About as long as the first and second pereion segments together. Frontal margin slightly concave, almost straight, with a row of stiff setae. Insertions for the antennulae and the antennae deep. Eye-peduncles narrow, widening towards the end, anteriorly with a short tooth. Eyes distinct, black.

Pereion. First four pereion segments very slightly diminishing in length from the first to the fourth, the first being the longest. Last three segments shorter than the others, subequal in length. Lateral margins of the segments rounded.

Coxal plates distinct on all the segments except the first, seen from above, subrectangular with lateral margins almost straight.

Abdomen. About as long as the last five pereion segments together, anteriorly with one distinct free segment.

Pleotelson oviform; greatest width approximately across the middle; distal margin between the uropods broadly rounded.

¹ TATTERSALL (1921).

² Swedish Antarctic Expedition, st. 34.

Antennulae. First and second joints of the peduncle stout, second and third very small. The flagellum consists of four joints, of which the last is minute.

Antennae. Broken.

Mandibles. See MONOD (1931, Figs 13 a and b).

Maxillipeds. Normal. Epipodite with distal margin broadly rounded. Coupling-hooks, three.

*First pair of pereopods, sub-adult male*¹ (Fig. 53 a). In the examined 3.2 mm. long specimen the left pereopod is about as long as the body and is of the same shape as in

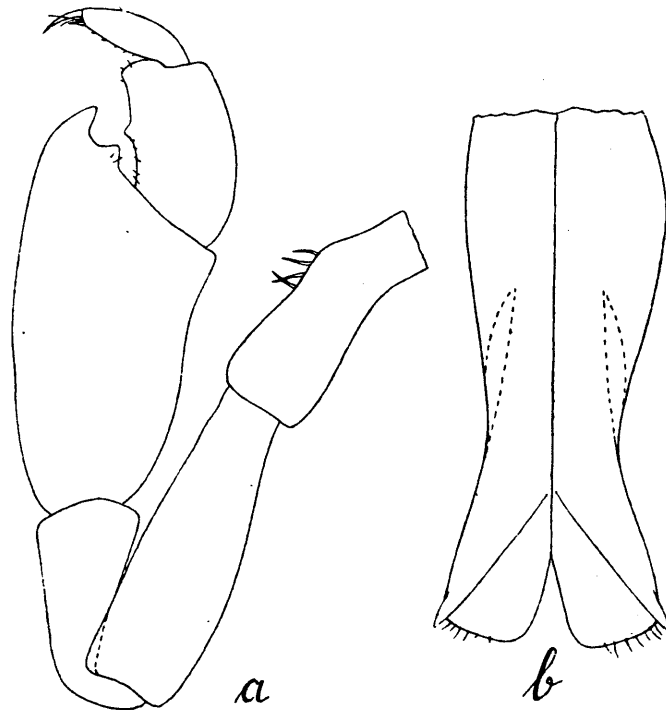


Fig. 53. *Munna neglecta* MONOD. a. Left first pereopod of a sub-adult male, 50 x. b. First pleopods, male, 115 x.

*Munna antarctica*² PFEFFER. There is one tooth on the free distal margin of the carpus and one on the lower margin of the propodus. The proportion between the length of the joints in the left pereopod is 35: 45: 30: 45: 22: 15. The right pereopod is very much shorter and smaller than the left. Denticulation on the free distal margin of the carpus and the lower margin of the propodus is missing.

The other pereopods. Long and moderately »hairly».

First pair of pleopods, male (Fig. 53 b). Distal margins almost straight.

*Uropods*³. Subconical, distally obtusely pointed; outer margin slightly convex, inner margin almost straight.

¹ Cf. also STEBBING (1919, Pl. I, gn. 1 ♂) and MONOD (1931, Figs. 10 a, 11 a and 12 a).

² Cf. TATTERSALL (1921 Pl. I, Fig. 15 and 16; Pl II, Fig. 1).

³ See MONOD, 1931, Fig. 12 c.

Localities and Material.

St. 51. Falkland Islands, Port William, lat. $51^{\circ} 40' S.$, long. $57^{\circ} 42' W.$ 22 m. Sand. $\frac{3}{8}$, 1902. Sub-adult male with both the first pereopods preserved, length about 3.2 mm.

St. 55. Falkland Islands, Port Albemarle, lat. $52^{\circ} 11' S.$, long. $60^{\circ} 26' W.$ 40 m. Sand bottom with algae $\frac{1}{8}$, 1902. Male, length about 2.6 mm. The specimen is proportionately somewhat shorter than the above-mentioned specimen. The head and the abdomen have the form characteristic of *Munna neglecta* MONOD; the coxal plates have their lateral margins almost straight. The colour is light yellowish, slightly dotted with brown pigment.

Distribution. Falkland Islands (STEBBING 1919), South Orkney Islands (MONOD 1931), Graham Region (MONOD 1931).

***Munna affinis* n. sp.**

Pl. II, Fig. 19; Text figs 54 a—e.

Diagnosis. Anterior margin of the head with short but distinct spine-like projections in front of the eyes. Lateral margins of the pereion segments convex. Last three pereion segments, short medially, increasing in length towards their lateral margins. Coxal plates on the second, third and fourth pereion segments with lateral margins convex, those on the fifth, sixth and seventh segments triangular and pointed. First pereopods in the male with ischium and merus subequal in length; merus considerably widening towards its distal end, with distal angles somewhat projecting; lower distal angle of the carpus projecting, obtusely pointed; the free distal margin of the carpus and the lower margin of propodus denticulated.

Description.

Types. Male, length about 3.6 mm., with both the first pereopods preserved; female, length about 3.0 mm.

General shape of body (Pl. II, Fig. 19). Pereion segments only slightly differing in width. Dorsal surface with minute setae.

Colour. Light yellowish.

Head (Pl. II Fig. 19). About as long as the first two pereion segments together. Frontal part between the antennulae about as long as the posterior part of the head, with the front margin very slightly concave and densely fringed with short stiff setae. Insertions for the antennulae and the antennae deep. Eye-peduncles slender, with a short obtuse tooth in front of the eyes. Eyes distinct, black.

Pereion (Pl. II, Fig. 19). First four pereion segments subequal in length. Last three segments very short in the middle, widening towards their lateral sides. Lateral margins of all the segments rounded.

Coxal plates distinct but small on all segments, except the first; on the second, third and fourth segments their lateral margins are convex; on the last three segments they are triangular and obtusely pointed.

Abdomen (Pl. II, Fig. 19). About as long as the pereion, except the first pereion segment. Anterior to the pleotelson there are two short free segments.

Pleotelson bulbous, shortly oval in outline, with its broadest part at a distance from its anterior margin of about one-third of its length. There is a faint broad, slightly light-coloured, elevation along the middle line.

Antennulae (Fig. 54 a)¹. First and second peduncular joints stout, first joint the longest; third and fourth peduncular joints very small. The flagellum consists of five joints, of which the last is minute. In the male the first joint of the flagellum is somewhat longer than in the female.

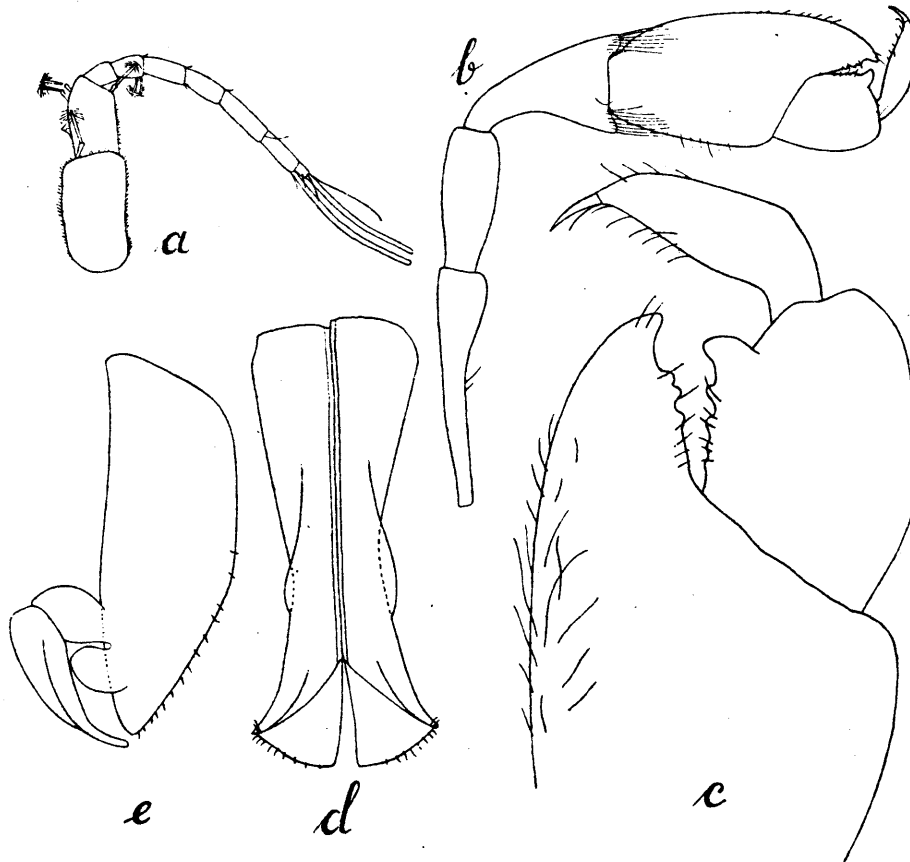


Fig. 54. *Munna affinis* n. sp. a. Right antennula, female, 80 ×. b. First pereiopod, adult male, 28 ×. c. Propodus, dactylus and distal part of the carpus of the same pereiopod, 80 ×. d. First male pleopods, seen from the caudal side, 80 ×. e. Right second male pleopod, seen from the caudal side, 80 ×.

Antennae. Broken.

Left mandible. Normal. Incisive part with five teeth, lacinia with four teeth, molar tubercle denticulated. Second joint of the palp, distally, on the lower margin, with a ciliated seta, third joint with three apical setae of the same kind.

Maxillipeds. Normal. Epipodite with distal margin broadly rounded. Coupling-hooks three.

First pair of pereiopods, male (Figs. 54 b and c). About as long as the body. Basipodite very narrow proximally, but widening towards its distal end. Ischium of approxi-

¹ Of a female.

mately uniform width, subequal in length to the merus, which increases considerably in width distally; its distal angles are somewhat projecting and have tufts of long setae. Carpal joint large and broad, oval, its lower distal angle obtusely pointed and its free distal margin denticulated. Lower margin of the carpus provided with long setae. Propodus short, with lower distal angle pointed, its lower margin denticulated. Dactylus short and narrow, about equal in length to the propodus. The proportion between the lengths of the joints is 57: 39: 40: 53;¹ 23: 23.

First pair of pereiopods, female. Broken.

The other pereiopods. Long and moderately «hairy». Seventh pereiopod with carpus and propodus (in a male specimen) more densely setiferous than in the other pereiopods. The seventh pair of pereiopods in the female are broken.

First and second pleopods, male. See figs. 54 d and e.

Operculum, female. Broken (in the single female specimen of the species).

Uropods. Slightly tapering towards the end, outer margin slightly convex, inner margin almost straight, distal margin broadly rounded.

Remarks. It is surprising to find that the first male pereiopods in this species are similar to those figured by RICHARDSON (1906, Fig. 20) and MONOD (1931, Fig. 11 b) in *Munna antarctica* var. *australis* (PFEFFER). They differ only in having the ischium and merus subequal in length. But the rounded lateral margins of the pereion segments and the rounded coxal plates on the second, third and fourth segments afford evidence that the specimens do not belong to *Munna antarctica* (PFEFFER). It was thus necessary to establish a new species.

Munna affinis is closely allied to *Munna neglecta* MONOD but differs especially from MONOD's species in having the last three pereion segments increasing in length laterally, in having the lateral margins of the second to fourth pereion segments more convex, in having pointed coxal plates on the last three pereion segments, and in having the ischium and merus of the first male pereiopod subequal in length.

Localities and Material.

South Georgia, Grytviken. From roots of kelp taken at a depth of 3—4 fathoms. ²⁴/₅ 1902 Male about 3.6 mm. in length (type). Colour, faint yellowish.

St. 28. South Georgia, mouth of Grytviken, lat. 54° 22' S, long 36° 28' W. 12—15 m. Sand and algae ²⁴/₅ 1902. 2 specimens, male and female. Length of the male about 3.5 mm.; colour light yellowish strongly marbled with dark-brown. Length of the female (type) about 3 mm.; colour light yellowish to brownish.

Distribution. South Georgia (Sw. Ant. Exped.).

¹ The number 53 corresponds to the middle length of the carpus; the length of the lower distal projection of the carpal joint has not been included.

Munna bituberculata n. sp.

Pl. II, Fig. 20; Text figs. 55 a—g.

Diagnosis. Frontal margin of the head with two oblong tuberculae, one on each side of the middle line. Eye-peduncles with a tooth in front of the eyes. Coxal plates on second, third and fourth segments of the pereion subtriangular with lateral margins rounded, those on the last three pereion segments triangular and pointed. First pair of pereopods in the adult male about twice as long as the body; ischium subequal in length to the merus, merus with a rounded prolongation at its lower distal angle; lower distal angle of carpus projecting and pointed, extending about to the distal margin of propodus; lower distal angle of propodus tooth-like, projecting; the free distal margin of carpus and the lower margin of propodus denticulated, dactylus about as long as the width of propodus.

Description.

Types. Male, length about 5 mm., with both the first pereopods preserved; and female (Pl. II, Fig. 20), length about 3.5 mm., greatest width 1.5 mm.

General shape of body. The first four segments of the pereion are nearly equal in width. Some scattered, very short, setae on the dorsal surface.

Colour. Light brownish.

Head (Pl. II, Fig. 20). About as long as the first two pereion segments together. At the frontal margin there are two distinct oblong tuberculae, one on either side of the middle line, extending somewhat backwards on the dorsal side. Between the tuberculae there is a longitudinal furrow. Frontal margin between the tuberculae somewhat concave, and laterally from the tuberculae straight. Insertions for the antennulae and antennae deep. Eye-peduncles broad and long, distally sub-globular. Eyes large, slightly brown-coloured. There is a distinct tooth-like projection in front of the eyes.

Pereion (Pl. II, Fig. 20). The first four pereion segments are subequal in length and width. In the male the first and second are a little longer than the others. In the female the second is the longest, the first the shortest. Last three segments subequal in length, narrow in the middle but increasing in length towards their lateral margins; together they are about as long as the fourth plus half the third segment. Lateral margins of all the pereion segments rounded.

Coxal plates seen from above, on the second to fourth segments subtriangular with lateral margins rounded, on the last three segments triangular and pointed.

Abdomen (Pl. II, Fig. 20). About as long as the last five thoracic segments together, with a large and distinct first free segment.

Pleotelson suboval in outline, with greatest width approximately across the middle, and distal margin rounded. On the dorsal side there is a distinct white-coloured elevation along the middle line, traversed by an indistinct white-coloured transverse ribbon-like streak.

Antennulae (Fig. 55 a). First and second joints of the peduncle very stout, the first somewhat longer than it is broad, the second about two and a half times as long as it is broad. The following two joints are very small and narrow, each only about one-fourth to one-fifth as long as the second joint. The flagellum, which is in length about equal to the peduncle, consists of five joints in the female and six joints in the male specimen.

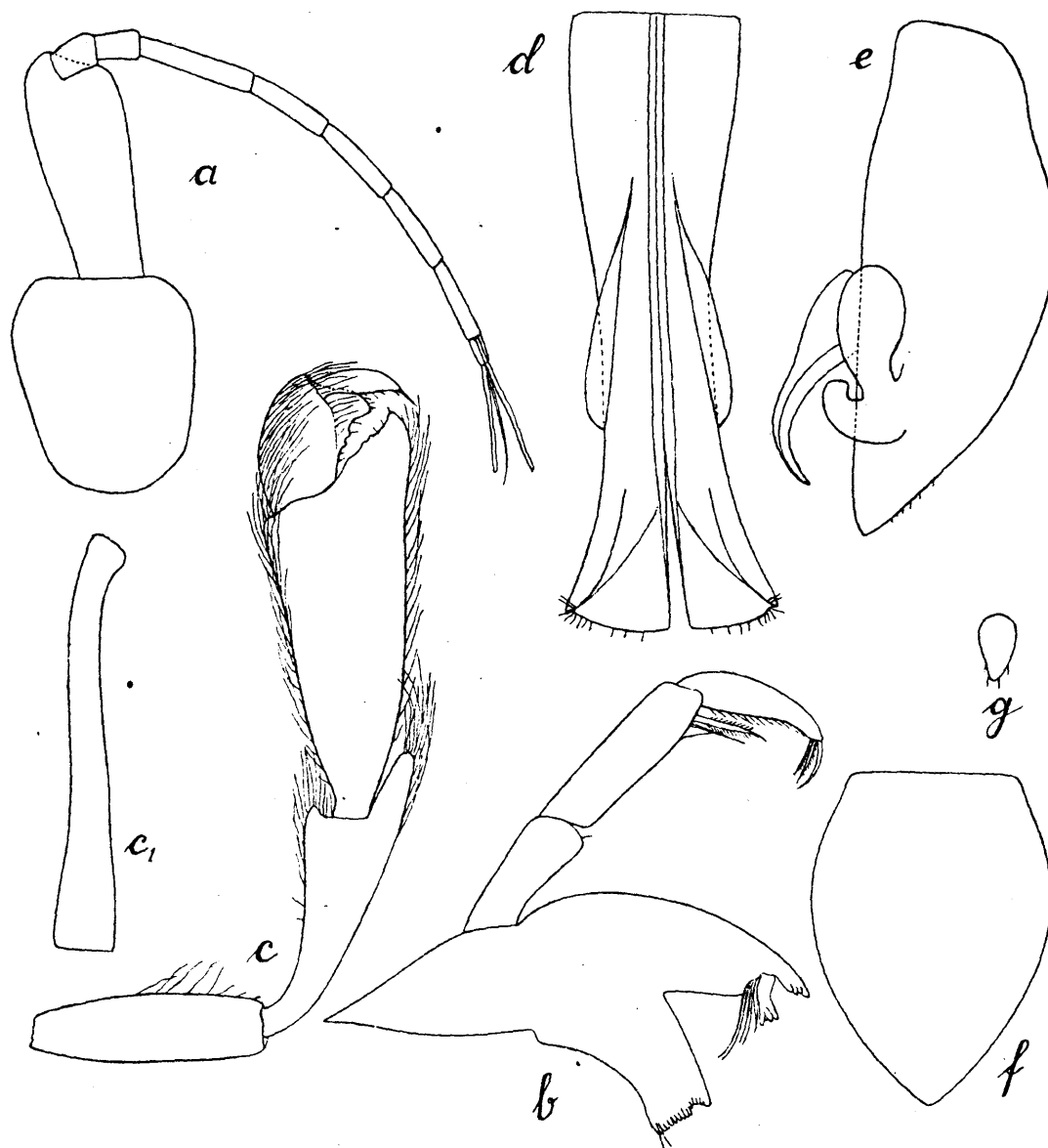


Fig. 55. *Munna bituberculata* n. sp. a. Right antennula, male, 80 ×. b. Left mandible, male, 80 ×. c. Left first pereopod, (except the basipodite), in an adult male, 26 ×. c₁. Basipodite of the same pereopod, 26 ×. d. First male pleopods, seen from the caudal side, 80 ×. e. Right second male pleopod from the caudal side, 80 ×. f. Female operculum, 40 ×. g. Right uropod, 80 ×.

Mandibles (male) (Fig. 55 b). Of the usual type in the genus. Incisive part with five teeth. Lacinia (on the left mandible) with four teeth. Second joint of the palp on the lower margin distally with one strong ciliated seta and two slender, hair-like setae. Third joint of the palp with three distal setae. For other details see the figure.

First and second pairs of maxillae. Normal. Each lappet of the outer lobe of the second maxillae provided with three distal setae.

Maxillipeds. As in *Munna antarctica* (PFEFFER). Distal margin of the epipodite broadly rounded. Coupling-hooks three.

First pair of pereopods, in the adult male (Fig. 55 c and c₁). Very strong. In the five mm. long male specimen their length is about 10 mm. The basipodite is very long, almost as long as the pereion, and widens out towards its distal end. Its length is about equal to the length of the ischium plus two-thirds the length of the merus. The ischium is somewhat broader than the basipodite and almost of uniform width. Meral joint about equal in length to the ischium, very narrow proximally, but widening towards its distal end to a width about three times as great as that proximally; on the lower side, distally, the joint is prolonged into a large forward-directed projection with rounded end; upper distal angle slightly produced. The carpal joint is the largest of all the joints widening out distally to about four times the width proximally. Its lower distal angle projects and extends about as far as to the distal margin of the propodus. The distal edge of the carpus is denticulated. The propodus is short and of almost uniform width; its lower margin is slightly denticulated; its lower distal angle forms a broad unguiform projection. Dactylus short and narrow, about as long as the width of the propodus. The lengths of the joints in the 5-mm-long specimen are — 2.8, 1.8, 1.7, 2.4, 0.7 and 0.6 mm. — commencing with the basipodite. The pereopod is furnished with long and hair-like setae at the lower and upper angles of the ischium, at the lower and upper margins of the carpus and the upper margin of the propodus. Shorter setae appear on the lower margin of the propodus and elsewhere (see figure).

The other pereopods. All broken.

First pair of pleopods, male. See Fig. 55 d.

Second pair of pleopods, male (Fig. 55 e). Exopodite strongly curved. Endopodite rather short.

Operculum, female (Fig. 55 f). Cordiform, obtusely pointed.

Uropods (Fig. 55 g). Outer margin slightly convex. Inner margin almost straight, distal margin rounded.

Localities and Material.

St. 22. South Georgia, off May Bay, lat. 54° 17' S, long. 36° 28' W. 75 m. Bottom temp. + 1.5°. Clay with a few algae. ¹⁴/₈, 1902. 3 specimens (mutilated female specimen about 3.5 mm in length, [type], 2 other damaged specimens, and a first pereopod of an adult male.)

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54° 11' S, long. 36° 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. ¹⁴/₈, 1902. Male about 5 mm. in length, having both the first pereopods preserved (type).

Distribution. South Georgia (Sw. Ant. Exped.).

Occurring at a depth of 75—300 m.

Munna nana n. sp.

Text fig. 56, Text figs. 57 a—j.

Diagnosis. Eye-peduncles broad with front margin straight (the ordinary tooth in front of the eyes missing). Lateral margins of the pereion segments rounded. Coxal plates small, rounded. Antennular flagellum consisting of two joints, the last being furnished

with one sensory filament. First pereopods shorter than the others, but stronger and prehensile. First male pleopods strongly tapering towards the end, being about four times broader proximally than distally. Sympodite of second male pleopod prolonged distally into an acute point. Female operculum approximately cordate, very broad proximally but strongly tapering towards the narrowly rounded end; near the distal margin it is furnished with two slender setae.

Description.

Types. Ovigerous female with twelve eggs (Fig. 56), length about 1.2 mm.; male, about 1 mm. in length.

General shape of body. Body in the female (Fig. 56) broadly oval in outline, with greatest width across the third pereion segment. In the male the first four pereion segments are subequal in width. No setae on the dorsal surface.

Colour. Whithish to yellowish.

Head (Fig. 56). About as long as the first and second pereion segments plus half the third segment. Frontal part broadly trapezoidal with front margin straight. Insertions for the antennulae and the antennae not very deep. Eye-peduncles broad with very small dark eyes. There is no tooth on the anterior margin of the eye-peduncles.

Pereion (Fig. 56). Segments in the ovigerous female increasing in length and width to the third, which is the largest. First segment in the ovigerous female not fully half as long as the second. In the male the first four segments are subequal in length. The lateral margins of the pereion segments are rounded.

Coxal plates small; seen from above their lateral margins are rounded.

Abdomen (Fig. 56). About as long as the last five thoracic segments together, anteriorly with one free segment.

Pleotelson oviform, with distal margin rounded. Greatest width of pleotelson in the female somewhat proximally from the middle. In the male the pleotelson is slightly narrower than in the female and has its greatest width about across the middle. There is a faint elevation on the dorsal side along the middle line.

Antennulae (Fig. 57 a). The two proximal joints of the peduncle are stout and the two following joints small. The flagellum consists of two joints only, of which the last is furnished with one sensory filament and some setae. The flagellum thus differs from the ordinary *Munna*-type characterized by having one sensory filament on the last and penultimate joints.

Antennae. Broken in all specimens, except a small male about 0.9 mm. in length. In this specimen they are about as long as the body. The first three joints of the peduncle are short, the fourth and fifth long, the fifth somewhat longer than the fourth. The flagellum is subequal in length to the peduncle and consists of about ten joints.

Right mandible (Fig. 57 b). Palp with the third joint small.

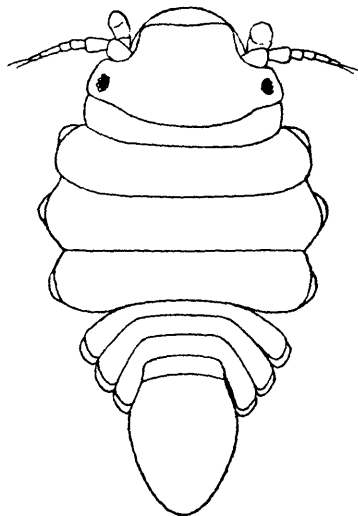


Fig. 56. *Munna nana* n. sp. Ovigerous female, 60 ×.

First and second pairs of maxillae (Figs. 57 c and d). Lappets of outer lobe of the second maxillae each with three apical setae.

Lower lip. See Fig. 57 e.

Maxillipeds. Epipodite ovate with distal margin broadly rounded, reaching to about the second joint of the palp.

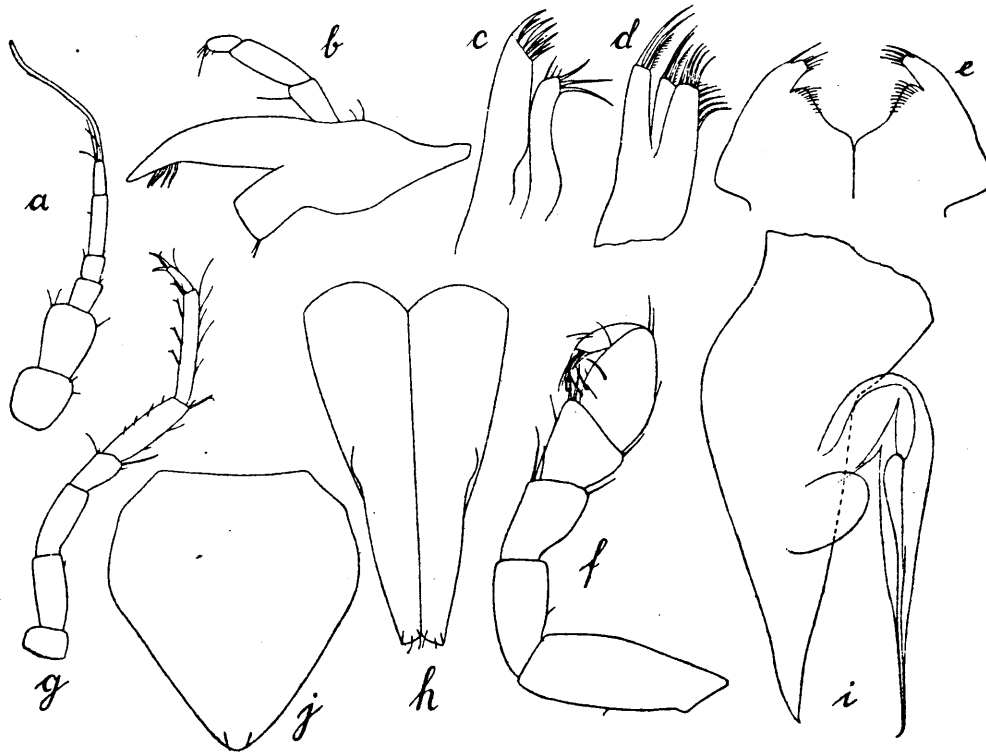


Fig. 57. *Munna nana* n. sp. a. Right antennula, female, 175 \times . b. Right mandible, female, 235 \times . c. First maxilla, 235 \times . d. Second maxilla, 235 \times . e. Lower lip, 235 \times . f. Right first pereiopod of a female, 150 \times . g. Third pereiopod, female, 75 \times . h. First male pleopods, from the caudal side, 240 \times . i. Left second male pleopod, from the caudal side, 325 \times . j. Female operculum, 175 \times .

First pair of pereiopods (Fig. 57 f). Small. Similar in males and females. Carpal joint subtriangular, with one slender seta on the lower margin and two stout setae at the lower distal angle. Propodus ovate, with — as usual in *Munna* — two setae near the lower margin. For other details see the figure.

The other pereiopods (Fig. 57 g). Increase in length from the first to the last, which is about as long as the body. The merus and carpus have each one two-pointed seta at their upper distal angles, and the propodus has a row of setae of the same kind along the lower margin.

First pair of pleopods, male (Fig. 57 h). Elongate, tapering towards the narrow end. They are proximally about four times broader than distally.

Second pair of pereiopods, male (Fig. 57 i). Sympodites ending distally in acute points.

Operculum, female (Fig. 57 j). Approximately cordate. Very broad proximally, triangularly protracted distally. Distal margin narrowly rounded. Near the distal end there are two small setae.

Uropods. Minute, sub-rectangular. Outer and inner margins almost straight; distal margin slightly rounded and provided with a few setae.

Remarks. The species comes very close to *Munna schauinslandi* G. O. SARS. In its general aspect it is very similar to that species, but differs in having the distal margin of the pleotelson slightly more rounded. The first pereopods are similar to the same limbs in *Munna schauinslandi*.

But it differs distinctly from *M. schauinslandi* in its first and second male pleopods and the female operculum. The first male pleopods taper more strongly towards the end than in *M. schauinslandi*; the sympodites of the second male pleopods are distally more prolonged, each ending in an acute point. The female operculum is proximally much broader than in *M. schauinslandi* and is triangularly protracted distally, having its distal margin narrowly rounded, not concave as in *M. schauinslandi*. The colour, in contradistinction from *M. schauinslandi*, is whitish to yellowish, only in a few specimens there is a slight trace of brownish marbling. The second male pereopods, which are characteristic in *Munna schauinslandi*, were broken in all the male specimens of *Munna nana*.

Localities and Material.

St. 40. Falkland Islands, Berkeley Sound, lat. 51° 33' S, long. 58° 0' W. 16 m. Bottom temp. + 2.75° Gravel and shells with algae. 19/1, 1902. 7 specimens, all females; length of the largest specimen, an ovigerous female, about 1.2 mm.

St. 46. Falkland Islands, Port Louis, Carenage Creek, lat. 51° 32' S, long. 58° 7' W. 1 m. Sand bottom with plenty of *Codium*. 19/1, 1902. 6 specimens (2 males, 4 females); length of the largest specimen, an ovigerous female (type), 1.2 mm.; largest male (type) length 1 mm.

Distribution. Falkland Islands (Sw. Ant. Exped).

Genus *Coulmannia* HODGSON, 1910.

Diagnosis. Body vaulted, pleotelson bulbous. Eyes small on slender eye-peduncles. No coxal plates, but coxae at the base of the pereopods. Antennulae short, consisting of a four-jointed peduncle and a single-jointed flagellum, which is about as long as the peduncle; last joint of the flagellum provided with one long sensory filament at the tip. Antennae not much longer than the antennulae, with peduncle six-jointed; squama missing. Mandibles with molar tubercle broad, widening towards its distal end; palp missing. Lower lip with the inner distal prolongations each elongated into four spine-like points. Maxilliped with a broad palp, having its second and third joints almost as wide as the endite; epipodite with distal margin narrowly rounded. First pereopods equal in males and females, prehensile, but not larger than the others. The first pleopods (in the male) each provided with a lateral triangularly projecting extension. Uropods very small, consisting of two branches.

HODGSON (1910) refers the genus to the fam. *Ianiridae* of G. O. SARS. Its distinct slender eye-peduncles, bulbous pleotelson, its minute uropods, the composition of the antennulae, and its first male pleopods, which are similar to those characteristic of *Paramunna* G. O. SARS, show that it must be assigned to the group *Munnini*.

***Coulmannia australis* HODGSON, 1910.**

Text figs. 58 a—j, text figs. 59 a—h.

Coulmannia australis. HODGSON, 1910, p. 53—54, Pl. IX, Figs. 2, and 2 a.**Supplementary Description.**

General shape of body. As illustrated by HODGSON (1910, Pl. IX, Fig. 2). First pereon segment somewhat shorter than the three following segments, which are subequal in length. The first abdominal segment is not so cordiform as figured by HODGSON and much shorter.

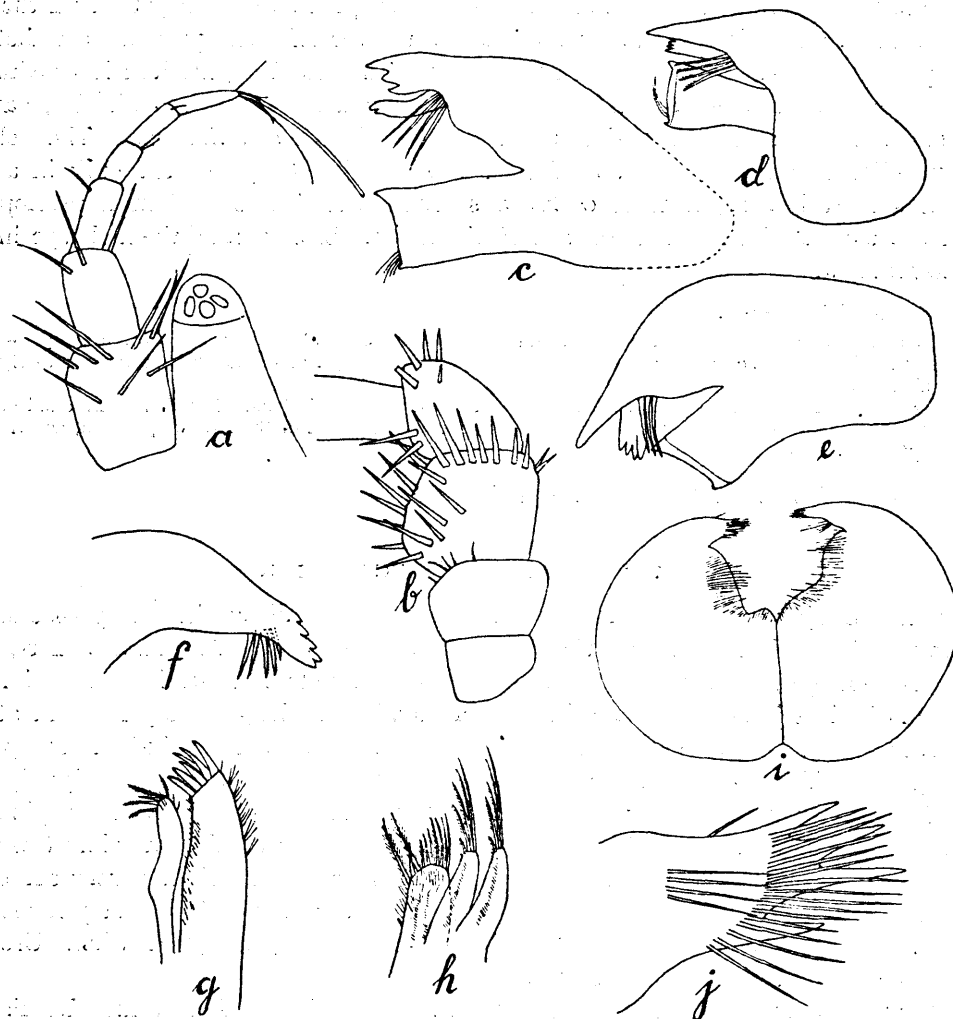


Fig. 58. *Coulmannia australis* HODGS. a. Right antennula and eye, female, 80 ×. b. Proximal peduncular joints of the antenna, 50 ×. c. d. and e. Left mandible, 80, 80 and 90 ×. f. Incisive part of the right mandible 30 ×. g. Left first maxilla, female, 80 ×. h. Second maxilla, female, 80 ×. i. Lower lip, 80 ×. j. One of its inner distal corners, 535 ×.

Antennulae.¹ See Fig. 58 a. The figure illustrates an antennula from a female specimen about 9 mm. in length. The antennulae are always six-jointed. The first two joints are stout, the first being the largest; both the joints are provided with setae, most of the setae situated dorsally. The last four joints are narrow; the terminal joint is furnished with one long sensory filament and some setae. The antennulae are thus similar to those in the genus *Antias* (cf. p. 200). As in that genus, the first four joints may be reckoned to the peduncle.

*Antennae*¹ (Fig. 58 b). The peduncle consists of six joints, the first four short. The second joint is about twice as long as the first, the third joint about half as long again as the second. The fourth peduncular joint is somewhat shorter than the third; the fifth is about as long as the first, second and third joints together. Sixth joint somewhat longer and narrower than the fifth. Flagellum about as long as the last three peduncular joints together, consisting of thirteen to fifteen joints (fifteen joints in a female specimen about eight mm. long). The first joint of the flagellum is about as long as the two following joints together.

Mandibles (Figs. 58 c, d, e and f). Corpus mandibulae broad and strong. Incisive part with four teeth on the left mandible, five teeth on the right one. Lacinia (left mandible) with four teeth. Setal row on the left mandible with four setae, on the right with five. Molar tubercle strong, subcylindrical, slightly widening towards its distal end, somewhat forwards-directed. Palp missing.

First pair of maxillae (Fig. 58 g). Normal. For details see the figure.

Second pair of maxillae (Fig. 58 h). Lappets of the outer lobe somewhat longer than the inner lobe, each with five apical setae. Distal margin of inner lobe provided with about ten long setae, of which the two largest are situated near the inner distal angle.

Upper lip. With distal margin convex.

Lower lip (Figs. 58 i and j). Distal angles of a tuft-like appearance, each divided into four points and strongly furnished with setae.

*Maxillipeds*². Distal margin of the endite with two somewhat submarginal rows of setae, one row each on the dorsal and the ventral side. The somewhat ventrally situated submarginal row consists of four stout flattened setae, which are furnished distally and laterally with long and pointed sub-branches; the length of the sub-branches increases towards the distal end of the setae. The other submarginal, but dorsally situated, row consists of five setae, which are longer than in the ventral row and are furnished with slender, hair-like sub-branches. The coupling-hooks are two or three in number. Epipodite triangular, distally pointed, and extending slightly beyond the distal margin of the second palp joint. Second and third joints of the palp broad, being only slightly narrower than the endite. The fourth and fifth joints of the palp are narrow.

First pair of pereopods (Fig. 59 a). Similar in males and females. Ischial, meral and carpal joints each with one seta at their upper distal angles. Meral and carpal joints broader than long. Lower margin of carpal joint provided with five stout two-pointed setae. Propodus about half as wide as carpus, its lower margin furnished with five setae. For other detail see the figure.

¹ Cf. HODGSON (1910, p. 53).

² See HODGSON (1910, Pl. IX, Fig. 2 a).

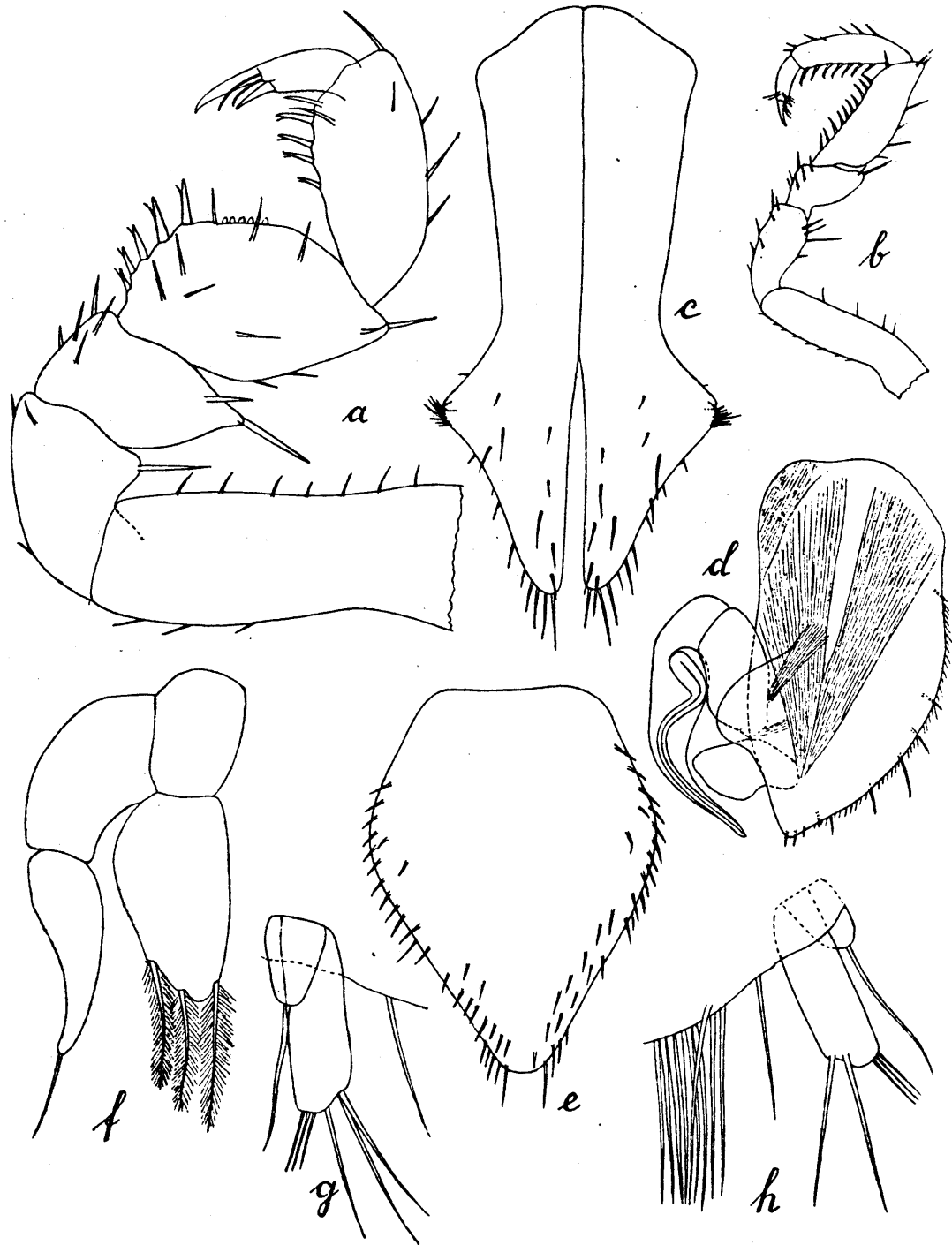


Fig. 59. *Coulmannia australis* HODGS. a. First pereiopod, female, 80 \times . b. Second pereiopod, 30 \times . c. First male pleopods, seen from the rostral side, 80 \times . d. Right second male pleopod, seen from the caudal side, 80 \times . e. Female operculum, seen from the rostral side, 50 \times . f. Third pleopod, male, 80 \times . g. Uropod, in a dorsal view, 160 \times . h. Uropod, in a ventral view, 150 \times .

The other pereopods (Fig. 59 b). Meral joint with one seta at its upper distal angle. Lower margin of carpus and propodus provided with a row of single-pointed setae (in the second pereopod, Fig. 59 b, about 10). Dactylus provided with two claws.

First pair of pleopods, male (Fig. 59 c). The distal parts of the sympodites have not coalesced with one another, but their inner margins are in contact. Anterior surface of the pleopods sparsely setose distally.

Second pair of pleopods, male (Fig. 59 d). Caudal surface of the sympodite with a fold issuing from a place a short distance from the inner margin. Both the rami are attached between this fold and the inner margin of the sympodite. The two-jointed endopodite has the usual shape; its second joint is penetrated by a narrow canal, which terminates in a small proximally situated vesicle with very narrow lumen.

Operculum, female (Fig. 59 e). Laterally and distally with single-pointed setae. Two setae, situated one on either side of the tip, are the longest.

Third pair of pleopods (Fig. 59 f). Similar in males and females. Basipodite about half as long again as broad, almost rectangular. Exopodite two-jointed, with second joint slightly longer than the first. First joint strongly curved, with outer margin convex and inner margin concave. Second joint tapering towards the end, which is furnished with one long apical seta; outer margin proximally slightly convex, distally distinctly concave; inner margin convex. The endopodite tapers slightly towards the end; its posterior surface is vaulted, its anterior surface hollowed, its outer margin is convex, inner margin only slightly convex, almost straight; its distal margin is provided with three long plumose setae.

Fourth pair of pleopods. Sympodite subquadrate. Exopodite two-fifths as wide as and slightly shorter than the endopodite, curved and tapering towards the pointed end; outer margin markedly convex, inner margin proximally markedly concave, distally almost straight. Endopodite of an ovate shape, having its caudal surface strongly vaulted and its rostral surface concave with the greatest depth of the cavity nearest to the lateral margin.

Fifth pair of pleopods. Basipodite small. Exopodite wanting. Endopodite oval, with outer margin markedly convex and inner margin slightly concave. Dorsal surface strongly vaulted, ventral surface concave, the deepest part of the cavity being closer to the outer than to the inner margin.

Uropods (Fig. 52 g and h). Small. Exopodite about twice as long as the endopodite, distally with two or three long and three short setae. Endopodite provided with one long distal seta. For further details see the figures.

Localities and Material.

St. 8. Graham Region, lat. $64^{\circ} 3' S$, long. $56^{\circ} 37' W$. Position of the station as well as depth uncertain. (360 m?). Soft clay. $11/2$, 1902. Male specimen 7.2 mm. in length.

St. 11. Graham Region, lat. $65^{\circ} 19' S$, long. $56^{\circ} 48' W$. 400 m. Clay mingled with gravel. $18/2$, 1902. 2 females; length of the largest specimen about 9 mm.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. $54^{\circ} 11' S$, long. $36^{\circ} 18' W$. 252—310 m. Bottom temp. $+ 1.45^{\circ}$. Gray clay with a few stones. $5/4$, 1902. 85 specimens, males and females. Length of the largest specimen, about 7.6 mm (a male).

Distribution. South Georgia (Sw. Ant. Exped.), Graham Region (Sw. Ant. Exped.), Victoria Land (HODGSON 1910).

One specimen only has previously been found, at the Coulman Island (near Victoria Land).

Genus *Paramunna* G. O. SARS, 1866.

Leptaspidia. BATE and WESTWOOD, 1868.

(?) *Metamunna*. TATTERSALL, 1906.

Austrimunna. RICHARDSON, 1906, 1908, 1913; HODGSON, 1910.

Austronanus. HODGSON, 1910; RICHARDSON, 1913.

Paramunna. STEBBING, 1893, 1910; G. O. SARS, 1899; VANHÖFFEN, 1914; BARNARD, 1920.

For diagnosis see G. O. SARS (1899, p. III) and cf. STEBBING (1910, p. 435). As pointed out by VANHÖFFEN (1914), *Austrimunna* RICHARDSON is synonymous with *Paramunna*. This is presumably the case also with *Metamunna* TATTERSALL (see BARNARD, 1920, p. 408—409). As I cannot find any difference of importance between *Austronanus* HODGSON and *Paramunna*, I am of the opinion that *Austronanus* is congeneric with *Paramunna*. In the diagnosis of *Austronanus* HODGSON says that the pereopods are all ambulatory and the uropods consist of a single joint. I do not, however, consider that these differences warrant the retention of the genus *Austronanus*. A comparison of the figures by HODGSON (1910, Pl. VIII, Fig. 3, *Austronanus glacialis*) and RICHARDSON (1908, Fig. 6, *Paramunna serrata*) shows such a marked similarity that it may be possible that these two species are identical.

In the material from the Swedish Antarctic Expedition 1901—1903 there are six species of *Paramunna*, of which two must be described as new, thus increasing the known species of *Paramunna* to seventeen. One of the new species, *Paramunna integra*, bears a strong resemblance to the genotype of the genus, *Paramunna bilobata* G. A. SARS, the head being, anteriorly prolonged into two diverging lobes as in that species.

***Paramunna integra* n. sp.**

Pl. II, Fig. 22; Text figs. 60 a—e.

Diagnosis. Rostral part of the head between the antennae antero-laterally prolonged into two subtriangular diverging lobes; anterior margin of the head between the lobes slightly concave. Hind part of the head immersed in the first pereion segment, which increases in length laterally to about twice the length in the middle. Segments of the pereion with lateral margins continuous, the first segment longest, the others subequal in length. Pleotelson tapering towards its rounded end, with lateral margins convex and serrate. Carpal joint of the first pereopod about one-third as broad again as the propodus, its lower margin and its free distal margin each provided with a large two-pointed seta; lower margin of propodus attenuate.

Description.

Type. Male, length 1 mm.

Head (Pl. II, Fig. 22; Text fig. 60 a). Posterior part of the head immersed in the first pereion segment. Frontal part between the antennae prolonged into two subtriangular diverging lobes; rostral margin between the lobes slightly concave. Eye-peduncles broad. Eyes small, distinct and dark-coloured.

Pereion (Pl. II, Fig. 22; Text fig. 60 a). First pereion segment the longest, increasing in length laterally to about twice the length in the middle. Measured along the middle line, it is about one-third as long again as the second pereion segment. The other

pereiopod segments are subequal in length, slightly decreasing in width from the first to the last, and have their lateral margins continuous.

Abdomen (Pl. II, Fig. 22; Text fig. 60 a). Somewhat longer than the last four pereiopod segments together, with a small free segment anteriorly. Pleotelson subtriangular with greatest width in front, tapering towards the rounded end. Lateral margins slightly convex, finely serrate.

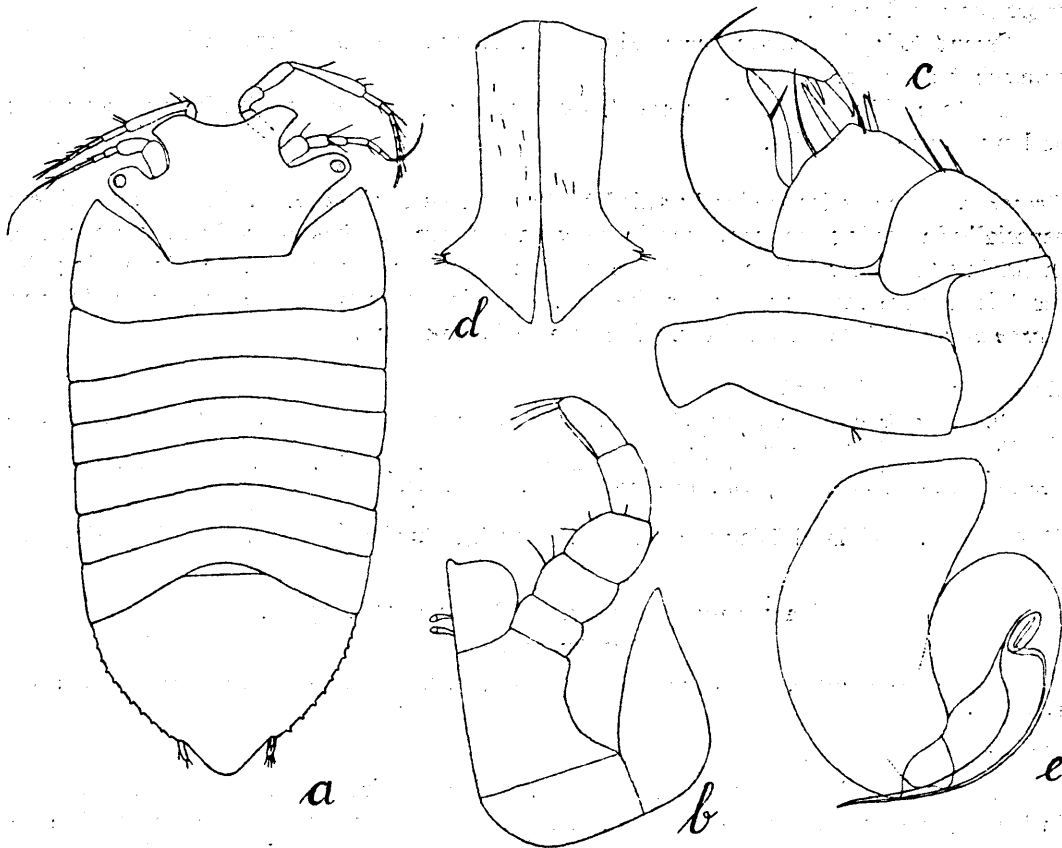


Fig. 60. *Paramunna integra* n. sp. a. A specimen, from above, 80 ×. b. Maxilliped, 315 ×. c. First pereiopod, 240 ×. d. First male pleopods, from the rostral side, 140 ×. e. Second pleopod, male, 240 ×.

Antennulae. About as in *Paramunna bilobata* G. O. SARS, with a four-jointed peduncle and a two-jointed flagellum. SARS refers only the three proximal joints to the peduncle.

Antennae. About as in *Paramunna bilobata* G. O. SARS. Peduncle consisting of six joints, flagellum of seven joints.

Mandibles. Typical of the genus, with molar tubercle strong, widening towards the distal end, somewhat forward-pointing, and with distal margin truncate. Incisive part single-pointed; lacinia (on the left mandible) with three points; setal row of four setae, on the left mandible. Palp very short consisting of three joints.

First and second pairs of maxillae. Normal.

Maxillipeds (Fig. 60 b). Normal.

First pair of pereopods (Fig. 60 c). Carpus about one-third as broad again as the propodus, its lower margin and its free distal margin each provided with a large two-pointed seta. Propodus with the lower margin attenuate. For other details, see the figure.

The other pereopods. Normal.

First pair of pleopods, male (Fig. 60 d). Typical of the genus. Anterior surface with short scattered setae.

Second pair of pleopods, male (Fig. 60 e). Exopodite linguiform with distal margin somewhat concave.

Uropods (Fig. 60 a). Very small, two-branched, the endopodite being about half as long as the exopodite.

Remarks. The species is closely allied to *Paramunna bilobata* G. O. SARS, but it differs especially in having the front margin between the frontal lobes of the head less concave, in having the lateral margins of the pereion segments continuous, and in having the pleotelson more tapering towards the end. The first pereopods are similar to those in *Paramunna bilobata* G. O. SARS. The female is unknown.

Localities and Material.

St. 51. Falkland Islands; Port William, lat. 51° 40' S., long. 57° 42' W. 122 m. Sand. ³/₁₀, 1902. Two specimens, males, about 1 mm. in length.

St. 59. South of West Falkland, on the Burdwood Bank, lat. 53° 45' S., long. 61° 10' W. 137—150 m. Broken shells with stones. ¹²/₁₀, 1902. One specimen (Pl. II Fig. 22).

Distribution. Falkland Islands (Sw. Ant. Exped.), Burdwood Bank (Sw. Ant. Exped.).

Paramunna antarctica (RICHARDSON, 1906).

Text figs. 61 a—b.

Austrimunna antarctica. RICHARDSON, 1906, p. 20—21, Pl. I. Fig. 7, Text figs. 24—26; 1908 p. 5; 1913 p. 20—21.

Supplementary Description.

Antennulae. Consisting of six joints, of which the first two are large and subequal in length, the first being the broadest. The third and fourth joints are, as usual in the genus, short; together they are about as long as the second joint; the fourth joint is shorter than the third. The flagellum consists of two fairly equal long joints, each very slightly longer than the last peduncular joint. The last joint of the flagellum is furnished with one sensory filament and a few setae.

Antennae. Of the usual type in the genus. The flagellum in a full-grown female specimen, 2 mm. long, consists of seven joints.

First pair of pereopods (Fig. 61 a)¹. The carpus widens considerably towards its distal end; close to its lower margin it has three stout two-pointed submarginal setae (the right pereopod of a full-grown specimen from the Swedish Antarctic Expedition was without the proximal seta). The broadly oval propodus is about equal in length

¹ The fig. shows the left pereopod of a full-grown female collected by the Expédition Antarctique Française (1903—1905); some material from the French Expedition was kindly sent to me from the Muséum d'Histoire Naturelle in Paris. The first pereopod from the full-grown female specimen obtained by the Swedish Antarctic Expedition (1901—1903) agrees well with my figure.

to the carpus. Its lower portion is not attenuate; near the lower margin there are a few setae.

Operculum, female (Fig. 61 b). Prolonged into a long subtriangular tip fitting into the distal part of the pleotelson. The distal margin of the tip of the operculum is narrowly rounded.

Uropods. Small, consisting of two joints, of which the endopodite is extremely small and difficult to detect, being only one-fourth to one-fifth as long as the exopodite.

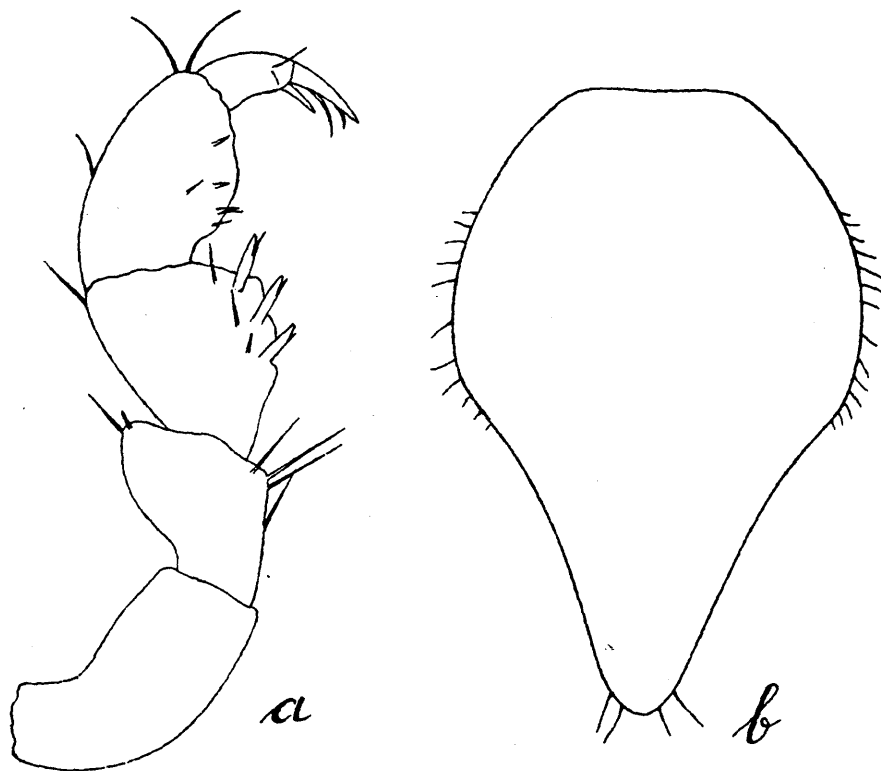


Fig. 61. *Paramunna antarctica* (RICH.). a. Left first pereopod from the rostral side, (adult female from the Museum of Paris), 215 \times . b. Operculum, female, 180 \times .

Remarks. A full-grown female with empty marsupium was found by the Swedish Antarctic Expedition. It agrees with the description and figures of the species by RICHARDSON (1906), except that the tip of pleotelson is furnished with some setae. A small male specimen, 1 mm. in length, which was collected together with the female specimen, is probably also *Paramunna antarctica*. It differs slightly from the female specimen in having three minute denticulae on each side of the pleotelson in front of the uropods and in having the tip of pleotelson somewhat shorter, the distal margin of pleotelson being almost truncate; the shape of pleotelson almost agrees with RICHARDSON's text figure of *Paramunna antarctica* (RICHARDSON 1906, Fig. 25). In shape as well as in the structure of its antennulae, antennae and first pleopods the specimen agrees with *Paramunna antarctica*. Both its first pereopods are broken.

Localities and Material.

St. 28. South Georgia, mouth of Grytviken, lat. $54^{\circ} 22' S.$, long. $36^{\circ} 28' W.$ 12—15 m. Sand and algae. 24/1, 1902. Female with an empty marsupium, length about 2 mm. Immature male specimen, about 1 mm. in length, probably belonging to *Paramunna antarctica*.

Distribution. South Georgia (Sw. Ant. Exped.), Graham Region (RICHARDSON 1906, 1908, 1913).

Not previously recorded from South Georgia.

Paramunna serrata (RICHARDSON, 1908).

Text fig. 62.

Austrimunna serrata. RICHARDSON, 1908, p. 5—6, Figs. 6—7.

(?) *Austronanus glacialis*. HODGSON, 1910, p. 50—51, Pl. VIII, Fig. 3.

Austronanus serrata. RICHARDSON, 1913, p. 19.

Supplementary Description.

General shape of body. As figured by RICHARDSON (1908, Fig. 6).

Head, pereion, abdomen. Frontal part of the head decreasing in width anteriorly, front margin evenly convex. Eyes small of reddish-brown colour. First four pereion segments subequal in length and width. There is no distinct waist between the first four and the last three pereion segments; the latter are shorter, however, than the anterior segments and curved backwards. Abdomen somewhat broader than it is long, anteriorly with a small free segment.

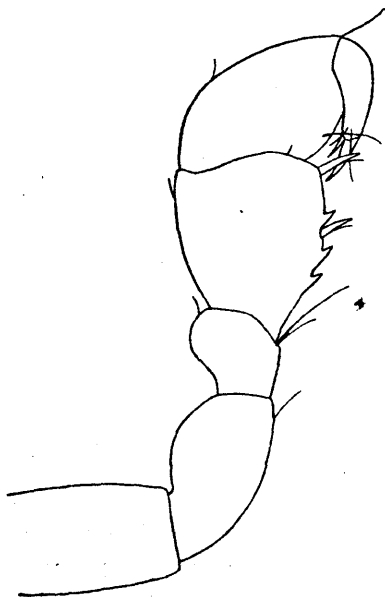


Fig. 62. *Paramunna serrata* (RICH.). Right first pereopod, female, 270 \times .

Antennulae. About three times as long as the eye-peduncles. First joint large, about as long as the narrower second joint; third and fourth joints small, of about equal length. The flagellum is comparatively long, about as long as the second, third and fourth peduncular joints together, and consists of two joints, of which the last is the longest. The proportion between the lengths of joints in the antennula is 10: 9: 3.5: 3.5: 6: 10.

Antennae. Broken (in both specimens).

First pair of pereopods (Fig. 62). Carpal joint widening towards the distal end, slightly longer than broad, its lower margin provided with two large two-pointed setae. Lower margin of carpus furnished with some small teeth. The propodus is almost as wide as the carpus, but slightly shorter. Its lower margin is thin and is furnished with at least one long slender seta.

First pair of pleopods, male. Extended laterally into long triangular lobes, as shown by RICHARDSON (1908, Fig. 7).

Operculum, female. About as long as it is broad. Lateral margins convex. It is broadest across the middle and thence tapers towards the distal end. Distal margin broadly rounded.

Uropods. Small, two-branched. The minute endopodite is difficult to detect and only about one-third as long as the exopodite.

Remarks. My specimens differ from *Paramunna serrata* as described by RICHARDSON (1908) only in having somewhat longer antennulae. It is possible that *Paramunna glacialis* (HODGSON, 1910) (= *Austronanus glacialis* HODGSON) is identical with *Paramunna serrata* (RICHARDSON). It differs from *Paramunna serrata* in having the head slightly longer, with frontal margin markedly convex, and in having a slightly longer pleotelson. The antennae, which are characteristic in *Paramunna glacialis* (HODGSON), have not been described in *Paramunna serrata* (RICHARDSON). The species of *Paramunna* described by STEPHENSEN (1927) as *Paramunna (serrata)* (RICHARDSON)? differs in having the carpus of the first pereopod broader than it is long. Possibly it is identical with *Paramunna dentata* n. sp. (see p. 241).

Localities and Material.

St. 46. Falkland Islands, Port Louis, Carenage Creek, lat. 51° 32' S., long. 58° 7' W. 1 m. Sandy bottom with plenty of *Codium*. 9/8, 1902. Male specimen, about 1 mm. in length.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. 3/8, 1902. Female, about 1 mm. in length.

Distribution. Falkland Islands (Sw. Ant. Exped.). Graham Region (RICHARDSON 1908, 1913), (?) Victoria Land (HODGSON 1910).

Not previously recorded from the Falkland Islands.

Paramunna subtriangulata (RICHARDSON, 1908).

Text figs. 63 a—d.

Austrimunna subtriangulata. RICHARDSON, 1908, p. 7, Fig. 8.

Paramunna subtriangulata. MONOD, 1926, p. 16, Figs. 7 A, B, C.

Supplementary Description.

*General shape of body*¹ (Fig. 63 a). Oblong-ovate, about twice as long as it is broad, broader in the ovigerous female than in the male.

Head. The frontal part is produced into one anterior rounded lobe in the middle and two lateral rounded lobes, neither being very distinct. Posterior part of the head immersed in the first segment of the pereion.

Pereion. Lateral margins of the pereion segments almost continuous. Last three segments short.

In the male the first five segments are subequal in width. The first segment is the longest, being in the adult male about as long as the second and third segments together; in immature males it is shorter, being, in a male specimen 1.3 mm. in length about half as long again as the second segment.

In the ovigerous female (Fig. 63 a) the first segment is the shortest of the anterior four segments, but it widens out laterally to more than twice its length in the middle. The third segment is slightly longer than the second and fourth, which are subequal in length. The greatest width of the body is across the third pereion segment.

¹ Cf. RICHARDSON (1908, Fig. 8) and MONOD (1926, Fig. 7 A).

Abdomen. About as long as the last four pereion segments together plus half the third segment; anteriorly with a free segment. Pleotelson subtriangular, tapering towards the rounded end.

Antennulae. Short and broad, a little longer than the eye-peduncles. First and second joints large, subequal in length and width and together slightly longer than

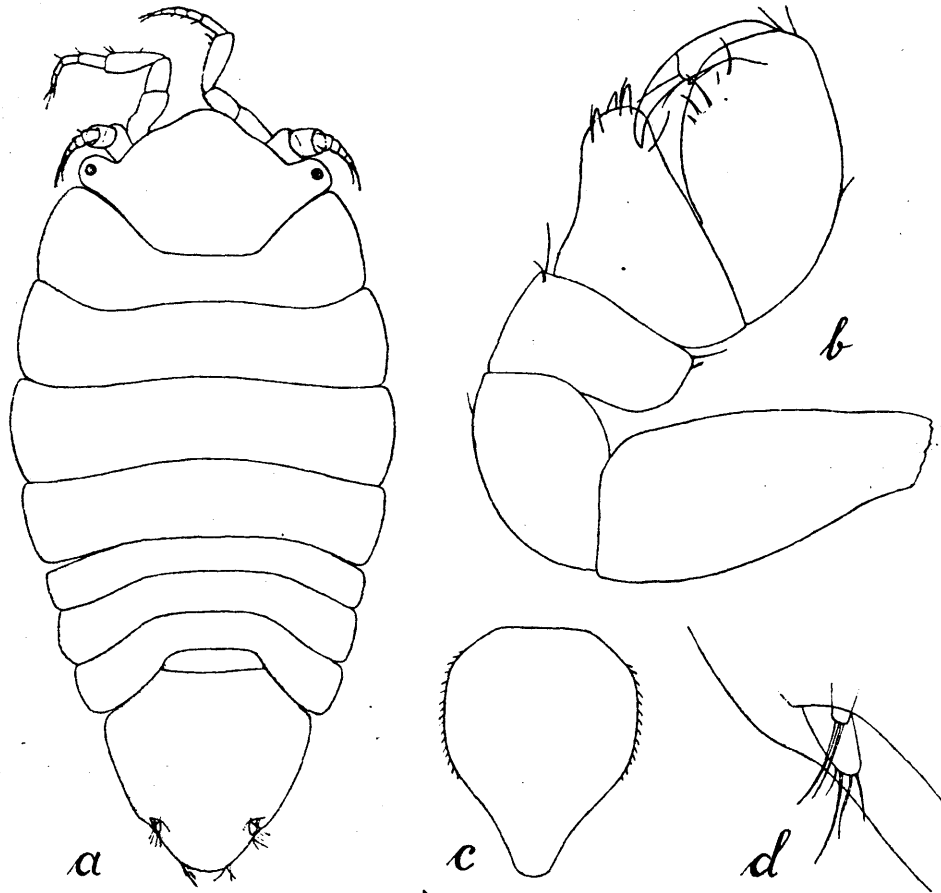


Fig. 63. *Paramunna subtriangulata* (RICH.). a. Female, from above, 65 \times . b. Left first pereopod, female, 235 \times . c. Female operculum, 65 \times . d. Uropod, 315 \times .

the remaining part of the antennula. The last four joints, of which the last two belong to the flagellum, decrease slightly in size from the first to the last.

Antennae. Of the usual type in the genus. The flagellum consists usually of five joints in adult specimens.

First pair of pereopods (Fig. 63 b). Exactly similar in males and females and very characteristic. They are broad and strong. The merus is approximately twice as broad as it is long. The carpus is very broad and increases considerably in width towards its distal end; its lower distal angle is broadly rounded; at the lower margin near the lower distal angle there are generally two, sometimes three submarginal two-pointed setae. The

propodus is broadly oval; its lower margin is provided with some slender submarginal setae. Dactylus furnished with one long and one short claw.

First pair of pleopods, male. Typical of the genus.

Operculum, female (Fig. 63 c). About cordate; distal margin broadly rounded.¹

Uropods (Fig. 63 d)². Very short. Exopodite about twice as large as the endopodite.

Localities and Material.

South Georgia, Cumberland Bay, May Bay. — Haul among algae in and below the tidal zone. $\frac{3}{8}$ 1902. 2 females. Length of largest specimen 1.8 mm. — Haul among algae above a stony bottom. 1–2 m. $\frac{3}{8}$ 1902. 2 specimens, male and female. Length of largest specimen 1.6 mm. (ovigerous female). — In a rock-hollow within the tidal zone. Shaken out from a colony of Bryozoa. $\frac{3}{8}$ 1902. Immature male specimen 1 mm. in length.

Distribution. Magellan Straits (MONOD 1926), South Georgia (Sw. Ant. Exped.), Graham Region (RICHARDSON 1908).

Not previously recorded from South Georgia.

Paramunna rostrata (HODGSON, 1910).

Text figs. 64 a–c.

Austromunna rostrata. HODGSON, 1910, p. 61–63, Pl. X, Fig. 3.

Austrimunna rostrata. RICHARDSON, 1913, p. 21.

Paramunna rostrata. VANHÖFFEN, 1914, p. 572–573, Fig. 102; MONOD, 1926, p. 16–17, Fig. 8.

(?) *Paramunna dilatata.* VANHÖFFEN, 1914, p. 573, Fig. 103.

Supplementary Description.

General shape of body (Fig. 64 a). In the figured specimen, a female 1.4 mm. in length, the pleotelson was slightly longer than broad, agreeing in that respect with *Paramunna dilatata* VANHÖFFEN. In a small 1 mm. long female specimen the pleotelson was broader, being about as wide as it is long.

Antennulae. About one-third as long again as the eye-peduncles; peduncle consisting of four joints, flagellum of two joints.

Antennae. The third peduncular joint is the broadest. In two specimens 1.4 and 1 mm. in length the flagellum consisted of seven joints.

Right mandible. Molar tubercle considerably widening towards the truncate end. Palp short, three-jointed.

First pair of pereopods (Fig. 64 b and c). Carpal joint oval, almost twice as long as it is broad, with greatest width across the middle; the lower margin of the joint is provided with two stout two-pointed setae. Propodus about three-fourths as long as the carpus; its lower part is not attenuate; the lower margin is provided with some slender setae. Dactylus furnished with one long and one short claw. For other details see the figures.

Operculum, female. Somewhat longer than broad; distal margin narrowly rounded.

Uropods. Consisting of two small joints. The endopodite is very minute, being about one-fourth as long as the exopodite.

Remarks. The two specimens examined by me differ from *Paramunna rostrata* as described and figured by HODGSON (1910), VANHÖFFEN (1914), and MONOD (1926) in having

¹ Cf. MONOD, 1926, Fig. 7 B.

² Cf. MONOD, 1926, Fig. 7 C.

a slightly longer pleotelson, agreeing in this respect with *Paramunna dilatata* VANHÖFFEN (1914). As mentioned above the pleotelson was slightly longer than broad in a specimen 1.4 mm. in length, whereas in another 1 mm. long specimen it was about as wide as it was long. On comparing the available figures of *P. rostrata* it appears that there exists a considerable variation within this species in the shape of the pleotelson as well as in the

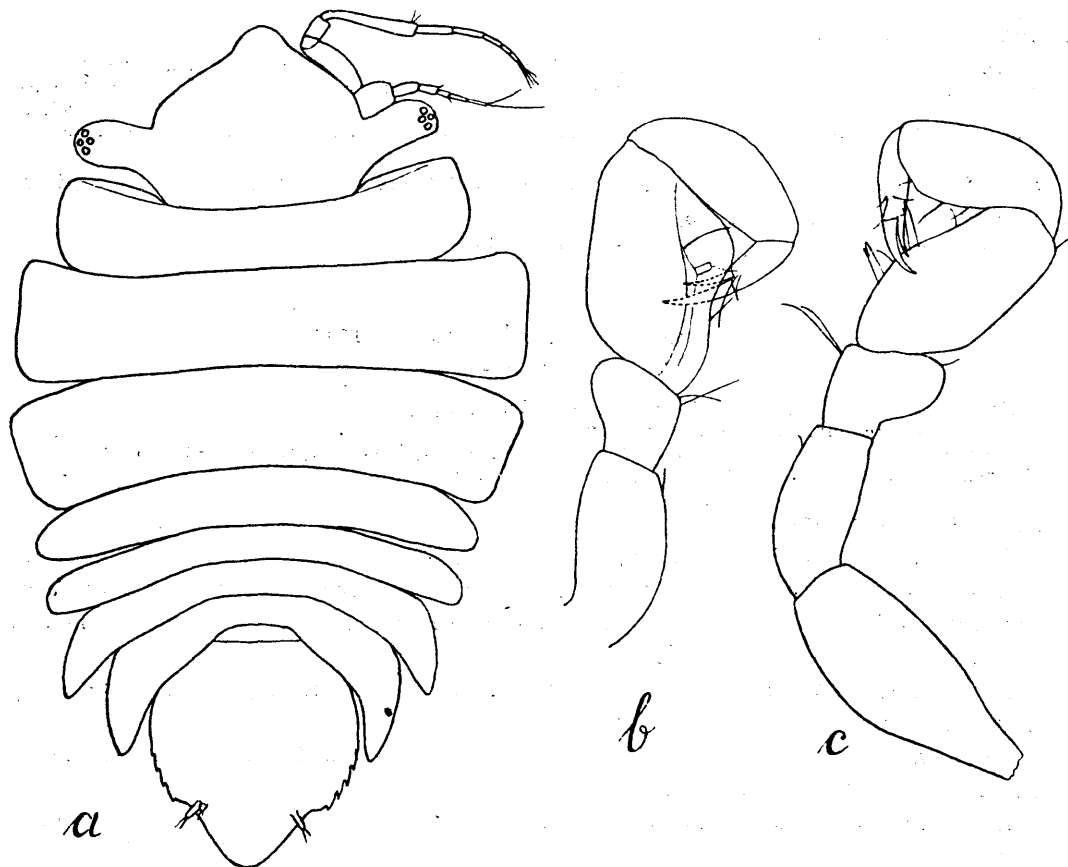


Fig. 64. *Paramunna rostrata* (HODGS.). a. Female from above, 80 \times . b. Right first pereopod, immature female, 315 \times . c. First pereopod, adult female, 240 \times .

shape of the rostrum¹. In view of the variation in the shape of the pleotelson, it seems very probable that *P. dilatata* is identical with *P. rostrata*. *P. dilatata* was established as a species differing from *P. rostrata* by VANHÖFFEN (1914) on account of the slightly different shape of the pleotelson and the greater width of the last three pereion segments. The unusual shape of the last three pereion segments in the species of VANHÖFFEN may perhaps be explained by his specimens being in a moulting condition, the shedding of the chitin having been accomplished on the posterior part of the body but not yet anteriorly.

¹ The great variation in the shape of the rostrum was pointed out by VANHÖFFEN (1914).

Localities and Material.

St. 23. South Georgia, off the mouth of Morain Bay, lat. 54° 23' S., long. 36° 26' W. 64—74 m. Bottom temp. + 1.65°. Gray clay with gravel and stones. 10/11 1902. 2 female specimens, one exhibiting an empty marsupium 1.4 mm. in length and one without marsupium 1 mm. in length.

Distribution. South Georgia (Sw. Ant. Exped.), Kerguelen (VANHÖFFEN 1914), Graham Region (RICHARDSON 1913), Antarctic Ocean west of Graham Region (MONOD 1926), Victoria Land (HODGSON 1910).

Not previously recorded from South Georgia.

Paramunna dentata n. sp.

Text figs. 65 a-i.

Diagnosis. Frontal part of the head subtriangular, obtusely pointed anteriorly. Eye-peduncles short, with small eyes of reddish-brown colour. Pleotelson almost semi-circular, its lateral margins denticulated, its distal tip between the uropods with broadly rounded margin. Antennulae about twice the length of the eye-peduncles, consisting of a four-jointed peduncle and a single-jointed flagellum. First pereopod with a very broad carpus, being distally about one-third as broad again as it is long, its lower margin furnished with two conspicuous setae and a few teeth. Female operculum slightly longer than broad, with distal end broadly rounded.

Description.

Types. Male and female, length about 1 mm.

Head. (Fig. 65 a). About as long as the first three pereion segments together. Frontal part subtriangular, obtusely pointed anteriorly. Eye-peduncles short and broad. Eyes small, reddish brown. Posterior part of the head immersed in the first pereion segment.

Pereion (Fig. 65 a). Segments in the female with their lateral margins continuous and the first four segments subequal in length and width. In the male, only the last three segments have their lateral margins continuous and the first segment is the longest. The last three pereion segments are shorter than the others in both sexes and decrease slightly in width from the fifth to the seventh segment.

Abdomen (Fig. 65 a). About as long as the last four pereion segments together, anteriorly with a small free segment. Pleotelson somewhat broader than long, its lateral and posterior margins forming almost a semi-circle, interrupted only by the indentations for the uropods. Lateral margins denticulated with about eight teeth on each side, the number somewhat varying.

Antennulae. About twice as long as the eye-peduncles. Consisting of five joints. First joint stout, second joint about as long as the first, but narrower. Third and fourth joints small, about as long as they are broad, subequal in length and together about as long as the second joint. The flagellum consists of one joint, which is about as long as the third and fourth joints together, and is furnished apically with one sensory filament and one seta.

Antennae (Fig. 65 b). Peduncle consisting of six joints, flagellum of seven.

Mandibles (Fig. 65 c). Normal. Incisive part with five points. Setal row with four or five setae. Palp short, consisting of three joints, of which the first two are subequal in length and the third about two-thirds as long as the second.

First pair of maxillae. Inner lobe decreasing in width towards the distal rounded end, which is provided with one conspicuous and three slender, hair-like setae.

Lower lip See Fig. 65 d.

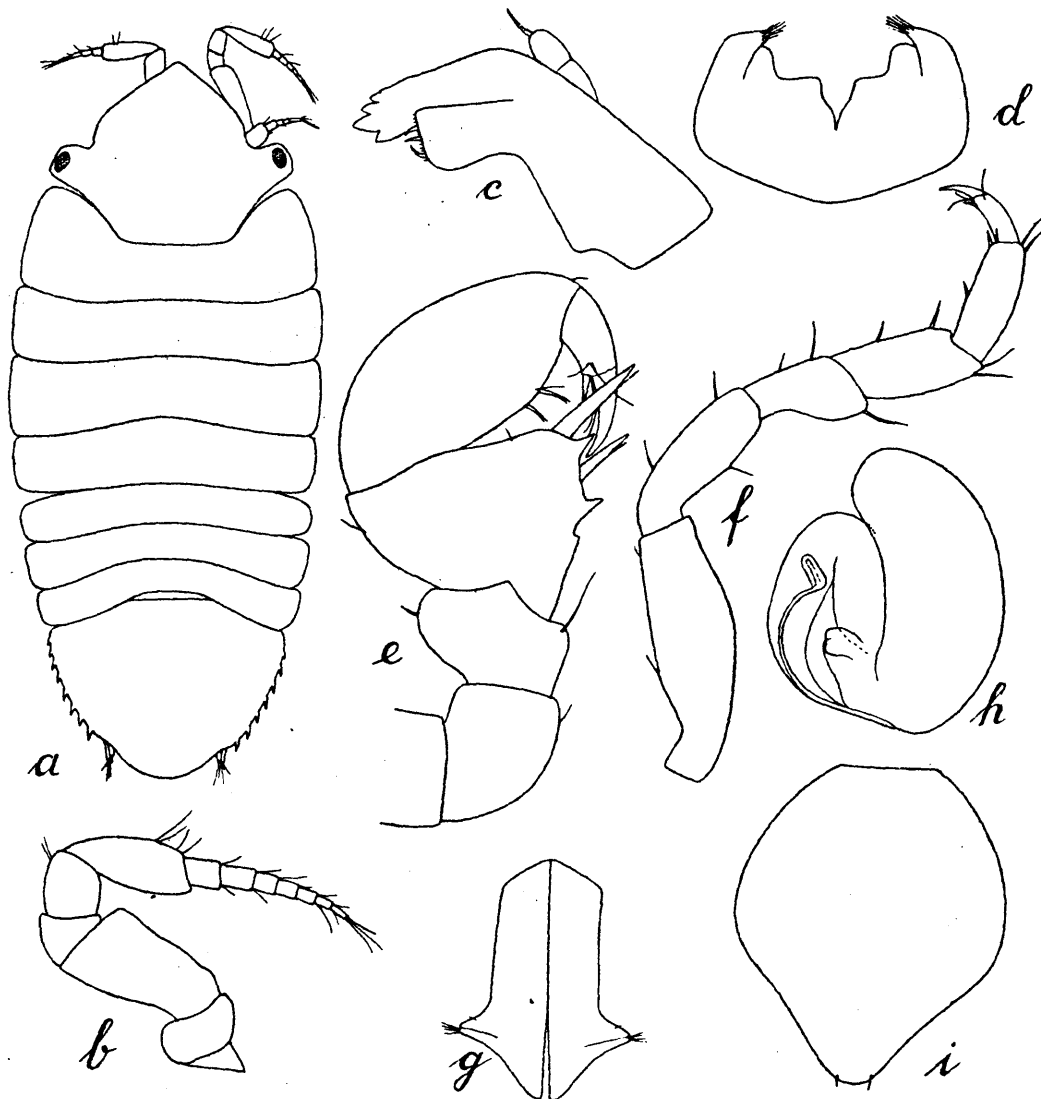


Fig. 65. *Paramunna dentata* n. sp. a. A specimen from above, 80 ×. b. Left antenna, female, 240 ×. c. Mandible, 315 ×. d. Lower lip, 235 ×. e. First pereopod, (except the larger part of the basipodite), female, 240 ×. f. Second pereopod, female, 235 ×. g. First pleopods, male, 140 ×. h. Second male pleopod, 240 ×. i. Female operculum, 140 ×.

Maxillipeds. Typical of the genus.

First pair of pereopods (Fig. 65 e). Characterized by its very broad carpus, which increases in width towards the distal end, where it is about one-third as broad again as it is long. Its lower margin is furnished with two long and stout two-pointed setae

and some teeth-like projections; one of the setae is situated at the lower distal angle. The propodus is about as long as the meral and carpal joints together. Its lower margin is furnished with two small two-pointed setae, situated near each other.

The other pereopods. All similar. The second pereopod is shown in fig. 65 f. Dactylus provided with one long and one short claw.

First and second pairs of pleopods, male. See Figs. 65 g and h.

Operculum, female (Fig. 65 i). Slightly longer than broad, distal margin rounded.

Uropods. Very short; the exopodite is about twice as long as the endopodite.

Remarks. In its general shape, *Paramunna dentata* shows some resemblance to *Paramunna subtriangulata* (RICHARDSON), but it differs in having the lateral margins of the pleotelson denticulated and in its first pereopods, which are very characteristic. The first pereopods agree with those in the species of *Paramunna* from the Auckland Islands named *Paramunna (serrata)* [RICHARDSON]? by STEPHENSEN (1928), but *P. dentata* differs from that species in other details, especially in the triangularly prolonged frontal part of the head.

Localities and Material.

St. 51. Falkland Islands. Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ²/₁, 1902. 8 specimens, males and females. Length of the largest specimens about 1 mm.

Distribution. Falkland Islands (Sw. Ant. Exped.).

Genus Austrosignum HOGDSON, 1910.

Diagnosis. Body oblong with a distinct »waist» between the first four and the last three pereion segments. Eyes small on slender eye-peduncles. Pleotelson slightly bulbous, distally pointed. Coxae visible from above on the last three pereion segments. Antennulae with the first two peduncular joints subequal in length to, or longer than, the remaining part. Mandibles with a strong subcylindrical molar tubercle widening towards the end; mandibular palp short, three-jointed. Maxillipeds with first, second and third joints of the palp wider than the last two joints, being about two-thirds as wide as the endite. First pair of pereopods prehensile. Uropods minute consisting of two branches.

The genus comes close to *Paramunna* G. O. SARS, but differs in having a distinct »waist» between the fourth and fifth pereion segments, in having the pleotelson pointed and to a slight degree bulbous, and in having the coxae visible from above on the last three pereion segments.

Austrosignum glaciale HOGDSON, 1910.

Text figs. 66 a—c.

Austrosignum glaciale. HOGDSON, 1910, p. 68—69 Pl. X, Fig. 2; VANHÖFFEN¹, 1914, p. 578, Figs. 109 a—f; MONOD 1931, p. 12 Figs. 2 a, 2 b, 9 a.

Supplementary Description.

General shape of body. As figured by MONOD (1931, Figs. 2 a and b), the female has a more oval shape of body than the male. The body is in both sexes, however, propor-

¹ MONOD (1931) doubts whether the specimens referred by VANHÖFFEN (1914) to *Austrosignum glaciale* are correctly determined.

tionately longer and narrower than figured by MONOD (1931). The angles between the anterior margin of the eye-peduncles and the head are not so sharp as figured by HODGSON, in that respect agreeing with the figures by MONOD (1931).

Pereion. The first pereion segment in the male is about as long as the second and half the third segment together; in the female the first four pereion segments are subequal in length in one specimen, in another specimen the second and third are the largest.

Abdomen. The pleotelson in the male is broader than in the female. The indentations for the uropods are more marked in the female than in the male.

*Antennulae*¹. First two joints stout and long, together slightly longer than the remaining part of the antennula. The third and fourth peduncular joints are small, but the third is about twice as long as the fourth. The flagellum consists of two slender joints, the last of which is furnished with a long sensory filament and a few setae.

Antennae. Short. Peduncle composed of six joints; first and second joints very short, subequal in length; third joint somewhat longer than first and second together; fourth joint about half as long again as the first; the fifth joint is somewhat longer than the third; and the sixth joint, which is the longest, is about as long as the fourth and fifth together. The flagellum is about as long as the sixth and half the fifth peduncular joints together, and consists in one specimen, 1.1 mm. long, of six joints, of which the first two joints are very long, each twice as long as the third joint and together longer than the four other small joints in the flagellum.

Mandibles (Fig. 66 a). Incisive part with five teeth. Lacinia (on the left mandible) three-dentated, situated very close to the incisive part. Setal row consisting of about four setae. Molar tubercle strong, subcylindrical, widening towards the end and directed somewhat forwards, distally abruptly cut off and provided with a row of marginal teeth. Palp very short, about half as long as the mandible corpus. It consists of three joints the first two of which are subequal in length; the last joint is about half as long as the second.

First and second pairs of maxillae. Of the usual type. Inner lobe of the first pair tapering towards the end and provided with three apical setae.

Maxillipeds. Slightly different from the figure by VANHÖFFEN (1914)², inasmuch as the epipodite is broader, being about half as broad again as the third joint of the palp; its lateral margin is strongly convex, its distal end narrowly rounded. The first second and third joints of the palp are subequal in width; the second joint widens out distally, whilst the third decreases slightly in width towards its distal end. The fourth and fifth joints of the palp — as figured by VANHÖFFEN (1914) — are much narrower than the others. Endite with two coupling-hooks.

*First pair of pereiopods*³. Similar in the male and the female. Carpus and propodus subequal in length; carpus with two large two-pointed and a few slender single-pointed setae as well as with some small tooth-like projections on its lower margin; propodus with two double-pointed setae and one slender single-pointed seta on its lower margin. Dactylus provided with one long and one short claw.

¹ Cf. VANHÖFFEN, 1914, Fig. 109 a.

² VANHÖFFEN, 1914, Fig. 109 f.

³ Cf. VANHÖFFEN (1914, Fig. 109 b) and MONOD (1931 Fig. 9 a).

The other pereopods (Fig. 66 b). Not prehensile, all with a short dactylus, furnished with one long dorsal claw about as long as the dactylus and one extremely short ventral claw.

First pair of pleopods, male. Shape as illustrated by VANHÖFFEN 1914 in his Fig. 109 c.

Operculum, female (Fig. 66 c). Subtriangularly produced distally and with a narrowly rounded end.

Uropods. Consisting of two small joints. The exopodite is about two and a half times as long as the very small endopodite.

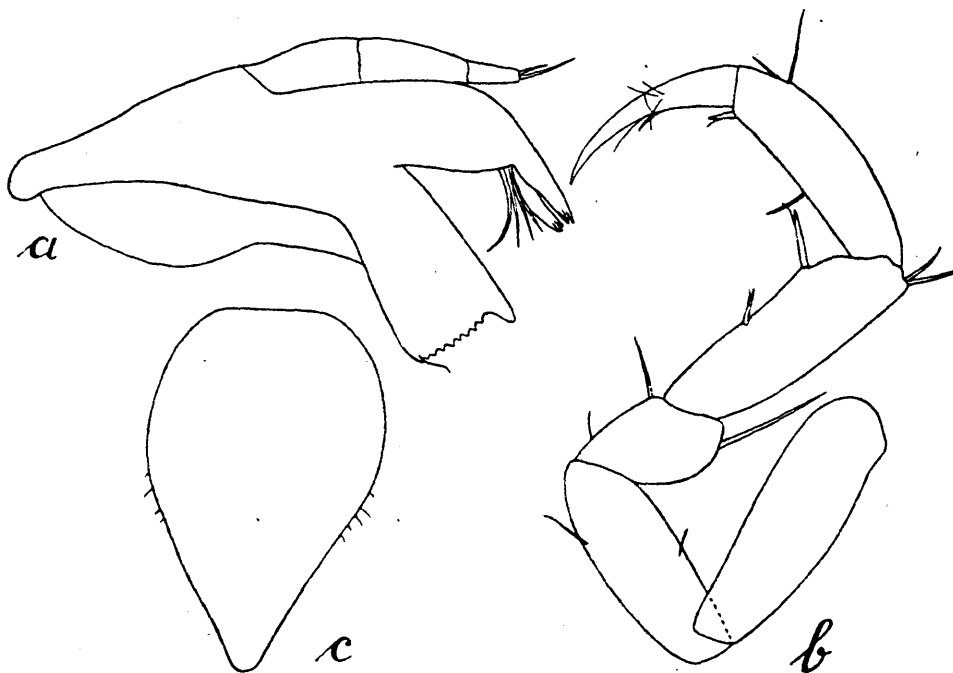


Fig. 66. *Austrosignum glaciale* HODGSON. a. Left mandible, male, 350 \times . b. Right second pereopod, immature female, 225 \times . c. Female operculum 180 \times .

Remarks. The species is very similar to, perhaps identical with *Austrosignum grande* HODGSON, differing from that species only in having the head not so deeply immersed in the first pereion segment and in having the first pereion segment shorter. In the male of *Austrosignum glaciale*, however, this segment attains almost the same length as in *Austrosignum grande*.

Localities and Material.

St. 28. South Georgia, mouth of Grytviken, lat. 54° 22' S., long. 36° 28' W. 12—15 m. Sand and algae. 1902. 3 specimens, one male and two females. Length of the largest specimen, a female, about 1.7 mm.

Distribution. South Georgia (MONOD 1931), Victoria Land (HODGSON 1910), Gauss station (VANHÖFFEN 1914).

Austrosignum falklandikum n. sp.

Text figs. 67 a—d.

Diagnosis. Body about three times as long as broad. Head not immersed in the first pereion segment, of an almost semi-circular shape. Eye-peduncles very short reaching only to about one-third the length of the first peduncular joint of the antennulae. First pereion-pod with carpus slightly shorter than propodus and increasing in width in distal direction. All pereion-pods with the dorsal claw longer than the dactylus; on the second, sixth and seventh about twice as long as the dactylus.

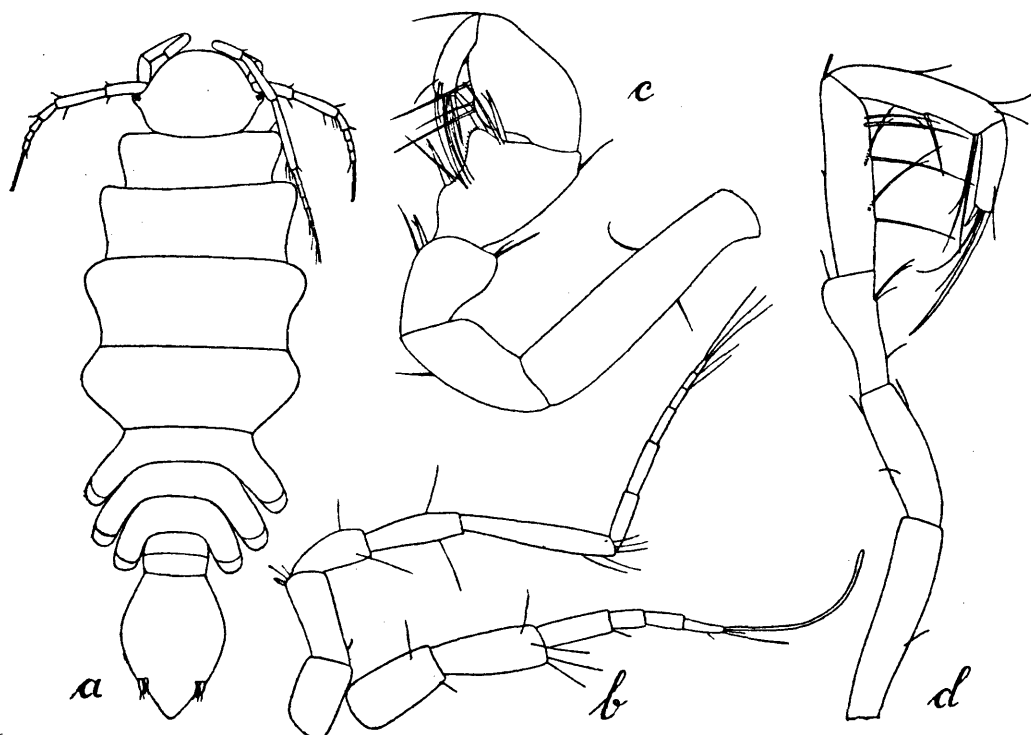


Fig. 67. *Austrosignum falklandicum* n. sp. a. Female, from above, 45 ×. b. Antennula and antenna, 185 ×. c. First pereion-pod, female, 185 ×. d. Second pereion-pod, female, 160 ×.

Description.

Types. Male about 1.6 mm. in length, and female (Fig. 67 a) about 1.9 mm. in length.

General shape of body (Fig. 67 a). Oblong, about three times as long as it is broad.

Head (Fig. 67 a). Not immersed in the first pereion segment, small, almost circular, with anterior margin convex. The length of the head is subequal to the length of the first plus half the second pereion segment. Eye-peduncles very short, reaching only to about one-third the length of the first peduncular joint of the antennulae. Eyes small of reddish-brown colour.

Pereion (Fig. 67 a). The figure illustrates a female specimen. It will be seen from the figure that the first segment is the shortest and narrowest of the anterior four segments. The second, third and fourth segments are subequal in length and width, the third being slightly longer than the others.

Between the fourth and fifth segments there is a distinct «waist». The last three segments are strongly curved backwards.

The pereion of the male differs from that in the female in having the first segment shorter and wider. In the male this segment is only about half as long as, but subequal in width to, the second segment.

Abdomen. Anteriorly with two free segments. Pleotelson similar in shape to that in *Austrosignum glaciale*, with greatest width across the middle and distally pointed. In the male the pleotelson is very slightly broader than in the female.

Antennulae. See Fig. 67 b. Six-jointed. About one-third shorter than the antennae. First two joints stout and long, the second slightly longer. Together they are slightly longer than the remaining part of the antennula. Second and third joints small, the second about twice as long as the third. Last joint furnished with a long apical sensory filament.

Antennae. See Fig. 67 b. About as in *Austrosignum glaciale*. The flagellum consists of six joints.

Mandibles. Mandibles with molar tubercle widening considerably towards the truncate end. Palp short, three-jointed.

Maxillipeds. As in *Austrosignum glaciale*, but differing in having the distal margin of the epipodite broadly rounded. Endite with a single coupling-hook.

First pair of pereopods (Fig. 67 c). Carpus and propodus broader than in *Austrosignum glaciale*. Carpus increasing in width towards the distal end. There is one strong two-pointed seta at the lower distal angle of the carpus, one on the lower margin, and one on the distal edge of the carpus. Propodus broad; its lower margin provided with three long single-pointed setae, situated near each other. Dactylus furnished with two claws and with two setae between the claws; the dorsal claw is longer than the joint itself. For details see the figure.

The other pereopods (Fig. 67 d). The third to fifth pairs are broken. On the second, sixth and seventh pereopod the lower margins of the carpus and propodus provided with long single-pointed setae, most of them on the carpus. The dorsal claw is very long, about twice as long as the dactylus. For details see the figure.

First pair of male pleopods and female operculum. About as in *Austrosignum glaciale*.

Uropods. Exopodite about three times as long as the endopodite, tapering towards the setiferous end. Endopodite with two apical setae.

Remarks. The new species somewhat resembles *Austrosignum glaciale* HODGSON, but is easily distinguished, especially by its much shorter eye-peduncles, its longer body and the longer dorsal claw on the pereopods.

Localities and Material.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. $\frac{1}{2}$, 1902. Female specimen, (type), about 1.9 mm. in length.

St. 59. South of West Falkland, on the Burdwood Bank, lat. 53° 45' S., long. 61° 10' W. 137—150 m. Broken shells with stones. $\frac{12}{8}$, 1902. Male specimen, (type), about 1.6 mm. in length.

Distribution. Falkland Islands (Sw. Ant. Exped.), Burdwood Bank (Sw. Ant. Exped.).

Sub-group **Pleurogoniini**, new sub-group.

For diagnosis see p. 199.

Genus *Pleurosignum* VANHÖFFEN, 1914.

*Diagnosis*¹. Body flattened. Head posteriorly immersed in the first pereion segment. Eyes small on slender eye-peduncles. Second to seventh pereion segments with long spine-like coxal plates. Pleotelson much narrower than the pereion and having its posterior part subtriangularly produced. Antennulae and antennae short, subequal in length; antennulae few-jointed (composed of five or six joints), the last joint furnished with one long sensory filament. Mandibles with a slender pointed molar tubercle directed somewhat forwards; palp missing. Maxillipeds with the first three joints of the palp about as broad as the endite, the last two joints narrower than the others; epipodite with distal margin rounded. First pereiopods in both sexes prehensile. First male pleopods each with a lateral subtriangular projection. Female operculum with its distal part subtriangularly prolonged. Uropods consisting of two very small branches.

The genus comes close to *Pleurogonium* G. O. SARS, as is shown by the fact that its characteristic mandibles have a narrow molar tubercle, very similar to that in *Pleurogonium*, and that its maxillipeds are shaped exactly as in the latter genus. The genus *Dendrotium* G. O. SARS, whose shape of body still more closely resembles that of *Pleurosignum*, shows in its mandibles and maxillipeds a closer relation to *Paramunna* than to *Pleurosignum*. This is also the case with *Austrosignum* (cf. p. 241).

Both the known species belonging to *Pleurosignum* were obtained by the Swedish Antarctic Expedition, but very few specimens of each (*Pl. magnum* VANH., two specimens, and *Pl. elongatum* VANH., one specimen). VANHÖFFEN (1914) does not figure the anterior four pereion segments in *Pl. magnum*. In his figure of *Pl. elongatum*², however, all the pereion segments are provided with spine-like epimeral processes, and this is stated by VANHÖFFEN to be the case also in *Pl. magnum*. But in the specimens of *Pleurosignum* examined by me I found, the spine-like epimera only on the second to seventh pereion segments, whilst on the first segment each lateral margin was provided with a small seta. The epimera on the second to seventh segments are strictly delimited from the segments by dorsal sutures. They are thus to be regarded as coxal plates. These spine-like coxal plates are somewhat obliquely truncate distally and are provided near their distal end with a short hair-like seta. At first sight they thus resemble two-pointed setae of the type regularly found in the Parasellids. In exceptional cases they are provided with two hair-like setae.

Pleurosignum magnum VANHÖFFEN, 1914.

Text figs. 63 a—c.

Pleurosignum magnum. VANHÖFFEN, 1914, p. 577—578, Figs. 108 a—g.*Supplementary Description.*

Head. Posteriorly slightly immersed in the first pereion segment.

Pereion. First segment short, measured along the middle line one-third to one-half as long as the second. The second, third and fourth segments are the longest

¹ Cf. VANHÖFFEN (1914, p. 576).² VANHÖFFEN (1914, Fig. 107 a).

and subequal in length. Each lateral margin of the first segment is furnished with a minute seta.

Pereion. Coxal plates developed on all segments except the first. They are spine-like and marked off from the terga by distinct dorsal sutures. The coxal plates of the second third and fourth segments are almost exactly as figured by VANHÖFFEN¹ (1914) in the case of *Pl. elongatum*. Those on the last three segments are larger, there being a broader proximal part dorsally delimited from the tergum by a slightly convex suture;

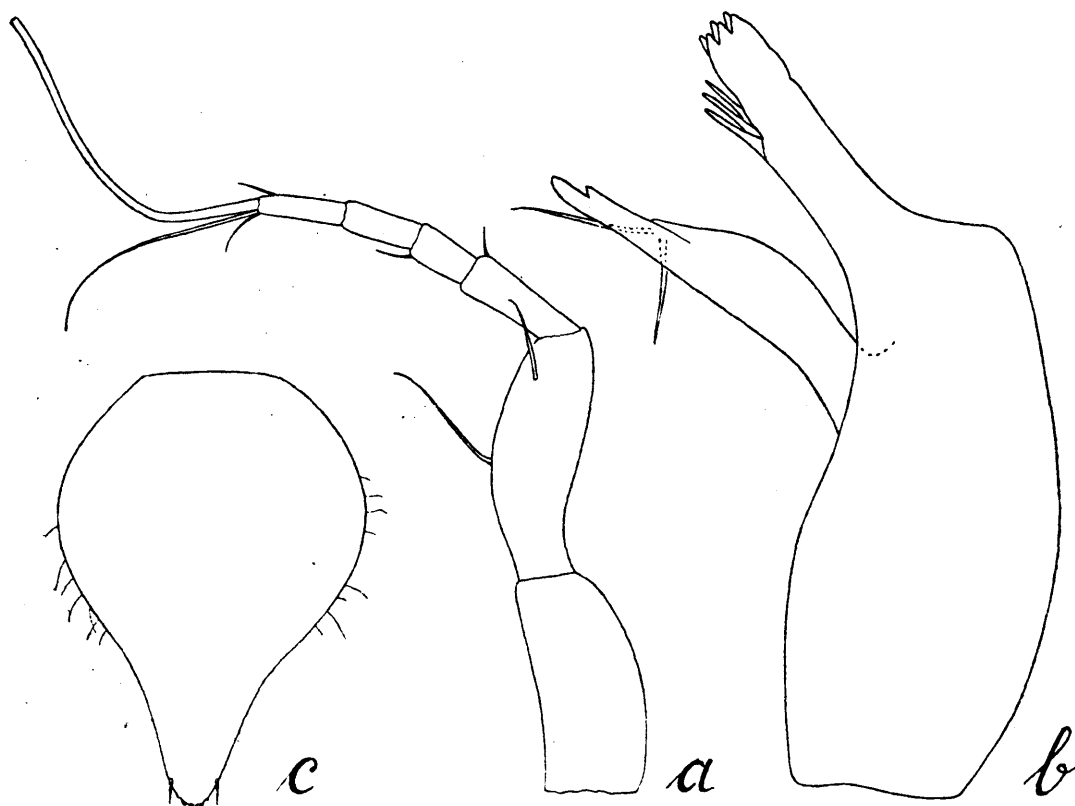


Fig. 68. *Pleurosignum magnum* VANHÖFF. a. Left antennula, 240 ×. b. Left mandible, 650 ×. c. Female operculum, 175 ×.

but laterally the coxal plates gradually narrow and are produced into spine-like projections similarly shaped to those on the second to fourth segments.

Abdomen. Anteriorly with one free segment.

Antennulae. See Fig. 68 a and VANHÖFFEN (1914, Fig. 108 c).

Antennae. Broken.

Mandibles (Fig. 68 b). Slender. Incisive part and lacinia, on the left mandible, situated close together, each with many points. Setal row on the left mandible with three setae. Molar tubercle long and slender, directed slightly forwards, distally prolonged into a long pointed projection.

¹ VANHÖFFEN (1914, Fig. 107 a).

First pair of maxillae. Normal. Inner lobe provided with two apical setae.

*Maxillipeds*¹. Epipodite short, reaching about to the distal margin of the first joint of the palp. Its distal margin is broadly rounded.

Operculum, female (Fig. 68 c). Its distal part is subtriangularly prolonged.

Uropods. Consisting of two small joints, of which the endopodite is extremely small.

Remarks. This species is well distinguished from *Pl. elongatum* by its short abdomen and by its characteristic first pereopods, which have a narrow propodus, furnished with two stout setae on its lower margin and the lower margin of the dactylus dentated.

Localities and Material.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ²/₁, 1902. Female specimen about 1.2 mm. in length.

St. 59. South of West Falkland, on the Burdwood Bank, lat. 53° 45' S., long. 61° 10' W. 137—150 m. Broken shells with stones. ¹²/₁, 1902. Female specimen about 1.5 mm. in length.

Distribution. Falkland Islands and Burdwood Bank (Sw. Ant. Exped.), Gauss Station (VANHÖFFEN 1914).

The species has previously been found only in the East Antarctic (Gauss Station); it is here recorded from the Falkland Islands and Burdwood Bank.

***Pleurosignum elongatum* VANHÖFFEN, 1914.**

Text fig. 69.

Pleurosignum elongatum. VANHÖFFEN, 1914, p. 576—577, Abb. 107 a—f.

Supplementary Description.

Head. Posteriorly immersed in the first pereion segment.

Pereion. First segment short, strongly curved in anterior direction, but of uniform length. Measured along the middle line it is half as to two-fifths as long as the second segment. Each of its lateral margins is provided with a short hair-like seta. The second, third and fourth segments are the longest and subequal in length and width. The last three segments are short and curved backwards.

Coxal plates developed on all segments, except the first. They are spine-like and similar to those in *Pl. magnum*. In the single specimen examined they were somewhat shorter than in *Pl. magnum*.

Abdomen. About as long as the last four pereion segments plus half the third segment. Pleotelson about twice as long as the anterior part of the abdomen. In the anterior part two segments are indicated, one short first segment and one second segment, which is almost fused with the pleotelson, the suture-line between this segment and the pleotelson being very faint.

Antennulae and antennae. As in *Pl. magnum*. The antennal flagellum consists of seven joints.

Maxillipeds. As in *Pl. magnum*.

First pair of pereopods (Fig. 69)². Propodal joint broad and oval in outline, with its lower part very thin. For details see the figure.

¹ See VANHÖFFEN (1914, Abb. 108 d).

² See also VANHÖFFEN (1914, Figs. 107 b and c).

Operculum, female. Its distal part is prolonged into a subtriangular extension with a rounded distal end.

Uropods. Consisting of two small branches, each furnished with apical setae.

Remarks. Of this species only a single damaged specimen was collected during the Swedish Antarctic Expedition. It is easily recognized as *Pleurosignum elongatum* by its long abdomen and characteristic first pereiopods. It differs from VANHÖFFEN's figures and description of *Pl. elongatum* in being devoid of coxal plates on the first pereion segment, in having the spine-like coxal plates on the other pereion segments slightly shorter and in having the anterior part of the abdomen slightly shorter than figured by VANHÖFFEN (1914).

Localities and Material.

St. 49. Falkland Islands, Berkeley Sound, lat. $51^{\circ} 35' S.$, long. $57^{\circ} 56' W.$ 25—30 m. Shells and stones. 10/8 1902. Female specimen, about 1 mm. in length.

Distribution. Falkland Islands (Sw. Ant. Exped.), Gauss Station (VANHÖFFEN 1914).

The species has not previously been recorded from the Falkland Islands.

Genus *Antennulosignum* n. gen.

Diagnosis. Body flattened. Head posteriorly immersed in the first pereion segment. Eyes small on long and slender eye-peduncles. Pereion segments, except the first, provided with long spine-like coxal plates. Abdomen narrow. Pleotelson posteriorly subtriangular and prolonged, much narrower than the pereion. Antennulae and antennae short, antennulae with two stout peduncular joints, of which the second is prolonged distally into a spine-like curved projection, which is longer than the flagellum; last joint of flagellum furnished with one long apical sensory filament. Mandibles with a slender molar tubercle and a short three-jointed palp. Maxillipeds with the palp slender. First pereiopods prehensile. The first pleopods in male each with a lateral triangularly projecting extension. Uropods consisting of two very small branches.

Though similar to *Pleurosignum*, this genus differs in the extremely prolonged second peduncular joint of the antennula, which at first sight gives the antennula the appearance of having two flagella, and also in the mandible, which is furnished with a short palp. The genus comprises only one species, which was represented in the material by three male specimens.



Fig. 69. *Pleurosignum elongatum* VANHÖFF. Left first pereiopod, 315 \times .

Antennulosignum elegans n. sp.

Text. figs. 70 a—e.

Diagnosis. Body about twice as long as it is broad. Pleotelson about one-fourth as long again as its greatest width, tapering towards the end. Antennae with the first four peduncular joints small and subequal in length. First pereiopod prehensile, with carpus trapezoidal and furnished at the tip with three two-pointed setae; propodus broadly oval; dactylus one-half to two-thirds the length of propodus, its dorsal claw about one-third as long as the joint itself.

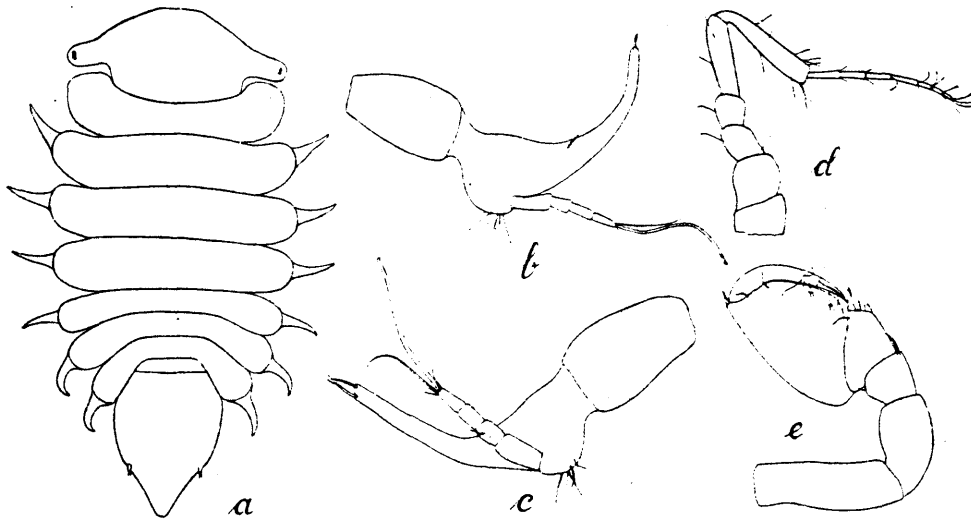


Fig. 70. *Antennulosignum elegans* n. sp. a. Animal, from above, 50 \times . b. Left antennula, male, from below, 100 \times . c. Antennula of another specimen, 120 \times . d. Left antenna, male, 100 \times . e. First pereiopod, 120 \times .

Description.

Type. Male, about 1 mm. in length.

General shape of body (Fig. 70 a). Oblong-ovate; the body is about twice as long as it is broad.

Head. Frontal margin between the eye-peduncles rounded. Eyes distinct, but without pigment, consisting of five ocelli, on slender, laterally directed eye-peduncles, extending about as far as the lateral margins of the first pereion segment. Head posteriorly slightly immersed in the first pereion segment.

Pereion. The first five segments are subequal in width, the sixth and seventh somewhat narrower than the others. First segment curved forwards, narrow in the middle, laterally increasing in width. Second, third and fourth segments long, subequal in length. The last three segments are short, curved backwards, subequal in length, but decreasing in width from the fifth to the seventh; the fifth segment is, in the middle, only about one-third as long as the fourth.

Abdomen. Anteriorly with a short free rectangular segment. Pleotelson about one-fourth as long again as its greatest width, tapering towards the end; its posterior part is produced into an obtusely rounded triangular tip.

Antennulae (Figs. 70 b and c). Peduncle consisting of two very stout joints, of which the second distally produced into a long curved and spine-like prolongation with its concave side directed anteriorly. The flagellum is small and situated posterior to the long prolongation of the second peduncular joint. Its length is only about half the length of this joint including the distal prolongation of the joint.

Antennae (Fig. 70 d). The six-jointed peduncle has four short proximal joints of about equal length. The fifth and sixth peduncular joints are long and increase slightly in width towards their distal ends. Flagellum, seven-jointed.

Mandibles. Molar tubercle slender. Palp short, three-jointed.

Maxillipeds. About as in *Pleurosignum magnum* VANHÖFFEN: The palp is narrow. Endite with two coupling-hooks.

First pair of pereopods (Fig. 70 e). Basipodite, ischium and merus subequal in width; the basipodite is about as long as the ischium and merus together. The ischium is about twice as long as the merus, which joint somewhat widens distally. The carpus and propodus are broader than the other joints. The carpus is trapezoidal in outline, and provided with three two-pointed setae at the tip. The propodus, which is about twice as broad as the basipodite and about as long as the ischial and meral joints together, is broadly oval and is provided with two submarginal short two-pointed setae close to its lower margin. The dactylus is one-half to two-thirds the length of the carpus; its dorsal claw is about one-third as long as the joint itself.

The other pereopods. About as in *Pleurosignum*. The dactylus is provided with one long dorsal and one short ventral claw. The dorsal claw is about half as long as the dactylus.

First pair of pleopods, male. As in *Pleurosignum elongatum*¹, except that the distal ends of the fused pleopods is slightly more narrowly rounded.

Uropods. Short, two-branched; the inner branch is minute.

Locality and Material.

St. 51. Falkland Islands, Port William, lat. 51° 40' S., long. 57° 42' W. 22 m. Sand. ²/₉, 1902. 3 small male specimens about 1 mm. in length.

Distribution. Falkland Islands (Sw. Ant. Exped.).

D. Group *Nannoniscini* HANSEN, 1916.

For diagnosis see HANSEN 1916, p. 83. In his diagnosis of this group HANSEN (1916) says as in regard to the mandibles: »The molar process tapers strongly to the narrow, obtuse, setiferous end, and is directed somewhat backwards». In this characteristic the southern genus *Austrofilius* HODGSON forms an exception. In *Austrofilius furcatus* HODGSON I always found the mandible as illustrated in Fig. 71 b, having the molar tubercle truncate. In the second known species of the genus, *Austrofilius serratus* VANHÖFFEN, the molar tubercle is of the same type, except that it tapers more markedly towards the end². HODGSON (1910), however, figures the mandible in *Austrofilius furcatus* as having a molar tubercle with an obtusely rounded end, thus conforming with HANSEN's diagnosis of the group. In his diagnosis of the group HANSEN (1916) moreover

¹ Cf. VANHÖFFEN (1914, Fig. 107 e).

² VANHÖFFEN, 1914, Fig. 83 c.

states that eyes are wanting. This is not the case in *Austrofilius*, in which genus both the known species have eyes, but in a very vestigial stage. HANSEN's definition of the group must, consequently, be revised in the two respects mentioned.

Genus *Austrofilius*, HODGSON, 1910.

HODGSON 1910, VANHÖFFEN 1914.

*Diagnosis*¹. Anterio-lateral angles of the head somewhat elongated in anterior direction. Front area with its anterio-lateral angles produced into one forward-directed point on each side. Eyes vestigial. All pereion segments marked off from each other by distinct sutures. Antennulae short consisting of about six joints. Antennae with distinct squama. Palp of maxilliped with first three joints expanded, second joint about half again as broad as the endite, third and fourth joints without lobes. First pairs of pereiopods ambulatory, with two claws.

Austrofilius furcatus HODGSON, 1910.

Text fig. 71 a—c.

Austrofilius furcatus. HODGSON, 1910, p. 51—52, Pl. VIII Figs. 2, 2 a, 2 b, 2 c, 2 d; VANHÖFFEN, 1914, p. 554—555, Figs. 81 a—d.

Supplementary Description.

Eyes. Vestigial, generally consisting of two ocelli; in one specimen the right eye had four ocelli.

Antennulae (Fig. 71 a)². Consisting of six joints.

Antennae. Third joint with a distinct, pointed, distally setiferous squama.

Mandibles (Fig. 71 b)³. Incisive part with five points. Lacinia (on the left mandible) with three points. Row of setae consisting of four setae on the left mandible, on the right mandible of seven. Molar tubercle slightly tapering towards the end, directed somewhat backwards, distal margin almost straight.

*Second pair of maxillae*⁴. Outer lappet of outer lobe with four apical setae and inner lappet of the same lobe with three apical setae.

Maxillipeds. As figured by HODGSON (1910)⁵, except that the lateral margin of the exopodite is evenly convex.

Pereiopods. All about equal, furnished with two subequal claws.

First and second pairs of pleopods, male. Exactly as figured by VANHÖFFEN (1914)⁶.

Operculum, female (Fig. 71 c). Small, subquadrate. Lateral margins somewhat convex; distal margin slightly concave in the middle; the lateral parts of the distal margin are provided with long setae and the concave part of distal margin is furnished with very short setae.

¹ Cf. HODGSON (1910, p. 51) and VANHÖFFEN (1914, p. 554).

² Cf. VANHÖFFEN (1914, Fig. 81 a).

³ Cf. HODGSON (1910, Pl. VIII, Fig. 2 a).

⁴ See HODGSON (1910, Pl. VIII, Fig. 2 c).

⁵ HODGSON (1910, Pl. VIII, Fig. 2 d).

⁶ VANHÖFFEN (1914, Figs. 81 b and c).

Localities and Material.

St. 6. Graham Region, S. W. of Snow Hill Island, lat. $64^{\circ} 36' S.$, long. $57^{\circ} 42' W.$ 125 m. Stones and gravel. $^{20}/_1$ 1902. Male specimen 2.4 mm. in length.

St. 33. South Georgia, Grytviken, lat. $54^{\circ} 22' S.$, long. $36^{\circ} 28' W.$ 22 m. Clay and algae. $^{20}/_5$ 1902. Damaged female specimen about 3 mm. long.

St. 51. Falkland Islands, Port William, lat. $51^{\circ} 40' S.$, long. $57^{\circ} 42' W.$ 22 m. Sand $^{21}/_8$ 1902. Damaged male specimen (head missing).

St. 64. Fuegian Archipelago, north beach of the Beagle Channel, between Ushuaia and Lapataia. 35 m. Shells and algae. $^{13}/_{10}$ 1902. Female specimen about 2 mm. in length.

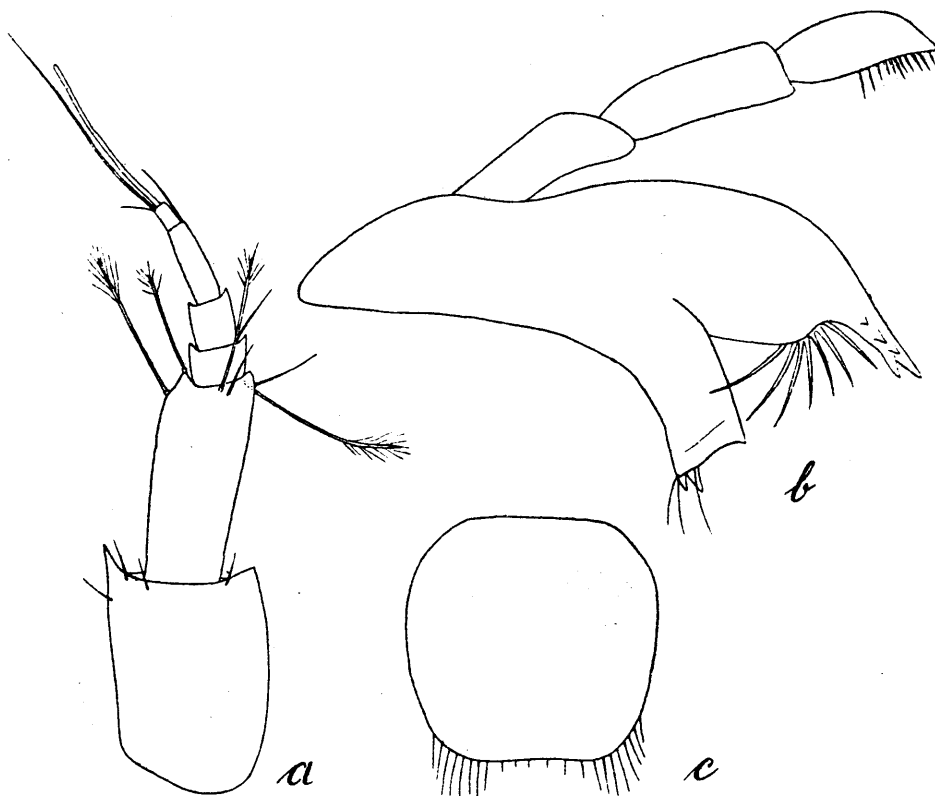


Fig. 71. *Austrofilius furcatus* HODGS. a. Left antennula, 235 \times . b. Right mandible, 240 \times . c. Female operculum, 120 \times .

Distribution. Fuegian Archipelago (Sw. Ant. Exped.), Falkland Islands (Sw. Ant. Exped.), South Georgia (Sw. Ant. Exped.), South Africa (VANHÖFFEN 1914), Kerguelen (VANHÖFFEN 1914), Graham Region (Sw. Ant. Exped.), Victoria Land (HODGSON 1910).

Not previously recorded from the Fuegian Archipelago, the Falkland Islands, South Georgia or the Graham Region.

E. Group **Desmosomatini** HANSEN, 1916.Genus **Desmosoma** G. O. SARS, 1863.

Desmosoma. MEINERT 1890, BONNIER 1896, G. O. SARS 1899, STEPHENSEN 1915, HANSEN 1916, MONOD 1926.
Eugerdia. MEINERT 1890, VANHÖFFEN 1914.

For diagnosis see G. O. SARS (1899, p. 124—125) and HANSEN (1916, p. 106—107). The majority of the species belonging to this well defined genus have been collected in the northern area; from Antarctic or subantarctic waters only one species has been described, *D. longimanum*, VANHÖFFEN, 1914. During the Belgian Antarctic Expedition 1897—1899 another species of *Desmosoma* was found, but as it was represented by one damaged specimen only, MONOD (1926) did not establish it as a new species. It is quite probable that the genus *Desmosoma* is common also in the southern areas. The Swedish Antarctic Expedition collected not less than four species, three of them from South Georgia and one from the Falkland Islands. Presumably none of these species is identical with MONOD's *Desmosoma* sp. MONOD gives only one figure, viz. of the uropods of his *Desmosoma* sp.; the lengths of the uropodal joints agree most closely with my species *D. modestum* and *D. brevipes*.

The classification of the genus *Desmosoma* has been dealt with most satisfactorily by HANSEN (1916). Very valuable characteristics, according to HANSEN are, to be found in the first and second pair of pereopods. As regards the setal armature, on these pereopods it should, however, be observed that there is some variation within one and the same species, as will be seen by comparing Figs. 72 c, d, and e, illustrating the first pereopod of different specimens of *D. australis* n. sp. The setae on the pereopods are either, single-pointed or double-pointed, a fact to which attention was drawn by BONNIER (1896) when describing his species *D. elongatum*.

***Desmosoma australis* n. sp.**

Text. figs. 72 a—n.

Diagnosis. First pereion segment about as long as the fourth segment and about half as long as the third (the fourth somewhat longer in the female). Second and third pereion segments subequal in length in the female, the second being somewhat longer than the third in the male. Fifth pereion segment in adult specimens increasing in width forwards. Sixth and seventh pereion segments of uniform width, and with their lateral margins straight. Abdomen with its greatest width proximally, decreasing in width towards the distal end. Last joint of the antennula longer than the penultimate joint. First pereopods narrow; carpal joint provided on its lower margin with three or four slender setae, of which two or three are situated at the lower distal angle; all the setae are shorter than half the length of the propodus. Second pereopod very strong; carpal joint increasing in width towards the distal end, approximately, twice as long as its greatest width; the lower row of setae on the carpus consists of eleven to thirteen setae, of which the two distal ones extend to about two-thirds the length of the propodus; upper row of setae on the carpus with twelve to seventeen setae. First pleopods in the male with distal margins of the rami convex. Female operculum broader than it is long, with distal margin concave and furnished with

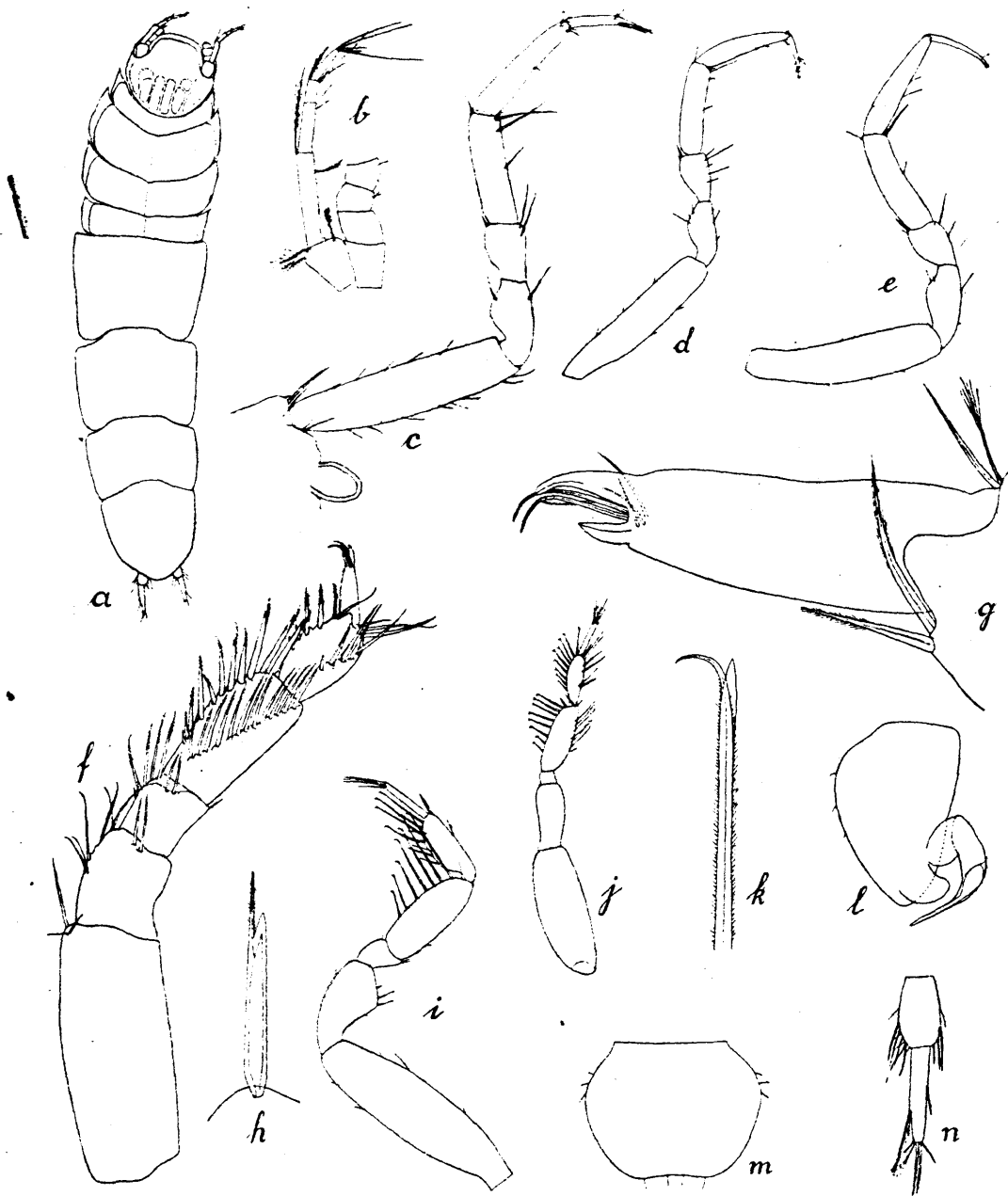


Fig. 72. *Desmosoma australis* n. sp. a. Male, from above, 20 ×. b. Antennula, and proximal joints of the antenna, female, 60 ×. c. Right first pereiopod, female, 60 ×. d. Right first pereiopod, female, 40 ×. e. First pereiopod, male, 60 ×. f. Right second pereiopod, female, 60 ×. g. Dactylus of the same pereiopod, 400 ×. h. Seta from the carpus of the second pereiopod, 180 ×. i. Left seventh pereiopod, female, 40 ×. j. Seventh pereiopod, adult female, 20 ×. k. Distal part of a seta from the carpus of the seventh pereiopod, 400 ×. l. Left second male pleopod, from the caudal side, 50 ×. m. Female operculum, 35 ×. n. Left uropod, 60 ×.

four setae at about equal distances from each other. Uropod about half as long as the abdomen, single-branched, its second joint about one-third as long again as the first.

Description.

Types. Male, length about 4.1 mm.; and female with young, length about 5.1 mm.

Head. Of the usual shape, posteriorly with a faint sculpturing (see Fig. 72 a).

Pereion. In the male (Fig. 72 a) the first and fourth segments are subequal in length. The second segment, which is the longest of the first four segments, is more than twice as long as the first and somewhat longer than the third. The fifth segment is the largest of all the segments; in adult specimens it increases in width towards the anterior margin, where it is not fully half as broad again as it is long; its antero-lateral angles are narrowly rounded.

In the female the first segment is about half as long as the second; the second and third are subequal in length; the fourth segment is almost half as long again as the first.

The proportion between the lengths of the first four pereion segments is: in the adult male 5: 12: 10: 6, in the adult female¹ 9: 18: 19: 13.

Coxal plates of medium size, anteriorly pointed and of about the same shape in males and females.

Abdomen. In the female with a small free segment anteriorly from the pleotelson. This segment is missing or at least very indistinct in the male. Pleotelson with its greatest width anteriorly.

Antennulae (Fig. 72 b). Consist of five joints. The first joint is the broadest², being about twice as broad as the second. It increases in width towards the distal end. The second joint is about twice as long as the third. The fifth joint is longer than the fourth.

The proportion between the lengths of the joints is, in a female 9: 14.5: 7.5: 3.5: 5.5.

Antennae. Broken. For the first four joints see Fig. 72 b.

Mandibles. Incisive part of the left mandible with two, that of the right with three points. Lacinia (left mandible) with two points. Setal row on the left mandible with ten, on the right mandible with twelve setae of the usual kind; between the setae in the row there are sparse, very slender »hairs». Palp three-jointed.

First and second pairs of maxillae and maxillipeds. Normal.

First pair of pereiopods (Figs. 72 c, d, e). Slender, not expanded. The carpus is about three and a half times as long as it is broad. Its lower distal angle is usually furnished with one long and one short seta. The long seta does not extend to half the length of the propodus. Sometimes there are three setae at the lower distal angle. Also the setae on the other joints show some variation, see the figures. The propodus is somewhat longer than the carpus and is provided with a few short setae.

Second pair of pereiopods (Fig. 72 f). Broad and strong, the strongest of the four anterior pairs of pereiopods. The carpus increases somewhat in width towards its distal end and is furnished with two longitudinal rows of stout setae, the lower row consisting of 11—13, the upper of 12—17 setae. The three distal setae in the lower row are the

¹ Female specimen about 5.1 mm. in length.

² Thus in this species the »peduncle» generally speaking is single-jointed. HANSEN (1916) reckons three joints to the peduncle in the genus *Desmosoma*. I have found it more natural to include into the peduncle of the Parasellids the more differentiated proximal joints (normally four in number) which lack sensory filaments of the simple non-ciliated type.

longest. Their length is about two-thirds the length of the propodus. There are two kinds of setae, single-pointed and two-pointed. The first kind have their slender distal parts equipped with delicate «hairs». One seta of the latter kind is shown in Fig. 72 h¹. In the lower row of setae the six proximal ones are of the single-pointed type, the seventh is two-pointed, but the eighth is again single-pointed. The other distal setae in this row are two-pointed. In the upper row the setae consist only of the single-pointed kind. The propodus also carries two longitudinal rows of setae; in the lower row there are six, in the upper about eight setae, all single-pointed. For the dactylus see Fig. 72 g.

Third pair of pereopods. About the same as the second, but not quite so strong.

Seventh pair of pereopods (Figs. 72 i and j). The proportion between the lengths of the joints is 56: 25.5 : 7: 27: 19: 13. The setae on the lower margin of the carpus and the propodus are two-pointed. Fig. 72 k shows the distal part of such a two-pointed seta.

First pair of pleopods, male. The distal margins of the rami are convex and setiferous.

Second pair of pleopods, male. See fig. 72 l.

Operculum, female (Fig. 72 m). Distal margin somewhat concave and furnished with four setae at about equal distances from each other.

Third, fourth and fifth pairs of pereopods. Normal, and of the same shape in males and females.

Uropods (Fig. 72 n). A little less than half as long as the abdomen. Second joint about one-third as long again as the first, distally furnished with three setae and two sensory filaments. The proportion between the lengths of the joints in the female type specimen is about 12: 15, in another specimen (see Fig. 72 n) 13: 18.

Remarks. *D. australis* is similar to the northern species *D. lineare* G. O. SARS, which it resembles in its first and second pereopods, the first being slender and furnished with only a few setae on the carpus, in having single-branched uropods, and in the absence of projections on the pleotelson anteriorly to the uropods. It differs from the species mentioned especially in the different length of the first four pereion segments, in the setal armature on the first pereopod, in the shape of the female operculum and the first pleopods of the male, and in having longer proximal joints of the uropods.

Localities and Material.

St. 22. South Georgia, off May Bay, lat. 54° 22' S., long. 36° 28' W. 75 m. Bottom temp. + 1.5°. Clay with some algae. 14/8 1902. Fragments of specimens.

St. 23. South Georgia, off the mouth of Morain Bay, lat. 54° 23' S., long. 36° 26' W. 64—74 m. Bottom temp. + 1.65°. Gray clay with gravel and stones. 18/8 1902. Fragments of specimens.

St. 30. South Georgia, Morain Bay, lat. 54° 24' S., long. 36° 26' W. 125 m. Bottom temp. — 0.25°. Clay with sparse stones. 28/8 1902. 2 specimens, female with young (type) about 5.1 mm. in length, and male about 4.1 mm. in length.

South Georgia, Morain Bay. 148 m. Bottom temp. — 0.35°. 15/8 1902. Male (type), 4.1 mm. in length.

Distribution. South Georgia (Sw. Ant. Exped).

Desmosoma brevipes n. sp.

Pl. II Fig. 21; Text. figs. 73 a—i.

Diagnosis. First pereion segment about half as long as the fourth and about one-third as long as the third. Second pereion segment the longest of the first four pereion seg-

¹ Cf. also BONNIER, 1896, Pl. 34, Fig. 3 m.

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ments and one-third to one-fourth as long again as the third. The fifth segment of the pereion is widest posteriorly and slightly decreases in width towards the anterior margin. Abdomen with greatest width near the anterior margin. Last joint of the antennula shorter than the penultimate joint. First pair of pereopods slender, with a few setae on the lower margin of the carpus, the seta at the lower distal angle being the longest but not extending to half the length of the lower margin of the propodus. Second pair of pereopods broad and strong; the carpus with its greatest width near the distal margin; not fully twice as long

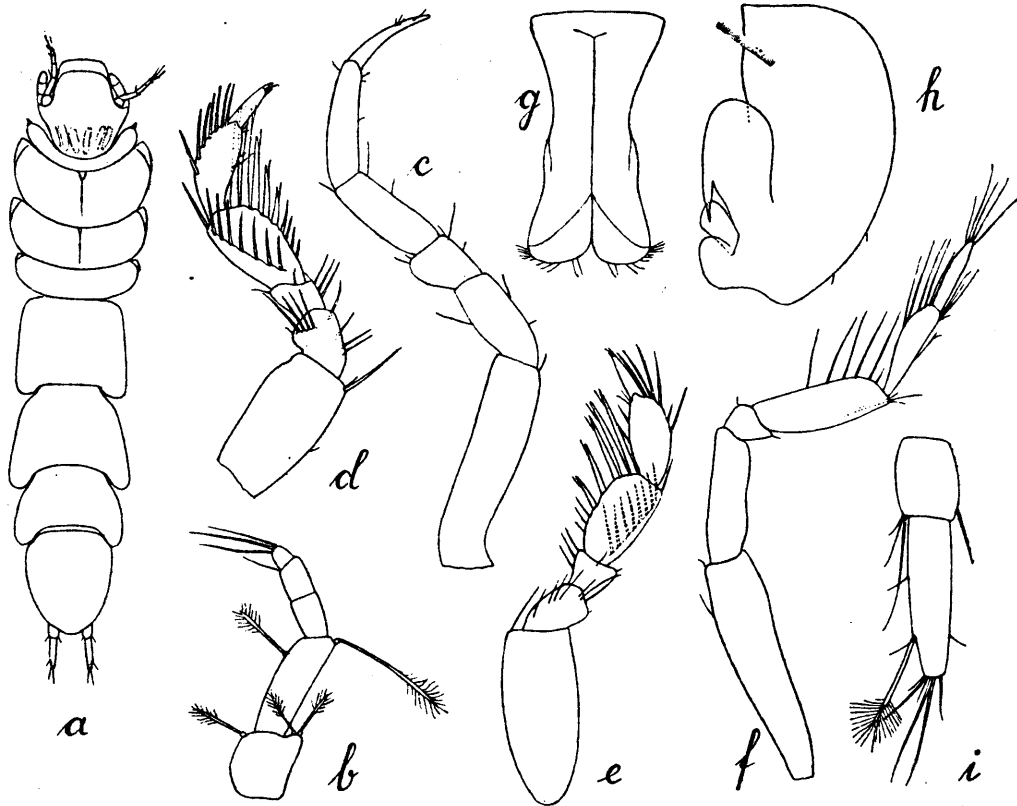


Fig. 73. *Desmosoma brevipes* n. sp. a. Female from, above, 35 \times . b. Left antennula, 160 \times . c. Right first pereopod, adult male, 115 \times . d. Right second pereopod, seen from the caudal side, female, 80 \times . e. Right second pereopod, seen from the rostral side, female, 80 \times . f. Seventh pereopod, 95 \times . g. First male pleopods, 160 \times . h. Right second male pleopod, from the caudal side, 240 \times . i. Left uropod, female, 235 \times .

as its greatest width and furnished with two longitudinal rows of setae with eight or nine setae in each row, the two distal setae in the lower row extend to about half the length of the dactylus. First pleopods of the male with distal margins of the rami evenly convex. Female operculum with the distal margin slightly concave and furnished with four setae. Uropods single-branched, with second joint about twice as long as the first.

Description.

Types. Adult male, and female with an empty marsupium, both about 2 mm. in length.

Head (Fig. 73 a). Of the usual shape in the genus; posteriorly with six faint oblong elevations.

Pereion (Fig. 73 a). First segment short, about half as long as the fourth. The second segment is the longest of the first four pereion segments and about twice as long as the fourth. The third segment is about three-fourths as long as the second. The fifth pereion segment decreases slightly in width in anterior direction.

The coxal plates on the first four segments are small and triangular and have the same shape in males and females.

Abdomen (Fig. 73 a). Anteriorly with a faintly indicated short free segment. The shape of the pleotelson is slightly different in males and females. In the first sex its posterior part between the uropods is slightly more projecting.

Antennulae (Fig. 73 b). Normal and consisting of five joints. The first joint is the broadest; it increases slightly in width towards the distal end. The second joint is more than half as long again as the first and about as long as the last three joints together. Of these the third and fourth are subequal in length and about twice as long as the fifth. The proportion between the lengths of the joints is 15: 25: 10: 9: 5.

Antennae. Normal. The peduncle consists of six joints, of which the first four are short and of about equal length; together they are subequal in length to the fourth joint or somewhat shorter. The fifth joint is slightly longer than the fourth. The flagellum consists of nine joints (in a female about 2.1 mm. in length and a male about 2 mm. in length). In the male it is, as usual in *Desmosoma*, stronger and broader than in the female.

First pair of pereopods (Fig. 73 c). Very similar to those in *D. australis* but comparatively shorter and broader. The carpus is about two and a half times as long as it is broad; its lower distal angle is usually furnished with one long and one short seta (on the figured specimen only one seta). The propodal joint is slightly longer than the carpus. The proportion between the lengths of the joints is 17: 7: 5: 7.5: 9.5: 6.5.

Second pair of pereopods (Figs. 73 d and e). They are the broadest of all the pereopods. The carpus increases on width towards the distal end and carries two longitudinal rows of setae with eight setae in the lower and eight or nine setae in the upper row. In the lower row the three or four proximal setae are single-pointed, the others two-pointed. The two most distally situated setae extend to half the length of the dactylus. In the upper row there are only single-pointed setae. The propodal joint has an upper longitudinal row of seven setae; on the lower margin there are four setae, of which two at the lower distal angle.

Third pair of pereopods. Much as the second pair, but somewhat more slender.

Seventh pair of pereopods (Fig. 73 f). The proportion between the lengths of the joints is 23: 11: 3: 11.5: 9: 7.

First pair of pleopods, male (Fig. 73 g). Distal margin of the rami convex and furnished with setae.

Second pair of pleopods, male. See Fig. 73 h.

Operculum, female. Of the same shape as in *D. australis*; distal margin slightly concave and furnished with four setae; lateral margins smooth.

Uropods (Fig. 73 i). Single-branched, as in *D. australis*, but the second joint is longer, being twice as long as the first.

Remarks. *D. brevipes* comes very close to *D. australis*, but is a smaller species. It differs from *D. australis* especially in its smaller size, in having another shape of the fifth

pereion segment, which decreases in width in anterior direction, in having a relatively greater width of the carpus of the first and second pereopods, in having the second joint of the uropods longer, and the terminal joint of the antennulae shorter.

Localities and Material.

St. 23. South Georgia, off the mouth of Morain Bay, lat. $54^{\circ} 23' S.$, long. $36^{\circ} 26' W.$ 64—74 m. Bottom temp. $+ 1.65^{\circ}$. Gray clay with gravel and stones. $18/6$, 1902. Female with empty marsupium (type), 2 m. in length.

St. 24. South Georgia, off the mouth of Grytviken, lat. $54^{\circ} 22' S.$, long. $36^{\circ} 27' W.$ 95 m. Clay. $20/6$, 1902. Female with young; length about 2.2 mm.

St. 30. South Georgia, Morain Bay, lat. $54^{\circ} 24' S.$, long. $36^{\circ} 26' W.$ 125 m. Bottom temp. $- 0.25^{\circ}$. Clay with sparse stones. $26/6$, 1902. 9 specimens. Length of largest specimen about 2.1 mm.; a male (type) and a female with embryos had the length of 2 mm.

South Georgia, Morain Bay. 148 m. Bottom temp. $- 0.35^{\circ}$. $15/6$, 1902. 7 female specimens. Length of largest specimen 2.4 mm. (ovigerous female).

Distribution. South Georgia (Sw. Ant. Exped.).

***Desmosoma modestum* n. sp.**

Text. figs. 74 a—h.

Diagnosis. First pereion segment about half as long as the fourth, which is slightly shorter than the third. Second pereion segment slightly longer than the third. Fifth pereion segment with its broadest part near the anterior margin and thence decreasing somewhat in width posteriorly. Last three joints of the antennula subequal in length. First pair of pereopods about as strong as the second; lower margin of carpal joint with four long setae at about equal distances from each other; the lower distal angle of the propodus with two short setae. Second pair of pereopods with carpus and propodus about equal in width and with carpal joint $2-2\frac{1}{2}$ times as long as it is broad; its two rows of setae consist of nine setae in the lower row, eleven in the upper, of which the two distal ones in the lower row are the longest. Female operculum broader than it is long, distal margin slightly concave in the middle and furnished with about five setae. Uropods about as long as one-third the length of the abdomen, single-branched, with second joint about twice as long as the first.

Description.

Type. Female with an empty marsupium, 2.2 mm. in length.

Head. Of the usual shape, with faint sculpturing on its hinder part.

Pereion. Decreasing in width in females without a marsupium continuously backwards. In females with a marsupium (Fig. 74 a) the second, third and fourth segments are slightly broader than the first. The first segment is the shortest, being about as long as the fourth segment. The third segment is somewhat longer than the fourth. The second segment is the longest of the first four segments, but is only slightly longer than the third. The long fifth segment has its broadest part very near the anterior margin and decreases from there in width slightly in a posterior direction. Sixth and seventh segments of the usual shape; lateral margins slightly convex.

The coxal plates on the first four segments are triangular, pointed on the first two segments, and are slightly more rounded anteriorly on the following two segments.

Abdomen. Comparatively narrower than in *D. australis* and *brevipes*, being one-half to one-third as long again as the sixth pereion segment. The proportion between the length and the breadth of the abdomen is about as 11: 8. Anteriorly it has an indication of a faint first segment.

The pleotelson is broadest anteriorly, its lateral margins are slightly convex; distal margin between the uropods evenly convex.

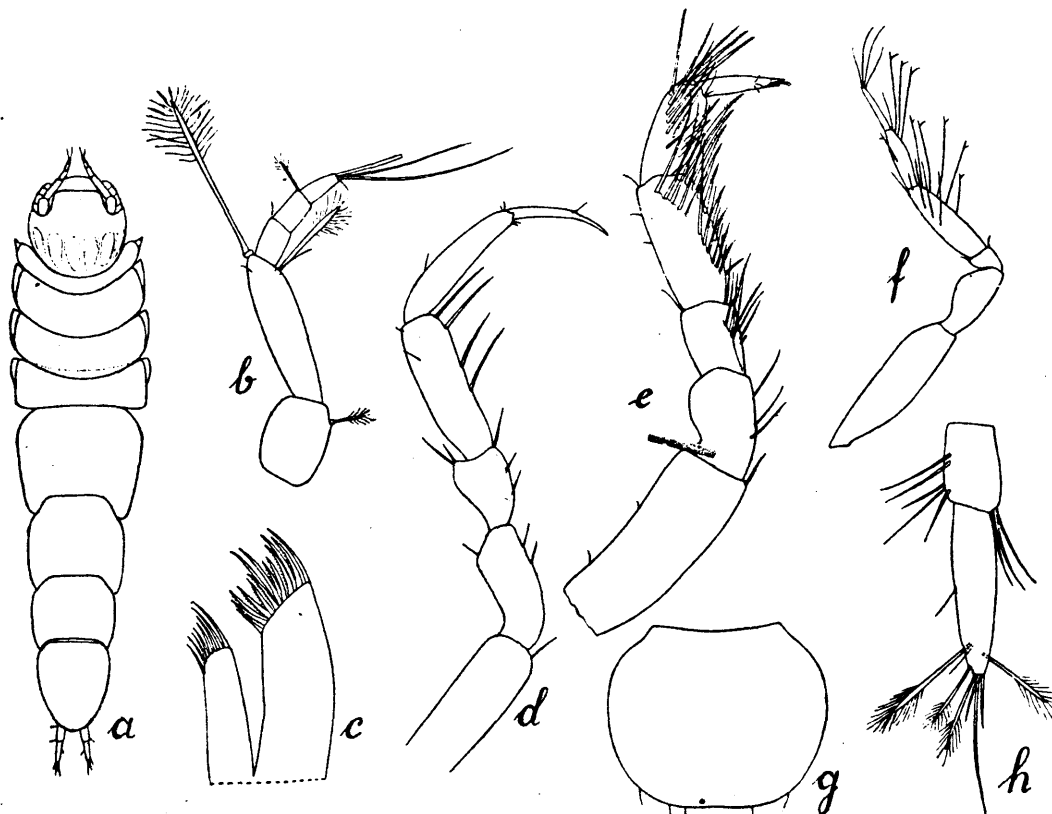


Fig. 74. *Desmosoma modestum* n. sp. a. Female with a marsupium, 27 ×. b. Antennula, female, 230 ×. c. First maxilla (except its proximal part), female, 230 ×. d. Right first pereopod (except the proximal end of the basipodite), female, 140 ×. e. Right second pereopod, female, 95 ×. f. Seventh pereopod, female, 95 ×. g. Female operculum, 117 ×. h. Right uropod, from below, female, 230 ×.

Antennulae (Fig. 74 b). The proportion between the lengths of the joints is 12: 20: 5: 5: 5. The second joint is thus almost twice as long as the first, and the last three joints are subequal in length.

Antennae. Normal. First four joints short. The sixth joints is one-third as long again as the fifth but more slender. The flagellum is about one-third as long again as the last peduncular joint and, in a specimen measuring 1.6 mm. in length, consists of eight joints; but the suture between the first two joints is extremely faint.

First pair of maxillae. See Fig. 74 c.

First pair of pereopods (Fig. 74 d). Almost as strong as the second pair. The carpus is about three times as long as it is broad and slightly longer than the propodus.

A very characteristic feature of the species is that the carpus is furnished on its lower margin with four long setae. These setae are single-pointed and equipped with very fine »hairs»¹, the length of the setae exceeds half the length of the propodus. The propodus is provided with a few setae; two short ones are situated at the lower distal angle. For details see figure.

Second pair of pereopods (Fig. 74 e). Carpal joint of uniform width, $2-2\frac{1}{2}$ times as long as it is broad. In the lower row there are nine setae, the length of the most distal one exceeding that of the propodus. In the upper row there are eleven setae. Propodus with a lower row of about five setae (of which one seta is situated at the lower distal angle) and with an upper row of eight setae.

Third pair of pereopods. About as the second.

Seventh pair of pereopods. See Fig. 74 f.

Operculum, female (Fig. 74 g). Distal margin slightly concave in the middle, and furnished with about five setae.

Uropods (Fig. 74 h). Single-branched; second joint about twice as long as the first.

Remarks. The most characteristic feature of *D. modestum* is the structure of the first pair of pereopods, which are almost as strong as the second pair and have the lower margin of the carpus furnished with four long setae. In these feature *D. modestum* differs very sharply from *D. australis* and *brevipes*, which two species it otherwise somewhat resembles. The proportion of the thoracic segments, the shape of abdomen etc., are also characteristic. The male of the species is unknown.

Localities and Material.

St. 18. South Georgia, mouth of Westfjord, Cumberland Bay, lat. $54^{\circ} 15' S.$, long. $36^{\circ} 25' W.$ 250 m. Bottom temp. $+ 1.2^{\circ}$. Soft clay. $\frac{22}{4}$ 1902. 4 female specimens, one of them broken. Length of largest specimen 2 mm.

St. 30. South Georgia, Morain Bay, lat. $54^{\circ} 24' S.$, long. $36^{\circ} 26' W.$ 125 m. Bottom temp. $- 0.25^{\circ}$. Clay with sparse stones. $\frac{28}{5}$ 1902. 9 females, partly broken. Length of largest specimen 2.2 mm (type specimen).

Distribution. South Georgia (Sw. Ant. Exped.).

***Desmosoma falklandicum* n. sp.**

Text. figs. 75 a—f.

Diagnosis. First three pereion segments subequal in length, the fourth shorter and narrower than the third. Fifth pereion segment sub-rectangular with lateral margins concave. Abdomen oblong, being broadest about across the middle and with sparse short setae on the lateral sides. Last antennular joint about one-third as long as the penultimate joint. First pair of pereopods much stronger than second pair; carpal joint very much expanded, only about one-third as long again as it is broad, its lower margin with eight strong setae; the propodus is shorter than the carpus and only somewhat more than half as broad as this joint. Second pair of pereopods with carpus about three times as long as it is broad and provided with a lower setal row consisting of ten setae and an upper row with sparse (two) setae. Female operculum sub-circular in outline, its lateral and distal margins furnished with sparse setae.

¹ Only visible on high magnification.

Description.

Type. Female with semi-developed oostegits (Fig. 75 a), length 2.5 mm.

Head (Fig. 75 a). Of the shape usual in the genus, about as long as the first plus two-thirds the length of the second pereion segment.

Pereion (Fig. 75 a). Greatest width across the first segment; second segment almost as broad as the first, the third somewhat narrower than the second; fourth segment considerably narrower than the third. The first three segments are subequal in length. The fourth segment is the shortest of all the pereion segments. The fifth segment is subrec-

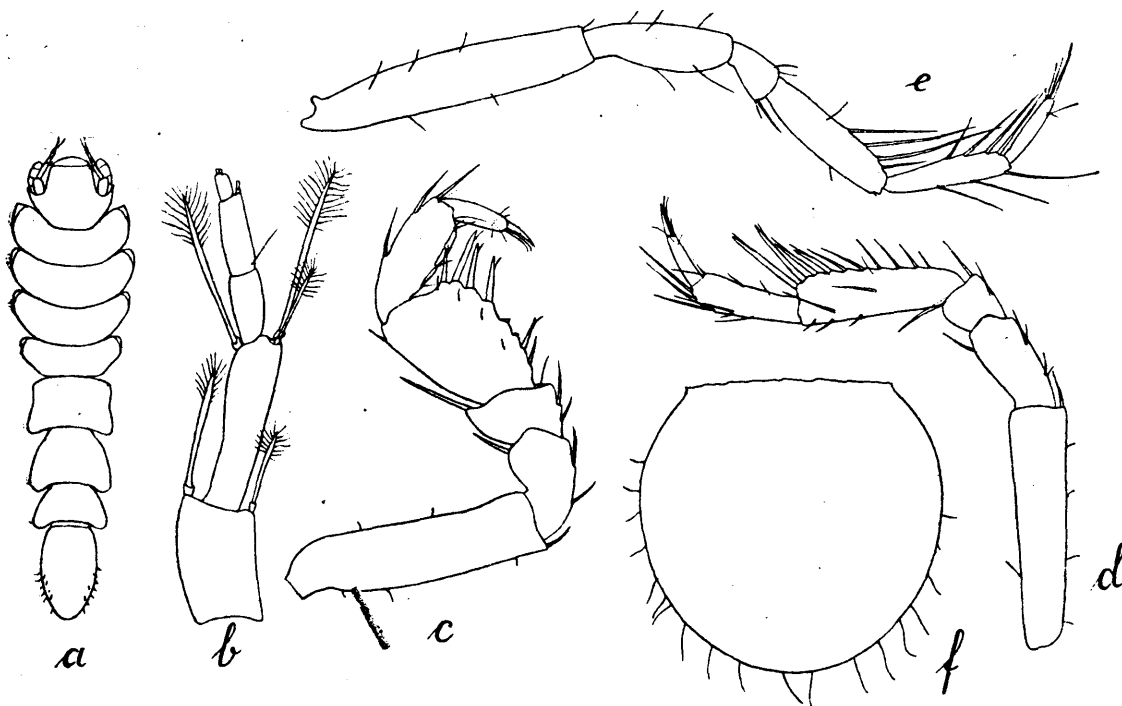


Fig. 75. *Desmosoma falklandicum* n. sp. a. Female, from above, 24 ×. b. Right antennula, female, 230 ×. c. Right first pereopod, female, 95 ×. d. Right second pereopod, female, 95 ×. e. Right seventh pereopod, female, 95 ×. f. Female operculum, 125 ×.

tangular and has a slightly convex anterior margin; its posterior margin is slightly concave; its lateral margins are concave; its antero-lateral and postero-lateral angles are rounded. The sixth and seventh pereion segments are of the shape usual in the genus.

Coxal plates small, on the first segment pointed, on the second to third segments rounded anteriorly.

Abdomen (Fig. 75 a). About as long as the seventh and sixth pereion segments together. Anteriorly there is a distinct free segment. Pleotelson oblong, being broadest about across the middle, somewhat more than half as long again as it is broad; its lateral sides provided with a few short setae.

Antennulae (Fig. 75 b). The proportion between the lengths of the joints is 17: 24: 10: 11: 4.

Antennae. Broken; only the first four short joints remain.

First pair of pereiopods (Fig. 75 c). They are the strongest of all the pereiopods and very characteristic. The carpus is very broad and expanded, sub-oval, about one-fifth as long again as the propodus. It increases somewhat in width towards its distal end. The proportion between its length and its greatest width is 12:9 and, consequently its greatest width is three-fourths of its length. The distal margin in its lower part is free to about half its length, the proximal margin of the propodus being in contact only with the upper half of the distal margin of the carpus. The lower margin of the carpus is furnished with a longitudinal row of eight stout setae, most of them two-pointed. Submarginally at the lower margin there are four short, hair-like setae. The propodus is only slightly more than half as wide the carpus, the proportion between the width of the propodus and that of the carpus being 9:16. Its upper margin is provided with three long single-pointed setae, one of them situated at the upper distal angle. The marginal part of the lower side of the propodus is very thin; it is furnished with four setae. Dactylus provided at the tip with a distinct claw and two setae.

Second pair of pereiopods (Fig. 75 d). More slender than the first pair. The basipodite and the carpus increase slightly in width towards their distal ends. The carpus is about three times as long as it is broad and approximately one-third as long again as the propodus, the proportion between its length and its width being 28:9; the proportion between the lengths of the carpus and the propodus is 28:20. The lower margin of the carpus is provided with 10 stout setae; upper setal row with sparse setae (two). The propodus is provided with four setae on its lower margin; two of which are situated at its lower distal angle. The upper row of setae consists of five long and some short setae. For other details see the figure.

Third pair of pereiopods. About as the second. Carpus with a lower row of 9 setae and an upper row of 4 setae.

Seventh pair of pereiopods. See fig. 75 e.

Operculum, female (Fig. 75 f). Almost circular; distal and lateral margins sparsely furnished with setae.

Uropods. Broken.

Remarks. *Desmosoma falklandicum* is especially characterized by its strong first pereiopods, which have the carpal joint expanded and furnished with stout setae. In contradistinction from the three above described species of *Desmosoma*, it thus belongs to Section II in HANSEN's analytical table of the genus¹. *Desmosoma falklandicum* is easily recognized by its characteristic first pereiopods and the shape of its pereion, the first three segments of which are long, the third shorter and narrower, whilst the lateral margins of the fifth segment are concave. The shape of the abdomen is also characteristic.

Only a single specimen of this characteristic species was obtained by the Swedish Antarctic Expedition.

Locality and Material.

St. 40. Falkland Islands, Berkeley Sound, lat. 51° 33' S., long. 58° 0' W. 16 m. Bottom temp. + 2.75°. Gravel and shells with algae. 19/1, 1902. One female specimen, about 2.5 mm. in length (type).

Distribution. Falkland Islands (Sw. Ant. Exped.).

¹ HANSEN (1916, p. 107).

F. Group *Ilyarachnini* HANSEN, 1916.

For diagnosis see HANSEN (1916, p. 120—121).

Genus *Ilyarachna* G. O. SARS, 1863.

G. O. SARS, 1899, HANSEN 1916, BARNARD 1920.

For diagnosis see G. O. SARS (1899, p. 134—135) and HANSEN (1916, p. 121—122).

Ilyarachna antarctica VANHÖFFEN, 1914.

Text. figs. 76 a—d.

Ilyarachna antarctica. VANHÖFFEN, 1914 p. 591—592, Figs. 124 a and b.

Supplementary Description.

Antennulae (Fig. 76 a). First joint broad, its outer distal part triangularly produced and furnished with a ciliated seta at the tip; its lateral margin furnished with a row of two-pointed setae of the usual type; inner margin devoid of setae, except one short seta at the inner distal angle. Second joint much smaller than the first. The third joint

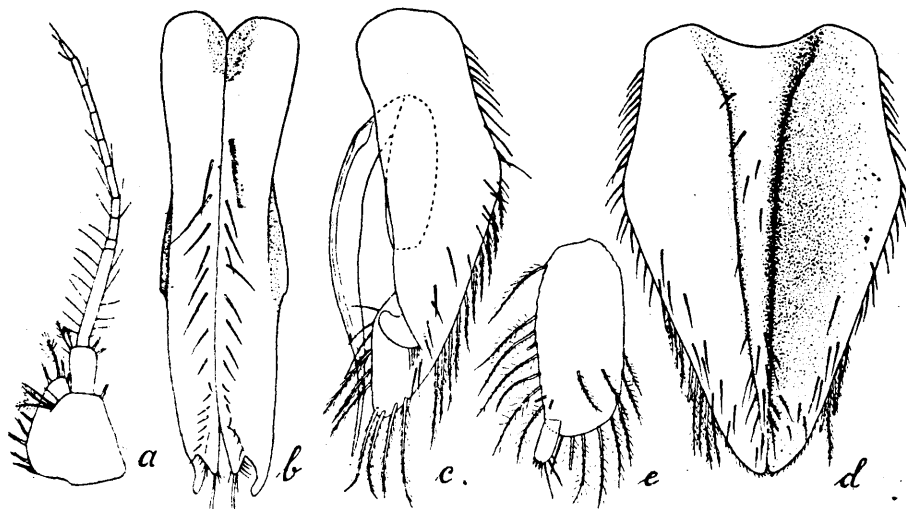


Fig. 76. *Ilyarachna antarctica* VANHÖFF. a. Left antennula, ovigerous female, 25 ×. b. First male pleopods 70 ×. c. Left second male pleopod, from the rostral side, 70 ×. d. Female operculum, 50 ×. e. Uropod, 70 ×.

is very long and narrow, whilst the fourth is minute. The remaining part of the antennula is composed of eight narrow joints in the female, nine or ten in the male.

Antennae. Broken in most of the specimens, so that only the first four short joints remain. In one ovigerous female, however, almost the whole of one antenna remains, the flagellum having been broken off only at the tip. In this specimen, in spite of the broken tip, the antenna attains a length of about three times the body length. The

squama on the third joint is distinct but small. The fifth peduncular joint is provided with sparse setae; the sixth joint is almost smooth.

Mandibles. Of the usual type in the genus. Mandible corpus provided on its anterior side with a broad somewhat bright-golden carina. The lacinia is distinctly developed on the left mandible. The setal row consists of seven setae, on the left mandible. Molar tubercle tapering conically towards the end, which is furnished with three setae. Palp long and narrow, consisting of three joints, of which the second is the longest; the last joint is provided with two apical setae.

Maxillipeds. Of the usual type in the genus, having the second and third joints of the palp very broad. The epipodite is obtusely pointed distally. Coupling-hooks, five on the right, six on the left maxilliped.

First pair of pleopods, male (Fig. 76 b). Almost of uniform width. The anterior surface of the fused sympodites is provided with two longitudinal rows of setae, one on either side of the middle line. Both the digitiform exopodites and the subtriangular endopodites have coalesced with the sympodites, so that the sutures have been effaced.

Second pair of pleopods, male. See Fig. 76 c.

Operculum, female (Fig. 76 d). Provided with a sharp longitudinal carina along the middle line.

Uropods (Fig. 76 e). Exopodite completely wanting.

Locality and Material.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54° 11' S., long. 36° 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. 8/1902. 5 specimens (2 small male specimens and 3 adult females, two of them with eggs). Length of largest specimen 5.3 mm. (female).

Distribution. South Georgia (Sw. Ant. Exped.), Gauss Station (VANHÖFFEN 1914).

The species has not previously been recorded from South Georgia.

Genus *Echinozone* G. O. SARS, 1899.

For diagnosis see G. O. SARS (1899, p. 139).

Of this genus, which is closely allied to *Ilyarachna* G. O. SARS, only five species have been described; two of them, *E. coronata* G. O. SARS and *E. arctica* HANSEN, are from the northern area, whilst three species *E. quadrispinosa* (BEDDARD), *spinosa* HODGSON and *magnifica* VANHÖFFEN are Antarctic or subantarctic. *E. spinosa* HODGSON will be shown below to be synonymous with *E. quadrispinosa* (BEDDARD). The known southern forms of *Echinozone* are thus reduced to only two species.

Echinozone quadrispinosa BEDDARD, 1886.

Text figs. 77 a—l.

Ilyarachna quadrispinosa. BEDDARD, 1886, p. 76—78, Pl. XII, Figs. 2—6.

Echinozone spinosa. HODGSON, 1902, p. 255—256, Pl. XXXVIII and XXXIX, Figs. 1—10; MONOD, 1926, p. 23—25, Figs. 16, 17 a—f, 18.

Supplementary Description.

Antennulae. Extending to about half the length of the fourth peduncular joint of the antennae. First joint larger and broader than the others; its outer distal angle is

triangularly produced and provided with a plumose seta at the tip. Second joint only about one-third as broad as the first, inserted at the inner part of the distal margin of the first joint. The remaining part of the antennula consists of about 24 joints, the first of which is very long, being about one-fourth the length of the others taken together.

Antennae (Figs. 77 a and b). First four peduncular joints very short, first and second laterally (posteriorly) produced and obtusely pointed, the third with a distinct, distally setiferous squama. Ventrally the distal margins of the second and third joints are each furnished with a row of two-pointed setae.

Mandibles (Fig. 77 c)¹. Mandible corpus with a broad slightly bright-golden carina on its anterior side (not to be seen in the figure, which shows the posterior surface of the mandible). None of the mandibles have any lacinia (as is the case also in *Echinozone arctica* HANSEN)², but the ventral seta in the setal row is stronger in the left than in the right mandible and is probably homologous with the lacinia³.

Maxillipeds. Endite with five coupling-hooks, distally with two submarginal rows of setae. The dorsal row consists of five broad setae, each with two rows of sub-branches⁴. The ventral row consists of a large number of slender setae.

Pereiopods. First pereiopod see Fig. 77 d. On the fifth and sixth pereiopods the basipodite is furnished with single-pointed setae without sub-branches, while the ischium is provided on its upper margin with a row of plumose setae, on its lower margin with branchless setae. The carpus and the propodus are furnished both on the upper and lower margins with plumose setae. I did not find a spine on the dorsal margin of the ischial joint, a feature which BEDDARD (1886) states to be characteristic of the species⁵; the spine is not figured by HODGSON (1902). On the seventh pereiopod the setal armature is similar to that of the fifth and sixth, except that the setae fringing the margins of the joints are more sparse. The small ischial joint of the last three pairs of pereiopods is furnished only with branchless setae.

First pair of pleopods, male (Figs. 77 e and f). They are inserted in the first abdominal segment. The fused sympodites are provided with a sharp longitudinal carina along the median line on the rostral side, gradually vanishing somewhat distally from the middle. The carina is furnished with one row of long setae, situated almost alternating with each other on either side of the middle line. This row has presumably been formed by the coalescence of two rows, as on the distal half of the sympodites it gradually divides into two distinct rows, where the setae gradually diminish in size. The exopodites and endopodites are fused with the sympodites. The exopodites are distally hook-shaped.

Second pair of pleopods, male (Fig. 77 g). Inserted in the pleotelson. The sympodite has the distal half of its lateral margin furnished with a row of plumose setae, which continues on the distal tip, where the setae are situated submarginally on the anterior side. The distal half of the anterior surface of the sympodite is moreover provided with long scattered branchless setae. The distal margin itself is covered with fine »hairs» lacking a setal canal. The rami (see the figure) are both short.

¹ Cf. also HODGSON (1902, Pl. XXXIX, Fig. 8) and MONOD (1926, Fig. 18).

² See HANSEN, 1916, p. 129.

³ Cf. MONOD, 1926, Fig. 18.

⁴ The setae have the same construction as those from the same place in *Ianira (Iathrippa) longicauda* (CHILTON). See Fig. 40 e.

⁵ See BEDDARD, 1886, Pl. XII Fig. 6.

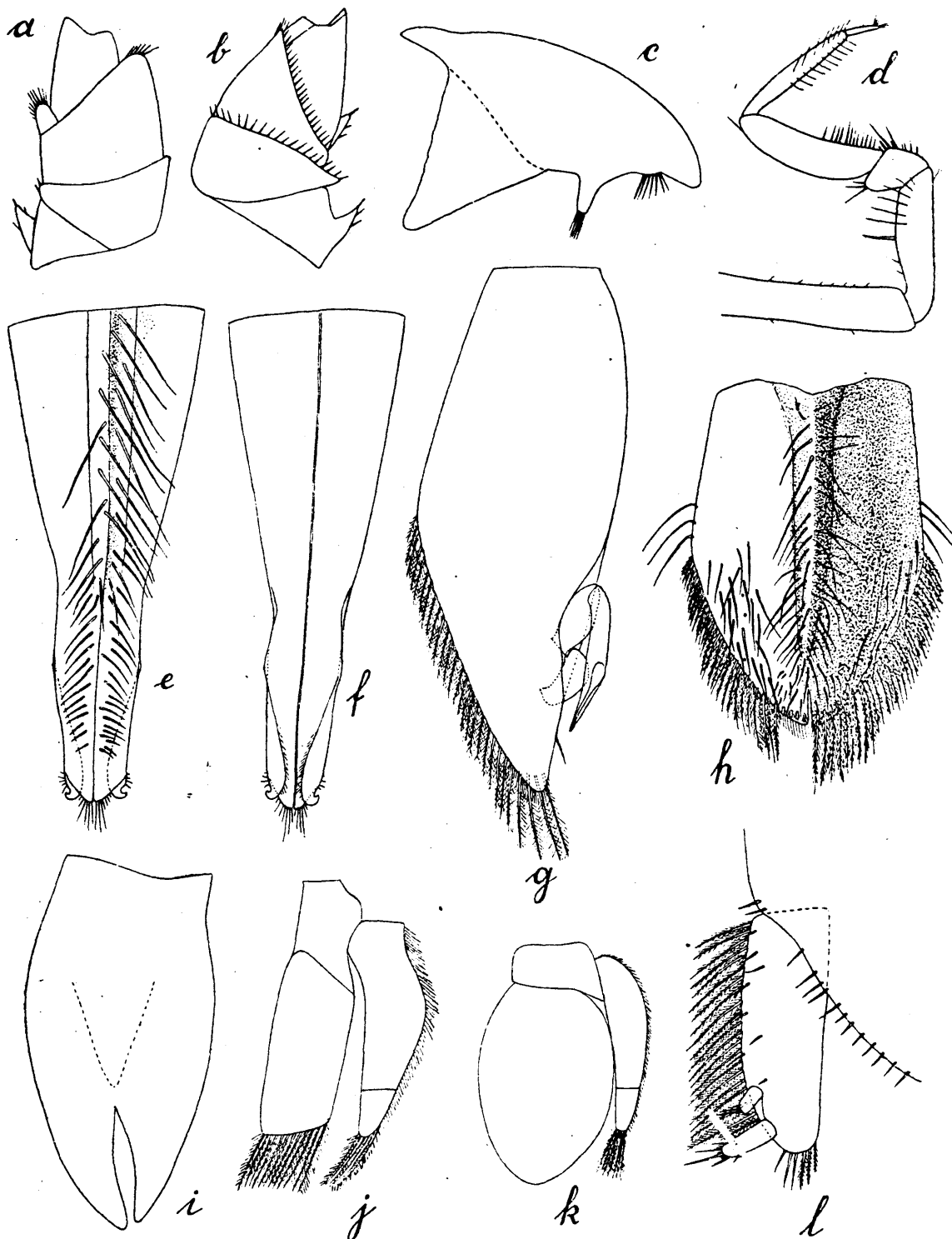


Fig. 77. *Echinozone quadrispinosa* (BEDD.). a. Proximal joints of the left antenna, from above, 18 ×. b. The same from below, 18 ×. c. Right mandible, from the posterior side, male, 50 ×. d. First pereiopod, adult female, 18 ×. e. First male pleopods, seen from the rostral side, 80 ×. f. First male pleopods, seen from the caudal side, 80 ×. g. Left second male pleopod, from the caudal side, 80 ×. h. Female operculum, 25 ×. i. Female operculum from immature specimen taken out of the marsupium, 240 ×. j. Third pleopod, 30 ×. k. Fourth pleopod, 30 ×. l. Left uropod, seen from the ventral side, female, 80 ×.

Operculum, female (Fig. 77 h). Inserted in the pleotelson. It is strongly vaulted. Lateral margin in its proximal half straight, in its distal half convex. Distal margin at the tip with a short but distinct incision. The operculum is provided along the median line of its anterior surface with a sharp longitudinal carina furnished with long setae, which proximally are situated approximately alternating with each other on the right and left side of the middle line, but distally are arranged in two distinct longitudinal rows. The longitudinal carina narrows towards its distal end and is marked off by grooves; also its distal end is abruptly delimited from the rest of the operculum. The distal halves of the lateral margins are furnished with rows of plumose setae, increasing in length towards the distal end and continuing on the distal tips (exactly as in the second male pleopods) with some submarginal setae on the anterior side; the distal margin itself is furnished with fine »hairs».

In young individuals taken out of the marsupium (Fig. 77 i) the longitudinal carina of the operculum is only slightly indicated, and the incision in the distal margin is longer and much more marked than in adult individuals, thus indicating that the operculum was originally formed by the coalescence of two distinct plates.

Third pair of pleopods (Fig. 77 j). Similar in both sexes. Basipodite longer than broad; proximal and inner margins straight; outer margin irregularly curved; distal margin straight, oblique. The exopodite has its outer margin convex and inner margin slightly concave. It is two-jointed, being divided by a suture into two plates, one large proximal and one small distal one. The second joint of the exopodite is furnished with about six plumose setae at the tip. The whole lateral margin of the exopodite is provided with »fine hairs». The endopodite is almost rectangular; its distal margin is furnished with about twelve plumose setae.

Fourth pair of pleopods (Fig. 77 k). Basipodite broader than long. Exopodite indistinctly two-jointed; its lateral margin provided with short, fine »hairs»; distal tip of the exopodite with about six plumose setae. Endopodite broad, ovate.

Fifth pair of pleopods. Basipodite small, vestigial, about rectangular. Exopodite wanting. Endopodite oval.

Uropods (Fig. 77 l)¹. Inserted in small incisions on the lateral margin of the pleotelson and usually folded in below the pleotelson.

Variation. Of this species BEDDARD (1886) says that it is of small size. The largest specimen, an ovigerous female, seen by BEDDARD was only 6 mm. in length. HODGSON (1902) describes a species of *Echinozone* (*E. spinosa*), closely allied to *E. quadrispinosa*, but differing from the latter species in having a pair of spines on the dorsal side of the last two pereon segments. Regarding the size and sex of his specimens HODGSON gives no particulars.

As the difference indicated by HODGSON (1902) between his species *E. spinosa* and *E. quadrispinosa* is minute, VANHÖFFEN (1914, in describing *E. magnifica*) very properly makes the suggestion that the species of HODGSON is possibly identical with *E. quadrispinosa*.

MONOD (1926) examined three female specimens from the Antarctic, the largest 11 mm. in length, yet with only rudiments of oostegits. All his three specimens had

¹ See also MONOD, 1926, Fig. 17 E.

a considerably greater length than that previously stated by BEDDARD (1886) to be characteristic of *E. quadrispinosa*. As in their spine-armature they essentially agreed with the figure and description by HODGSON (1902, *E. spinosa*), he refers them¹ to the species of HODGSON.

They also differ from HODGSON's specimens (1902) in another respect; they all have the last peduncular joint of the antennae about as long as the body, whereas in the figure by HODGSON (1902) it is only about equal in length to the head and the first five pereion segments together. MONOD therefore presumes that the length of the last peduncular joint of the antennae varies in specimens of different size.

The Swedish Antarctic Expedition collected a large amount of material of *Echinozone quadrispinosa*, so that I have been in a position to study the variation within the species. As regards spine-armature, the variation is considerable. This will be illustrated by the tabular view below, which comprises 35 specimens (14 males, 21 females), all from South Georgia.

Spine-armature on the fifth to seventh pereion segments of Echinozone quadrispinosa
(BEDDARD).

	Number of specimens.	
	Males	Females
1. Fifth, sixth and seventh pereion segments smooth or almost smooth (quadrispinosa-specimens, typical)	0	9
2. Fifth pereion segment spinous, sixth and seventh smooth (quadrispinosa-specimens, non-typical)	1	7
3. Fifth and sixth pereion segments spinous, seventh smooth (spinosa-specimens, non-typical)	9	1 ²
4. Fifth, sixth and seventh pereion segments spinous (spinosa-specimens, typical)	4	4 ³

As shown by the tabular view the examined material contains both specimens which agree with *quadrispinosa* (BEDDARD) and with *spinosa* (HODGSON), as well as all manner of transitional forms between the two supposed species. I therefore regard *spinosa* HODGSON as synonymous with *quadrispinosa* BEDDARD. It will also be seen that the males are generally more spinous than the females. All the males examined, but only 12 of the females, had spines or distinct tuberculae on the fifth pereion segment, nine females having no spines or tuberculae on that segment. Whether abundant and distinct spine-armature of the male sex always occurs in this species is a question which cannot be settled on the basis of the table. After comparing the spine-armature of specimens with their size, I came to the conclusion that larger specimens are generally more spinous than smaller ones. But from this rule there were many exceptions. Thus one female, only 3 mm. in

¹ Their spine-armature is, however, very similar to that characteristic of *E. quadrispinosa* according to BEDDARD (1886), as «les tubercules spiniformes dorseaux de la division postérieure du péréion sont ici à peine perceptible et moins développés que sur la figure de HODGSON» (MONOD, 1926, p. 24).

² Distinct spines on the fifth, tuberculae on the sixth segment.

³ Distinct spines on the sixth, tuberculae on the seventh segment.

length, had spines on the fifth pereion segment, whilst in one adult female, 5 mm. in length, spines were wanting on that as well as on the following segments.

As mentioned above, MONOD (1926) observed a considerably greater length of the last peduncular joint of the antennae in his examined specimens than was stated by HODGSON in 1902; he presumes that the length of the last peduncular joint varies with the size of the specimens. I investigated this matter by comparing the length of the last peduncular antennal joint with the lengths of the specimens examined. In my material only eleven specimens (two males, nine females) had one or both of the antennae still adhering to the head. The lengths of their last peduncular joints, as well as their size, are given in the table below.

Length of the last peduncular joint of the antennae and the size of the specimens in Echinozone quadrispinosa (BEDDARD).

<i>Length of the specimens in mm.</i>	<i>Length of the last peduncular joint of the antennae in mm.</i>	<i>Loc.</i>
Females.		
3.5 (without oosteg.)	Extending to the anterior margin of the seventh pereion segment.	St. 34
3.5 » »	Extending to the anterior margin of the abdomen	St. 34
4.4 » »	Extending to the middle of the seventh pereion segment	St. 34
4.4 » »	Extending to the anterior margin of the abdomen	St. 34
6.0 (oostegits semi-developed)	» » » » » » »	St. 22
6.3 »	» » » » » » »	St. 22
6.4 »	» » » » » » »	St. 34
6.8 »	» » » » » » »	St. 34
7.2 (rudiments of oostegits)	» » » » » » »	St. 34
Males.		
(3.9 ¹)	Extending to the end of abdomen	St. 24)
4.0	Extending to half the length of the abdomen	St. 34
6.0	Extending behind the body (the joint was one-fourth longer than the specimen)	St. 34

From this table it will be seen that most of the female specimens have the last peduncular joint of the antennae about as long as the head plus the pereion. This was observed in female specimens of a length ranging from 3.5 to 7.2 mm., which gives support to the view that the length of the last peduncular antennal joint, does not increase in length with age. It must be brought in view, however, that I have not examined specimens of such great length as those investigated by MONOD (1926). That a considerable variation in the length of the last peduncular joint of the antennae is found in the species, even in specimens of the same size, is shown by the table; in the two smallest specimens, both 3.5 mm. in length, the joint in one case extended to the anterior margin of the seventh

¹ The antenna was not found adhering to the head, but it probably belongs to that specimen.

pereion segment, and in the other to the anterior margin of the abdomen. In no specimen, however, was the joint so short as in the specimen figured by HODGSON (1902), where the last peduncular joint of the antenna only reached the anterior margin of the sixth pereion segment. The males (only three specimens) show a considerable difference from the females. The length of the last antennal peduncular joint, in all specimens, is much greater than in the females, amounting in the small specimen (4 mm.) to half the length of the abdomen; in the largest specimen (6 mm.) the joint is of a remarkable length, being about one-fourth longer than the body. The measurements show that in the males the last antennal peduncular joint is longer than in the females, and that its length in the specimens examined increases with size. But, as only three male specimens were examined it cannot be decided whether the difference in length of the last peduncular antennal joint is not due to a considerable individual variation.

A characteristic feature of those specimens of *Echinozone quadrispinosa* which have been collected in the Antarctic, is their larger size compared with specimens found in subantarctic waters (see MONOD, 1926). The largest specimen from the Expédition Antarctique Belge 1897—99 was a female 11 mm. in length and was not yet mature, being furnished only with rudiments of oostegits, whilst BEDDARD (1886) gives the length of his largest specimen (ovigerous female) collected off the Kerguelen as only 6 mm.

As the material from the Swedish Antarctic Expedition contains only one specimen collected in the Antarctic (Graham Region), I cannot say anything about the variation of Antarctic specimens of *Echinozone quadrispinosa*. The specimen from Graham Region, is, however, the largest of all the specimens collected during the Expedition and the largest of all specimens of *Echinozone* hitherto caught. It is a female about 17 mm. long and yet having only semi-developed oostegits. The largest specimen from South Georgia obtained by the Expedition is a female with semi-developed oostegits 9.7 mm. in length. Some of the specimens collected at the same time and locality are only about 5 mm. in length, but have, however, a fully developed marsupium. This considerable variation of size in adult specimens from the same material gives support to the supposition that the females may survive the laying of offspring and may mature several times; thus, increasing in size after every moult, they may attain, comparatively speaking, gigantic proportions.

Remarks. The female and the male operculum show a remarkable resemblance to each other. Though the male operculum is formed by three plates (the fused first pair of pleopods and the second pleopods), these three plates lie so very close together that without separating the plates it is difficult on a superficial view to determine the sex by observing the pleopods.

The shape of the female and male operculum is quite the same, and in both sexes there is a distinct longitudinal carina on the anterior side. The setal armature is similar in almost every detail (cf. Figs. 77 e, g and h). Thus the longitudinal carina is furnished with long setae, which distally are arranged in two distinct longitudinal rows. The lateral margins in both the male and female operculum are likewise furnished each with a row of plumose setae, distally continuing in a submarginal row on the anterior side, whilst the distal margins themselves are equipped with fine «hairs». This similarity between the male and the female operculum is partly due to the fact that the first pleopods in the

male have assumed a carinated shape, almost the same as the carina in the female operculum. That the parts of the female operculum other than the carina, on the other hand, show a detailed resemblance to the second pleopods of the male, is presumably due to the homology between the sympodites of the second male pleopods with the female operculum.

Echinozone quadrispinosa very closely resembles *Echinozone magnifica* VANHÖFFEN (1914), which differs merely in having a larger number of spines in the transverse spine-rows on the first four pereion segments, but this only in specimens about 5 mm. in length, whilst the spine-armature of small specimens up to 2 mm. is just as in *Echinozone quadrispinosa*. Another difference which VANHÖFFEN mentions, viz. that the lateral margins of the pleotelson in *Echinozone magnifica* are furnished with incisions, does not hold good; also in *Echinozone quadrispinosa* there occur the same incisions for the insertions of the uropods.

Localities and Material.

St. 8. Graham Region. Situation of the station as well as depth uncertain, lat. 64°, 3' S., long. 56°, 37' W (360 m?). Soft clay. 11/8, 1902. Large female specimen possessing semi-developed marsupial plates; length about 17 mm.

St. 18. South Georgia, mouth of Westfjord, Cumberland Bay, lat. 54°, 15' S., long. 36°, 25' W. 250 m. Bottom temp. + 1.2°, Soft clay. 22/8, 1902. A large, damaged female specimen with head and first pereion segment missing.

St. 24. South Georgia, off Grytviken, lat. 54°, 22' S., long. 36°, 27' W. 95 m. Clay. 20/8, 1902. 3 specimens; length of the largest specimen, 8.3 mm., (female with semi-developed oostegits).

St. 33. South Georgia, Grytviken, lat. 54°, 22' S., long. 36° 28' W. 22 m. Clay and algae. 20/8, 1902. Female possessing semi-developed oostegits; length about 4.7 mm.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54°, 11' S., long. 36°, 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. 5/8, 1902. About 72 specimens. Length of the largest specimen, a female with the oostegits semi-developed, 9.7 mm.

Distribution. South Georgia (Sw. Ant. Exped.), Kerguelen (BEDDARD 1886), West of Graham Region (MONOD 1926), Graham Region (Sw. Ant. Exped.), Victoria Land (HODGSON 1902).

The species has not previously been recorded from South Georgia; nor has it been taken at Graham Region, though the Belgian Antarctic Expedition 1897—99 collected material at stations situated slightly west of Graham Region.

G. Group *Eurycopini*, HANSEN, 1916.

For diagnosis see HANSEN (1916, p. 129—130).

Genus *Eurycope* G. O. SARS, 1863.

G. O. SARS, 1899; VANHÖFFEN, 1914.

For diagnosis see G. O. SARS (1899, p. 144).

Eurycope sp. (cf. *frigida*, VANHÖFFEN, 1914).

Text figs. 78 a—h.

Description.

General shape of body (Fig. 78 a). As in *Eurycope frigida* VANHÖFFEN.

Head. With a trapezoidal «front area». See Fig. 78 a, which illustrates a female specimen with semi-developed oostegits, about four mm. in length. The shape of the «front

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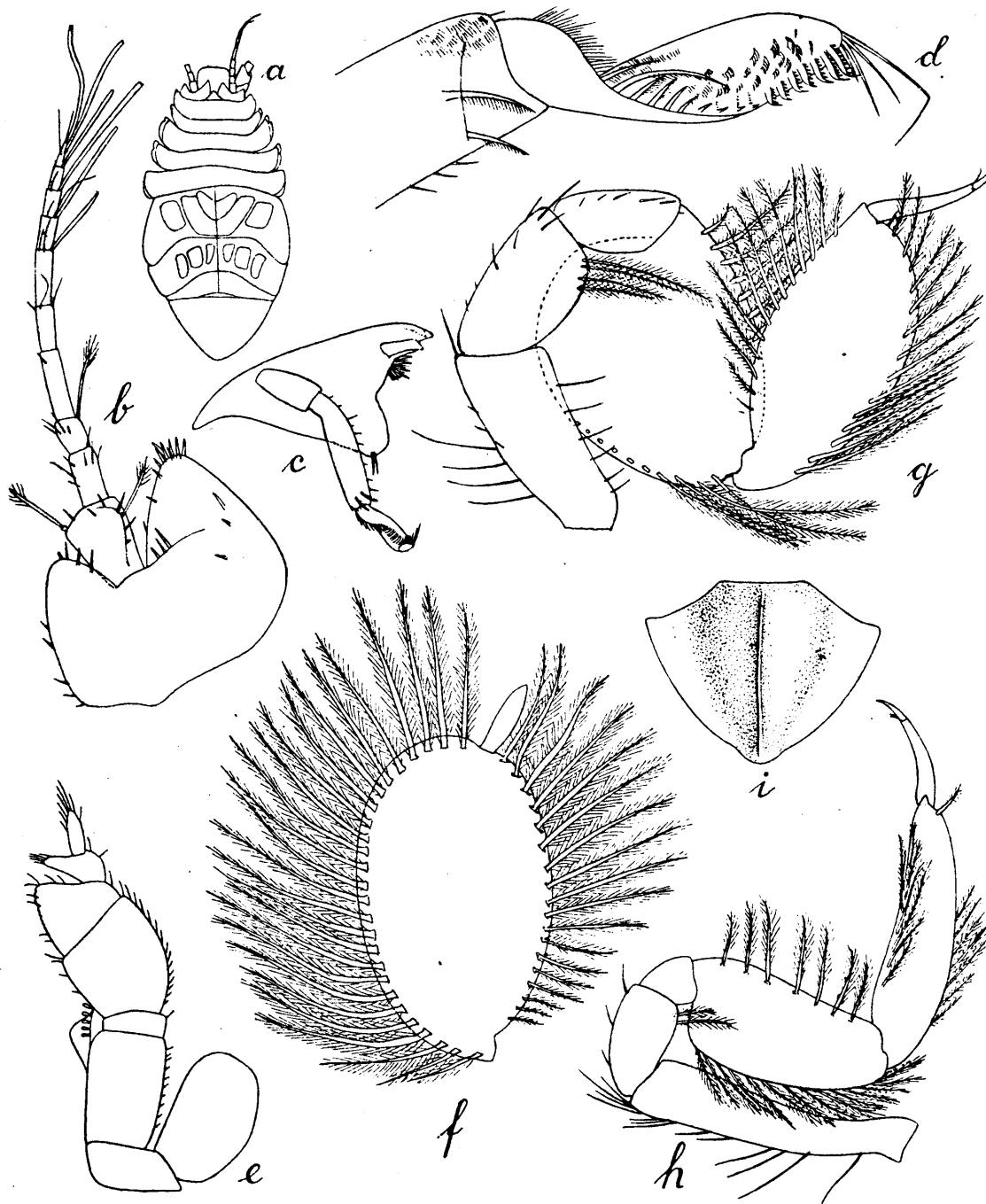


Fig. 78. *Eurycope* sp. (cf. *frigida* VANHÖFF.). a. Female, from above, 10 ×. b. Antennula, female, 80 ×. c. Left mandible, female, 50 ×. d. Third joint and distal part of the second joint of the mandibular palp, 240 ×. e. Maxilliped, female, 45 ×. f. Propodus and dactylus of the fifth pereopod, female, 80 ×. g. Sixth pereopod female, 80 ×. h. Left seventh pereopod, female, 80 ×. i. Female operculum, 30 ×.

area» is the same as that in *Eurycope frigida* (see VANHÖFFEN, 1914, Figs. 122 a and b). But in his description of *Eurycope frigida* VANHÖFFEN (1914, p. 590) says of the head »vorn etwas wellig abgeschnitten».

Pereion. See Fig. 78 a. Similar in shape to that in *Eurycope frigida* VANHÖFF. The last three segments decrease in length from the fifth to the seventh; the seventh is slightly longer than figured by VANHÖFFEN; they are immovably attached to one another but distinctly delimited; along their middle line there is a faint longitudinal groove. The fifth and sixth segments are faintly sculptured in the way shown in Fig. 78 a.

Coxal plates distinct on the first four pereion segments. On the first three segments they are in contact with the whole lateral margin, whilst on the fourth they are smaller, being in contact with the posterior part of the lateral margin of the segment and leaving the anterior part of the margin free. The coxal plates on the second and third pereion segments have a distinct lateral incision.

Antennulae (Fig. 78 b). First peduncular joint very broad, broader than long; outer distal and inner distal parts triangularly produced, the inner distal projection being the largest. The comparatively small second peduncular joint is longer than it is broad and increases slightly in width towards the distal end. The two following joints are narrow but more setose than the joints of the flagellum. Third peduncular joint only about half as broad as the second joint and half as long again as the fourth. The flagellum consists of eight joints, of which the first is the longest.

Antennae. Only the first four short peduncular joints remain. Squama with distal margin evenly rounded, furnished with six setae.

Mandibles (Figs. 78 c and d). Incisive part with two large points and two smaller points¹. Lacinia (on the left mandible) with two points. Row of setae on the left mandible with six to eight setae. Molar tubercle strong, subconical, proximally very broad, distally truncate, and provided with five or six small teeth¹. There are two small setae at the tip of the molar tubercle. Palp consisting of three joints, of which the second is the longest, being about twice as long as the first; it is furnished with two distal plumose setae. The third joint, which is slightly longer than the first, forms a thin plate (Fig. 76 d) of peculiar shape. Its upper side is vaulted, the lower side hollowed. Proximal part of the rostral margin with fine »hairs»; middle part of the rostral margin with stout setae decreasing in length distally. Distal part of the rostral margin furnished with seven projecting pectinate scales increasing in size towards the distal end. The lower surface is covered with pectinate scales of typical form. The distal end of the joint is provided with three long setae.

First pair of maxillae. Typical of the genus. Inner lobe distally provided with a large number of slender setae.

Second pair of maxillae. Typical of the genus. Lappets of outer lobe together about as broad as the inner lobe, each with three long apical setae. Inner lobe with a large number of apical setae, situated in two rows.

Maxillipeds (Fig. 78 e). Typical of the genus. Epipodite oval, with distal margin broadly rounded. Endite with five coupling-hooks. In *Eurycope frigida* VANHÖFFEN

¹ Not to be seen in the figure.

the epipodite is pointed¹. In one of VANHÖFFEN's specimens² of *Eurycope frigida*, re-examined by me, I found that the epipodite was still more pointed than figured by VANHÖFFEN, extending to the end of the second joint of the palp.

Upper lip. About semi-circular, with front margin evenly convex.

Pereiopods. The first four pereiopods were all broken. The fifth pereiopod (Fig. 78 f) with the first three joints decreasing in length. Carpal joint expanded, slightly longer than broad. Propodus expanded, about half as long again as broad. Dactylus very short, vestigial, about one-fourth as long as the propodus. Sixth pereiopod (Fig. 78 g) like the fifth, but the propodal joint is a little narrower and about twice as long as it is broad; dactylus well developed, furnished with a distinct claw. The seventh pereiopod (Fig. 78 h) has its carpal and propodal joints slightly expanded and provided with sparse plumose setae on its upper and lower margins.

Operculum, female (Fig. 78 i). Sub-pentagonal. Proximal margin divided into a median and two lateral parts forming obtuse angles with each other. Lateral margins convex, except distally, where they are slightly concave. Distal tip obtusely rounded. A sharp carina stretches along the middle line on the anterior side; the carina is sharpest in the middle and widens out somewhat distally.

Uropods. Broken.

Remarks. The species is closely allied to *Eurycope frigida* VANHÖFFEN. I have compared my specimens with the type specimen of *Eurycope frigida* VANHÖFFEN, from the Museum in Berlin. The described species agrees with *Eurycope frigida* VANHÖFFEN in the shape of the head and the pereion; also the same sculpturing of the fourth and fifth pereion segments was found in the type specimen. It differs, however, from *Eurycope frigida* VANHÖFFEN in its maxillipeds, which have their epipodites broadly rounded distally.

Locality and Material.

St. 34. South Georgia, off the mouth of Cumberland Bay, lat. 54° 11' S., long. 36° 18' W. 252—310 m. Bottom temp. + 1.45°. Gray clay with a few stones. $\frac{3}{4}$, 1902. 2 small damaged female specimens.

Distribution. South Georgia (Sw. Ant. Exped.).

The closely allied species *Eurycope frigida* VANHÖFFEN has been found in the East Antarctic (Gauss Station).

II. Fam. Stenetriidae.

Genus *Stenetrium*, HASWELL, 1881.

Stenetrium acutum VANHÖFFEN, 1914.

Stenetrium acutum. VANHÖFFEN, 1914, p. 546—548, Figs. 72, 73 a—h.

Locality and Material.

St. 5. Graham Region. S. E. of Seymour Island, lat. 64°, 20' S., long. 56°, 38' W. 150 m. Sand and gravel. $\frac{10}{1}$, 1902. Male specimen; 8.6 mm. in length, large specimen with the abdomen missing, head and pereion together about 8.9 mm. in length.

Distribution. Gauss Station (VANHÖFFEN 1914), Graham Region (Sw. Ant. Exped.).

The species has not previously been recorded from the West Antarctic.

¹ See VANHÖFFEN, 1914, Fig. 122 b.

² Some specimens of *Eurycope frigida* VANHÖFFEN were kindly sent to me for investigation from the Museum in Berlin.

SECTION VI.

Table of Distribution.

	Coast of Central Chile	Argentina	Patagonia	Tierra del Fuego and Mag. Straits	Burdwood Bank	Falkland Islands	Shag Rock Bank	South Georgia	West Antarctic	East Antarctic	Other localities
<i>Serolis paradoxa</i>	+		+	+		+		+			South Sandwich Islands. Kerguelen. South Atlantic E of Patag. N. of Falkl. Isl., Prince Edw. Isl., Crozet Isl., Ker- guelen.
<i>Serolis schythei</i>	+	+	+	+				+			
<i>Serolis polaris</i>		+							+		
<i>Serolis trilobitoides</i>			+	+							
<i>Serolis septemcarinta</i>								+			
<i>Serolis polita</i>								+	+		S. Atlantic. N. of Falkl. Isl. E. of Patagonia, S. Sandw. Isl.
<i>Serolis glacialis</i> var. <i>austrogeorgiensis</i>								+			
<i>Serolis exigua</i>						+					
<i>Serolis gaudichaudii</i>	+										
<i>Serolis convexa</i>				+		+		+			S. Sandw. Isl. Australia.
<i>Serolis minuta</i> var. <i>eugeniae</i>								+			
<i>Serolis pagenstecheri</i>							+		+		
<i>Serolis pagenstecheri</i> var. <i>albida</i>											
<i>Serolis bouvieri</i>											
<i>Serolis australiensis</i>											Australia. Australia.
<i>Serolis longicaudata</i>										+	Almost universal.
<i>Idothea metallica</i>			+	+							
<i>Edotia tuberculata</i>			+	+		+		+			
<i>Edotia magellanica</i>			+	+							
<i>Edotia bilobata</i>			+	+		+					
<i>Cleantis linearis</i>	+		+								
<i>Cleantis granulosa</i>		+		+							St. Paul.
<i>Glyptonotus antarcticus</i>								+	+		
<i>Glyptonotus antarcticus</i> var. <i>acutus</i>								+	+	+	
<i>Macrochiridothea stebbingi</i> var. <i>multituberculata</i>							+				
<i>Pseudidothea bonnieri</i>			+				+				
<i>Neastacilla falclandica</i>							+				N. Zealand.
<i>Neastacilla magellanica</i>				+							
<i>Antarcturus furcatus</i>				+			+	+	+	+	Kerguelen, Heard Island.
<i>Antarcturus americanus</i>			+	+			+				
<i>Antarcturus brunneus</i> var. <i>spinulosus</i>							+	+			
<i>Antarcturus franklini</i>							+		+	+	
<i>Antarcturus antarcticus</i>							+	+	+		S. Sandw. Islands.
<i>Antarcturus granulosis</i>							+	+	+		
<i>Microarcturus stebbingi</i>							+	+			Kerguelen.
<i>Microarcturus rugosus</i>							+		+		
<i>Microarcturus digitatus</i>							+	+			
<i>Ianira (Iathrippa) longicauda</i>	+		+	+	+	+	+	+			Campbell Isl., N. Zealand.

	Coast of Central Chile	Argentina	Patagonia	Tierra del Fuego and Mag. Region	Burdwood Bank	Falkland Islands	Shag Rock Bank	South Georgia	West Antarctic	East Antarctic	Other localities
<i>Iantra (Iathrippa) sarsi</i>							+	+	+	+	S. Atlantic. E. of Patagonia. N. of Falkl. Isl., Kerguelen.
<i>Iais pubescens</i>				+		+					Widely distributed up to Cameroon and Ceylon.
<i>Ianthopsis bovalli</i>			+			+		+		+	Kerguelen.
<i>Ianthopsis nasicornis</i>								+		+	
<i>Ectias turqueti</i>								+		+	
<i>Neojaera antarctica</i>				+				+			Juan Fernandez, S. Atl. E. of Pat. N. of Falkl. Isl., Kerguelen.
<i>Jaeropsis patagoniensis</i>			+	+	+	+					
<i>Jaeropsis intermedius</i>		+		+	+	+					
<i>Antias hispidus</i>									+		St. Paul, Auckl. Isl.
<i>Antias marmoratus</i>								+			St. Paul, Kerguelen.
<i>Antias Hofsteni</i>								+			
<i>Munna maculata</i>						+					Kerguelen.
<i>Munna pallida</i>						+					Kerguelen.
<i>Munna antarctica</i>								+		+	
<i>Munna neglecta</i>						+			+		S. Orkney Isl.
<i>Munna affinis</i>								+			
<i>Munna bituberculata</i>								+			
<i>Munna pana</i>						+					
<i>Coulmannia australis</i>								+	+	+	
<i>Paramunna integra</i>					+	+					
<i>Paramunna antarctica</i>								+	+		
<i>Paramunna serrata</i>						+			+		
<i>Paramunna subtriangulata</i>				+				+	+		
<i>Paramunna rostrata</i>								+	+	+	Kerguelen.
<i>Paramunna dentata</i>						+					
<i>Austrosignum glaciale</i>								+		+	
<i>Austrosignum falklandicum</i>					+	+					
<i>Pleurosignum magnum</i>					+	+				+	
<i>Pleurosignum elongatum</i>						+				+	
<i>Antennulosignum elegans</i>						+				+	
<i>Austrofilus furcatus</i>				+		+		+	+	+	S. Africa, Kerguelen.
<i>Desmosoma australis</i>								+			
<i>Desmosoma brevipes</i>								+			
<i>Desmosoma modestum</i>								+			
<i>Desmosoma falklandicum</i>						+					
<i>Ilyarachna antarctica</i>								+		+	
<i>Echinozone quadrispinosa</i>								+	+	+	Kerguelen.
<i>Eurycope sp. cf. frigida</i>								+			
<i>Stenetrium acutum</i>								+	+	+	

SECTION VII.

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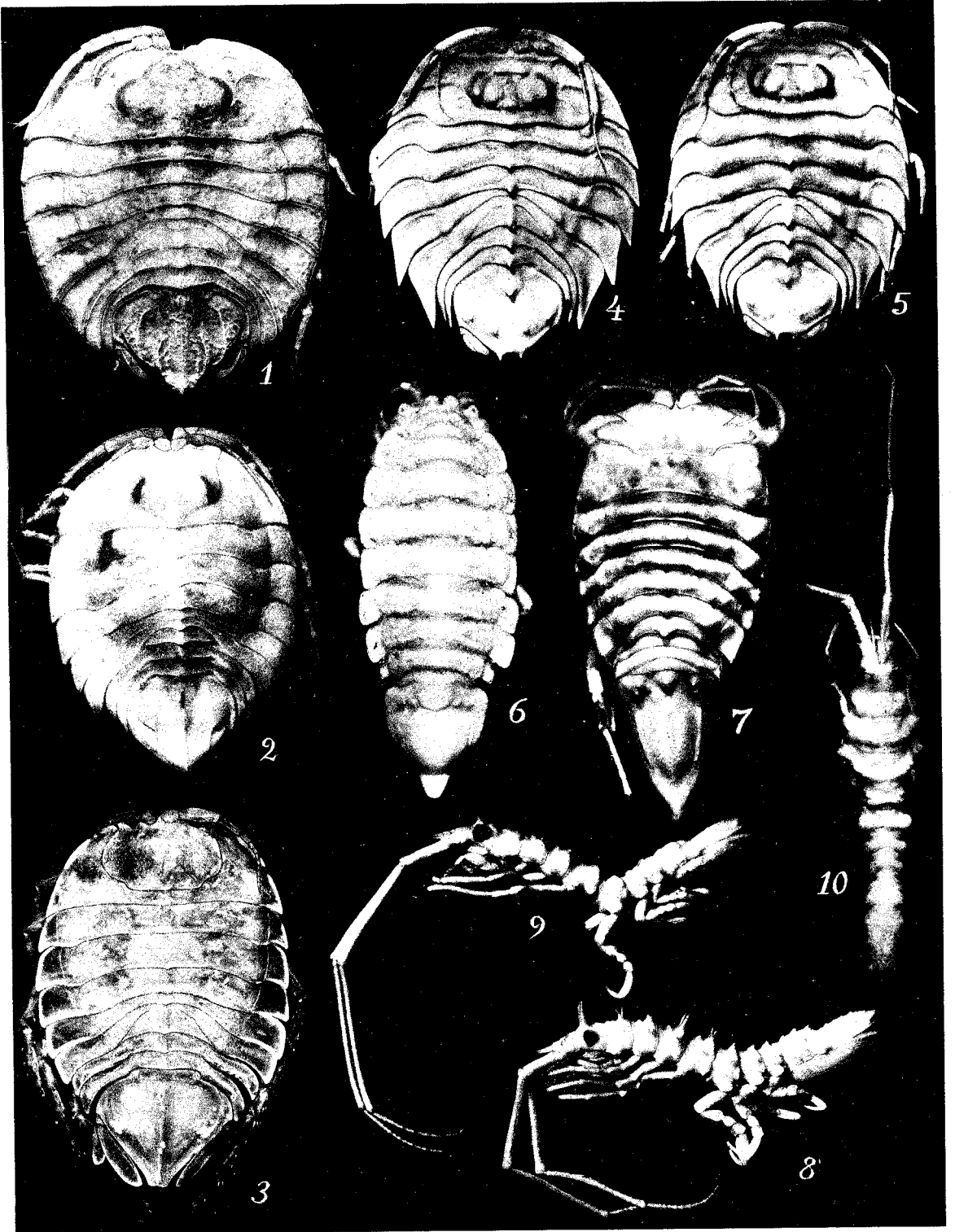
PLATES

EXPLANATION OF PLATE I.

- Fig. 1. *Serolis glacialis* TATTERSALL var. *austrogeorgiensis* n. var., ♀ with marsupial plates semi-developed. $5\frac{1}{2} \times$.
Fig. 2. *Serolis exigua* n. sp. ♀ with young. $8 \times$.
Fig. 3. *Serolis minuta* BEDDARD var. *eugeniae* n. var., ♀ with young. $7\frac{1}{2} \times$.
Fig. 4. *Serolis pagenstecheri* PFEFFER var. *albida* n. var., adult ♂. $2 \times$.
Fig. 5. *Serolis pagenstecheri* PFEFFER var. *albida* n. var., ♀ with a marsupium. $2 \times$.
Fig. 6. *Edotia bilobata* n. sp. $7\frac{1}{2} \times$.
Fig. 7. *Macrochiridothea stebbingi* OHLIN var. *multituberculata* n. var., ♀ with an empty marsupium. $5.7 \times$.
Fig. 8. *Antarcturus franklini* (HODGSON), ♂. $3 \times$.
Fig. 9. *Antarcturus granulosus* n. sp., immature ♀. $5\frac{1}{2} \times$.
Fig. 10. *Antarcturus granulosus* n. sp., ♀ with young. $4\frac{1}{2} \times$.

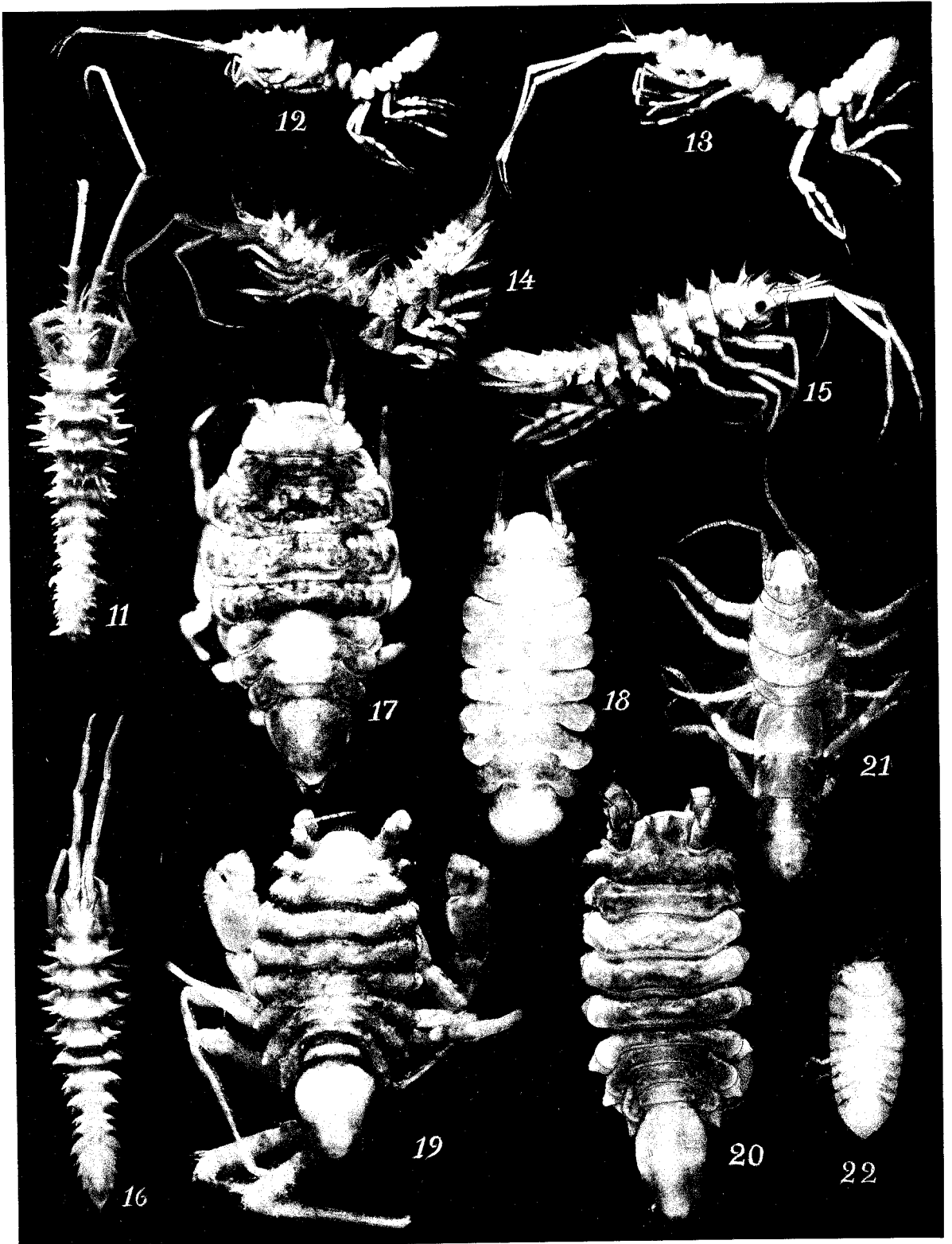
EXPLANATION OF PLATE II.

- Fig. 11. *Antarcturus brunneus* (BEDDARD) var. *spinulosus* n. var., ♀ with semi-developed oostegits. $4\frac{1}{2} \times$.
Fig. 12. *Microarcturus stebbingi* (BEDDARD), ♀ with a marsupium. $7.6 \times$.
Fig. 13. *Microarcturus stebbingi* (BEDDARD), adult ♂. $7.6 \times$.
Fig. 14. *Microarcturus rugosus* n. sp., ♂. $8 \times$.
Fig. 15. *Microarcturus digitatus* n. sp., immature ♂ in a lateral view. $5 \times$.
Fig. 16. *Microarcturus digitatus* n. sp., the same specimen seen from above. $5 \times$.
Fig. 17. *Antias marmoratus* VANHÖFFEN, ♀ with a marsupium. $40 \times$.
Fig. 18. *Antias Hofsteni* n. sp., ♂. $35 \times$.
Fig. 19. *Munna affinis* n. sp., sub-adult ♂. $18 \times$.
Fig. 20. *Munna bituberculata* n. sp., ♀. $18 \times$.
Fig. 21. *Desmosoma brevipes* n. sp., ♀ with an empty marsupium. $28 \times$.
Fig. 22. *Paramunna integra* n. sp. $30 \times$.



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ERRATA.

Page 58 Line 6. In place of *Magellanian Region* read *Magellan Straits*.
» 82 » 24. In place of *Magellanian Region* read *Magellan Straits*.