AUSTRALASIAN ANTARCTIC EXPEDITION

1911–14.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

SCIENTIFIC REPORTS.

SERIES C.—ZOOLOGY AND BOTANY.

VOL. V. PART 5.

EUPHAUSIACEA AND MYSIDACEA

BY

W. M. TATTERSALL, D.Sc

WITH ONE PLATE.

PRICE: ONE SHILLING AND SIXPENCE.
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EUPHAUSIACEA AND MYSIDACEA.

By Walter M. Tattersall, D.Sc., Keeper of the Manchester Museum.

With Plate XVIII.

Through the courtesy of Professor Haswell I have had the opportunity of examining the Crustacea belonging to the old order Schizopoda, collected during the course of the Australian Antarctic Expedition under the leadership of Sir Douglas Mawson.

The expedition explored that part of the Antarctic continent and adjacent ocean which lies between Kaiser Wilhelm II Land (the head-quarters of the German Expedition) and Victoria Land (the head-quarters of the British Expeditions), *i.e.*, between 90° E. long. and 170° E. long.

Of the numerous recent expeditions to the Antarctic, the French, Belgian, Swedish, German, Scotch, and English have already published reports on the orders of Crustacea here dealt with, and as these expeditions between them cover the entire Antarctic Ocean, our knowledge of the Schizopodan Fauna of these waters is now considerable. It was, therefore, not to be expected that the present collection would be rich in novelties, and indeed such is the case. The collection is a small one, comprising four species of Euphausians, and two of Mysids. One species of Mysid is new to science, but it is not an Antarctic species, having been collected in the Auckland Islands. The other five species are well known Antarctic and Sub-Antarctic species which have been reported by all the recent South Polar Expeditions.

The new species belongs to a genus described in 1900 by Mr. G. M. Thomson, from specimens collected in New Zealand waters. Since that date it does not appear to have been met with. The discovery of a second species by the "Aurora," is, therefore, a matter of some interest.

I wish to express my thanks to Professor Haswell for his kindness in entrusting this collection to me for examination and report.

Order EUPHAUSIACEA.

Family Euphausiidæ.

Genus Euphausia *Dana.*

Euphausia superba *Dana.*

E. superba Tattersall, 1908. (With full synonymy.)

E. superba Hansen, 1913.

Localities—

3rd January, 1914
4th January, 1914
5th January, 1914
6th January, 1914
14th January, 1914

} In surface tow-nettings taken during the cruise along the pack-ice westward from Adelie Land to Davis Sea. Numerous specimens up to 50 mm.

From the stomach of a Weddell seal and an Emperor penguin, Adelie Land, January, 1913.

From the stomach of *Trematomus lænnbergii* Regan, No. 10, and *Prionodraco* sp., No. 62.

Euphausia superba is known to form a large part of the food of the crab-eating seal, *Lobodon carcinophaga* and of the Antarctic penguins, but I am not aware that it has been previously recorded from Weddell's Sea, *Leptonychotes weddelli*, or from any of the Antarctic fishes.

Euphausia crystallorophias *Holt and Tattersall.*

E. crystallorophias Holt and Tattersall, 1906.

E. crystallorophias Tattersall, 1908.

E. crystallorophias Hansen, 1908.

Locality.

From the stomach of *Trematomus eulepidotus* Regan, No. 18, several specimens in a somewhat fragmentary condition. This species comes very near to *Euphausia frigida* Hansen, but may be recognised by the much longer rostrum and by the absence of lobes on the distal extremity of the basal joint of the antennular peduncle. The copulatory organs on the first pleopods of the male are very similar indeed to those described by Hansen for his species.

E. crystallorophias was captured in enormous numbers by the "Discovery," from holes made in the ice at Winter Quarters on Victoria Land, to the east of the area explored by the "Aurora." It has only been recorded by one other South Pole Expedition, the "Belgica," having captured three young specimens in about lat. 70° S., long. 82° 37′ W.

Genus THYSANOESSA *Brandt.*

THYSANOESSA GREGARIA *G. O. Sars.?*

T. gregaria Hansen, 1911.
T. gregaria Hansen, 1913.

Locality.

Off Macquarie Island, 18–19th June, 1912, 26 m. tow-net, 8 p.m.–8 a.m., sixty-three specimens, 4–10 mm.

These specimens are all immature and very fragmentary. Only two specimens retain their long legs. In one of these specimens, 6·5 mm. in length, the fifth joint of the long leg is twice as long as the sixth and seventh joints combined. In the other specimen, 10 mm. long, the fifth joint is one and three quarter times as long as the combined sixth and seventh joints. In both specimens the combined length of the fourth and fifth segments of the abdomen is one and a quarter times the length of the sixth segment. Small specimens of *Thysanoessa* are extremely difficult to determine, and Hansen, who has studied this genus exhaustively admits that small *T. gregaria* are difficult to separate from small *T. macrura*. In the present collection there is one specimen of *T. macrura*, 10 mm. long, that is, about the size of the largest specimen of those I refer to, *T. gregaria*. It still retains its long legs, and, in these limbs, the fifth joint is 2·6 times as long as the combined sixth and seventh. The fourth and fifth segments of the abdomen are together equal to the sixth. These proportions differ considerably from those in the specimens I have referred to *T. gregaria*.

In the figures illustrating Sars' account of this species in the "Challenger" Report, taken presumably from specimens 18 mm. long, the fifth joint of the first leg is 1·77 times as long as the combined sixth and seventh joints, and the combined fourth and fifth segments of the abdomen are 1·2 times as long as the sixth. These proportions are in close agreement with those given above.

I do not think the present specimens can be *T. vicina* Hansen, for in all that still retain the upper flagellum of the antennules, it is shorter than the distal two joints of the peduncle, whereas in *T. vicina* it is longer. Moreover, in *T. vicina* the proportions of the abdominal segments is about the same as in *T. macrura*.

I think these specimens are correctly referred to *T. gregaria*, but, owing to their poor state of preservation, the identification must remain doubtful.

THYSANOESSA MACRURA *G. O. Sars.*

T. macrura Tattersall, 1908.
T. macrura Hansen, 1911.
T. macrura Hansen, 1913.

Localities.

4th January, 1914. Tow-net at 5 fathoms, twenty-two specimens, 7–12 mm.

10th January, 1914. Tow-net at 100 fathoms, 2 ♀ and 1 ♂, 22–25 mm.

Both these tow-nettings were taken during the cruise along the pack-ice westward from Adelie Land to Davis' Sea.

21st January, 1914. Lat. 66° 47′ 21″ S., long. 93° 14′ E., off Drygalski Island, tow-net at 20 fathoms, twenty-eight specimens, 7–16 mm.

Nearly all these specimens are badly damaged, and very few retain any of the thoracic limbs. Their identity is, therefore, a matter of some doubt. In the gatherings made on 10th January, 1914, and 21st January, 1914, there are adult males and their copulatory organs on the first pair of pleopods agree with those figured by Hansen (1913) as characteristic of this species. For the remainder, I have relied on the length of the upper flagellum of the antennules (in such specimens as still retain them), which is shorter than the combined length of the last two joints of the antennular peduncle, to separate them from *T. vicina*, and the proportionate length of the last segment of the abdomen to distinguish them from *T. gregaria*.

From measurements which I have made on fifty specimens, I find that, taking the length of the last abdominal segment as unity, the combined length of the fourth and fifth segments varies between ·94 and 1·06.

In the gathering made on 4th January, 1914, I found one specimen, 10 mm. long, which still retained its long legs. In this specimen, the fifth joint of the long legs was 2·6 times as long as the combined sixth and seventh joints. In the same bottle there were nine loose legs of the first pair, and measurements made on these show that the fifth segment varies from 2·12 to 2·64 times as long as the combined sixth and seventh joints. This variation, however, is one of age. In the smaller limbs the fifth joint is relatively shorter than in the larger limbs, and this joint evidently becomes more elongated as the animal grows. In adult *T. vicina*, about 12 mm. in length, the fifth joint of the long leg is about twice as long as the combined sixth and seventh joints (*fide* Hansen, 1913, plate VI, fig. 2c.). In *T. macrura*, 10 mm. the proportion is already 2·6 to 1 while, in a loose leg, which to judge from its size belonged to a specimen about 7 mm. long, the proportion is already 2·12 to 1, *i.e.*, of the proportions of adult *T. vicina*. In fully grown *T. macrura* the fifth joint of the long leg is from 3·5 to 3·8 times as long as the combined sixth and seventh joints (*fide* Tattersall, 1908, plate III, fig. 8 and Hansen, 1913, plate VI, fig. 3c.). Consideration of these measurements has led me to refer all the present specimens to *T. macrura*, and this identification is supported by the form of the first pleopods of such adult males as there happen to be present.

Order MYSIDACEA.

Sub-order MYSIDA.

Family Mysidae.

Sub-family Mysinae.

Genus Tenagomysis *G. M. Thomson.*

Tenagomysis G. M. Thomson, 1900.

This genus was instituted for a species, *T. novæ-zealandiæ*, found not uncommonly on the coasts of New Zealand, but I am not aware of any subsequent records since Thomson's paper, nor of any further described species which may be referred to the genus. The species described below is very readily distinguished from the type form, though clearly referable to this genus. In view of the recent advances of our knowledge of the Mysidæ it seems desirable to re-define the genus, and to indicate its place in the family.

The genus *Tenagomysis* may be defined as follows :—Carapace rather short, leaving at least the last two thoracic segments entirely exposed, produced anteriorly into a moderate frontal plate; eyes moderately large and well developed, pigment black; antennal scale lanceolate in shape, setose all round, with a distal transverse suture near the apex; thoracic legs slender, sixth joint divided by vertical articulations into numerous subjoints (four in the type, ten to fourteem in the new species described below), seventh joint (dactylus) feeble; pleopods of the male essentially as in the genus *Leptomysis*, first pair with the endopod quite short and unjointed with the usual lateral plate, exopod long and multiarticulate; second, third, fourth, and fifth pleopods of the male well developed and biramous, the rami except in the fourth pair, subequal and without any specially modified armature; the exopod of the fourth pair longer than the endopod, with a strong spiniform and barbed seta on the outer side of each of the antepenultimate and penultimate joints; telson varying in length, its margins armed with spines, cleft at the apex, the cleft armed with closely-set pectinations, and the centre of the cleft bearing two plumose setæ; uropods rather long and slender, the exopod without a distal suture and without spines, the endopod with spines along the inner margins; female with three pairs of marsupial lamellæ (*fide* G. M. Thomson); type, *Tenagomysis novæ- zealandiæ* Thomson.

Hansen (1910) has divided the Mysidæ into six sub-families and one of these sub-families, the Mysinæ, into which *Tenagomysis* falls, is further divided up into four tribes. In all its essential features *Tenagomysis* agrees with Hansen's definition of the tribe Leptomysini, but its inclusion therein will necessitate a slight modification of the characters assigned to the tribe. This is in the number of subjoints into which the tarsus of the thoracic legs is divided. Hansen's definition runs "Sixth joint of thoracic legs [tarsus] with two, rarely three, vertical articulations and no oblique articulation." The new species described below though otherwise clearly belonging to this genus has

from ten to fourteen vertical articulations on the sixth joint of the thoracic legs, a number which has so far only been met with among the Mysini. It is obvious, therefore, that this character cannot be used as a differentiating character of the various tribes of the sub-family.

Among the genera assigned by Hansen to the tribe Leptomysini, *Tenagomysis* approaches perhaps most closely to the genus *Leptomysis*, differing only in the form of the telson. The latter, indeed will serve to distinguish the genus from all its congeners. Its general form is strikingly like that found very frequently among the Mysini, especially such genera as *Macromysis* and *Schistomysis*, with the important difference that in the latter genera there are no plumose setæ in the centre of the clefts of the telson, whereas *Tenagomysis* possesses a pair in that position. These setæ are entirely absent in the genera of the Mysini, characteristic of the Erythropini, and present in *Mysideis* and *Mysidopsis* alone of the genera belonging to the Leptomysini. *Tenagomysis* thus presents small features characteristic of three of the tribes of the sub-family Mysinæ.

Tenagomysis tenuipes *sp. nov.*

(Plate XVIII, figs. 1–7.)

Locality.—Carnley Harbour, Auckland Islands, 24th June, 1912, one adult ♂, 21 mm.

Description.—General form moderately slender; *carapace* having the anterior margin produced into a triangular rostral plate which extends for about one-third of the way along the basal joint of the antennules and is shorter than the eye; rostral plate (fig. 1) about three-fifths as long as broad at its base, apex obtusely pointed; last two segments of the thorax left completely uncovered by the carapace.

Antennular peduncle (fig. 1) rather elongate, about as long as the sixth segment of the pleon; basal joint about as long as the second and third combined; second joint very short; third joint with a prominent spine on the dorsal anterior margin between the bases of the flagella; latter very long and slender; the basal joint has a few setæ on the outer distal corner; male appendage well developed and densely hirsute.

Antennal peduncle (fig. 2) not as long as the basal joint of the antennular peduncle, second joint slightly longer than the third.

Antennal scale (fig. 2) exceedingly long and narrow, extending for one quarter of its length beyond the distal end of the antennular peduncle, eleven times as long as broad, narrowly lanceolate in shape, setose all the way round; distal joint exceedingly small but distinctly present; the basal joint from which both the scale and peduncle spring, bears on its lower surface two strong spines, an inner and an outer, under the base of the peduncle and scale respectively.

Thoracic legs.—The form of the endopods of the first and second thoracic limbs is shown on plate XVIII, figs. 3 and 4. They present no special points. The basal joint

of the exopod is freely acuminate at the outer distal corner, and the flagellum-like portion is composed of nine joints. The endopods of the remaining thoracic limbs (fig. 5) are long and slender, increasing in length from the third to the seventh limbs, the endopod of the eight limb being much shorter than that of the seventh. The sixth joint is divided into nine subjoints in the third limb, the number increasing to fourteen in the seventh limb, the eighth limb having only ten. The dactylus is feebly developed and not claw-like. The basal joint of the endopods of the third to the eighth pair of thoracic limbs bears a well-developed epipodial process.

Abdomen.—With the sixth segment twice as long as the fifth; first pair of pleopods of the male with the endopod short and unjointed, and having the usual lateral lamella, exopod well developed and multiarticulate; second, third, and fifth pair of pleopods in the male, well developed, biramous, the rami approximately equal and not having any modified armature; fourth pair of pleopods in the male (fig. 6) well developed, biramous, the outer ramus nearly twice longer than the inner, and having on the outer distal corner of the antepenultimate and penultimate joints, a long strong spiniform seta barbed on the distal half of their margins; the basal joint of the exopod bears a short blunt process on its lower and inner surface.

Telson (fig. 7) longer than the sixth abdominal segment, dorsally channelled, and therefore ventrally keeled, two and a half times as long as broad at its base, margins armed throughout their entire length by about thirty-six spines, the terminal spine of each margin rather stronger than the other spines; apex cleft, the cleft equal to about one-fifth of the total length of the telson and armed with closely set pectinations as well as with two plumose setæ at the centre, the setæ slightly longer than the cleft.

Uropods long and slender; inner plate one quarter longer than the telson, its inner margin armed with spines extending from the statocyst to the apex, the spines being closely set for the greater part of the margin but becoming more distantly placed and longer towards the apex, arranged more or less in series, sometimes as many as four in a series, but the serial arrangement is not regular nor obvious; the outer margin of the inner uropods bears in addition to the usual setæ a few scattered "kegelförmige" bristles; outer uropods one and a half times as long as the inner, rather slender and narrow in form.

Length of the type and only specimen, an adult male, 21 mm. The type has been deposited in the British Museum.

T. tenuipes is easily distinguished from the type and only other described species of the genus by the extreme length and tenuity of the thoracic limbs, and especially by the larger number of subjoints in the sixth joint of the endopods, by the longer and narrower antennal scale, by the longer telson and the larger number of spines arming its margins, and by the armature of the inner margin of the inner uropods. I have four undescribed species of the genus taken in New Zealand waters on the last expedition of the "Discovery." They will be described in the Reports on that Expedition, but

they are all much smaller and more robust forms. The point to note here is that the genus is a fairly big one, and is characteristic of New Zealand waters, not having been met with in any other part of the waters of the globe.

Genus ANTARCTOMYSIS *Coutière.*

ANTARCTOMYSIS MAXIMA (*Hansen, M.S.*) *Holt and Tattersall.*

Mysis maxima Holt and Tattersall, 1906.

Antarctomysis maxima Coutière, 1906.

,, Hansen, 1908.

,, Tattersall, 1908.

,, Hansen, 1913.

Localities.

Station 7, 21st January, 1914; lat. 66° 47′ 21″ S., long. 93° 14′ E., off Drygalski Island, 60 fathoms, stones, 1 ♀, 34 mm.

Station 11, 31st January, 1914; lat. 64° 43′ 47″ S., long. 97° 25′ 10″ E., 358 fathoms, mud, 1 ♂, 55 mm.

Station 12, 31st January, 1914; lat. 64° 39′ 19″ S., long. 97° 19′ 21″ E., 110 fathoms, sand and stones, 5 ♂ and 17 ♀ up to 54 mm.

Both these last two stations are in Davis Sea, off Shackleton Shelf, near to the southern end of Termination Ice Tongue.

This species has been taken by all the recent Antarctic Expeditions and has a circumpolar distribution.

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EXPLANATION OF PLATE XVIII.

TENAGOMYSIS TENUIPES *sp. nov.*

Fig. 1.—Anterior end, to show rostral plate, antennular peduncle, antennal scale and eye.

Fig. 2.—Antennal scale and peduncle from below.

Fig. 3.—Endopod of the first thoracic limb.

Fig. 4.—Endopod of the second thoracic limb.

Fig. 5.—Endopod of the third thoracic limb.

Fig. 6.—Fourth pleopod of the male.

Fig. 7.—Telson.

(All the figures are drawn to the same scale.)

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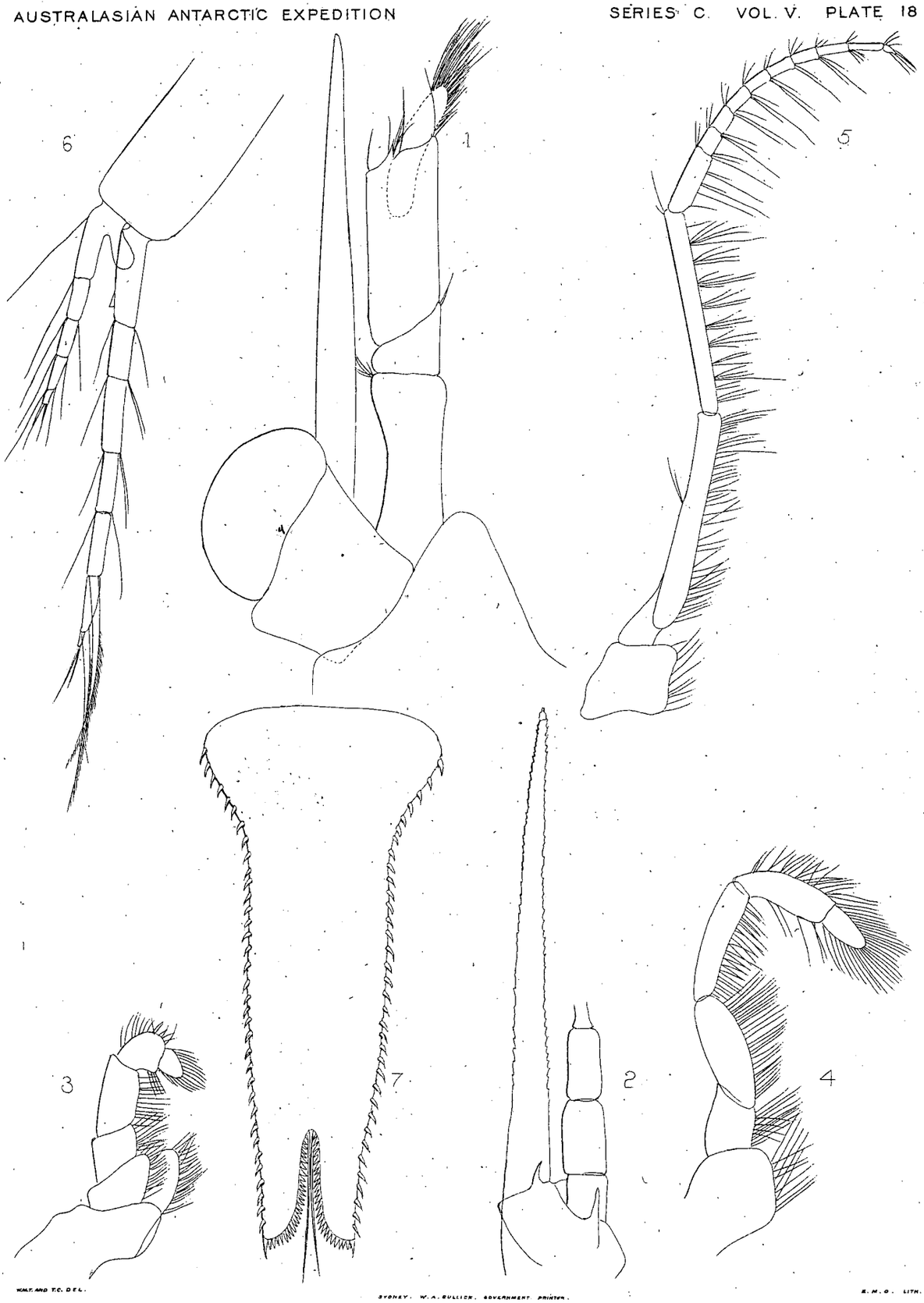

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