Profr H.

XVI.—The Schizopoda, Stomatopoda, and non-Antarctic Isopoda of the Scottish National Antarctic Expedition. By Walter M. Tattersall, D.Sc., Keeper of the Manchester Museum. *Communicated by* Dr J. H. Ashworth. (With One Plate.)

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The present report deals with the whole of the Schizopoda and Stomatopoda in the *Scotia* collections, and with those Isopoda which were taken in localities outside the limits of Antarctica. I am indebted to the courtesy of Dr W. S. Bruce for the opportunity of examining and reporting on these collections. The report on the Antarctic Isopoda is being prepared by Mr T. V. Hodgson.

I also include a few notes on a small collection of Schizopoda which were taken by the *Discovery* on its outward journey to the South Pole, for the opportunity of examining which I am indebted to the kindness of Dr W. T. Calman, of the British Museum. These latter records are most appropriately included here along with those of the species which the *Scotia* captured on her outward journey, over very nearly the same ground. A comparison is thus possible between the captures of the two expeditions over the same ground and in two different years, and may be brought out in the following lists:—

Scotia. Nov. 1902–Jan. 1903.	*Discovery.* Sept. and Oct. 1901.
Siriella Thompsonii.	*Siriella Thompsonii.*
Thysanopoda tricuspidata.	*Thysanopoda tricuspidata.*
Euphausia americana.	*Euphausia Krohnii.*
,, *brevis.*	,, *americana.*
,, *tenera.*	,, *brevis.*
,, *hemigibba.*	,, *recurva.*
,, *pseudogibba.*	,, *tenera.*
Thysanoëssa gregaria.	,, *hemigibba.*
Nematoscelis microps.	,, *gibboides.*
	,, *lucens.*
	,, *longirostris.*
	Thysanoëssa gregaria.
	Stylocheiron carinatum.

No fewer than seven of the species are common to the two lists, and these represent the most abundant species in the tropical Atlantic Ocean.

Turning to the Antarctic Schizopoda, the results of the *Scotia* may be compared with those of other expeditions in the form of a table, as follows:—

Species.	French Expedition.	*Belgica.*	*Discovery.*	Swedish Expedition.	*Scotia.*
Euphausia superba, Dana	×	×	×	×	×
,, *longirostris*, Hansen		×		×	
,, *triacantha*, H. and T.			×	×	
,, *frigida*, Hansen			×	×	
,, *crystallorophias*, H. and T.		×	×		
,, *Vallentini*, Stebb.			×	×	
Thysanoëssa macrura, Sars	×	×	×	×	×
,, *vicina*, Hansen			×	×	
Eucopia australis, Dana				×	×
Hansenomysis antarctica, H. and T.			×	×	
Antarctomysis maxima, H. and T.	×	×	×	×	×
,, *Ohlinii*, Hansen			×	×	
Pseudomma Belgicæ, H. and T.		×	×	×	
Dactylamblyops Hodgsoni, H. and T.			×		
Mysidetes posthon, H. and T.			×	×	
Boreomysis distinguenda, Hansen					×
,, *Brucei*, W. M. T.					×

I have taken the average limits of free and floating ice as the boundaries of the Antarctic Regions. This limit for the South Polar waters was laid down by Dr Bruce* in 1894, and is shown on a chart of the South Polar regions published by the British Admiralty.

The French Expedition (*Français*) had its headquarters at Graham Land, a little to the west of the Weddell Sea. The Schizopoda were described by Coutière (1906).

The *Belgica* worked a little further to the west of the *Français*. The Schizopoda were described by Hansen (1908).

The *Discovery* had its winter quarters at the opposite side of the Pole to the *Scotia*, at Victoria Land. The Schizopoda were described by Holt and Tattersall (1906), and Tattersall (1908).

The Swedish Antarctic Expedition (*Antarctic*), under Nordenskjöld, explored the region to the east of Graham Land, between the ground worked by the *Scotia* and the *Français*. The results, as far as the Schizopoda are concerned, have not yet been published; but Hansen, in several of his recent papers, has recorded various species belonging to the material of that expedition, and I have abstracted such records for the purposes of the above table. (See note, p. 894.)

It will be seen, therefore, that the recent expeditions to the Antarctic have explored that ocean between the Weddell Sea westwards to Victoria Land, about half the South Polar Ocean, and we have a fair knowledge of the Schizopod fauna of that area. The German Expedition (*Gauss*) had its headquarters half way between those of the *Scotia* and *Discovery*, in about lat. 90° E., in the centre of the unexplored eastern

* "Antarctic Birds," *Knowledge*, September 1, 1894.

part of the Antarctic Ocean, but I am not aware that any account of the Schizopods has yet been published.

The above table includes seventeen species of Schizopoda—a complete list of the known purely Antarctic forms, as far as I am aware. (See note, p. 894.)

Of these seventeen, three are more or less circumpolar—*Euphausia superba*, *Thysanoëssa macrura*, and *Antarctomysis maxima*—having been recorded from the collections of most of the recent expeditions. Of the remainder, the following species, captured by the *Discovery* and the Swedish Expedition at almost opposite sides of the South Polar Ocean, will probably be found ultimately to be circumpolar in their distribution, viz. :—

Euphausia triacantha.
,, *frigida.*
,, *crystallorophias.*
,, *Vallentini.*
Thysanoëssa vicina.
Hansenomysis antarctica.
Antarctomysis Ohlinii.
Pseudomma Belgicæ.

Eucopia australis, captured by the *Scotia* and the Swedish Expedition, was not taken by the *Discovery*; but the type locality is quite near to Victoria Land, and the species is in all probability circumpolar. This gives a total of twelve species, out of seventeen known from the Antarctic Ocean, with a circumpolar distribution in that ocean, leaving only five whose present known distribution is limited.

The Schizopoda, therefore, present very clear evidence of a group which is, as a whole, circumpolar in its distribution in Antarctic waters.

The *Scotia* discovered only one new species, *Boreomysis Brucei*.

The Isopoda entrusted to me for identification include those taken by the *Scotia* on the outward and homeward journeys, mainly at the Falkland Islands and at the Cape, together with three species of parasitic Isopoda found on pelagic Decapoda and Schizopoda captured in tow-nets in the open ocean. The collection as a whole calls for very little comment, the recent work of STEBBING on the Crustacea of the Falkland Islands and South Africa covering nearly all the ground. In common with most workers called upon to identify isolated specimens of Sphæromidæ from distant localities, I have experienced considerable difficulty with this group. I have been obliged, as a result of my work, to establish two new species, which I hope will not add to the state of chaos in which the group remains at present. Dr BRUCE was also fortunate in rediscovering *Exosphæroma tristense*, of LEACH, a species which has remained in obscurity since its discovery nearly a century ago. I have redescribed the species, and figured, for the first time, the adult male. A third new species among the Isopoda is established for a specimen of the family Arcturidæ found at the Cape, which appears to be very distinct from any hitherto known form.

Finally, I desire to express my thanks to Dr Bruce for entrusting me with this collection, for much help with the literature, and for many courtesies in other ways; and to Dr W. T. Calman for allowing me to examine the collection of extra-Antarctic Schizopoda made by the *Discovery*, and for permission to include the records here.

Order MYSIDACEA, Boas.

Family Lophogastridæ, G. O. Sars.

Genus *Gnathophausia*, W. Suhm.

Gnathophausia gigas, W. Suhm.

Scotia.

Station 450, lat. 48° 00′ S., long. 9° 50′ W., South Atlantic, 1332 fathoms, trawl.—One female, 160 mm.

This specimen, which is in a rather poor state of preservation, is the largest recorded one belonging to the species, the previous largest, the *Challenger* specimen, measuring 142 mm. It differs from Sars' description and figures mainly in the less pronounced teeth on the antennal scale and in the less produced infero-posterior corners of the carapace. Both of these slight differences are due to age, and the specimen otherwise agrees with *G. gigas* so closely that I have no hesitation in ascribing it to this species.

Family Eucopiidæ, G. O. Sars.

Genus *Eucopia*, Dana.

Eucopia australis, Dana.

Scotia.

Station 398, lat. 68° 25′ S., long. 27° 10′ W., Antarctic Ocean, vertical tow-net, 0–1000 fathoms.—One female, 50 mm.

Station 414, lat. 71° 50′ S., long. 23° 30′ W., Weddell Sea, 2102 fathoms, vertical tow-net, 0–1000 fathoms.—One female, 35 mm.; one fragmentary specimen, tail end only.

Station 450, lat. 48° 00′ S., long. 9° 50′ W., South Atlantic, 1332 fathoms, trawl.—One female, 45 mm.

Station 468, lat. 39° 48′ S., long. 2° 33′ E., South Atlantic, 2645 fathoms, trawl.—One fragmentary specimen, head end only.

These specimens are in poor condition, but appear to belong, with very little doubt, to *E. australis* as redefined by Hansen (1905*c*).

Family MYSIDÆ, Dana.

Sub-family BOREOMYSINÆ, Holt and Tattersall.

Genus *Boreomysis*, G. O. Sars.

Boreomysis distinguenda, Hansen.

B. scyphops, G. O. Sars, 1885*a*.
B. distinguenda, Hansen, 1908*a*.
nec. B. scyphops, G. O. Sars, 1885*b*.

Scotia.

Station 301, lat. 64° 48′ S., long. 44° 26′ W., Weddell Sea, 2485 fathoms, trawl.—One female, 30 mm.

HANSEN, in describing the Crustacea collected by the *Ingolf* Expedition in northern seas, took the opportunity afforded by the capture of large numbers of the true *B. scyphops* to separate the present southern species from its northern ally, with which it had been confused by SARS. The distinguishing characters are to be found in the shape of the eye and of the antennal scale. No full description of *B. distinguenda* has yet appeared, but it is not possible to draw one up from the present specimen, which, besides being only about half-grown, is in a very poor state of preservation. Suffice it to say that, in respect of the eyes and antennal scale, its characters are in agreement with those given by HANSEN for distinguishing *B. distinguenda* from *B. scyphops*. Until HANSEN separated the two species, the latter was the last surviving instance of a bipolar Schizopod. Now there is no species common to the Arctic and Antarctic Oceans, though several genera are recognised as occurring at both Poles.

Boreomysis Brucei, sp. nov. (Plate, figs. 11–13.)

Scotia.

Station 414, lat. 71° 50′ S., long. 23° 30′ W., Weddell Sea, 2102 fathoms, vertical net, 0–1000 fathoms.—One immature male, 25 mm.

Station 416, lat. 71° 22′ S., long. 18° 15′ W., Weddell Sea, 2370 fathoms, trawl.—One immature male, 28 mm.

Specific Characters.—The frontal or rostral plate (Plate, fig. 11) is produced almost to the anterior level of the eyes. The lateral margins are slightly convex, and meet in an angle of less than a right angle, while the apex is produced into a short acute spine. The eyes are moderately large, broader than deep, with the pigment very pale brown. The eye-stalks have the distal tubercle well developed.

The antennular peduncle exhibits a light oblique ridge on the dorsal surface of the basal joint, and has the second joint narrow, but much deeper dorso-ventrally than either the first or third joints, so that it is almost circular in section.

The antennal peduncle extends anteriorly about half way up the distal joint of the antennular peduncle.

The antennal scale (Plate, fig. 12) overreaches the antennular peduncle considerably, and is three times as long as broad, the broadest portion before the middle. The outer margin is almost straight and ends in a prominent spine, beyond which the apex of the scale is slightly produced.

The telson (Plate, fig. 13) is three times as long as broad at its base, and has the terminal cleft one-quarter of the entire length. The lateral margins are armed with about thirty-six small spines, the first of which occurs about one-third of the way down the margin. The spines are proximally arranged in small series of two and three, but distally the last ten or a dozen spines are of equal length and not arranged in series of shorter and longer spines. The lateral lobes of the apex of the telson are armed with three strong spines, the outermost one of which is the longest.

The inner uropods (Plate, fig. 13) are about one-sixth as long again as the telson, without spines in the region of the otocyst. The outer uropods (Plate, fig. 13) are longer than the inner. The proximal portion of the outer margin, without spines or setæ, is about two-ninths of the length of the entire margin, and has two spines at its distal corner.

This species comes remarkably near to *B. sibogæ*, Hansen (1910), but differs in the more produced rostrum and in the shape of the antennal scale.

In *B. sibogæ* the rostral plate does not extend nearly as far forward as the anterior level of the eyes, and its margins meet in an obtuse angle. In *B. Brucei* the rostrum extends almost as far forward as the anterior level of the eyes, and its margins meet in an acute angle.

In *B. sibogæ* the spine on the outer margin of the antennal scale overreaches the apex of the scale. In *B. Brucei* the reverse obtains. *B. sibogæ* is a deep-water tropical species, *B. Brucei* a definitely Antarctic form.

B. Brucei also comes very near to *B. rostrata*, Illig (1906); but, so far as the latter has been described, it differs from *B. Brucei* in the different form of the antennal scale and the different armature of the telson.

I dedicate this new form to the leader of the Scottish National Antarctic Expedition, whose intrepid researches have brought it to light.

Sub-family SIRIELLINÆ, Norman.

Genus *Siriella*, Dana.

Siriella Thompsonii, H. Milne-Edw.

Scotia.

Station 11, lat. 23° 50′ N., long. 21° 34′ W., tow-net.—One.
Station 12, lat. 22° 19′ N., long. 22° 07′ W., tow-net.—Five.
Station 13, lat. 21° 58′ N., long. 22° 26′ W., tow-net.—One.

Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—Ten.
Station 15, lat. 20° 34′ N., long. 23° 12′ W., tow-net.—Two.
Station 18, lat. 19° 59′ N., long. 23° 34′ W., tow-net.—One.
Station 21, lat. 18° 28′ N., long. 24° 28′ W., tow-net.—Seven.
Station 32, lat. 10° 46′ N., long. 25° 21′ W., tow-net.—One.
Station 33, lat. 9° 40′ N., long. 25° 28′ W., tow-net.—One.
Station 36, lat. 8° 42′ N., long. 25° 28′ W., tow-net.—Twenty-five.
Station 37, lat. 7° 50′ N., long. 25° 31′ W., tow-net.—Three.
Station 39, lat. 6° 43′ N., long. 25° 48′ W., tow-net.—Two.
Station 46, lat. 3° 13′ N., long. 26° 30′ W., tow-net.—Five.
Station 56, lat. 0° 42′ S., long. 31° 20′ W., tow-net.—Thirty-eight.
Station 58, lat. 2° 13′ S., long. 32° 23′ W., tow-net.—Forty-eight.
Station 59, lat. 2° 30′ S., long. 32° 42′ W., tow-net.—Eight.
Station 61, lat. 3° 38′ S., long. 33° 20′ W., tow-net.—One.
Station 62, lat. 4° 15′ S., long. 33° 38′ W., tow-net.—Eighteen.
Station 515, lat. 2° 32′ N., long. 19° 32′ W., tow-net.—Nine.

Discovery.

Funchal Bay, Madeira.—Four.
Lat. 13° 59′ S., long. 34° 35′ W.—Two.
Lat. 17° 15′ S., long. 32° 05′ W.—Three.
Lat. 30° 43′ S., long. 21° 36′ W.—One.
Lat. 33° 53′ S., long. 17° 38½′ W.—Two.

All the stations listed above are in the Atlantic Ocean, and all the specimens were captured at the surface. These records indicate that *S. Thompsonii* is an abundant species in the tropical Atlantic; and a correspondingly long list of captures given by HANSEN (1912) shows that it is likewise equally common in the Eastern Pacific. Its distribution is, in short, circumtropical, bounded, roughly speaking, by the lines of latitude 40° N. and 40° S. Several specimens in the *Scotia* collections were found to have the Epicarid, *Dajus siriellæ*, G. O. Sars, in their marsupial pouches. This parasite, first found by SARS in the same host, collected by the *Challenger*, has only been recorded once since its discovery, namely, by HANSEN (1912), who also found it in the present host.

Siriella denticulata, G. M. Thomson.

S. denticulata, Thomson, 1900.

Discovery.

Laurie Harbour, Auckland Isles.—One female, 6 mm., immature.

I refer this small and immature specimen to *S. denticulata*, Thomson, with some little doubt, and add a few notes supplementing THOMSON's description. The rostrum, in my specimen, can hardly be described as spiniform. The two lateral margins meet in almost a right angle with the apex hardly produced. There is, however, a prominent pseudo-rostrum, as in *Macromysis inermis,* and it is possible that THOMSON may have mistaken this structure for the true rostrum. On the other hand, the rostrum may become more produced and spiniform with age, as it is known to do in certain Euphausians, *e.g. Thysanoëssa macrura.* The telson of the present specimen has three lateral spines on each margin, anterior to the constriction characteristic of the telson in this genus, and between the three small spines at the apex of the telson there are finer and longer setæ. THOMSON does not mention or figure either of these features. The inner uropods have seventeen spines on their inner margins, the spines commencing at the statocyst and extending the whole way to the distal extremity of the appendage, increasing in size. They are not arranged in series. There are five spines on the outer margin of the proximal joint of the outer uropods.

Sub-family MYSINÆ.

Genus *Antarctomysis*, Coutière.

Antarctomysis, Coutière, 1906.
Antarctomysis, Hansen, 1908*b*.
Antarctomysis, Tattersall, 1908.

Antarctomysis maxima, Hansen.

Mysis maxima, Holt and Tattersall, 1906.
Antarctomysis maxima, Coutière, 1906.
A. maxima, Hansen, 1908*b*.
A. maxima, Tattersall, 1908.

Scotia.

Station 325, lat. 60° 43′ 42″ S., long. 44° 38′ 33″ W., Scotia Bay, South Orkneys. —One immature female, 30 mm.

This species has a circumpolar distribution, having been captured by the *Discovery,* the *Belgica,* the Charcot Expedition, and now by the *Scotia,* at the four points of the compass in the Antarctic Ocean.

Order EUPHAUSIACEA.

Genus *Thysanopoda*, Milne-Edw.

Thysanopoda cornuta, Illig.

T. cornuta, Illig, 1905.
T. insignis, Hansen, 1905*b*.
T. cornuta, Hansen, 1912.

Scotia.

Station 467, lat. 40° 08′ S., long. 1° 50′ E., 2645 fathoms, trawl.—One female, 79 mm.

This magnificent specimen agrees well with both ILLIG's and HANSEN's descriptions. It was captured at very nearly the same place as the type-specimen, in the Benguela

Current, but rather further south. It is only known from five other specimens, three recorded by HANSEN from the North Atlantic, one by HANSEN from the East Pacific, and the type, captured by the *Valdivia* in the South Atlantic. It is one of the largest known Euphausians.

Thysanopoda tricuspidata, Milne-Edw.

Scotia.

Station 29, lat. 12° 31′ N., long. 25° 9′ W., tow-net.—Two.
Station 42, lat. 5° 25′ N., long. 26° 7′ W., tow-net.—One, larval.

Discovery.

Lat. 12° 27′ S., long. 33° 33′ W., tow-net.—One.
Lat. 13° 59′ S., long. 34° 35′ W., tow-net.—One large female, 22 mm.; three larvæ, 5–8 mm.
Lat. 17° 15′ S., long. 32° 05′ W., tow-net.—Five.

All these specimens were caught at the surface, and, with the exception of the large female, 22 mm., captured by the *Discovery*, are all larval or post-larval in development.

Genus *Euphausia*, Dana.

Euphausia Krohnii (Brandt).

Discovery.

Off Madeira, tow-net.—Fifteen.

This species seems at last to have found a name which may be considered more or less a permanent one. It has been known during the last ten years successively as *Euphausia pellucida*, *bidentata*, and *Mülleri*; but HANSEN (1910) has definitely established that *Thysanopoda Krohnii*, Brandt, an earlier name than any of the above, was applied to specimens identical with those of the later species. By this name, therefore, the species must henceforth be known.

Euphausia americana, Hansen.

E. americana, Hansen, 1911.

Scotia.

Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—Five.
Station 18, lat. 19° 59′ N., long. 23° 34′ W., tow-net.—Four.
Station 26, lat. 14° 33′ N., long. 25° 9′ W., tow-net.—Two.
Station 29, lat. 12° 31′ N., long. 25° 9′ W., tow-net.—Thirteen.

Station 36, lat. 8° 42′ N., long. 25° 28′ W., tow-net.—One.
Station 39, lat. 6° 43′ N., long. 25° 48′ W., tow-net.—One hundred and thirty-six.
Station 42, lat. 5° 25′ N., long. 26° 7′ W., tow-net.—Ten.
Station 59, lat. 2° 30′ S., long. 32° 42′ W., tow-net.—One.
Station 512, lat. 0° 22′ N., long. 18° 43′ W., tow-net.—Four.

Discovery.

Lat. 7° 23′ S., long. 30° 23′ W.—Two.

Euphausia americana has only lately been instituted by HANSEN, and appears to have been confused hitherto with *E. Krohnii*, to which it bears a considerable resemblance. It seems clear that some of the *Challenger* specimens referred to *E. pellucida* by SARS in reality belong to the present species. HANSEN gives as the locality for this species, West Atlantic, Cape Verde; but the above list of captures shows that the species has a very general distribution in the tropical parts of the Atlantic Ocean.

Euphausia recurva, Hansen.

E. recurva, Hansen, 1905*c*.
E. recurva, Hansen, 1912.

Discovery.

Lat. 30° 43′ S., long. 21° 36′ W.—Thirty-one.
Lat. 33° 53′ S., long. 17° 38½′ W.—Five.
Lat. 35° 10′ S., long. 13° 40′ W.—Sixty-three.
Lat. 36° 27½′ S., long. 8° 20′ W.—One.
Lat. 37° 33¾′ S., long. 6° 09′ E.—Four.
Lat. 37° 12′ S., long. 9° 30′ E.—Three.

All the specimens were taken in surface tow-nettings. The majority are post-larval in development, but appear to belong to this species.

E. recurva is known from the South Atlantic, Indian Ocean, and from two or three localities in the Pacific (HANSEN, 1912).

Euphausia brevis, Hansen.

E. brevis, Hansen, 1905*c*.
E. brevis, Hansen, 1912.

Discovery.

Lat. 12° 27′ S., long. 33° 33′ W.—One.
Lat. 13° 59′ S., long. 34° 35′ W.—One.
Lat. 17° 15′ S., long. 32° 05′ W.—Seven.
Lat. 36° 27½′ S., long. 8° 20′ W.—One.

Scotia.

Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—Twenty-three.

E. brevis has a general distribution in the tropical parts of the Atlantic Ocean, in the Indian Ocean, and in the Eastern Pacific. It has also been recorded from the Mediterranean (TATTERSALL and HANSEN). HANSEN notes that most of the specimens recorded have been taken at the surface. The present records are no exception.

Euphausia tenera, Hansen.

E. tenera, Hansen, 1905c.
E. tenera, Hansen, 1910.
E. tenera, Hansen, 1911.

Scotia.

Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—Three.
Station 18, lat. 19° 59′ N., long. 23° 34′ W., tow-net.—Two.
Station 29, lat. 12° 31′ N., long. 25° 9′ W., tow-net.—Twenty-two.
Station 36, lat. 8° 42′ N., long. 25° 28′ W., tow-net.—Fifty.
Station 39, lat. 6° 43′ N., long. 25° 48′ W., tow-net.—Twelve.

Discovery.

Lat. 7° 23′ S., long. 30° 23′ W.—Five.
Lat. 13° 59′ S., long. 34° 35′ W.—Three.

All the specimens here recorded were captured at the surface.

Euphausia superba, Dana.

E. superba, Tattersall, 1908.

Scotia.

Station 152, lat. 60° 32′ S., long. 43° 40′ W., February 2nd, 1903, stomach of *Lobodon carcinophaga*.—Many.

Station 156, off Saddle Island, South Orkneys, February 3rd, 1903, edge of the ice-floes.—Twenty.

Station 159, lat. 61° 20′ S., long. 43° 23′ W., February 4th, 1903, stomach of penguin.—Many.

Station 203, lat. 59° 38′ S., long. 29° 55′ W., February 13th, 1903, edge of ice-floes, tow-net.—Seven.

Station 325, lat. 60° 43′ 42″ S., long. 44° 38′ 33″ W., Scotia Bay, South Orkneys, April to July 1903.—Fifty-one in nets, and many from the stomachs of fish.

Station 411, lat. 74° 01′ S., long. 22° 00′ W., off Coats Land, 161 fathoms, traps.—Eighteen.

Station 414, lat. 71° 50′ S., long. 23° 30′ W., vertical net, 0–1000 fathoms. —Five.

Station 417, lat. 71° 22′ S., long. 16° 34′ W., 1410 fathoms, trawl.—One large female.

Station 418, lat. 71° 32′ S., long. 17° 15′ W., 1221 fathoms, trawl (not on bottom).—One male.

Station 422, lat. 68° 32′ S., long. 12° 49′ W., vertical net, 0–800 fathoms.—Three.

Dr Bruce has furnished me with three coloured sketches of Euphausians, all of which refer to this species. One of the sketches, of a specimen caught in February 1903 at the edge of the ice-floes, agrees almost perfectly with the account of the colour of this species as noted by Dr G. Racovitza during the expedition of the *Belgica*, and published by Hansen (1908*b*). In the other two sketches, of specimens captured in February 1903 and March 1904, there is considerably more red pigment shown on the dorsal surface of the carapace and abdomen. The distribution of the pigments is the same in all three sketches, but in the two latter ones the red is intensified. This difference, it seems probable to me, may be accounted for by the supposition that, in the animal from which the first sketch mentioned above was made, the red chromatophores were in a contracted condition, and in the other two specimens they were in an expanded condition at the time they were painted.

Euphausia superba is the Euphausian *par excellence* of the Antarctic Ocean. It is circumpolar in its distribution, and has been recorded by all the recent expeditions which have visited those waters. It likewise forms the major part of the food of the crab-eating seal, *Lobodon carcinophaga*, and of certain of the penguins.

Euphausia lucens, Hansen.

E. lucens, Hansen, 1905*c*.
E. lucens, Hansen, 1911.

Discovery.

Lat. 36° 27½′ S., long. 8° 20′ W.—Two.

Lat. 37° 47′ S., long. 3° 59′ E.—Two.

Lat. 37° 33¾′ S., long. 6° 09′ E.—Fifteen.

This species of the genus is one of the rarest, and has not been captured by any of the expeditions since the *Challenger*. Hansen mentions specimens from three localities in the South-East Atlantic, very much in the same neighbourhood as the present records, and from one locality between Tasmania and New Zealand.

Euphausia hemigibba, Hansen.

E. hemigibba, Hansen, 1910.

Scotia.

Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—Thirteen.

Station 18, lat. 19° 59′ N., long. 23° 34′ W., tow-net.—One.

Station 21, lat. 18° 28′ N., long. 24° 28′ W., tow-net.—Two.

Discovery.

Lat. 30° 43′ S., long. 21° 36′ W.—Six.
Lat. 35° 10′ S., long. 13° 40′ W.—Three.
Lat. 36° 27½′ S., long. 8° 20′ W.—One.

At present, this species is known only from the tropical Atlantic (HANSEN), Indian Ocean, and Mediterranean (TATTERSALL).

Euphausia pseudogibba, Ortmann.

E. pseudogibba, Ortmann, 1893.
E. pseudogibba, Hansen, 1910.
E. pseudogibba, Hansen, 1912.

Scotia.

Station 29, lat. 12° 31′ N., long. 25° 9′ W., tow-net.—One.

This species is known from the tropical Atlantic, Indian Ocean, and the Pacific, from which the types were recorded. It is most generally distributed in the Indian Ocean and the Atlantic, and decidedly rarer in the Pacific.

Euphausia gibboides, Ortmann.

E. gibboides, Ortmann, 1893.
E. gibboides, Hansen, 1911.
E. gibboides, Hansen, 1912.

Discovery.

Lat. 36° 27½′ S., long. 8° 20′ W.—One female, 22 mm.

This specimen differs from the description and figures given by HANSEN (1912) in the form of the lobe on the first joint of the antennular peduncle. This lobe has a bifid extremity, the outer process quite minute, and much smaller than the inner and main extremity. The specimen, however, agrees otherwise so well with *E. gibboides* that it has seemed best to include it in that species for the present, at any rate until male specimens are forthcoming and the copulatory organs on their pleopods can be investigated.

Euphausia longirostris, Hansen.

E. longirostris, Hansen, 1908*b*.
E. longirostris, Hansen, 1911.

Discovery.

Lat. 37° 47′ S., long. 3° 59′ E.—One adult male, 19 mm.

When first I examined this specimen, I determined it as a variety of *E. spinifera*, G. O. Sars, with which it agrees very closely, except in regard to the lobe from the first joint of the antennular peduncle. This lobe in *E. spinifera* extends right across the peduncle and has its anterior margin irregularly digitate. In the present specimen, the lobe does not stretch right across the peduncle, and the extremity is bifid. It thus agrees, in this respect, with *E. longirostris*. The copulatory organs on the first pleopods, however, agree almost exactly with those figured by SARS for *E. spinifera*. HANSEN has not, up till now, described the male of *E. longirostris*, so I am unable to compare my specimen from this point of view.* HANSEN says that *E. longirostris* is closely related to *E. spinifera*, and is only distinguished by the antennular lobe. On that character, therefore, I refer my specimen to that species.

E. longirostris is known, at present, only from the Antarctic Ocean to the south of the Falkland Islands and in the neighbourhood of South Georgia. The present record, therefore, is the most northerly one yet known for the species.

Genus *Thysanoëssa*, Brandt.

Thysanoëssa macrura, G. O. Sars.

T. macrura, G. O. Sars, 1885*a*.

Scotia.

Station 319, lat. 61° 05′ S., long. 43° 20′ W., 214 fathoms.—One female, 14 mm.

Station 414, lat. 71° 50′ S., long. 23° 30′ W., vertical net, 0–1000 fathoms.—One female, 28 mm.

If the evidence of the antennular flagellum be accepted, the smaller of these two specimens is correctly referred to this species, since it is distinctly shorter than the two distal joints of the peduncle. The larger specimen seems clearly to belong to *T. macrura*. The species has a circumpolar distribution in Antarctic waters.

Thysanoëssa gregaria, G. O. Sars.

T. gregaria, G. O. Sars, 1885*a*.

Scotia.

Station 98, lat. 34° 02′ S., long. 49° 07′ W., tow-net.—One.

Station 458, lat. 42° 57′ S., long. 8° 13′ W., tow-net.—Twenty-six.

Discovery.

Lat. 37° 47′ S., long. 3° 59′ E.—Two.

A post-larval specimen of the genus *Thysanoëssa* taken by the *Scotia* at Station 137, lat. 57° 42′ S., long. 46° 33′ W., cannot be referred to its adult species. It may belong to *T. gregaria* or to *T. vicina*, Hansen (1911).

* See note, p. 894. In this paper HANSEN describes and figures the copulatory organs of the male of this species, and points out minor differences from those of *E. spinifera*.

Genus *Nematoscelis*, G. O. Sars.

Nematoscelis microps, G. O. Sars.

N. microps, G. O. Sars, 1885*a*.
N. microps, Hansen, 1905*b* and *c*.
N. microps, Hansen, 1910.
N. microps, Hansen, 1912.

Scotia.

Station 12, lat. 22° 19′ N., long. 22° 07′ W., tow-net.—Ten.
Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—Thirteen.

These specimens are all small and in rather poor condition. I cannot be quite certain of their identity, but I believe they ought to be referred to this species.

Genus *Stylocheiron*, G. O. Sars.

Stylocheiron carinatum, G. O. Sars.

S. carinatum, G. O. Sars, 1885*a*.
S. carinatum, Hansen, 1910.
S. carinatum, Hansen, 1912.

Discovery.

Lat. 13° 59′ S., long. 34° 35′ W.—One.
Lat. 17° 15′ S., long. 32° 05′ W.—Thirteen.

This interesting and easily recognisable species of the genus *Stylocheiron* is widely distributed in the various tropical waters of the globe.

Order STOMATOPODA.

Family Squillidæ.

Genus *Squilla*, Fabricius.

Squilla armata, Milne-Edwards.

Scotia.

Station 481, N.W. off Ijzer Fontein Point, Cape Colony, 35 fathoms, sand, trawl.—Two, 116 mm. and 98 mm.

Genus *Lysiosquilla*, Dana.

Stomatopod larvæ, referable to this genus, were taken on two occasions, in surface tow-nets.

Station 64, lat. 6° 30′ S., long. 34° 25′ W., off Brazil, tow-net.—One, 3 mm.
Station 66, lat. 7° 9′ S., long. 34° 30′ W., off Brazil, tow-net.—Two, 2 mm. and 3·5 mm.

These specimens, belonging to the genus of larval Stomatopods known as *Lysierichthus*, cannot be referred to their adult species.

Order ISOPODA.

Tribe *FLABELLIFERA*.

Family Eurydicidæ.

Genus *Cirolana*, Leach.

Cirolana, Hansen, 1890.

Cirolana hirtipes, Milne-Edwards.

C. hirtipes, Hansen, 1890.

Scotia.

Station 482, Saldanha Bay, Cape Colony, May 1904, 8–10 fathoms, trawl.—One, 25 mm.

This species is only certainly known from the Cape, from which Milne-Edwards' type was procured, and from which Hansen has since recorded a single specimen.

Cirolana sulcata, Hansen.

C. sulcata, Hansen, 1890.

Scotia.

Station 482, Saldanha Bay, Cape Colony, May 1904, 8–10 fathoms, trawl.—One.

Recorded from the shores of Simon's Bay by Hansen (1890), and from Somerset West, False Bay, by Stebbing (1902). Not known from any other locality.

Family Corallanidæ.

Genus *Lanocira*, Hansen.

Lanocira sp. ?

Scotia.

Station 482, Saldanha Bay, Cape Colony, May 1904, 8–10 fathoms.—One, 12 mm.

The telson of this specimen is, unfortunately, damaged, so that it is not possible to identify the species, if known, or to describe the specimen satisfactorily. Moreover, the sex of the specimen is uncertain. The absence of oostegites and of the external setiferous lobe to the maxillipedes indicates that the specimen is a male. On the other hand, I can find no *appendix interna* on the second pleopods.

The structure of the mouth parts clearly indicates the generic position of this specimen, and, in the form of these appendages, it approaches very closely, among the described species, to *L. zeylanicus*, Stebbing (1905*a*), with which it agrees in the strong development of the hook of the first maxilla and in the great inequality in the length of the two setæ arming the distal joint of the second maxilla.

The shape of the body has been considerably altered, presumably by the method of preservation. The segments are more or less separated from each other, and the whole body considerably distended, so that it is impossible to get a fair idea of the normal form. As it is, the specimen has not the compact, broadly oval, rotund form of the other members of the genus. The body is nearly three times as long as broad, and the epimeral plates seem to be more in evidence in dorsal view than in the figures of other species of the genus. The length, moreover, is almost twice that of any other species. The largest described form is *L. Gardineri*, Stebbing (1904), which is 7 mm. long, while females of *L. rotundicauda*, with young in the brood-pouch, measure only 5·25 mm. The present specimen is 12 mm. long.

The body is provided with setæ only on the fourth and fifth segments of the mesosome and the whole of the telson. In this respect it is more setose than *L. Gardineri* and *L. rotundicauda*, but less so than in *L. zeylanicus*.

The broadly oval inner branch of the uropods bears seven spines at its extremity, and the outer branch, which is just slightly shorter than the inner, bears three spines.

I prefer to leave the identity of this species an open question till more specimens, not deformed or mutilated in any way, are available. In the meantime, the genus has not, so far as I am aware, been recorded from South Africa previously.

Family Cymothoidæ.

Genus *Glossobius*, Schiödte and Meinert.

Glossobius linearis (Dana).

G. linearis, Hansen, 1895.

Scotia.

Station 36, lat. 8° 42′ N., long. 25° 28′ W., tow-net.—One young, in the second stage, 3 mm.

This specimen agrees very closely with the specimens described and figured by Hansen (1895). I would point out, however, that both Hansen's specimen and my own show four well-developed teeth on the dactylus of the first thoracic legs. Schiödte and Meinert (1879–84) show only three well-developed teeth and a rudimentary one for *G. linearis*, but four well-developed teeth for *G. laticauda*. In this character, therefore, and in the shape of the eyes the present specimen approaches more closely to *G. laticauda* (M.-Ed.), a Pacific species. On the other hand, this specimen agrees so well with Hansen's specimens, and is so obviously the same species, that I accept his decision as to the name it should bear.

Family SPHÆROMIDÆ.

Genus *Limnoria*, Leach.

Limnoria lignorum (Rathke).

Scotia.

Station 118, 51° 41′ S., 57° 51′ W., Port Stanley, Falkland Islands, January 1903.—One.

This specimen was found among other Isopoda from Port Stanley, with no special note as to how it was come by. I cannot say, therefore, if it was engaged in its usual practice of destroying wooden structures. I can find no appreciable differences from northern specimens of the same species. The nearest recorded place of capture is Port Elizabeth, South Africa (STEBBING, 1908).

Genus *Exosphæroma*, Stebbing, 1900*a*.

Exosphæroma, Hansen, 1905*a*.

Exosphæroma gigas, Leach.

E. gigas, Stebbing, 1900*a*.

Scotia.

Station 118, 51° 41′ S., 57° 51′ W., Port Stanley, Falkland Isles, January 1903.—*ca.* fifty, all sizes.

Station 349, 51° 41′ S., 57° 51′ W., Port William, Falkland Isles, January 1904.—Nineteen.

I have nothing to add to STEBBING's detailed account of this species. It was infested, as seems usual with the species in this part of the world, with *Iais pubescens.*

Exosphæroma tristense (Leach). (Plate, fig. 1.)

Sphæroma tristense, Leach, 1818.
Sphæroma tristense, Hansen, 1905*a*.
nec. Sphæroma tristense, Krauss, 1843.
nec. Sphæroma tristense, Stebbing, 1910.

Scotia.

Station 461, lat. 40° 20′ S., long. 9° 56′ 30″ W., Gough Island, 21st–22nd April 1904.—One male, 10 mm., and three females, 5–6 mm., from the shore and from floating weed.

I refer these specimens from Gough Island to LEACH's rather obscure species, which does not seem to have been recognised since it was described in 1818, from specimens taken at Tristan d'Acunha. The female specimens agree with LEACH's brief description in its main points—body smooth, terminal segment of the abdomen terminating in an obtuse point and having at its base two elongated and rather indistinct tubercles. The description of the terminal segment of the abdomen and the uropods may be amplified somewhat. The last segment of the abdomen is triangular in shape, narrowing to a rather produced apex, the actual tip of which is bluntly rounded. The segment is not evenly vaulted from its edges, as, for instance, it is in *E. gigas*; but some little way in from the margins there is a shallow impressed groove running more or less parallel with the margins all the way round. The central portion thus marked off is evenly vaulted, and bears anteriorly two elongated but only slightly pronounced tubercles. The inner and outer uropods are about equal in length, and barely reach the apex of the abdomen. The inner one is truncate at its distal extremity, the outer one evenly rounded.

The male specimen, 10 mm. in length, which I refer to this species, differs from the female in having the seventh segment of the thorax produced into a short, blunt median process, which projects slightly beyond the anterior margin of the last segment of the pleon (Plate, fig. 1). Moreover, the tubercles on the latter are very obscure and almost obsolete. But otherwise the agreement with the female specimens is very close, especially in the form of the pleon and uropods, as described above, though the latter are, perhaps, a little more fully developed. I have very little doubt that the male specimen should be referred to the same species as the females, and I think I am correct in regarding both as examples of LEACH's species.

If my identification is correct, the generic position of the species requires consideration. As regards the mouth organs and the structure of the pleopods, the specimens are in complete harmony with the genus *Exosphæroma*. Moreover, they show the closest agreement with the type of that genus, *E. gigas*, Leach, in the general form and the structure of the various appendages. They differ from *E. gigas* in the form of the pleon and uropods in both sexes, and in the process from the seventh thoracic segment in the male. HANSEN's amended definition (1905*a*) of the genus *Exosphæroma*, however, runs as follows:—"Last thoracic segment unarmed in both sexes. End of the abdomen at most somewhat produced, but not acute." If this definition be accepted, LEACH's species would be excluded from the genus *Exosphæroma* by the characters of the last thoracic segment of the male, and would fall into one or other of the genera *Zuzara* and *Isocladus*. These latter genera are, however, further characterised by the great development of the uropods in the male, greater in *Zuzara* than in *Isocladus*, but much greater in both than in the present species, in which the difference between the sexes in this respect is almost negligible. The females of all three genera are very much alike, and HANSEN himself has indicated the great difficulty of separating the genera in a satisfactory manner. Moreover, as STEBBING (1910) points out, he has at least implied a modification of the definition of *Exosphæroma*, quoted above, by including in the genus *Sphæroma*

Stimpsonii, Heller (1868). Heller says of the latter that the hind margin of the seventh segment of the thorax is produced into a conical process, and that the telsonic segment has an acute apex. The adjective "acute," as applied to the telson, is, I take it, meant relatively to the shape of that organ in such a species as *E. gigas*, and in no way intended absolutely. I have accepted this implied emendation to the characters of the genus *Exosphæroma*, and, as modified, include *S. tristense*, Leach, within its limits.

I may, perhaps, be allowed to suggest the probability that *E. tristense*, Leach, and *E. Stimpsonii*, Heller, are synonymous. I have already referred to the close similarity between *E. tristense* and *E. gigas* as regards their appendages and general structure. The above remarks on *E. Stimpsoni* apply equally well to the male of the specimen I refer to *E. tristense*, and I think it highly probable the two forms are one and the same species. I have not the necessary material to pronounce a definite opinion here, but I make the suggestion, for any future worker with more material at his disposal to decide. If the suggestion is upheld by future research, Leach's name has priority. The females of *E. tristense* agree very closely with White's types of *S. leucura*, which I have examined at the British Museum. This species was named by White (1847), but never described. It is not unlikely that it will be found to be synonymous with *S. integrum*, Heller, described from specimens taken off Chile, near the same locality as that from which White's types came. Heller's name would have preference, since White's name can only be regarded as a *nomen nudum*. Hansen refers *S. leucura* to *Exosphæroma*, and *S. integrum* to, possibly, *Isocladus* or *Zuzara*. I believe both should be referred to the genus *Exosphæroma*, and suspect that the males will be found to have the same form as those of *E. tristense*. It would not surprise me if *Sphæroma Stimpsonii*, *S. leucura*, and *S. integrum* were all eventually found to be synonymous with *S. tristense*, though females of allied species of *Exosphæroma* are notoriously difficult to separate.

Exosphæroma Kraussii, sp. nov. (Plate, figs. 2 and 6.)

? *Sphæroma tristense*, Krauss, 1843.
? *Sphæroma tristense*, Stebbing, 1910.

Scotia.

Station 483, entrance to Saldanha Bay, Cape Colony, trawl.—Three females, 8 mm.

Specific Characters.—Sexes similar; body microscopically granular, especially on the pleon and uropods; segments of the thorax with four very obscure small tubercles equidistantly placed, the tubercles most pronounced on the last thoracic segment, and becoming almost obsolete on the anterior segments; a pair of larger and more definite rounded tubercles on the centre of the combined first three segments of the pleon; last segment of the latter triangular in shape with a pointed apex, having a pair of closely approximating, conspicuous elongate tubercles at the centre of the anterior part, the tubercles separated by a shallow groove, from the distal end of which a light carina runs to the apex of the telson; epimera visible in dorsal view; uropods subequal in length, slightly shorter than the telson, inner ramus bluntly rounded, outer ramus acute, the extremity of both branches minutely and irregularly denticulate when seen under the low power ($\frac{2}{3}''$) of the microscope (Plate, fig. 6).

I believe this species to be the one recorded by KRAUSS (1843) as *Sphæroma tristense*, Leach. KRAUSS' description may be quoted in full: "Die 2 langlich Hockerchen auf dem letzten segmente, so wie die stumpfe Spitze des Abdomen bestimmen mich, meine Examplare für diese von LEACH nur sehr kurz beschriebene Art zu halten, jedenfalls gehoren sie zu der Abtheilung der Spezies, deren 2 letzte Ringe des Thorax wie die vorderen gebildet sind; aber alle Ringe haben in der Mitte 4 sehr undeutliche Hockerchen und an den Seiten eine ahnliche Anschwellung. Die Lamellen der hinteren falschen Füsse haben glatte Ränder und sind gerade so lang als die Spitz des Abdomen. In der Tafelbai. Länge 5·2 linien."

The adjective "stumpfe," it is true, does not accurately describe the apex of the pleon in the present form, but the character which I rely on mainly for the identification of this species with the one observed by KRAUSS is: "all the segments have in the middle four very obscure tubercles." This does not apply to *S. tristense* of LEACH, which has the thorax smooth; but it accords very well with the present species, though the tubercles are almost obsolete on the anterior segments. The "similar intumescence" on the sides of the segments, mentioned by KRAUSS, is present on the segments of *E. Kraussii*, as a slight swelling in the region of the junction of the body segments with their epimeral plates. If *E. Kraussii* is not identical with *S. tristense*, Krauss, I am unable to identify it with any described form.

In the British Museum I found several specimens of this species, unnamed, from Cape Town. Among them were two or three males, which agree in all respects with the females, and have no processes on the thoracic segments. In the characters of the mouth parts and pleopods, the species is in agreement with the genus *Exosphæroma*. I have named the species in honour of the only worker on South African Crustacea (previous to the recent researches of STEBBING), who most probably had the species before him in compiling his catalogue.

The species is, so far, only known from Cape Colony in the neighbourhood of Cape Town and neighbouring bays.

Exosphæroma Coatsii, sp. nov. (Plate, figs. 3 and 4.)

Scotia.

Station 118, lat. 51° 41′ S., 57° 51′ W., Port Stanley, Falkland Islands, January 1903.—Six females, 4–10 mm.

Specific Characters.—Body capable of rolling up, or at least doubling up; epimeral plates not visible in dorsal view, projecting down at right angles to the rest of the segments of the body, from which they are sharply marked off by a strong ridge which projects laterally and hides the plates from the dorsal aspect; segments of the thorax with four small, equally distant tubercles on the dorsal surface, the tubercles more pronounced than in *E. Kraussii*; a pair of larger tubercles in the centre of the combined first three segments of the pleon; terminal segment of the latter triangular in shape with the apex somewhat produced but the actual tip rounded; centre of the telsonic segment evenly vaulted from a point some little way in from the margins, bearing in the centre two pairs of large tubercles, the anterior pair slightly narrower and more elongate than the posterior pair; behind the latter in the median line are two smaller tubercles, one behind the other; the lateral parts of the telsonic segment with a number of minute tubercles or granulations; a very light carina runs from the base of the median tubercles to the apex of the telson; inner and outer uropods shorter than the telson; apex of the inner one truncate, with the outer corner somewhat produced into a sharp angle; outer uropod almost sabre-shaped, apex sharpely acute.

My report was almost completed when I received the large adult female specimen, on which this description is based, from the Rev. T. R. R. STEBBING, who found it and another example among some Decapod crustaceans from the same place. I had already figured as the type the largest specimen then in the collection, a female, 6 mm., and I reproduce that figure here because it illustrates the differences between the young and adult of this species, and as a contribution to our knowledge of the changes which a Sphæromid may undergo during growth. A comparison of the two figures will show that there is considerable difference between the young and adult stages. In the young stage, the telsonic segment is less produced and its apex more obtuse than in adult specimens. It bears only the two pairs of larger tubercles of the adult stage, the two median tubercles and the lateral minute tubercles being absent. The tubercles throughout the body are less developed in the young stage. The differences in the uropods are quite considerable. In the young example both uropods have more or less evenly rounded extremities, quite distinct from the form of the uropods in the adult as described above.

Having seen no male specimens, I am unable to say whether this species exhibits any marked sexual differences. Otherwise the species seems clearly referable to the genus *Exosphæroma*, as far as the characters of the mouth organs and pleopods go.

The arrangement of the epimeral plates is quite characteristic. The first plate projects forward under the eyes, the next four are rectangular or rhomboidal in shape, while the sixth is larger than any of the others and projects backwards so as to almost hide the small seventh plate. When the animal is doubled in two, the epimeral plates form a very good protection for the sides of the body.

The arrangement of the tubercles will allow the species to be recognised at once. It differs from *E. Kraussii* in the more pronounced nature of the tubercles of the body, in the possession of two pairs of large tubercles in the telsonic segment, and the shape of the uropods, as well as in the form of the epimeral plates.

I have seen a specimen of this species, unnamed, in the British Museum, from the island of St Paul.

Genus *Cymodoce*, Leach.

Cymodoce uncinata, Stebbing.

C. uncinata, Stebbing, 1902.

Scotia.

Station 482, Saldanha Bay, Cape Colony, May 1904.—Two males, 6 mm. and 12 mm.; four females, 7–8 mm.

The females of this form do not seem to have been hitherto observed. They have two submedian, blunt and rounded bosses on the telsonic segment, which correspond to the large bosses found on the male, but are very much less developed. The bosses are not so well developed in the largest female as in the smaller male, in which they have reached almost adult proportions. The apex of the telsonic segment of the female is trifid, with the median lobe well developed and bluntly rounded, and the lateral lobes marked off by mere notches. The apex of the telson in the young male is of the same form. It seems to me that the form of the apex of the telson characteristic of the adult male is reached by the greater development of the lateral lobes of the female, and consequently of the notches which separate them from the median lobe.

The most characteristic feature of the present species is the scythe-like termination of the outer uropod, and the sharply truncate extremity of the inner uropod, which are the same for both sexes. STEBBING mentions both of these points, but hardly emphasises them.

Sphæromidæ of uncertain identity.

Two specimens of eubranchiate Sphæromidæ, representing two distinct species, are present in the collection. Both are female and, as such, cannot be referred to their correct genera, though they appear to be very closely allied to *Dynamenella*. I have not attempted to refer them to their proper species. They may briefly be noted as follows :—

(1) Station 118, 51° 41′ S., 57° 51′ W., Port Stanley, Falkland Isles.—One female, 4 mm. (Plate, figs. 7 and 8.)

The most characteristic feature of this specimen is the form of the telson, which I have represented on Plate, figs. 7 and 8. Looked at from above, it takes the form of a triangle narrowing rapidly to an abrupt apex ; but from the ventral surface the lateral margins are seen to be folded in to a certain extent, though they do not meet in the mid-ventral line to form a definite tube as in *Cymodocella*, nor is the half tube thus formed as long as in the latter genus. Looked at from the posterior end, therefore, the end of the telson appears as a semicircular notch ; but this cannot be considered as a notch in the apex of the telson, since it is formed by the infolding of the lateral margins. The body presents no processes or tubercles of any kind, though the integument appears granular to a certain extent, due probably to extraneous matter and not a definite character of the integument itself. The mouth parts and pleopods agree with the characters of the sub-family *Sphærominæ eubranchiata*.

(2) Station 482, Saldanha Bay, Cape Colony, May 1904.—One female, 6 mm. (Plate, figs. 9 and 10.)

The body is quite smooth, without tubercles or processes of any kind whatever. The colour is a golden yellow minutely flecked with black pigment. The telson is similar in form to that of the last specimen, but less abruptly narrowed, with a wider apex, and less inwardly folded margins. The result is that, from the dorsal aspect, the apex of the telson appears slightly emarginate.

The telsonic segment and uropods are shown on Plate, fig. 9. The most characteristic feature of the specimen is the form of the superior antenna (Plate, fig. 10), in which the second joint of the peduncle is very broad, with a strong ridge throughout its whole length, so that in cross-section it would appear triangular and not lamellar. The third joint is quite small and distally expanded.

Further specimens of both these forms are desirable before their systematic position can be determined.

Tribe *VALVIFERA*.

Family Idoteidæ.

Genus *Paridotea*, Stebbing, 1900*b*.

Paridotea ungulata (Pallas).

P. ungulata, Stebbing, 1900*b*.

Scotia.

Station 478, Table Bay, Cape Town Harbour, May 1904.—Five.
Station 482, Saldanha Bay, Cape Colony, May 1904, 5–25 fathoms.—Abundant.

Specimens were also procured from the stomach of a dogfish, caught in Saldanha Bay.

Genus *Synidotea*, Harger.

Synidotea hirtipes (Milne-Edwards).

S. hirtipes, Stebbing, 1902.

Scotia.

Station 478, Table Bay, Cape Town Harbour, May 1904.—Four.
Station 482, Saldanha Bay, Cape Colony, May 1904, 5–25 fathoms.—Abundant.

Genus *Idotea*, Fabricius.

Idotea metallica, Bosc.

Scotia.

Fifteen specimens belonging to this species were found among the collections submitted to me, without any note as to the locality of their capture. I suspect they were taken among the Gulf weed, through which the *Scotia* passed between 22nd June and 30th June 1904.

Station 482, Saldanha Bay, Cape Colony, May 1904.—Two.

Family Astacillidæ.

Genus *Antarcturus*, zur Strassen.

Antarcturus ornatus, sp. nov. (Plate, fig. 5.)

Scotia.

Station 482, Saldanha Bay, Cape Colony, May 1904.—One female, 7 mm.

Plate, fig. 5, gives a general idea of the form of this species and shows its most characteristic feature, namely, its ornamentation or armature of short, stiff bristles on all the segments of the body.

The head and the first three segments of the thorax equal together the length of the large middle segment. The last three segments of the thorax are widely separated. The metasome has two segments partially marked off with transverse sutures.

The setæ are found on the dorsal surface of the animal, on all the segments, as well as on the head and metasome. The surface of the body is irregular, roughened, and microscopically spinulose, but there are not any distinct tubercles. The first three and the last three segments of the mesosome are elevated dorsally when seen in lateral view, and the setæ are arranged in a broad band across this elevated part, and are most numerous in the centre. The well-marked intervals between the last three segments of the mesosome are devoid of setæ. The middle segment of the body shows two setigerous areas, a wide and broad anterior one and a narrow posterior one, separated by a shallow depression devoid of setæ. This is shown very well in lateral view. Both the setigerous areas are elevated and roughened; the non-setigerous band, smooth and depressed.

The eyes are moderately well developed and lateral. The superior antenna reaches to the level of the distal end of the second joint of the peduncle of the inferior antenna. The flagellum is equal in length to the last two joints of its peduncle and bears olfactory filaments.

The inferior antenna is two-thirds of the entire length of the animal from the front of the head to the posterior end of the metasome. The fourth joint is equal in length to the preceding three joints, and slightly longer than the fifth joint. The flagellum is short, about half as long as the fifth joint, composed of three joints, the last joint terminating in a spine. I cannot see any denticulations on the inner margin of the flagellum. The inferior antenna is armed with a few scattered stout setæ similar to those which are found on the body, but there are no teeth or spines of any kind.

The first gnathopods are broken off on both sides. The remaining legs present no special features.

Only one other South African Arcturid is known, *Antarcturus kladophorus*, Stebbing (1908). From this species *A. ornatus* is readily distinguished by the quite different character of the armature of the body, by the shorter and stouter inferior antenna, and by the shorter flagellum to the latter. I know of no species of this group with which *A. ornatus* can be confused. Spiny and tuberculous forms are common, but no setigerous species have been described.

The generic position of this form is doubtful. STEBBING (1908) gives a table for the discrimination of genera belonging to this family, based primarily on the number of marsupial plates. KOEHLER (1911) has shown that all the genera of Arcturidæ possess three oostegites, and that therefore this character is useless for generic separation. This discovery increases the difficulty of deciding the generic position of the species of the family. In the general form of the body, *A. ornatus* approaches *Antarcturus* and *Arcturella*, and I provisionally refer it to the former genus. It cannot be referred to *Arcturina*, Koehler, because the second and third thoracic limbs are not robust, but conform to the type met with in *Antarcturus*. Male specimens are necessary to decide whether it should be referred to the genus *Arcturopsis*, Koehler. The separation of the epimeral plates would seem to exclude it from the genus *Pleuroprion*, zur Strassen.

Tribe *ASELLOTA*.

Family JANIRIDÆ.

Genus *Iais*, Bovallius.

Iais pubescens (Dana).

I. pubescens, Stebbing, 1900*a*.

Scotia.

Station 118, lat. 51° 41′ S., long. 57° 51′ W.

A large number of specimens of this curious and interesting commensal Isopod were found in the bottles containing *Exosphæroma gigas* from Port Stanley and Port William, Falkland Isles. They were, presumably, living on the latter species when captured. I have nothing to add to STEBBING's description of the species.

Tribe *EPICARIDEA*.

Family Bopyridæ.

Genus *Probopyrus*, Giard and Bonnier.

Probopyrus latreuticola (Gissler).

Scotia.

Station 538, lat. 32° 11′ N., long. 34° 10′ W., tow-net.—Eight, from *Latreutes ensiferus*, captured among the Gulf weed.

Family Dajiidæ.

Genus *Heterophryxus*, G. O. Sars.

Heterophryxus appendiculatus, G. O. Sars. (Plate, figs. 14 and 15.)

H. appendiculatus, G. O. Sars, 1885*a*.

Scotia.

Station 39, lat. 6° 43′ N., long. 25° 48′ W., tow-net.—One female, with attached male, free in a tow-netting containing many *Euphausia americana*, Hansen.

Station 512, lat. 0° 22′ N., long. 18° 43′ W., tow-net.—One female, with attached male, from *Euphausia americana*.

It is almost certain that the specimen from Station 39, found unattached, was originally parasitic on *Euphausia americana*, of which there were over one hundred specimens in the same gathering. Thus both specimens in this collection were from the same host.

These specimens differ from those described and figured by me (1905) from specimens taken from *Euphausia Krohnii* in the form of the last pair of legs. I figure on the Plate these limbs from one of the present specimens (fig. 14) and from a specimen taken in the North Atlantic to the west of Ireland (fig. 15). It will be seen at once that, in the specimens from *E. americana*, the inner branch of these peculiar appendages is shorter and stouter than in the specimens from *E. Krohnii*. These figures illustrate incidentally the most frequent position of the limbs in preserved specimens. I cannot decide at present whether this difference is of specific value. In the first place, the host of the type specimen must be considered uncertain, in the light of Hansen's recent work. It was called *Euphausia pellucida* by Sars, but Hansen has shown that Sars confused several distinct species under that name. The host of the type specimen was taken in the North Atlantic, near to Cape Verde. This is just the locality given by Hansen for *E. americana*, and though there is no improbability that the specimen is a true *E. Krohnii*, it is more probable that it is *E. americana*, the same species from which the present specimens were taken. I have examined the type host and parasite in the British

Museum, but they are mounted in Canada balsam, and are only to be seen in lateral view. It was not possible to make sure either of the species of the host or the form of the legs in the parasite. Until this matter can be settled, it is not desirable to consider the differences noted above as specific. If the type host is *E. Krohnii*, the differences can only be regarded as varietal; but, if *E. americana*, the grounds for considering them specific are strengthened. On the principle enunciated by GIARD and BONNIER, each species of host has a separate species of parasite. The genus *Heterophryxus* would seem to be a favourable one in which to test the truth of this axiom, for the form and shape of the last pair of legs seem to afford more definite characters than are usually to be found in the species of this group. It would be necessary to examine a large number of specimens taken from definitely and accurately named hosts, to decide the point. In the meantime, it seems to me to be best to refer the present specimens to the type species, with a note on the differences they exhibit.

Genus *Dajus*, Kröyer.

Dajus siriellæ, G. O. Sars.

D. siriellæ, G. O. Sars, 1885*a*.

Scotia.

Station 12, lat. 22° 19′ N., long. 22° 07′ W., tow-net.—Several in the Cryptoniscan stage.

Station 14, lat. 21° 28′ N., long. 22° 40′ W., tow-net.—One female, with two males attached, from the incubatory pouch of *Siriella Thompsonii.*

Station 56, lat. 0° 42′ S., long. 31° 20′ W., tow-net.—One female with male, free, but almost certainly from one of the thirty-eight specimens of *Siriella Thompsonii* in the same gathering.

Station 62, lat. 4° 15′ S., long. 33° 38′ W., tow-net.—Two females with males, from the incubatory pouch of *Siriella Thompsonii.*

This species was originally described by SARS from specimens taken from *Siriella Thompsonii* captured during the cruise of the *Challenger*. It has not, so far as I am aware, been recorded since that time, until last year, when HANSEN (1912) noted the presence of an Epicarid, probably this species, from the same host, captured in the Eastern Pacific.

The occurrence of two males with the same female is of interest.

SARS' type specimens, both male and female, were immature, the male being only in the Cryptoniscan stage. The present female specimens, presumably mature, have the incubatory pouch prolonged backwards in two bluntly rounded projections, which meet in the mid-ventral line and extend beyond the end of the pleon. The pouch is also prolonged in front beyond the head, on either side. The segmentation of the body is distinct throughout, and there is no cordon for the support of the male. The pleon in the female is terminated by a pair of biramous uropods, not uniramous as figured by SARS. In this respect the species differs from the genus *Dajus*, to which it was referred by SARS, and it is possible that this difference may, in the future, be thought worthy of generic significance; but I do not feel able at present to go into the matter fully, as I have not enough material for the purpose. I do not know of any other genera of Dajiidæ in which the uropods of the female are biramous.

The adult male has the pleon unsegmented, narrow, pointed, and slightly curved, and terminated by a pair of uniramous uropods.

Both the adult male and the Cryptoniscan larvæ are characterised by the excessive development of dark pigment, so well illustrated in SARS' figure. This feature enables the larvæ to be identified in tow-net gatherings.

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EXPLANATION OF THE PLATE.

Fig. 1. *Exosphæroma tristense* (Leach), male. × 8.
Fig. 2. *Exosphæroma Krausii*, sp. nov., female. × 8.
Fig. 3. *Exosphæroma Coatsii*, sp. nov., female, immature. × 8.
Fig. 4. *Exosphæroma Coatsii*, sp. nov., adult female. × 8.
Fig. 5. *Antarcturus ornatus*, sp. nov., female. × 10.
Fig. 6. *Exosphæroma Krausii*, sp. nov., extremities of the uropods.
Fig. 7. *Dynamenella* sp.?, telson and uropods, dorsal view.
Fig. 8. *Dynamenella* sp.?, telson, ventral view.
Fig. 9. *Dynamenella* sp.?, telson and uropods, dorsal view.
Fig. 10. *Dynamenella* sp.?, superior antenna.
Fig. 11. *Boreomysis Brucei*, sp. nov., dorsal view of anterior end.
Fig. 12. *Boreomysis Brucei*, sp. nov., antennal scale.
Fig. 13. *Boreomysis Brucei*, sp. nov., telson and uropods.

Fig. 14. *Heterophryxus appendiculatus*, G. O. Sars, last leg from a specimen taken from *Euphausia americana*.

Fig. 15. *Heterophryxus appendiculatus*, G. O. Sars, last leg of a North Atlantic specimen from *Euphausia Krohnii*.

NOTE ADDED IN THE PRESS.—While this paper was in the hands of the printers, I received a copy of HANSEN'S Report on the Crustacea Schizopoda of the Swedish Antarctic Expedition, but I have been unable to insert references to it in the main body of the text or to modify the latter in any way in accordance with HANSEN'S latest observations. Three new Antarctic Mysidæ are described, and further records of known species given.

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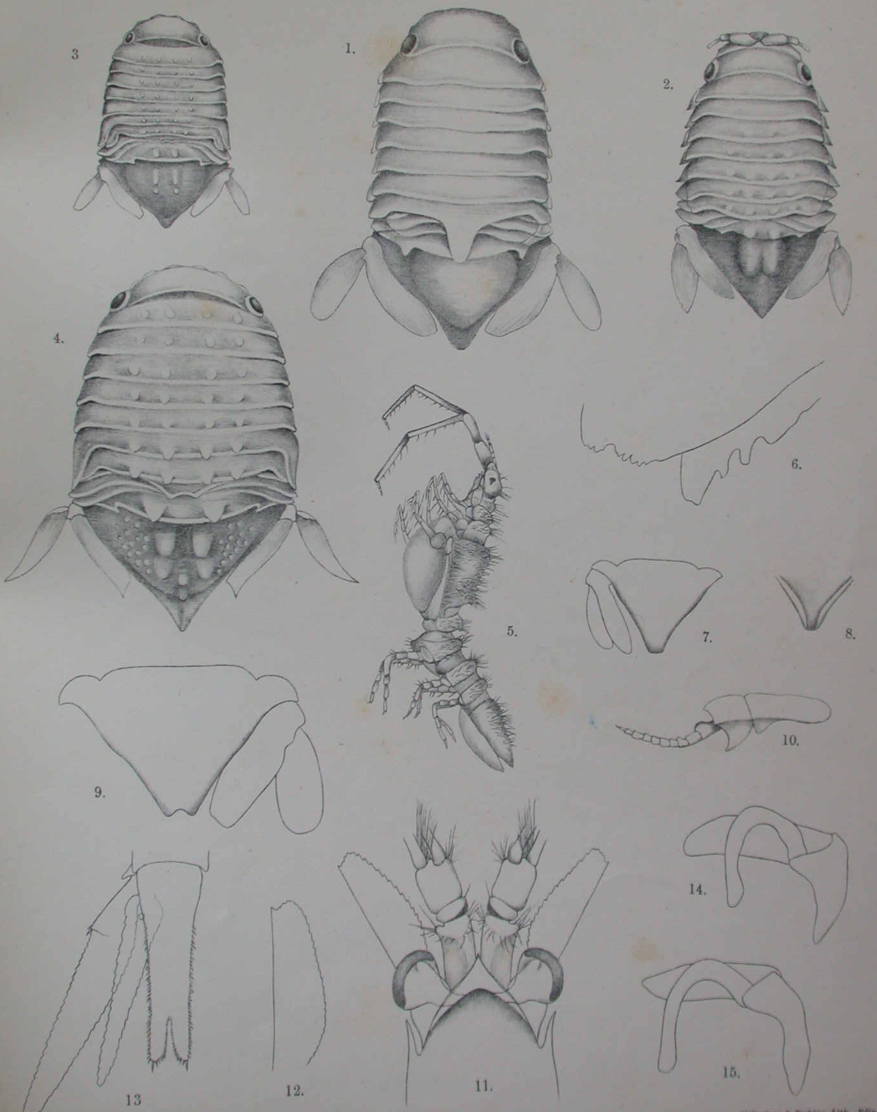

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