

Y. Delage

crust.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

FISHERIES BRANCH.

SCIENTIFIC INVESTIGATIONS,
1904.

No. V.

Schizopodous Crustacea from the North-East Atlantic Slope.

Supplement.

By E. W. L. HOLT and W. M. TATTERSALL, B.Sc.

This Paper may be referred to as
"*Fisheries, Ireland, Sci. Invest.*, 1904, V., [1906]."

1906.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

FISHERIES BRANCH.

LIST OF PUBLICATIONS RELATING TO SCIENTIFIC INVESTIGATIONS.

Report on the Sea and Inland Fisheries of Ireland for 1901, Part II.,
Scientific Investigations. (1903. Cd. 1577.) Price 4s. 5d.

Report on the Sea and Inland Fisheries of Ireland, 1902-1903, Part II.,
Scientific Investigations. (1905. Cd. 2535.) Price 8s. 7d.

The above can be obtained, either directly or through any bookseller,
from the Government Sale Agents:—E. Ponsonby, 116, Grafton-street,
Dublin; or Wyman & Sons, Ltd., Fetter-lane, London, E.C., and 32,
Abingdon-street, Westminster, S.W.; or Oliver & Boyd, Edinburgh.

The following papers have been published separately, and
can be obtained on application to the Scientific Adviser,
Fisheries Branch, Department of Agriculture, &c., Dublin.

HOLT, E. W. L.—The Public Oyster Beds on the Coasts of Counties
Wicklow and Wexford, pp. 33.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., II. [1903.]

HOLT, E. W. L. and BYRNE, L. W.—The British and Irish Gobies, pp.
30, pl. 2.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., III. [1903.]

HOLT, E. W. L., and BYRNE, L. W.—On a Young Stage of the White
Sole, *Pleuronectes (Glyptocephalus) cynoglossus*, pp. 3, pl. 1.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., IV. [1903.]

HOLT, E. W. L. and BYRNE, L. W.—The British and Irish Species of
the Family Stromateidae, pp. 7, pl. 2.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., V. [1903.]

WOLLEBAEK, ALF.—A Norwegian Method of Oyster Culture (Transla-
tion), pp. 27, pl. 10.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., VI. [1903.]

FARRAN, G. P.—Record of the Copepoda taken on the Mackerel Fishing
Grounds off Cleggan, Co. Galway, in 1901, pp. 18, pl. 2.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., VII. [1903.]

FARRAN, G. P.—The Nudibranchiate Molluscs of Ballynakill and Bofin
Harbours, Co. Galway, pp. 10, pl. 2.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., VIII. [1903.]

COLE, GREENVILLE A. J., and CROOK, T.—On Rock Specimens dredged
from the Floor of the Atlantic off the West Coast of Ireland in
1901, pp. 9, pl. 3.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., IX. [1903.]

GREEN, C.—Drawings and Descriptions of Apparatus used in Salmon
and Trout Culture, pp. 8, pl. 6.

Ann. Rep. Fish., Ireland, 1901, Pt. II., App., XIV. [1903.]

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

FISHERIES BRANCH.

SCIENTIFIC INVESTIGATIONS,
1904.

No. V.

Schizopodous Crustacea from the North-East Atlantic Slope.

Supplement.

By E. W. L. HOLT and W. M. TATTERSALL, B.Sc.

This Paper may be referred to as
“*Fisheries, Ireland, Sci. Invest.*, 1904, V., [1906].”

1906.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND

FISHERIES BRANCH

SCIENTIFIC INVESTIGATIONS,
1904.

No. V.

Chisiphoia Crustacea from the North East Atlantic Slope

Supplement.

By E. W. L. Holt and W. M. Tattersall, B.Sc.

This Paper may be referred to as

"Fishes of Ireland, and Freshwater Fishes, 1904, V. (1906)"

1906

SCHIZOPODOUS CRUSTACEA FROM THE NORTH-EAST ATLANTIC SLOPE.

SUPPLEMENT.

BY

E. W. L. HOLT AND W. M. TATTERSALL, B.Sc.

PLATES I. TO V.

The present note contains diagnoses and figures of several species which were provisionally described in Appendix, No. IV., of the Report for 1902-3,* and we have included additional records in order to complete the list, in essentials, for the period ending in September, 1905. The localities are denoted by magnetic bearings, except in a few instances, where latitude and longitude are mentioned.

Certain forms, though we have but little to add to previous records of capture, require mention on account of the discoveries of our friend, Dr. H. J. Hansen, of Copenhagen, to whom we desire to express our thanks for the most generous help. In his recent papers, which are referred to later under their several titles, it is shown that the Euphausian which, following Sars, we have previously recorded as *Euphausia pellucida* is only one of several species hitherto grouped under that name, and is more properly known as *E. Mülleri*, Claus (= *T. bidentata*, Sars). It follows that the account which we gave of the geographical distribution requires revision to make it applicable to the restricted species. The same applies to the forms known since the publication of Sars' *Challenger* monograph as *Eucopia australis*, and one is tempted to conjecture that as the opportunities of exact knowledge of oceanic animals increase, so will the list of truly cosmopolitan species be found to decrease.

Dr. Lo Bianco's papers on the results of the cruises of the *Puritan* and *Maia*, which we had previously overlooked, afford us an opportunity of materially adding to the

* *Ann. Rep. Fisheries, Ireland*, 1902-3, Pt. II. [1905]. Species, &c., instituted by us in that paper are here denoted by the initials H. and T.

Fisheries, Ireland, Sci. Invest., 1904, V., [1906].

horizontal range assigned in our previous communication to several species, and since the author has kindly permitted us to examine his material we have in some instances been able to suggest a different interpretation of the systematic definition.

To Canon Norman we are indebted for the loan of co-types without which it would have been impossible to decide the species of a *Pseudomma* previously recorded as *P. roseum*, but in reality *P. affine*; and, as usual, we have not hesitated to afflict our friend Dr. Calman with many demands on his valuable time.

The records additional to those already given enrich the census of the British-and-Irish area by five species :

Thysanopoda distinguenda, Hansen.

Eucopia sculpticauda, Faxon.

Euchaetomera Fowleri, H. and T.

Pseudomma nanum, sp. n.

Boreomysis microps, G. O. Sars.

Pseudomma roseum is expunged from the list, and replaced by *P. affine*, G. O. Sars; *Mysideis Farrani* becomes *Mysidetes Farrani*. Correction of nomenclature causes *Euphausia pellucida*, *Stylocheiron longicorne*, *S. chelifer* and *Eucopia australis* to be replaced by *E. Mülleri*, *S. Suhmi*, *S. abbreviatum* and *E. unguiculata*. We have traced our record of *Meterythrops robusta* to a clerical error, specimens which were correctly determined and labelled as *Parerythrops obesa* having been entered in the note-book as *P. robusta*. *M. robusta* therefore disappears from the list, and we are obliged to Dr. Hansen for suggesting the error.

Siriella norvegica, already known from the coasts of England and Scotland, is now noted from the west of Ireland.

Three oceanic species, *Stylocheiron elongatum*, *Bentheuphausia amblyops* and *Petalophthalmus armiger* have been taken immediately to the west of the British-and-Irish area, and may, from experience with other forms, be expected to occur sooner or later within the 1,000-fathom line.

The principal addition to the *Helga's* collecting equipment consists of a large townet in the form of a pelagic otter-trawl, designed and presented to us by Dr. C. G. Johan Petersen. The net is made of strong coarse cheese-cloth or butter muslin, the seams strengthened by bolt-ropes which take much of the strain off the material. The opening is about eight feet by four feet.

It is, like all the townets now used by the *Helga*, an open net and therefore fishes not only at the depth to which it is sunk, but also (and probably more efficiently) from thence to the surface. So far we are unacquainted with any self-closing horizontal net sufficiently large to capture active

pelagic animals of considerable size. The net must be big, since, if the animals are to be taken in good condition, the meshes must be small, and no fine material can be hauled at a high rate of speed. The limit to which the size of any even occasionally-efficient pattern of horizontal self-closing net can be raised is very soon determined by the weight of frame and messengers. Vertical self-closing nets appear to present less difficulty, but in the comparatively shallow water in which the *Helga* usually works the zones of observation are necessarily narrow, and could not be properly explored without an infinite repetition of hauls about each station. Probably no sort of haul can by arithmetical processes be made to yield a safe estimate of the larger denizens of the surrounding water or section of the sea floor, since such processes must presume that which is not, viz., an approximate equality in the distribution of organisms over a given area; and however difficult it may be to relegate to their proper vertical positions the contents of a long horizontal haul made with a large open net, they may be suspected to comprise at least a fair qualitative sample of the more active members of the fauna.

Hansen's records deal mainly with the captures made in 1904 by the *Princess Alice* with certain large townets, which do not differ, in their probable fishing capacity, from the Petersen trawl or the big triangular net used by the *Helga*. The range of the *Princess Alice* extends in effect to the seas between the Canary Islands, the Azores, and the Bay of Biscay, the latter being explored to no great extent. The bay, therefore, forms a neutral territory separating the operations of the *Princess Alice* from those of the *Helga* (and *Oceana*) off the south-west and west coasts of this country, and it seems of interest to contrast the evidence of pelagic Schizopodous fauna afforded by use of similar gear in the two areas. The *Princess Alice* naturally had, apart from considerations of latitude, the better chance of collecting oceanic forms, forms, since the *Helga* is restricted to a comparatively narrow margin of activity, and the *Oceana* made only a few hauls. The respective results, in species, are given below. Seventeen species are common, and among those which appear to be restricted to one or the other area, some at least may be supposed, from previous record, to belong essentially to boreal or tropical communities.*

* In relation to this table we have not the means of comparing data other than those of locality and season. Our own records for 1905 appear to have been affected not only by the use of new nets but also by an unusual distribution of the Atlantic waters.

[TABLE.]

PRINCESS ALICE.	HELGA (and OCEANA).
<i>Euphausia</i> Mülleri, brevis, gibba, gibboides.	<i>Euphausia</i> Mülleri, Lanei.
<i>Thysanopoda</i> vulgaris, acutifrons, distinguenda, lateralis, insignis, egregia, aequalis, pectinata.	<i>Thysanopoda</i> acutifrons, distinguenda.
<i>Meganyctiphanes</i> norvegica.	<i>Meganyctiphanes</i> norvegica.
	<i>Nyctiphanes</i> Couchi.
	<i>Boreophausia</i> inermis.
<i>Thysanoessa</i> gregaria, parva.	<i>Thysanoessa</i> gregaria (? includes parva), longicauda, neglecta.
<i>Nematoscelis</i> megalops, microps, tenella.	<i>Nematoscelis</i> megalops.
<i>Nematobrachion</i> boöpis.	<i>Nematobrachion</i> boöpis.
<i>Stylocheiron</i> Suhmi, elongatum, abbreviatum.	<i>Stylocheiron</i> Suhmi, elongatum, abbreviatum.
<i>Bentheuphausia</i> amblyops.	<i>Bentheuphausia</i> amblyops.
<i>Eucopia</i> unguiculata, intermedia, sculpticauda.	<i>Eucopia</i> unguiculata, sculpticauda.
<i>Gnathophausia</i> zoea.	<i>Gnathophausia</i> zoea, drepanephora.
	<i>Petalophthalmus</i> armiger
<i>Boreomysis</i> microps, semicoeca.	<i>Boreomysis</i> microps.
<i>Katerythrops</i> Oceanae.	<i>Katerythrops</i> Oceanae.
<i>Euchaetomera</i> Fowleri.	<i>Euchaetomera</i> Fowleri.
	<i>Meterythrops</i> picta.
	<i>Chunomysis</i> diadema.

Terminology.—The thoracic appendages are referred to as thoracic limbs. The "maxillipede" thus becomes the first thoracic limb, and its endopod the first leg, and so on.

DIVISION EUCARIDA, Calman.

ORDER EUPHAUSIACEA.

FAMILY EUPHAUSIIDAE.

SUB-FAMILY EUPHAUSINAE, H. and T.

GENUS *Euphausia*, Dana.

Euphausia Mülleri, Claus, 1863.

Thysanopoda bidentata, G. O. Sars, 1882.

Euphausia pellucida (pars), G. O. Sars, 1885.

Euphausia pellucida, H. and T., 1905 (1).

Euphausia bidentata, H. and T., 1905, (2).

Euphausia Mülleri, Hansen, 1905 (3).

In our first communication (1905 (1)) we followed Sars in giving the name *E. pellucida*, Dana, to North-Atlantic Euphausiæ with two pairs of lateral denticles on the carapace. While preparing a note of the *Oceana* schizopods (1905 (2)) examination of some Euphausiæ placed in Mr. Tattersall's hands by Professor Herdman suggested that *E. pellucida*, Sars, might be a too comprehensive species, and this was confirmed by an intimation that Dr. Hansen was kind enough to

give us of the work which he had then in hand. We accordingly used Sars' name *E. bidentata* in the *Oceana* note, having then no acquaintance with Claus' earlier diagnosis of *E. Mülleri*. Stebbing (1900) lists *E. bidentata* and *E. Mülleri* as separate species.

Hansen has since revised the Euphausiæ of this group, and has shown that the designation *E. Mülleri* is proper to those of the genus which have a multifid leaflet on the first antennular joint, and this is the case in all our material, from the *Research*, the *Oceana*, and the *Helga*.

The specimen of 26 mm. to which we have previously referred is undoubtedly *E. Mülleri* as re-defined by Hansen. It was taken off the Bay of Biscay in July, 1900, and some other examples taken at the same time are not much smaller. Hansen notes that in the collections to which he has had access many Mediterranean specimens are larger than those from the Atlantic, with the exception of a single individual. He gives 19.5 mm. as the size of the largest which he has observed.

We suspect that the life-history and ultimate growth-limit of Euphausians may be dependent on oceanic conditions which are not necessarily of seasonal recurrence, and that the data as yet available do not warrant the establishment of a local size-limit.

The restriction in specific interpretation entails a revision of our previous account of the distribution. *E. Mülleri* is only known, with certainty, from the Atlantic, its extreme northern range touching the coast of Norway, while to the south it does not appear to reach the latitude of Cape Colony. It extends, as we have seen, into the Mediterranean.

Additional Records.

40 mi. N. by W. of Eagle Island, Co. Mayo, 750 fath., August, 1904, townet at surface.—Seven.

50 mi. W.N.W. of Tearaght, Co. Kerry, 350 fath., November, 1904, large townet at 350 fath.—Five, 10 to 14 mm.

40 mi., same course and date, 244 fath., townet on dredge.—One, 9 mm.

40 mi. N. by W. of Eagle Island, Co. Mayo, 750 fath., November, 1904, townet at 600 fath.—Eight, 15 mm., and two, 9 mm.

48 mi. W.N.W. of Tearaght, Co. Kerry, 337 fath., November, 1904, townet on trawl.—One, 15 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 8 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—One, 9 mm.; six, 12 to 17 mm.

20 mi. N.W. of Achill Head, 102 fath., November, 1904, townet at surface.—One, 10 mm.

40 mi. N. by W. of Eagle Island, Co. Mayo, 670 fath., February, 1905, townet at 630 fath.—Twenty-eight, 8 to 16 mm.; townet at 500 fath.—Three, 12 to 15 mm.

45 mi. N. of Eagle Island, Co. Mayo, 1,000+ fath., February, 1905, townet at surface.—Forty, 10 to 18 mm.

West of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $14^{\circ} 50' W.$, 500 fath., May, 1905, townet on trawl.—Three, 17 mm.

West of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $15^{\circ} 6' W.$, 860 fath., May, 1905, coarse townet at surface.—Nine, 15 to 18 mm.

Same station, Petersen trawl at 700 fath.—Thirteen, 15 to 18 mm.

Porcupine Bank, Lat. $53^{\circ} 20' N.$, Long. $13^{\circ} 0' W.$, 164 fath., May, 1905, townet on trawl.—One, 14 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Four, 15 to 18 mm.

GENUS *Thysanopoda*, M.-Ed.

Thysanopoda acutifrons, H. & T.

Pl. I.

Thysanopoda acutifrons (pars), Holt and Tattersall, 1905 (1).

Thysanopoda pectinata, Hansen, 1905 (1), nec Ortmann, 1893, nec Hansen, 1905 (2).

Thysanopoda acutifrons, Hansen, 1905 (2).

It is by accident rather than by adequacy of description that we remain the sponsors of this species, which was excellently described by Hansen under the name of *T. pectinata*, Ortmann. The Danish author has since found (1905 (2)) that there actually existed, in the collections placed at his disposal, a form exactly fulfilling Ortmann's description of *T. pectinata*, and has therefore retained our name for the specimens which he had previously assigned to Ortmann's species. Since, when he was kind enough to examine our types of *T. acutifrons*, he found them to consist of a medley of mature specimens of one and immature specimens of another species, he would, we imagine, have been quite justified in consigning *H. acutifrons* to oblivion, and attaching a new name to his already adequate diagnosis. For reasons of which his reputation offers sufficient explanation, he did not adopt this course, and we are free to choose a proper series of types and append to them a sufficient diagnosis.

Diagnosis.

Form stoutly built, slightly compressed laterally. Carapace without lateral denticles (see p. 11), the front part a broadly triangular plate, the angle at the apex greater than a right angle and terminating in a short sharp tooth which is directed

obliquely forward and upward; sides of the triangular plate slightly inflated, apex not extending beyond the visual part of the eye but generally falling short of it: carapace exhibits in the median dorsal line a low keel. *Pleon segments* with pleural plates of moderate size and the usual form, none of the segments exhibiting any trace of spines on their posterior borders; last segment almost as long as the two preceding ones combined. *Preanal spine* well developed and simple. *Eyes* small with rather short stalks, the greatest width of the cornea scarcely exceeding the width of the antennular peduncle, pigment brown. *Antennular peduncle* strongly built, the basal joint bearing a strong slightly curved sharp spine on its outer distal corner, the anterior end of the basal joint bearing a densely hispid forwardly directed lappet roughly triangular in shape, terminating anteriorly in a short acute process, the whole lappet extending for about one-third of the way along the second joint of the peduncle, its inner edge furnished with strong plumose bristles which interlock with those of the other peduncle; second joint of the peduncle longer than the third, its anterior border produced into a broadly rounded lobe without spine. *Antennal scale* extending about half way towards the extremity of the third joint of the antennular peduncle, broadly oval in shape and rather wide, its total length very little more than twice its greatest breadth, apex broadly rounded, outer margin entire without trace of terminal spine, basal spine about one-third of the length of the scale, slender and quite smooth. *First maxilla* with the masticatory lobes well developed, the terminal joint of the palp narrow and short, not projecting beyond the masticatory lobes, exognath well developed and extending beyond the terminal joint of the palp. *Second maxilla* almost exactly as in *T. obtusifrons*, G. O. Sars. *First thoracic legs* with the terminal joint bearing a row of about twelve short plumose setae on its inner edge. *Second thoracic legs* with the terminal joint bearing ten strong plumose setae on its inner edge in addition to the terminal setae and eight short curved spines, which increase in size distally, on its inner face. *Last thoracic limb* without endopod, the inner produced corner of the exopod bearing six long plumose setae. *Telson* rather slender, tapering towards the apex and some little way from the latter suddenly constricted and drawn out into a very acute point which shows no trace of secondary spines; subapical spines projecting beyond the tip of the telson and quite smooth; dorsal surface of the telson armed with four pairs of denticles set on faint ridges which run down the length of the telson, the posterior pair arising at the same level as the subapical spines, the most anterior pair arising about half way down the telson. *Uropods* with the outer plate a little longer than the inner, which just overreaches the tip of the telson. *Length* of the largest specimen, 33 mm.

The diagnosis may be assisted by a dichotomic table, in which the characters of *T. acutifrons* and *T. distinguenda* are compared. The true *T. pectinata* may be disregarded, because it has a really obtuse rostrum, while *T. lateralis*, Hansen, will,

if ever found in our seas, be easily distinguished by the slender dorsal spine of the third segment of the pleon, and the *broad* border of the carapace (see Hansen, 1905 (1)) quite distinct from the narrow border common to *T. distinguenda* and *T. acutifrons*.

Thysanopoda

having the carapace destitute (except in larvae) of lateral denticles and produced to form a conspicuous pointed rostrum, neither abruptly elevated nor depressed. Segments of the pleon without conspicuous dorsal prolongations.

—	<i>T. acutifrons.</i>	<i>T. distinguenda.</i>
Length of adults,	About 35 to 44 mm., ..	About 20 to 25 mm.
Colouration, ..	Brick-red in life without any conspicuous dark pigment.	Red in life. Dark pigment in variable amount—at its maximum extending more or less continuously over all parts, except the legs and pleopods.
Eye, ..	Rather small, light brown in adult, much darker in young.	Small, brownish black.
Antennule, ..	Lappet of proximal joint as seen from the side not acutely spiniform at anterior extremity.	Lappet of proximal joint acutely spiniform.
Antennal scale,	Extends at least to the middle of the third joint of the antennular peduncle.	Scarcely extends beyond the second joint of the antennular peduncle.
Pleon, ..	Terga of fourth and fifth segments not acuminate at the posterior median margin.	Terga of fourth and fifth segments very slightly acuminate at the posterior median margin.

We are sensible that the differences expressed in this table are not of a very tangible character, but, although the two forms are at least entitled to rank as very distinct varieties, we do not know how to express their individualities more exactly. Our figures, which, as it happened, were drawn from each species when the other was not available for comparison may from this circumstance be exonerated from any attempt to exaggerate the points of distinction.

The mouth parts, which in the genus *Thysanopoda* as a whole afford the opportunity, to him who may be desirous of distinction in this direction, of generic sub-division, are not as between *T. acutifrons* and *T. distinguenda* capable of even specific diagnosis save in minutiae which may pardonably be held negligible.

A full-grown *T. acutifrons* is easily recognised, because it is like no other known species of its size. A mature male *T. distinguenda* is also easy to name, because, being mature, it is not big enough to be assigned to *T. acutifrons*!

Large but immature males of *T. acutifrons* and mature or nearly mature females of *T. distinguenda* present much greater difficulty, and we must confess that but for the high authority of Hansen we should feel some difficulty in regarding *T. distinguenda* as more than a smaller and perhaps more southern variety of *T. acutifrons*. In specimens of comparable size the difference in the colour of the eyes, though existent, seems to us very slight, and for the distinctive characters of the lappet of the first joint of the antennular peduncle, in so far as they may be more perceptible than our remark above would seem to indicate, readers must be referred to Hansen.

From material recently obtained, we think it probable that the larva of *T. acutifrons* has a lateral denticle on the carapace, though all specimens exceeding 14 mm., and some of less length, have no denticle.

Additional records.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 670 fath., May, 1905, Petersen trawl at 630 fath.—Six, 26-29 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—One, 33 mm.

Hansen mentions that a number of specimens have been received at his museum from the boreal part of the Atlantic. His Monaco specimens are from the region westward of the Bay of Biscay. The use of a pelagic otter-trawl with which Dr. Petersen was kind enough to present us, in 1904, seems to indicate that *T. acutifrons* is probably common enough at or about the 1,000 fathom line off the West of Ireland. It does not appear to be a surface species, but has been taken on one occasion at not more than 75 fath. from the surface. Its absence, save possibly in the larval stage, from Dr. Fowler's *Research* collections made off the northern part of the Bay of Biscay is somewhat remarkable, but more extensive experience than that of which we already dispose may serve to associate it with an oceanic community which the physical conditions of the summer of 1900 did not bring within the region then examined.

Thysanopoda distinguenda, Hansen, 1905 (1) (2).

T. acutifrons (pars), Holt and Tattersall, 1905 (1).

Pl. II.

40 mi. N. by W. of Eagle Island, Co. Mayo, 750 fath., November, 1904, coarse townet at 600 fath.—Two, 14 and 19 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, coarse townet at 300 fath.—One, adult male, 19 mm.

This species was described by Hansen from specimens captured near the Azores and Canary Islands. Its occurrence off the west coast of Ireland, therefore, indicates a considerable northern extension of its geographical range. It is thus possible that it may belong typically to the southern part of the North Atlantic, and rarely extends into higher latitudes, while the converse may apply to *T. acutifrons*.

GENUS *Nyctiphanes*, G. O. Sars.

Nyctiphanes Couchi (Bell).

Nyctiphanes norvegica (pars), Lo Bianco, 1903 and 1904.

After the publication of our previous communication Dr. Lo Bianco was kind enough to send us Mediterranean specimens of *N. Couchi* which he had previously regarded as specifically identical with the larger forms correctly referred to *M. norvegica*. The species therefore extends in all probability from North British latitudes to the Mediterranean, though it has not yet been recognised from the coasts of France and the Iberian peninsula.

Among recent *Helga* records we note the occurrence of a few specimens at 50 miles off Eagle Island and 80 miles off Slyne Head.

The distances from land are unusual, and one specimen (taken at 700-0 fath.) is in its present condition remarkable in having the antennular lobes forwardly directed instead of reflexed. It is, we suppose, none the less referable to *N. Couchi*, and since we cannot see how any method of preservation could have affected the flexure of the leaflets it would seem that the latter are not, in nature, invariably reflexed.

Our notes (1905 (1), p. 104) as to the size at which the antennular comb is developed might be held to indicate that ovigerous females of 12 mm. or less are destitute of this adornment. The fact is, however, that all ovigerous females have the comb, though it may not always be developed in females actually larger than the smallest of those which have assumed the cares of maternity, and may be present in specimens of only 8 mm. (see p. 49, *Note added in Press*).

Additional records.

40 mi. S.W. of Fastnet, Co. Kerry, 70 fath., August, 1904, townet at 30 fath.—Five, one ovigerous.

10 mi. W.N.W. of Tearaght, Co. Kerry, 76 fath., November, 1904, townet at surface.—One hundred and eighty-seven, 6 to 15 mm., the smallest in the last larval stage, none ovigerous.

20 mi. N.W. of Achill Head, 102 fath., November, 1904, townet at surface.—Sixty-eight, 9 to 14 mm., none ovigerous.

80 mi. W.N.W. of Slyne Head, Co. Galway, 180 fath., August, 1904, townet on trawl.—One, 9 mm., and two fragments.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—One, 11 mm.

10 mi. S.W. of Fastnet, Co. Kerry, 57 fath., February, 1905, townet on trawl.—Five, fragmentary, ca. 10 mm.

30 mi. W.N.W. Tearaght, Co. Kerry, 136 fath., February, 1905, coarse townet at 44 fath.—Five, 10 mm.

GENUS *Meganyctiphanes*, H. & T., 1905 (1).

Meganyctiphanes norvegica (M. Sars).

Nyctiphanes norvegica (*pars*), Lo Bianco, 1903 and 1904.

Euphausia intermedia, Riggio, 1905, corrected in note at end of paper.

The observations of Lo Bianco and Riggio show that this species, already traced from the Arctic regions to the coast of Portugal, extends to the Italian shores of the Mediterranean. Specimens from the Naples region kindly placed at our disposal by Dr. Lo Bianco do not appear to differ in any important particular from Irish examples. The largest observed by this author measured 33 mm., but, as we are seldom fortunate enough to secure full-grown specimens here, it by no means follows that the species is smaller in the Mediterranean than in the North Atlantic, though such a difference is familiar in the case of some kinds of fish common to the two regions.

The figure which the exigencies of a popular *brochure* have inflicted upon one of Lo Bianco's memoirs (Lo Bianco, 1904) is not to be taken as an imputation of the accuracy of the determination, nor as conveying the intimation that *M. norvegica* carries the ova in the same manner as *Nyctiphanes australis* and *N. Couchi*. It has, in fact, as we are informed, no connection with *M. norvegica*, and may be presumed to be a sketch of Sars' drawing of the female *N. australis*.

The *Helga* records of *M. norvegica*, subsequent to those already published are of no importance, but Messrs. Farran and Kemp, who have made gastronomic experiment of the species, assure us that however abundant it may become in some subsequent development of economic fishing methods it is never likely to form a welcome addition to the table.

Additional records.

80 mi. W.N.W. of Slyne Head, Co. Galway, 180 fath., August, 1904, townets on trawl.—Ten. Townet at surface.—One, 12 mm.

81 mi. W. of Eagle Island, Co. Mayo, 220 fath., August, 1904, townets on trawl.—Twenty-seven.

54 mi. W. of Eagle Island, Co. Mayo, 200 fath., August, 1904, townet at bottom.—Fifty.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., August, 1904, large townet at 1,000 fath.—Thirteen.

40 mi. same course and date, 750 fath., townet at 750 fath.—Twenty.

48 mi. W.N.W. of Tearaght, Co. Kerry, 337 fath., November, 1904, trawl.—Two, 30 mm.

Same station, townets on trawl.—One, 15 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 350 fath., November, 1904, townet at surface.—Three, 24 to 34 mm.

Same station, large townet at 350 fath.—Eight, 13 to 30 mm.

40 mi., same course and date, 244 fath., townet on dredge.—Seven, 14 to 17 mm.

40 mi. N. by W. of Eagle Island, Co. Mayo, 750 fath., November, 1904, townet at 600 fath.—Three, 25 mm.

33 mi. W. of Tearaght, Co. Kerry, 80 fath., November, 1904, trawl (sprat net).—One, 12 mm.

30 mi. W.N.W. of Tearaght, Co. Kerry, 136 fath., February, 1905, townet at 60 fath.—One, 21 mm.

20 mi. N.W. of Achill Head, 102 fath., November, 1904, townet at surface.—One, 16 mm.

50 N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—Three, 21 to 25 mm.

40 mi., same course and date, 670 fath., townet at 630 fath.—One, 28 mm.

45 mi. N. of Eagle Island, Co. Mayo, 1,000+ fath., February, 1905, townet at surface.—Five, 25 mm.

Porcupine Bank, Lat. 53° 15' N., Long. 13° 17' W., 116 fath., May, 1905, coarse townet at surface.—One, 27 mm.

SUB.-FAM. NEMATOSCELINAE, H. and T.

GENUS *Thysanoessa*, Brandt.

Thysanoessa neglecta (Kröyer).

Additional records.

30 mi. W.N.W. of Tearaght, Co. Kerry, 136 fath., August, 1904, townet at 44 fath.—Eight, 7 to 9 mm.

Off Rathlin Island, Co. Antrim, 120 fath., February, 1905, dredge.—One, 12 mm.

Thysanoessa longicaudata* (Kröyer).Additional records.*

81 mi. W. of Eagle Island, Co. Mayo, 220 fath., August, 1904, townets on trawl.—Two.

54 mi. W. of Eagle Island, Co. Mayo, 200 fath., August, 1904, townet at bottom.—Two, 10 mm.

40 mi. N. by W. of Eagle Island, Co. Mayo, 750 fath., November, 1904, townet at 600 fath.—Fifteen, 8 to 10 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 7 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 600 fath.—Twenty-one, 10 mm.

Same station, townet at 500 fath.—Twenty-nine, 12 mm.

Same station, townet at 700 fath.—One hundred and sixty-three, 8 to 12 mm.

30 mi. N. by W. of Eagle Island, Co. Mayo, 588 fath., May, 1904, townet at 200 fath.—One, 10 mm.

40 mi. N. by W. of Eagle Island, Co. Mayo, 670 fath., February, 1905, townet at 630 fath.—One hundred, 7 to 12 mm.

45 mi. N. of Eagle Island, Co. Mayo, 1,000+ fath., February, 1905, townet at surface.—Forty-two, 8 to 10 mm.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 860 fath., May, 1905, Petersen trawl at 700 fath.—Sixty-two, 10 to 13 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Four, 10 to 12 mm.

Thysanoessa gregaria*, G. O. Sars.Additional record.*

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 8 mm.

Hansen has recently recorded this species from the Eastern Atlantic near the Azores and Canary Islands. We cannot deny the possibility of representation, in the material referred to here and in our previous communication, of *T. parva*, Hansen (1905 (1) (2)), a species very closely allied to *T. gregaria* but smaller. The most obvious points of distinction are found in the thoracic limbs, but none of the specimens remaining in our hands when Hansen's paper appeared had any legs at all.

GENUS *Nematoscelis*, G. O. Sars.*Nematoscelis megalops*, G. O. Sars.*Additional records.*

40 mi. N. by W. of Eagle Island, Co. Mayo, 750 fath., August, 1904, townet at surface.—Six, 15 mm.

Same station, November, 1904, townet at 600 fath.—Two, 10 and 12 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 16 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—Twelve, 9 to 16 mm.

Same station and date, townet at 500 fath.—One, 15 mm.

40 mi. same course and date, 670 fath., townet at 630 fath.—Seven, 10 to 20 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $15^{\circ} 6' W.$, 860 fath., May, 1905, Petersen trawl at 700 fath.—Three, 20 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Four, 10 to 24 mm.

Lo Bianco (1903) mentions this species from the Mediterranean, thus extending its known range.

GENUS *Nematobrachion*, Calman.*Nematobrachion boöpis*, (Calman).*Additional records.*

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 500 fath.—One, 20 mm.

Same station, townet at 700 fath.—Three, 8 mm.; two, 19 and 21 mm.

40 mi. same course and date, 670 fath., townet at 630 fath.—Four, 10 to 24 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $15^{\circ} 6' W.$, 860 fath., May, 1905, Petersen trawl at 700 fath.—Five, 12-28 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Two, 20 mm.

Mention of this species by Hansen from several localities in the eastern part of the Atlantic Ocean between the Bay of Biscay and the Azores considerably extends its known geographical range, which previously appeared to be confined to the water off the north part of the Bay and off the West of Ireland. The most northern record is afforded by specimens taken north-west of the Farøe Bank, $61^{\circ} 11' N.$, $11^{\circ} 00' W.$, 306 fath., June, 1905 (*per* Dr. J. Schmidt).

One of the Irish specimens measures 24 mm. from tip of rostrum to tip of telson.

GENUS **Stylocheiron**, G. O. Sars.**Stylocheiron Suhmi**, G. O. Sars.

- S. Suhmii*, G. O. Sars, 1885.
S. longicorne, G. O. Sars, 1885.
S. mastigophorum, Chun, 1888.
S. longicorne, Ortmann, 1893.
S. mastigophorum, Lo Bianco, 1901 and 1903.
S. longicorne, Holt and Tattersall, 1905 (1).
S. Suhmii, Hansen, 1905 (1).
S. Suhmi, Holt and Tattersall, 1905 (2) and (3).

We accept Hansen's demonstration of the identity of *S. Suhmi* and *S. longicorne*, G. O. Sars. The latter name is proper to the adult form, but by accident of place in the *Challenger* memoir *S. Suhmi*, though descriptive of immature stages, has priority.

The change of name does not affect the observations which we have offered on the distribution of the species.

Additional records.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 6 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 600 fath.—One, 6 mm.

Same station and date, townet at 700 fath.—Four, 5 to 8 mm.

40 mi. same course and date, 670 fath., townet at 630 fath.—Five, 7 mm.

45 mi. N. of Eagle Island, Co. Mayo, 1,000+ fath., February, 1905, townet at surface.—Two, 8 mm.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 860 fath., May, 1905, Petersen trawl at 700 fath.—Twenty-three, 8 to 10 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Four, 10 mm.

Stylocheiron elongatum, G. O. Sars.

The *Helga* took a single specimen, 16 mm. in length, 50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., in the Petersen trawl, fished at 1,150 fath., and thence to the surface. Both antennal scales have the tips broken off, but from other characters there seems to be no doubt of the correctness of the specific determination.

This record shows the at least occasional northward range of the species, which was found by the *Challenger* in the South Atlantic, and by the *Princess Alice* (Hansen, 1905 (1)) about the Azores and Canary Islands. It was not taken by the *Research* and *Caudan*, and is not named among the few schizopods of the *Travailleur* and *Talisman* collections as yet publicly determined.

Stylocheiron abbreviatum, G. O. Sars.*S. chelifera*, Chun, 1888.*S. chelifera*, Holt and Tattersall, 1905, (1).*S. abbreviatum*, Hansen, 1905 (1).*S. abbreviatum*, Holt and Tattersall, 1905 (2) and (3).

Hansen has confirmed our opinion that Sars under *S. abbreviatum* described, however imperfectly, the young of Chun's *S. chelifera*, which therefore becomes a synonym.

Additional records.

56 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—Two, 10 and 15 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—One, 20 mm.; two, 13 and 14 mm.

Same station and date, townet at 600 fath.—One, 22 mm.

SUB-FAM. *BENTHEUPHAUSINAE*, H and T.GENUS *Bentheuphausia*, G. O. Sars.***Bentheuphausia amblyops***, G. O. Sars.*Bentheuphausia* sp., Holt and Tattersall, 1905 (1).

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Two, 14 and 18 mm.

In addition to the range mentioned in our previous communication, Hansen (1905 (1)) has added many records from the Bay of Biscay to the Canaries, and considers *B. amblyops* a common species in the area explored by the *Princess Alice* in 1904. Its presence, therefore, off the west of Ireland is not remarkable.

DIVISION PERACARIDA, Calman.

ORDER **MYSIDACEA**.FAMILY *LOPHOGASTRIDAE*, G. O. Sars.GENUS *Lophogaster*, M. Sars.***Lophogaster typicus***, M. Sars.*Additional records.*

30 mi. W.N.W. of Tearaght, Co. Kerry, 136 fath., February, 1905, coarse townet at 44 fath.—One, ovigerous female, 22 mm.

70 mi. S.W. of Fastnet, Co. Kerry, 81 fath., May, 1905, townet on trawl.—Thirty-three, 8 to 22 mm.; one, 30 mm.

In 1905 (1) we were able to record only a single example as the results of all the gatherings placed at our disposal. For some reason the species appears to be scarce on the Irish coast, but the capture of thirty-three in one haul suggests that it may be locally abundant. On the other hand, the record from 30 mi. off Tearaght, at 44 fath. in soundings of 136 fath., shows that *L. typicus* is by no means an essentially bottom-haunting form, and is therefore unlikely to be affected by any local conditions susceptible of narrow horizontal definition. However, while this capture presents, so far as we know, the first conclusive evidence of pelagic habit on our coasts, it is not enough to demonstrate that the species is at all phases of its career pelagic rather than benthic, nor is it impossible that the occurrence of the individual so near the surface was not induced by some unusual stratification of the medium. Lo Bianco (1901, p. 439) mentions the species as rarely caught in the upper strata in the Mediterranean.

The specimen is a gravid female, carrying young apparently just ready to leave the brood pouch. We are not aware of any previous description of this stage. It is, therefore, interesting to note that the larvae are of essentially the same type as those of an ordinary mysid at a corresponding stage of life-history, and in this respect bear testimony to the validity of the systematic association of the *Lophogastridae* and *Mysidae*.

GENUS *Gnathophausia*, Will.-Suhm.

Gnathophausia zoëa, Will.-Suhm.

Additional records.

40 mi. N. by W. of Eagle Island, Co. Mayo, 670 fath., February, 1905, townet at 540 fath.—Two, 50 and 65 mm.

Same station, townet at 630 fath.—Two, 45 and 50 mm.

50 mi., same course and date, 1,200 fath., townet at 700 fath.—One, 80 mm.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 860 fath., May, 1905, Petersen trawl, at 700 fath.—Three, 26 to 60 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—One, 66 mm.

Same station, townet at 750 fath.—Two, 25 and 28 mm.

Records by Hansen (1905 (1)) from near the Azores and Canary Islands furnish additional proof of the very general distribution of this species in the north-east Atlantic. It is also known, as we have seen, from the tropical Atlantic and South Pacific.

FAMILY EUCOPIIDAE.

GENUS *Eucopia*, Dana, 1852.*Eucopia unguiculata* (Will.-Suhm).*Chalaraspis unguiculata*, Will.-Suhm, 1875.*Eucopia australis* (pars.), G. O. Sars, 1885.*Eucopia australis*, Lo Bianco, 1903 and 1904.*Eucopia australis*, Holt and Tattersall, 1905 (1).*Eucopia australis*, Hansen, 1905 (1).*Eucopia unguiculata*, Hansen, 1905 (2).*Eucopia australis*, Holt and Tattersall, 1905 (2).*Eucopia unguiculata*, Holt and Tattersall, 1905 (3).

Hansen (1905 (2)) has shown that the forms which Sars (1885) described as *E. australis*, Dana, comprise more than one species, and that those of them which were described by Willemoes Suhm as *C. unguiculata* are distinct.

Though it is possible that Suhm, who died before he had an opportunity of revising his preliminary diagnoses of the *Challenger* crustacea, may have included more than one species in *C. unguiculata*, his description appears to be sufficiently exact to apply to the common Atlantic form, to which belong all which we have previously recorded as *E. australis*. The same may apply, we suppose, to some of the *E. australis* of the *Albatross* (Faxon, 1895). *E. unguiculata* is widely distributed in the Atlantic, and extends into the Mediterranean (Lo Bianco, 1903). It occurs also in the Pacific about the East Indies [Hansen, 1905 (2), p. 4].

Additional records.

50 mi. N. by W. of Eagle Island, Co. Mayo. 1,200 fath., February, 1905, tow-net at 500 fath.—Three, fragmentary, *ca.* 20 mm.

Same station and date, tow-net at 700 fath.—One, 22 mm.

40 mi. N. by W. of Eagle Island. Co. Mayo. 670 fath., February, 1905, tow-net at 630 fath.—Four, 14 to 30 mm.

Same station and date, tow-net at 500 fath.—One, 15 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 360 fath., May, 1905, tow-net on trawl.—One, 15 mm.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 860 fath., May, 1905, Petersen trawl at 700 fath.—Forty-three, 13 to 30 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Thirty-two, 15-35 mm.

Same station and date, coarse tow-net at 750 fath.—Eight, 25 mm.

***Eucopia sculpticauda*, Faxon, 1895.**

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 860 fath., May, 1905, Petersen trawl at 700 fath.—One, 29 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl, at 1,150 fath.—One, 46 mm.

The geographical range of this species is extensive. Faxon records it from the tropical Pacific near the coast of Central America, and Alcock from the Indian Ocean. Hansen mentions it from the Atlantic Ocean near the Azores and the Canary Islands, and its occurrence, as above indicated, within the 1,000 fathom line on our own coast seems to point to a general north-east Atlantic range. *E. intermedia* (Hansen, 1905 (1)) is a closely allied species as yet only known from a single immature specimen taken near Madeira. Its occasional occurrence within our area appears probable.

FAMILY PETALOPHTHALMIDAE, nov.

Carapace membranaceous, short and imperfectly developed, leaving the last two thoracic segments quite free.

Eyes (first cephalic appendages) without visual elements, lamellar or spiniform (or absent?).

First thoracic limbs devoid of exopods but furnished with well developed epipods. An internal lamelliform lobe present on the merus in some genera.

Second thoracic limbs with an internal lamelliform lobe on the merus. Exopods present or absent.

Third to last thoracic limbs with well developed exopods.

Female with seven pairs of incubatory lamellae.

Inner uropods without otocyst.

In instituting this family we have only given definite expression to the suggestions of Faxon (1895) and Hansen (1887) when dealing with some of the genera which it is intended to embrace. Among which, of other families of the *Mysidacea*, its nearest relatives may be sought, is a problem upon which we can form no definite opinion. It is, however, of interest to note that while the eyes in all members of the family happen to be without visual function, this peculiarity is not one of the characters essential to its separation. Among the Mysidae occur instances of closely allied genera in which the first cephalic appendages are respectively organs of vision or sightless processes (*e.g.* *Erythrops* and *Pseudomma*) while within the limits of a single genus may be found those which see and those which see not (*e.g.*, *Boreomysis*, *Mysidella*); but, blind or seeing, the Mysids present no near approach to the Petalophthalmids in those characters which more saliently

distinguish the latter. We may, therefore, be right in supposing that the *Petalophthalmidae* have not diverged from the general Mysidacean type, or at least from true *Mysidae* in response to variation associated with the loss of the visual sense, but became separated from the remaining families by a process of variation in which the change of the first cephalic appendage played at most a subsidiary part.

The following key for the identification of the genera grouped in this family may be useful:—

A. First and second pairs of thoracic limbs devoid of exopods.

(i.) First thoracic limbs (maxillipedes) with internal lamelliform meral lobe.

Petalophthalmus, Will.-Suhm.

B. First pair of thoracic limbs alone devoid of exopods, second pair with exopods well developed.

(i.) First thoracic limbs (maxillipedes) with internal lamelliform meral lobe.

Ceratomyxis, Faxon.

(ii.) First thoracic limbs (maxillipedes) without internal lamelliform meral lobe.

(a.) Rostrum prominent, eyestalks spiniform.

Scolophthalmus, Faxon.

(b.) Rostrum obsolete, eyes leaf-like (or absent?).

Hansenomyxis, Stebbing.

As noted by Faxon and Hansen, the form described by Willemoes Suhm as the female of *Petalophthalmus armiger*, does not belong to any of the *Petalophthalmid* genera, but is a *Boreomyxis* (? *B. scyphops*.)

GENUS *Petalophthalmus*, Will.-Suhm.

Petalophthalmus armiger, Will.-Suhm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—One, 15 mm.

The specimen, though not in the best condition, agrees fairly well with the descriptions of Suhm and Sars. We note, however, that all the spines on the apex and some of those on the lateral margins of the telson are plumose, or rather armed on each side with a very closely set row of minute sharp spinules, and that between the median spine of the apex and the nearest spine on each side there are three spinules. The antenna has, besides the peduncle, a short, very slender flagellum, consisting of six joints and terminated by a pair of setae; it is not much longer or stouter than the setae arising from the end of the peduncle.

There are no incubatory lamellae, but the specimen is perhaps too small to show sexual characters. The pleopods are uniramous; the distal joint has a general resemblance to the inner ramus depicted by Sars in his male specimen of 40 mm., but is rather narrower.

Previous records comprise one male (Will.-Suhm) from $2^{\circ} 25' \text{ N.}, 20^{\circ} 1' \text{ W.}$, 2,500 fath., and one female (Faxon), $24^{\circ} 36' \text{ N.}, 84^{\circ} 5' \text{ W.}$, 955 fath. *P. armiger* is therefore known only from the temperate and tropical parts of the Atlantic. It seems to be a pelagic animal, apparently confined to strata remote from the surface.

FAMILY MYSIDAE.

SUB-FAM. *LEPTOMYSINAE*, Norman.

GENUS *Erythrops*, G. O. Sars.

Erythrops serrata, G. O. Sars.

Additional records.

50 mi. W.N.W. of Slyne Head, Co. Galway, 112 fath., August, 1904, townet on trawl.—Twenty, small.

80 mi. same course, 180 fath., August, 1904, townet on trawl.—Sixteen.

81 mi. W. of Eagle Island, Co. Mayo, 220 fath., August, 1904, townet on trawl.—One.

40 mi. W.N.W. of Tearaght, Co. Kerry, 244 fath., November, 1904, townet on dredge.—One, 7 mm.

Porcupine Bank, Lat. $53^{\circ} 39' \text{ N.}$, Long. $12^{\circ} 24' \text{ W.}$, 185 fath., May, 1905, townet on trawl.—Five, 7 to 9 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 1' \text{ N.}$, Long. $14^{\circ} 34' \text{ W.}$, 293 fath., May, 1905, townet on trawl.—Twenty-eight, 6 mm.

Porcupine Bank, Lat. $53^{\circ} 2' \text{ N.}$, Long. $13^{\circ} 48' \text{ W.}$, 105 fath., May, 1905, townet on trawl.—Two, 9 mm.

Porcupine Bank, Lat. $53^{\circ} 20' \text{ N.}$, Long. $13^{\circ} 0' \text{ W.}$, 164 fath., May, 1905, townet on trawl.—Seven, 10 mm.

GENUS *Meterythrops*, S. I. Smith.

Meterythrops picta, H. & T.

Additional records.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—One, 5 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 1' \text{ N.}$, Long. $14^{\circ} 34' \text{ W.}$, May, 1905, 293 fath., townet on trawl.—Two, 5 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' \text{ N.}$, Long. $15^{\circ} 6' \text{ W.}$, 860 fath., May, 1905, Petersen trawl at 700 fath.—One, 12 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—One, 8 mm.

M. picta is otherwise known only from the single example recorded in our previous communication. Altogether, six have now been taken, all off the west coast of Ireland, at soundings

which range from 293 to 1,200 fath., but at distances from the surface which in no case exceed 700 fath. The species appears to be most probably pelagic, and not, as we were at first inclined to suppose, confined to the neighbourhood of the bottom.

The fully developed adult of either sex is not known. Young examples of 5 mm. lack the serration of the antennal scale characteristic of later stages. They thus resemble young *Parerythroptera* rather closely, but may be distinguished at once by the relatively larger size and pale golden colour of the eye, which in *Parerythroptera* is reddish brown and much darker. Even the youngest *M. picta* have the deep brown body pigment noted in our description of the type.

GENUS **Katerythroptera**, H. & T., 1905 (1) & (2).

Katerythroptera Oceanae, H. & T.

Additional record.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 15° 6' W., 860 fath., May, 1905, Petersen trawl at 700 fath.—One, 8 mm.

This specimen is an adult male. The pleopods, as we surmised in diagnosing the species from an immature example, are as in *Meterythroptera*. The antennal scale retains the proportional size and character of the type, and the telson is devoid of median setae. The antennular brush of setae is as usual in the genera allied to *Erythroptera*. Our diagnosis, therefore, requires only the statement of size of adult, viz., 8 mm.

Hansen's records (1905 (1)) are from the neighbourhood of the Azores and Canary Islands. The species appears to be truly pelagic, and may be suspected to have a fairly wide distribution in the Atlantic.

GENUS **Hypererythroptera**, H. & T.

Hypererythroptera serriventer, H. & T., 1905 (1).

Additional records.

80 mi. W.N.W. of Slyne Head, Co. Galway, 180 fath., August, 1904, townet on trawl.—Two, fragmentary.

Porcupine Bank, Lat. 53° 39' N., Long. 12° 24' W., 185 fath., May, 1905, townet on trawl.—Six, 9 to 11 mm.

Porcupine Bank, Lat. 53° 20' N., Long. 13° 0' W., 164 fath., May, 1905, townet on trawl.—One, 8 mm.

GENUS **Parerythroptera**, G. O. Sars.

Parerythroptera obesa, G. O. Sars.

? *P. abyssicola*, G. O. Sars.

We are unable to find any definitely marked and constant character whereby *Parerythroptera obesa* may be distinguished from *P. abyssicola*. The only marked difference between the

two species to be gleaned from descriptions and figures is the comparative size of the eye. In *P. obesa* the greatest breadth of the pigmented part of the eye is shown to be greater than the greatest breadth of the telson, while in *P. abyssicola* the reverse condition is depicted. The eye is, however, such a fragile structure and so very liable to injury and contraction that characters derived from its form and dimensions alone are not of very much value for specific distinction. In the specimens before us, all of which we refer to *Parerythropros obesa*, none have the eyes in perfect condition. In consequence we are unable to obtain among them a constant relation between the breadth of the telson and the greatest breadth of the pigmented portion of the eye. Apart from the supposed differences in the comparative size of the eyes, there is no other sufficiently well-marked character to separate the two species. We therefore suggest that it is highly probable that they are identical, the differences in the size of the eye being due to differences of preservation. We may note in addition that the vertical range of both species is the same.

Additional records.

77 mi. W. of Achill Head, Co. Mayo, 382 fath., August, 1901, townet on dredge.—One, 9 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $14^{\circ} 15' W.$, 500 fath., May, 1905, townet on trawl.—Two, 7 and 9 mm.

Distribution.—This species is among those added to the fauna of the Mediterranean by Lo Bianco (1903).

GENUS *Euchaetomera*, G. O. Sars.

Euchaetomera Fowleri, H. & T.

Euchaetomera tenuis, Lo Bianco, 1903.

The range of this species, first taken by Fowler off the Bay of Biscay, has now been extended by records from south of the Azores (Hansen, 1905 (2)), from off the west coast of Ireland (see below) and from the Mediterranean (as *E. tenuis*).

By a clerical error in our diagnosis (1905 (1), p. 123), the antennular peduncle is said to be about one and a half times as long as the eye. It is to the proximal joint of the peduncle that this statement of length is really applicable.

The imperfect condition of the posterior thoracic limbs of our female type (*op. cit.*, p. 124) proves, as we supposed, to be individual and not specific in character. It may perhaps be associated with the regeneration of lost parts.

Additional records.

50 mi. W.N.W. of Tearaght, Co. Kerry, 360 fath., May, 1905, townet on trawl.—One, 11 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $15^{\circ} 6' W.$, 860 fath., May, 1905, Petersen trawl at 700 fath.—One, 8 mm.

Dr. Lo Bianco very kindly sent us the Mediterranean form which he has recorded as *Euchaetomera tenuis*. This, taken off Pt. Tragara at 1,100 m., is a somewhat imperfect example of *E. Fowleri*.

Two Mysids* (apparently from 100 m., off Capri, and from 1,000 m., off Pt. Carena) though very closely resembling *E. tenuis* in some respects cannot be included in the genus as at present defined on account of the character of the antennal scale. The scale is narrow and tapering, extends somewhat beyond the extremity of the antennular peduncle and is sparsely setose on both margins with a narrowly rounded apex. The eyes, absent from one specimen, are injured in the other, but were certainly bilobate when perfect. The telson is of about the same size and shape as in *E. tenuis*, but the apical part is broader and more convex in outline than in Sars' drawings of that species. At each angle of this part is a small prominence which in one specimen still bears a small fine spine much like one of the angular spines of *E. Fowleri*. The median setae, which are plumose and very long and stout, are set at about the same distance from each other as in *E. typica* and *E. Fowleri*, and therefore much further apart than in Sars' drawing of *E. tenuis*. The male, which has the antennular brush of setae well developed, has the outer rami of the second to fifth pleopods much shorter, not so much jointed, and less setose than the inner. The total length is about 7.5 mm.

GENUS *Amblyops*, G. O. Sars.

Amblyops abbreviata, G. O. Sars.

Additional record.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—Four, 13 to 15 mm.

GENUS *Paramblyops*, H. & T.

Paramblyops rostrata, H. & T.

Additional records.

80 mi. W.N.W. of Slyne Head, Co. Galway, 180 fath., August, 1904, townet on trawl.—One, fragmentary.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 6 mm.

W. of Porcupine Bank, Lat. 53° 1' N., Long. 14° 34' W., May, 1905, townet on trawl.—One, 6 mm.

* These specimens, having been labelled *E. tenuis*, by inadvertence, were sent to us with the *E. Fowleri*, but do not appear in the record.

GENUS *Pseudomma*, G. O. Sars.*Pseudomma affine*, G. O. Sars, 1870.

Pseudomma roseum, Holt and Tattersall, 1905 (1), *nec* Sars, 1870-79.

Pl. III., Figs. 1-6.

Pseudomma roseum must be expunged from the list of British and Irish mysids, since the specimens which we so named in our previous communication have proved, on re-examination, to be *P. affine*.* They are not, however, in perfect agreement with Sars' description and figures, and had we not obtained from Canon Norman the loan of some of Sars' co-types of *P. affine* we should have burdened the genus with a spurious species.

Dr. Scharff was kind enough to place at our disposal specimens of *P. roseum* named by Sars himself, with whose diagnosis and drawings (1870-79) they are in the most exact agreement. *P. roseum*, moreover, is a larger animal, as will appear.

The creature has given us so much trouble, that to save others from the same, we propose a rather lengthy discussion of its characters. Norman's co-types being in agreement with Irish examples we should, from the material we have seen, diagnose the species as follows:—

Form compact, sublinear in shape. *Carapace* wider than pleon; emarginate posteriorly so as to leave the last thoracic segment exposed; front margin evenly rounded. *Pleon* longer than carapace; first five segments subequal in length; last segment about twice as long as fifth segment. *Ocular lamina* (composed of two sub-rectangular contiguous plates) barely extending to the distal end of basal joints of antennular peduncle; slightly cleft in the middle line, slightly hispid in central region, armed on each side with about thirty lateral denticles extending from the antero-lateral angles to the extreme hind ends of the lateral margins. Anterior margin only very slightly produced in the middle line in the female, not produced in the male. Antero-lateral angle strongly developed in the male, not in the female. *Antennular peduncle* with first and third joints subequal in length in female, second joint shorter; in male third joint longer than first. *Antennal peduncle* about as long as antennular peduncle

* The error was mine, since by an oversight, confined to this form, Mr. Tattersall had no opportunity of revising my preliminary determination before our paper went to press (E. W. L. H.).

in female, a little shorter in male; its two last joints subequal in length. *Antennal scale* extending for about half its length beyond antennal peduncle, about three times as long as broad, apical part obtusely rounded at tip and extending beyond terminal spine of outer margin for a distance varying from one-fourth to one-third of total length of scale. Spinous process external to articulation of scale strongly developed. *Mouth parts, thoracic legs and pleopods* not differing from *P. roseum* in any important particular. *Telson* very slightly shorter than sixth segment of pleon; apex entire, broadly rounded, armed with a pair of median setae and with usually four, occasionally five, and very rarely six pairs of spines—median pair about one-quarter the length of telson, second and third pairs slightly shorter than median, fourth (and fifth and sixth, if present) pair small. Lateral margins armed with three (rarely less) to seven spines. *Uropods*, outer about half again, inner about a quarter again as long as telson; no spines on ventral surface of inner. *Length* 12 mm., males adult at about 10 mm.

P. affine, as we know it, departs from the account conveyed by Sars' diagnosis and figures, especially in the following particulars:—

- (i.) The antennal scale never has the part distal to the terminal spine of the outer margin of a greater length than one-third of the total length of the scale. Sars (1870, Pl. V., Figs. 13, 16, 20) depicts it somewhat longer.
- (ii.) The eye-plate of the female has the median extremity distinctly less produced than in Sars' figure (Pl. V., Figs. 13, 15.).
- (iii.) Sars gives the number of pairs of spines on the apex of the telson as five to six. We think four is the normal number; five appear to occur only occasionally, and six pairs we regard as quite exceptional. We have one specimen which has three on one side, four on the other.

We have critically examined thirty-two specimens from different localities, and of these twenty-eight which have the telson quite perfect give the apical spine formula thus:—

One specimen,	seven spines (asymmetrical).
Twenty-two specimens, . .	four pairs.
Four specimens,	five pairs.
One specimen,	six pairs.

In other words, four pairs of apical spines occur in about eighty per cent. of specimens. In a cursory examination of over seventy we have found no other example possessing six pairs, though asymetry is not rare.

The variations in particulars of antennal scale and telson are set forth below in tabular form.

Pseudomma affine, G. O. Sars.

TABLE showing variations in telson and antennal scale.

The abbreviation "br." signifies "broken."

Locality of capture of specimens.	Length in mm.	Spines arming telson.			Proportion of part of antennal scale beyond outer terminal spine to total length of scale.
		Left.	Right.	Apex.	
50 miles W.N.W. Cleggan, co. Galway. 120 fathoms. Townet on trawl.	8	br.	br.	br.	1 : 3
	7	6	6	8	1 : 3
	5	3	3	8	broken.
Porcupine Bank. 185 fathoms. Lat., 53° 39' N., Long., 12° 24' W. Townet on trawl.	7	5	3	10	4 : 19
	7	6	4	10	4 : 18
	7	5	5	10	1 : 4
	7	5	5	8	3 : 11
W. of Porcupine Bank. 500 fathoms. Lat., 53° 7' N., Long., 14° 50' W.	9	1	2	10	1 : 4
40 miles W.N.W. Tearaght, co. Kerry. 244 fathoms. Townet on trawl.	9	br.	br.	br.	1 : 3
	8	6	6	8	2 : 7
	8	8	5	8	7 : 24
	8	5	7	8	7 : 23
	7	7	6	8	1 : 4
	(6 tails)	5	5	8	
		5	6	8	
		6	5	8	
		4	3	8	
		4	4	8	
	(5 heads)	7	5	8	3 : 11
60 miles W. of Achill Head. 199 fathoms. Townet on trawl.	9	5	5	12	1 : 4
	9	3	3	8	7 : 29
	8	br.	br.	br.	5 : 23
Lambay Deep. 65 fathoms. Towner on trawl.	8	5	4	8	6 : 19
	7	4	3	7	4 : 11
	7	4	4	8	2 : 7
	7	4	4	8	3 : 10
	7	5	5	8	broken.
	7	6	6	8	2 : 7
	6	br.	br.	br.	5 : 18
	5	4	4	8	4 : 15
Co-types of <i>P. affine</i> , Sars., received from Canon Norman.	10	4	5	8	9 : 31
	10	5	5	8	broken.

From *P. roseum* it is easy to distinguish *P. affine* by the following characters:—

Eye plate.—In *P. affine* the denticulations cover the whole lateral margins. In *P. roseum* they scarcely extend beyond the antero-lateral angles.

Antennal scale.—In *P. affine* the length of the apical part is generally about a quarter, and never more than a third, of the total length of the scale. In *P. roseum* the apical is generally about a half and always more than a third of the total length of the scale.

Telson.—In *P. affine* there are at least four apical spines on one side or the other of the telson. In *P. roseum* the number of apical spines has not been observed to exceed two pairs.

Size.—*P. affine* has not been observed to exceed 12 mm., and in Irish waters at least is mature (male) at 10 mm. *P. roseum* attains or exceeds 15 mm., and we suppose that the male is not mature at 10 mm.

P. truncatum, S. I. Smith, has the antennal scale much as in *P. affine*, but the eye-plate and telson are quite distinctive. Specimens kindly communicated by Professor Smith and Canon Norman enable us to speak on this point with reference to the actual animal as well as to its presentments in literature.

Other species of *Pseudomma* appear to present no obvious opportunity of confusion with *P. affine*.

Additional records.

Porcupine Bank, Lat. 53° 39' N., Long. 12° 24' W., 185 fath., May, 1905, townet on trawl.—Four, 7 to 8 mm.

W. of Porcupine Bank, Lat. 53° 7' N., Long. 14° 50' W., 500 fath., May, 1905, townet on trawl.—One, 9 mm.

P. affine has also been taken by the *Helga* in the Irish Sea at 65 fath. Its known horizontal range is, therefore, Norway to coasts of Ireland, the vertical range being 65 to 500 fathoms. The Mediterranean species recorded as *P. affine* by Lo Bianco is really *P. calloplura*.

***Pseudomma calloplura*, H. & T.**

Pseudomma calloplura, H. and T., 1905 (1).

Pseudomma affine, Lo Bianco, 1903, *nec* Sars.

Pl. IV., Figs. 1-5.

Form sublinear, compact, carapace not much wider than the pleon, emarginate posteriorly, evenly rounded anteriorly, *Pleon* with the first five segments subequal, the sixth one and a half times as long as the fifth. *Ocular lamina* large, with a short cleft in the median dorsal line, each part sub-rhomboidal in shape, about one and a quarter times as broad as long, with

a more or less prominent angle near the outer distal corner, the margins from the (antero-lateral) angle throughout the whole lateral edge on each side armed with about twenty-five teeth. *Antennular peduncle* rather stoutly built and feebly armed, male appendage well developed and densely hirsute. *Antennal peduncle* shorter than the antennular peduncle, with the last two joints subequal, feebly armed. *Antennal scale* about four times as long as broad, and about twice as long as the antennal peduncle, extending for about one-third of its length past the antennular peduncle, external margin entire, terminating in a short spine, tip of the scale rather obtuse and not extending beyond the terminal spine. *Mandible* as usual for the genus, but with the second joint of the palp rather broader than in the type species. *First and second maxillae* of the usual structure and form. *First thoracic legs* rather small, with the carpus as long as the merus, propodus very short, nail distinct and much longer than the propodus, merus and the two preceding joints armed on their inner edges with plumose setae, the merus having, in addition, ordinary setae, the carpus armed with a few simple setae, the propodus similarly armed to the carpus. *Second thoracic legs* relatively shorter than in the type species, with the merus slightly longer than the carpus, propodus very small, nail distinct and longer than the propodus; latter armed with about five plumose setae at its tip in addition to a few simple setae, not nearly so densely armed as in the type species; remaining joints feebly armed with simple setae only. *Endopods* of the remaining thoracic limbs missing in the type specimens. *Exopods* of the thoracic limbs well developed, those of the first and second limbs longer than the endopods, outer distal corner of the basal joint slightly acuminate, flagelliform part of ten joints. *Pleopods* of the female as usual for the genus, those of the male well developed, natatory, inner branch of the first pair a short rounded lobe armed at the tip with three setae and with three setae near its base, lateral lobe rather narrow with two setae at its tip; second, third, and fifth pleopods of the male consisting of two equal multiarticulate branches, the inner branch with the usual lateral lobe; fourth pair of pleopods of exactly the same structure as the others but with the outer branch terminating in a very long strong seta, quite simple and longer than the whole pleopod itself. *Telson* as long as the last segment of the pleon, lateral margins straight, whole telson gradually narrowing to its apex, latter broadly rounded, entire, armed with three (? sometimes four) pairs of equal spines, which are about one-fifth of the length of the telson, and are adorned on each side with a closely set row of minute spinules or setae; median setae absent; lateral margins armed with about thirteen short spines occupying the distal two-thirds of the margin. *Inner Uropods* about one and a quarter times as long as the telson, ciliate all round, with a single spine at the inner posterior corner of the otocyst. *Outer uropods* about one and a third times as long as the inner and broader than the latter. *Length*, 10 mm.

In a Mediterranean specimen communicated by Dr. Lo Bianco, the telson has on the right side fourteen simple lateral and three plumose apical spines, while on the left side the numbers are thirteen and four, one of the normally lateral spines having become enlarged and plumose.

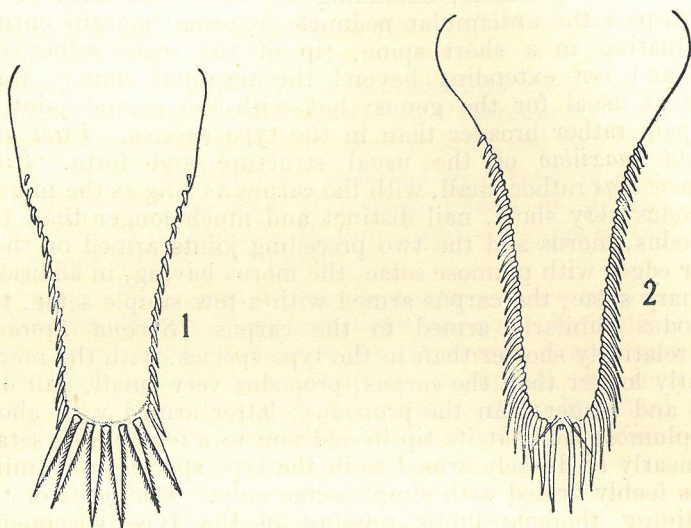


FIG. 1.—Telson of *Pseudomma calloplura*.

„ 2.—Telson of *Pseudomma Kempi*.

Including *P. nanum*, nine species of *Pseudomma* are now known. Of these species four—*P. calloplura*, *P. Théli*, Ohlin, *P. parva*, Vanhöffen, and *P. Kempi* are distinguished from the rest by the shortness of the apex of the antennal scale, which does not extend beyond the terminal spine of the outer margin. From *P. Théli*, *P. calloplura* is readily distinguished by the form of the ocular lamina, which in the former species is described as without any trace of median cleft, and triangular in shape. A further point of distinction lies in the armature of the telson. In *P. Théli* the terminal spines are not plumose, while the spines arming the lateral margins are very few in number and confined to the extreme posterior part. From *P. Kempi*, *P. calloplura* is distinguished by the absence of median setae and by the plumose character of the spines at the apex of the telson, and by the fewer and shorter spines arming the lateral margins of the telson. The

armature of the eye is also another distinguishing point. With *P. parva*, the present species may be identical. *P. parva* was very imperfectly described by its discoverer, and has never to our knowledge been figured. It has three pairs of spines and no median setae on the apex of the telson. Nothing is said as to whether the terminal spines of the telson are plumose or not, and these are such a striking feature of *P. calloptura* even under a moderately low power of the microscope, that had they been similarly plumose in *P. parva* this fact would hardly have escaped notice and mention. We hesitate to unite the two species, especially as *P. calloptura*, as will be seen from the above description, presents many unusual features. Chief among these is the character of the pleopods in the male. The first pleopods, with their feebly armed inner ramus, recall the condition seen in *Amblyops* rather than *Pseudomma*, while the long seta which terminates the outer branch of the fourth pair only, finds its parallel among the Leptomysinae in the genus *Mysidopsis*, where, however, the seta is much shorter and plumose, while in *P. calloptura* it is quite simple and very long. The first and second thoracic legs, further, differ from the type species of the genus, *P. roseum*, in having the propodus very small, and the nail quite distinct and rather long, thus again agreeing closely with *Amblyops*. The details of armature of these limbs are also more in accordance with those found in *Amblyops* than in *Pseudomma*. The character of the ocular lamina in *P. calloptura*, however, places this species in the genus *Pseudomma*. Though a slight dorsal cleft is noticeable, as, indeed, it is in the type species, the lateral elements of the lamina are otherwise perfectly contiguous.

Additional records.

54 mi. W.N.W. of Tearaght, Co. Kerry, 454 fath., November, 1904, townet on trawl.—Four, 9 to 10 mm.

50 mi., same course, 372 fath., February, 1905, townet on trawl.—Four, 8 to 10 mm.

50 mi., same course, 360 fath., May, 1905, townet on trawl.—Nine, 7 to 9 mm.

Under the name of *P. affine*, Lo Bianco (1903) indicated the occurrence of this species in the Mediterranean.

***Pseudomma Kemp*, H. & T.**

P. Kemp, Holt and Tattersall, 1905 (1).

Pl. IV., Figs. 6-10.

Form robust, compact, sublinear in shape. *Carapace* not much wider than pleon, emarginate posteriorly, evenly rounded in front, cervical sulcus well marked. *Pleon* with the first segment longer than the next four, which are sub-equal in length, last segment about twice as long as the preceding. *Ocular lamina* slightly cleft in the middle dorsal line, composed of

two sub-rectangular contiguous plates; rather large, minutely hispid all over; teeth about twelve in number, confined to the antero-lateral corners. *Antennular peduncle* short and very stoutly built; basal joint with its outer corner produced into a process tipped with setae; second joint remarkably short; third joint roughly cubical in shape, as long as the other two combined, with a few setae on its inner edge and inner distal corner. *Antennal peduncle* comparatively short and more slender than the antennular peduncle; third joint slightly longer and narrower than the second; both second and third joints with setae at their inner distal corners. *Antennal scale* about twice as long as the antennal peduncle, extending for about half its length past the antennular peduncle; about three times as long as broad in its widest part; outer margin entire, terminating in a prominent spine; apex of scale bluntly rounded and not extending beyond the terminal spine. *Mandible* of the usual form, but with the second joint of the palp wider than usual. *First and second maxillae* as in the type species. *First thoracic legs* rather short, merus equal in length to the carpus, propodus small, nail distinct and longer than the propodus; merus and two preceding joints armed with strong plumose setae, carpus armed with simple setae only, about four plumose setae on the propodus. *Second thoracic legs* moderately slender, with the carpus equal to the merus, propodus very small, nail quite distinct and longer than the propodus, a few plumose setae on the propodus, the remaining joints with a few scattered simple setae. *Exopods* of all the thoracic limbs well developed; outer distal corner of the basal joint slightly acuminate; flagelliform part of about ten joints. *Telson* as long as the last segment of the pleon, massive and well armed, tapering slightly to a broadly rounded entire apex armed with a median pair of minute spinules (which often appear as a single spinule with a bifid tip), a median pair of plumose setae arising anterodorsally to the above, and two pairs of spines, rather long and slender, the inner and longer pair of which are about one-sixth the length of the telson proper; lateral margins, from the level of the otocysts, each with about twenty-eight to thirty spines increasing in length towards the apex. *Inner uropods* about one and a sixth times as long as the telson, with a single spine on the inner posterior corner of the otocyst. *Outer uropods* about one and a half times as long as the telson, broader than the inner uropods. *Length* of an apparently adult female, 11 mm.

In describing *P. calloplura* we called attention to the rather marked differences which existed between the first and second thoracic legs of that species and those of the type form *P. roseum*, noting that the condition there seen showed closer resemblance to the genus *Amblyops* than to *Pseudomma*. These differences are to be found in the extreme shortness of the propodus and the length and distinctness of the nail, as well as in the armature. *P. Kempi* has the first and second thoracic legs of exactly the same type as *P. calloplura*. The

two species are very closely allied, and further points of agreement between them are to be seen in the shape of the antennal scale, in the comparative breadth of the second joint of the mandibular palp and in the presence of a single spine at the inner posterior corner of the otocyst. They differ from each other in the relative length and stoutness of the antennular peduncle, and in the armature of the eye. In *P. calloplura* the eye is smooth and has teeth along the whole of its lateral edge. In *P. Kempi* the eye is distinctly hispid, and the teeth are confined to the anterolateral corner. Further, in *P. calloplura* the last segment of the pleon is only one and a half times as long as the preceding segment, whereas in *P. Kempi* it is twice as long. Finally, the telsons of the two forms are very distinct, *P. Kempi* differing from *P. calloplura* in possessing a median pair of plumose setae and small spinules, in the non-plumose character of the terminal spines, and in the larger number and greater length of the spines arming the lateral margins. A comparison between the pleopods of the males of each species is, unfortunately, not possible, the only fragment of a male of *P. Kempi* which is available having the pleopods evidently in an immature state of development. This fragment measures 7 mm. in length, and we judge that the total length of the complete specimen must have been at least 10 mm. Of the pleopods exhibited by this fragment all except the first have the inner ramus longer than the outer, while both branches of all are imperfectly articulate, with the setae sparingly or not at all developed. It is impossible at present to say whether the peculiar condition of the fourth pair of pleopods noticed in the male of *P. calloplura* obtains also in *P. Kempi*, but this is quite likely in view of the close resemblance in other characters.

***Pseudomma nanum*, sp. n.**

Pl. III., Figs. 7-10.

Form compact, sublinear in shape. *Carapace* little wider than the pleon, emarginate posteriorly, evenly rounded in front. *Pleon* longer than the carapace, with the first five segments subequal in length, the last segment once and a half to once and two-thirds as long as the fifth. *Ocular lamina* slightly cleft in the middle line, composed of two sub-rectangular contiguous plates; extending to barely the distal ends of the basal joints of the antennules, each plate exhibiting near the mid-dorsal line a rather prominent corner, which is much more pronounced in the male than in the female; plates hispid, armed on the anterolateral margins with about fifteen teeth, lateral margins smooth. *Antennular peduncle* in the female moderately slender, basal joint the longest, nearly as long as the other two combined; second joint small, whole peduncle feebly setose; in the male much stronger and longer, distal joint nearly as long as the basal, male appendage well developed and very hirsute. *Antennal peduncle* slender, in

the female shorter than the antennular peduncle, last two joints subequal; in the male longer and more slender than in the female, as long as the antennular peduncle, the last joint somewhat longer than the second. *Antennal scale* comparatively short and narrow, in the female extending for only a little way, in the male not extending beyond the antennular peduncle, about four times as long as broad, outer margin entire terminating in a strong spine, apex obtusely rounded and almost imperceptibly extending beyond the outer terminal spine. *Mouth parts* of the usual type found in the genus. *First thoracic legs* very much as described for *P. calloplura*, with, however, the carpus shorter than the merus, propodus short, nail well developed, distinct and longer than the propodus; setae as in *P. calloplura*. *Second thoracic legs* much as in *P. roseum*; carpus shorter than merus; the propodus much better developed than in either *P. calloplura* or *P. Kempf*. and densely armed with both simple and plumose setae; nail distinctly present but small, shorter than the propodus and hidden among the setae of the propodus. *Exopods of all the thoracic limbs* well developed, outer distal corner of the basal joint slightly acuminate, flagelliform part of eleven joints. *Pleopods* of the female of usual structure, those of the male well developed, biramous, natatory, of the type met with in *P. roseum*; inner branch of the first pair with a single long seta at its tip, and three or four on its inner edge, lateral lobe well developed and tipped with two or three long setae. *Telson* as long as the last segment of the pleon, base nearly three times as broad as apex; apex broadly rounded, entire, armed with a pair of median setae and four pairs of strong simple spines, the innermost pair the longest, about one-quarter the length of the telson, each succeeding pair shorter than its inner neighbour; lateral margins unarmed. *Inner uropods* once and a quarter, outer uropods once and a half the length of the telson; no spine at the base of the inner uropod. *Length* of the type female 8 mm., of the type male (adult) 6.5 mm.

Though the type male only measures 6.5 mm., the brush on the antennules is very well developed, as are also the pleopods. This would seem to indicate that *P. nanum* is a small species compared with most other members of the genus. It is at once distinguished from all its congeners by the unarmed lateral margins of the telson. Otherwise it approaches rather closely to *P. Sarsi* described from the *Challenger* collections from near Kerguelen. *P. Sarsi* has, however, distinct though small spines on the lateral margins of the telson. The shape of the antennal scale is the same in both species and unlike that seen in any other member of the genus.

The first two thoracic legs of *P. nanum* show a rather intermediate stage between the type form *P. roseum* and *P. calloplura*. The first thoracic leg agrees in all essential particulars with that described and figured by us for *P. calloplura*. The second thoracic leg, however, approaches more nearly to the condition seen in *P. roseum* in having the propodus well

developed and densely setose. The nail is, however, quite distinctly developed though quite small. The third to eighth legs are missing in all our specimens, both of *P. nanum* and *P. calloplura*.

The sexual difference noted above in the proportional length of the antennal peduncle has not, we believe, been noticed in any other mysid.

We append a table for the ready identification of the known British-and-Irish species of *Pseudomma*.

I. Lateral margins of the telson armed with more or fewer spines.

A. Antennal scale with the outer margin terminating in a spine, apex of the scale *not* extending beyond the outer terminal spine.

(i.) Telson armed at apex with about three pairs of plumose spines, median setae absent, lateral margins with about thirteen small spines; eye plate with teeth throughout the antero-lateral and lateral edges.

P. calloplura, H. and T.

(ii.) Telson armed at apex with about two pairs of simple spines, and a median pair of small spinules, median setae present, lateral margins with about twenty-eight spines; eyeplate with teeth confined to the antero-lateral corner.

P. Kempi, H. and T.

B. Antennal scale with the outer margin terminating in a spine, apex of the scale extending *far* beyond the outer terminal spine.

Telson armed at apex with about four pairs* of simple spines, median setae present, lateral margins armed with about three to seven spines; eye plate with teeth throughout the antero-lateral and lateral margins.

P. affine, G. O. Sars.

II. Lateral margins of the telson unarmed.

Antennal scale with the outer margin terminating in a spine, apex barely extending beyond the outer terminal spine.

Telson armed at its apex with about four pairs of simple spines, median setae present, eye plate with teeth confined to the antero-lateral corner.

P. nanum, H. and T.

Records of P. nanum.

60 mi. W. of Achill Head, 199 fath., August, 1901, townet on trawl.—One, 5 mm.

* The spines, as in all *Mysidae*, are not rarely asymmetrical in distribution. The total number observed on the apex varies from seven to twelve (see p. 28).

48 mi. W.N.W. of Tearaght, Co. Kerry, 337 fath., November, 1904, townet on trawl.—Nineteen, 6 to 8 mm.

50 mi. same course, 372 fath., February, 1905, townet on trawl.—Eight, 6 to 9 mm.

50 mi. same course, 360 fath., May, 1905, townet on trawl.—Three, 7 mm.

GENUS *Mysidopsis*, G. O. Sars.

Mysidopsis didelphys, Norman.

Additional records.

50 mi. W.N.W. of Cleggan, Co. Galway, 120 fath., August, 1904, townet on dredge-bridle.—One, 7 mm.

Porcupine Bank, Lat. $53^{\circ} 20' N.$, Long. $13^{\circ} 0' W.$, 164 fath., May, 1905, townet on trawl.—One, 12 mm.

GENUS *Mysideis*, G. O. Sars.

Mysideis insignis, G. O. Sars

Mysidopsis hibernica, Norman, 1892.

The examination of further material has convinced us that *M. insignis* and *M. hibernica* cannot be regarded as specifically distinct. They are one species in which the apex of the telson may exhibit an emargination which varies, without regard to size of individual, from the merest indentation to a distinct but small and narrow cleft. The cleft is never denticulate, and the median setae are on the ventral face of the telson somewhat anterior to its postero-median margin. The lateral spines are in the specimens of which we have knowledge from eighteen to twenty-five in number.

We have noted in *Mysidetes Farrani* a variation in the telson at least equal to that which separates the original descriptions of *M. insignis* and *M. hibernica*.

Additional records.

75 mi. W.S.W. of Fastnet, Co. Cork, 190 fath., May, 1904, townet on trawl.—Two, 15 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—Two, 9 and 11 mm.

Same locality, 360 fath., May, 1905, townet on trawl.—Two, 10 and 13 mm.

Porcupine Bank, Lat. $53^{\circ} 39' N.$, Long. $12^{\circ} 24' W.$, 185 fath., May, 1905, townet on trawl.—One, 15 mm.

Porcupine Bank, Lat. $53^{\circ} 2' N.$, Long. $13^{\circ} 48' W.$, 105 fath., May, 1905, townet on trawl.—Eleven, 10 mm.

GENUS *Leptomysis*, G. O. Sars.*Leptomysis gracilis*, G. O. Sars.

Porcupine Bank, Lat. $53^{\circ} 2' N.$, Long. $13^{\circ} 48' W.$, 105 fath., May, 1905, townet on trawl.—Three, 12 mm.

While this species occurs in our gatherings from shallow water off the south and west coasts and is very common in the Irish Sea, we have only once found it (as above) in deep-water collections. Its occurrence elsewhere in water of more than 40 or 50 fath. does not appear to have been reported, but it has been taken in as little as 10 fath., and is in fact a littoral species. On this account its presence on or near the Porcupine Bank is of obvious interest.

SUB.-FAM. nov. *MYSIDETINAE*.

Differing from *Leptomysinae* in having the pleopods rudimentary in both sexes.

Type-genus *Mysidetes*, nov.

We suppose that the institution of sub-families in the *Mysidae* is regarded rather as an aid to determination of specimens than as an expression of equally important taxonomic distinctions. The *Mysidatinae*, differing from the *Leptomysinae* only in the characters of the pleopods, closely resemble in the characters of the antennal scale and telson the *Heteromysinae* and *Mysidellinae*, which also have the pleopods rudimentary in both sexes; but are distinguished from them, respectively, by the structure of the third and first thoracic limbs.

GENUS *Mysidetes*, nov.

Antennal scale lanceolate, setose all round.

Mandibles with a distinct and well developed molar process and a three-jointed palp.

First maxillae with the inner lobe better developed than in the genus *Mysidopsis* and bearing more setae.

Second maxillae with the exognath well developed, inner setiferous expansion of the basal part present and well developed.

First thoracic legs six-jointed, fairly stoutly built and well armed with plumose setae.

Second thoracic legs much as in the genus *Mysidopsis*, feebly armed.

Remaining legs with a three-jointed tarsus.

Pleopods of both sexes rudimentary and much as in females of the genus *Mysidopsis*.

Telson elongate, cleft; cleft armed with small teeth; sides of telson armed with spines: no median setae.

Inner uropods with a row of spines along the greater part of the inner edge, otocyst not exceptionally large.

Type, Mysidetes Farrani (H. and T.).

Mysidetes Farrani (H. & T.).

Pl. V.

Mysideis (?) *Farrani*, Holt and Tattersall, 1905 (1).

Form moderately robust. *Carapace* much wider than pleon, slightly emarginate posteriorly; produced in front into an obtusely rounded rostrum. *Pleon* longer than carapace, its first four segments subequal in length, the fifth slightly longer than the fourth, the last segment one and a quarter times as long as the fifth. *Eyes* large, nearly globose, extending to the distal joint of the antennular peduncle, pigment golden brown. *Antennular peduncle* strongly built, the middle (second) joint very small, the distal joint stouter than the other two and equal in length to the basal joint. *Antennal peduncle* with the antepenultimate joint small, the penultimate joint longer than the last, each of the latter joints with a few setae on their inner distal corners. *Antennal scale* lanceolate, about four times as long as broad, setose all round, extending for a little way beyond the antennular peduncle, and about half as long again as the antennal peduncle. *Mouth parts* as for the genus. *First thoracic legs* six-jointed, moderately stoutly built, with the merus longer than the carpus, the carpus longer than the propodus, nail distinct; the inner edge of the last four joints armed with plumose setae. *Second thoracic legs* very much as in the genus *Mysidopsis*, with the merus nearly as long as the carpus and propodus combined, the latter shorter than the carpus, and densely setose; nail distinct; the whole appendage except the propodus feebly armed. *Third thoracic legs* with the tarsus three-jointed, and shorter than the merus; nail distinct and as long as the last two joints of the tarsus combined. *The remaining thoracic legs* with the first joint of the tarsus proportionally longer than in the third pair, in other respects agreeing with the latter. *Exopods* of the thoracic limbs well developed, with the outer distal corner of the basal joint bluntly rounded, the flagelliform part of nine joints except in the first pair of limbs, where it is eight-jointed. *Pleopods* of both sexes rudimentary, as in females of the *Leptomysinae*. *Telson* as long as the last segment of the pleon, gradually narrowing towards the apex, where it is rather

less than half the width at the base; apex truncate and cleft, the cleft varying in depth from one-fifth to one-tenth of the total length of the telson; cleft armed with three small spines at the apex and about three to five on each side; apex with a pair of spines on each side of the cleft, the inner pair being the shortest; lateral margins armed with from ten to twenty-two spines, which commence at about the level of the otocyst and continue to the apex, gradually increasing in size. *Inner uropods* about half as long again as the telson, rather narrow, with from twenty-five to twenty-eight spines in a row along the inner edge, the spines commencing about opposite the centre of the otocyst and extending from about two-thirds to three-quarters of the way to the extremity. *Outer uropods* about twice as long as the telson, and one and a half times as long as the inner. *Length* of the largest specimen, 28 mm. Males mature at about 15 mm.

In our preliminary notice of the species, having then only three damaged female specimens for examination, we doubtfully referred it to the genus *Mysideis*. Other nine* came to hand in time for inclusion in the list of localities (1905 (1), p. 146), but too late for close study. We now find that our material—twenty-one specimens in all, includes both sexes. Males and females alike have rudimentary pleopods, though the larger males are evidently mature.† While this circumstance removes *Mysidetes* from the *Leptomysinae* it affords no assistance in distinguishing the females of *Mysidetes* from those of *Mysideis* and *Mysidopsis*. We have, therefore, prepared a table in which the distinctive characters are set forth in parallel columns.

* Six more were found afterwards in the gathering made at 454 fath., November, 1904.

† We take it that a male with well-developed antennular brush is mature. In *Mysideis insignis* the range in size from the smallest mature male to the largest example appears to be about the same as in the species before us, which is, therefore, not singular in that respect.

[TABLE.]

—	<i>Mysidopsis.</i>	<i>Mysidetes.</i>	<i>Mysideis.</i>
Mandible, ..	Without molar process.	With molar process.	With molar process.
First maxilla,	Inner lobe rather small and armed with few setae.	Inner lobe normal in size, armed with several setae.	Inner lobe normal in size, armed with several setae.
Second maxilla,	Without inner setiferous expansion of the basal part.	With inner setiferous expansion of the basal part.	With inner setiferous expansion of the basal part.
First thoracic legs.	Six-jointed, of normal stoutness and armature.	Seven-jointed, of normal stoutness and armature.	Seven-jointed, very massive, and very strongly armed.
Second thoracic legs.	Normal, ..	Normal, ..	Unusually massive and very densely and strongly armed.
Telson, ..	With or without a cleft; cleft when present unarmed; no median setae.	With a cleft; cleft armed; no median setae.	With a very shallow cleft; cleft unarmed; median setae present.
Inner uropods	With few spines confined to the region of the otocyst.	With many spines extending well over half way down the uropod.	With few spines confined to the region of the otocyst.
Pleopods of the male.	Well developed, biramous.	Rudimentary, ..	Well developed, biramous.

Mysidopsis incisa, G. O. Sars, described in the *Challenger* report, ought most probably to be referred to *Mysidetes*. We have examined the type in the British Museum and find that in addition to the armed cleft of the telson it has a row of spines on the inner uropod exactly as in *M. Farrani*. It is a female.

Our material of *M. Farrani*, though not very numerous, exhibits considerable variation in the telson and uropods. The variation in the depth of the cleft of the telson is rather surprising. It may be as little as one-tenth and as great as one-fifth of the total length of the telson. The armature of the cleft is not always the same, nor is it invariably symmetrical. The specimen which we have used for illustration has three small spines at the apex and four and five on the sides. Another specimen has three at the apex and four on each side, while yet a third has three at the apex, four on one side

and three on the other. The number of spines on the inner uropod varies from twenty-five to twenty-eight, and is not always the same on the two inner uropods of the same animal. We have counted twenty-five on one side and twenty-six on the other, and in another instance twenty-six on one side and twenty-eight on the other. The distance to which the spines on the inner uropod extend is likewise variable. We have found them extending as little as two-thirds of the way down in one specimen, and as much as three-quarters of the way down in others. The spines of the lateral margins of the telson vary according to age, as seems to be at least not unusual in *Mysidae*, from twelve to twenty-two.

We subjoin a table in which is given the results of a critical examination of all our material. It may be mentioned that specimens 8, 13 and 18 were the three first specimens to hand, and were those from which our preliminary description was drawn up.

TABLE showing variations in the armature of the telson.

Length of Specimen in Millimetres.	Proportion of Length of Cleft to Length of Telson.	Spines arming Margins of Telson.		Spines Arming Cleft of Telson.	Index Number of Specimen.
		Left Side.	Right Side.		
16	1 : 10	12	11	9	1
15	1 : 8	13	12	8	2
15	1 : 8	12	12	6	3
14	1 : 8	13	13	6	4
13	1 : 8	10	10	9	5
13	1 : 10	12	12	8	6
13	1 : 9	11	11	9	7
12	1 : 5	21	21	13	8
12	1 : 8	12	11	8	9
11	1 : 8	12	12	8	10
11	1 : 8	11	11	8	11
10	1 : 6	10	10	10	12
10	1 : 5	21	20	13	13
9	1 : 6	10	10	9	14
9	1 : 10	10	10	6	15
9	1 : 6	13	13	9	16
9	1 : 6	11	12	8	17
7	1 : 5	?	16	10+	18*
28	1 : 7	26	25	12	19
28	1 : 6	23	22	13	20
12	1 : 10	11	10	7	21

Additional record.

50 mi. W.N.W. of Tearaght, Co. Kerry, 360 fath., May, 1905, townet on trawl.—Two, 28 mm.; one, 12 mm.

* Telson broken.

The known vertical range is from 337 to 454 fath., while the known horizontal range remains confined to a small area off the coast of County Kerry.

SUB.-FAM. *MYSINAE*.

GENUS *Dasymysis*, Holt and Beaumont.

Dasymysis longicornis (M.-Ed.).

Mysis longicornis, Milne-Edwards, 1837.

Mysis longicornis, G. O. Sars, 1877.

Acanthomysis platydens, Czerniavsky, 1882.

Acanthomysis longicornis, Czerniavsky, 1882.

Acanthomysis spinosissima, Czerniavsky, 1882.

Acanthomysis longicornis, Norman, 1905.

70 mi. S.W. of Fastnet, Co. Kerry, 81 fath., May, 1905, townet on trawl.—One, 10 mm.

D. longicornis is known to us from less than 50 fath. at several localities on the west coast, and is very common in the Irish Sea.

SUB.-FAM. *ARACHNOMYSINAE*, H. and T.

GENUS *Chunomysis*, H. & T.

Chunomysis diadema, H. & T.

Additional record.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—One, 5 mm.

SUB.-FAM. *SIRIELLINAE*, Czerniavsky.

GENUS *Siriella*, Dana.

Siriella norvegica, G. O. Sars.

10 mi. W.N.W. of Tearaght, Co. Kerry, 76 fath., November, 1904, townet at surface.—One, 16 mm., ovigerous.

This *Siriella* seems to be more truly pelagic than its British-and-Irish congeners, and, as far as our collections go to show, is one of the rarest Mysids on the west coast. It may, however, prove less rare when the very large townets have been more worked over the inshore grounds to which we think it belongs rather than to the ocean.

SUB.-FAM. *GASTROSACCINAE*, Norman.

GENUS *Haplostylus*, Kossmann.

Haplostylus Normani (G. O. Sars).

Additional records.

Porcupine Bank, Lat. $53^{\circ} 38' N.$, Long. $13^{\circ} 19' W.$, 135 fath., August, 1904, townet on trawl.—Six, 6 to 8 mm., and ten very small.

80 mi. W.N.W. of Slyne Head, Co. Galway, 180 fath., August, 1904, townet on trawl.—One, 7 mm.

Porcupine Bank, Lat. $53^{\circ} 2' N.$, Long. $13^{\circ} 48' W.$, 105 fath., May, 1905, townet on trawl.—Eighteen, 6 to 13 mm.

Porcupine Bank, Lat. $53^{\circ} 20' N.$, Long. $13^{\circ} 0' W.$, 164 fath., May, 1905, townet on trawl.—One, fragmentary.

SUB.-FAM. *BOREOMYSINAE*, H. and T.

GENUS *Boreomysis*, G. O. Sars.

Boreomysis arctica (Kröyer).

Boreomysis arctica, G. O. Sars, 1870-79.

Additional records.

50 mi. W.N.W. of Tearaght, Co. Kerry, 372 fath., February, 1905, townet on trawl.—Nineteen, 15 to 22 mm.

50 mi. W.N.W. of Tearaght, Co. Kerry, 360 fath., May, 1905, townet on trawl.—One, 18 mm.

Lo Bianco (1903) has announced the capture in the Mediterranean of examples which he refers to this species. Some of these, which we have been permitted to examine, differ in no obvious respect from the Irish specimens, which are in agreement with Sars' descriptions of Norwegian forms. This Mysid would therefore seem to have a distribution equivalent to that of the Euphausian *Meganyctiphanes norvegica*, extending from the Arctic region to the Mediterranean. In our previous communication we included Jan Mayen in the list of localities. This, as Dr. Hansen has suggested to us, is an error of transcription from Sars' table (1870-79).

Boreomysis tridens, G. O. Sars.

Additional record.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $14^{\circ} 50' W.$, 500 fath., May, 1905, townet on trawl.—Ten, 9 to 24 mm.

Boreomysis megalops, G. O. Sars.*Additional records.*

50 mi. W.N.W. of Cleggan Head, Co. Galway, 120 fath., May, 1904, townet on trawl.—Two.

54 mi. W.N.W. of Eagle Island, Co. Mayo, 200 fath., August, 1904, townet at bottom.—One, 10 mm.

Porcupine Bank, Lat. $53^{\circ} 39' N.$, Long. $12^{\circ} 24' W.$, 185 fath., May, 1905, townet on trawl.—Two, 14 and 16 mm.

Porcupine Bank, Lat. $53^{\circ} 2' N.$, Long. $13^{\circ} 48' W.$, 105 fath., May, 1905, townet on trawl.—Two, 10 mm.

Porcupine Bank, Lat. $53^{\circ} 30' N.$, Long. $13^{\circ} 0' W.$, 164 fath., May, 1905, townet on trawl.—One, 10 mm.

Boreomysis microps, G. O. Sars.*Boreomysis subpellucida*, Hansen, 1905 (1).

We recorded (1905) a specimen which we considered referable to *B. microps*, but were induced, by the publication of Hansen's description of *B. subpellucida*, to examine Sars' type, which is in the British Museum. The fact is that in so far as the diagnosis of *B. microps* differs from that of *B. subpellucida*, the former is erroneous. The type (and Sars' only) specimen of *B. microps* is in rather bad condition, and especially the eyes are badly preserved, but on one of them the papilla of *B. subpellucida* is easy to distinguish, and in all other respects the two forms agree. Hansen's figures of the antennal scale and telson appear to us to be more faithful to the type than the drawings given in the *Challenger* report, but the difference is at most slight.

We find that in small examples (about 7 mm.) the dilatation at the top of the apical cleft of the telson is not yet developed, but is represented only by an extremely narrow fissure. Otherwise the young present no obvious difference from the adult. The spinules between the lateral spines of the telson, figured by Sars and mentioned by Hansen, are already present.

Additional records.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., February, 1905, townet at 700 fath.—One, 7 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $14^{\circ} 50' W.$, 500 fath., May, 1905, townet on trawl.—One, 7 mm.

W. of Porcupine Bank, Lat. $53^{\circ} 7' N.$, Long. $15^{\circ} 6' W.$, 860 fath., May, 1905, Petersen trawl at 700 fath.—Twenty-two, 6 to 18 mm.

50 mi. N. by W. of Eagle Island, Co. Mayo, 1,200 fath., May, 1905, Petersen trawl at 1,150 fath.—Ten, 17 to 20 mm.

Petersen's net has demonstrated that this oceanic species is abundant on the confines of our area, and Dr. Hansen tells us that it is common towards Iceland and the Färöe Islands. He has recorded it from near the Azores and Canary Islands. As the original record is from off Nova Scotia *B. microps* would seem to be generally distributed throughout the North Atlantic.

SUB.-FAM. *MYSIDELLINAE*, Czerniavsky.

GENUS *Mysidella*, G. O. Sars.

Mysidella typica, G. O. Sars.

Additional records.

50 mi. W.N.W. of Slyne Head, Co. Galway, 112 fath., August, 1904, townet on dredge.—One, 7 mm.

W. of Porcupine Bank, Lat. 53° 1' N., Long. 14° 34' W., 293 fath., May, 1905, townet on trawl.—Three, 6 to 8 mm.

LIST OF AUTHORITIES QUOTED.

- Chun, 1888.—“Die pelagische Thierwelt in grosseren Meerestiefen.”—*Bibliotheca Zoologica*, Heft I.
- Chun, 1896.—“Ueber pelagische Tiefsee-Schizopoden.”—*Bibliotheca Zoologica*, Heft XIX.
- Claus, 1863.—*Zeitschr. Wiss. Zool.*, Vol. XIII.
- Czerniavsky, 1882.—“Monogr. Mysid. imprimis Imperii Rossici.”
- Dana, 1852.—U.S.A. Exploring Exped., XIV., “Crustacea.”
- Faxon, 1895.—“Stalk-eyed Crustacea of Albatross Exped.”—*Mem. Mus. Harvard Coll.*, Vol. XVIII.
- Hansen, 1887.—“Malacostraca marina Groenlandiae occidentalis.”—*Vid. Medd. Naturh. Foren., Kjöbenhavn*.
- Hansen, 1905 (1).—“Preliminary Report on the Schizopoda of the *Princess Alice* for 1904.”—*Bull. Mus. Océan. Monaco*, No. 30.
- Hansen, 1905 (2).—“Further Notes on the Schizopoda.”—*Bull. Mus. Océan. Monaco*, No. 42.
- Holt and Beaumont, 1900.—“Survey Fishing Grounds W. Coast of Ireland—Crustacea Schizopoda.”—*Sci. Trans. Roy. Dublin Soc.*, Ser. 2, Vol. VII.

- Holt and Tattersall, 1905 (1).—"Schizopoda from the North East Atlantic slope."—Rep. Sea and Inland Fisheries of Ireland for 1902 and 1903, Pt. II., Appendix, IV.
- Holt and Tattersall, 1905 (2).—"Schizopods collected by the *Oceana*."—Ann. Mag. Nat. Hist., Ser. 7, Vol. XVI.
- Holt and Tattersall, 1905 (3).—"Biscayan Plankton—Pt. V.—Schizopoda."—Trans. Linn. Soc. Zool., Vol. X., Pt. 4.
- Lo Bianco, 1901.—"Le Pesche pelagiche abissali eseguite dal *Maia* nelle vicinanze di Capri."—Mitth. Zool. Stat. Neapel. Bd. XV.
- Lo Bianco, 1903.—"Le Pesche abissali eseguite da F. A. Krupp col yacht *Puritan* nelle adiacenze di Capri ed in altre località del Mediterraneo."—Mitth. Zool. Stat. Neapel, Bd. XVI.
- Lo Bianco, 1904.—"Pelagische Tiefsee Fischerei der *Maja*" (translation of Lo Bianco, 1901, with figures).—Beitrage zur Kenntniss des Meeres und seiner Bewohner, Bd. I.
- Milne-Edwards, 1837.—"Histoire Naturelle des Crustacés."
- Norman, 1892 (1).—"British Lophogastridae and Euphausiidae."—Ann. Mag. Nat. Hist., Ser. 6, Vol. IX.
- Norman, 1892 (2).—"British Mysidae."—Ann. Mag. Nat. Hist. Ser. 6, Vol. X.
- Norman, 1902.—"Notes on the Natural History of East Finmark."—Ann. Mag. Nat. Hist., Ser. 7, Vol. X.
- Norman, 1905.—Museum Normanianum, III., Crustacea, 2nd ed.
- Ohlin, 1902.—"Arctic Crustacea."—Bihang Kongl. Svensk. Vet-Akad. Handl., Bd. 27, Afd. IV.
- Ortmann, 1893.—"Decapoda u. Schizopoda d. Plankton Exped."
- Riggio, 1905.—"Carcinologia del Mediterraneo," I.—Naturalista Siciliano. XVII.
- G. O. Sars, 1870-79.—"Carcin. Bidrag. t. Norg. Faun."—Monog. over Mysider.
- G. O. Sars, 1876.—"Middelhavets Mysider."
- G. O. Sars, 1882.—"Oversigt af Norges Crustacea."—Christiania Vidensk. Forhandl.
- G. O. Sars, 1885.—"Voyage of H.M.S. *Challenger*. "Report on Schizopoda."—Zool., Vol. XIII.
- S. I. Smith, 1879.—Trans. Connecticut Acad. Arts and Sci., Vol. V. Pt. 1.
- Vanhöffen, 1898.—Drygalski, Grönland Expedition, II.
- Willemoes-Suhm, 1875.—"Some Atlantic Crustacea from the *Challenger* Expedition."—Trans. Linn. Soc., London, Ser. II., Vol. I.

NOTE ADDED IN PRESS.*

Nyctiphanes Couchi.

In our previous report (1905 (1) p. 103), we stated that *Nyctiphanes Couchi* could be distinguished from *N. australis* by the presence in the former of a spine over the base of the telson. For this we relied upon the accuracy of Sars' (1885) descriptions and figures. Stebbing (1905), in recording *N. australis* from the Cape of Good Hope, remarked the presence of a spine in that species. Examination of the *Challenger* material, including the types, has shown that the spine is always present in *N. australis*, and about as large as in *N. Couchi*, and the only differences which we can detect are:—

Females of about 8 mm. and upwards, and young males of *N. Couchi* have a digitate leaflet on the second joint of the antennular peduncle. Neither sex of *N. australis* has such a leaflet, though large females may have a minute simple process in the same place. Adult males of *N. Couchi* have, on the proximal intero-ventral corner of the third joint of the antennular peduncle, a group of three to five closely-set plumose setiform spines which are not present in adult males of *N. australis*.

EXPLANATION OF THE PLATES.

PLATE I.

Thysanopoda acutifrons.

- Fig. 1. Lateral view of young specimen, 16 mm.
 „ 2. Dorsal view of head of adult female, 37 mm.

PLATE II.

Thysanopoda distinguenda,

Female, 23 mm.

- Fig. 1. Lateral view.
 „ 2. Dorsal view of head.
 „ 3. Dorsal view of telson and uropods.

PLATE III.

Pseudomma affine.

- Fig. 1. Dorsal view of female, 10 mm.
 „ 2. Left eye-plate of male.
 „ 3. Left eye-plate of female.
 „ 4. Antennal scale.
 „ 5. Telson, of a male, with the usual number of apical spines.
 „ 6. Telson, of a female, with five pairs of apical spines.

* See page 12.

Pseudomma nanum,

Male, 7 mm.

- Fig. 7. Dorsal view.
 „ 8. Left eye-plate.
 „ 9. Antenna and antennule.
 „ 10. Telson.

PLATE IV.

Pseudomma calloplura,

Male, 11 mm.

- Fig. 1. Dorsal view.
 „ 2. Antenna.
 „ 3. Endopod of 1st thoracic limb.
 „ 4. Endopod of 2nd thoracic limb.
 „ 5. Pleopod of 1st pair.

Pseudomma Kempfi,

Female, 12 mm.

- Fig. 6. Dorsal view.
 „ 7. Antenna.
 „ 8. Antennule.
 „ 9. Endopod of 1st thoracic limb.
 „ 10. Endopod of 2nd thoracic limb.

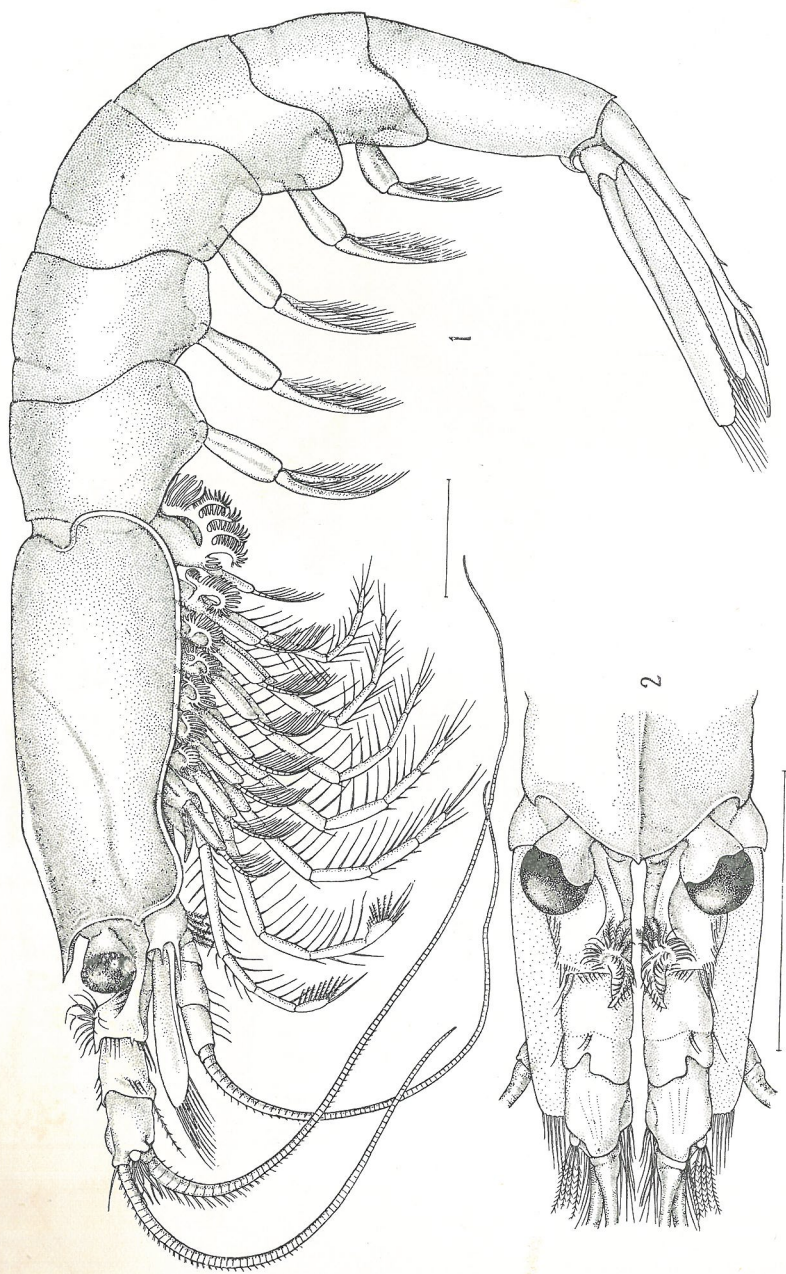
PLATE V.

Mysidetes Farrani,

Female, 14 mm.

- Fig. 1. Dorsal view.
 „ 2. Antenna.
 „ 3. Endopod of 1st thoracic limb.
 „ 4. Endopod of 2nd thoracic limb.
 „ 5. Endopod of 3rd thoracic limb.
 „ 6. Telson.

Pl. I.



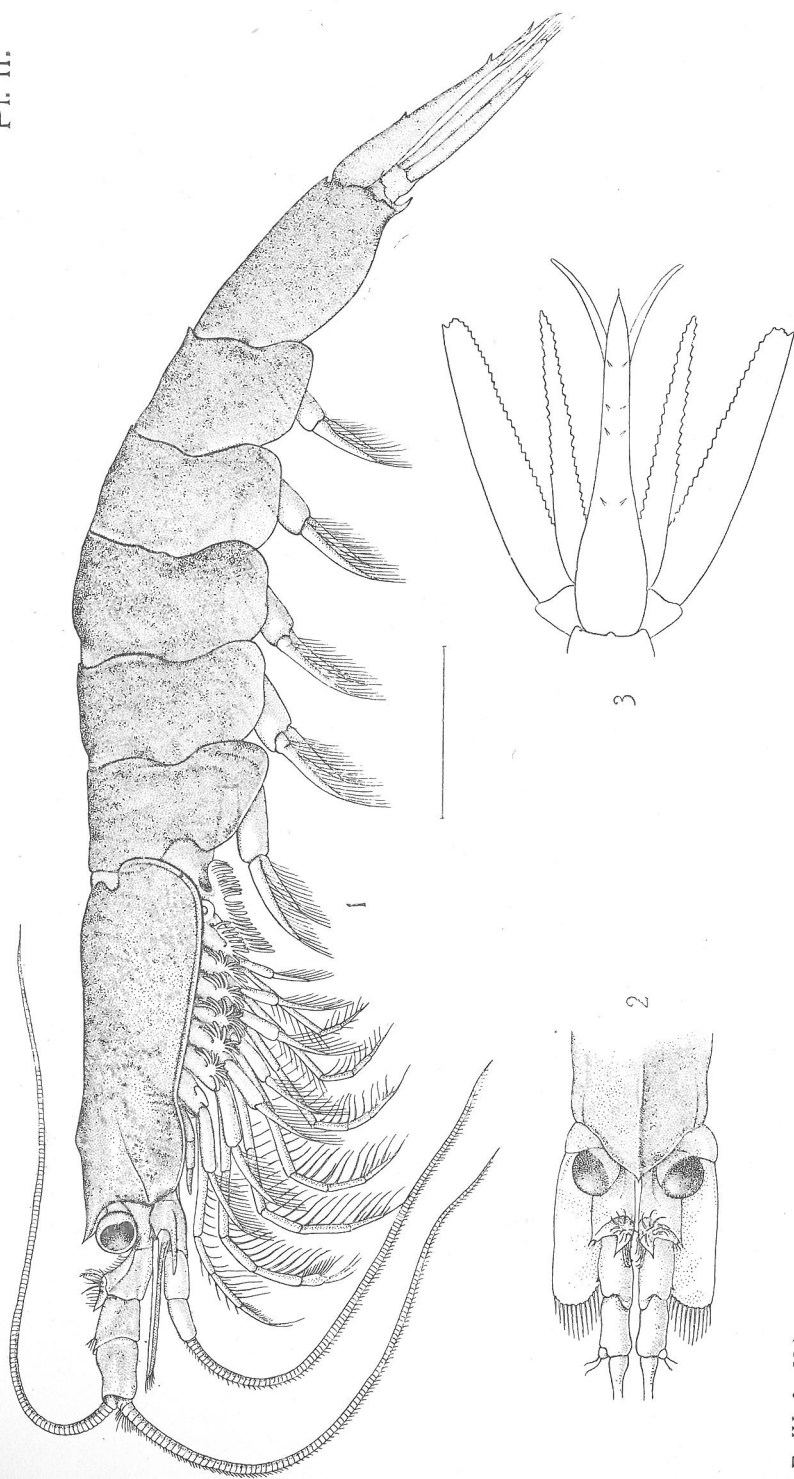
Thysanopoda acutifrons.

E. W. L. H. } del.
G. M. W. }

1890-1891

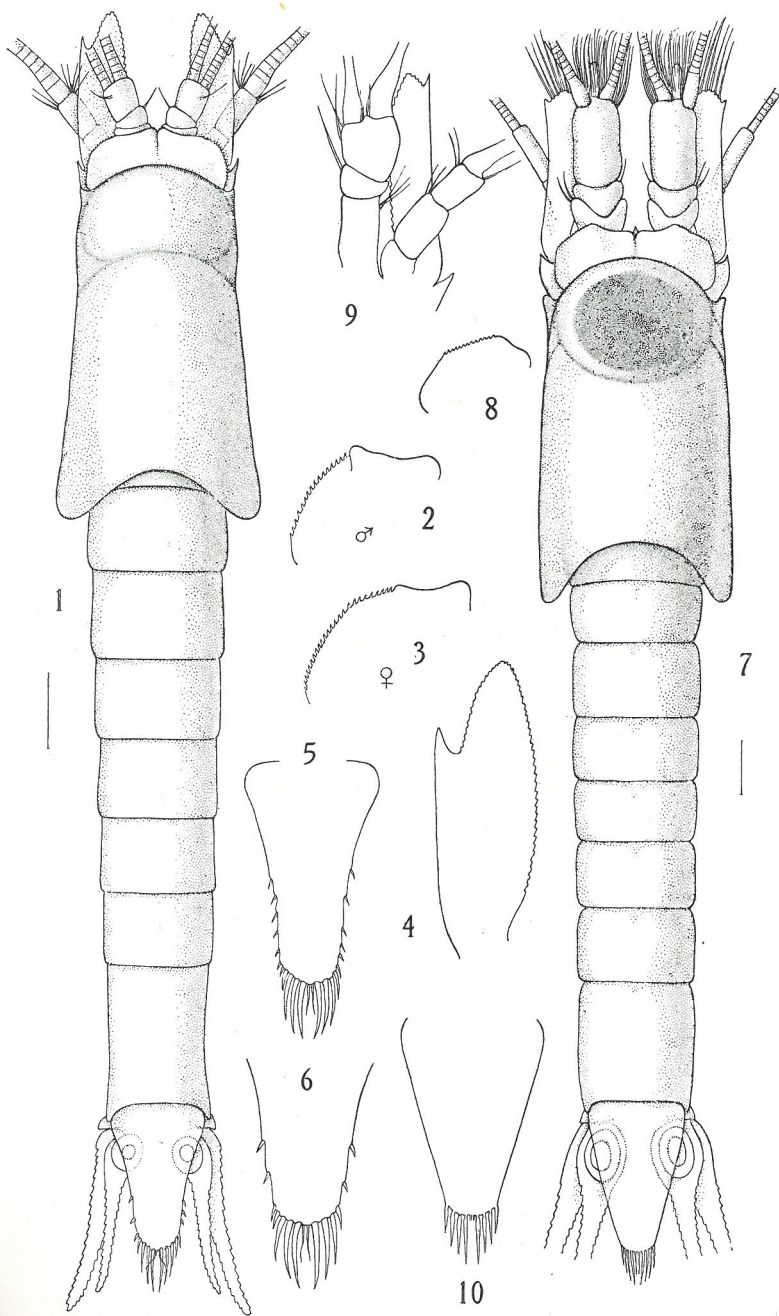
1891-1892

1892-1893



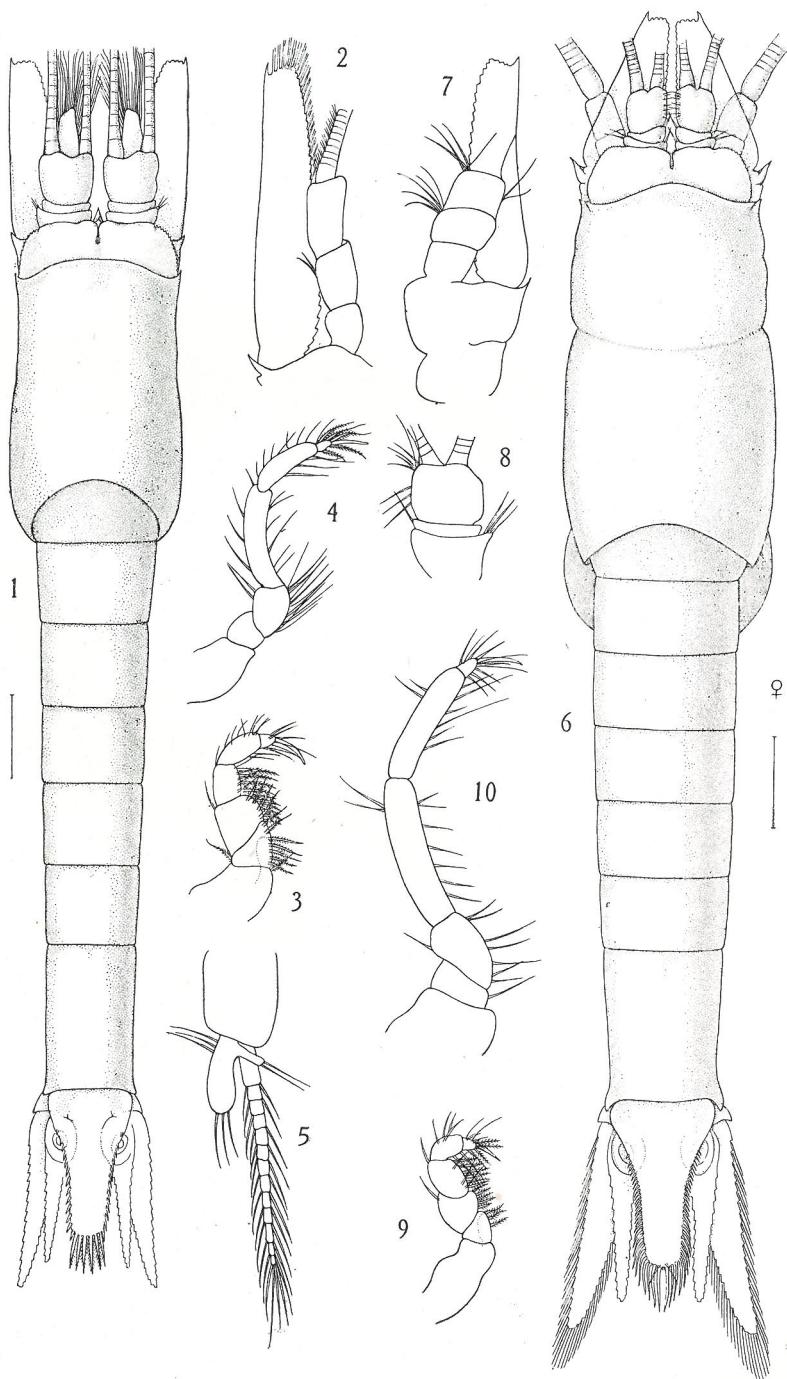
E. W. L. H. } del.
W. M. T. }
G. M. W. }

Thysanopoda distinguenda.



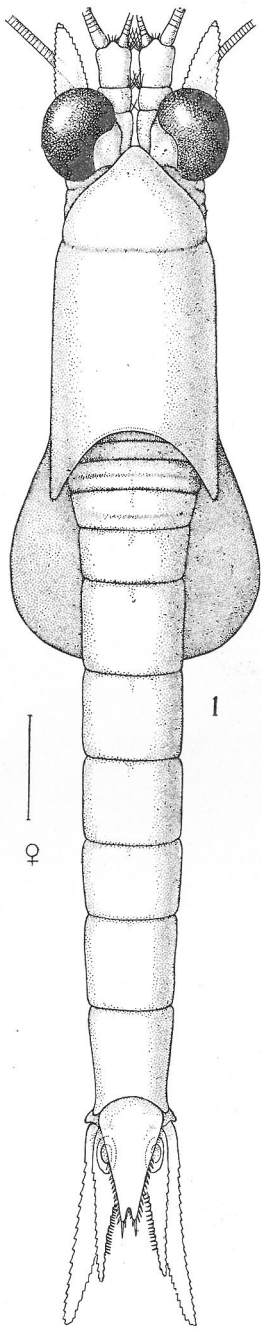
W. M. T. } del.
G. M. W. }

1-6, *Pseudomma affine*.
7-10, *Pseudomma nanum*.

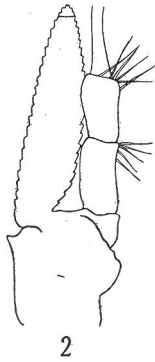


E. W. L. H. }
W. M. T. } del.
G. M. W. }

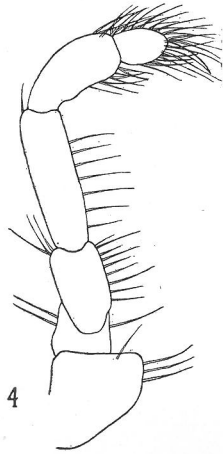
1-5, *Pseudomma calloplura*.
6-10, *Pseudomma kempi*.



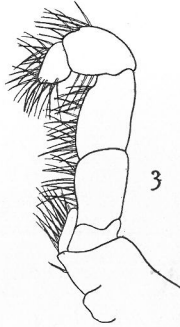
♀



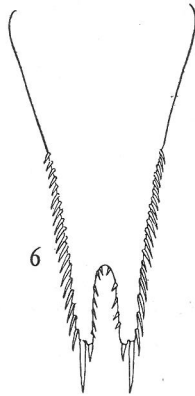
2



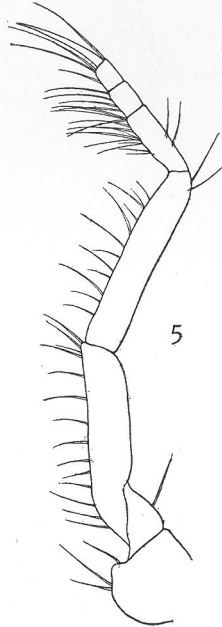
4



3



6



5

W. M. T. }
C. M. W. } del.

Mysidetes Farrani.

- DELAP, M. and C.—(i.) Notes on the Plankton of Valencia Harbour, 1899-1901; (ii.) Notes on the rearing, in an Aquarium, of *Cyanea lamarki*, Peron and Lesueur, pp. 20, pl. 2.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., I. [1905.]
- FARRAN, G. P.—Report on the Copepoda of the Atlantic Slope off Counties Mayo and Galway, pp. 30, pl. 11.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., II. [1905.]
- SYKES, E. R.—The Molluscs and Brachiopods of Ballynakill and Bofin Harbours, Co. Galway, and of the deep water off the West and South-West Coasts of Ireland, pp. 40; and
- HOYLE, W. E.—On Specimens of *Tracheloteuthis* and *Cirroteuthis* from deep water of the West Coast of Ireland, pp. 6, pl. 1, maps 2.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., III. [1905.]
- HOLT, E. W. L., and TATTERSALL, W. M.—Schizopodous Crustacea from the North-East Atlantic Slope, pp. 54, pl. 11; and
- CALMAN, W. T.—Note on a Genus of Euphausiid Crustacea, pp. 3, pl. 1.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., IV. [1905.]
- HOLT, E. W. L. and BYRNE, L. W.—(i.) Note on a Specimen of *Dentex vulgaris* from Dingle Bay, pp. 6, pl. 1; (ii.) The British and Irish Gobies, Supplement, pp. 2, pl. 1; (iii.) Figures and Descriptions of the British and Irish Species of *Solea*, pp. 12, pl. 6.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., V. [1905.]
- KEMP, S. W.—Echinoderms of Ballynakill and Bofin Harbours, Co. Galway, and of the Deep Water off the West Coast of Ireland, pp. 31, pl. 1.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., VI. [1905.]
- FARRAN, G. P.—(i.) Additions to the List of Nudibranchiate Molluscs of Ballynakill Harbour, Co. Galway; (ii.) Rediscovery of the Nudibranch *Alderia modesta* (Loven); (iii.) Occurrence of the Floating Barnacle, *Lepas fascicularis* (Ellis and Sol.), and
- TATTERSALL, W. M.—(iv.) On *Nebalia typhlops*, G. O. Sars; (v.) On Stomatopod larvae from the West Coast of Ireland; (v.) Enteropneusta from the West Coast of Ireland, pp. 8.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., VII. [1905.]
- HOLT, E. W. L. and HILLAS, A. B. E.—Preliminary Report on Experiments in Oyster Culture on the West Coast of Ireland, pp. 118.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., VIII. [1905.]
- Quarterly Observations of Temperature, s.s. "Helga," pp. 11.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., IX. [1905.]
- HOLT, E. W. L.—Note on the Manurial Value of the Seaweed *Cladophora rupestris*, pp. 2.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., X. [1905.]
- HOLT, E. W. L.—Report on the Artificial Propagation of Salmonidae for the Seasons of 1902-1903, and 1903-1904, pp. 5, and
- GREEN, C.—Preliminary Note on the Size of Salmon Eggs, in relation to Estimating their Number, pp. 2, and
- OLIVER, CHARLES DEANE.—Report on the Salmon Hatchery at Lismore, pp. 6, pl. 3, together with

- Statistical Information relating to the Salmon Fisheries, pp. 4, and
Substance of Reports received from Clerks of Conservators relative to
Salmon Fisheries, pp. 23.
Ann. Rep. Fish., Ireland, 1902-3, Pt. II., App., XI., XII., XIII. [1905.]
- CALMAN, W. T.—Cumacea, pp. 52, pl. 5.
Fisheries, Ireland, Sci. Invest., 1904, I. [1905.]
- TATTERSALL, W. M.—Isopoda, pp. 90, pl. 11, maps 2.
Fisheries, Ireland, Sci. Invest., 1904, II. [1905.]
- PEARSON, JOSEPH.—A list of the Marine Copepoda of Ireland, Part I.,
Littoral Forms and Fish Parasites, pp. 30.
Fisheries, Ireland, Sci. Invest., 1904, III. [1905.]
- CARPENTER, G. H.—Pycnogonida, pp. 8, pl. 3.
Fisheries, Ireland, Sci. Invest., 1904, IV. [1905.]
- HOLT, E. W. L., and TATTERSALL, W. M.—Schizopodous Crustacea from
the North-East Atlantic Slope. Supplement, pp. 50, pl. 5.
Fisheries, Ireland, Sci. Invest., 1904, V. [1906.]
- GOUGH, L. H.—Plankton collected at Irish Light Stations in 1904, pp.
55, and
Hydrographical Observations at Irish Light Stations, 1904, pp. 23.
Fisheries, Ireland, Sci. Invest., 1904, VI. [1906.]
- HOLT, E. W. L.—Report on the Artificial Propagation of Salmonidae
during the season of 1904-1905, pp. 6, and
ARENS, C.—Observations on the Spawning Season of the Rainbow Trout,
pp. 5, and
HILLAS, A. B. E.—Record of Salmon Marking Experiments in Ireland,
1902-1905, pp. 39, together with
Statistical Information relating to the Salmon Fisheries, pp. 4, and
Substance of Reports received from Clerks of Conservators relative to
Salmon Fisheries, pp. 23.
Fisheries, Ireland, Sci. Invest., 1904, VII. [1906.]