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Schizopodous Crustacea from the North-east Atlantic Slope. Second Supplement,

BY

W. M. TATTERSALL, M.Sc.

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SCHIZOPODOUS CRUSTACEA FROM THE NORTH-EAST ATLANTIC SLOPE.

SECOND SUPPLEMENT.

BY

W. M. TATTERSALL, M.Sc.

Plates I—VIII.

The first and second papers dealing with the Schizopoda of the Atlantic slope to the West of Ireland completed the account of the group, as represented in the collections made by the Department's Fishery Cruiser *Helga*, to the middle of the year 1905. The present report deals with the material obtained from that time to November, 1909.[1]

The chief feature in the work of the *Helga* during the period under notice has been the extension of the investigations of the bottom-haunting fauna into water deeper than had up to this time been explored. The trawl, with its accessory nets, has been worked successfully on numerous occasions in depths down to 800 fathoms, while the midwater otter trawl, which, as its name indicates, is particularly adapted to the investigation of bathypelagic life, has been found to be no less efficient for the capture of the smaller bottom-living species, if allowed to skim lightly over the surface of the ground. It has been fished in this way down to a depth of 900 fathoms, and has yielded a wealth and variety of forms almost beyond expectation. As a bathypelagic net it has been used to explore the ocean to a depth of 1200 fathoms.

It was natural to expect that, when the deep water was more thoroughly and systematically examined it would yield forms both new to science and new to the British-and-Irish Area. This expectation, as far as Schizopoda are concerned, has been abundantly realised.

In 1907 I offered preliminary diagnoses of six new Mysidae which had been found in the deeper waters of our area. These six species, together with two additional new forms which have since come to hand, are here fully diagnosed and figured.

[1] While correcting the proofs of this paper, I received an advance copy of Hansen's report on the Schizopoda collected by the *Siboga* expedition (Hansen, 1910). I have only been able to refer briefly to this important work in footnotes.

The eight species thus described as new to science are :—

Dactylerythrops bidigitata.
Dactylerythrops gracilura.
Dactylamblyops goniops.
Dactylamblyops thaumatops.
Metamblyops oculata.
Bathymysis Helgae.
Amblyops tenuicauda.
Paramblyops bidigitata.

They required the formation of two new genera, *Metamblyops* and *Bathymysis*. The last two species are diagnosed for the first time. In addition, the following bottom-living species are added to the British-and-Irish list :—

Erythrops microphthalma, G. O. Sars.
Erythrops abyssorum, G. O. Sars.
Michthyops parva (Vanhöffen).
Hansenomysis Fyllae (Hansen).

The discovery of the last two species off the South-West of Ireland is particularly interesting, as they were both previously known only from the West Coast of Greenland, but the records are not so remarkable as they may at first seem, for it has been pointed out that the Atlantic Ocean water, with part of its fauna, pushes its way far up the west coast of Greenland. From the list of stations with the temperature of the bottom water at each station, which has been published with the *Ingolf* reports, we notice several stations on the West coast of Greenland, nearly as far as lat. 70° N., at which the temperature of the bottom water was positive, while at stations off the East Coast of Greenland, Iceland and to the North of the Färöes, which in many cases are farther south than the stations off the west coast of Greenland the temperature of the bottom water was below zero. If, then, the water in the Davis Strait is of Atlantic and not Arctic origin, the species inhabiting that water may be expected to have a wide distribution in the Atlantic Ocean at suitable depths. The occurrence, therefore, of *Michthyops parva* and *Hansenomysis Fyllae* off the South-West of Ireland is in accordance with this view. The depths, however, at which these two forms are found off Ireland are naturally vastly greater than those at which they were captured off Greenland. *Michthyops parva* was taken at 100 fathoms off Greenland, while it has only been found on one occasion, and that in 900 fathoms, off Ireland, and the least depth at which *Hansenomysis Fyllae*, known from 80 fathoms off Greenland, has been captured off Ireland is 540 fathoms.

All the new genera and species described in the previous reports have been recaptured on more than one occasion, and the additional material obtained has enabled me to correct, confirm or supplement the previous descriptions and figures, while considération of the circumstances of depth under which they were captured has enabled their mode of life and their bathymetric range to be more accurately fixed. For instance, *Chunomysis diadema*, H. and T., which, from

its build and the structure of its various appendages was suspected of leading a bathypelagic life, can now be reasonably assumed to be a creature of bottom-living habits, for on each of the twenty or more occasions on which it has been obtained it was taken in nets attached to trawls and it has never yet occurred in nets which are free from the suspicion of having touched the bottom.

Again, the bathymetric range of *Hypererythrops serriventer* may now almost certainly be fixed at from 100 to 350 fathoms, for it has not yet been found in the large area of deeper water which the *Helga* has recently explored. Similarly *Amblyops Kempi*, known previously from a single record in 382 fathoms, has been found to have its centre of distribution somewhere about the 700-fathom line. Details of the bathymetric ranges of the several forms are dealt with under each species.

Erythrops erythrophthalma (Goës) is recorded from the Irish coast for the first time, though previously known as British from the east coast of Scotland.

While the bottom-haunting species may be said to be unaffected in their distribution by the movements of oceanic waters, the same is not true of the pelagic and bathypelagic forms. The capture, therefore of the following oceanic species, *Stylocheiron elongatum*, G. O. Sars, *Bentheuphausia amblyops*, G. O. Sars, *Petalophthalmus armiger*, Will. Suhm, *Longithorax fuscus*, Hansen and *Arachnomysis Leuckarti*, Chun, within the British and Irish area for the first time must be taken to mean rather that the *Helga* happened to be working over the ground at a time when an unusual shoreward movement of Atlantic oceanic water, with its contained organisms, was in progress, than that the species named are regular tenants of the home waters which, somehow or other, have previously evaded capture within our area.

An important contribution to the fuller knowledge of the distribution of the Schizopoda in British and Irish waters has been made by the records of Dr. Scott (1907), from the Färö Channel. Besides recording from that locality several of the species previously known in our area only from off the coast of Ireland, including several of the new forms first described from Irish specimens, Dr. Scott has added *Pseudomma roseum*, G. O. Sars, to the British list. I am indebted to him for two fine specimens of this species. He also records from the Färö Channel the species *Gnathophausia drepanephora*, H. and T. I have been allowed to examine the specimens on which this record was based and believe them to be referable to *G. zoea*, Will.-Suhm. It is to be regretted that it was thought advisable to publish these records of obviously bottom-living forms in a publication supposed to be devoted to the records of planktonic organisms. I have kindly been allowed by Mr. Patience to examine the specimen recorded by him (1905) from the Clyde as *Pseudomma roseum*, G. O. Sars, and find that it is really referable to *P. affine*, G. O. Sars. Patience noted in his paper the difference in the armature of the apex of the telson of his specimen from that described by Sars for *P. roseum*, but was misled

into referring it to the latter by the crimson colouring, which the two species possess in common.

Acting on the advice of my friend Dr. H. J. Hansen, I have withdrawn the species described as *Euphausia Lanei* in the previous report and relegated it to the synonymy of *Meganyctiphanes norvegica*, since the type-specimen is believed by Dr. Hansen to be a young specimen of the latter species, from which the antennular leaflet has become detached.

Dr. Hansen has also informed me that he believes the species described as *Euchaetomera Fowleri*, H. and T., to be synonymous with *E. tenuis*, G. O. Sars, after examining the types of both species in the British Museum.

Ortmann (1906) has published the opinion that *Gnathophausia drepanephora*, H. and T., was founded on a young specimen of *G. gigas*, Will.-Suhm. No further specimens of this species have come to hand, so that I have not been able to study the question, but Dr. Hansen tells me that from an examination of extensive material he is inclined to accept Ortmann's view.

I take the opportunity afforded by the capture of the true *Erythrops microphthalma*, off the West of Ireland, of expunging Dr. Gough's record of this form in the English Channel from the British list, as based on insufficient evidence (see p. 27).

Finally, I find that the species described as *Pseudomma Kempi*, H. and T., is in reality a true *Amblyops* (see p. 42).

The species described as *Pseudomma parvum* by Vanhöffen (1898 and 1907) has already been mentioned as an interesting capture from the point of view of geographical distribution, but it has proved to be of interest from a systematic standpoint as well. The species is, in reality, not a *Pseudomma*, but the Atlantic representative of the anomalous sub-family Calyptomminae, described by me from the Mediterranean (1909), and I have been obliged to institute a new genus *Michthyops* for its reception.

Attention may be directed to the striking form and remarkable diversity of structure exhibited in the eyes of the deep-water Mysidae. It has not been found possible, at present, to undertake a minute anatomical and histological examination of the various types of eye met with in the material, but such an examination could not fail to yield results of great morphological interest. Material for interesting speculation may also be found in the possible functions performed by, say, the processes of the eyes in the genera *Dactylerythrops* and *Paramblyops*, or the curious equatorial membranous ridge of the eye in *Dactylamblyops thaumatops*.

Besides the material derived from the collections made by the *Helga*, I have had the advantage of examining material collected by the Danish steamer *Thor* in the Atlantic, immediately to the west of the area explored by the *Helga*, for which I am indebted to Dr. J. Schmidt, of Copenhagen, who made the collection. Prof. D'Arcy Thompson has also entrusted to my care a collection of Schizopoda

made by the *s.s. Goldseeker* in the Färö Channel. The results of both these collections are appended to the present report in the form of tables (pp. 69–71).

The Färö Channel material supplements the records already given by Scott (1907), while the *Thor* collection links up the Atlantic records made by the *Helga* with those of the *Ingolf* published by Hansen (1908).

Systematic and Terminological Notes.

As in the two previous reports, the word Schizopoda is only used for general convenience, and the views of Boas, Hansen, and Calman on the phylogenetic classification of the species comprised in this "group" are adopted.

I find myself unable to agree with Canon Norman's recently expressed views that the sub-families of the family Mysidae should be raised to family rank, for I am of the opinion that the Mysidae are a sufficiently homogenous group to be still included in the limits of a single family. On the other hand I venture to differ from Zimmer (1909), in thinking it desirable to retain the sub-family Arachnomysinae. After all, the sub-families are instituted mainly for the convenience of the systematist, rather than to indicate the division of a family into groups of equal phylogenetic importance, and it is mainly from the systematist's point of view that I am in favour of retaining this sub-family. It differs from the Leptomysinae in the absence of an antennal scale and this readily observable character, if raised to sub-family importance, allows the systematist to eliminate at once all other sub-families from his consideration, in dealing with a species in which the antennal scale is absent. Zimmer is most probably correct, phylogenetically, in regarding the species of the sub-family Arachnomysinae as true Leptomysinae, but our knowledge of the inter-relationships of the various genera and species of Mysidae is not extensive enough as yet to admit of a revision of the family on a phylogenetic basis.[1] In the meantime, a classification which has its convenience for the systematist may well be allowed to remain.

As before, I have referred to the so-called maxilliped as the first thoracic limb, and the succeeding thoracic appendages are denoted in numerical order only.

The length of a specimen is always measured from the anterior margin of the carapace (including rostrum, if present), to the tip of the telson, excluding the spines.

At the end of the paper (p. 66) a full list of stations with soundings, temperatures and salinities will be found.

In conclusion I wish to express my thanks to Dr. J. Schmidt, of Copenhagen, and Prof. D'Arcy Thompson, for the material derived from their collections and for permission to include an account of it in the present paper, to Dr. T. Scott and Mr. Patience for allowing me to examine their specimens of *Gnathophausia* and *Pseudomma roseum*, and to Mr. W. I. Beaumont for supplying me with full notes

[1] Hansen (1910) agrees with Zimmer in rejecting the sub-family Arachnomysinae His paper should be consulted for the latest classification of the Mysidacea.

on the specimens recorded by Dr. Gough as *Erythrops microphthalma*, and for permission to use those notes in this report. I am specially indebted to my friend Dr. H. J. Hansen, of Copenhagen, for most valuable help on many points in connection with this group too numerous to specify individually, but for which I tender my best thanks.

DIVISION **EUCARIDA**, Calman,

ORDER EUPHAUSIACEA.

FAMILY *EUPHAUSIIDAE*.

SUB-FAMILY *EUPHAUSINAE*, H. AND T.

GENUS **Euphausia**, Dana, 1852.

Euphausia Mülleri, Claus, 1863.[1]

Additional records :—

S.S. *Helga*.

S. R. 270.—Midwater otter trawl at 350 fms.—*Ca.* one thousand.
S. R. 272.—Coarse townet at surface.—Fifty-one.
Midwater otter trawl at 75 fms.—Forty-seven.
Midwater otter trawl at 350 fms.—Twenty.
S. R. 275.—Coarse townet at 120 fms.—One.
S. R. 282.—Mosquito townet at 200 fms.—Nine.
Mosquito townet at 700 fms.—Seven.
S. R. 299.—Mosquito townet at 350–400 fms.—Two.
S. R. 302.—Midwater otter trawl at surface.—Forty.
Midwater otter trawel at 300–350 fms.—One hundred and five.
S. R. 332.—Townet on trawl.—One.
S. R. 337.—Midwater otter trawl 1–20 fms.—One.
Midwater otter trawl 400 fms.—Five.
S. R. 351.—Townet on trawl.—Seven.
S. R. 352.—Midwater otter trawl, 700–750 fms.—*Ca.* one thousand.
S. R. 353.—Townet on trawl.—Fragments.
S. R. 359.—Townet on trawl.—One.
S. R. 363.—Townet on trawl.—Fifteen.
S. R. 364.—Townet on trawl.—Eight.
S. R. 365.—Townet on trawl.—Six.
S. R. 366.—Midwater otter trawl at 400 fms.—*Ca.* one thousand.
S. R. 368.—Townet on trawl.—Two.
S. R. 383.—Midwater otter trawl at 150 fms.—One hundred and seventy-four.

[1] Hansen (1910) points out that *Thysanopoda Krohnii*, Brandt, 1851, is synonymous with *Euphausia Mülleri*, Claus, and as Brandt's name is the earlier of the two, the species must henceforth be known as *E. Krohnii* (Brandt).

S. R. 386.—Midwater otter trawl at surface.—One hundred and thirty-four.
S. R. 387.—Townet on trawl.—Three.
S. R. 397.—Townet on trawl.—One.
S. R. 400.—Townet on trawl.—Two.
S. R. 401.—Townet on trawl.—Four.
S. R. 403.—Mosquito townet at 450 fms.—Twenty-two.
S. R. 439.—Mosquito townet at surface.—Twenty-eight.
Mosquito townet at 300 fms.—Ten.
S. R. 470.—Midwater otter trawl 400–500 fms.—*Ca.* one thousand.
S. R. 476.—Midwater otter trawl at surface.—*Ca.* one thousand.
Midwater otter trawl at 300 fms.—*Ca.* one thousand.
S. R. 478.—Townet on trawl.—Five.
S. R. 479.—Townet on trawl.—Eight.
S. R. 481.—Midwater otter trawl, 600-900 fms.—One hundred and one.
S. R. 484.—Townet on trawl.—Seven.
S. R. 485.—Townet on trawl.—Ten.
S. R. 486.—Townet on trawl.—One.
S. R. 489.—Townet on trawl.—Eight.
S. R. 490.—Townet on trawl.—Four.
S. R. 491.—Townet on trawl.—Five.
S. R. 492.—Mosquito townet at 400 fms.—Nine.
S. R. 493.—Townet on trawl.—Two.
S. R. 494.—Townet on trawl.—Three.
S. R. 496.—Townet on trawl.—Two.
S. R. 497.—Townet on trawl.—Thirty-three.
S. R. 498.—Mosquito townet at 500 fms.—Twenty-seven.
S. R. 499.—Townet on trawl.—Six.
S. R. 500.—Townet on trawl.—Four.
S. R. 502.—Townet on trawl.—Six.
S. R. 503.—Mosquito townet at surface.—Two hundred and seventy-seven.
Mosquito townet at 70–80 fms.—One hundred and fifty.
S. R. 504.—Townet on trawl.—Two.
S. R. 505.—Townet on trawl.—Two.
S. R. 506.—Townet on trawl.—One.
S. R. 589.—Midwater otter trawl at surface.—*Ca.* one thousand.
Midwater otter trawl at 550–600 fms.—Two hundred.
S. R. 590.—Eel net.—Fifty.
S. R. 592.—Townet on trawl.—Two.
S. R. 593.—Townet on trawl.—Four.
Midwater otter trawl at surface.—*Ca.* six hundred.
S. R. 799.—Midwater otter trawl at surface.—*Ca.* one thousand.
S. R. 851.—Midwater otter trawl at 900 fms.—Two hundred.
S. R. 858.—Shrimp trawl at 700 fms.—One.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

These additional records abundantly prove that *Euphausia Mülleri* is a constant and abundant member of the offshore pelagic life on our coasts. It has only been captured three times over depths of less than 200 fathoms.

It will be noticed that the ten records of capture at the surface are of captures made at night. We have no record of a capture at the surface during daylight, and this fact lends striking support to the suggestion already made by Holt and Tattersall, 1905 (3) that this form rises to the surface during darkness.

The species is present in the offshore waters at all times of the year, but reaches its maximum in point of numbers in August. In each of the years 1907–8–9 the *Helga* captured considerably over one thousand examples in a single haul of a surface net, at night, in the month of August, and I have already, in 1908 (1), noted the capture of a similarly large number at the surface of the Bay of Biscay in August, 1906. The species would also appear to reach its maximum of size about August, as several of the specimens taken about that time of year measure over 20 mm., and not infrequently reach 25 mm. Records from the collections of the s.s. *Thor* and of the s.s. *Goldseeker* in the Färö channel, which have passed through my hands, appear in the two tables devoted to these collections, appended to this paper. Those from the Färö Channel are of special interest inasmuch as, apart from Sars' original record of this species from Norway, it has only been recorded from so far north on one occasion since, namely, by Scott in the quarterly bulletin of the International Investigations for November, 1906. Hansen does not mention the species in his report on the *Ingolf* crustacea, and the small number of specimens in the *Goldseeker's* material indicates that about 60° N. is the extreme limit of its horizontal range.

GENUS **Thysanopoda**, M.-Ed., 1837.

Thysanopoda acutifrons, H. and T., 1905 (1).

T. microphthalma, Ortmann, 1893.
T. microphthalma, Fowler, 1903.
T. microphthalma ?, H. and T., 1905 (1).
T. acutifrons (pars.), H. and T., 1905 (1)
T. pectinata, Hansen, 1905 (1).
T. acutifrons, Hansen, 1905 (2).
T. acutifrons, H. and T., 1906 (2).
T. acutifrons, Hansen, 1908.
T. acutifrons, Zimmer, 1909.

Additional records :—

s.s. *Helga*.

S. R. 272.—Midwater otter trawl at 350 fms.—One.
S. R. 282.—Mosquito townet at 200 fms.—One.
Mosquito townet at 700 fms.—Three.

S. R. 337.—Midwater otter trawl at 400 fms.—Seven, larvae.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Sixteen.
S. R. 359.—Townet on trawl.—One.
S. R. 363.—Townet on trawl.—Three.
S. R. 364.—Townet on trawl.—One.
S. R. 366.—Midwater otter trawl at 400 fms.—Thirty.
S. R. 401.—Townet on trawl.—One.
S. R. 439.—Mosquito townet at 300 fms.—Two.
S. R. 433.—Midwater otter trawl at 550 fms.—One.
S. R. 449.—Midwater otter trawl at 700 fms.—Two.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Six.
S. R. 478.—Townet on trawl.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Seven.
S. R. 484.—Townet on trawl.—One.
S. R. 487.—Townet on trawl.—One.
S. R. 488.—Mosquito townet at 350–400 fms.—Four.
S. R. 489.—Townet on trawl.—Three.
S. R. 491.—Townet on trawl.—One.
S. R. 493.—Townet on trawl.—Three.
S. R. 496.—Townet on trawl.—Two.
S. R. 497.—Townet on trawl.—Three.
S. R. 498.—Mosquito townet at 600 fms.—Two.
S. R. 499.—Townet on trawl.—Three.
S. R. 504.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—One.
S. R. 589.—Midwater otter trawl at 500 fms.—Twelve.
S. R. 593.—Townet on trawl.—Two.
S. R. 752.—Midwater otter trawl, 523–595 fms.—One.
S. R. 851.—Midwater otter trawl at 900 fms.—One, 37 mm.; three, 15–20 mm.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

From an examination of a number of post-larval specimens which certainly belong to this species, it appears that *T. acutifrons* possesses a lateral denticle on the carapace up to a length of about 13 mm., after which the denticle becomes obsolete. This fact has convinced me that the specimens recorded by Holt and Tattersall from the Bay of Biscay (1905 (1)) as *Thysanopoda microphthalma* (?) in reality belong to this species, and it is likewise certain that the specimens noted by Fowler, under the same name, from the Färö Channel should also be referred to *T. acutifrons*. The largest specimen in the material under notice measures 37 mm. This form is present at all seasons of the year in the offshore waters, but is never very abundant, twenty-six specimens (and these all post-larval) being the greatest number captured at one time. It has not yet been taken over less depths than 400 fathoms and has never occured in a net fishing at a less depth than 200 fathoms from the surface. These facts are well in line with the statements made by Hansen (1908) on the vertical distribution.

Hansen (loc. cit.), gives several records, to the west and south-west of Iceland and also to the west of the Färöes. These are here supplemented by those of the *Thor* and *Goldseeker*, and the inclusion of the species as a permanent member of the deeper water of the boreal north Atlantic is thereby permanently established.

Thysanopoda distinguenda, Hansen, 1905.[1]

T. distinguenda, Hansen, 1905 (2).
T. acutifrons, H. and T., 1905 (1) (*pars*).
T. distinguenda, H. and T., 1906 (2).
T. distinguenda, Zimmer, 1909.

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—Three, 18 mm.
S. R. 272.—Midwater otter trawl at 350 fms.—One, 17 mm.
S. R. 481.—Midwater otter trawl at 600–900 fms.—One, 32 mm.

s.s. *Thor.*—See table, p. 70. The five specimens measured 28–32 mm.

It was rather surprising to find in the material collected, both by the *Thor* and *Helga*, specimens of so large a size as 32 mm. which apparently belonged to this species. Being, however, unable to come to any other conclusion than that these specimens represented fully grown adults of *T. distinguenda*, I submitted them to Dr. Hansen and he has confirmed my determination. Whatever difficulty there may have been in separating *T. acutifrons* from *T. distinguenda* in specimens 20–23 mm. in length, the adult size of the latter species according to Hansen, there can be none in separating completely grown specimens of the two species. Adult *T. distinguenda* is, if possible, more robust and clumsily built than *T. acutifrons*. The rostrum, in lateral view, is shaped very much like that depicted by Hansen for *T. insignis* but is longer and the upturned extremity much less strongly marked. It is thus stouter or thicker than in *T. acutifrons* and is much more obtuse in dorsal view.

The telson of *T. distinguenda* has a double row of about twelve spines on the dorsal surface, and when the spines are broken off the telson has the appearance of being armed with two serrated keels, a condition similar to that described by Sars for *T. obtusifrons*. This species is much rarer than the preceeding one and is only an occasional visitant to our shores. Its occurrence off the coast of Ireland appears to be coincident with the annual ocean tide which results in a more or less considerable influx of South Atlantic water, with its contained organisms, into the North Atlantic. The evidence to hand is not sufficient, in this case, to establish the point, but it is interesting to

[1] Hansen (1910) has identified *T. distinguenda* with *T. microphthalma*, G. O. Sars (*Challenger* type). This species should, therefore, now be known by the latter name.

note that at stations 270 and 272 the salinity was higher than at the majority of the remaining stations. Moreover, the species would appear to be by no means rare in the south part of the North Atlantic (Hansen, 1905 (1) and (2)). It is not recorded in the *Ingolf* report.

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

Meganyctiphanes norvegica (M. Sars).

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

Additional records :—

s.s. *Helga.*

S. R. 255.—Coarse townet at 50 fms.—Five.
Coarse townet at 100 fms.—Two.
S. R. 270.—Midwater otter trawl at 350 fms.—Four.
S. R. 272.—Coarse townet at surface.—One.
Midwater otter trawl at 75 fms.—Fifty-seven.
Midwater otter trawl at 350 fms.—Six.
S. R. 282.—Mosquito townet at 200 fms.—One.
Mosquito townet at 700 fms.—Four.
S. R. 302.—Midwater otter trawl at 300–350 fms.—Seven.
S. R. 337.—Midwater otter trawl at 1–20 fms.—One.
Midwater otter trawl at 400 fms.—One.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Two.
S. R. 353.—Townet on trawl.—One.
S. R. 361.—Townet on trawl.—Three.
S. R. 363.—Townet on trawl.—Two.
S. R. 364.—Townet on trawl.—Three.
S. R. 365.—Townet on trawl.—Thirty-three.
S. R. 366.—Midwater otter trawl at 400 fms.—*Ca.* thirty.
S. R. 380.—Townet on trawl.—One.
S. R. 383.—Midwater otter trawl at 150 fms.—Several hundreds.
S. R. 386.—Midwater otter trawl at surface.—Fifty-two.
S. R. 397.—Townet on trawl.—One.
S. R. 439.—Mosquito townet at surface.—Seven.
Mosquito townet at 300 fms.—Fifty.
S. R. 440.—Townet on trawl.—One.
S. R. 443.—Midwater otter trawl at 500 fms.—One.
S. R. 447.—Townet on trawl.—Three.
S. R. 449.—Midwater otter trawl at 700 fms.—Four.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Eleven.
S. R. 476.—Midwater otter trawl at surface.—Two.
Midwater otter trawl at 300 fms.—Ten.
S. R. 478.—Townet on trawl.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Twenty-nine.
S. R. 488.—Mosquito townet at 350–400 fms.—One.
S. R. 492.—Mosquito townet at 400 fms.—Four.
S. R. 496.—Townet on trawl.—Two.

S. R. 498.—Mosquito townet at 600 fms.—Sixteen.
S. R. 499.—Townet on trawl.—One.
S. R. 502.—Townet on trawl.—Two.
S. R. 503.—Mosquito townet at surface.—Fourteen.
Mosquito townet at 70–80 fms.—Twenty.
S. R. 504.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—Three.
S. R. 589.—Midwater otter trawl at surface.—Seven.
Midwater otter trawl at 500–600 fms.—Seventy-five.
S. R. 590.—Townet on trawl.—Two.
S. R. 593.—Midwater otter trawl at surface.—Thirty-seven.
S. R. 752.—Midwater otter trawl at 523–595 fms.—One.
S. R. 799.—Midwater otter trawl at surface.—Thirty-one.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

Euphausia Lanei, H. and T. must be added to the synonymy of this species, as being founded on a small specimen of *M. norvegica* from which, by some means or other, the dorsal leaflet of the basal joint of the antennule had become detached (see p. 4 and Hansen, 1910).

In July 1908, I received a batch of Euphausians which had been taken from the stomach of a whale captured off the Island of Iniskea, Co. Mayo. They proved, on examination, to be entirely *M. norvegica*, which has not, so far as I am aware, been previously noted as forming part of the diet of whales. Nine of the above records are of captures at the surface and, as in the case of *Euphausia Mülleri*, all these captures were made at night. But the diurnal rise and fall of this form is less well marked than in *E. Mülleri*, since two records of its occurrence at the surface, previously published, were of captures during daylight.

The above records distinctly show that *M. norvegica* is a less markedly oceanic species than the majority of the other Euphausians here dealt with. The largest number of specimens in a single haul recorded here was taken in a net fished at the bottom, in a depth of 150 fathoms, when the specimens numbered several hundreds. In none of the nets fished over deeper water did the number exceed fifty per gathering. On the other hand *M. norvegica* is captured in vast numbers in shallow water. While, therefore, it is a constant member of the pelagic life of the offshore waters, the maximum of the intensity of its distribution would appear to be at or about the 100-fathom line, a conclusion bearing out earlier remarks on the distribution of this form (Holt and Tattersall, 1905 (1)).

GENUS **Nyctiphanes,** G. O. Sars, 1883

Nyctiphanes Couchi (Bell).

Additional records :—

s.s. *Helga.*

S. R. 379.—Townet on trawl.—Three.
S. R. 383.—Midwater otter trawl at 150 fms.—Several hundreds.
S. R. 448.—Townet on trawl.—One.

s.s. *Thor.*—See table, p. 70.

The occurrence of this species at so great a depth as 343 fathoms is exceptional, since the species is essentially a shallow water form.

SUB-FAMILY *NEMATOSCELINAE,* H. and T.

GENUS **Thysanoëssa,** Brandt.

Thysanoëssa neglecta (Kröyer).

Additional records :—

s.s. *Helga.*

S. R. 255.—Coarse townet at 120 fms.—Four.
S. R. 257.—Coarse townet at 50 fms.—Forty.
Coarse townet at 100 fms.—Sixteen.
S. R. 360.—Townet on trawl.—One.
S. R. 807.—Townet on trawl.—Seven.

s.s. *Thor.*—See table, p. 70.

s.s. *Goldseeker,* see table, p. 69.

Thysanoëssa longicaudata (Kröyer).

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—Eleven.
S. R. 272.—Midwater otter trawl at 350 fms.—Fifty-four.
S. R. 282.—Mosquito townet at 200 fms.—Two.
Mosquito townet at 700 fms.—Twenty.
S. R. 299.—Mosquito townet at 350–400 fms.—Eight.
S. R. 321.—Townet on trawl.—One.
S. R. 338.—Townet on trawl.—One.
S. R. 351.—Townet on trawl.—One hundred and eighty five.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Several hundreds.
S. R. 359.—Townet on trawl.—Seven.
S. R. 361.—Townet on trawl.—Ten.

S. R. 363.—Townet on trawl.—Three.
S. R. 366.—Midwater otter trawl at 400 fms.—*Ca.* seventy-five.
S. R. 383.—Midwater otter trawl at 150 fms.—*Ca.* fifty.
S. R. 387.—Townet on trawl.—Five.
S. R. 398.—Townet on trawl.—Three.
S. R. 401.—Townet on trawl.—Twenty-five.
S. R. 403.—Mosquito townet at 450 fms.—Four.
S. R. 439.—Mosquito townet at 300 fms.—Ten.
S. R. 449.—Midwater otter trawl at 700 fms.—Four.
S. R. 470.—Midwater otter trawl at 400–500 fms.—*Ca.* fifty.
S. R. 476.—Midwater otter trawl at surface.—Several hundreds.
Midwater otter trawl at 300 fms.—Several hundreds.
S. R. 478.—Townet on trawl.—Eleven.
S. R. 479.—Townet on trawl.—Five.
S. R. 481.—Midwater otter trawl at 600–900 fms.—*Ca.* one hundred.
S. R. 484.—Townet on trawl.—Ten.
S. R. 485.—Townet on trawl.—Thirteen.
S. R. 486.—Townet on trawl.—One.
S. R. 488.—Mosquito townet at 350–400 fms.—One.
S. R. 489.—Townet on trawl.—Five.
S. R. 490.—Townet on trawl.—Two.
S. R. 491.—Townet on trawl.—Nineteen.
S. R. 492.—Mosquito townet at 400 fms.—Three.
S. R. 493.—Townet on trawl.—Seventeen.
S. R. 494.—Townet on trawl.—Twenty-eight.
S. R. 496.—Townet on trawl.—Twenty-eight.
S. R. 499.—Townet on trawl.—Eight.
S. R. 500.—Townet on trawl.—Thirteen.
S. R. 502.—Townet on trawl.—Twelve.
S. R. 503.—Mosquito townet at surface.—Four.
S. R. 504.—Townet on trawl.—Thirteen.
S. R. 505.—Townet on trawl.—Five.
S. R. 506.—Townet on trawl.—Two.
S. R. 589.—Midwater otter trawl at 550–600 fms.—*Ca.* two hundred.
S. R. 590.—Townet on trawl.—*Ca.* two hundred.
S. R. 592.—Townet on trawl.—Eleven.
S. R. 593.—Townet on trawl.—Twenty-four.
S. R. 593.—Midwater otter trawl at surface.—Four.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Two.
S. R. 851.—Midwater otter trawl at 900 fms.—Fifty.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

Three of the above records are of captures at the surface, on all three occasions during darkness. A diurnal rise and fall is, however, not established.

Hansen (1908) has recently published the opinion that this species is usually found " in the upper layers of water, either near the surface or, at any rate, not deeper than 100 fathoms under this." While

our records show that it does occasionally dwell at or near the surface and may even be abundant there, they seem to prove on the whole that it is most abundant in the deeper strata. On ten occasions when the nets were fishing at depths of over 300 fathoms they brought up over one hundred specimens, and the records of the *Thor* and *Goldseeker* material also show that this form is abundant at greater depths than 100 fathoms, unless we are to assume that the majority of the specimens entered the nets while they were being hauled up, an assumption too great to adequately meet the facts. The largest number of specimens which Hansen records from a single gathering is fifteen, and all the *Ingolf* specimens were taken in nets fishing from 100 fathoms to the surface. It does not appear that the *Ingolf* fished any nets, except a trawl, at depths greater than 100 fathoms, and it is fair to assume that the absence of *T. longicaudata* from any of the trawl records is due to the fact that there were no fine-meshed nets attached to the back of the trawl, such as have been so successful in the *Helga's* work, in the capture of small crustacea. On the other hand, Hansen mentions that the *Thor* has captured this species many times and, though he gives no details of the hauls, it must be taken for granted that the results bore out his conclusions from the study of the *Ingolf* material. The disagreement between Hansen's conclusion and those here set forth is both interesting and perplexing, and requires an explanation which, at present, is not obvious.

GENUS **Nematoscelis,** G. O. Sars, 1883.

Nematoscelis megalops, G. O. Sars, 1883.

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—Twenty-one.
S. R. 272.—Midwater otter trawl at 75 fms.—Six.
Midwater otter trawl at 350 fms.—Ten.
S. R. 282.—Mosquito townet at 200 fms.—Fifteen.
Mosquito townet at 700 fms.—Twenty.
S. R. 299.—Mosquito townet at 350–400 fms.—Two.
S. R. 302.—Midwater otter trawl at 300–350 fms.—Eight.
S. R. 337.—Midwater otter trawl at surface.—One.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Four.
S. R. 359.—Townet on trawl.—One.
S. R. 361.—Townet on trawl.—One.
S. R. 363.—Townet on trawl.—Four.
S. R. 366.—Midwater otter trawl at 400 fms.—*Ca.* thirty.
S. R. 383.—Midwater otter trawl at 150 fms.—*Ca.* forty.
S. R. 386.—Midwater otter trawl at surface.—Eleven.
S. R. 403.—Mosquito townet at 450 fms.—One.
S. R. 470.—Midwater otter trawl at 400–500 fms.—*Ca.* fifty.
S. R. 476.—Midwater otter trawl at surface.—Several hundreds.
Midwater otter trawl at 300 fms.—Several hundreds.

S. R. 478.—Townet on trawl.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—*Ca.* forty.
S. R. 484.—Townet on trawl.—One.
S. R. 485.—Townet on trawl.—One.
S. R. 488.—Mosquito townet at 350–400 fms.—Forty-nine.
S. R. 489.—Townet on trawl.—Two.
S. R. 491.—Townet on travel.—Nine.
S. R. 492.—Mosquito townet at 400 fms.—Thirty-five.
S. R. 493.—Townet on trawl.—Seven.
S. R. 494.—Townet on trawl.—Four.
S. R. 496.—Townet on trawl.—Five.
S. R. 497.—Townet on trawl.—Fourteen.
S. R. 498.—Mosquito townet at 500 fms.—Thirty-four.
S. R. 499.—Townet on trawl.—Two.
S. R 502.—Townet on trawl.—Two.
S. R. 503.—Mosquito townet at surface.—One.
Mosquito townet at 70–80 fms.—Fifty.
S. R. 589.—Midwater otter trawl at surface.—Three.
Midwater otter trawl at 550–600 fms.—Fifty one.
S. R. 593.—Midwater otter trawl at surface.—Thirty-three.
S. R. 799.—Midwater otter trawl at surface.—Five.
S. R. 851.—Midwater otter trawl at 900 fms.—Three.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

Hansen (1908) has called attention to the scarcity of completely adult males of this species, and the only fully grown males I have seen, during the examination of an immense material, are fourteen, measuring 23–28 mm., from the collections made by the *Thor*. They agree with Hansen's description of the male, in having the long slender rostral projection, characteristic of females, almost completely obsolete. In the same gathering as that which contained the adult males were five ovigerous females, one of which had the characteristic rostrum of the adult male. The rostrum of this female did not appear to me to be broken or damaged in any way, so that it would seem that females may occasionally assume the male character in the structure of the rostrum.

This form is most abundant in the upper layers of water, though constantly met with in small numbers at greater depths. The four records from the surface are all of captures during darkness.

GENUS **Nematobrachion** Calman, 1905.

Nematobrachion boöpis (Calman, 1896).

Additional records :—

s.s. *Helga*.
S. R. 270.—Midwater otter trawl at 350 fms.—Nine.
S. R. 272.—Midwater otter trawl at 350 fms.—Five.

S. R. 282.—Mosquito townet at 200 fms.—Two.
S. R. 302.—Midwater otter trawl at 300–350 fms.—Five.
S. R. 337.—Midwater otter trawl at 400 fms.—Ten.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Eleven.
S. R. 363.—Townet on trawl.—Three.
S. R. 366.—Midwater otter trawl at 400 fms.—*ca.* one hundred and fifty.
S. R. 401.—Townet on trawl.—One.
S. R. 403.—Mosquito townet at 450 fms.—Three.
S. R. 439.—Mosquito townet at 300 fms.—Two.
S. R. 440.—Townet on trawl.—One.
S. R. 443.—Midwater otter trawl at 500 fms.—One.
S. R. 449.—Midwater otter trawl at 700 fms.—One.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Fourteen.
S. R. 476.—Midwater otter trawl at 300 fms.—*ca.* fifty.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Eight.
S. R. 485.—Townet on trawl.—One.
S. R. 489.—Townet on trawl.—One.
S. R. 492.—Mosquito townet at 400 fms.—Two.
S. R. 493.—Townet on trawl.—Two.
S. R. 499.—Townet on trawl.—Two.
S. R. 502.—Townet on trawl.—One.
S. R. 589.—Midwater otter trawl at 550–600 fms.—Ten.
S. R. 590.—Townet on trawl.—Two.
S. R. 592.—Townet on trawl.—One.
S. R. 593.—Townet on trawl.—One.
S. R. 746.—Townet on trawl.—One.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Two.
S. R. 851.—Midwater otter trawl at 900 fms.—Eleven.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

From the examination of the large material of this species at my disposal, comprising specimens of all sizes, I find that up to a size of 12 mm. it possesses a lateral denticle on the carapace, but that from 13 mm. upwards the denticle becomes obsolete. *N. boöpis* thus almost exactly agrees with *Thysanopoda acutifrons* in this respect.

The *Helga* has never captured *N. boöpis* in nets working at less than 200 fathoms, but it was taken by Dr. Fowler in the Bay of Biscay in 100 fathoms or less, and one of the *Goldseeker* records (see p. 69) is from a net working at 136 fathoms. Hansen (1908) also records it from a net working between 55 fathoms and the surface. On the whole the species appears usually to frequent deeper water.

Hansen's records from the South and West of Iceland and from the West and South-West of the Färöes, supplemented by those here given from the collections made by the *Thor* and *Goldseeker*, complete the distribution of the species from the Bay of Biscay continuously to lat. 65° N.

GENUS **Stylocheiron,** G. O. Sars, 1883.

Stylocheiron longicorne, G. O. Sars, 1883.

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—Fifty-seven.
S. R. 272.—Coarse townet at 60 fms.—One.
Midwater otter trawl at 75 fms.—One.
Midwater otter trawl at 350 fms.—Eight.
S. R. 282.—Mosquito townet at 200 fms.—Two.
Mosquito townet at 700 fms.—One.
S. R. 299.—Mosquito townet at 350–400 fms.—Thirteen.
S. R. 302.—Midwater otter trawl at surface.—Nine.
Midwater otter trawl at 300–350 fms.—One hundred and twenty-eight.
S. R. 327.—Townet on trawl.—One.
S. R. 334.—Townet on trawl.—One.
S. R. 337.—Midwater otter trawl at 400 fms.—Seventeen.
S. R. 351.—Townet on trawl.—Two.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Fifty-four.
S. R. 359.—Townet on trawl.—Two.
S. R. 363.—Townet on trawl.—Five.
S. R. 365.—Townet on trawl.—One.
S. R. 366.—Midwater otter trawl at 400 fms.—*ca.* one hundred.
S. R. 383.—Midwater otter trawl at 150 fms.—Fifteen.
S. R. 387.—Townet on trawl.—One.
S. R. 397.—Townet on trawl.—One.
S. R. 398.—Townet on trawl.—One.
S. R. 401.—Townet on trawl.—Two.
S. R. 403.—Mosquito townet at 450 fms.—Two.
S. R. 439.—Mosquito townet at 300 fms.—Three.
S. R. 443.—Midwater otter trawl at 500 fms.—Two.
S. R. 449.—Midwater otter trawl at 700 fms.—One.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Seventy-four.
S. R. 476.—Midwater otter trawl at surface.—Several hundreds.
Midwater otter trawl at 300 fms.—Several hundreds.
S. R. 478.—Townet on trawl.—One.
S. R. 479.—Townet on trawl.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Thirty-seven.
S. R. 484.—Townet on trawl.—Two.
S. R. 485.—Townet on trawl.—Three.
S. R. 488.—Mosquito townet at 350–400 fms.—One.
S. R. 489.—Townet on trawl.—One.
S. R. 490.—Townet on trawl.—One.
S. R. 491.—Townet on trawl.—One.
S. R. 492.—Mosquito townet at 400 fms.—Two.
S. R. 493.—Townet on trawl.—Three.
S. R. 496.—Townet on trawl.—One.
S. R. 497.—Townet on trawl.—Two.

S. R. 499.—Townet on trawl.—Two.
S. R. 502.—Townet on trawl.—Two.
S. R. 503.—Mosquito townet at 70–80 fms.—Ten.
S. R. 504.—Townet on trawl.—Three.
S. R. 505.—Townet on trawl.—One.
S. R. 589.—Midwater otter trawl at 550–600 fms.—Seventeen.
S. R. 593.—Townet on trawl.—One.
S. R. 851.—Midwater otter trawl at 900 fms.—Thirty-three.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

According to Hansen's latest published views (1908 and 1910), this species should be called *S. longicorne*, from which he regards *S. Suhmi* as specifically distinct. All our material is apparently referable to one species.

The above records do not alter, in any way, what we have previously published as to the vertical distribution, but the two additional records at the surface at night are interesting. Both Hansen's records and those here published from the *Goldseeker* gatherings would suggest that it is rarer in more northern latitudes than off the West Coast of Ireland.

Stylocheiron abbreviatum, G. O. Sars, 1883.

Additional records :—

s.s. *Helga*.

S. R. 270.—Midwater otter trawl at 350 fms.—Five.
S. R. 272.—Midwater otter trawl at 350 fms.—Three.
S. R. 282.—Mosquito townet at 700 fms.—Two.
S. R. 302.—Midwater otter trawl at 300–350 fms.—Seventeen.
S. R. 331.—Townet on trawl.—One.
S. R. 337.—Midwater otter trawl at 400 fms.—Three.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Eight.
S. R. 359.—Townet on trawl.—One.
S. R. 363.—Townet on trawl.—One.
S. R. 366.—Midwater otter trawl at 400 fms.—Twenty.
S. R. 383.—Midwater otter trawl at 150 fms.—Five.
S. R. 397.—Townet on trawl.—One.
S. R. 403.—Mosquito townet at 450 fms.—One.
S. R. 443.—Midwater otter trawl at 500 fms.—One.
S. R. 449.—Midwater otter trawl at 700 fms.—Two.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Sixteen.
S. R. 476.—Midwater otter trawl at surface.—One.
Midwater otter trawl at 300 fms.—*ca.* fifty.
S. R. 478.—Townet on trawl.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Ten.
S. R. 484.—Townet on trawl.—Two.
S. R. 488.—Mosquito townet at 350–400 fms.—Seventeen.
S. R. 489.—Townet on trawl.—One.

S. R. 491.—Townet on trawl.—One.
S. R. 492.—Mosquito townet at 400 fms.—Two.
S. R. 493.—Townet on trawl.—One.
S. R. 494.—Townet on trawl.—Two.
S. R. 497.—Townet on trawl.—One.
S. R. 498.—Mosquito townet at 500 fms.—Two.
S. R. 502.—Townet on trawl.—Two.
S. R. 503.—Mosquito townet at 70–80 fms.—Five.
S. R. 589.—Midwater otter trawl at 500–600 fms.—Ten.
S. R. 590.—Townet on trawl.—Three.
S. R. 593.—Midwater otter trawl at surface.—One.
S. R. 851.—Midwater otter trawl at 900 fms.—Five.
S. R. 858.—Shrimp trawl at 700 fms.—One.

s.s. *Goldseeker*.—See table, p. 69.

The largest specimen in the collection, an ovigerous female, measures 31 mm. from the top of the rostrum to the end of the telson. It is possible that this specimen and several others in the material which exceed 20 mm. in length should be referred to *S. maximum*, a new species instituted by Hansen (1908) for a large *Stylocheiron* caught by the *Thor* to the West of the Färö Islands.

The two records from the surface at night are interesting as being the first, with which I am acquainted, to demonstrate that this form is occasionally a surface organism.

Stylocheiron elongatum, G. O. Sars, 1883.

Additional records :—

s.s. *Helga*.

S. R. 299.—Townet on trawl.—One.
S. R. 439.—Midwater otter trawl at 300 fms.—One.

On the evidence of these two specimens the species is admitted to the British-and-Irish list for the first time, the previous record having reference to a specimen caught immediately outside the 1,000-fathoms limit. It is a southern form and, like *Thysanopoda distinguenda*, is probably borne to our shores on the flood of the annual ocean tide.

Sub-Family *BENTHEUPHAUSINAE*, H. and T. 1905 (1).

Genus **Bentheuphausia**, G. O. Sars, 1883.

Bentheuphausia amblyops, G. O. Sars, 1883.

Additional records :—

s.s. *Helga*.

S. R. 449.—Midwater otter trawl at 700 fms.—One.
S. R. 477.—Townet on trawl.—One.
S. R. 493.—Townet on trawl.—One.

These specimens are the first taken within the British-and-Irish area, as defined by the 1,000-fathom line. It is another southern species, the distribution of which is probably influenced by the annual movement northward of South Atlantic water.

DIVISION **PERACARIDA,** Calman, 1904.

ORDER MYSIDACEA.

FAMILY *LOPHOGASTRIDAE.*

GENUS **Lophogaster,** M. Sars.

Lophogaster typicus, M. Sars.

Additional records :—

S.S. *Helga.*

S. R. 153.—Townet on dredge.—One, 12·5 mm.
S. R. 215.—Townet on trawl.—Four, 8–18 mm.
S. R. 376.—Coarse townet at 28 fms.—One, 6 mm.
S. R. 379.—Townet on trawl.—One, 9 mm.
S. R. 382.—Coarse townet at 45 fms.—One, 6 mm.
S. R. 383.—Midwater otter trawl at 150 fms.—Six, 8–13 mm.
S. R. 807.—Townet on trawl.—One.

I have recently noted (1909) the presence, on the first five abdominal segments of both males and females of this species, and in additon, on the second to the seventh thoracic segments of the male, of a rather long, acutely pointed and backwardly directed scythe-like spine. Re-examination of all the *Helga* material has confirmed this observation.

In connection with Ortmann's observations (1906) on the variation in this species from different parts of the globe, it may be well to note that the number of teeth on the outer margin of the antennal scale varied in the *Helga's* material from six to ten, while the number of lateral spinules on the telson was always either three or four pairs. Holt and Tattersall (1906 (2)) recorded the occurrence of a gravid female with young in the brood pouch almost ready to be liberated, in a townet fishing at 44 fathoms over a depth of 136 fathoms, while I have recently noted (1908 (1)) the capture of eighty-two young specimens, 5–10 mm. long, in a surface net. On this latter occasion it was suggested that the species normally lived at the bottom, but that the female rose to the surface to liberate the young in order to ensure for the species a wide distribution. The present records tend to support that view, since I have now to note the capture of two more specimens in nets fishing in midwater, both of which are small and still show larval characters, while the larger specimens were only caught in nets attached to trawls, or else fishing at the bottom.

From an examination of all the material at my disposal, I am able to give a few interesting notes on the development. The smallest

specimen measures 5 mm. The median fork of the rostral plate is, as yet, undeveloped and the latter is a broad emarginate projection with the antero-lateral corners rounded. The antero-lateral margins of the rostral plate and the epimera of the first five abdominal segments are all coarsely pectinate.

At 6 mm., the median fork of the rostrum becomes evident as a very small projection of the emarginate border of the rostral plate. At a length of 9 mm., the median fork of the rostral plate equals the lateral forks, and all three are acutely pointed, so that, at this stage, the rostral plate has practically assumed adult form, except that the pectinations still persist on the antero-lateral margins, though they are now much finer. The epimeral plates of the first five abdominal segments have only their posterior margins pectinate, and the teeth are more pronounced on the last two epimera than on the first three. The anterior margins of all the epimera are quite smooth.

The 11 mm. stage is practically identical with the last, except that the pectinations only persist on the rostral plate and on the posterior margins of the fourth and fifth abdominal segments.

At 12 mm., the rostral plate is free from pectinations and the last traces of the latter are just disappearing from the abdominal epimera.

At 13 mm. the species assumes quite adult form and structure.

The developmental stages in the life-history of *L. typicus* afford an interesting parallel with those of certain Euphausians, in the presence of pectinations during larval or post-larval life. The independent development of similar structures in two such widely separated orders as the Mysidacea and the Euphausiacea, is of great morphological interest. The pectinations are evidently correlated with larval rather than pelagic life for the Euphausiacea remain pelagic throughout life, but lose the pectinations before becoming adult. In Euphausians, the pectinations are associated with the imperfect development of the eyes and are gradually lost as the latter become fully formed. In the smallest *L. typicus* which I have examined, the eyes are apparently fully functional, and the pectinations would appear to be simply additional protection during its precarious larval life. The species slowly sinks towards the bottom as growth proceeds and appears to finally settle there when about 8–9 mm. in length. The pectinations do not commence to disappear till the species has reached the bottom.

Phronima sedentaria presents a parallel instance to *L. typicus* in that, normally a bathypelagic form, it rises to the surface to liberate its young.

GENUS **Gnathophausia,** Will.-Suhm, 1875.

Gnathophausia zoëa, Will.-Suhm, 1875.

Additional records :—

S.S. *Helga.*

S. R. 282.—Mosquito townet at 700 fms.—One.
S. R. 331.—Trawl.—One.
S. R. 334.—Townet on trawl.—One.

S. R. 352.—Midwater otter trawl at 700–750 fms.—One.
S. R. 363.—Trawl and townets on trawl.—Three.
S. R. 397.—Townet on trawl.—One.
S. R. 400.—Townet on trawl.—One.
S. R. 401.—Trawl.—Two.
S. R. 449.—Midwater otter trawl at 700 fms.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Two.
S. R. 485.—Trawl.—One.
S. R. 493.—Townet on trawl.—Two.
S. R. 494.—Townet on trawl.—One.
S. R. 499.—Townet on trawl.—One.
S. R. 500.—Trawl and townets on trawl.—Five.
S. R. 502.—Townet on trawl.—Two.
S. R. 504.—Townet on trawl.—Two.
S. R. 505.—Townet on trawl.—Two.
S. R. 506.—Townet on trawl.—One.
S. R. 592.—Townet on trawl.—One.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Thirteen.
S. R. 753.—Townet on trawl.—One.
S. R. 806.—Midwater otter trawl at 500-550 fms.—Two.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

The record of *Gnathophausia drepanephora* from the Färö channel which appears in the Scotch plankton list for August, 1907, in the quarterly bulletin of the International Investigations Council for that month, refers to this species. I am indebted to Dr. Scott for kindly allowing me to examine the fragmentary specimen on which the record is based.

Family *EUCOPIIDAE*.

Genus **Eucopia**, Dana, 1852.

Eucopia unguiculata (Will.-Suhm, 1875).

Additional records :—

s.s. *Helga*.

S. R. 270.—Midwater otter trawl at 350 fms.—Twelve.
S. R. 272.—Midwater otter trawl at 350 fms.—Five.
S. R. 282.—Mosquito townet at 700 fms.—Eight.
S. R. 299.—Mosquito townet at 350–400 fms.—One.
S. R. 302.—Midwater otter trawl at 300–350 fms.—One.
S. R. 327.—Townet on trawl.—One.
S. R. 337.—Midwater otter trawl at 400 fms.—Eight.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Twenty.
S. R. 363.—Townet on trawl.—Six.
S. R. 366.—Midwater otter trawl at 400 fms.—Three.

S. R. 397.—Townet on trawl.—Two.
S. R. 400.—Townets on trawl and dredge.—Three.
S. R. 401.—Townet on trawl.—Fifteen.
S. R. 403.—Mosquito townet at 450 fms.—Three.
S. R. 442.—Townet on trawl.—Four.
S. R. 443.—Midwater otter trawl at 550 fms.—One.
S. R. 449.—Midwater otter trawl at 700 fms.—Seventeen.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Twenty-two.
S. R. 476.—Midwater otter trawl at 300 fms.—One.
S. R. 477.—Townet on trawl.—One.
S. R. 478.—Townet on trawl.—Five.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Thirty.
S. R. 484.—Townet on trawl.—Sixteen.
S. R. 485.—Townet on trawl.—Nine.
S. R. 487.—Townet on trawl.—Five.
S. R. 488.—Mosquito townet at 350–400 fms.—Five.
S. R. 489.—Townet on trawl.—Four.
S. R. 491.—Townet on trawl.—One.
S. R. 493.—Townet on trawl.—One.
S. R. 496.—Townet on trawl.—Four.
S. R. 497.—Townet on trawl.—Thirteen.
S. R. 498.—Mosquito townet at 500 fms.—Eleven.
S. R. 499.—Townet on trawl.—Five.
S. R. 502.—Townet on trawl.—One.
S. R. 503.—Mosquito townet at surface.—One.
S. R. 504.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—One.
S. R. 506.—Townet on trawl.—Three.
S. R. 589.—Midwater otter trawl at 550–600 fms.—Thirty-three.
S. R. 590.—Townet in eel net.—Four.
S. R. 593.—Townet on trawl.—Two.
S. R. 746.—Midwater otter trawl at 500 fms.—Nine.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Thirty-seven.
S. R. 753.—Townet on trawl.—Six.
S. R. 805.—Townet on trawl.—One.
S. R. 851.—Midwater otter trawl at 900 fms.—Forty-four.
S. R. 858.—Shrimp trawl at 700 fms.—Five.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

The record of a single specimen captured at the surface, S.R. 503, is open to suspicion inasmuch as the net in which it was caught had been used earlier in the same day at a depth of 500 fms. (S.R. 498) and had on that occasion captured eleven specimens of this species. It is just possible that the specimen recorded under S.R. 503 may have been a stray one which had remained in the net from S.R. 498.

Eucopia sculpticauda, Faxon, 1895.

Additional records :—

s.s. *Helga.*

S. R. 335.—Townet on trawl.—One.
S. R. 352.—Midwater otter trawl at 700-750 fms.—One.
S. R. 363.—Townets on trawl.—Three.
S. R. 401.—Townets on trawl.—One.
S. R. 443.—Midwater otter trawl at 550 fms.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Three.
S. R. 484.—Townet on trawl.—Two.
S. R. 485.—Townet on trawl.—One.
S. R. 499.—Townet on trawl.—One.
S. R. 806.—Midwater otter trawl at 500–550 fms.—Three.

This species does not appear to be influenced in its distribution by the annual ocean tide. It occurs at all times of the year, but only sparingly, and only in the very deepest waters explored by the *Helga*, and must be regarded as a permanent member of the deep water of the North Atlantic.

FAMILY *PETALOPHTHALMIDAE*, Czerniavsky, 1882.

GENUS **Petalophthalmus,** Will.-Suhm, 1875.

Petalophthalmus armiger, Will.-Suhm, 1875.

Additional record :—

s.s. *Helga.*

S. R. 851.—Midwater otter trawl at 900 fms.—One, 14 mm.

The above specimen is but the second of this rare and interesting bathypelagic species which has been met with off the Irish coast, and its capture was coincident with an influx of South Atlantic water in connection with the annual oceanic tide, shown to occur off these coasts.

GENUS **Hansenomysis,** Stebbing, 1893.

Hansenomysis Fyllae (Hansen, 1887).

Arctomysis Fyllae, Hansen, 1887.
Hansenomysis Fyllae, Stebbing, 1893.
H. Fyllae, Tattersall, 1907.
H. Fyllae, Hansen, 1908.
H. Fyllae, Zimmer, 1909.

s.s. *Helga.*

S. R. 352.—Midwater otter trawl at 700–750 fms.—Two.
S. R. 401.—Townet on trawl.—Two.

S. R. 487.—Townet on trawl.—Four.
S. R. 497.—Townet on trawl.—One.
S. R. 593.—Townet on trawl.—Four.
S. R. 851.—Midwater otter trawl at 900 fms.—One.

s.s. *Goldseeker*.—See table, p. 69.

Hansen originally described this species from an imperfect female specimen, but has recently (1908) supplemented his diagnosis from more complete specimens taken during the *Ingolf* expedition and by the Danish steamer *Thor*. There is nothing to add to Hansen's description, except a statement of the size of adult males, viz., 16 mm. and a short note on the antennules of this sex. Hansen states the size of male specimens to be 13 mm., and he gives a description of the peculiar form of the inner antennular flagellum in the male. From an examination of my material it is clear that Hansen's male specimens were immature, for the inner antennular flagellum of males, in addition to having the basal thirteen to fifteen joints extremely thickened, has these thickened joints ornamented with two closely-set broad rings of very long dense setae. There remains to notice the presence of a small simple genital appendix to the last thoracic legs of the male, similar to that found in Mysidae generally.

The capture of this remarkable Mysidacean off the S.W. coast of Ireland extends its known geographical distribution by 10° of latitude and its vertical range from 500 fathoms to 795 fathoms. Hansen's records are from Greenland, Davis Straits, and S.W. of the Färöes, in depths varying from 80 fathoms in Greenland to 500 fathoms off the Färöes. In all cases the temperature of the water at the bottom was 0° C. or higher.

Family *MYSIDAE*.

Sub-Family *LEPTOMYSINAE*.

Genus **Erythrops**, G. O. Sars.

Erythrops serrata, G. O. Sars.

Additional records :—

s.s. *Helga*.

S. R. 360.—Townet on trawl.—One.
S. R. 361.—Townet on trawl.—Twenty-nine.
S. R. 362.—Townet on trawl.—Fourteen.
S. R. 379.—Townet on trawl.—One.
S. R. 383.—Midwater otter trawl at 150 fms.—Two.
S. R. 807.—Townet on trawl.—Six.

s.s. *Goldseeker*.—See table, p. 69.

Erythrops erythropthalma (Goës).

s.s. *Helga.*

S. R. 379.—Townet on trawl.—One female, 9 mm.

Zimmer (1909) in his summary of the distribution states that this species is known from the Irish coasts, but I have not been able to trace the source from which this statement is derived or any previous record from Irish waters. It is already known as British, from the Firth of Forth, and other parts of the east coast of Scotland.

I have already expressed (1909) the opinion that Lo Bianco's records from the Mediterranean refer to *E. elegans*.

Erythrops microphthalma (G. O. Sars).

s.s. *Helga.*

S. R. 330.—Townet on trawl.—One, 9 mm.

Distribution.—This species has, up till now, only been found off the Norwegian coast in depths of 40–500 fathoms. It is, therefore, new to the British and Irish fauna.

In the *Bulletin des Courses periodiques*, November, 1904, Dr. Gough has recorded a specimen of *Erythrops microphthalma* from the English Channel at a depth of 118 metres, over soundings of 120 metres.

Mr. W. I. Beaumont, who examined the specimen at the time of its capture, has kindly informed me that he considers it to be *E. elegans*, and has sent me some notes, made at the time of the examination, which I am allowed to use here. Dr. Gough based his diagnosis mainly on what he believed to be in his specimen a spine or hook on the outer distal corner of the basal joint from which the antennal scale arises. The presence of such a spine or hook distinguishes *E. microphthalma* from *E. elegans*. But Mr. Beaumont tells me that the spine or hook which Dr. Gough saw was really on the next joint proximal to the one from which the scale springs. Several spines in this position are figured by Sars for *E. elegans* (1870-79, Tab. II., fig. 22), and Mr. Beaumont believes that the spine Dr. Gough saw was one of these. The specimen, an immature female, 3–4 mm. in length, agreed in other particulars such as the eyes rostrum, and antennal scale with *E. elegans*.

Considerations of the locality of capture and the circumstances under which it was caught support Mr. Beaumont's opinion. Gough's record may therefore be deleted.

Erythrops abyssorum, G. O. Sars. (?).

s.s. *Goldseeker.*—See table, p. 69.

It is with considerable doubt that I refer to this species, a dozen examples of *Erythrops* taken by the s.s. *Goldseeker* in the warm area

of the Färö Channel. The material consists of six males, 8–11 mm., and six females, 7–9 mm. The largest specimen of both sexes would appear to be adult, judging from the fully formed incubatory lamellae in the female and the pleopods and antennular brush of the male.

The size of adult *E. abyssorum*, according to Sars, is 18 mm., so that the present examples, if correctly determined, are about half the size of the Norwegian types. The smallest female, 7 mm., has only two teeth on the outer margin of the antennal scale, and the largest male, 11 mm., has but four teeth while the majority have three such teeth, in all cases including the strong terminal one. *E. abyssorum*, according to Sars, possesses seven or eight teeth on the outer margin of the antennal scale.

The eyes of the Färö Channel specimens are small and resemble, very closely, those figured by Sars (1870–79, Tab. V, fig. 12) for a young male, of which he does not state the length, but depicts six teeth on the antennal scale.

The telson of the present specimens has the apex truncate, rather than of the slightly arcuate form described by Sars for *E. abyssorum*, but otherwise agrees closely with his figures. All have lost their posterior thoracic legs, so comparison of characters of their appendages is impossible.

It seems to me that the present examples cannot be referred to *E. serrata*, by reason of the small eyes and the number of teeth on the antennal scale, since *E. serrata*, which is adult at the size of the specimens now under consideration, has the eyes much larger and has seven to eight teeth on the scale. On the other hand, it does seem possible to regard them as a small race of *E. abyssorum* which has taken on the characters pertaining to sexual maturity at a size at which, in true *E. abyssorum*, the eyes and the antennal scale are not completely developed.

In the serrulation of the inner margin of the inner uropods the present specimens follow the rule discovered for *E. serrata* by Holt and Beaumont (1900), viz., all females and immature males have the inner uropods finely serrulated, but in adult males the serrulations become obsolete and the uropod is smooth.

Distribution.—E. abysorrum, now added to the British-and-Irish list, is known up to the present from the Kara Sea, the Norwegian coast, Ian Mayen, and East and West Greenland, in depths varying from 50–300 fathoms.

The present record from the Färö Channel, in depths of 580–600 fathoms, thus considerably extends both the horizontal and vertical distribution.

GENUS **Meterythrops**, S. I. Smith, 1879.

Meterythrops picta, Holt and Tattersall, 1905 (1).

M. picta, H. and T., 1906 (2).
M. picta, Hansen, 1908.
M. picta, Zimmer, 1909.

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—Two.
S. R. 282.—Mosquito townet at 700 fms.—One.
R. 337.—Midwater otter trawl at 400 fms.—One.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Five.
S R. 449.—Midwater otter trawl at 700 fms.—One.
S. R. 476.—Midwater otter trawl at 300 fms.—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—One.
S. R. 485.—Townet on trawl.—One.
S. R. 487.—Townet on trawl.—One.
S. R. 493.—Townet on trawl.—One.
S. R. 499.—Townet on trawl.—Three.
S. R. 504.—Townet on trawl.—One.
S. R. 589.—Midwater otter trawl at 550–600 fms —One.
S. R. 851.—Midwater otter trawl at 900 fms.—Two.

s.s. *Goldseeker.*—See table, p. 69.

My largest specimens are two adult males measuring 15 mm. and 14 mm., and an adult female, 13 mm. The adult males have a profuse brush of setae on the antennules.

GENUS **Euchaetomera,** G. O. Sars, 1883.

Euchaetomera tenuis, G. O. Sars, 1883.

E. tenuis (pars), Lo Bianco, 1901 and 1903.
E. Fowleri, H. and T., 1905 (1) and (3) and 1906 (2).
E. Fowleri, Hansen, 1905 (2).
E. tenuis, Tattersall, 1909.
E. Fowleri, Zimmer, 1909.

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—Three.
S. R. 272.—Midwater otter trawl at 350 fms.—Two.
S. R. 302.—Midwater otter trawl at 300–350 fms.—Two.
S. R. 366.—Midwater otter trawl at 400 fms.—Three.
S. R. 383.—Midwater otter trawl at 150 fms.—One.
S. R. 470.—Midwater otter trawl at 400–500 fms.—One.
S. R. 479.—Townet on trawl,—One.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Three.

The largest specimen measures 11 mm. in length. The sixth thoracic limbs of a female of 10 mm. have the endopod measuring nearly 3 mm. The merus is slightly longer than the three-jointed tarsus. The first joint of the latter is slightly longer than the other two joints combined, and the third joint is longer than the second.

The nail is long and slender, not quite as long as the second joint of the tarsus. The exopods of the thoracic limbs are very long, almost as long as the endopods, and have their basal joints but very little expanded. I have already (1909), at the suggestion of Dr. Hansen, withdrawn the species *E. Fowleri*, H. and T., as a synonym of *E. tenuis*, G. O. Sars.

GENUS **Katerythrops**, Holt and Tattersall, 1905 (1).

Katerythrops Oceanae, Holt and Tattersall, 1905 (1).

K. Oceanae, H. and T., 1905 (1) and (2).
K. Oceanae, Hansen, 1905 (2).
K. Oceanae, H. and T., 1906 (2).
K. Oceanae, Zimmer, 1909.
K. dactylops, Illig, 1906.

Additional records :—

s.s. *Helga.*

S. R. 270.—Midwater otter trawl at 350 fms.—One.
S. R. 337.—Midwater otter trawl at 400 fms.—One.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Two.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Two.
S. R. 851.—Midwater otter trawl at 900 fms.—One.

The largest specimen is an adult male measuring 11 mm. The thoracic legs of this specimen are very long and slender. The eighth pair measure 6.25 mm. in length, and have the tarsus longer than the merus, three-jointed, with the first joint eight times as long as the second and seven times as long as the third joint. The latter is thus slightly longer than the second, and the dactylus, in turn, is longer than the third joint of the tarsus and very slender.

I do not think that *K. dactylops*, Illig, is separated from *K. Oceanae* by any characters of specific value, and am of the opinion that it must be relegated to the synonymy of the latter species. The only character given by Illig to separate the two is the presence of a finger-like process on the dorsal face of the eye. As mentioned in the original description, *K. Oceanae* has a similar papilla on the eyes, but it is much smaller and not nearly so conspicuous as depicted by Illig. Nevertheless, I do not think the difference of specific value. The known distribution of *K. dactylops* is not against this view. It was taken by the *Valdivia* expedition at three widely separated points of the Atlantic Ocean, off New Amsterdam, Dutch Guiana, off Banana, at the mouth of the Congo River and north-west of Cape Town. But *K. Oceanae* is known from the seas round the Azores as well as off the coast of Ireland, and an oceanic bathypelagic species may be expected to have a wide geographical range, cf. *Eucopia unguiculata.*

Distribution.—Regarding *K. dactylops* as a synonym of *K. Oceanae*, this species is evidently widely distributed in the North and South Atlantic.

GENUS **Parerythrops,** G. O. Sars.

Parerythrops obesa, G. O. Sars.

Additional records :—

s.s. *Helga.*

S. R. 331.—Townet on trawl.—One.
S. R. 333.—Townet on trawl.—One.
S. R. 359.—Townet on trawl.—Five.
S. R. 363.—Townet on trawl.—Five.
S. R. 364.—Townet on trawl.—Two.
S. R. 365.—Townet on trawl.—Two.
S. R. 387.—Townet on trawl.—Five.
S. R. 479.—Townet on trawl.—Twelve.
S. R. 487.—Townet on trawl.—One.
S. R. 490.—Townet on trawl.—Two.
S. R. 491.—Townet on trawl.—Twenty-two.
S. R. 494.—Townet on trawl.—One.
S. R. 499.—Townet on trawl.—Two.
S. R. 502.—Townet on trawl.—Five.
S. R. 504.—Townet on trawl.—Three.
S. R. 506.—Townet on trawl.—Two.
S. R. 590.—Townet on trawl.—Four.
S. R. 746.—Townet on trawl.—One.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Six.

s.s. *Goldseeker.*—See table, p. 69.

GENUS **Hypererythrops,** Holt and Tattersall, 1905 (1).

Hypererythrops serriventer, H. and T., 1905 (1).

Additional records :—

s.s. *Helga.*

S. R. 351.—Townet on trawl.—Forty.
S. R. 353.—Townet on trawl.—One.
S. R. 360.—Townet on trawl.—Twenty.
S. R. 361.—Townet on trawl.—Twenty-nine.
S. R. 362.—Townet on trawl.—Nine.
S. R. 379.—Townet on trawl.—One.
S. R. 380.—Townet on trawl.—One.
S. R. 447.—Townet on trawl.—Thirty-eight.

With the exception of S. R. 353, the vertical range of the above stations is 108–343 fathoms and this appears to be the bathymetric range of the species. S. R. 353 covers too great a depth of water, 250–542 fathoms, to be of value in determining the vertical distribution of this form, and the fact that it occurred at none of the numerous deeper-water stations recently worked by the *Helga* renders it tolerably certain that its bathymetric range does not extend beyond 350 fathoms.

GENUS **Dactylerythrops,** Holt and Tattersall, 1905.

Dactylerythrops, Zimmer, 1909.

Non *Dactylerythrops*, Illig, 1906.

This genus when first described was compared with *Meterythrops*, S. I. Smith. The discovery of two further species and of the closely allied genus *Dactylamblyops*, H. and T., indicates that it is perhaps more nearly related to the genus *Amblyops*, G. O. Sars, and it may thus be more accurately redefined in the light of this new material as follows :—Characters generally as in the genus *Amblyops*, G. O. Sars, except :—

Eyes small; not exhibiting any definite eye-stalk, but joined at their bases by a membranous integument; visual elements imperfectly developed, not reaching to the surface of the eye, but rather deeply seated in its tissues; outer distal corner produced into a rather long digitiform flexible process.

Telson entire, rather small, subtriangular or lanceolate in shape, lateral margins armed distally with more or fewer spines, median apical pair of setae present or absent.

Incubatory lamellae in the female, two pairs.

Type species, *Dactylerythrops dactylops*, H. and T.

Dactylerythrops arcuata, Illig, should more properly be referred to the genus *Dactylamblyops*.

Dactylerythrops dactylops, H. and T.

D. dactylops, H. and T., 1905 (1) and 1906 (2).

D. dactylops, Zimmer, 1909.

Pl. VII, figs. 8, 9.

Additional records :—

s.s. *Helga.*

S. R. 351.—Townet on trawl.—Seven, 3–7 mm.
S. R. 397.—Townet on trawl.—One, 6 mm.
S. R. 398.—Townet on trawl.—One, 6 mm.
S. R. 447.—Townet on trawl.—One, 6 mm.
S. R. 500.—Townet on trawl.—Two, 6 and 7 mm.
S. R. 502.—Townet on trawl.—One, 3 mm.
S. R. 592.—Townet on trawl.—Two, 5 mm.

s.s. *Goldseeker.*—See table, p. 69.

Except as regards the telson, there is nothing to add to our previous description.

On Pl. VII, fig. 8, is figured the telson of the specimen from S. R. 447. The general form is essentially as shown in the type, but the number of spines on the telson is eleven on each side of the median apical setae, whereas the type had only five on each side. The specimens from S.R. 351 have the telson shaped exactly as in those from S. R. 447 and in the type, while the number of spines varies from five to nine. This variation in number of lateral spines is not greater than is known in other Mysidae, so that the type specimens and those from S. R. 447 and S. R. 351 can, without any scruple, be legitimately regarded as belonging to the same species. The range of depth for these stations is 199–382 fathoms.

On Pl. VII, fig. 9, is depicted the telson of one of the Scotch specimens, and those from S.R. 397, S. R. 398 and S. R. 500 have telsons exactly agreeing with this. The range of depth for these stations is 547-666 fathoms.

The material from S. R. 592 is, unfortunately, too fragmentary to be of any use, so the only specimen available from intermediate depths is that from S. R. 502. This is an immature example, only 3 mm. in length. It has the telson shaped as in the first type mentioned above, but has only three spines on each lateral margin. Such a telson may develop into the first type by the addition of spines to the lateral margins or into the second type by a slight change of shape, while retaining the same number of spines.

Have we here an example of a species in the act of splitting up into two, or are there in reality two distinct but very closely allied species present in the collection ? The data available are too meagre for a definite decision, but they at least afford material for interesting speculation. All the specimens are alike in every respect, save the telson. Yet had those from 199–382 fathoms (*i.e.* with the first type of telson) and those from 547–666 fathoms (*i.e.* with the second type of telson) been alone available, I should have been tempted to have regarded them as belonging to two distinct species, each having a more or less definite vertical range. The fact that specimens have been taken at intermediate depths, albeit too young or fragmentary to afford direct evidence bearing on the question, suggests that the two types may be connected by a complete series of intermediate forms, and the matter must be left in abeyance till fuller material is available.

Distribution.—The capture of this species by the *Goldseeker* in the Färö Channel has considerably extended its known geographical range and the fact that no fewer than thirty-five specimens were secured in one haul suggests that the species may be more abundant in more northern latitudes than it is off the west coast of Ireland. Its known vertical range at present is from 199–800 fathoms and it appears to be a true bottom-haunting form, living only in water of a temperature above 0° C.

Dactylerythrops bidigitata, Tattersall, 1907

D. bidigitata, Zimmer, 1909.

Pl. III, figs. 7–10.

Pl. IV, fig. 1.

S.S. *Helga.*

S. R. 352.—Midwater otter trawl at 700–750 fms.—Three, 15–16 mm.
S. R. 851.—Midwater otter trawl at 900 fms.—Eight females and eight males, 11–17 mm.

Carapace covering all the thoracic segments; cervical sulcus well-marked; produced in front into a broadly rounded obtuse rostrum which reaches to about the level of the centre of the eyes and nearly to the distal end of the first joint of the antennular peduncle (Pl. IV, fig. 1); antero-lateral corners rounded; emarginate on the posterior border.

Pleon longer than the carapace; the first segment one and a half times as long as the subequal second, third and fourth segments; fifth segment slightly longer than the fourth; sixth segment twice as long as the fifth.

Eyes (Pl. III, fig. 7), small, with their basal parts covered by the rostrum and united by a membranous integument such as is described for *D. dactylops;* the outer distal corner produced into a rather long acute flexible process which reaches nearly to the level of the outer distal corner of the second joint of the antennular peduncle; a shorter, firmer and blunter process on the inner and upper face of the eye, which a raised ridge connects to the main parts of the eye, so that the whole organ is triangular in cross section and not flat; the visual elements are more numerous than in *D. dactylops,* confined to a triangular area on the outer part of the eye at the base of the outer process; pigment confined to the visual elements, pale purplish pink in freshly preserved specimens, bright red in living specimens; to the inside of the visual elements, at the base of the inner process, is a large cell with a conspicuous nucleus from which what appears to be a nerve passes to the top of the inner process; a similar presumed nerve fibre passes up the other process; both nerves appear to be connected with a sense organ of some sort, possibly reduced visual elements, at the top of each process.

Antennular peduncle (Pl. IV, fig. 1), rather short, with the third joint a little longer than the first and very much stouter, and more swollen in the male than in the female; second joint small; male appendage long and very prominent, but only very slightly hirsute, as the specimens are still immature.

Antennal peduncle shorter than the antennular, reaching about half way along the third joint of the latter; second joint slightly longer than the subequal first and third joints.

Antennal scale (Pl. IV, fig. 1 and Pl. III, fig. 8), almost twice the length of the antennular peduncle; about four times as long as broad;

outer margin entire and ending in a strong spine beyond which the apex of the scale is not produced ; no spine on the basal joint.

Mouth parts essentially as in the genus *Amblyops*. There is a prominent pseudorostral spine which proceeds from the upper lip.

First and second thoracic limbs (Pl. III, fig. 9), very like those of *Amblyops abbreviata*.

The *remaining thoracic limbs* are rather long and slender ; the merus of the endopod in the third is slightly longer than the tarsus ; the latter three jointed, the first joint very slightly less than the combined length of the second and third joints, which are sub-equal ; nail very long and slender, longer than the third joint of the tarsus.

Exopods of all thoracic limbs well developed with the outer distal corner of the basal joint slightly acuminate and the flagelliform part composed of about seventeen joints.

Incubatory lamellae of the female, two pairs.

Pleopods of the male apparently agreeing with those of the genus *Amblyops*, though none of the male specimens are mature.

Telson (Pl. III, fig. 10), comparatively short, about two-thirds of the length of the last segment of the pleon ; sub-triangular in shape ; about one and a half times as long as broad at its base ; margins tapering evenly to a bluntly rounded apex ; the distal third of its margins armed on each side with about ten rather stout spines increasing slightly in length towards the apex ; terminal spines about one-seventh as long as the telson ; a pair of median plumose setae situated at the apex, between the terminal spines of the margins.

Uropods moderately slender ; inner, one and two-thirds of the length of the telson with two or three small spines on the inner margin in the region of the otocyst ; outer, twice the length of the telson.

Length of the largest female, mature, 16 mm. ; of the largest male, still immature, 16 mm.

This species is a much larger form than the type of the genus, *D. dactylops*, and is further distinguished by the more prominent rostral projection, the longer and broader antennal scale, and especially by the form of the eye with its two processes and numerous deeply seated visual elements. *D. dactylops* also has the terminal spines of the telson much longer than in *D. bidigitata*.

D. bidigitata has only been taken twice by the *Helga*, on both occasions off the south-west coast of Ireland, in depths of 800 and 900 fathoms, and on each occasion in a midwater otter trawl which touched the bottom.

Dactylerythrops gracilura, Tattersall, 1907.

D. gracilura, Zimmer, 1909.

Pl. III, fig. 11.

Pl. IV, figs. 2–4.

s.s. *Helga*.

S. R. 352.—Midwater otter trawl at 700–750 fms.—Four females, 15 mm.

S. R. 851.—Midwater otter trawl at 900 fms.—Forty-one females and twenty-eight males, 9–17 mm.

Carapace covering all the thoracic segments; broadly and evenly rounded in front without trace of rostral projection; antero-lateral corners rounded; emarginate on its posterior border; in the median line in front of and immediately below the carapace there is a broadly triangular pseudorostral plate, with the apex bluntly rounded and minutely hispid (Pl. IV, fig. 2).

Pleon a little longer than the carapace; first segment a little shorter than the sub-equal second, third, and fourth segments; fifth segment slightly longer than the fourth; sixth segment from one and a half to one and two-thirds times as long as the fifth.

Eyes (Pl. IV, fig. 2) very small and almost entirely hidden by the carapace; not triangular in cross section but flat, thin and membranous; united at their bases by a membranous integument; outer distal corners produced into a very acute, fairly long flexible process; a shorter and less acute process at the inner corner; visual elements very imperfect and confined to a deeply seated mass at the base of the outer process; no pigment was observed either in living or freshly preserved specimens.

Antennular peduncle (Pl. IV, fig. 2) rather short and curiously contorted in lateral view; basal joint flattened and broader than the other two, outer distal corner somewhat produced and tipped by setae; second joint short; third joint the largest, and longer and somewhat stouter in the male than in the female, produced ventrally between the bases of the two flagella into a short process tipped with setae; antennular process of the male well developed and rather long, profusely setose.

Antennal peduncle (Pl. IV, fig. 3) slightly shorter than the antennular and moderately robust; second joint a little longer than the third; the whole peduncle in lateral view looks slightly contorted owing to the posterior part of the third joint overlapping dorsally the anterior part of the second joint, the second and third joints being thus in different horizontal planes.

Antennal scale (Pl. IV, fig. 3) rather short and broad; almost twice as long as the antennular peduncle in the female; from two and a half to three times as long as broad; outer margin entire, terminating in a strong spine beyond which the apex of the scale is slightly produced for a length equal to about one-eighth of the total length of the scale; a very prominent spine on the outer distal corner of the basal joint.

Mouth parts not exhibiting any special points of note, but agreeing in the main with those of the type species and the previous one.

Second thoracic limbs (Pl. IV, fig. 4) compared with those of *D. bidigitata* are relatively much stouter, with the carpus a little longer proportionately and equal to the merus.

Remaining thoracic limbs very long and slender, with the tarsus of the endopods equal to the merus and three-jointed, the first joint longer than either of the other two; nail well developed and slender, but shorter than the last joint of the tarsus.

Exopods of all the thoracic limbs well developed, with the oute distal corner of the basal joint slightly acuminate and the flagelliform part composed of about ten to twelve joints.

Incubatory lamellae in the female, two pairs.

Pleopods of the male agreeing with those of *Amblyops abbreviata*.

Telson (Pl. III, fig. 11) diverging somewhat from the type met with in *D. dactylops* and *D. bidigitata* and shaped almost exactly as in the genus *Meterythrops*; equal in length to the last segment of the pleon and twice as long as broad at its base where the margins are somewhat expanded; margins converging rapidly to a narrowly truncate apex armed with two spines set close together and equal in length to one-twelfth of the length of the telson; median setae absent from the apex; distal half of the lateral margins armed with about nineteen to twenty-two short spines.

Uropods long and slender; inner, about one and a half times as long as the telson, without spines on its inner ventral margin; outer nearly twice as long as the telson.

Length of the largest female, mature, 17 mm.; of the largest male, mature, 15 mm.

This species differs from the last in the shorter and broader antennal scale, in the want of a rostral projection, in the shape of the telson and in the absence of median setae from the apex of the latter. The eyes in both species are built on similar principles, but in *D. gracilura* they are smaller and more feebly developed than in *D. bidigitata* and almost entirely concealed by the carapace, only the two digitate processes projecting beyond the latter.

D. gracilura has only been taken twice by the *Helga* and, curiously enough, each time in company with *D. bidigitata*. On the last occasion on which it was taken, no fewer than sixty-nine specimens were captured in the net. This was in a depth of 900 fathoms and presumably the species is a fairly abundant form at such great depths.

Genus **Dactylamblyops**, Holt and Tattersall, 1906 (1).

Dactylerythrops, Illig, 1906.
Dactylamblyops, Tattersall, 1908 (2).
Dactylamblyops, Zimmer, 1909.

This genus is undeniably very closely allied to the preceding one, but may be distinguished by the following characters:—

Eye small, with distinct and definite eye-stalks; more or less pyriform in shape; visual elements, though imperfectly formed, are better developed and more numerous than in *Dactylerythrops*, reaching to the surface of the eye and probably directly functional as organs of sight; outer distal corner rounded and not produced into a digitform process; a short process always present on the inner and upper surface.

Type species *Dactylamblyops Hodgsoni*, H. and T.

The type and the two new species described below appear to form a natural group chiefly distinguished from the genus *Dactylerythrops*

by the above points, and in the present state of our knowledge of the group this generic division may well be allowed to stand.

Dactylerythrops arcuata, Illig, should be referred to this genus, and is, in fact, synonymous with the type species, *D. Hodgsoni*.

Dactylamblyops thaumatops, Tattersall, 1907.

D. thaumatops, Zimmer, 1909.

Pl. I, fig. 1.
Pl. V, figs. 1–8.

s.s. *Helga*.

S. R. 352.—Midwater otter trawl at 700–750 fms.—Two females, 11 mm.

S. R. 504.—Townet on trawl.—One.

s.s. *Goldseeker*.—See table, p. 69.

Carapace (Pl. I, fig. 1) covering all the thoracic segments except the last; produced in front into a short broadly rounded obtuse rostrum which extends to the distal end of the first joint of the antennular peduncle and partially covers the eyestalks; evenly rounded at the antero-lateral corners and emarginate behind; cervical sulcus well marked.

Pleon longer than the carapace; first segment a little longer than the subequal second, third and fourth segments; sixth segment nearly twice as long as the fifth.

Eyes (Pl. V, figs. 1, 2) small, extending forwards to the distal end of the second joint of the antennular peduncle; pyriform in shape with distinct eye stalks; each eye with a short digitiform process on the inner and upper face; a broad membranous ledge projecting at right angles to the surface of the cornea starts at the outer lateral part of the eye stalk and runs equatorially round the outer part of the eye, terminating ventrally to the digitiform process and dividing the cornea into a dorsal and ventral portion; this ledge is broadest about the centre of the cornea and narrows off at either end; visual elements imperfectly developed, numerous, reaching to the surface of the eye; pigment, in preserved specimens, pale purplish pink.

Antennular peduncle about twice as long as the eye and three-quarters of the length of the antennal scale; third joint slightly longer than the first; second joint small.

Antennal peduncle (Pl. V, fig. 3) about half as long as the scale, and composed of three roughly subequal joints.

Antennal scale (Pl. V, fig. 3) small, about one-third as long again as the antennular peduncle and twice as long as the antennal; about four times as long as broad; outer margin entire and terminating in a strong spine, beyond which the apex of the scale is not produced; spine on the outer corner of the basal joint obsolete.

Mouth parts and first and second thoracic limbs (P. V, fig. 4) presenting no features of special interest and agreeing in the main with those of the type species and the genus *Amblyops*.

Third thoracic limbs (Pl. V, figs. 5, 6) long and slender; the tarsus of the endopods composed of three joints, the first of which is as long as the second and third combined; third joint of the tarsus very short and terminated by a short stout recurved dactylus and having at its inner distal corner a strong spine which forms with the dactylus a weak chela (Pl. V, fig. 6).

Fourth to the eighth thoracic limbs long and slender with the tarsus (Pl. V, fig. 7) three-jointed, the first joint less than the combined subequal second and third joints; dactylus long and slender, only slightly shorter than the third joint of the tarsus. The whole limbs are of quite normal build and show no trace of the curious chelate structure of the third pair.

Exopods of all the thoracic limbs with the outer distal corner of the basal joint slightly acuminate and the flagelliform part composed of ten joints.

Incubatory lamellae of the female, two pairs.

Male pleopods conforming to the general type seen in *Amblyops*.

Telson (Pl. V, fig. 8) not quite so long as the last segment of the p eon and once and two-thirds as long as broad at its base, where the margins are slightly expanded; entire and lanciform in shape, tapering distally to a narrowly rounded apex; distal two thirds of its margins armed with about twenty-four short spines increasing in length towards the apex, the terminal pair equal to about one-twelfth of the telson in length; median apical pair of plumose setae absent.

Uropods moderately long and slender; inner about one and a half times as long as the telson, with four spines on its inner margin in the region of the otocyst; outer about double the length of the telson.

Length of the largest specimen, a female apparently mature, 12 mm.; of the largest male, mature, 11 mm.

This species is readily recognised by the remarkable structure of the eyes, which are among the most wonderful of the many varied forms which the Mysidae as a whole display. The peculiar chelate structure of the third thoracic limbs is another point in which the species is unique. The chela is, of course, quite different in form to the typical chelate limb of the Decapoda where the chela is formed by a movable dactylus and an immovable process of the propodus. In *D. thaumatops* the chela is formed by a movable dactylus and a movable articulated spine on the propodus.

Distribution.—The records noted above are all that are known for the species, which is therefore among the rarest of British Mysidae. Its occurrence in the deep water of the Färö Channel, however, suggests a wide distribution at suitable depths. Its present known bathymetric range is from 568–800 fathoms, in water of a temperature above 0° C.

Dactylamblyops goniops, Tattersall.

D. goniops, Tattersall, 1907.
D. goniops, Zimmer, 1909.

Pl. II, fig. 1.
Pl. V, figs. 9–17.
Pl. VI, fig. 1.

s.s. *Helga.*

S. R. 359.—Townet on trawl.—One male and one female, 10 mm.
S. R. 364.—Townet on trawl.—One male, 11 mm.
S. R. 484.—Townet on trawl.—One male, 10 mm.
S. R. 489.—Townet on trawl.—Three males and two females, 10 mm.
S. R. 491.—Townet on trawl.—Three males and one female, 10 mm.
S. R. 493.—Townet on trawl.—Two males and one female, 10 mm.
S. R. 502.—Townet on trawl.—Seven males and nine females, 10 mm.
S. R. 504.—Townet on trawl.—Six.
S. R. 505.—Townet on trawl.—One male, 10 mm.
S. R. 506.—Townet on trawl.—Two males and two females.
S. R. 746.—Townet on trawl.—One male and three females, 10 mm.
S. R. 752.—Midwater otter trawl at 523–595 fms.—One.
S. R. 753.—Townet on trawl.—One male and three females, 12 mm.

s.s. *Goldseeker.*—See table, p. 69.

Carapace (Pl. II, fig. 1) covering all the thoracic segments except the last, which is fully exposed; evenly rounded in front and not produced into a rostral projection; antero-lateral corners rounded; emarginate behind; cervical sulcus well marked.

Pleon longer than the carapace; first segment slightly longer than the subequal second, third, fourth and fifth segments; sixth segment little more than one and a half times as long as the fifth.

Eyes (Pl. V, fig. 9) a little larger than in the last species, set close together, but free from the carapace and apparently with definite eyestalks; more subquadrangular than pyriform in shape; the digitiform process in the inner and upper face more slender and somewhat longer than in the last species; visual elements imperfectly developed, numerous; pigment, pale purplish pink.

Antennular peduncle (Pl. II, fig. 1) in the female extending a little more than half way up the scale, third joint rather shorter and not wider than the first; in the male (Pl. V, fig. 10) relatively a little longer with the third joint slightly longer and more robust than in the female; antennular process in the male well developed and densely hirsute.

Antennal peduncle (Pl. V, fig. 11) only slightly shorter than the antennular; third joint longer and more robust than the subequal first and second joints and overlapping dorsally the distal portion of the second joint so that the peduncle in lateral view looks contorted.

Antennal scale (Pl. V, figs 11, 12) extending for rather less than half its length beyond the antennular peduncle; from three to four times as long as broad; outer margin lightly sinuate and terminating

in a very strong spine which projects for its entire length beyond the apex of the scale ; outer distal corner of the basal joint prolonged into a long acute spine.

Mouth parts and first and second thoracic limbs (Pl. V, fig. 13) are in substantial agreement with the same appendages in the genus *Amblyops* and in the type species except that the terminal joint of the mandibular palp is shorter and somewhat more robust.

Third to the eighth thoracic limbs (Pl. V, figs. 14, 15) compared to those of the last species are relatively much shorter ; tarsus slightly shorter than the merus, first joint equal to or only slightly shorter than the other two joints, slightly inflated in the third, and more so in the succeeding limbs ; nail much shorter than the last joint of the tarsus.

Genital appendix to the eighth thoracic limbs of the male (Pl. V, fig. 17) short and tipped with about seven recurved setae.

Incubatory lamellae in the female, two pairs.

Pleopods conforming to the type seen in *Amblyops*.

Telson (Pl. VI, fig. 1. ; Pl. V, fig. 16) about three-quarters of the length of the last segment of the pleon and about twice as long an broad at its base ; entire and lanciform in shape, tapering distally to a narrowly rounded apex ; the distal two-thirds of its margin armed with about eighteen long slender spines increasing in length towards the apex ; the terminal spines equal in length to about one-seventh of the telson ; a single very slender median spine at the apex between the terminal spines of the margin ; median apical setae absent.

Uropods slender ; inner, only a little longer than the telson plus the terminal spines and having four long spines on the inner ventra margin in the region of the otocyst ; outer about one, and a half times as long as the telson.

Length of an adult and mature male and female, 10 mm.

This species is distinguished from the other members of the genus mainly by the structure and form of the eye which is widely different from that just described for *D. thaumatops* and that seen in *D. Hodgsoni*. Compared with *D. thaumatops* the antennal scale is longer and broader with a much more conspicuous spine at the termination of the outer margin. The telson in the two species is closely alike, but in *D. goniops* the spines are longer and the terminal median spine of this species is absent from the telson of *D. thaumatops*. There is no trace in *D. goniops* of the peculiar chela of the third thoracic limbs of the *D. thaumatops* and the thoracic limbs of the latter would appear to be longer and a little more slender than in *D. goniops*.

Distribution.—D. goniops is a more abundant form than *D. thaumatops* and has been met with on twelve occasions, all in townets attached to trawls. The vertical range at present known is 465–720 fathoms and the temperature of the water in all cases above 0° C. Its occurrence in the material collected by the *Goldseeker* in the Färö channel is the only extra-Irish record, but it will probably be found all along the Atlantic slope of these islands at suitable depths whenever they shall be explored.

GENUS **Amblyops**, G. O. Sars.

Amblyops abbreviata, G. O. Sars.

Additional records :—

s.s. *Helga.*

S. R. 321.—Townet on trawl.—Five.
S. R. 329.—Townet on trawl.—Two.
S. R. 330.—Townet on trawl.—One.
S. R. 338.—Townet on trawl.—Eight.
S. R. 351.—Townet on trawl.—Two.
S. R. 353.—Townet on trawl.—Five.
S. R. 359.—Townet on trawl.—One.
S. R. 365.—Townet on trawl.—Nineteen.
S. R. 367.—Townet on trawl.—One.
S. R. 440.—Townet on trawl.—Eight.
S. R. 447.—Townet on trawl.—Eighty.
S. R. 448.—Townet on trawl.—Seven.
S. R. 479.—Townet on trawl.—One.
S. R. 482.—Townet on trawl.—One.
S. R. 487.—Townet on trawl.—Eight.
S. R. 502.—Townet on trawl.—Two.
S. R. 504.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—One.
S. R. 754.—Townet on trawl.—One.

s.s. *Goldseeker.*—See table, p. 69.

Amblyops Kempi (Holt and Tattersall, 1905 (1)).

Pseudomma Kempi, H. and T., 1906 (2).
Pseudomma Kempi, Tattersall, 1909.
Pseudomma Kempi, Zimmer, 1909.

Additional records :—

s.s. *Helga.*

S. R. 331.—Townet on trawl.—Two.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Six.
S. R. 363.—Townet on trawl.—Two.
S. R. 364.—Townet on trawl.—One.
S. R. 397.—Townet on trawl.—Three.
S. R. 398.—Townet on trawl.—One.
S. R. 477.—Townet on trawl.—Eight.
S. R. 479.—Townet on trawl.—One.
S. R. 487.—Townet on trawl.—Five.
S. R. 489.—Townet on trawl.—Two.
S. R. 497.—Townet on trawl.—Four.
S. R. 499.—Townet on trawl.—Twelve.
S. R. 504.—Townet on trawl.—Two.
S. R. 506.—Townet on trawl.—Three.
S. R. 593.—Townet on trawl.—Thirty.
S. R. 753.—Townet on trawl.—Six.

s.s. *Goldseeker.*—See table, p. 69.

This was originally described as a species of *Pseudomma* from a supposed mature but really immature female specimen 11 mm. in length, and six much smaller examples.

The acquisition of fully grown specimens has enabled me to prove that the species is, in reality, a true *Amblyops* very nearly allied to *A. abbreviata*, G. O. Sars. The largest specimens measure 16 mm. They have the eyes completely separated and not united at the base as in *Pseudomma*. The teeth described as arming the antero-lateral corners of the eye have proved to be only part of a general armature of small spinules which covers this portion of the eye plate and which seems to be a pronounced form of the general hispidity of the rest of the eye. They are not true serrations as in the species of *Pseudomma*. *A. Kempi* is very closely allied to *A. abbreviata*, but differs :—

(1) In the presence of a spinulose armature on the eye plates.

(2) In the more pronounced and acuter form of the spine on the basal joint of the antennal scale.

(3) In the different shape of the telson and in the longer spines arming the margins of the latter.

The various appendages of the two species are in the closest agreement.

Comparing our records of *A. abbreviata* with those of *A. Kempi*, it is found that the vertical distribution of the former extends from 200–627 fathoms, and of the latter, 382–800 fathoms. *A. abbreviata*, however, occurs in greatest numbers at about the 350-fathom line, while *A. Kempi* is most abundant between 600–800 fathoms. The forms appear, therefore, to have distinct centres of maximum abundance, but the two areas of distribution overlap. This is interesting, and suggests that the deeper-water form is but a recent offspring of the shallower-water species, so recent, that the areas of distribution have not yet become completely marked off from each other, yet so far remote that structurally the two forms are distinct and easily separated when captured together.

I have noted above what appears to be a parallel case in *Dactylerythrops dactylops* except that in the latter case evolution has not proceeded so far and the deepest-water form is still apparently connected, by a series of intermediate forms, with the shallowest-water varietys so that it is not yet practicable to apply separate specific designation, to the extremes.

Amblyops tenuicauda, sp. nov.

Pl. II, fig. 2.
Pl. VI, figs. 2–8.

s.s. *Helga*.

S. R. 487.—Townet on trawl.—One male, 16 mm.
S. R. 502.—Townet on trawl.—One male, 15 mm.
S. R. 504.—Townet on trawl.—One female, 15 mm.
S. R. 506.—Townet on trawl.—One female, 15 mm.

S. R. 593.—Townet on trawl.—Two males and four females, 15–17 mm.

S. R. 753.—Townet on trawl.—Two males, 15 mm.

s.s. *Goldseeker*.—See table, p. 69. Seven males and one female, 14–16 mm.

Carapace (Pl. II, fig. 2) covering all the thoracic segments except the last; broadly and evenly rounded in front without trace of rostral projection; antero-laternal angles rounded; emarginate behind; cervical sulcus well marked.

Pleon longer than the carapace; first segment a little longer than the subequal second, third, fourth and fifth segments; sixth segment about double the length of the fifth.

Eyes (Pl. VI, fig. 2) rather small, set close together and apparently without definite eye-stalks; subquadrangular in shape, barely reaching distal end of the first joint of the antennular peduncle; a small digitiform process on the inner and upper face; margins quite smooth; no pigment in preserved specimens.

Antennular peduncle (Pl. VI, fig. 3) very little more than half the length of the antennal scale; third joint a little longer than the first and a little stouter in the male than in the female; male appendage well developed and densely hirsute.

Antennal peduncle (Pl. VI, fig. 4) scarcely reaching to the distal end of the antennular peduncle; three joints roughly subequal.

Antennal scale (Pl. VI, fig. 4) comparatively large, almost twice as long as the antennular peduncle; four times as long as broad; outer margin entire and terminating in a very strong spine which projects for its entire length beyond the apex of the scale; there is in many of the specimens a second small spine on the inner margin of the large one; outer distal corner of the basal joint produced into a prominent acute spine.

Mouth parts agreeing in the main with the type species.

First and second thoracic limbs (Pl. VI, fig. 5) compared with the type are much more robust, especially the second pair which have the merus and carpus relatively shorter than in *A. abbreviata* but much stouter; nail very strong.

Third to eighth thoracic limbs (Pl. VI, fig. 6) shorter and stouter than in the type species; tarsus shorter than the merus, robust, three-jointed, first joint a little longer than the second, which in turn is longer than the third; the whole inner margin of the tarsus armed with strong stout spiniform setae; nail short and stout, about equal in length to the last joint of the tarsus.

Exopods of all the thoracic limbs rather short, outer corner of the expanded basal joint slightly acuminate, flagelliform part composed of about ten joints.

Pleopods (Pl. VI, fig. 8) of the male conforming generally to the type species.

Telson (Pl. VI, fig. 7) rather long and slender, about equal in length to the last segment of the pleon; about two and a half times as long as broad at its base; margins rapidly narrowing to an acute apex

armed with two long spines which are equal to one-seventh of the length of the telson ; lateral margins throughout the distal two-thirds of their length armed with about twelve rather distant spines increasing in length towards the apex and distally rather long and slender ; a pair of median plumose setae situated at the apex between the terminal spines.

Uropods rather long and slender ; inner, very little longer than the telson plus the terminal spines, with a single small spine on the inner ventral margin in the region of the otocyst ; outer, one and a half times as long as the telson.

Length of the largest male and female, mature, 17 mm.

This fine species occupies a place intermediate in position between the genera *Amblyops* and *Dactylamblyops*. It differs from the genus *Amblyops* in possessing a digitiform process on the eye, but, on the other hand, the eyes have no definite stalks and are apparently formed as in *Amblyops*, though rather smaller. On the whole, I have preferred to refer the species to the latter genus as in size, build and superficial aspect it has all the appearance of an *Amblyops*. From the type it differs rather markedly in the form of the telson and in the more robust form of the thoracic limbs.

Distribution.—Known only from the above records off the South-West of Ireland and in the Färö Channel, in depths varying from 447–770 fathoms. It is presumably a bottom-haunting form and by no means rare at suitable depths.

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

Pseudomma affine, G. O. Sars.

P. roseum, Patience, 1905.

Additional records :—

s.s. *Helga.*

S. R. 330.—Townet on trawl.—One.
S. R. 338.—Townet on trawl.—Thirty-nine.
S. R. 351.—Townet on trawl.—Thirty-eight.
S. R. 353.—Townet on trawl.—Two.
S. R. 360.—Townet on trawl.—Eleven.
S. R. 365.—Townet on trawl.—Forty-seven.
S. R. 379.—Townet on trawl.—One.
S. R. 440.—Townet on trawl.—Ten.
S. R. 447.—Townet on trawl.—One hundred and fifty.
S. R. 448.—Townet on trawl.—Twenty-seven.
S. R. 479,—Townet on trawl.—Nineteen.
S. R. 482.—Townet on trawl.—One.
S. R. 486.—Townet on trawl.—One.
S. R. 487.—Townet on trawl.—One.
S. R. 489.—Townet on trawl.—One.

S. R. 504.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—Thirteen.
S. R. 592.—Townet on trawl.—One.
S. R. 754.—Townet on trawl.—One.

s.s. *Goldseeker*.—See table, p. 69.

I have referred above (p. 3) to Patience's record of *P. affine* under the name of *P. roseum*. The latter is known as British from the Färö Channel, and I am indebted to Dr. Scott for kindly presenting me with two fine specimens which agree perfectly with the descriptions and figures given by Sars.

Pseudomma calloplura, Holt and Tattersall, 1905 (1).

Additional records :—

s.s. *Helga*.

S. R. 321.—Townet on trawl.—Seven.
S. R. 351.—Townet on trawl.—Twenty-six.
S. R. 353.—Townet on trawl.—One.
S. R. 363.—Townet on trawl.—One.
S. R. 440.—Townet on trawl.—Six.
S. R. 447.—Townet on trawl.—Thirty-nine.
S. R. 448.—Townet on trawl.—One.
S. R. 491.—Townet on trawl.—One.
S. R. 499.—Townet on trawl.—One.
S. R. 502.—Townet on trawl.—Twenty-three.
S. R. 592.—Townet on trawl.—One.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Two.

s.s. *Goldseeker*.—See table, p. 69.

Beyond noting an increase of 320 fathoms in bathymetric distribution, there is nothing to add to the previous account of this species. It is, however, not so abundant in water exceeding 500 fathoms as in less depths.

Pseudomma nanum, Holt and Tattersall, 1906 (2).

Additional records :—

s.s. *Helga*.

S. R. 353.—Townet on trawl.—One.
S. R. 447.—Townet on trawl.—Three.
S. R. 506.—Townet on trawl.—One.
S. R. 593.—Townet on trawl.—One.
S. R. 753.—Townet on trawl.—Three.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Two.

s.s. *Goldseeker*.—See table, p. 69.

The above records increase the bathymetric range of this species by 400 fathoms, the previous greatest depth at which it had been captured being 372 fathoms, while the depth at S. R. 593 in the above list was 670–770 fathoms. Its capture by the *Goldseeker* in the Färö Channel extends the known geographical distribution considerably, but it has yet to be recorded from outside the British-and-Irish area.

Pseudomma sp.

Pl. VIII, fig. 5.

s.s. *Helga.*

S. R. 851.—Midwater otter trawl at 900 fms.—One female, 15 mm.

The single specimen of this form does not appear to be referable to any of the known species of the genus. It approaches most nearly to *Pseudomma nanum*, H. and T., but differs from that species in the following points :—

(1) *Size.* *P. nanum* is adult at 8 mm., and I have never seen specimens undoubtedly referable to this species larger than 10 mm. The present specimen is 15 mm. in length and is thus much larger than the average of *P. nanum.*

(2) *The antennular peduncle* of *P. nanum* is only very slightly shorter than the antennal scale, whereas in the species now under notice it is only about one-half of the length of the antennal scale (Pl. VIII, fig. 5).

(3) *The inner and outer uropods* of *P. nanum* are respectively once and a quarter and once and a half as long as the telson. In the present specimen the proportions are once and a half and twice the length of the telson and are thus relatively longer than in *P. nanum.*

The telson is as long as the last pleon segment and the armature is almost exactly as in *P. nanum*, i.e., the margins are unarmed and the apex is armed with four pairs of spines and a pair of median apical setae. The largest of the apical spines is about one-sixth of the length of the telson. The armature of the eyes could not be made out as the teeth had been apparently rubbed off.

Having but one rather imperfect specimen of this form, I have hesitated to establish a new species for its reception, though it seems to be quite distinct from any described form.

Genus **Paramblyops,** Holt and Tattersall, 1905 (1).

Paramblyops rostrata, Holt and Tattersall, 1905 (1).

P. rostrata, Hansen, 1908.

Additional records :—

s.s. *Helga.*

S. R. 336.—Townet on trawl.—Four.
S. R. 351.—Townet on trawl.—Two hundred.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Three.
S. R. 353.—Townet on trawl.—Five.

S. R. 397.—Townet on trawl.—Two.
S. R. 398.—Townet on trawl.—One.
S. R. 440.—Townet on trawl.—Thirty-eight.
S. R. 447.—Townet on trawl.—Thirty-five.
S. R. 448.—Townet on trawl.—Eleven.
S. R. 487.—Townet on trawl.—Twenty-three.
S. R. 494.—Townet on trawl.—One.
S. R. 496.—Townet on trawl.—One.
S. R. 497.—Townet on trawl.—Four.
S. R. 502.—Townet on trawl.—Four.
S. R. 506.—Townet on trawl.—Five.
S. R. 590.—Townet on trawl.—One.
S. R. 592.—Townet on trawl.—One.
S. R. 593.—Townet on trawl.—Four.
S. R. 752.—Midwater otter trawl at 523—595 fms.—Eight.
S. R. 753.—Townet on trawl.—Two.
S. R. 754.—Townet on trawl.—Twenty-eight.
S. R. 851.—Midwater otter trawl at 900 fms.—Five.

s.s. *Goldseeker*.—See table, p. 69.

Beyond noting an increase in the known vertical distribution of this species, from 500 to 900 fathoms, there is nothing further in these specimens which calls for remark.

Paramblyops bidigitata, sp. nov.

Pl. VIII, figs. 2–4.

s.s. *Helga*.

S. R. 851.—Midwater otter trawl at 900 fms.—Seven; one mature female, 15 mm., three immature females, 10–13 mm., and three immature males, 10–14 mm.

Carapace produced in front into a long acute rostrum extending slightly beyond the distal margin of the second joint of the antennular peduncle; the sides of the rostral projection not toothed or serrated in any way (Pl. VIII, fig. 3).

Eyes (Pl. VIII, fig. 3) rather small, without visual elements, produced into two digitate processes, the outer one of which is longer, more slender and more acute than the inner one.

Antennular peduncle (Pl. VIII, fig. 3) with the outer distal corner of the basal joint somewhat produced and armed at the tip with a few setae; third joint about equal in length to the first. The male specimens are immature and consequently the antennular brush of setae is not developed but the process which bears the setae is already well formed and prominent.

Antennal scale (Pl. VIII, figs. 2, 3) about one and a half times as long as the antennular peduncle, four times as long as broad, outer margin entire and terminating in a well developed acute spine beyond

which the apex of the scale is not produced; basal joint from which the scale springs, with a well developed acute spine on its outer distal corner.

Antennal peduncle (Pl. VIII, fig. 2) equal in length to the antennular; terminal joint two-thirds of the length of the second.

Pleon having the first segment a little longer than the subequal second to the fifth segments; sixth segment more than twice as long as the fifth.

Telson (Pl. VIII, fig. 4) about two-thirds of the length of the sixth segment of the pleon and almost twice as long as broad at its base; apex truncate, its breadth equal to about one-fifth of the length of the telson, armed with a medium pair of apical setae, a medium spinule and five pairs of strong spines, the longest of which is equal in length to the breadth of the apex; lateral margins armed with about twelve short and rather stout spines.

Inner uropods once and a half as long as the telson, a single slender spine on the inner ventral margin near the otocyst.

Outer uropods twice as long as the telson.

Labrum produced into a long, strong, scythe-like, pseudorostral process, equal in length to the true rostrum.

All the males and all the immature females have the sterna of the second to the eighth thoracic segments armed with rather prominent forwardly directed and distinctly serrated scythe-like median processes but in the single mature female these processes are absent. Similar processes have been described in the males of *Hypererythrops serriventer*, H. and T. 1905 (1).

Such appendages as still remained attached to the present specimens present no prominent points of difference from those of the type species, but rudimentary epipodal processes appear to be present on all the thoracic limbs.

Length of a mature female, 15 mm.

This species is an interesting addition to the genus *Paramblyops*, and agrees closely in its generic characters with the type species, *P. rostrata*, H. and T. It differs from the latter:—

(1) In having the rostrum unarmed.

(2) In the bidigitate character of the eyes.

(3) In the proportional length of the uropods as compared with the telson. In *P. rostrata* both uropods are subequal and but little longer than the telson. In *P. bidigitata* they are relatively much longer and the outer one is one and a quarter times as long as the inner.

(4) In the details of the armature of the telson.

(5) In possessing processes on the sterna of the second to the eighth thoracic segments of males and immature females.

(6) In the comparatively larger size of mature specimens, 15 mm. as against 10 mm. for *P. rostrata*.

GENUS **Metamblyops**, Tattersall, 1907.

Metamblyops, Zimmer (1909).

The definition of this genus, as given in 1907, is recapitulated here.

Characters essentially as in *Amblyops*, G. O. Sars, except :—

Carapace produced in front into a well-developed, rather long and acute rostrum.

Eyes well developed, normal in appearance and structure, pigment light reddish brown.

Telson entire, lanciform in shape, its margin armed with more or fewer spines, median setae absent.

Inner uropod with a few spines on its inner margin in the region of the otocyst. Female with only two pairs of incubatory lamellae.

Type species, *Metamblyops oculata*, Tattersall.

Metamblyops oculata, Tattersall, 1907.

M. oculata, Zimmer, 1909.

Pl. II, fig. 3.
Pl. III, figs. 1–6.

s.s. *Helga*.

S. R. 352.—Townet on trawl.—Thirteen males and fourteen females, 10–16 mm.
S. R. 493.—Townet on trawl.—One male, 11 mm.
S. R. 502.—Townet on trawl.—Thirty-six.
S. R. 506.—Townet on trawl.—One male, 15 mm.

s.s. *Goldseeker*.—See table, p. 69. One male and four females, 8–16 mm.

General form (Pl. II, fig. 3) robust and compact.

Carapace (Pl. II, fig. 3) covering all the thoracic segments ; produced in front into a very slightly upturned acute rostrum (Pl. III, fig. 1) reaching as far as or even slightly beyond the eyes ; terminal angle about 60°, its apex produced into a short acute point ; antero-lateral corners evenly rounded ; posterior border emarginate ; cervical sulcus well marked.

Pleon longer than the carapace ; first segment one and a half times as long as the second, which is subequal to the third and fourth ; fifth segment slightly longer than the fourth ; sixth segment twice as long as the fifth.

Eyes large, well developed and normal in structure ; extending as far forward as the distal end of the first joint of the antennular peduncle ; pigmented portion equal in width to the last pleon segment ; pigment light reddish brown ; a minute papilla is present on the inner distal part of the peduncle just where it meets the cornea ; the eye is slightly flattened, dorso-ventrally, as in the genus *Erythrops*, but not to the same extent.

Antennular peduncle (Pl. III, fig. 3) about twice as long as the eye; third joint slightly shorter, but considerably stouter than the first and more robust in the male than in the female; second joint short; two simple setae on the inner distal corner of the first joint and a few on the outer distal corner of the third; male appendage well developed and densely hirsute, of normal shape and structure.

Antennal peduncle (Pl. III, fig. 2) short, not extending beyond the distal end of the second joint of the antennular peduncle and composed of three subequal quadrangular joints.

Antennal scale (Pl. III, fig. 2) about one-third as long again as the antennular peduncle and twice as long as the antennal; about three and a half times as long as broad; outer margin entire and terminating in a strong spine beyond which the apex of the scale is not produced; spine on the outer distal corner of the basal joint quite short but acute; a minute second joint marked off at the apex of the scale as in *Amblyops*.

Mouth parts essentially as in the genus *Amblyops* except that the second joint of the mandibular palp is considerably broader than that figured by Sars for *A. abbreviata*.

First and second thoracic limbs (Pl. III, fig. 4) likewise as for *A. abbreviata* except that the latter limb has the endopod proportionately longer—twice as long as that of the first thoracic limb and longer than its own exopod; a distinct dactylus is present on the second thoracic limb, but is hidden in the dense mass of setae arming the extremity of the propodus.

Remaining thoracic limbs (Pl. III, fig. 5) having the endopods long and slender but not differing much in length *inter se*; tarsus longer than the merus, composed of three joints, the third longer than the second and often flexed as shown in the figure, armed on the inner margin with groups of long simple setae; dactylus well developed and acute. *Exopods* of all the thoracic limbs having a small tooth on the outer distal corner of the lamella-like basal joint and having the flagelliform part composed of from nine to ten joints.

Incubatory lamellae in the female, two pairs.

Genital appendix to the eighth thoracic limb of the male slightly longer than in *Amblyops* and of more even width throughout but otherwise of the same structure and similarly armed.

Pleopods in the male agreeing in all essential particulars with those of the males of *Amblyops*.

Telson (Pl. III, fig. 6) not quite so long as the sixth segment of the pleon and about twice as long as broad at its base where the lateral margins are slightly expanded; entire and narrowly lanciform in shape, tapering evenly to a narrowly rounded apex; distal two-thirds of its lateral margins armed with from twenty-eight to thrity-two short spines increasing in length towards the apex; terminal spines about one sixteenth of the length of the telson; median setae absent from the apex.

Uropods slender; inner, about one and a half times as long as the tolson, with about six spines on its inner margin in the region of the etocyst; outer, about twice as long as the telson.

Length of an adult female, 16 mm.; of an adult male, 15 mm.

This is essentially an *Amblyops* with eyes of normal structure and functional as visual organs. The closest agreement exists otherwise in the structure of the various appendages, but the eyes and the rostral projection of the carapace would appear to justify its generic separation. It is possible indeed, that *Metamblyops* is synonymous with Illig's genus *Chalcophthalmus*, but the details of the latter as at present published are not sufficient to be sure on this point. The type and only known species of *Chalcophthalmus*, *C. latisquamosus*, appears to be a much more slender and less compact form than *M. oculata*, with a shorter carapace, smaller eyes having a conspicuous dorsal papilla and much shorter and broader antennal scale. The telson is strikingly like that of *M. oculata*. It was captured near Sumatra, and is a bathypelagic species, rather than bottom-living. *M. oculata*, to judge from the list of captures, is a creature of the bottom, and is by no means rare at suitable depths. Its vertical range is, at present, 500–800 fathoms, and its horizontal distribution is already extended to the Färö Channel, by its capture by the *Goldseeker*.

GENUS **Longithorax**, Illig, 1906.

Longithorax fuscus, Hansen, 1908.

L. fuscus, Zimmer, 1909.

s.s. *Helga*.

S. R. 481.—Midwater otter trawl at 600–900 fms.—One female, 17 mm.

s.s. *Thor*.—See table, p. 70. One female, 25 mm.

The female taken by the *Thor* has the incubatory lamellae, two pairs, fully formed, and is, presumably, adult. There are seven lateral spines on each margin of the telson in addition to the four terminal ones at the apex. The inner uropod bears three or four spines on the inner margin near the otocyst.

The smaller female taken by the *Helga* agrees with Hansen's description of a female, 17·5 mm. in length. The male is, as yet, unknown.

The genus *Longithorax* was founded by Illig (1906) for a species *L. similerythrops* captured in the Pacific near the Amirante Islands, off the East Coast of Africa. Illig's specimen measured only 7 mm. in length and there is nothing in his published description to distinguish it from *L. fuscus* except that the telson is figured without lateral spines and with only two very small apical ones. This difference may be due to the small size and immaturity of Illig's specimen.

Illig's record of *L. similerythrops*, Hansen's of *L. fuscus* and those now given for the latter species refer to a bathypelagic form inhabiting comparatively great depths, and if future investigations should prove that *L. fuscus* is synonymous with *L. similerythrops*, as indeed is not improbable, there would be nothing unusual in such a bathypelagic species having a wide geographical range. *Eucopia unguiculata* presents the necessary illustration.

In the meantime the present specimens are certainly *L. fuscus*.

L. fuscus is an addition to the British-and-Irish list and is known otherwise only from a single specimen captured by the s.s. *Thor* to the South of Iceland.

GENUS **Mysideis**, G. O. Sars.

Mysideis insignis, G. O. Sars.

Additional records :—

s.s. *Helga.*

S. R. 338.—Townet on trawl.—One.
S. R. 351.—Townet on trawl.—Thirty-six.
S. R. 353.—Townet on trawl.—One.
S. R. 361.—Townet on trawl.—Two.
S. R. 380.—Townet on trawl.—One.
S. R. 447.—Townet on trawl.—Five.
S. R. 487.—Townet on trawl.—One.
S. R. 489.—Townet on trawl.—One.
S. R. 502.—Townet on trawl.—Three.

The record from S. R. 487 increases the known bathymetric range of this species from 372 to 660 fathoms.

GENUS **Mysidopsis**, G. O. Sars.

Mysidopsis didelphys (Norman).

Additional records :—

s.s. *Helga.*

S. R. 360.—Townet on trawl.—One.
S. R. 361.—Townet on trawl.—Five.
S. R. 362.—Townet on trawl.—Four.
S. R. 379.—Townet on trawl.—One.
S. R. 384.—Townet on trawl.—One.
S. R. 807.—Townet on trawl.—One.

s.s. *Goldseeker.*—See table, p. 69.

GENUS **Bathymysis**, Tattersall, 1907.

Bathymysis, Zimmer, 1909.

Carapace evenly rounded in front, without any trace of rostral projection.

Eyes small, set close together, apparently without definite eye-stalks, somewhat flattened and subquadrangular in shape ; visual elements imperfectly developed and unpigmented in preserved specimens.

Antennal scale shortly lanceolate in shape, setose all round, with a small second joint.

Mouth-organs and first and second thoracic limbs as described by Sars for the genus *Leptomysis* except that the terminal joint of the palp

of the second maxilla is expanded at its apex and armed with numerous short stout spines, the whole appendage being generally as figured by Sars for *Schistomysis spiritus*.

Tarsus of the remaining thoracic limbs four-jointed; nail long and slender.

Telson fairly long; very deeply cleft, the cleft serrated; lateral margins armed throughout their length with spines.

Inner uropod with a row of spines all along its inner margin.

Pleopods in the male exactly as for the genus *Leptomysis*.

Type species, *Bathymysis Helgae*.

In the general structure of the appendages of the thorax (with the exception of the second maxillae), and especially of the pleopods of the male, this genus agrees almost exactly with *Leptomysis*, G. O. Sars. The chief points of difference are to be found in the second maxillae, telson, and eyes. The first two of these structures are interesting as exhibiting a form met with in many of the genera of the sub-family Mysinae, while the eyes appear to have undergone specialization and reduction along lines very similar to *Amblyops*, the eyes of which they strongly recall, though rather smaller in size. *Bathmysis* also bears considerable resemblance to the genus *Pseudomysis*, G. O. Sars, but the greatly different form of the telson and eyes at once distinguishes it.

Bathymysis Helgae, Tattersall, 1907.

B. Helgae, Zimmer, 1909.

Pl. I, fig. 2.
Pl. VI, figs. 9, 10.
Pl. VII, figs. 1–7.

s.s. *Helga*.

S. R. 364.—Townet on trawl.—One male, 15 mm.
S. R. 477.—Townet on trawl.—One male, 13 mm.
S. R. 489.—Townet on trawl.—One male and two females, 13–15 mm.
S. R. 502.—Townet on trawl.—One male and two females, fragmentary.
S. R. 506.—Townet on trawl.—Two males.

s.s. *Goldseeker*.—See tables, p. 69. One male, 11 mm. and one female, 9 mm.

Carapace (Pl. I, fig. 2) short, leaving the last three thoracic segments fully exposed, evenly rounded in front and at the antero-lateral corners; without trace of rostral projection; emarginate behind; cervical sulcus well marked.

Pleon longer than the carapace; the first segment equal in length to the fifth, and slightly longer than the subequal second, third and fourth segments; sixth segment one and a half times as long as the fifth.

Eyes (Pl. VI, fig. 9) very like those in the genus *Amblyops*; rather small, set close together, apparently without definite eye-stalks, subquadrangular in shape, not reaching to the distal end of the first joint of the antennular peduncle and very little wider than the latter, without

armature or processes of any kind; visual elements imperfectly developed and without pigment in preserved specimens.

Antennular peduncle (Pl. VI, fig. 10) in the female slightly shorter than the antennal scale, in the male almost equal to the scale; third joint equal to the combined length of the second and first joints; male appendage well developed and profusely hirsute.

Antennal peduncle (Pl. VII, fig. 1) a little shorter than the antennular, with the second joint one and a half times as long as the third.

Antennal scale (Pl. VII, fig. 1) equal to or a little longer than the antennular peduncle; shortly lanceolate or oval in shape; about four and a half times as long as broad; setose all round; second joint about one quarter of the total length of the scale; spine on the outer distal corner of the basal joint small and almost obsolete.

Mouth parts as described in the generic definition. The terminal joint of the palp of the second maxilla is figured (Pl. VII, fig. 2), to show the difference between it and the genus *Leptomysis* and its approach to the condition seen in the sub-family Mysinae.

First and second thoracic limbs (Pl. VII, figs. 3, 4) compared with those of *Leptomysis* are essentially of the same form but relatively more robust, especially the second pair.

Third to the eighth thoracic limbs (Pl. VII, fig. 5) long and slender; tarsus a little shorter than the merus, apparently four-jointed, the first joint the longest; nail long and slender, as long as the last two joints of the tarsus combined.

Pleopods of the male agreeing well with those of the genus *Leptomysis*. The fourth pair (Pl. VII, fig. 7) have the outer branch longer than the inner with the last three joints devoid of fine setae; the ante-penultimate joint carries a single long and powerful plumose or barbed spine; the penultimate joint is armed with a single similar but smaller spine and the terminal joint with two similar spines.

Telson (Pl. VII, fig. 6) equal to the last segment of the pleon, sometimes slightly longer or shorter and twice as long as broad at its base; narrowing only very slightly towards the apex, where its breadth is equal to one-third of its length; cleft deep, the width varying in individual specimens, about one-third of the telson in length and serrated with about thirty spines on each side; the apical lobes on each side of the cleft bluntly rounded; lateral margins of the telson armed throughout their entire length with about forty spines, which increase slightly in length towards the apex, but without any single outstanding long spine at the apex of each lobe as seen in species of *Schistomysis* and *Mysis*.

Uropods slender; inner, about one and a quarter times as long as the telson, inner ventral margin armed with about thirty-seven spines; outer, one and a half times as long as the telson.

Length of the largest specimens, a mature male and female, 15 mm.

An important error occurs in the preliminary description of this species where the carapace is stated to cover all the thoracic segments.

The first specimen reached me in two pieces, and it was in its attempted reconstruction that the mistake arose. The carapace is, in reality, small and leaves three thoracic segments fully exposed.

The exopods of the thoracic limbs appear to be relatively unusually long and slender, and are very little shorter than the endopods. This species is very distinct from any Mysid known to me and is very easily recognised. It approaches most nearly to the genera *Leptomysis* and *Pseudomysis* among the Leptomysinae, both of which agree with *Bathymysis* in having the antennal scale setose all round, but the form of the eyes, recalling those of *Amblyops*, and the shape and armature of the telson, strongly reminiscent of many genera among the Mysinae, are sufficient to separate *Bathymysis* at a glance from either of the other genera.

Distribution.—As yet only known from the above records from the S.W. of Ireland and from the Färö Channel. Its bathymetric range as at present known is 447–720 fathoms.

Sub-Family *ARACHNOMYSINAE*, H. and T., 1905 (1).

Genus **Arachnomysis**, Chun.

Arachnomysis Leuckarti, Chun.

s.s. *Helga.*

S. R. 851.—Midwater otter trawl at 900 fms.—Two, 8 mm.

This remarkable mysid has hitherto only been recorded from the Mediterranean, so that its capture off the South-West of Ireland has a twofold interest in that it is the first record of the species from the Atlantic, and further represents an addition to the Mysid fauna of the British Isles. The two specimens are typical, and call for no remark.

Genus **Chunomysis**, Holt and Tattersall, 1905 (1).

Chunomysis diadema, Holt and Tattersall, 1905 (1).

Pl. VIII, figs. 6, 7.

Additional records :—

s.s. *Helga.*

S. R. 321.—Townet on trawl.—One.
S. R. 352.—Midwater otter trawl at 700–750 fms.—One.
S. R. 363.—Townet on trawl.—One.
S. R. 397.—Townet on trawl.—One.
S. R. 448.—Townet on trawl.—One.
S. R. 491.—Townet on trawl.—One.
S. R. 493.—Townet on trawl.—One.
S. R. 494.—Townet on trawl.—Three.
S. R. 497.—Townet on trawl.—One.
S. R. 499.—Townet on trawl.—One.
S. R. 502.—Townet on trawl.—Two.
S. R. 504.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—One.

S. R. 506.—Townet on trawl.—One.
S. R. 590.—Townet on trawl.—Two.
S. R. 592.—Townet on trawl.—Two.
S. R. 593.—Townet on trawl.—Three.
S. R. 851.—Midwater otter trawl at 900 fms.—Three.

s.s. *Goldseeker*.—See table, p. 69.

The acquisition of more material in a better state of preservation than the type specimens has enabled me to correct some errors in the previous description and to complete the diagnosis of the species.

In the figure already given of the mandibular palp there is shown a small second joint between a large first and third joint. The mandibular palp is in reality normally constructed with a small basal joint (not shown in the figure), a large second joint (the first and second joints of the figure combined) and a smaller third joint (correctly figured). The error arose from the fact that in the original preparation of the mandible and palp there is a mark which I, at the time, took to be a suture across the true second joint at the point indicated where the joint becomes suddenly narrower. I am unable to find this supposed suture in later dissections, and I am led to believe that it was caused by a bending of the joint. There is a weak molar tubercle present on the mandible which is not shown in the figure.

I figure (Pl. VIII, fig. 6) the endopod of the last thoracic leg of a male specimen, 10 mm. in length. The figure, which is typical of those of the third to the eighth thoracic limbs of the species, shows the endopods to be long and very slender, with the tarsus longer than the merus and three-jointed, the first joint longer than the second and third combined, the third joint a little longer than the second, the dactylus long and slender. The front margin of the merus and the tarsus is beset with numerous specialised setae, the "kegelformigen" bristles described by Chun for *Arachnomysis Leuckarti*. An enlarged figure of one of these bristles is given (Pl. VIII, fig. 7) showing them to consist of a rather stout cylindrical rod terminating in a long, filiform seta-like extremity and adorned with numerous fine hairs. The pleopods of the male conform to the general type of the sub-family Leptomysinae and present no features of note. The fully adult male measures 10 mm. and has the antennular brush profusely setose.

I am indebted to Mr. Kemp for a note of the colour of the species when alive. The thorax and its appendages are black, the pleon white, and the eyes red.

On each occasion on which this species has been captured it has been taken in a net attached to trawls fishing on the bottom. The opinion, therefore, previously expressed as to the probably pelagic habit of this species must be changed, for it appears really to live at the bottom, in spite of its long and filiform thoracic limbs and the feeble lamellar-like form of the telson, features usually associated in Mysidae with a pelagic existence. The species has now been taken on twenty-two occasions and no evidence in favour of a bathypelagic life has been brought to light.

Its occurrence in the Färö Channel considerably extends its known geographical range, but this is still confined to the Atlantic slope of the British-and-Irish area.

SUB-FAMILY *MYSIDETINAE*, H. and T., 1906 (2).

GENUS **Mysidetes**, Holt and Tattersall, 1906 (2).

Mysidetes Farrani (Holt and Tattersall, 1905 (1)).

M. Farrani, H. and T., 1906 (2).

Additional records :—

s.s. *Helga.*

S. R. 321.—Townet on trawl.—One.
S. R. 331.—Townet on trawl.—One.
S. R. 351.—Townet on trawl.—One.
S. R. 353.—Townet on trawl.—Eleven.
S. R. 359.—Townet on trawl.—Twenty-eight.
S. R. 387.—Townet on trawl.—Six.
S. R. 447.—Townet on trawl.—Eight.
S. R. 448.—Townet on trawl.—Two.
S. R. 489.—Townet on trawl.—One.
S. R. 490.—Townet on trawl.—Twenty.
S. R. 491.—Townet on trawl.—Twenty-one.
S. R. 493.—Townet on trawl.—Two.
S. R. 496.—Townet on trawl.—Five.
S. R. 502.—Townet on trawl.—Sixteen.
S. R. 505.—Townet on trawl.—Two.
S. R. 590.—Townet on trawl.—Eleven.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Two.
S. R. 753.—Townet on trawl.—Four.
S. R. 805.—Townet on trawl.—One.
S. R. 851.—Midwater otter trawl at 900 fms.—One.

The largest specimens measured 30 mm. in total length.

There is nothing new to note with reference to this form except the greatly increased vertical range revealed by the above records, viz., 220–900 fathoms, and the fact that it is by no means a rare species.

SUB-FAMILY *MYSIDELLINAE*, Czerniavsky, 1882.

GENUS **Mysidella**, G. O. Sars.

Mysidella typica, G. O. Sars.

Additional record :—

s.s. *Helga.*

S. R. 351.—Townets on trawl.—Two.

The recent record of this species from the Mediterranean (Tattersall, 1909) extends its known distribution considerably, the captures from the West of Ireland having been hitherto the most southern known. It still proves to be rather rare off our coast.

Sub-Family *CALYPTOMMINAE*, Tattersall, 1909.

In working through the Schizopoda collected by the *Maia* and *Puritan* in the Mediterranean I came across a large number of specimens of a very small anomalous Mysid which I described as *Calyptomma Puritani*. The material of this form was in a very bad state of preservation and, in spite of there being over fifty specimens, it was not possible to draw up a complete diagnosis of the species. It seemed, nevertheless, necessary to institute this sub-family for its reception, because of the curious form of the fourth and fifth pleopods of the male, which are considerably elongated and uniramous, the first three being short and simple as in the female. At the same time, none of the female specimens were sufficiently well preserved to enable the form of the pleopods to be correctly described, and I therefore diagnosed the sub-family as follows :—Males having the first, second and third pleopods rudimentary as in the female, the fourth and fifth pleopods elongate consisting of a single uni-articulate ramus.

In November, 1909, the *Helga* collected off the south-west coast of Ireland eighty-eight specimens of a Mysid which has been described under the name *Pseudomma parvum* by Vanhöffen (1898 and 1907), and still more recently adequately figured by Hansen (1908) under the same name.

In the females of this species the fifth pleopods are considerably more elongate than is usual in female Mysidae and extend slightly beyond the posterior end of the sixth segment of the pleon which is itself more than twice as long as the fifth segment.

Several of the *Helga's* specimens are males, and on examining their pleopods I found that the first, second, third and fifth pairs were formed as in the female, that is, the first, second and third pairs were short and simple uniramous appendages, while the fifth pair, though uniramous and uni-articulate, were considerably elongate as described for the female. The fourth pair of pleopods of the male were found to be almost twice as long as in the female, but still uniramous and uni-articulate. This construction of the male pleopods is obviously widely different from that found in the males belonging to the genus *Pseudomma*, and recalls strongly that described for the genus *Calyptomma*. In fact *Pseudomma parvum* must be removed from the genus *Pseudomma* and even from the sub-family Leptomysinae and referred to the sub-family now under notice. But the definition of this sub-family in the light of this new material will require modification. Instead of the elongate fifth pleopods being a feature confined to the male, as it appeared to be, from a study of the material of *Calyptomma*, it would seem to be a character common to the two sexes. The two species, *Calyptomma Puritani* and *Pseudomma parvum* are, I think, in such close agreement in their main features, as to warrant this as a

reasonable assumption. It is, therefore, only the fourth pleopods which become modified in the male.

The definition of the sub-family Calyptomminae will, therefore, read as follows :—

Fifth pleopod of the female considerably elongate but uniramous and uni-articulate; first, second, third and fifth pleopods of the male as in the female, fourth pair much longer than in the female but still consisting of a single uni-jointed ramus.

There remains to be considered the generic position of *Pseudomma parvum* and of *Pseudomma Théeli*, Ohlin (1902), a species obviously congeneric with *P. parvum*.

I do not think these two species can reasonably be referred to the genus *Calyptomma*. In the latter genus the eyeplate is a membraneous non-rigid lamella, the antennal scale small and reduced and the telson slender, with a pointed apex and feeble armature. In *P. Théeli* and *P. parvum* the eyeplate is a rigid thickened pad, the antennal scale is well developed and comparatively large and the telson moderately robust with a truncate apex and an armature of fairly stout spines.

I propose, therefore, to refer these two species to a new genus, which may be defined as follows :—

Genus **Michthyops** nov.

Eye-plate in the form of a rigid thickened plate, more or less triangular in form, without median cleft or visual elements. *Antennal scale* considerably longer than the antennular peduncle, outer margin entire and terminating in a strong spine beyond which the apex of the scale is not produced.

Telson rather large and elongate, apex entire, armed with more or fewer stout spines, median setae absent.

Female with two pairs of incubatory lamellae and with the fifth pair of pleopods consisting of an elongate uni-articulate single ramus.

Male with the first, second, third and fifth pairs of pleopods as in the female, fourth pair much longer than in the female but uni-articulate and single-branched.

Type species, *Pseudomma parvum*, Vanhöffen. *Pseudomma Théeli*, Ohlin, must also be included in this genus.

Re-examination of the material of *Calyptomma Puritani* has shown that this species agrees with the genus *Michthyops* in having the terminal joint of the mandibular palp short and more or less triangular in shape and in having the endopod of the first thoracic limbs comparatively more robust and the fifth joint shorter than is usual in the genus *Pseudomma*.

Calyptomma and *Michthyops* further agree in the apparent absence of the antennular brush of setae in the male. In pointing this fact out for *Calyptomma* I put it down to possible immaturity, since the specimens of *C. Puritani* were only 4–5 mm. in length, though the

genital appendage to the eighth thoracic limbs in the male appeared to be completely formed. But the male examples of *Michthyops parva* now under notice measure 12 mm. in total length and appear otherwise to be sexually mature, but all lack the antennular brush of setae so characteristic of male Mysidae generally.

M. parva is the boreal, *M. Théeli* the arctic representative of the genus. The two species appear to be closely allied, but may be distinguished according to the following key:—

Length of apparently adult specimens, 20 mm.; eye-plate triangular in shape (not spinulose ?); apex of the telson armed with five pairs of (non-plumose ?) spines, *Michthyops Théeli* (Ohlin).

Length of apparently adult specimens, 13 mm.; eye-plate not triangular in shape, spinulose; apex of the telson armed with three pairs of plumose spines, *Michthyops parva* (Vanhöffen).

Michthyops parva (Vanhöffen).

Pseudomma parvum, Vanhöffen, 1898.
P. parvum, Zimmer, 1904.
P. parvum, Vanhöffen, 1907.
P. parvum, Hansen, 1908.
P. parvum, Zimmer, 1909.

Pl. VIII, fig. 1.

s.s. *Helga*.

S. R. 851.—Midwater otter trawl at 900 fms.—Eighty-eight, 7–12 mm.

These specimens agree perfectly with the descriptions and figures given by Vanhöffen and Hansen.

The female has two pairs of incubatory lamellae. The genital appendix to the eighth thoracic limbs of the male is moderately long and slender, as long as the exopod of the limb to which it is attached, lightly hirsute all over, with two strong setae at the slightly swollen apex.

The fourth pleopods of the male (Pl. VIII, fig. 1) are about twice as long as in the female, uniramous, uni-articulate, with three moderately stout, short, slightly annulated spines at the tip.

Distribution.—The only previously known specimens were taken off the West Coast of Greenland, 70° 20′ N, in 100 fathoms. It is however, not surprising that it should occur in deep water off the West of Ireland, for we have a parallel instance in the case of *Hansenomysis Fyllae*, Moreover, Hansen has pointed out that the deep water of the Atlantic with part of its fauna pushes up far into Davis Straits, and from the list of stations with bottom temperatures published with the *Ingolf* reports, it is to be noticed that all the stations in the Davis Strait have the bottom temperature about 0° C. The fact, therefore, that this species should occur at two such widely separated localities as Greenland and the South-West of Ireland is not so remarkable as may at first appear, and it is certain to be found at intermediate places whenever they shall be sufficiently explored.

SUB-FAMILY *BOREOMYSINAE*, H. and T., 1905 (1).

GENUS **Boreomysis**, G. O. Sars.

Boreomysis arctica (Kröyer).

Additional records :—

s.s. *Helga.*

S. R. 321.—Townet on trawl.—Two.
S. R. 329.—Townet on trawl.—Six.
S. R. 330.—Townet on trawl.—Five.
S. R. 338.—Townet on trawl.—One.
S. R. 352.—Midwater otter trawl at 700-750 fms.—Two.
S. R. 359.—Townet on trawl.—Five.
S. R. 363.—Townet on trawl.—One.
S. R. 440.—Townet on trawl.—Three.
S. R. 447.—Townet on trawl.—Sixteen.
S. R. 448.—Townet on trawl.—Two.
S. R. 500.—Townet on trawl.—One.
S. R. 502.—Townet on trawl.—One.
S. R. 505.—Townet on trawl.—Eight.
S. R. 593.—Townet on trawl.—Two.
S. R. 805.—Townet on trawl.—One.

s.s. *Goldseeker.*—See table, p. 69.

The largest specimens measured 25 mm. and were found at this size only in the material from the deeper waters.

This species has not been found to be as abundant in the area explored by the *Helga* as *B. tridens*, but its horizontal distribution is more extended than that of the latter, including the West Coast of North America, the Bay of Biscay and the Mediterranean in addition to the Atlantic slope of the continent of Europe from Iceland to Norway. Strangely enough it was not taken by the *Ingolf* expedition, though both Kröyer and Vanhöffen have recorded it from Greenland.

Its known vertical distribution in the North Atlantic ranges from 100-580 fathoms, but, as may be expected, the depths at which it was captured in the Mediterranean are considerably greater than those of North Atlantic records, viz., 520-1040 fathoms.

Boreomysis tridens, G. O. Sars.

Additional records :—

s.s. *Helga.*

S. R. 327.—Townet on trawl.—Four.
S. R. 331.—Townet on trawl.—Seven.
S. R. 333.—Townet on trawl.—Ten.
S. R. 336.—Townet on trawl.—One.
S. R. 353.—Townet on trawl.—One hundred.
S. R. 359.—Townet on trawl.—Seventy.

S. R. 363.—Townet on trawl.—Five.
S. R. 364.—Townet on trawl.—One.
S. R. 365.—Townet on trawl.—Seventy.
S. R. 397.—Townet on trawl.—Six.
S. R. 398.—Townet on trawl.—Three.
S. R. 400.—Townet on trawl.—One.
S. R. 401.—Townet on trawl.—One.
S. R. 448.—Townet on trawl.—Sixteen.
S. R. 477.—Townets on trawl.—Seventeen.
S. R. 479.—Townet on trawl.—Nine.
S. R. 484.—Townet on trawl.—One.
S. R. 486.—Townet on trawl.—One.
S. R. 487.—Townet on trawl.—Forty.
S. R. 489.—Townet on trawl.—Fifteen.
S. R. 490.—Townet on trawl.—One hundred.
S. R. 491.—Townet on trawl.—One hundred.
S. R. 493.—Townet on trawl.—Seventy-three.
S. R. 494.—Townet on trawl.—Two hundred.
S. R. 496.—Townet on trawl.—Fifty-five.
S. R. 497.—Townet on trawl.—Fifty-five.
S. R. 499.—Townet on trawl.—Fourteen.
S. R. 500.—Townet on trawl.—One.
S. R. 502.—Townet on trawl.—Sixty.
S. R. 504.—Townet on trawl.—Forty-seven.
S. R. 505.—Townet on trawl.—One hundred and fifty-nine.
S. R. 506.—Townet on trawl.—Nineteen.
S. R. 590.—Townet on trawl.—Thirty-one.
S. R. 592 —Townet on trawl.—Twenty-one.
S. R. 593.—Townet on trawl.—Nine.
S. R. 752.—Midwater otter trawl at 523–595 fms.—Five.
S. R. 753.—Townet on trawl.—Six.
S. R. 805.—Townet on trawl.—Eight.
S. R. 851.—Midwater otter trawl at 900 fms.—One.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker* —See table, p. 69.

With extended observation, this species has proved to be enormously abundant at suitable depths off the west coast of Ireland. Its vertical distribution as shown by the above list of captures is from 343–900 fathoms with a maximum at about 500 fathoms.

Its horizontal distribution has recently been considerably extended by Hansen's records (1908) of its capture in the Davis Strait, to the West and South-West of Iceland and to the South-West of the Färöes. The records here given from the *Goldseeker* collections fill in gaps which existed in its previously known distribution from the West of Ireland to the Norwegian coasts, while the single record from the *Thor* gatherings indicates the southernmost point at which the species has hitherto been captured. Its known vertical range is now 300–900 fathoms, an increase of over 300 fathoms on the previous records.

Boreomysis megalops, G. O. Sars.

Additional records :—

s.s. *Helga.*

S. R. 351.—Townet on trawl.—Twenty-six.
S. R. 353.—Townet on trawl.—One.
S. R. 360.—Townet on trawl.—Eight.
S. R. 361.—Townet on trawl.—Seven.
S. R. 383.—Midwater otter trawl at 150 fms.—One.
S. R. 384.—Townets on trawl.—Two.

The usual colour of the eyes of this species in freshly taken examples is a light golden brown. Some of the specimens from S. R. 351, however, had the pigment of the eye quite black, but otherwise were in complete agreement with *B. megalops*. The distribution of this species appears to be confined, at present, to the west and north coast of the British Isles and to the west coast of Norway, in depths of 80–250 fathoms It is not recorded in Hansen's report on the *Ingolf* Malacostraca although it might well have been expected to occur at the many stations of suitable depth and temperature above 0° C. worked by that expedition in the area between the Färöes and Iceland. We must conclude that it is absent from that area.

The large range of depth covered by S. R. 353 in the above record is inconclusive as to the occurrence of this form in depths greater than 250 fathoms, the greatest depths reached at the remaining stations on the list.

Boreomysis microps, G. O. Sars, 1883.

B. microps, G. O. Sars, 1885.
B. microps, H. and T., 1905 (1) and 1906 (2).
B. subpellucida, Hansen, 1905 (1).
B. microps. Hansen, 1908.

Additional records :—

s.s. *Helga.*

S. R. 282.—Mosquito townet at 700 fms.—One.
S. R. 352.—Midwater otter trawl at 700–750 fms.—Twenty.
S. R. 363.—Townet on trawl.—Nine.
S. R. 397.—Townet on trawl.—One.
S. R. 401.—Townet on trawl.—One.
S. R. 449.—Midwater otter trawl at 700 fms.—One.
S. R. 470.—Midwater otter trawl at 400–500 fms.—Two.
S. R. 481.—Midwater otter trawl at 600–900 fms.—Eight.
S. R. 484.—Townet on trawl.—Four.
S. R. 485.—Townet on trawl.—Three.
S. R. 489.—Townet on trawl.—One.
S. R. 497.—Townet on trawl.—One.
S. R. 498.—Midwater otter trawl at 500 fms.—Four.
S. R. 506.—Townet on trawl.—One.
S. R 851.—Midwater otter trawl at 900 fms.—Thirteen.

s.s. *Thor*.—See table, p. 70.

s.s. *Goldseeker*.—See table, p. 69.

The second thoracic limbs of this species require a short note. On the inner margin of the carpus, near the distal end, there is a single large blunt spine which is sufficiently strongly developed to conceivably act with the short propodal joint as a weak chela. No other species of the genus possess such a spine on the second thoracic limbs, but in *B. scyphops* these appendages have a superficially sub-chelate extremity caused by the presence of a concavity on the inner distal margin of the carpus, which thus forms a sort of palmar edge to receive the propodus. The structure of the second thoracic limbs in *B. microps* is quite sufficient to distinguish the species, should more readily observable characters be damaged in any way.

Hansen (1908) has acquiesced in the opinion expressed by Holt and Tattersall, 1906 (2), that *B. subpellucida* is a synonym of *B. microps* and has withdrawn the former species.

The above records confirm Hansen's statements (1908) that this species belongs to the mesoplankton and in no case was it with certainty captured at a less depth than 500 fathoms.

List of Stations mentioned in this Report, with Locality, Temperature, and Salinity where available.

Station Number.	Date.	Latitude, N.	Longitude, W.	Soundings.	Nature of Bottom	Depth	Temperature	Salinity
	1904.			Fms.		Fms.	° C.	°/₀₀
S.R. 153	1/11	50° 24′	10° 31′	91	Fine sand	0	14,00	—
						90	10.70	
	1905.							
S.R. 215	9/5	52° 01′	11° 21′	106	Fine sand	0	10.60	—
S.R. 255	29/8	51° 59′	11° 27′	131	Fine sand	0	15·00	35·41
						120	10·30	35·46
S.R. 257	3/9	53° 35′	11° 24′	105	Fine sand	0	14·15	35·03
						50	10·20	—
						95	10·00	35·05
S.R. 270	3/11	50° 20′	11° 15′	470	Ooze, .	0	12·70	35·66
						425	9·40	—
S.R. 272	4/11	51° 54′	11° 58′	411	Fine mud and sand	0	12·20	35·55
						75	10·50	35·57
						400	9·30	—
S.R. 275	8/11	53° 34′	11° 31′	130	Fine sand	0	11·40	35·37
						120	10·25	35·41
S.R. 282	18/11	54° 59′	10° 53′	$\frac{\cdot}{1000}$	Ooze, .	0	10·70	35·30
						250	9·30	35·39
						700	9·00	—
	1906.							
S.R. 299	4/2	50° 13′	11° 16′	500	Ooze, .	0	10·80	—
						370	10·80	—
						470	9·70	—
S.R 302	5/2	51° 54′	11° 54′	460	Fine mud and sand	0	10·50	35·39
						350	9·91	35·34
						450	9·20	35·39
S.R. 321	1/5	50° 56′ to 51° 0′	11° 17′	480–208	Fine sand	0	10·20	—
S.R. 327	8/5	51° 46′	12° 14′	550	Ooze, .	0	11·50	35·14
						500	9·22	35·16
						530	8·95	—
S.R. 329	9/5	51° 22′ to 51° 20′	11° 31′ to 11° 38′	215–415		0	10·60	—
						400	9·55	35·33
S.R. 330	9/5	51° 16′	11° 37′	374–415	Fine sand	0	10·70	35·23
S.R. 331	9/5	51° 12′	11° 55′	610–680	Ooze, .	0	10·75	—
S.R. 332	10/5	51° 12′	12° 2′	680–735	Ooze, .	0	10·80	—
S.R. 333	10/5	51° 37′	12° 9′	557–579	Ooze, .	0	10·80	—
						500	9·19	35·10
S.R. 334	10/5	51° 35′	12° 26′	500–520	—	0	10·85	—
S.R. 335	12/5	51° 12′ to 51° 17′	12° 18′ to 12° 16′	893–673	—	0	11·05	—
S.R. 336	12/5	51° 17′ to 51° 21′	12° 18′ to 12° 23′	720	—	0	11·10	35·19
						700	6·84	34·99
S.R. 337	12/5	51° 21′	12° 9′	768	—	0	11·00	—
S.R. 338	13/5	51° 28′	11° 39′	291–330	Mud, .	0	11·10	—
S.R. 351	5/8	50° 19′	11° 6′	230–250	Fine sand	0	16·10	35·39
						245	10·10	35·43
S.R. 352	5/8	50° 22′	11° 40′	800	Ooze, .	0	15·85	35·41
						700	7·33	—
S.R. 353	6/8	50° 37′ to 50° 40′	11° 32′	250–542	Mud and sand,	0	16·00	—
						500	8·85	35·46
S.R. 359	7/8	52° 0′	12° 6′	492	Ooze, .	0	15·60	35·32
						475	9·04	35·37
S.R. 360	8/8	52° 4′	11° 27′	108–120	Fine sand	0	15·60	—

LIST OF STATIONS MENTIONED IN THIS REPORT—*continued.*

Station Number	Date.	Latitude, N.	Longitude, W.	Soundings.	Nature of Bottom.	Depth.	Temperature.	Salinity.
	1906.			Fms.		Fms.	° C.	°/₀₀
S.R. 361	8/8	51° 49′	11° 42′	177–213	Fine sand	0	16·10	—
S.R. 362	9/8	51° 34′	11° 27′	145–160	Fine sand	0	15·80	—
						150	10·05	35·37
S.R. 363	10/8	51° 22′	12° 0′	695–720	Ooze, .	0	15·80	—
S.R. 364	10/8	51° 23′	11° 47′	620–695	Ooze, .	0	15·60	35·30
						600	7·92	35·37
S.R. 365	10/8	51° 25′	11° 32′	385–440	Sand and stone,	0	15·70	—
						380	9·44	—
S.R. 366	10/8	51° 24′	11° 40′	461	—	0	15·60	—
S.R. 367	11/8	51° 38′	11° 37′	287–332	Mud and sand,	0	15·60	—
S.R. 368	11/8	51° 38′ to 51° 39′	12° 5′ to 11° 56′	608–450	Fine sand	0	15·60	—
S.R. 376	1/11	51° 14′	9° 44′	58	Rock, .	0	11·95	34·87
						30	9·82	35·16
						56	9·87	35·26
S.R. 379	1/11	50° 14′	10° 53′	126–139	Fine sand and shells	0	13·30	—
						135	10·66	—
S.R. 380	1/11	50° 29′ to 50° 32′	11° 0′	142–214	Fine sand	0	12·80	—
S.R. 382	5/11	51° 59′	11° 11′	93	Fine sand	0	12·10	35·37
						50	10·17	35·32
						90	10·11	35·34
S.R. 383	6/11	51° 57′ to 51° 56′	11° 30′ to 11° 39′	143–180 3	Fine sand	0	12·25	35·35
						140	10·23	35·32
S.R. 384	6/11	51° 54′	11° 37′	162–218	Fine sand	0	12·40	—
S.R. 386	6/11	51° 50′	12° 1′	450	—	0	12·40	35·37
						420	9·58	35·37
S.R. 387	7/11	51° 47′	12° 12′	530–535	Ooze, .	0	12·30	35·43
						500	9·13	35·39
	1907.							
S.R. 397	2/2	51° 49′	12° 7′	537	Ooze, .	0	10·40	35·50
						500	8·71	35·57
S.R. 398	2/2	51° 45′	12° 2′	547–549	—	0	10·40	35·55
S.R. 400	5/2	51° 18′	11° 50′	525–600	Ooze,	0	10·60	—
S.R. 401	5/2	51° 14′	11° 51′	600–660	—	0	10·20	—
						580	8·35	35·5
S.R. 403	6/2	51° 12′	11° 55′	—	—	—	—	—
S.R. 439	16/5	51° 45′	12° 31′	723	—	0	11·75	—
						300	10·00	—
S.R. 440	16/5	51° 45′	11° 49′	350–389	—	0	11·60	35·53
						300	9·93	35·46
S.R. 442	16/5	51° 34′	11° 47′	465–508	Mud and sand,	0	11·80	—
S.R. 443	16/5	51° 28′	12° 5′	683	—	0	11·65	—
S.R. 447	18/5	50° 20′	10° 57′	221–343	Fine sand	0	12·10	35·59
						300	9·87	35·48
S.R. 448	18/5	50° 21′	11° 0′	343–346	—	0	11·80	—
S.R. 449	19/5	50° 28′	11° 39′	950	—	0	12·00	—
S.R. 470	24/8	50° 16′	11° 27′	770	Ooze, .	0	15·80	35·30
						500	9·03	35·35
S.R. 476	26/8	51° 41′	12° 17′	640	Ooze, .	0	15·45	35·37
						250	10·19	35·34
						600	8·18	35·30
S.R. 477	28/8	51° 15′	11° 47′	707–710	Ooze, .	0	15·90	—
						700	7·19	—

LIST OF STATIONS MENTIONED IN THIS REPORT—*continued.*

Station Number.	Date.	Latitude, N.	Longitude, W.	Soundings.	Nature of Bottom.	Depth.	Temperature.	Salinity.
	1907.			Fms.		Fms.	° C.	°/₀₀
S.R. 478	28/8	51° 17′	11° 44′	560–707	—	0	15·60	35·34
						400	9·55	35·48
S.R. 479	28/8	51° 20′	11° 41′	468–560	—	0	15·65	35·41
S.R. 481	29/8	50° 59′	11° 52′	900–1064	Ooze, .	0	15·40	—
S.R. 482	29/8	51° 6′	11° 26′	368	Fine sand	—	—	—
S.R. 484	30/8	51° 35′	11° 57′	602–610	—	0	15·20	35·22
						550	8·34	35·32
S.R. 485	30/8	51° 33′	12° 1′	602–630	—	0	15·20	—
S.R. 486	3/9	51° 37′	12° 0′	600–660	—	0	14·95	—
S.R. 487	3/9	51° 36′	11° 57′	540–660	—	0	14·80	—
						500	8·65	35·35
S.R. 488	4/9	51° 35′	11° 57′	540–720	—	0	14·63	35·34
S.R. 489	4/9	51° 35′	11° 55′	720	—	0	14·70	—
S.R. 490	7/9	51° 57′	12° 7′	470–491	Ooze, .	0	15·30	—
						480	8·68	—
S.R. 491	7/9	51° 57′	12° 13′	491–520	—	0	15·20	—
						500	8·53	35·44
S.R. 492	8/9	51° 57′	12° 19′	520–533	—	0	15·35	35·39
S.R. 493	8/9	51° 58′	12° 25′	533–570	—	0	15·00	—
S.R. 494	8/9	51° 59′	12° 32′	550–570	—	0	15·00	—
S.R. 496	8/9	51° 54′	12° 54′	473–500	—	0	15·00	—
S.R. 497	10/9	51° 2′	11° 36′	775–795	Ooze, .	0	16·00	—
S.R. 498	11/9	51° 58′	11° 33′	775–778	—	—	—	—
S.R. 499	11·9	50° 55′	11° 29′	666–778	—	0	16·30	35·41
						600	8·22	35·41
S.R. 500	11/9	50° 52′	11° 26′	625–666	—	0	16·30	35·41
S.R. 502	11/9	50° 46′	11° 21′	447–515	—	0	16·15	—
						500	8·80	35·37
S.R. 503	12/9	50° 42′	11° 26′	990	—	0	16·20	35·34
S.R. 504	12/9	50° 42′	11° 18′	627–728	Coral, .	—	—	—
S.R. 505	12/9	50° 39′	11° 14′	464–627	—	0	14·80	—
S.R. 506	12/9	50° 34′	11° 19′	661–672	—	0	16·30	35·50
						600	8·22	35·53
	1908.							
S.R. 589	2/8	51° 54′	12° 16′	595	Ooze, .	0	17·10	35·43
						550	9·45	35·48
S.R. 590	3/8	51° 50′	12° 8′	480–493	Ooze, .	0	17·20	—
						450	9·28	35·46
S.R. 592	6/8	50° 39′	11° 35′	400–510	Ooze, .	0	16·00	35·62
						350	9·88	35·57
S.R. 593	6/8	50° 29′	11° 29′	660–770	Ooze, .	0	16·20	35·48
						650	7·75	35·53
	1909.							
S.R. 746	14/5	51° 32′	12° 12′	620–658	Ooze, .	0	11·30	35·41
S.R. 752	16/5	51° 51′	12° 13′	523–595	Ooze, .	0	11·90	35·32
						500	8·90	35·43
S.R. 753	17/5	51° 24′	11° 59′	561–572	Ooze, .	550	8·79	35·46
S.R. 754	17/5	51° 26′	11° 57′	544–572	Ooze, .	0	11·50	35·33
S.R. 799	13/8	50° 17′	11° 13′	318–418	—	0	18·17	35·37
S.R. 805	14/8	51° 50′	12° 14′	539–544	Ooze, .	0	17·78	35·44
						520	8·60	35·47
S.R. 806	15/8	51° 42′	12° 24′	634–651	—	—	—	—
S.R. 807	17/8	51° 36′	11° 6′	105	Fine sand	0	16·45	35·39
S.R. 851	9/11	50° 48′	11° 41′	900	—	—	—	—
S.R. 858	12/11	51° 20′	11° 56′	—	—	—	—	—

SCHIZOPODA COLLECTED BY THE S.S. *GOLDSEEKER* IN AUGUST 1907.

Station Number,	8028	8045	8054	8070	8105	8108	8149	8158	8159
Latitude, North,	60° 35′	60° 28′	60° 31′	60° 34′	59° 54′	59° 41′	59° 25′	59° 36′	59° 36′
Longitude, West,	1° 52′	3° 53′	3° 53′	4° 32′	7° 6′	8° 0′	7° 33′	7° 0′	7° 0′
Soundings in metres,	103	237	505	965	250	850	1100	1060	1060
Depth of net in metres,	103	237	505	965	250	850	1100	1060	400
Temperature at depth of net, ° C.	8·69	8·63	7·62	−0·45	7·80	7·90	7·10	7·22	8·42
Euphausia Mülleri, Claus,	.....	3	.....	.....	2	.....	1	.....	3
Thysanopoda acutifrons, H. & T.,	.....	.....	.....	5	2	21	.....	12	14
Meganyctiphanes norvegica (M. Sars),	abd.	many	abd.	abd.	abd.	9	9	5	8
Thysanoëssa neglecta (Kröyer),	abd.	.....	.....	.....	.....	.....	.....	.....	.....
Thysanoëssa longicaudata (Kröyer),	.....	many	13	many	abd.	100	150	100	many
Nematoscelis megalops, G. O. Sars	.....	1	.....	.....	27	.....	3	1	3
Nematobrachion boöpis (Calman)	.....	.....	2	.....	3	2	.....	3	1
Stylocheiron longicorne, G. O. Sars,	2	1	.....	.....	2	1	.....	.....	1
Stylocheiron abbreviatum, G. O. Sars,	1	.....	2	.....	1	.....	.....	.....	.....
Gnathophausia zoëa, Will.-Suhm,	.....	.....	.....	.....	.....	.....	1	2	.....
Eucopia unguiculata (Will.-Suhm)	.....	.....	.....	.....	.....	.....	8	5	1
Hansenomysis Fyllae (Hansen),	.....	.....	.....	.....	.....	1	3	.....	.....
Chunomysis diadema, H. & T.,	.....	.....	.....	.....	.....	.....	1	8	.....
Erythrops serrata, G. O. Sars,	.....	1	.....	.....	.....	.....	.....	.....	.....
Erythrops abyssorum, G. O. Sars	.....	.....	.....	.....	.....	.....	4	8	.....
Meterythrops picta, H. & T.,	.....	.....	.....	.....	.....	1	1	1	.....
Parerythrops obesa, G. O. Sars,	.....	.....	.....	.....	.....	6	2	40	.....
Amblyops abbreviata, G. O. Sars	.....	.....	.....	.....	.....	16	.....	66	.....
Amblyops Kempi (H. & T.),	.....	.....	.....	.....	.....	.....	5	21	.....
Pseudomma affine, G. O. Sars,	.....	.....	.....	.....	.....	3	.....	.....	.....
Pseudomma nanum, H. & T.	.....	.....	.....	.....	.....	.....	2	3	.....
Pseudomma calloplura, H. & T.,	.....	.....	.....	.....	.....	.....	6	38	.....
Paramblyops rostrata, H. & T.,	.....	.....	.....	.....	.....	8	6	100	.....
Dactylerythrops dactylops, H & T.,	.....	.....	.....	.....	.....	.....	.....	35	.....
Dactylamblyops thaumatops, Tattersall,	.....	.....	.....	.....	.....	.....	.....	3	.....
Dactylamblyops goniops, Tattersall,	.....	.....	.....	.....	.....	1	.....	2	.....
Dactylamblyops tenuicauda, Tattersall,	.....	.....	.....	.....	.....	.....	3	5	.....
Metamblyops oculata, Tattersall,	.....	.....	.....	.....	.....	.....	.....	5	.....
Mysidopsis didelphys, Norman,	.....	9	.....	.....	.....	.....	.....	.....	.....
Bathymysis Helgae, Tattersall,	.....	.....	.....	.....	.....	.....	1	1	.....
Boreomysis tridens, G. O. Sars,	.....	.....	.....	.....	.....	1	abd.	abd.	.....
Boreomysis arctica (Kröyer),	.....	.....	.....	.....	.....	.....	.....	5	.....
Boreomysis microps, G. O. Sars,	.....	.....	.....	.....	.....	.....	3	9	.....

SCHIZOPODA COLLECTED

No		1904.	1905.							
	Date,	10/7	28/5	29/5	30/5	7/6	8/6	15/6	20/6	21/6
	Latitude, North,	61° 34′	61° 11′	62° 47′	59° 49′	57° 47′	57° 52′	51° 0′	48° 9′	47° 47′
	Longitude, West,	19° 5′	11° 0′	15° 3′	8° 58′	11° 33′	9° 55′	11° 43′	8° 30′	8° 0′
	Soundings in metres,	2160	963	1950	1150	1985	1550	840–1350	600–995	1612
	Wire on net, metres,	1800	900		1200	1500	600	1200	300	500
1	Euphausia Mülleri, Claus,	.....	.....	.....	.....	.....	.....	5	.....	.....
2	Thysanopoda acutifrons, H. &. T.,	2	.....	1	1	.....	2	26	.....	.....
3	Thysanopoda distinguenda, Hansen,	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	Meganyctiphanes norvegica (M. Sars),	7	4	16	.....	17	.....	.....	.....	41
5	Nyctiphanes Couchi (Bell),	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	Boreophausia inermis (Kröyer),	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	Thysanoëssa neglecta (Kröyer),	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	Thysanoëssa longicaudata (Kröyer),	18	.....	113	4	15	.....	3	.....	.....
9	Nematoscelis megalops, G. O. Sars,	.....	4	2	.....	.....	.....	.....	.....	.....
10	Nematobrachion boöpis (Calman),	.....	3	2	.....	1	.....	6	.....	.....
11	Stylocheiron longicorne, G. O. Sars,	.....	.....	.....	.....	.....	.....	1	1	.....
12	Gnathophausia zoëa, W. Suhm,	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Eucopia unguiculata (W. Suhm),	.....	.....	.....	.....	1	.....	.....	.....	.....
14	Boreomysis tridens, G. O. Sars,	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Boreomysis microps, G. O. Sars,	.....	.....	7	.....	1	.....	.....	.....	.....
16	Longithorax fuscus, Hansen,	.....	.....	.....	.....	.....	.....	.....	.....	.....

BY THE S.S. *THOR*.

1906.														
17/7	28/8	31/8	30/5	31/5	31/5	5/6	5/6	6/6	7/6	7/6	8/6	9/6	9/6	11/6	
59° 54′	63° 42′	57° 46′	51° 27′	51° 4′	51° 4′	49°17′	49° 17′	48° 43′	48° 29′	47° 40′	48° 40′	49 °23′	49° 23′	49° 27′	
4° 0′	13° 2′	9° 55′	11° 10′	11° 39′	11° 39′	14° 3′	14° 3′	15° 17′	14° 15′	12° 41′	11° 30′	12° 13′	12° 13′	13° 33′	
290	659		202	1020–	1320							1245–	1298	2600	
500	65	300	250	300	800	200	300	300	1700	200	300	2500	2000	2800	No.
.....	.....	.....	.....	2	.....	271	16	.....	1	.....	6	.....	.....	.....	1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	3
27	1	1	6	.....	.....	29	.....	.....	.....	5	.....	.....	.....	.....	4
.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8
.....	.....	.....	.....	.....	.....	51	19	3	.....	.....	3	.....	.....	.....	9
.....	.....	.....	.....	.....	3	.....	6	.....	6	.....	.....	.....	4	1	10
.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	11
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	12
.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	9	2	13
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	14
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	15
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	16

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EXPLANATION OF PLATES I–VIII.

Plate I.

Fig. 1.—*Dactylamblyops thaumatops*, Tattersall, female, dorsal view.
Fig. 2.—*Bathymysis Helgae*, Tattersall, male, dorsal view.

Plate II.

Fig. 1.—*Dactylamblyops goniops*, Tattersall, female, dorsal view.
Fig. 2.—*Amblyops tenuicauda*, Tattersall, female, dorsal view.
Fig. 3.—*Metamblyops oculata*, Tattersall, female, dorsal view.

Plate III.

Metamblyops oculata, Tattersall

Fig. 1.—Side view of rostral projection.
Fig. 2.—Antennal scale with peduncle.
Fig. 3.—Antennular peduncle.
Fig. 4.—Second thoracic limb.
Fig. 5.—Third thoracic limb.
Fig. 6.—Telson.

Dactylerythrops bidigitata, Tattersall.

Fig. 7.—Eye.
Fig. 8.—Antennal scale.
Fig. 9.—Second thoracic limb.
Fig. 10.—Telson.

Dactylerythrops gracilura, Tattersall.

Fig. 11.—Telson.

Plate IV.

Dactylerythrops bidigitata, Tattersall.

Fig. 1.—Dorsal view of anterior end.

Dactylerythrops gracilura, Tattersall.

Fig. 2.—Dorsal view of anterior end.
Fig. 3.—Antennal scale with peduncle.
Fig. 4.—Second thoracic limb.

Plate V.

Dactylamblyops thaumatops, Tattersall.

Fig. 1.—Lateral view of eye.
Fig. 2.—Dorsal view of eye.
Fig. 3.—Antennal scale and peduncle.

Fig. 4.—Second thoracic limb, endopod.
Fig. 5.—Third thoracic limb, endopod.
Fig. 6.—Enlarged view of distal extremity of endopod of third thoracic limb.
Fig. 7.—Tarsus and dactylus of the endopod of fourth thoracic limb.
Fig. 8.—Telson.

Dactylamblyops goniops, Tattersall.

Fig. 9.—Eye.
Fig. 10.—Antennular peduncle of male.
Fig. 11.—Antennal scale and peduncle.
Fig. 12.—Distal extremity of antennal scale.
Fig. 13.—Second thoracic limb, endopod.
Fig. 14.—Third thoracic limb, endopod.
Fig. 15.—Tarsus and dactylus of endopod of eighth thoracic limb.
Fig. 16.—Distal extremity of telson.
Fig. 17.—Genital appendage of the eighth thoracic limb of male.

Plate VI.

Dactylamblyops goniops, Tattersall.

Fig. 1.—Telson.

Amblyops tenuicauda, sp. nov.

Fig. 2.—Eye.
Fig. 3.—Antennular peduncle.
Fig. 4.—Antennal scale and peduncle.
Fig. 5.—Second thoracic limb, endopod.
Fig. 6.—Third thoracic limb, endopod.
Fig. 7.—Telson.
Fig. 8.—Second pleopod of male.

Bathymysis Helgae, Tattersall.

Fig. 9.—Eye.
Fig. 10.—Antennular peduncle of male.

Plate VII.

Bathymysis Helgae, Tattersall.

Fig. 1.—Antennal scale and peduncle.
Fig. 2.—Distal joint of palp of second maxilla.
Fig. 3.—First thoracic limb, endopod.
Fig. 4.—Second thoracic limb, endopod.
Fig. 5.—Third thoracic limb, endopod.
Fig. 6.—Telson.
Fig. 7.—Fourth pleopod of male.

Dactylerythrops dactylops, H. and T.

Fig. 8.—Telson of shallow-water variety.
Fig. 9.—Telson of deep-water variety.

Plate VIII.

Michthyops parva (Vanhöffen).

Fig. 1.—Lateral view of fifth and sixth segments of the pleon of the male, with fourth and fifth pleopods.

Paramblyops bidigitata, sp. nov.

Fig. 2.—Antennal scale and peduncle.
Fig. 3.—Dorsal view of anterior end.
Fig. 4.—Telson.

Pseudomma sp.

Fig. 5.—Dorsal view of anterior end.

Chunomysis diadema, H. and T.

Fig. 6.—Eighth thoracic limb, endopod.
Fig. 7.—One of the bristles on the thoracic limbs enlarged.

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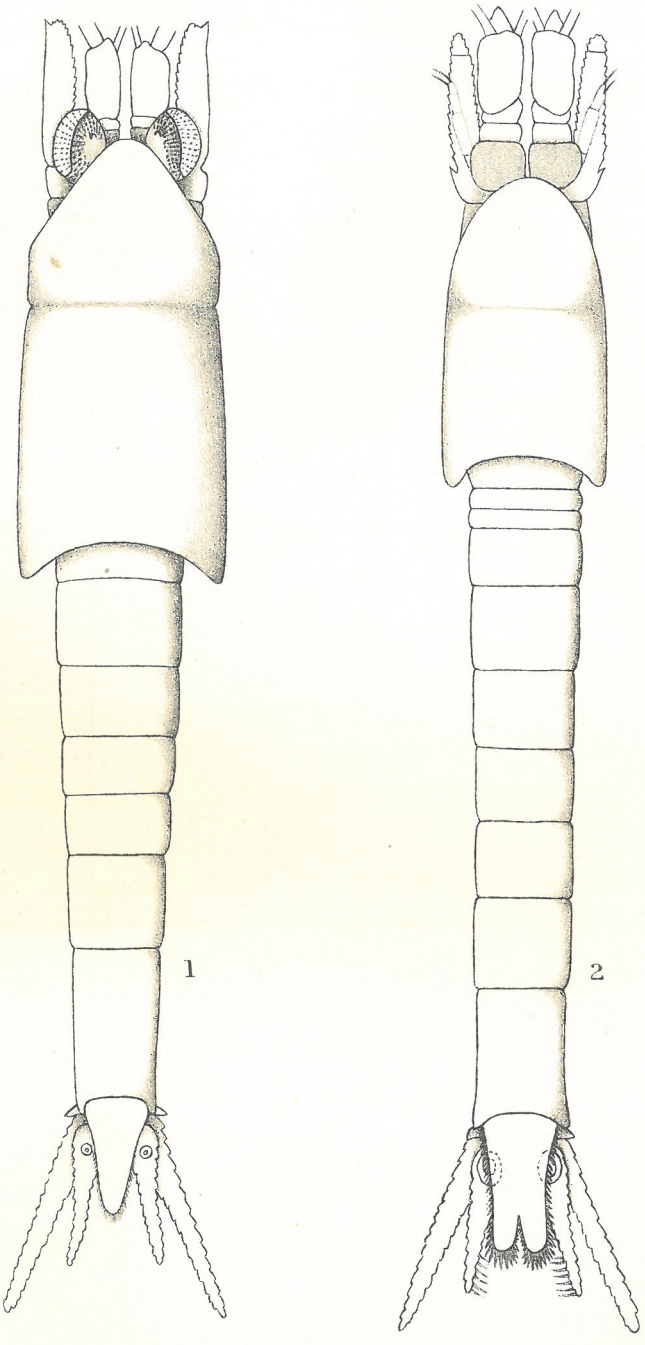

Fig. 1. Dactylamblyops thaumatops.
Fig. 2. Bathymysis Helgae.

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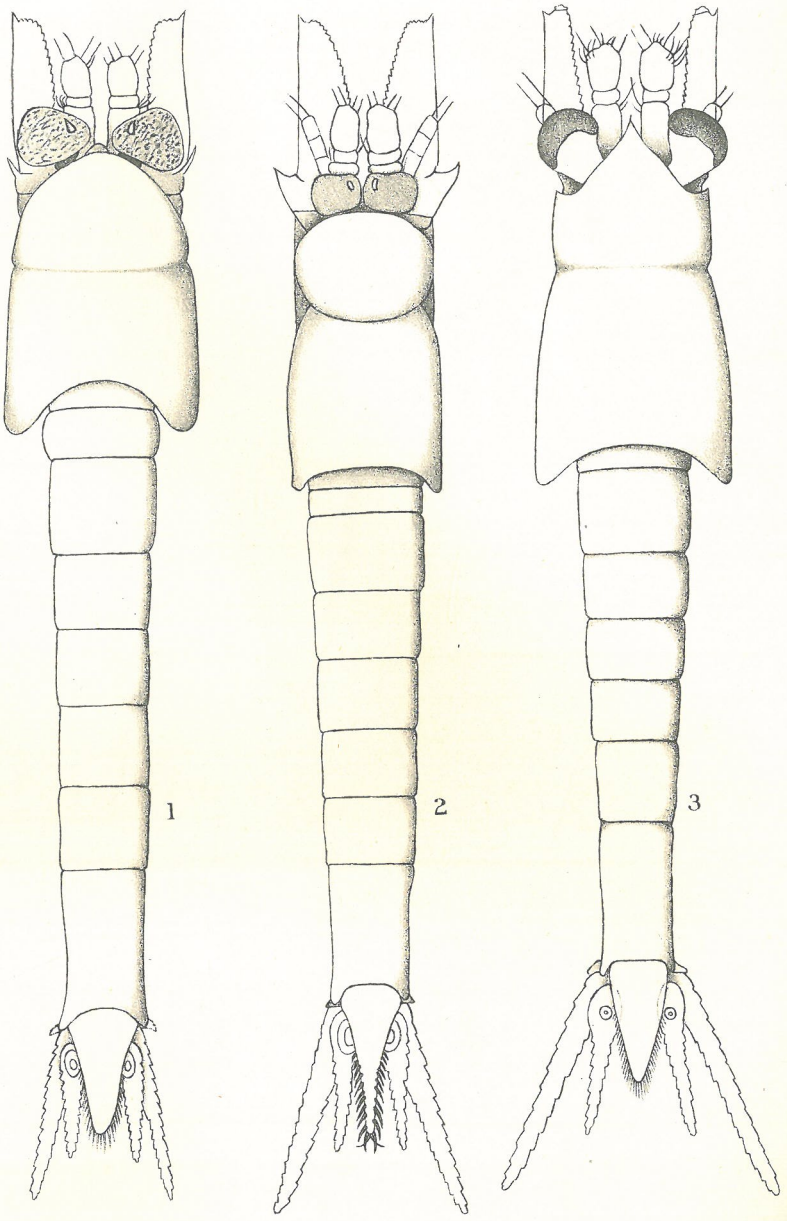

Fig. 1, Dactylamblyops goniops.
Fig. 2, Amblyops tenuicauda.
Fig. 3, Metamblyops oculata.

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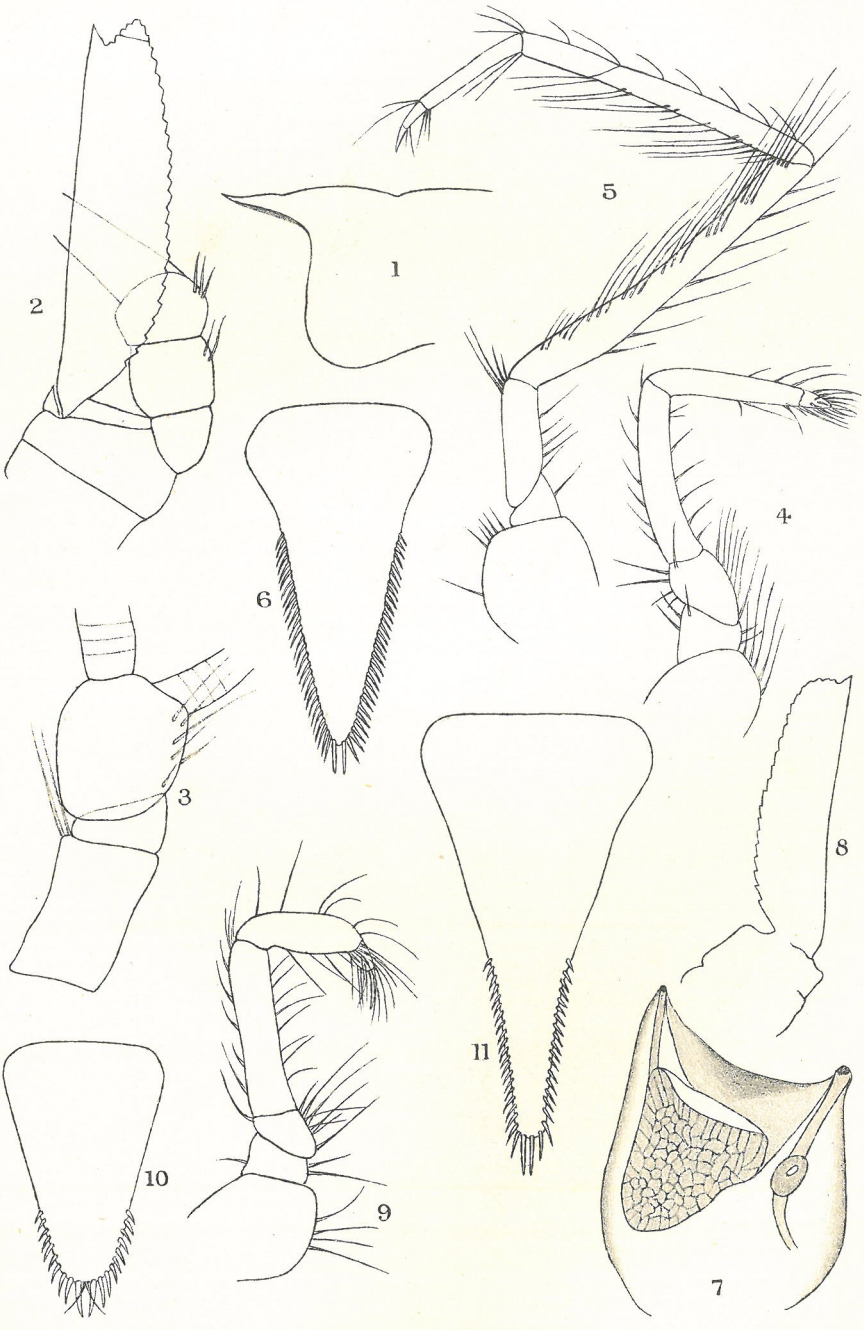

Figs. 1–6, Metamblyops oculata.
Figs. 7–10, Dactylerythrops bidigitata.
Fig. 11, Dactylerythrops gracilura.

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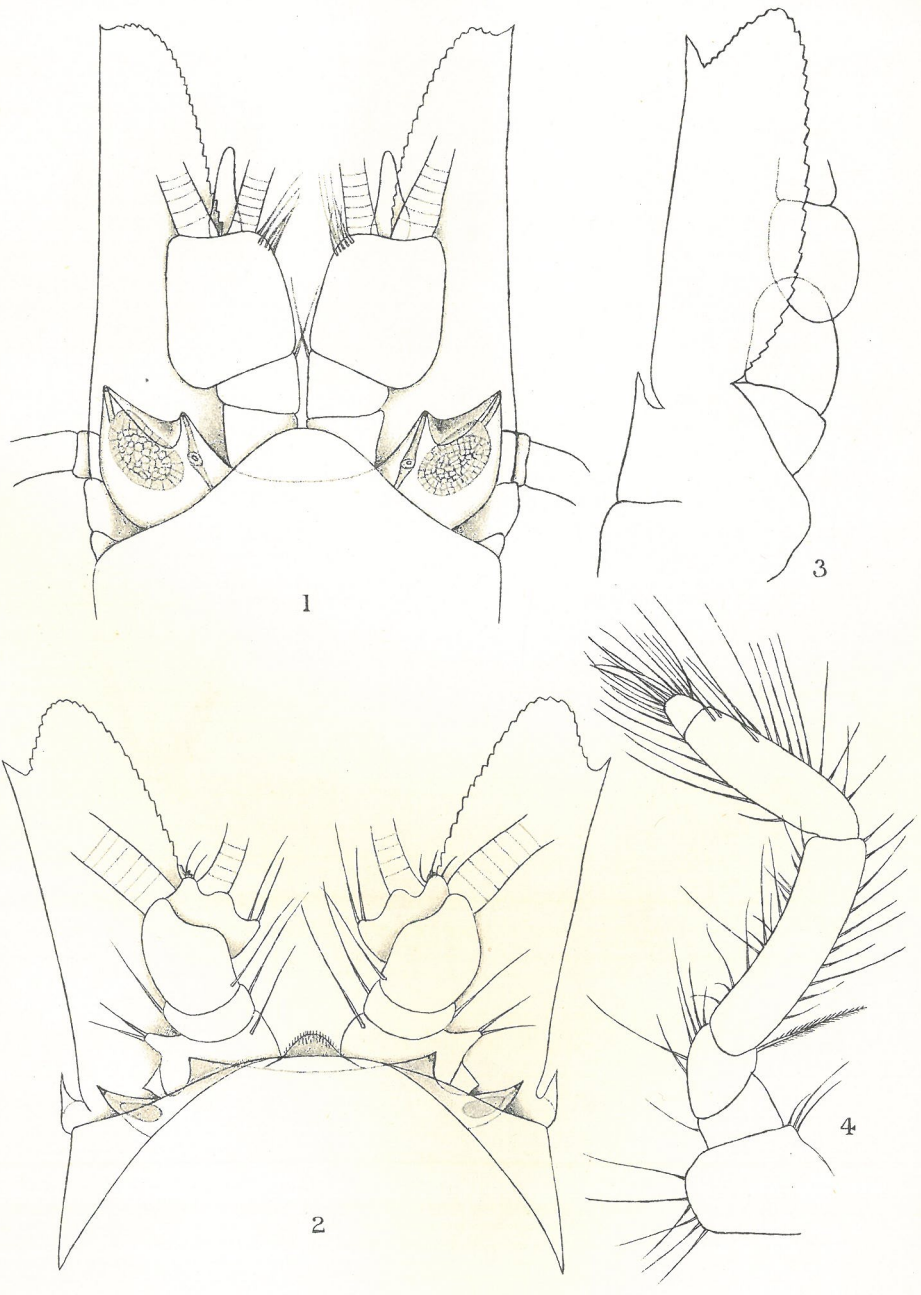

Fig.1, Dactylerythrops bidigitata.
Figs.2-4, Dactylerythrops gracilura.

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Figs. 1–8, Dactylamblyops thaumatops.
Figs. 9–17, Dactylamblyops goniops.

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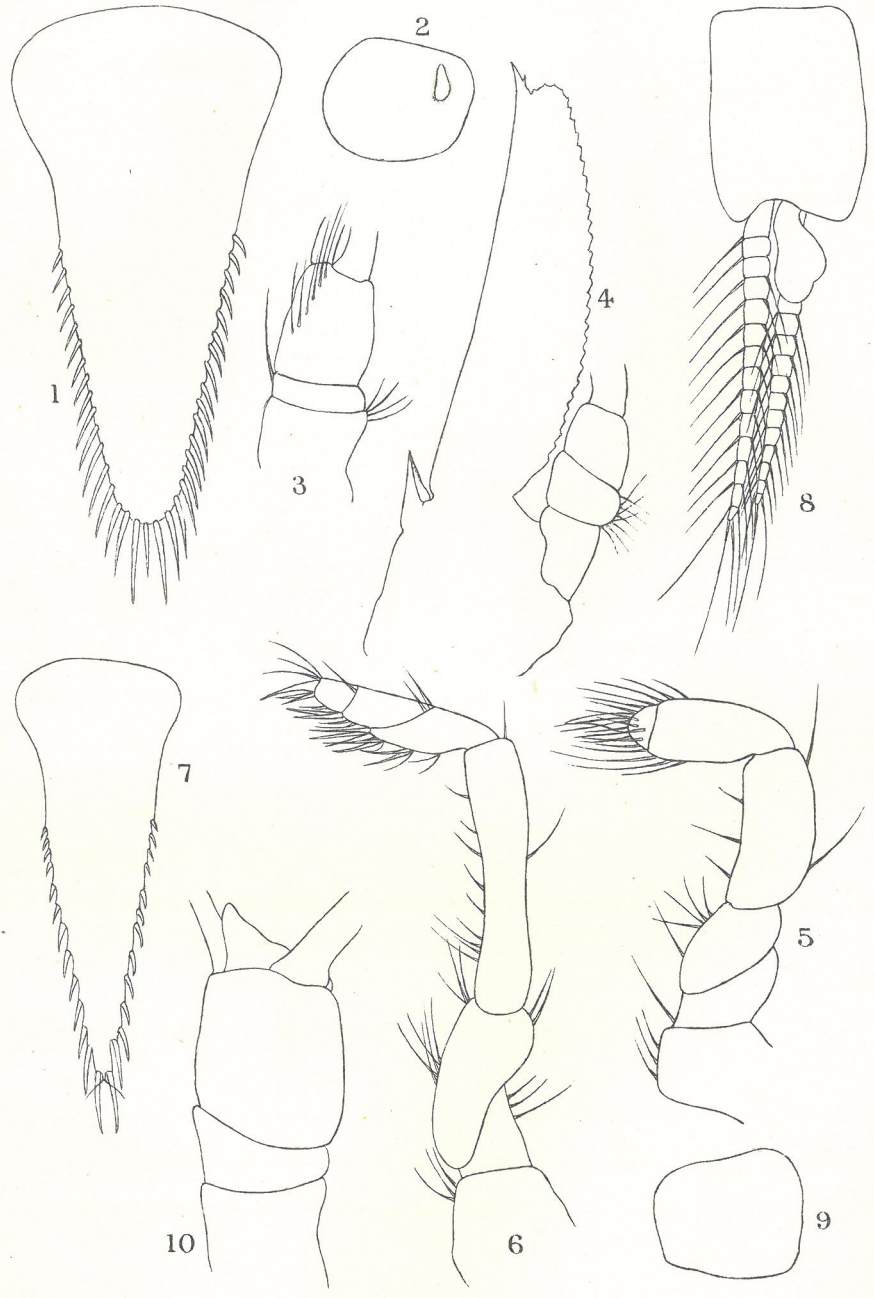

Fig. 1, Dactylamblyops goniops.
Figs. 2–8, Amblyops tenuicauda.
Figs. 9, 10, Bathymysis Helgae.

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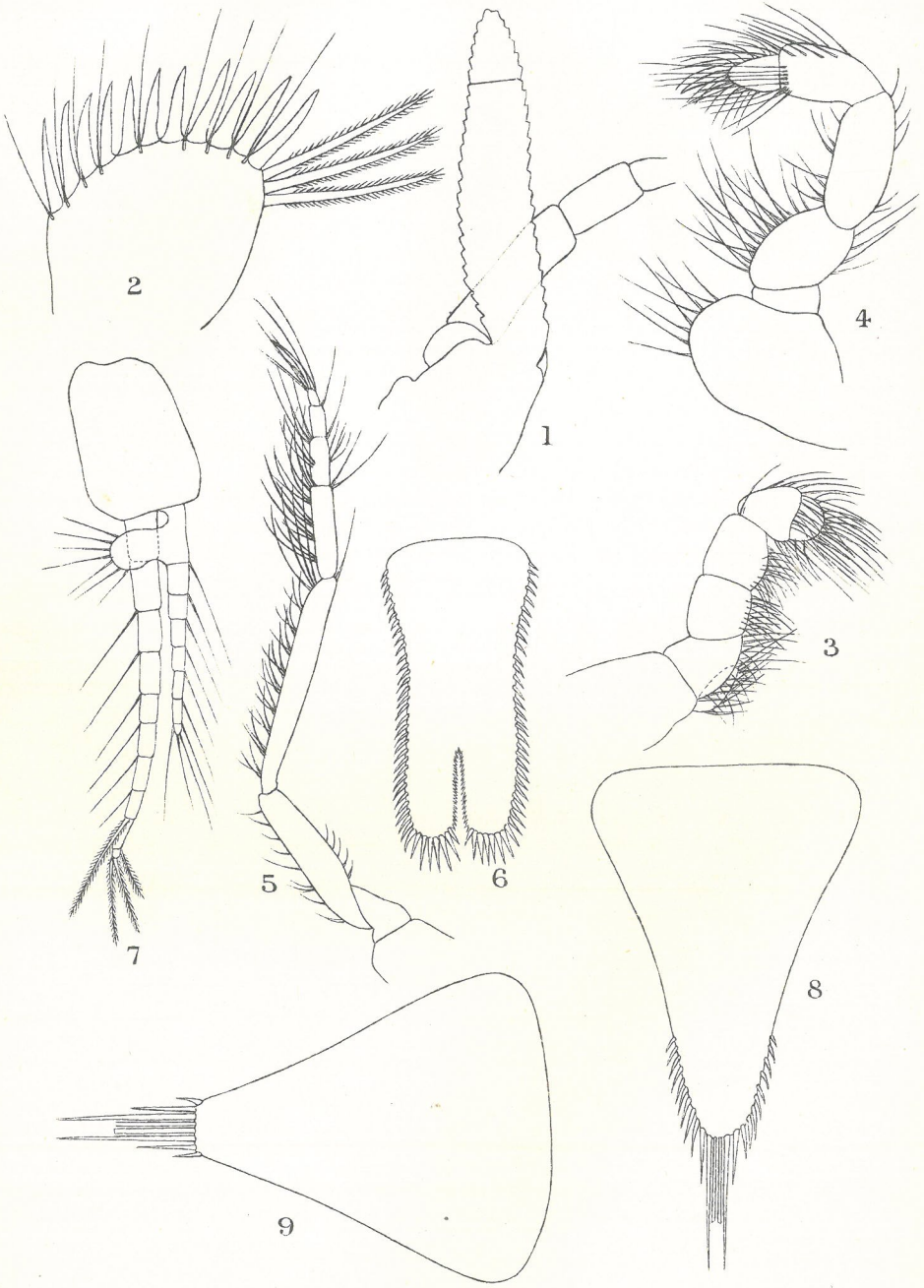

Figs. 1–7, Bathymysis Helgae.
Figs. 8, 9, Dactylerythrops dactylops.

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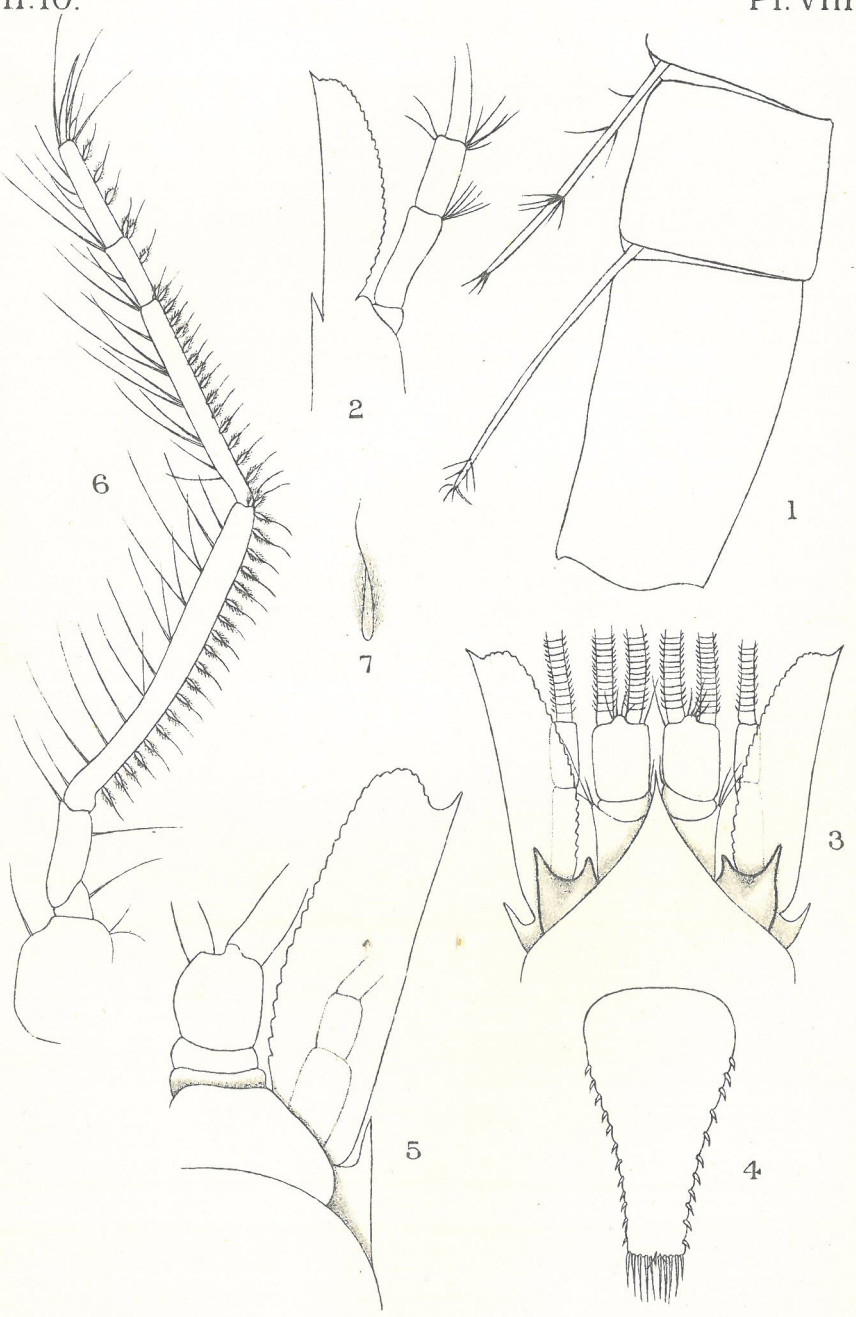

Fig. 1, Michthyops parva.
Figs. 2–4, Paramblyops bidigitata.
Fig. 5, Pseudomma, sp.
Figs. 6, 7, Chunomysis diadema.

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