

Tattersall 1907

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All six species belong to the subfamily *Leptomysinae** of the Mysidæ. Two are types of new and interesting genera, while the other four belong to two recently defined deep-water genera characterized by the imperfectly developed eyes possibly modified for tactile functions.

Genus *METAMBLYOPS*, nov.

Characters generally as in *Amblyops*, G. O. Sars, except:—
Carapace produced in front into a well-developed, rather long and acute rostrum.

* I cannot agree with Norman's recent proposal to raise his sub-families to family rank (cf. Norman and Scott, 'Crustacea of Devon and Cornwall,' London, 1906).

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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 setæ absent.

Inner uropod with a few spines on its inner margin in the region of the otocyst.

Female with only two pairs of incubatory lamellæ.

Type species, *Metamblyops oculata*.

The genus *Chalcophthalmus*, Illig, 1906, would appear to be rather closely allied to the present one, but judging from Illig's figures *Metamblyops* is a more compact and robust form, the carapace covers all the thoracic segments, the eye is much larger and its papilla quite minute, and the antennal scale comparatively much longer. The chief distinction lies in the structure of the first thoracic limbs, which in *Chalcophthalmus* are described as being devoid of endopods, while in *Metamblyops* both endopod and exopod are fully and normally developed.

Metamblyops oculata, sp. n.

Carapace covering all the thoracic segments; produced in front into a slightly upturned, acute rostrum reaching as far as, or a little beyond, the eyes, and partially covering the eye-stalks; terminal angle about 60°, its apex produced into a short acute point; evenly rounded at the antero-lateral corners and slightly emarginate behind.

Pleon longer than carapace; the 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 to the distal margin of the first joint of the antennular peduncle; pigmented portion equal in width to the last pleon-segment, a minute papilla on the inner distal part of the peduncle where it joins the cornea; visual elements well developed; pigment light reddish brown.

Antennular peduncle about twice as long as the eye; third joint a little shorter, but considerably stouter than the first and more robust in the male than in the female; second joint small; male appendage well developed and densely hirsute, but otherwise of normal appearance.

Antennal peduncle short, not extending beyond the distal end of the second joint of the antennular peduncle and composed of three subequal quadrangular joints.

Antennal scale about one-third as long again as the anten-

nular 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 margin of the basal joint quite short.

Mouth-parts not exhibiting any striking points of difference from those of *Amblyops abbreviata*, except that the second joint of the mandibular palp is considerably broader.

First thoracic limb with the endopod almost exactly as in *Amblyops abbreviata*.

Second thoracic limb with the endopod of the same form as in *A. abbreviata*, but comparatively much longer; twice as long as that of the first thoracic limb and longer than its own exopod.

Remaining thoracic limbs rather long and slender, with the tarsus longer than the merus and composed of three joints, the third joint longer than the second; dactylus well developed.

Exopods of all thoracic limbs having the basal joint lamelliform with a small spine at the outer distal corner; flagelliform part composed of nine to ten joints.

Incubatory lamellæ of the female, two pairs.

Pleopods in the male agreeing essentially with those of the males of the genus *Amblyops*.

Telson not quite so long as the last segment of the pleon and twice 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; the distal two thirds of its margins armed with from twenty-eight to thirty-two spines increasing in length towards the apex; terminal spine about one sixteenth of the length of the telson; median setæ absent from the apex.

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

Length of the largest female 16 mm., of the largest male 15 mm. Female with about twenty young in the marsupium.

Locality. Fourteen females and thirteen males from S.R. 352, 92 miles S.W. by W. of Bull Rock, Co. Kerry, lat. 50° 22' N., long. 11° 40' W., 800 fath., August 1906, Petersen trawl at 750-800 fath.

The external appearance of this species with its large well-developed eyes and long acute rostrum at first suggests a species of *Boreomysis*, such as *B. arctica*, but the details of

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 setæ absent.

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Pleon longer than carapace; the 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 to the distal margin of the first joint of the antennular peduncle; pigmented portion equal in width to the last pleon-segment, a minute papilla on the inner distal part of the peduncle where it joins the cornea; visual elements well developed; pigment light reddish brown.

Antennular peduncle about twice as long as the eye; third joint a little shorter, but considerably stouter than the first and more robust in the male than in the female; second joint small; male appendage well developed and densely hirsute, but otherwise of normal appearance.

Antennal peduncle short, not extending beyond the distal end of the second joint of the antennular peduncle and composed of three subequal quadrangular joints.

Antennal scale about one-third as long again as the anten-

nular 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 margin of the basal joint quite short.

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Remaining thoracic limbs rather long and slender, with the tarsus longer than the merus and composed of three joints, the third joint longer than the second; dactylus well developed.

Exopods of all thoracic limbs having the basal joint lamelliform with a small spine at the outer distal corner; flagelliform part composed of nine to ten joints.

Incubatory lamellæ of the female, two pairs.

Pleopods in the male agreeing essentially with those of the males of the genus *Amblyops*.

Telson not quite so long as the last segment of the pleon and twice 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; the distal two thirds of its margins armed with from twenty-eight to thirty-two spines increasing in length towards the apex; terminal spine about one sixteenth of the length of the telson; median setæ absent from the apex.

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

Length of the largest female 16 mm., of the largest male 15 mm. Female with about twenty young in the marsupium.

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The external appearance of this species with its large well-developed eyes and long acute rostrum at first suggests a species of *Boreomysis*, such as *B. arctica*, but the details of

the various appendages, the number of incubatory lamellæ in the female, and the form of the telson and uropods clearly indicate its position in the Leptomysinæ, among the numerous genera of which *Amblyops* seems to be its nearest relative. The characters of the rostrum, eye, antennal scale, and telson combined abundantly distinguish it from all other genera in the subfamily.

Genus DACTYLERYTHROPS, Holt & Tattersall, 1905.

Non *Dactylerythroops*, 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. & 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 setæ present or absent.

Incubatory lamellæ in the female, two pairs.

Type species, *Dactylerythroops dactylops*, H. & T.

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

Dactylerythroops bidigitata, sp. n.

Carapace covering all the thoracic segments; cervical sulcus well marked; produced in front into a broadly rounded obtuse rostrum which reaches to about the centre of the eyes; antero-lateral corners rounded; emarginate on its posterior border.

Pleon longer than the carapace; the 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 small with their basal parts covered by the rostrum; as far as can be seen, joined to each other at the base by a

membranous integument such as is described for *D. dactylops*; the outer distal corner produced into a rather long digitate and flexible process; a shorter and firmer 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; visual elements much 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.

Antennular peduncle rather short, with the third joint a little longer and very much stouter than the first and more swollen in the male than in the female; second joint small; male appendage well developed, but only slightly hirsute, as the specimen is still immature.

Antennal peduncle shorter than the antennular and having the second joint slightly larger than the subequal first and third joints.

Antennal scale almost twice the length of the antennular peduncle; about four to four and a half 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 fundamentally as in the genus *Amblyops*.

First and second thoracic limbs likewise agreeing with those of the genus *Amblyops*, except that the second limb is comparatively longer.

Remaining thoracic limbs broken away.

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

Incubatory lamellæ of the female, two pairs.

Pleopods in the only male, which is immature, have the inner branch of the first pair already more developed than in *D. dactylops* and armed with many more setæ; otherwise they conform to the *Amblyops* type.

Telson comparatively short; about two thirds (slightly less) of the length of the last segment of the pleon; subtriangular in shape; 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 ten rather stout spines increasing slightly in length towards the apex; a pair of median plumose setæ 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, apparently without spines on its inner margin; outer, twice the length of the telson.

Length of a mature female 16 mm., of an immature female 14 mm., and of an immature male 15 mm.

Locality. Two females and one male from S.R. 352, 92 miles S.W. by W. of Bull Rock, Co. Kerry, lat. $50^{\circ} 22' N.$, long. $11^{\circ} 40' W.$, 800 fath., August 1906, Petersen trawl at 750–800 fath.

This species while obviously congeneric with *D. dactylops* is abundantly distinguished from it by the better developed rostrum, the two processes of the eye, the longer antennal scale, and the greater number of spines arming the margins of the telson.

Dactylerythrops gracilura, sp. n.

Carapace covering all the thoracic segments; broadly and evenly rounded in front, without any trace of a rostral projection; antero-lateral corners rounded; emarginate on its posterior border.

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

Eyes very small, almost entirely covered by the carapace; very 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 on the inner corner; visual elements very imperfectly developed, confined to a small deeply-seated mass at the base of the outer process; no pigment observed in preserved specimens.

Antennular peduncle rather short; about half as long as the antennal scale; basal joint flattened and broader than the other two; second joint small; third joint the longest, moderately stoutly built, produced ventrally between the bases of the two flagella into a short process armed with about six strong setae; the whole appendage in lateral view appears curiously contorted.

Antennal peduncle slightly shorter than the antennular peduncle and likewise slightly contorted in lateral view; rather stout; second joint the largest.

Antennal scale almost twice as long as the antennular peduncle; 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 produced for a length

equal to about one-eighth of the total length of the scale; no spine on the basal joint.

Mouth-parts and first and second thoracic limbs not differing in any important point from those of the last species.

Remaining thoracic limbs with the tarsus equal to the merus, three-jointed, the first joint the longest; nail well developed, but shorter than the last joint of the tarsus.

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

Incubatory lamellæ of the female, two pairs.

Telson diverging somewhat from the type met with in *D. dactylops* and *D. bidigitata*, and shaped almost exactly as in the genus *Meterothrops*; equal in length to the last segment of the pleon and twice as long as broad at its base where the margins are somewhat inflated; margins rapidly converging to a very narrow 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 short spines.

Uropods 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 a mature female 15 mm.

Locality. Four females from S.R. 352, 92 miles S.W. by W. of Bull Rock, Co. Kerry, lat. $50^{\circ} 22' N.$, long. $11^{\circ} 40' W.$, 800 fath., August 1906, Petersen trawl at 750–800 fath.

This form diverges somewhat from the other two species of the genus in the shape of the telson, which in its narrowly lanceolate form and want of apical setae approaches that of members of the next genus. The eyes, however, conform to the general type of *Dactylerythrops*, and to that genus the species is provisionally referred. The eyes are rather remarkable and enable the species to be readily distinguished; they are almost entirely covered by the carapace, only the two digitate processes projecting beyond the latter.

Genus DACTYLAMBLYOPS, Holt & Tattersall, 1906.

Syn. *Dactylerythrops*, Illig, 1906.

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 *Dactylerythropros*, reaching to the surface of the eye and probably directly functional as organs of sight; outer distal corner rounded and not produced into a digitiform process; a short process always present on the inner and upper surface.

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

The type and the two new species described below appear to form a natural group chiefly distinguished from the genus *Dactylerythropros* by the above points, and in the present state of our knowledge of the group this generic division may well be allowed to stand.

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

Dactylamblyops thaumatops, sp. n.

Carapace 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 eye-stalks; evenly rounded at the antero-lateral corners and emarginate behind; cervical sulcus well marked.

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

Eyes 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 just ventral to the digitiform process and dividing the cornea into a dorsal and ventral portion; the 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 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 about half as long as the scale; the three joints roughly subequal in length.

Antennal scale 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 spine, beyond which the apex of the scale is not produced; spine on the outer distal corner of the basal joint obsolete.

Mouth-parts and first and second thoracic limbs not differing in any striking way from those of the type species.

Remaining thoracic limbs missing.

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 lamellæ of the female, two pairs.

Telson not quite so long as the last segment of the pleon and once and two thirds as long and broad at its base, where the margins are somewhat 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; median apical setæ absent.

Uropods moderately slender: inner, about one and a half times as long as the telson, otocyst rather large, with apparently no spines on its inner margin; outer, broken in both specimens.

Length of both specimens (immature females) 11 mm.

Locality. Two immature females from S.R. 352, 92 miles S.W. of Bull Rock, Co. Kerry, lat. 50° 22' N., long. 11° 40' W., 800 fath., August 1906, Petersen trawl at 750-800 fath.

This species is readily distinguished by the remarkable structure of the eye, which is one of the most wonderful among the many varied forms met with in Schizopoda. The exact function of the external membranous ledge is not quite clear. In other characters the species is rather closely allied to the type.

Dactylamblyops goniops, sp. n.

Carapace 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 second, which is subequal to the third, fourth, and fifth; sixth segment rather long, two and a half times as long as the fifth.

Eyes a little larger than in the last species, set close together and rather subquadrangular than pyriform in dorsal outline; the digitiform process on the inner and upper face more slender and a little longer than in either the type or

the last species; visual elements imperfectly developed, numerous; pigment pale purplish pink.

Antennular peduncle in the female extending slightly more than halfway up the scale, third joint rather shorter and not wider than the first; in the male relatively a little longer, with the third joint slightly longer and more robust than in the female; male process well developed and hirsute.

Antennal peduncle only slightly shorter than the antennular; third joint the longest and most robust.

Antennal scale extending for rather less than half its length beyond the antennular peduncle; about three times as long as broad; outer margin slightly 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.

Telson about three quarters of the length of the last segment of the pleon and slightly less than twice as long as 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 about one seventh of the total length of the telson; a single very slender median spine at the apex between the terminal spines of the margins; median setæ absent.

Uropods slender: inner, only a little longer than the telson plus the terminal spines and with four long spines on its ventral inner 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.

The third to the eighth thoracic limbs are broken off in both specimens. The first and second thoracic limbs and the mouth-parts, as well as the male pleopods, are in substantial agreement with the same parts in both the type and the foregoing species, except that the last joint of the mandibular palp is shorter and somewhat more robust.

Locality. An adult male and female from S.R. 359, 56 miles W. by N. of Tearaght, Co. Kerry, 465-492 fath., August 1906, tow-net on trawl.

This species is at once distinguished from its congeners by the characters of the eye, antennal scale, telson, and inner uropods. The sixth pleon-segment is also relatively longer than in either of the other two species. The antennal scale resembles rather closely that figured for *Paramblyops rosstrata*, H. & T., 1905.

Genus BATHYMYSID, nov.

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

Eyes 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.

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 Helgæ*.

In the general structure of the appendages of the thorax (with the exception of the second maxillæ), 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 maxillæ, telson, and eyes. The first two of these structures are interesting as exhibiting a form met with in many of the genera of the subfamily *Mysinæ*, 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. *Bathymysis* also bears considerable resemblance to the genus *Pseudomysis*, G. O. Sars, but the greatly different form of the telson at once distinguishes it.

Bathymysis Helgæ, sp. n.

Carapace covering all the thoracic segments; evenly rounded in front and at the antero-lateral corners; without trace of rostral projection.

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 one and a half times as long as the fifth.

Eyes strongly recalling those of *Amblyops*, rather small, somewhat flattened and subquadrangular in shape, not reaching to the distal end of the first joint of the antennular peduncle; apparently without definite peduncles; set very close together; visual elements imperfectly developed and without pigment in preserved specimens.

Antennular peduncle a little shorter than the telson, moderately stout, third joint equal in length to the basal two combined; male appendage well developed and densely hirsute.

Antennal peduncle a little shorter than the antennular, slender, the second joint one and a half times as long as the third.

Antennal scale equal in length to the telson and a little longer than the antennular peduncle; about four and a half times as long as broad; shortly lanceolate or oval in shape; setose all round; spine on basal joint almost obsolete.

Mouth-parts and thoracic limbs as described above in the generic definition. The exopods have the outer corner of the basal joint rounded and the flagelliform part composed of twelve joints.

Pleopods of the male as described for *Leptomysis*. The fourth pair have the outer ramus longer than the inner; the last three joints are devoid of setae; the antepenultimate joint carries a single long and powerful plumose or barbed spine; a similar but much shorter spine is found on the penultimate joint, while the terminal joint has two of these long barbed spines.

Telson a little longer than the last segment of the pleon and twice as long as broad at its base; narrowing slightly towards the apex, where its breadth is equal to one third of the total length; cleft very deep and fairly wide, extending for one third of the total length; the apical lobe on each side of the cleft bluntly rounded at its tip; cleft serrated, with about thirty spines on each side; lateral margins armed throughout their entire length with about forty spines, which increase slightly in length towards the apex, but there is no single outstanding long spine at the apex of each lobe as seen in species of *Mysis* and *Schistomysis*.

Uropods broken in the specimen; inner one with a row of spines all along its inner ventral margin, thirty-four being counted on that part of the uropod which remained and which extended a little beyond the apex of the telson.

Length of the only specimen (a mature male) 15 mm.

Locality. S.R. 364, lat. 51° 25' N., long. 11° 29' W., to lat. 51° 25' N., long. 11° 36' W., 620-695 fath., August 1906, fine net on trawl.

Two species new to the British and Irish list may also here be noticed, *Hansenomysis Fyllæ* (Hansen) and *Erythrops microphthalmus*, G. O. Sars, having been taken in 400-800 fathoms off the coast of Kerry, in August 1906.

List of Authorities quoted.

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