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LIV.—Notes on British Amphipoda.—I. Megaluropus, n. g., and some Ædiceridæ

Rev. A.M. Norman M.A. D.C.L. F.L.S.
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LIV.—*Notes on British Amphipoda*.—I. *Megaluropus*, *n. g.*,
and some *Ædiceridæ*. By the Rev. A. M. NORMAN,
M.A., D.C.L., F.L.S.

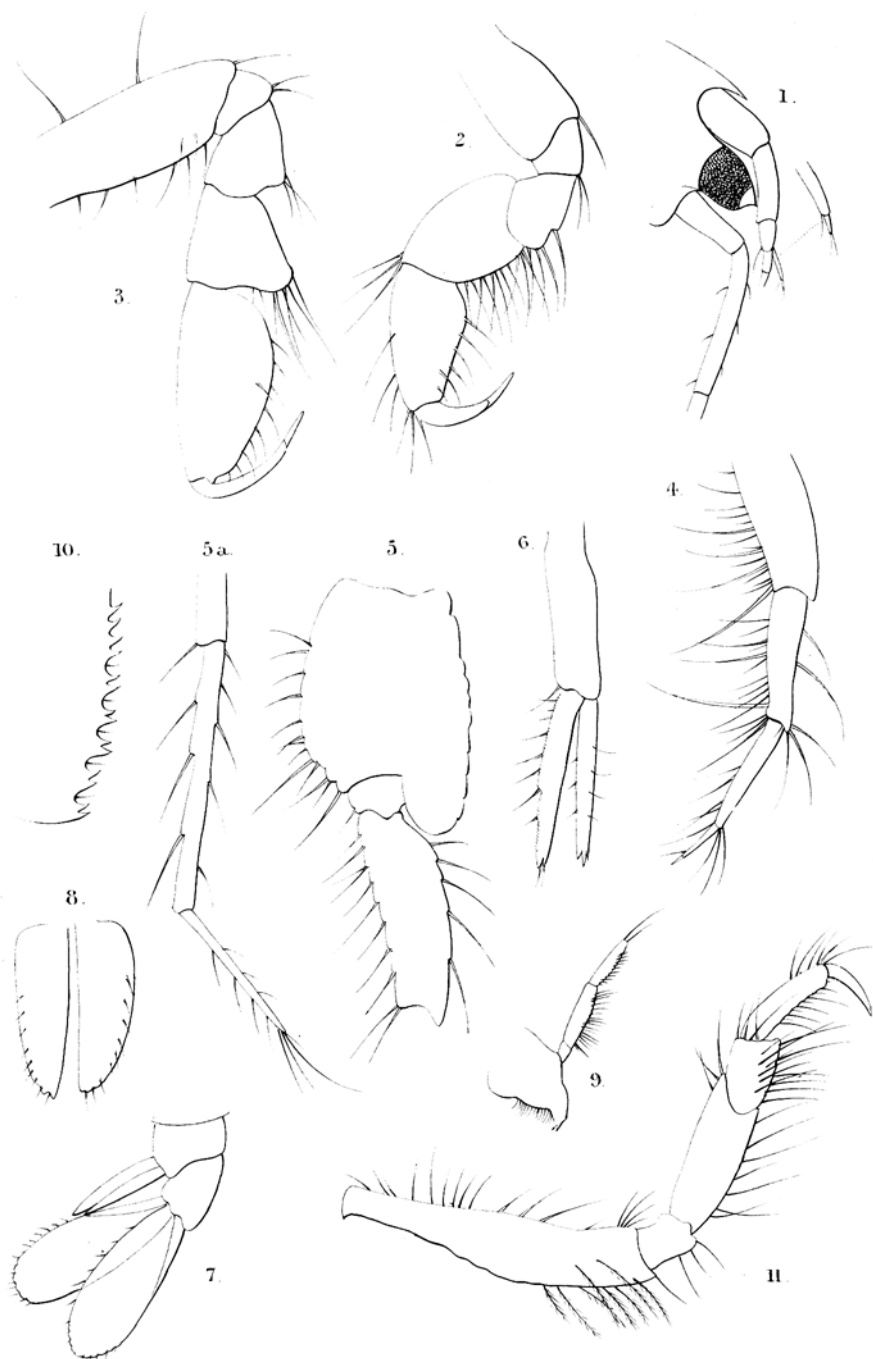
[Plates XVIII.–XX.]

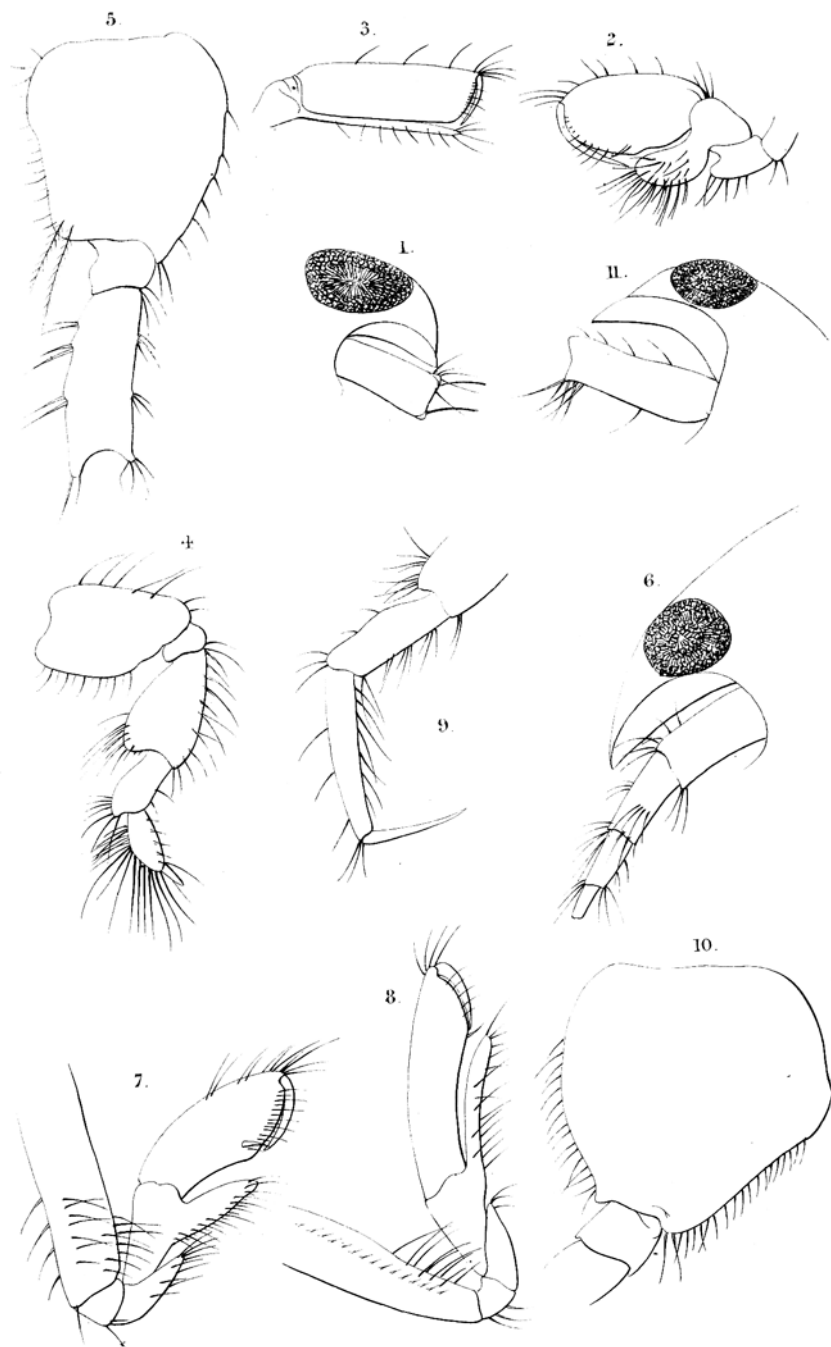
MY purpose in these notes is to describe new or little-known Amphipoda, to correct nomenclature, and to give details regarding distribution.

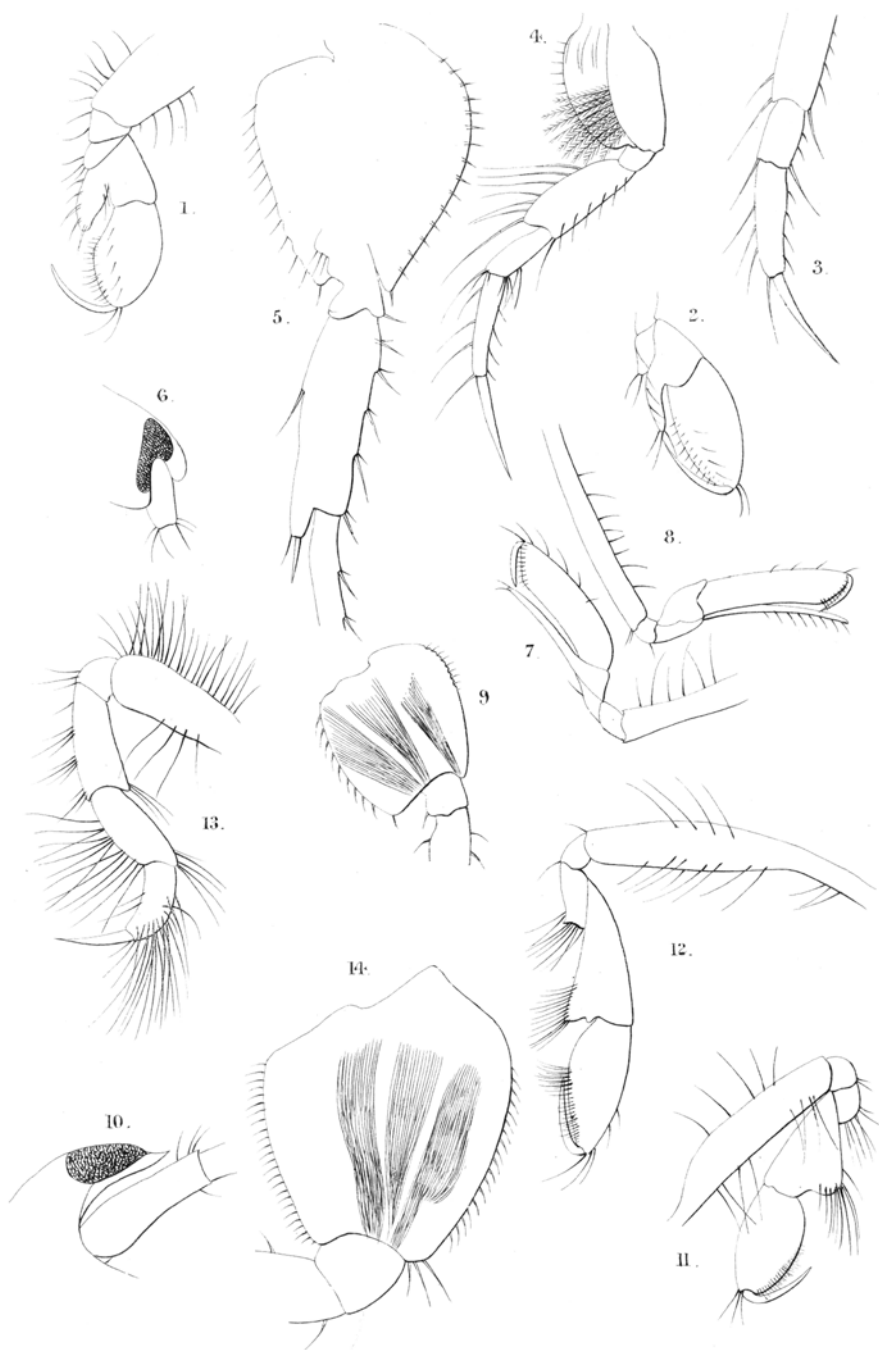
At the time when Messrs. Bate and Westwood's 'History of British Sessile-eyed Crustacea' was published the subject, more especially as regards the Amphipoda, had been little studied. Sexual differences had scarcely been recognized, and still less the alterations of structure dependent upon age; hence many errors crept in. But a more serious obstacle to the full and accurate description of the forms was the scarcity of specimens at the disposal of the authors for examination. In a large number of instances species were described from single individuals which, having been merely entrusted to the authors for examination, they were unable to dissect; moreover in some instances these specimens were dried, and presented therefore the greatest difficulties with respect to their full elucidation. It is only by dissecting and mounting the organs of the Amphipoda that their structure can be fully and properly

Ann. & Mag. N. Hist. Ser. 6. Vol. iii.

31







seen. I have thought it only right to draw attention to these points, since I am compelled frequently to dissent from the conclusions of Messrs. Bate and Westwood in these notes.

Genus MEGALUROPUS, n. g.

(μέγας, οὐρά, ποῦς=having large uropods.)

Head produced forwards between the bases of the antennules and antennæ into a conspicuous lobe in which the large round eye is situated. Antennules with short secondary flagellum, much shorter than the antennæ. Gnathopods not large, subchelate, second pair rather larger than the first. Last uropods with the branches in the form of large, membranaceous, leaf-like laminæ. Telson squamiform, cleft to the base.

The most remarkable characters in this genus are the eye, which is situated on the greatly projected lobe, and the expanded foliaceous branches of the last uropods. In the former particular we are reminded of the genus *Photis* (= *Eiscladus*, B. & W.), in the latter of the genus *Elasmopus* (Boeck), near to which last genus the present should, I think, take its place. In *Elasmopus* the eye is situated on the side of the head, the antennules are longer than the antennæ instead of the reverse, and the peræopods are constructed in a very different manner, the joints being widely expanded and the limbs robust.

Megaluropus agilis, n. sp. (Pl. XVIII. figs. 1-10.)

Head (fig. 1) with a rostrate acute process above, which is extended about half the length of the first joint of the antennules; on the side between the bases of the antennules and antennæ there is projected a large lobe, which is pointed at the end and reaches one third of the length of the second joint of the peduncle of the antennules; this lobe, with the exception of the point at its extremity, is filled with an eye composed of large conspicuous lenses. Antennules slender, first two joints subequal in length, third about half that length; flagellum shorter than peduncle, composed of six or seven articulations, secondary appendage minute, consisting of two articulations. Antennæ having the two distal joints of the peduncle subequal, very long and slender and almost naked; flagellum eight-jointed. First gnathopods (fig. 2) having the wrist ovate, as long as and broader than the ovate hand, which latter tapers towards the extremity, the whole of which is occupied by the attachment of the strong, well-curved nail; palm continuous with the front margin for nearly two

thirds its length. Second gnathopods (fig. 3) somewhat stronger than the first; wrist triangular, widening to the extremity, and forming a conspicuous lobe below the attachment of the hand, this lobe terminating in several spine-like setæ; hand nearly straight on the back and convexly rounded below, the length double the greatest breadth, which is nearly central; finger long and well curved, an undefined palm to about half the length of the hand. Last peræopods (figs. 5 and 5 *a*) very long and slender, when stretched backwards reaching beyond the uropods; basos oblong and produced behind into a downward directed lobe, and reaching much below the extremity of the ischium; terminal joints very slender, the last without a nail, ending in setæ. First uropods (fig. 6) with branches shorter than the peduncle, upper edge of outer branch spinose and finely serrated on the edge between the spinules. Last uropods (fig. 7) consisting of a strong basal joint and two leaf-like, broad, membranaceous branches, widely rounded at the extremities, and with the margin there obscurely crenulated, with minute cilia in the interstices of the crenulations. Telson (fig. 8) in form as two thirds of an ellipse, cleft to the base, a row of minute cilia within the margin. Hinder dorsal margin of third segment of pleon serrated and hinder lateral margin of the same segment also serrated, the serrations on the lower portion (fig. 10) set in pairs or threes with a sinus between, and at the bottom of each of the sinuses there is a cilium. Infero-posteal angle of second segment of pleon also produced to a spine-point, above which there are commonly one or two serrations. Length 4-5 millim.

This species is most frequently taken by means of the surface-net at night, it being a very active swimmer.

Hab. Cumbræ, Firth of Clyde (*D. Robertson*); Starcross, Devon; and Jersey (*A. M. N.*); 25 miles off May Island, Firth of Forth (*John Murray*): *Mus. Norm.* Liverpool Bay! (*A. O. Walker*).

Fam. *Ædiceridæ*.

Genus I. *MONOCULODES*, Stimpson.

1. *Monoculodes carinatus*, Bate. (Pl. XIX. figs. 1-5.)

1855. *Westwoodia carinata*, Bate, Brit. Assoc. Rep. p. 58.

1859. *Ædiceros affinis*, Bruzelius, Skand. Amphip., Gammaridæ, p. 93, pl. iv. fig. 15, ♂ junior.

1862. *Monoculodes carinatus*, Bate & Westw. Brit. Sessile-eyed Crust. vol. i. p. 165 (♂ ?).

1862. *Monoculodes Stimpsoni*, iid. ib. p. 160, ♂ junior.

1870. *Monoculodes affinis*, Boeck, Crust. Amphip. bor. et arct. p. 84, ♀.

1876. *Monoculodes affinis*, Boeck, De Skand. og Arkt. Amphip. p. 265, pl. xiv. fig. 6, ♀.

1883. *Monoculodes carinatus*, Schneider, Af Norges kyster forekom. Art. af Ædiceridæ, p. 19, pl. i. fig. 4.

1887. *Monoculodes carinatus*, Chevreux, Cat. Amphip. du Sud-ouest de la Bretagne, p. 12.

Hab. Shetland, Cumbrae, Firth of Clyde, Northumberland coast (*A. M. N.*); Banff (*T. Edward*); 25 miles off May Island, in the Firth of Forth (*John Murray*): *Mus. Norm.*

Distribution. Florø, Norway, 35 fath. (*A. M. N.*); South and West Norway (*G. O. Sars*); Bohuslän (*Bruzellius*); Croisic, France (*Chevreux*).

Adult female. Rostrum (fig. 1) largely hooded, equal to length of first joint of antennules, extremity bent downwards, rather blunt; eye large, occupying the greater part of the rostrum. Antennules with second joint equalling first, the third not half the length of the second. Antennæ with fifth joint about one third longer than fourth. First gnathopods (fig. 2) having the wrist short, calx half the length of hand, broadly linguiform, broadest in the middle, widely rounded at the extremity, hollowed on the face towards the palm, setose all over; hand ovate, palm well arched, occupying one half the margin, the strongly curved finger reaching nearly to extremity of calx of wrist. Second gnathopods (fig. 3) having the wrist produced into a very long, narrow, linear calx, which is appressed to the margin of the hand, the length of which it slightly exceeds; hand in the form of a long oblong, with parallel sides, which are not arched, rather more than three times as long as broad, palm scarcely at all oblique, occupying the distal side of the oblong. Peræopods 1-4 remarkable on account of their terminal joints, densely clothed with setæ and slender spines, and the characters of the hand, which is densely setose on one margin and furnished within the other with a row of minute spinules, and of the nail, which is very minute and weak; the fourth pair (which is figured, fig. 4) is not so densely setose and spinulose as the first and second pairs, and the nail is somewhat larger. Last peræopods (fig. 5) having the basal joint subquadrate, length and breadth subequal, front margin bearing spinules, hinder margin ciliated, and a few long plumose setæ spring from the face; four distal joints subequal in length. Length 10 millim.

The male differs from the female in having the second and third joints of antennules much shorter and the flagellum much thickened, the first articulation very long, and densely clothed with setæ. The antennæ have the upper margin of the distal joints of peduncle set with transverse rows of minute cilia, the flagellum greatly elongated, consisting of 70-80 articula-

tions. These sexual distinctions in the male seem to hold good throughout the genus, as I have noticed them in several species. The last peræopods, moreover, instead of having the two distal joints furnished with small spinules and groups of 3-5 and of single, long, spine-like setæ, have the penultimate joint more strongly spined and the last more slender, the spines stronger, and the setæ of much greater length.

In the young (May Island) the antennæ are less strongly spined and the brush of setæ of the hand of peræopod much less developed proportionately than in the adult.

Bate and Westwood's figure and description of *M. carinatus* are inexact in the following points:—The metacarpus of the first gnathopods is not "produced inferiorly to a sharp point," but is obtusely produced and furnished with numerous divergent setæ at the extremity. In the figure the lower margin of the last joint of the antennæ is represented as clothed with down, which is not the case in the female, in which it has transverse rows of spines, and although the male has such down (or cilia) it is on the upper, not lower, margin. The last joints of last peræopods are also drawn too setose for the female, though the last joint would well represent that part of the male. Judging from the *antennæ*, however, I should suppose that Bate and Westwood's figure was taken from a female.

Monoculodes Stimpsoni was first described in Cat. Amphip. Crust. Brit. Mus. p. 105, from a very imperfect specimen; but, in Hist. Brit. Sessile-eyed Crust., Bate and Westwood made a specimen in my collection their type. That specimen I have now dissected and compared carefully with *M. carinatus*, to which it is undoubtedly referable. It will be observed that their figure and description of the antennæ do not accord, while the figure and description of the second gnathopods are altogether wrong, the mistake having clearly arisen from a laterally foreshortened view of the limb in the undissected animal. The numerous short joints of the flagellum of the antennæ show it to be an immature male and is the state which exactly accords with *M. affinis*, Bruzelius.

Monoculodes affinis of Goës, however, is certainly not this species, and he appears, moreover, to have confused two species. One of these (Goës, fig. 21') Schneider assigns to *M. borealis*, Boeck, and the other (Goës, fig. 21) with doubt to *M. norvegicus*, Boeck. Hansen agrees as to the former allocation, which appears to me also to be correct, but would refer the latter to *M. tuberculatus*, Boeck.

Hansen ('*Malacostraca marina Grœnlandiæ occidentalis*,

1887, p. 108, pl. iv. fig. 5) has recently described a species from Greenland, *M. crassirostris*, which has similar small nails to *M. carinatus* and chiefly seems to differ from that species in the fact that the basal joint of the last peræopods is more dilated. Is it really distinct?

2. *Monoculodes subnudus*, n. sp.

(Pl. XVIII. fig. 11, and Pl. XIX. figs. 6-10.)

Rostrum (fig. 6) well developed, arcuate, apex acute, bent downwards and extending considerably beyond first joint of antennules. Eye large, occupying the basal portion of rostrum, not prominent. Antennules with basal joint furnished with plumed setæ and spines; second joint equal in length to first, third half the length of second; flagellum of 11-14 long joints. Antennæ having fourth and fifth joints subequal. First gnathopods (fig. 7) having the thigh long; calx of carpus elongated ovate, divergent, reaching commencement of palm; hand narrow at the base and expanding distally, arcuate, arched* on the back, distinctly concave in front, widest at the commencement of the palm; palm scarcely occupying one half the length of the hand. Second gnathopods (fig. 8) in general form as in *M. borealis*, but having the hand much narrower in proportion to its length, length about equal to five times the breadth, palm oblique, occupying somewhat less than one third of length; calx of wrist linear, somewhat divergent, reaching commencement of palm. First and second peræopods (Pl. XVIII. fig. 11) with length of joints in the following order:—thigh, meros, hand, wrist, nail, ischium; sparingly ciliated except wrist; thigh linear, five times as long as broad, as usual with stiff setæ on parts of the margin, and a few plumose setæ on the face; meros nearly linear, not lobed behind, upper margin naked, except a small bunch of (6-8) setæ at distal extremity; wrist densely ciliated in front and produced there downwards into a little lobe; nail well developed, slightly curved, equal in length to two thirds of the linear hand. Third and fourth peræopods (fig. 9) with thigh, metacarpus, and hand subequal in length, wrist rather shorter, nail well developed, nearly straight, more than half the length of long linear hand; thigh ovate, flattened into a thin plate behind and slightly so on edge in front, girt with stiff simple setæ and numerous plumose setæ on face; meta-

* I regard all the limbs of the body (whether directed forwards or backwards) as I do a human hand; that is, the back or upper side is that away from the bend of the limb, the front or lower side that which is within the bend of the member.

carpus rather expanded and lobed behind, the lobe not projected downwards over wrist; wrist and hand linear, all the joints except thigh only sparingly setose. Last peræopods (fig. 10) with thigh pyriform, as broad as long, slightly emarginate below behind. All the pairs of uropods with inner branch somewhat longer than outer, last pair with peduncle and longer branch subequal. Telson subquadrate, apex emarginate in the centre, angles broadly rounded, each furnished with five marginal spinules. Length 10 millim.

The male differs from the above-described female in having the second and third joints of peduncle of antennules shorter (as appears to be usual in males of this genus) and together not equalling the length of first joint; flagellum long, 15-jointed, joints very long, especially the first and the distal articulations, first equalling combined length of last two joints of peduncle, densely setose. Antennæ with two distal joints of peduncle clothed with short cilia on upper margin; flagellum very long.

Monoculodes subnudus is distinguished from its allies more especially by the rostrum, telson, and peræopods; the name *subnudus* has allusion to the comparatively slight ciliation of the last-named organs in this species.

Hab. Shetland; Sleat Sound, Isle of Skye (*A. M. N.*).

In many respects *M. subnudus* approaches *M. borealis*, Boeck, but may at once be distinguished by the greater length of the rostrum and its less arched form; a figure of the rostrum of *M. borealis* is given for comparison (Pl. XIX. fig. 11). It also comes near to the Greenland species *M. simplex*, Hansen, but here again the longer rostrum suffices to distinguish it. The form of the rostrum appears to afford very valid characters in this genus, and all the specimens of the present species which I have examined have the rostrum alike.

3. *Monoculodes longimanus*, Bate and Westwood. (Pl. XX. figs. 6-9.)

1868. *Monoculodes longimanus*, Bate & Westw. Brit. Sessile-eyed Crust. vol. ii. p. 507.
1870. *Monoculodes Grubei*, Boeck, Crust. Amphip. bor. et arct. p. 85.
1876. *Monoculodes Grubei*, Boeck, De Skand. og Arkt. Amphip. p. 269, pl. xvi. fig. 1.
1883. *Monoculodes Grubei*, Schneider, Af Norges kyster forekom. Cædiceridæ, p. 24.
1887. *Monoculodes longimanus*, Chevreux, Cat. Crust. Amphip. du Sud-ouest de la Bretagne, p. 13, pl. v. figs. 1, 2.
1888. *Monoculodes æquimanus* (Norman, MS.), Robertson, Contrib. Cat. Amphipoda and Isopoda Firth of Clyde, p. 26.

Hab. Oban; Firth of Clyde; Starcross, Devon (*A. M. N.*);

Banff (*T. Edward*): *Mus. Norm.* Off the Scilly Islands (*D. Robertson and G. S. Brady*).

Distribution. Southern Norway (*G. O. Sars*): *Mus. Norm.* South-west France (*Chevreaux*).

Animal white, pellucid. Rostrum (fig. 6) very short, not hooded, extremity blunt, closely appressed to first joint of antennules, and not equal to half its length. Eye very large and of unusual form in the genus, situated at base of rostrum, and extending thence down the side of the head round the base of the antennules, its colour brilliant blood-red, lenses indistinct. Antennules (♀) with peduncle much longer than that of antennæ, first joint rather more than twice as long as broad, second joint longer, third still longer and very slender; flagellum about six-jointed. Antennæ with last two joints of peduncle short and subequal. Gnathopods (figs. 7 and 8) of nearly the same form in both pair; no produced calx to meros; wrist produced into a long linear calx, projected forward parallel with the hand, and in the first pair extending markedly beyond the commencement of the palm, in second pair longer still and exceeding in length the whole hand; hand greatly elongated, gently arched above in the first, nearly straight in second; length in second pair about five times the breadth, palm moderately oblique; basos of second pair much longer than that of first, the whole limb being more produced. Anterior peræopods with broad hand, the little nail, which is not half its length, attached at lower corner of the extremity, and from above it springs a dense brush of long setæ. Last peræopods (fig. 9) very long, extending greatly beyond the uropods, four last joints subequal, the nail being exceedingly long and slender. Telson obovate, widely rounded at the extremity. Length 3-4 millim.

Chevreaux has accurately figured the heads of the two sexes. The male differs from the female in having the last two joints of the peduncle of the antennules shorter than the first joint and the first articulation of the flagellum greatly developed, very long, and densely ciliated, while the antennæ have not the upper margin of two distal joints of peduncle covered with minute cilia (as is usual in males of this genus), but the flagellum is, as usual, greatly elongated.

My friend Mr. Robertson and myself have taken the males of this species by means of the tow-net worked at night.

Mr. D. Robertson has given in his excellent 'Catalogue of the Amphipoda and Isopoda of the Firth of Clyde' the name *Monoculodes æquimanus*, Norman MS., a name by which I distinguished this species in my collection and which I gave him before it was described by Bate and Westwood.

4. *Monoculodes Packardi*, Boeck.

1870. *Monoculodes Packardi*, A. Boeck, Crust. Amphip. bor. et arct. p. 86.
 1876. *Monoculodes Packardi*, A. Boeck, De Skand. og Arkt. Amphip. p. 274, pl. xiv. fig. 3.
 1883. *Monoculodes Packardi*, Schneider, Af Norges kyster forekom. art. af *Ædiceridæ*, p. 27, pl. i. fig. 6.

Hab. Loch Striven, Firth of Clyde, 40 fathoms, dredged by the 'Medusa,' the steamer of the Scotch Marine Station (*David Robertson*): *Mus. Norm.*

Distribution. Tromsø, 20 fathoms (*S. Schneider*): *Mus. Norm.* South and West Norway (*G. O. Sars*).

Mr. D. Robertson brought this species under my notice last summer, when he also kindly gave me specimens. It is not here described because I believe that he will himself shortly do so. It may be mentioned, however, that I have confirmed his identification by actual comparison of his specimens with those kindly given me by Herr J. Sparre Schneider from Tromsø, with which specimens the Clyde examples entirely agree.

5. *Monoculodes æquicornis*, Norman. (Pl. XX. figs. 1-5.)

1868. *Ædiceros æquicornis*, Norman, Last Report Dredging among the Shetland Isles, Brit. Assoc. Report, p. 278.

Rostrum extending beyond the first joints of the antennules. Antennules having the three joints of the peduncle of nearly equal length, each more slender than the preceding, filament equal in length to the last two joints of the peduncle, composed of five long articulations. Antennæ slender and short; peduncle exceeding that of antennules by nearly the last joint, which is equal in length to the penultimate; filament very slender, 4-5-jointed, equal in length to the last joint of the peduncle. First gnathopods (fig. 1) with wrist anteriorly produced into a wide rounded lobe, which reaches forward to the commencement of the palm; hand obovate, widest in the centre, where the palm commences, which is very oblique; finger slender, simple, as long as the palm. Second gnathopods (fig. 2) very like the first, but the hand slightly larger and rather more elongated. All the peræopods with very long and nearly straight nails (fig. 3), which about equal the propodos in length; propodos much longer than carpus. Penultimate peræopods (fig. 4) with a row of setæ down the middle of the basos. Last peræopods (fig. 5) with the basos small, elongated, pear-shaped, equally produced anteally and

posteadly, both margins with small cilia, the hinder margin also crenated, the last four joints all greatly produced and each longer than the basos, the whole limb very long. Length 5 millim.

A single specimen from St. Magnus Bay, Shetland, in 30-60 fathoms (1867).

The above is the description given by me in the 'Shetland Dredging Report.' The specimen, which was mounted, is not now in good condition, the antennæ, antennules, and rostrum having a good deal shrunk and the gnathopods being somewhat folded. For this reason the figures given of the gnathopods are probably not so exactly correct as regards the carpus as could be desired; but the hands are in good position for drawing, and the other illustrations may be regarded as strictly accurate. I give the following additional particulars. The setæ of the peduncles of the antennules and antennæ stand out at nearly right angles, and in this respect remind one of *M. tuberculatus*. The first peræopods (fig. 3) are, as well as the other peræopods, very sparingly ciliated, the nail very long and acute, as long as the propodos. The fourth peræopods have the basos ovate, with a line of setæ down the distal half of the centre, the hinder margin with cilia at regular intervals; the meros is expanded behind at its termination, and is there twice as broad as the portion to which the carpus is united. Meros, propodos, and dactylus subequal in length, carpus about one third shorter. Last peræopods having the basos pyriform, rather longer than broad, equally produced behind and before; hinder margin obscurely crenated, with small cilia, front margin bearing minute spinules; meros as long as basos, distal posterior angle produced downwards into a lobe which is equal in length to the breadth of the carpus. Although there is a corresponding lobe in some other species it is here more largely developed than usual.

This species may possibly be the same as *M. tenuirostratus*, Boeck, but I am unable to determine with certainty. The last uropods are absent in my specimen, and the parts which seem to afford good characters in *M. æquicornis* are not so described by Boeck as to lead with any degree of certainty to identification. At any rate the name here employed, *M. æquicornis*, antedates by two years that of *M. tenuirostratus*, and it would appear to differ from the latter form markedly in the characters of the antennæ and antennules, the less produced rostrum (which, though bearing the same relative length to the first joint of antennules, is shorter, since that joint is shorter), the more expanded meros of fourth peræopods, and other points.

Genus II. HALIMEDON, A. Boeck.

[= *Westwoodia* (partim) and *Westwoodilla*, Bate (erroneously described).]

Mandibles only slightly toothed at the extremity and thick ; palp very long, narrow, and curiously curved.

First gnathopods having the wrist as long as or much longer than the ovate hand and slightly dilated at the infero-posteal angle.

Second gnathopods with a very long and narrow wrist, either with or without a small "calx ;" hand as long as or shorter than the wrist (*Boeck*).

Halimедon parvimanus (Bate and Westwood).

(Pl. XX. figs. 10-14.)

1855. *Westwoodia cæcula*, Bate, Rep. Brit. Assoc. p. 58, ♀.
 1857. *Westwoodia cæcula*, Bate, Ann. & Mag. Nat. Hist. ser. 2, vol. xix. p. 139.
 1862. *Westwoodilla cæcula*, Bate, Cat. Amphip. Brit. Mus. p. 102 ; Bate & Westw. Brit. Sessile-eyed Crust. vol. i. p. 155, ♀.
 1862. *Westwoodilla hyalina*, Bate, Cat. Amphip. Brit. Mus. p. 103, pl. xvii. fig. 5, ♂ junior ; Bate & Westw. Brit. Sessile-eyed Crust. vol. i. p. 158.
 1862. *Ædiceros parvimanus*, Bate & Westw. Brit. Sessile-eyed Crust. vol. i. p. 161.
 1870. *Halimедon Mülleri*, A. Boeck, Crust. Amphip. bor. et arct. p. 89.
 1876. *Halimедon Mülleri*, A. Boeck, De Skand. og Arkt. Amphip. p. 281, pl. xiii. fig. 5.
 1886. *Halimедon Mülleri*, Schneider, Af Norges kyster forekom. art. af fam. Ædiceridæ, p. 33, pl. iii. fig. 17.

It will be observed that I unite under this name three species described by Bate and Westwood.

The genus *Westwoodilla* was established under a misinterpretation of the form described. The first gnathopods were not observed ; the second gnathopods were regarded as the first, and the first pereopods as the second gnathopods. A comparison of the figures published by Bate and Westwood of these parts with those here given will show this to have been the case, while their figures *d* and *g* (p. 155) are good illustrations of the mandible and maxillipeds of *Halimедon parvimanus*, the palp of the mandible of which is very peculiar and unlike that of any other species known to me. With respect to *W. hyalina*, Bate and Westwood themselves questioned its distinctness ; it was taken with their *W. cæcula*, and I can see no specific character by which it can be distinguished. Their *Ædiceros parvimanus*, of which the types are in my collection, is undoubtedly the *Halimедon Mülleri* of Boeck.

I have felt some hesitation as to which specific name ought to be adopted; but as both *cæcula* and *hyalina* were given under a misapprehension of the structure of the species, and the former cannot moreover be received, as the name implies what is not correct, it has seemed to me best to take the name *parvimanus*, which I the less hesitate to do as Mr. Bate's name will still be associated with the species.

The rostrum (fig. 10) is well developed, gently arched above, and reaches nearly to the end of first joint of antennules; the eye is conspicuous, situated in the rostrum and very prominent; in front of the eye the rostrum is suddenly contracted and projected as a little point; and this peculiar form of the rostrum at once enables the species to be picked out from a gathering of mixed *Ædiceridæ*. The second joint of the antennules in the female is much longer than the first, in the male it is subequal to it in length. The first gnathopods (fig. 11) have the wrist rather longer than the hand, the front margin produced at the middle into a rounded setose lobe, which is not porrected; hand regularly ovate, palm occupying half the length. The second gnathopods (fig. 12) have very much the same character, but the limb is altogether much more slender and drawn out; meros with a little point below; carpus gradually widening from the base to the extremity, distally truncate, and much wider than the insertion of the hand; hand shorter than wrist, ovate, palm occupying fully half its length. The anterior peræopods (fig. 13) have the wrist and hand subequal in length and rather shorter than the meros, the distal half of the back of the hand bears a dense brush of long setæ, the nail well developed and nearly as long as the hand. The nail of the third and fourth peræopods is very long and acute. Basos of last peræopods (fig. 14) widest above, gradually narrowing downwards, length rather greater than breadth. Telson oblong, evenly rounded at the termination, and bearing four spinules. Length 7–11 millim.

As in other *Ædiceridæ*, the male differs from the female in having the last two joints of the peduncle of the antennules shorter and the flagellum densely ciliated almost to the extremity; but the first joint of the flagellum is not elongated and enlarged, as is usual in males of *Monoculodes*. The antennæ have the upper margin of the two distal joints of the peduncle ciliated above and the flagellum of great length.

Hab. Sixty miles east of Shetland, 70–90 fathoms, 1861 (types); St. Magnus Bay, Shetland, 1867; off Durham coast, 1862; Skye, 1866; Cumbræ, 20 fathoms, 1885 (*A. M. N.*); Banff (*T. Edward*): *Mus. Norm.*

Distribution. Florö, Norway, 45–70 fathoms (*A. M. N.*) ; South and West Norway, 50–200 fathoms (*G. O. Sars*) ; West Greenland, 25–215 fathoms (*H. J. Hansen*).

There are several closely allied species of *Halimедon* found in Norway, some of which may be expected to occur on our coast.

Genus III. ACEROS, A. Boeck.

Head truncate in front and without any rostrum. “*Eyes* not united, very small, situated on the side of the head” (?). *Epimera* of the third and fourth segments of peræon smaller than in the preceding genera. *Antennules* of female with remarkably long peduncle and very short flagellum, the male peduncle very short and flagellum long. *Mouth-organs* similar in structure to those of the family; the mandibular palp having the second joint curved, but not so strongly as in *Halimедon*, and broader; inner lamina of first maxillæ longer than usual, with three apical plumose setæ. *Gnathopods* small, in general structure as in *Halimедon*, but the wrist furnished with a longer and narrower calx. *Peræopods*, first and second pair with meros long and broad; finger in the form of a long, flattened, knife-like, naked blade; third and fourth pairs short, the nail of similar character to that of preceding pairs; fifth pair long and slender.

Aceros phyllonyx (M. Sars).

1858. *Leucothoe phyllonyx*, M. Sars, Oversigt over Norsk-arct. Krebsdyr, Vid. Selsk. Forh. p. 148.
 1859. *Ædiceros obtusus*, Bruzelius, Skand. Amphip. Gamm. p. 92, pl. iv. fig. 17, ♀.
 1862. *Ædiceros obtusus*, Bate, Cat. Amphip. Crust. Brit. Mus. p. 373.
 1862. *Montagua phyllonyx*, id. ibid. p. 369.
 1865. *Ædiceros obtusus*, Goës, Crust. Amphip. maris Spetsbergiam alluentis, p. 11, pl. xi. fig. 24, ♂.
 1870. *Aceros phyllonyx*, A. Boeck, Crust. Amphip. bor. et arct. p. 92.
 1876. *Aceros phyllonyx*, A. Boeck, De Skand. og Arkt. Amphip. p. 392, pl. xiv. fig. 7.
 1875. *Aceros phyllonyx*, Metzger, Zool. Ergebnisse der Nordseefahrt, p. 282 (no description).
 1883. *Aceros phyllonyx*, Schneider, Af Norges kyster forekom. Ædiceridæ, p. 39, pl. iii. fig. 18.
 1884. *Aceros phyllonyx*, Schneider, Tromsø Museums, Aarshefter, vii. p. 95.
 1887. *Aceros phyllonyx*, H. J. Hansen, Overs. over det vestlige Grönlands Fauna af Malakostrake Havkrebssdyr, 117, pl. iv. fig. 7.

Head vertically truncate, without the slightest rostrate process. *Antennules* in female with remarkably long peduncle, first joint long, three to four times as long as the

breadth at base, almost naked; second nearly twice as long as the first and longer than combined length of third joint and the flagellum, with a row of long setæ on the edge; third joint shorter than the first; flagellum of about eleven articulations. *Antennæ* longer than the antennules, but the peduncle much shorter, its extremity not nearly reaching the end of the second joint of the antennules; fourth and fifth joints subequal. According to Goës's figure of the male, in that sex the peduncle of the antennules is very short, especially the second and third joint, and it does not reach the end of the penultimate joint of the antennæ, while the flagellum is much longer (about twenty articulations); and the flagellum of the antennæ is, as usual in males, very long. The *gnathopods* are very similar in structure to each other, but the second are longer; the wrist is produced downwards and forwards into a calx, which reaches the commencement of the palm, and is rounded at the extremity, rather more broadly in the first pair than in the second; hand ovate, palm continuous with the front margin and about half its length, finger gently curved. *Peræopods*: in the first pair the thigh is narrow above, rather widening below, much curved; the meros wide, outspread on the back, where it is furnished along the edge with long setæ, as long and as broad as the thigh; wrist and hand subequal in length, each hardly half the length of meros, the former densely setose on the lower margin, and the latter with a group of long setæ at the distal termination of the dorsal margin; finger foliaceous, broadly lanceolate, not quite so long as the hand; second peræopods with finger of similar character to that of first but longer; third and fourth peræopods much shorter and not more than half as long as last pair, the third having the thigh subovate, expanded and well arcuated dorsally, and edged with pectinately arranged long setæ, some of those of the upper margin being beautifully plumose; wrist and hand subequal to each other and their combined length about equal to the meros, the former densely setose below and apically setose dorsally, setæ long; hand setose above, naked below, finger flattened, membranaceous, knife-like, and as long as the hand; fourth peræopods very similar to the third, but the thigh very broad, with numerous long plumose setæ down the centre, but no plumose setæ on the meros. Last peræopods with thigh and meros subequal, the thigh elongated-pyriform, the carpus rather shorter; the propodus is the longest joint and the finger is unguiform, acute, and of moderate length. *Telson* having the length scarcely exceeding the breadth, with arcuate sides and the extremity

as broad as the base of the telson and centrally emarginate. Length 15 millim. or more.

Hab. Sixty miles north of Peterhead, in 69 fathoms, on sandy mud bottom (*Metzger*, who rightly adds "Neu für die brit. Nordseefauna").

Distribution. Greenland, lat. 69° 31' N., long. 56° 1' W., 100 fathoms, 'Valorous' Exped. 1865 (*A. M. N.*); Tromsø and Finmark generally (*Schneider*): *Mus. Norm.* Spitzbergen (*Goës*); Siberian Arctic Sea (*Stuxberg*). In Norway it has been found by G. O. Sars at Skraaven in 300 fathoms, and Aalesund in 60-100 fathoms; by Danielssen in the Hardanger Fiord; and by Boeck at Haugesund. In Sweden it has been taken on the Bohuslän coast by Bruzelius; Kara Sea, 55-60 fath. (*H. J. Hansen*, 'Dijmphna'); Barents Sea (*Hoek*, 'Willem-Barents').

This species is added to our fauna on the authority of *Metzger*, who records a specimen taken at the above-named locality by the 'Pommerania' during the German North-Sea exploring expedition.

Aceros phyllonyx may be distinguished from all other British *Cediceridæ* by the total absence of rostrum; and also from *Halimedon*, to which it approaches nearest in the form of the gnathopods, by the structure of the antennules.

The figures of Bruzelius of the female are very good and should be consulted.

Herr H. J. Hansen has recently described a very closely allied form from Greenland, *Aceros distinguendus* (*J. H. Hansen*, 'Oversigt over det vestlige Grönlands Fauna af Malakostrake Havkrebssdyr,' 1887, p. 118, pl. iv. fig. 8), and refers to it *Goës's* pl. xl. fig. 24¹. It is distinguished by the much shorter joints of the antennules and the character of the first peræopods, which are his "pedes tertii," and are thus described:—"Pedes tertii et quarti parium quam in specie præcedente multo latiores; articulus quartus" [*i. e.* meros] "a basi ad apicem versus ante valde dilatatus, articulo sexto perpaulo longior, in latere exteriore setis multis longis in series tres obliquas dispositis ornatus; articulus quintus articulo sexto multo brevior, parte posteriore valde dilatata, angulo infero-posteriore in processum sat magnum, latum, brevior, deorsum vergentem producta; unguis permagnus. Long. maris adulti 8·6 mm.; long. feminae laminis ovigeris instructæ 5·5 mm."

In these Notes on Amphipoda—

Mus. Norm. implies that specimens of the species from *all* the localities

which precede this indication, by whomsoever they may have been found, are in my collection.

(!) implies that I have examined and identified specimens from the locality after which the mark is placed, but that specimens from it are not in my collection.

EXPLANATION OF THE PLATES.

PLATE XVIII.

- Fig.* 1. *Megaluropus agilis*, Norman. Head, showing the peculiar eye.
Fig. 2. The same. First gnathopod.
Fig. 3. The same. Second gnathopod.
Fig. 4. The same. Terminal joints, fourth peræopod.
Fig. 5. The same. Basal joints, last peræopod.
Fig. 5 a. The same. Terminal joints of the same.
Fig. 6. The same. First uropod.
Fig. 7. The same. Telson and last uropod.
Fig. 8. The same. Telson from above.
Fig. 9. The same. Mandible.
Fig. 10. The same. Lower portion of hinder margin of third segment of pleon.
Fig. 11. *Monoculodes subnudus*, Norman. Second peræopod.

[All the figures on the same scale, except 2, 3, and 10, which are more magnified.]

PLATE XIX.

- Fig.* 1. *Monoculodes carinatus*, Bate. Rostrum and base of antennules.
Fig. 2. The same. First gnathopod.
Fig. 3. The same. Second gnathopod.
Fig. 4. The same. Fourth peræopod.
Fig. 5. The same. Basal joints of last peræopod.
Fig. 6. *Monoculodes subnudus*, Norman. Rostrum and peduncle of antennules.
Fig. 7. The same. First gnathopod.
Fig. 8. The same. Second gnathopod.
Fig. 9. The same. Terminal joints of fourth peræopod.
Fig. 10. The same. Basal joints of last peræopod.
Fig. 11. *Monoculodes borealis*, Boeck. Rostrum and base of antennules.

PLATE XX.

- Fig.* 1. *Monoculodes æquicornis*, Norman. First gnathopod.
Fig. 2. The same. Second gnathopod.
Fig. 3. The same. Terminal joints of first peræopod.
Fig. 4. The same. Fourth peræopod.
Fig. 5. The same. Basal joints of last peræopod.
Fig. 6. *Monoculodes longimanus*, Bate & Westwood. Rostrum and first joint of antennules.
Fig. 7. The same. First gnathopod.
Fig. 8. The same. Second gnathopod.
Fig. 9. The same. Basal joints of last peræopod.
Fig. 10. *Halimemon parvimanus*, Bate & Westwood. Rostrum and first joint of antennules.
Fig. 11. The same. First gnathopod.
Fig. 12. The same. Second gnathopod.
Fig. 13. The same. First peræopod.
Fig. 14. The same. Basal joints of last peræopod.