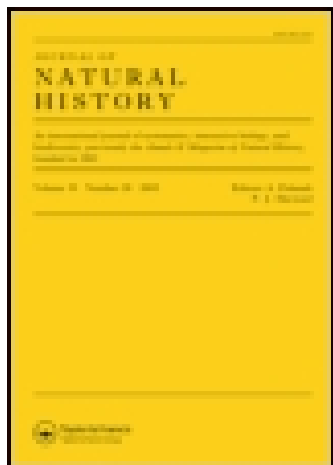


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XLVI.—British Amphipoda: Families Pontoporeidæ to Ampeliscidæ

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described on the former occasion, the pelvic pair being relatively large and advanced far forwards.

Aulolepis may therefore be placed in the family Clupeidæ, and in the primitive section which is characterized by the absence of ventral ridge-scales. Careful comparisons seem to show that its nearest ally is the Cretaceous genus *Otenothrissa**, from which it differs in the non-pectination of the scales and in the relatively smaller size of the pelvic and dorsal fins.

EXPLANATION OF PLATE IX. Figs. 2, 2a.

Fig. 2. *Aulolepis typus*, Ag.; imperfect fish, left lateral aspect, nat. size. Lower Chalk; Southeram, near Lewes. [Woodwardian Museum, Cambridge.] 2a. Upper view of skull of same specimen, nat. size.

a., anal fin; a.o., antorbital; c., base of caudal fin; fr., frontals; m., mesethmoid; md., mandible; mx., maxilla; op., operculum; p.op., preoperculum; pa., parietal; pet., pectoral fin; plv., pelvic fin; s.mx., supramaxillæ; s.occ., supraoccipital; sq., squamosal.

XLVI.—*British Amphipoda: Families Pontoporeidæ to Ampelisidæ*. By Canon NORMAN, M.A., D.C.L., LL.D., F.R.S., &c.†

THIS revision of species of British Amphipoda is intended primarily to give an account of specimens which have passed through my hands and have been identified by myself. Species may have been procured from districts which have been worked by others and recorded; but if they are also in my collection I give my own authority for them. Multiplication of exact habitats of less rare species would too greatly extend the space occupied by distribution, while my own record will have the advantage of confirming that previously made. A carcinologist desiring to be acquainted with the fauna of a particular district will naturally consult the papers which have been published on the restricted area. These observations more especially refer to the Clyde district, in which I first dredged in 1854, and which I have visited many times since, a district which has been so admirably worked as

* A. S. Woodward, Ann. & Mag. Nat. Hist. [7] vol. iii. (1899) p. 490.

† See for preceding paper 'Annals,' Feb. 1900, p. 196.

regards the Amphipoda by my late friend Dr. David Robertson, and more recently by Mr. Thomas Scott.

In order, however, to indicate the good work which my brother carcinologists have done, I subjoin the following lists of species which they have added to our fauna since the publication of Bate and Westwood's work. I hope that these lists are approximately, if not absolutely, complete.

The late DAVID ROBERTSON.

The following Amphipoda were first recorded in Dr. Robertson's excellent papers "On the Amphipoda and Isopoda of the Firth of Clyde and West of Scotland" (Trans. Nat. Hist. Soc. Glasgow, vol. ii. pp. 9-99, and vol. iii. pp. 199-223):—

- | | |
|---|---|
| <p>1888. <i>Ampelisca assimilis</i>, Boeck.
 <i>Amphilochus tenuimanus</i>, Boeck.
 <i>Podalirius typicus</i>, Kröyer.
 <i>Metopa affinis</i>, Boeck.
 <i>Ampelisca spinipes</i>, Boeck.
 <i>Triphosa Höringii</i>, Boeck.
 <i>Paramphithoe assimilis</i>, G. O. Sars.
 <i>Dulichia tuberculata</i>, Boeck.</p> | <p>1892. <i>Monoculodes borealis</i>, Boeck.
 <i>Amphithopsis nodifera</i>, G. O. Sars.
 <i>Melphidippa spinosa</i>, Boeck.
 <i>Amphilochoides odontonyx</i>, Boeck.
 <i>Gitanopsis bispinosa</i>, Boeck.
 <i>Metopa rubrovittata</i>, G. O. Sars.
 — <i>borealis</i>, G. O. Sars.
 — <i>nasuta</i>, Boeck.
 <i>Bruzellia typica</i>, Boeck.
 <i>Iphimedia minuta</i>, G. O. Sars.
 <i>Podocerus minutus</i>, G. O. Sars.</p> |
| <p>1892. <i>Socarnes Vahli</i>, Kröyer.
 — <i>erythrophthalmus</i>, sp. n.
 <i>Orchemenella pinguis</i>, Boeck.
 <i>Triphosa nana</i>, Kröyer.
 — <i>pusilla</i>, G. O. Sars.
 <i>Haplonyx similis</i>, G. O. Sars.</p> | |

Rev. T. R. R. STEBBING and D. ROBERTSON.

"Four New British Amphipoda" (Trans. Zool. Soc. vol. xiii. 1891, p. 31).

- | | |
|--|--|
| <p><i>Sophrasynce Robertsoni</i>, sp. n.
 <i>Syrrhoe fimbriata</i>, sp. n.</p> | <p><i>Podoceroopsis palmata</i>, sp. n.
 <i>Podocerus cumbrensis</i>, sp. n.</p> |
|--|--|

Rev. T. R. R. STEBBING.

Papers published in the Ann. & Mag. Nat. Hist. of the several dates.

- | | |
|---|---|
| <p>1874. <i>Amphithoe cuniculus</i>, sp. n.
 1876. <i>Probolium Spence-Batei</i>,
 sp. n.</p> | <p>1878. <i>Caprella fretensis</i>, sp. n.
 <i>Amphilochus Sabrinæ</i>, sp. n.
 1891. <i>Talorchestia brito</i>, sp. n.</p> |
|---|---|

A. O. WALKER.

Trans. Liverpool Biol. Soc. of the dates mentioned, except where otherwise indicated in the notes.

- | | |
|---|--|
| <p>1888. <i>Photis tenuicornis</i>, <i>G. O.</i>
 <i>Sars.</i>
 1889. <i>Lysianax ceratinus</i>, sp. n.
 <i>Orchomene Goësi</i>, <i>Boeck.</i>
 <i>Podocerus isopus</i>, sp. n.
 1893. — <i>Herdmani</i>, sp. n.
 1895. <i>Nannonyx spinimanus</i>, sp. n.
 <i>Paraphoxus oculatus</i>, <i>G. O.</i>
 <i>Sars.</i>
 <i>Harpinia lævis</i>, <i>G. O. Sars.</i>
 <i>Amphilochus melanops</i>, sp. n.
 <i>Metopa pusilla</i>, <i>G. O. Sars.</i>
 — <i>Bruzellii</i>, <i>Goës.</i></p> | <p>1895. <i>Paratylus uncinatus</i>, <i>G. O.</i>
 <i>Sars.</i>
 <i>Gammaropsis nana</i>, <i>G. O.</i>
 <i>Sars.</i>
 <i>Photis pollex</i>, sp. n.
 1896. *<i>Phoxocephalus pectinatus</i>,
 sp. n.
 †<i>Stenothoe crassicornis</i>, sp. n.
 1897. †<i>Parapleustes megacheir</i>, sp. n.
 1898. <i>Ambasia Danielsseni</i>, <i>Boeck.</i>
 <i>Callisoma Krøyeri</i>, <i>Bruze-</i>
 <i>lius.</i>
 <i>Parvipalpus capillacea</i>, <i>Chev-</i>
 <i>reux.</i></p> |
|---|--|

A. O. WALKER and JAMES HORNELL.

Journ. Marine Zool. & Micros. vol. ii.

- | | |
|---|--|
| <p>1896. <i>Ampelisca gibba</i>, <i>G. O. Sars.</i>
 <i>Gammarus Berilloni</i>, <i>Catta.</i></p> | <p>1896. <i>Menigrates obtusifrons</i>,
 <i>Boeck.</i></p> |
|---|--|

THOMAS SCOTT.

Papers on the Crustacea of the Firth of Forth and Loch Fyne published in the 'Annual Rep. Fish. Board of Scotland' of the several dates given; other papers are referred to in the notes. Mr. Scott's work has been admirable and his assiduity excessive. His lists of the marine Crustacea of the Firth of Forth include descriptions and most careful illustrations of an immense number of new Copepoda; and, taken together with his other papers on the land and freshwater Crustacea of the neighbourhood of Edinburgh, constitute by far the fullest information with respect to the Crustacean fauna of a district that has ever been published.

- | | |
|---|---|
| <p>1890. <i>Phoxocephalus Fultoni</i>, sp. n.
 <i>Siphonæcetes Colletti</i>, <i>Boeck.</i>
 1893. <i>Anonyx nugax</i>, <i>Phipps.</i>
 ‡<i>Cyproidea brevirostris</i>, <i>T. &</i>
 <i>A. Scott</i>, sp. n.</p> | <p>1894. <i>Amphilochoides pusillus</i>,
 <i>G. O. Sars.</i>
 <i>Metopa propinqua</i>, <i>G. O.</i>
 <i>Sars.</i></p> |
|---|---|

* Ann. & Mag. Nat. Hist. ser. 6, vol. xvii. p. 343.

† Rep. Brit. Assoc. for 1896 (1897), p. 420. The "Report" contains a full list of all the Crustacea of the Liverpool district.

‡ Journ. Linn. Soc., Zool. vol. xxvi. p. 230.

§ Ann. & Mag. Nat. Hist. ser. 6, vol. xii. p. 244.

- | | |
|--|---|
| <p>1894. <i>Paramphithoe monocuspis</i>,
 <i>G. O. Sars.</i>
 <i>Apherusa borealis</i>, <i>G. O. Sars.</i>
 <i>Harpinia crenulata</i>, <i>G. O.</i>
 <i>Sars.</i>
 *<i>Metopa robusta</i>, <i>G. O. Sars.</i>
 1896. <i>Amphilochoides interme-</i>
 <i>dus</i>, sp. n.
 <i>Gammarus Duebeni</i>, <i>Lillje-</i>
 <i>borg.</i>
 <i>Cheirocratus intermedius</i>,
 <i>G. O. Sars.</i></p> | <p>1896.†? <i>Mæra Brooki</i>, sp. n.
 1897. ?<i>Orchemenella minuta</i>,
 <i>Kröyer.</i>
 ‡? <i>Ampelisca Eschrichtii</i>,
 <i>Kröyer.</i>
 ? <i>Stegocephaloides auratus</i>,
 <i>G. O. Sars.</i>
 <i>Monoculodes tuberculatus</i>,
 <i>G. O. Sars.</i>
 1898. <i>Dulichia monacantha</i>, <i>G. O.</i>
 <i>Sars.</i></p> |
|--|---|

Fam. III. Pontoporeiidæ.

[Genus 1. PONTOPOREIA, Kröyer.

[*Pontoporeia femorata*, Kröyer.

1842. *Pontoporeia femorata*, Kröyer, Naturhist. Tidsskr., 1 Rækkes, vol. iv. p. 153; Voyage en Scand. &c. pl. xxiii. fig. 2.
 1859. *Pontoporeia furcigera*, Bruzelius, Scand. Amphip. Gamm. p. 49.
 1876. *Pontoporeia femorata* and *furcigera*, Boeck, (138) pp. 197 & 201.
 1891. *Pontoporeia femorata*, G. O. Sars, (142) p. 123, pl. xli. fig. 1.

Off Hare Island, Waigat Sound, Greenland, in 175 fathoms, 'Valorous,' 1875.

Distrib. Klosterelv Fiord, East Finmark, 3-5 fathoms, 1890 (*A. M. N.*); Tromsö (*Schneider*); Spitsbergen (*Lovén*); Gulf of St. Lawrence (*S. I. Smith*): *Mus. Nor.* Throughout the Arctic Ocean and southward as far as the Baltic. Kiel (*Blanc*); West Sweden (*Lilljeborg*).]

Genus 2. BATHYPOREIA, Lindström.

I cannot regard some of the following forms as entitled to specific—indeed, they seem hardly worthy of varietal—

- * Moray Firth (Ann. & Mag. Nat. Hist. ser. 6, vol. xiii. p. 148).

† Isle of Mull.

‡ The four following species are from the Clyde district. Of these *Ampelisca Eschrichtii*, *Stegocephaloides auratus*, and *Orchemenella minuta*, Kröyer, have not been seen by Mr. Scott, but are given by him from a MS. catalogue of Crustacea dredged by Sir J. Murray's steamer, the 'Medusa.' In noticing *Orchemenella minuta* in the paper preceding this (p. 204) I committed two errors, for the first of which I cannot account; the date 1870 is substituted for "16-17 fathoms," and in stating "we do not know the authority who identified the species," I had overlooked a note of Mr. Scott's at p. 109 (Fifteenth Ann. Rep. Fishery Board of Scotland), which states that the "Crustacea" were identified by R. I. Pocock, Esq. I have now consulted Mr. Pocock, and he tells me that he wishes that the occurrence of these species in Loch Fyne should be considered doubtful unless subsequently confirmed.

separation. Moreover, Jules Bonnier has stated that there is dimorphism in the males in this genus (Jules Bonnier, "Le dimorphisme des mâles chez les Crustacés Amphipodes," Comptes rendus Acad. Sci., Dec. 22, 1890).

50. *Bathyporeia norvegica*, G. O. Sars.

1862. *Bathyporeia pilosa*, Bate & Westwood, (1) vol. i. p. 304 (partly at any rate).

? 1876. *Bathyporeia pilosa*, Boeck, (138) p. 209, pl. vii. fig. 3.

1891. *Bathyporeia norvegica*, G. O. Sars, (142) p. 128, pl. xliii.

For remarks on Bate's specimens of *B. pilosa* see Walker, Ann. & Mag. Nat. Hist. ser. 6, vol. xv. p. 470. It is a question whether Bate's name *Guilliamsonii* (*Thersites Guilliamsonii*, Bate, Ann. & Mag. Nat. Hist. ser. 2, vol. xix. p. 146) ought not to be used for this species. Sars applies the name *Bathyporeia pilosa*, Lindström, to a Baltic form not yet found in our seas.

Hab. Apparently the commonest form in Britain. Shetland; Isle of Cumbræ; and Guernsey (*A. M. N.*); Banff (*T. Edward*); Aberdeen (*R. Dawson*); Whitburn, Co. Durham (*G. S. Brady*); Firth of Forth (*T. S.*); *Mus. Nor.* North Wales and Isle of Man (*A. O. W.*); 70-80 miles off Spurm Head (*T. S.*); Jersey (*Chevreaux*).

Distrib. Ognébuct, off Jæderen, south coast of Norway (*G. O. Sars*); Le Croisic, Western France (*Chevreaux*).

51. *Bathyporeia pelagica*, Bate.

1862. *Bathyporeia pelagica*, Bate & Westwood, (1) vol. i. p. 309, ♂.

1875. *Bathyporeia pilosa*, Stebbing, "On the Genus *Bathyporeia*," Ann. & Mag. Nat. Hist. ser. 4, vol. xv. p. 74, pl. iii.*

1877. *Bathyporeia tenuipes*, Meinert, "Crust. Isop. Amphip. et Decap. Danicæ," Naturhist. Tidsskr., 3 Række, vol. xi. p. 101.

1891. *Bathyporeia pelagica*, Sars, (142) p. 129, pl. xliv. fig. 1.

Hab. Shetland and Isle of Cumbræ (*A. M. N.*); Banff (*T. Edward*); Aberdeen (*R. Dawson*); 25 miles off May Island, Firth of Forth (*Murray*); Firth of Forth (*T. S.*); 'Porcupine,' 1869, Stat. 18, west of Clew Bay, Ireland, 183 fathoms: *Mus. Nor.* 70-80 miles off Spurm Head (*T. S.*); Isle of Man; North Wales; Guernsey (*A. O. W.*); Jersey (*Sinel & Hornell*). St. Andrews (*M'Intosh*).

Distrib. With the preceding at Ognébuct, off Jæderen, South Norway, and Lofoten Islands (*Sars*); Tromsö and Vardö, Finmark (*Schneider*); Sweden (fide *Sars*); Denmark (*Meinert*); West France (*Chevreaux*).

* Referred to by Sars, but fig. 1 appears to be *B. norvegica*, Sars, while the male is *B. pelagica*.

52. *Bathyporeia Robertsoni*, Bate.

1862. *Bathyporeia Robertsoni*, Bate & Westwood, (1) vol. i. p. 307.

1891. *Bathyporeia Robertsoni*, G. O. Sars, (142) p. 131, pl. xlv. fig. 2.

Hab. Isle of Cumbræ (*A. M. N.*); Firth of Forth (*T. S.*):
Mus. Nor. East Loch Tarbert, Loch Fyne (*T. S.*).

Distrib. Three adult males, Sörvår, West Finmark (*G. O. Sars*); Western France (*Chevreaux*).

53. *Bathyporeia gracilis*, G. O. Sars.

1891. *Bathyporeia gracilis*, G. O. Sars, (142) p. 132, pl. xlv. fig. 1.

Hab. 'Porcupine,' 1869, Stat. 6, west of the Shannon, Ireland, in 90 fathoms: *Mus. Nor.*

Distrib. One male and one female, off West Norway, in rather deep water (*G. O. Sars*); Le Croisic, Western France (*Chevreaux*).

Genus 3. HAUSTORIUS, Statius Müller.

= *Lepidactylus*, Say, = *Pterigocera*, Latreille, = *Bellia*, Bate,
= *Sulcator*, Bate.

54. *Haustorius arenarius* (Slabber).

1769. *Oniscus arenarius*, Slabber, Naturkundige Verlostigengen &c. p. 92, pl. xi. figs. 3, 4.

1818. *Lepidactylus dytiscus*, Say, Journ. Acad. Nat. Sci. Philadelphia, vol. i. p. 379*.

1862. *Sulcator arenarius*, Bate & Westwood, (1) vol. i. p. 189.

1878. *Pterigocera arenaria*, Bovallius, "Notes on *Pterigocera arenaria*," K. Svens. Vet.-Akad. Handl. vol. iv. no. 8, pls. i., ii., iii.

1891. *Haustorius arenarius*, Sars, (142) p. 135, pl. xlvi.

Bovallius, in the paper referred to, gives figures of the variously constructed setæ and sensory organs of this very interesting and beautiful species.

Hab. Kames Bay, Isle of Cumbræ; near Sunderland (*A. M. N.*); Barmouth and Llanfairfechan, North Wales (*Stebbing*): *Mus. Nor.* Paignton, Devon (*Stebbing*); Burnt-island, Firth of Forth (*T. S.*).

Distrib. Karmo, West Norway (*Boeck*); Kattegat (*Bovallius*); Holland (*Slabber*); Western France (*Chevreaux*); N.E. America (*S. I. Smith*).

* Prof. S. I. Smith has compared specimens from England which I sent him with the North-American species, and found them identical (*Trans. Connect. Acad.* vol. iv. 1880, p. 282).

Genus 4. *UROTHOE*, Dana.

Stebbing published an elaborate paper "On the Genus *Urothoe* and a New Genus, *Urothoides*" (Trans. Zool. Soc. vol. xiii. 1891). He examined the specimens then in my collection, and I follow here his lead, but think that some of the species are of doubtful value; but, on the other hand, I can still less acquiesce in Della Valle's views, who not only unites the whole of the forms here included, but adds *U. irrostrata*, Dana, *U. abbreviata*, Sars, and *U. Poucheti*, Chevreux. But on the question what characters suffice for specific distinction naturalists will always find it necessary to agree to differ.

54*. *Urothoe pulchella* (A. Costa).

1857. *Egidia pulchella*, A. Costa, "Crosta. Amph. Regno di Napoli," Mem. d. R. Accad. d. Sci. di Napoli, vol. i. p. 190, pl. iv. figs. 3 a-g.

1887. *Urothoe pulchella*, Stebbing, l. c. p. 11, pl. iv. A.

1893. *Urothoe irrostrata*, Della Valle, (139) p. 664, pl. v. figs. 3, 8, pl. xxxvi. figs. 1-18, pl. lx. figs. 11, 12.

Hab. "Several specimens of this *Urothoe* have been obtained in the Firth of Forth; it is a smaller species than *U. marina*" (T. Scott, "Addit. to Fauna of the Firth of Forth," Fourteenth Rep. Fish. Board of Scotland, 1896, p. 159). This is the only notice of it as a British species.

Distrib. Naples (A. M. N.); West France (*Chevreux*).

I was struck with the lovely rose-colour of the species (or, at any rate, of the males) when I took them (see Della Valle, pl. v. fig. 8).

55. *Urothoe elegans*, Bate.

1862. *Urothoe elegans*, Bate & Westwood, (1) vol. i. p. 200.

1887. *Urothoe elegans*, Stebbing, l. c. p. 13, pl. i.

Hab. Shetland, 60-70 fathoms; Isle of Cumbrae (A. M. N.); off S.W. Ireland (*Haddon*); and the following from 'Porcupine,' 1869, Donegal Bay: Stats. 17 and 18, in 183 and 1230 fathoms, off Donegal Bay; also two other stations off west of Ireland, in 90 and 1630 fathoms: *Mus. Nor.* Hebrides (A. M. N.); off Ormes Head and North Wales and Blacksod Bay, Ireland (A. O. W.); Jersey (*Sinell & Hornell*).

Distrib. West France and Azores (*Chevreux*).

56. *Urothoe marinus*, Bate.

1862. *Urothoe Bairdii*, Bate & Westwood, (1) vol. i. p. 193, ♂.

1862. *Urothoe marinus*, Bate & Westwood, (1) vol. i. p. 195, ♀.

1887. *Urothoe marinus*, Stebbing, l. c. p. 16, pl. ii.

Hab. Balta Sound, Shetland; near Holy Island, Northumberland; Sleat Sound, Skye; Firth of Clyde (*A. M. N.*); Guernsey (*G. S. Brady*); *Mus. Nor.* Ardbear Bay, Ireland (*Brady & Robertson*); Liverpool district (*A. O. W.*); Firth of Forth (*T. S.*); Loch Fyne (*Sir J. Murray*, fide *T. S.*); Goodrington Sands, Devon (*Stebbing*).

Distrib. Denmark (*Meinert*); Western France (*Barrois &c.*).

56*. *Urothoe norvegica*, Boeck.

1876. *Urothoe norvegica*, Boeck, (138) p. 226, pl. vi. fig. 9, pl. vii. fig. 4.

1887. *Urothoe norvegica*, Stebbing, *l. c.* p. 21, pl. iv. B.

1891. *Urothoe norvegica*, G. O. Sars, (142) p. 138, pl. xlvii.

Hab. Stebbing gives as his only authority "The Shetland Isles, taken by the Rev. A. M. Norman in 1867." I have not these specimens in my collection, nor, indeed, any *Urothoe* taken in 1867. Mr. D. Robertson recorded it from Cumbræ, but clearly what he meant was *U. Bairdii*, and he adopted Boeck's nomenclature, which makes that *Urothoe* a synonym of *U. norvegica*.

Distrib. Trondhjem Fiord, Norway (*A. M. N.*): *Mus. Nor.* Sars records it in various depths from 20 to 100 fathoms from the south of Norway to West Finmark.

57. *Urothoe brevicornis*, Bate.

1862. *Urothoe brevicornis*, Bate & Westwood, (1) vol. i. p. 198.

1887. *Urothoe brevicornis*, Stebbing, *l. c.* p. 23, pls. iii. & iv. c.

Hab. Firth of Clyde (*D. R.*, specimens named *U. marinus*): *Mus. Nor.* Llanfairfechan, North Wales, from the banks of little streams or pools left in the sands at low tide, and Goodrington, near Torquay (*Stebbing*); Largo Bay, Firth of Forth (*T. S.*); Guernsey and Valentia, Ireland (*A. O. W.*); Jersey (*Sinel & Hornell*).

Distrib. West coast of France (*Chevreaux*).

Fam. IV. **Phoxocephalidæ.**

Genus 1. **PHOXOCEPHALUS**, Stebbing.

= *Phoxus*, Krøyer (name preocc.).

(Including *Paraphoxus*, G. O. Sars, and *Metaphoxus*, J. Bonnier.)

Phoxocephalus appears to be a natural genus, and attempts to divide it on very slight variations of the mandible break up that natural group. The allied *Harpinia* is a parallel case; it might be split up on similar trivial differences in the mandible (see Sars's figures of mandible in *H. plumosa*, *H. pectinata*, and *H. crenulata*).

58. *Phoxocephalus Holbölli* (Kröyer).

1842. *Phoxus Holbölli*, Kröyer, Naturhist. Tidsskr. vol. iv. p. 151;
2 Rækkes, vol. i. 1844, p. 551.

1853. *Phoxus Kröyeri*, Stimpson, Marine Invert. Grand Manan, p. 58.

1861. *Phoxus Holbölli*, Bate & Westwood, (1) vol. i. p. 143.

1876. *Phoxus Holbölli*, Boeck, (138) p. 214, pl. vii. fig. 5.

1891. *Phoxocephalus Holbölli*, G. O. Sars, (142) p. 144, pl. xlix.

Hab. Isle of Cumbrae (*A. M. N.*); Banff, N.B. (*T. Edward*): *Mus. Nor.* Firth of Clyde and Firth of Forth (*T. S.*).

Distrib. Greenland, 'Valorous,' 1875; Svolvær, Lofoten Islands; Vadsö and Bog Fiord, East Finmark (*A. M. N.*); Casco Bay, N.E. America, 1873 (*S. I. Smith*, as "*Phoxus Kröyeri*"): *Mus. Nor.* Arctic Ocean generally. Rare in the more southern parts of Norway (*G. O. Sars*); West Sweden (*Goës*); Denmark (*Meinert*); west coast of France? (*Chevreaux*; but it is omitted in his most recent revised list).

The setæ on the anterior coxæ are usually more numerous than the four given by Bate and Westwood, usually 8-10. In the specimen figured by Sars they are still more numerous. When the mandible-palp is examined this species is easily distinguished from *Paraphoxus oculatus*, and this palp can often be seen projected without dissection. When that character is not visible I find the best points by which to recognize this species from *Paraphoxus oculatus* are the much shorter nails of the anterior peræopods, the shorter and stouter character of the three hinder peræopods, and the form of the posterior lobe of the last peræopod, which is truncated below.

59. *Phoxocephalus oculatus* (G. O. Sars).

1880. *Phoxus oculatus*, G. O. Sars, "Crust. et Pycnog. in itin. 2 et 3 Exped. Norveg. inventa," Archiv for Mathem. og Naturvid. 1880, p. 441.

1885. *Phoxus oculatus*, G. O. Sars, (104) p. 154, pl. xiii. figs. 4, 4 a-c.

1891. *Paraphoxus oculatus*, G. O. Sars, (142) p. 149, pl. li.

1893. *Phoxocephalus oculatus*, Della Valle, (139) p. 740, pl. v. fig. 5, pl. xxxv. figs. 19-38.

Della Valle figures only 4-6 setæ on the coxæ of the gnathopods and anterior peræopods; but in a specimen sent to me by him and in others which I took myself at Naples these setæ are more numerous (6-10). His figure 28 of the last uropods does not agree with the Neapolitan specimens which I have examined, in which the inner branch is much shorter (as in Sars's figure). This species comes very near to, if it be not identical with, *Phoxus maculatus*, Chevreux (Bull. Soc. Zool. de France, vol. xii., Feb. 28, 1888), which he has since called *Paraphoxus maculatus*; the following

words, however, scarcely accord with the present species:—"Pedes 3^{ti} et 4^{ti} paris [*i. e.* first and second peræopods] ungue multo breviora quam articulo 5^{to} elongato."

The nails in *P. oculus* are very long and afford a good characteristic as compared with the short nails of *Phoxocephalus Holbølli*.

Hab. St. Magnus Bay, Shetland, 1867, a single specimen (*A. M. N.*; recorded in Shetland Report of 1868 as *Phoxus Holbølli*): *Mus. Nor.* Seven miles off Bradda Head, Isle of Man, 31 fathoms (*A. O. W.*).

Distrib. Tromsø, Finmark (*J. S. Schneider*); Naples (*A. M. N.*): *Mus. Nor.* Greenland (*H. J. Hansen*); Jan Mayen; Finmark and Norway coast as far south as Farsund (*G. O. Sars*).

60. *Phoxocephalus simplex* (Bate).

1857. *Phoxus simplex*, Bate, Ann. & Mag. Nat. Hist. ser. 2, vol. xx. p. 525.

1861. *Phoxus simplex*, Bate & Westwood, (1) vol. i. p. 140.

1896. *Phoxocephalus simplex*, Calman, "On Species of *Phoxocephalus* and *Apherusa*," Trans. Roy. Irish Acad. vol. xxx. p. 748, pl. xxxii. fig. 3.

1896. *Phoxocephalus pectinatus*, A. O. Walker, "On Two new Species of Amphipoda Gaummarina," Ann. & Mag. Nat. Hist. ser. 6, vol. xvii. p. 343, pl. xvi. figs. 1-6, and vol. xviii. p. 156.

1896. *Metaphoxus typicus*, Bonnier, Results sci. de Campagne du 'Caudan,' Edriophthalmes, p. 630, pl. xxxvii. fig. 1.

1898. *Metaphoxus pectinatus*, Chevreux, "Révis. des Amphip. de la côte océan de France," Assoc. Française pour Advanc. des Sci. p. 477 (no description or figure).

I cannot but think that this must be the *Phoxus simplex* of Bate. What is stated with respect to the want of eyes may have arisen from his suspicion that some special medium that he employed may have destroyed them. 1st. I have examined Bate's specimen in the British Museum, and am not disposed to question Mr. Walker's opinion that it is referable to *Phoxocephalus Holbølli*; but it certainly is not the specimen described and figured by Bate, for the antennæ are quite different. 2nd. As regards size, I have some specimens from Valentia which are much finer than usual and as long as the line above Bate and Westwood's figure which indicates the length. 3rd. As regards the antennæ, the description of Bate and Westwood does not agree with the figure, where the rostrum is represented only as long as the peduncles of the upper antennæ, and this is the case with the present species; and although the figure in the Brit. Mus. Cat. does agree with the description, is it not more likely that the

second figure is more correct than the first? 4th. Points I lay great stress upon are the difference in size of the gnathopods and the large process (represented in the Brit. Mus. Cat.) which is at the base of the palm of the second gnathopods. It is in form as a hood, from the inside of which rises a conspicuous sharp spine (see Calman, *gn.*¹ and *gn.*^{1x}).

The *Phoxus simplex* of Boeck (nec Bate) is a synonym of *Leptophoxus falcatus*, G. O. Sars.

Hab. Firth of Clyde; Roundstone Bay and Valentia, Ireland; Brelade Bay, Guernsey (*A. M. N.*); *Mus. Nor.* Guernsey, 7 fathoms (*A. O. W.*); Cumbræ (*D. R.*, fide Calman).

Distrib. West coast of France (*Chevreux & Bonnier*).

61. *Phoxocephalus Fultoni*, T. Scott.

1890. *Phoxocephalus Fultoni*, T. Scott, "Additions to the Fauna of the Firth of Forth," Eighth Ann. Rep. Fish. Board Scotland, p. 327, pl. xii. figs. 10-12, pl. xiii. figs. 13-19.

1892. *Phoxocephalus Fultoni*, D. Robertson, "Second Contrib. Isop. and Amphip. Firth of Clyde," Trans. Nat. Hist. Soc. Glasgow, vol. iii. p. 13 (separate copy).

1893. *Phoxocephalus chelatus*, Dalla Valle, (139) p. 142, pl. v. fig. 10, pl. xxxv. figs. 29-35.

1896. *Phoxocephalus Fultoni*, Calman, "On Species of *Phoxocephalus* and *Apherusa*," Trans. Royal Irish Acad. vol. xxx. p. 743, pl. xxxi. figs. 1, 2.

Hab. Roundstone, Ireland, tow-net, 1874; Firth of Clyde, tow-net, 1884; Mylor Creek, Falmouth, 1884; Plymouth, tow-net, 1889; Guernsey (*A. M. N.*); Isle of Cumbræ (*D. R.*, as "*Phoxus Holbölli*"); *Mus. Nor.* Off St. Monace, Firth of Forth (*T. S.*); near Menai Bridge; Port Erin (Isle of Man); and Jersey (*A. O. W.*).

Distrib. Naples (*A. M. N.*); La Croisic, west coast of France (*Chevreux*).

I conclude that this is *Phoxus Holbölli* of Robertson's "First Contribution," as he sent me at that time specimens taken in the tow-net under this name. I subsequently took it myself in the Clyde by tow-net.

Genus 2. HARPINIA, Boeck.

[*Harpinia plumosa* (Kröyer).

1842. *Phoxus plumosa*, Kröyer, Naturhist. Tidsskr. vol. iv. p. 152; 2 Række, vol. i. 1844, p. 563.

1891. *Harpinia plumosa*, G. O. Sars, (142) p. 151, pl. lii.

Greenland, 'Valorous,' 1875. An Arctic form, "Spetsbergen, Novaya Zemlia; the Kara Sea and the Siberian Polar Sea" (*G. O. S.*).

62. *Harpinia neglecta*, G. O. Sars.

1862. *Phoxus plumosus*, Bate & Westwood, (1) vol. i. p. 146 (and of all British authors).

1890. *Harpinia antennaria*, Meinert, (71) p. 160, pl. i. figs. 39-41, ♂.

1891. *Harpinia neglecta*, G. O. Sars, (142) p. 153, pl. liii. fig. 1.

Hab. Shetland; Isle of Skye; Firth of Clyde; Northumberland and Durham coasts; Salcombe, Devon; Guernsey; off Bundoran, Ireland (*A. M. N.*); 'Porcupine,' 1869, Stat. 6, west of the Shannon, Ireland, 90 fathoms: *Mus. Nor.* North Wales and Isle of Man (*A. O. W.*); Loch Fyne, 80 fathoms, and Loch Ranza, Arran (*D. R.*); Loch Linnhe (*G. Brook*); Firth of Forth (*T. S.*).

Distrib. Bog Fiord, East Finmark, 3-5 fathoms; Trondhjem Fiord, Norway, 20-40 fathoms; Naples, 1887 (*A. M. N.*): *Mus. Nor.* Whole coast of Norway, Bohuslän, Kattegat (*G. O. Sars*); Western France (*Chevreux*).

63. *Harpinia pectinata*, G. O. Sars.

1891. *Harpinia pectinata*, G. O. Sars, (142) p. 154, pl. liii. fig. 2.

Hab. 'Porcupine,' 1869, Stat. 3, lat. 51° 38' N., long. 12° 50' W., 722 fathoms; Stats. 17, 18, 19, lat. 54° 15' to 54° 28', long. 10° 56' to 11° 44' W., 183-1360 fathoms; Stat. 23 a, lat. 56° 13', long. 14° 18', 420 fath. These stations are all to the west of Ireland and between Ireland and Rockall: *Mus. Nor.*

Distrib. Trondhjem Fiord, Norway, 250-300 fathoms (*A. M. N.*): *Mus. Nor.* From the south of Norway northwards to Tromsö and coast of Bohuslän (*G. O. Sars*); Western France (*Chevreux*).

64. *Harpinia crenulata*, Boeck.

1870. *Harpinia crenulata*, Boeck, (137) p. 56.

1876. *Harpinia crenulata*, Boeck, (138) p. 221, pl. viii. fig. 2.

1891. *Harpinia crenulata*, G. O. Sars, (142) p. 158, pl. lv. fig. 2.

1894. *Harpinia crenulata*, T. Scott, Ann. & Mag. Nat. Hist. ser. 6, vol. xiii. p. 147.

Hab. Off Farland Point, Isle of Cumbrae, 20-25 fathoms; Valentia, Ireland (*A. M. N.*): *Mus. Nor.* Off Bradda Head, Isle of Man, 39 fathoms (*A. O. W.*); vicinity of Inchkeith and other parts of the Firth of Forth, and Campbeltown Loch, Cantyre (*T. S.*).

Distrib. Trondhjem Fiord, Norway, 40-300 fathoms (*A. M. N.*); South Norway (*G. O. Sars*): *Mus. Nor.* South and West Norway (*G. O. S.*); Tromsö (*Schneider*); coast of Bohuslän (fide *Sars*); Denmark (*Meinert*); west coast of France (*Chevreux*).

[*Harpinia abyssi*, G. O. Sars.

1880. *Harpinia abyssi*, G. O. Sars, "Crust. et Pycnog. Nova exped. Norvegiæ anno 1877 et 1878 collecta," Archiv för Math. og Naturvid. p. 443, ♀.

1881. *Harpinia carinata*, id. ibid. p. 444, ♂.

1885. *Harpinia abyssi*, G. O. Sars, (104) p. 157, pl. xiii. figs. 5, 5 a-n, ♀.

1885. *Harpinia carinata*, id. ibid. p. 159, pl. xiii. figs. 6, 6 a-e, ♂.

1891. *Harpinia abyssi*, G. O. Sars, (142) p. 160, pl. lvi. fig. 1, ♂ ♀.

'Lightning,' 1868, Stat. 3, close to the Faroe Bank, in 229 fathoms, lat. $60^{\circ} 31' N.$, long. $9^{\circ} 18' W.$

"Outside the great fishing-banks from the 63rd to the 75th degree of latitude, and extending westwards to the sea between Iceland and Jan Mayen" (G. O. S.).]

65. *Harpinia lævis*, G. O. Sars.

1891. *Harpinia lævis*, G. O. Sars, (142) p. 161, pl. lvi. fig. 2.

Hab. 'Porcupine,' 1869, Stat. 24, lat. $56^{\circ} 26' N.$, long. $14^{\circ} 28' W.$, south of Rockall, 109 fathoms: *Mus. Nor.* Seven miles west of Niarbyl, Isle of Man, 45 fathoms, mud (A. O. W.).

Distrib. Röddberg, Trondhjem Fiord, Norway, 20-40 fathoms (A. M. N.): *Mus. Nor.* Sars gives as localities the same fiord and Hardanger Fiord, in 50-100 fathoms.

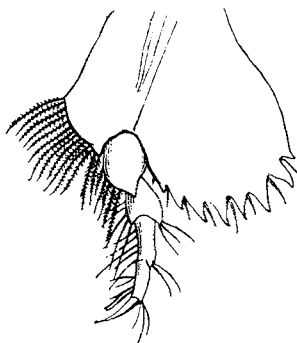
66. *Harpinia latipes*, sp. n.

Female.—The upper antennæ have the second joint of the peduncle edged with a row of six long plumose setæ, within which are two minute plumose setæ, and between these a single penicillate auditory organ. The first joint of the lower flagellum is nearly as long as the second joint of the peduncle and much longer than the last joint.

The lower antennæ have the penultimate joint furnished with about fourteen spines in the anterior set, and the posterior lobe is edged with twelve plumose setæ, within which are eight long slender straight spines, and in the space between them and the anterior set of spines there is a very long spine which, reaching forward, extends nearly to the extremity of the first joint of the flagellum; the last joint of the peduncle has eight long slender spines (not plumose setæ) on the posterior margin; the joints of the flagella of both pairs of antennæ are very oblique.

The gnathopods are obliquely oval and the palm is defined by a strong spine of some length; in the first pair the palm is somewhat longer than the remaining portion of the posterior margin, while in the second pair the slightly concave palm occupies nearly three fourths of the posterior margin.

The last peræopods have a large forward projection of the basal joint edged with fifteen long plumose setæ, while the



Harpinia latipes. Last peræopod.

posterior lobe is largely developed, reaching downward to the extremity of the meros; the margin cut into nine serrations, five of which are very large, the uppermost of all considerably smaller, and the three lowest smaller still; a small seta is situated at the base of each serration; the ischium has eight setæ on the anterior margins, the central of which are long and plumose; the ischium, meros, and carpus are subequal in length; the hand slightly longer and the nail longer than the hand.

The above description is taken from separated mounted limbs; the specimen itself I cannot at the present time find, so am unable to give further particulars, but the last peræopod at once distinguishes it from all described species, and in the anterior lobe of the basal joint finds its counterpart only in *Harpinia abyssi*, G. O. Sars, from which the deeply cut posterior lobe at once distinguishes it.

Hab. A single female specimen taken by the 'Porcupine,' 1869, Stat. 47, lat. 59° 34' N., long. 7° 18' W., in 542 fathoms. This station is on the "*Holtenia*"-ground, N.N.E. of the Butt of Lewis.

Fam. V. **Ampelescidæ.**

Genus I. **AMPELISCA**, Kröyer.

67. *Ampelesca typica* (Bate).

1857. *Tetromatus typicus*, Bate, "Synopsis Brit. Edriophthalmous Crustacea," Ann. & Mag. Nat. Hist. ser. 2, vol. xix, p. 139.
 ? 1859. *Ampelesca carinata*, Bruzelius, Skand. Amphip. Gamm., K. Vet.-Akad. Hand. vol. iii, p. 87, pl. iv, fig. 16, ♂.

1861. *Ampelisca Gaimardi*, Bate & Westwood, (1) vol. i. p. 127 (nec *Ampelisca Gaimardi*, Kröyer).

1869. *Ampelisca carinata*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 277, ♂.

1891. *Ampelisca typica*, G. O. Sars, (142) p. 165, pl. lvii.

Hab. Durham coast, Isle of Cumbrae; Lough Foyle, Ireland (*A. M. N.*); 'Porcupine,' 1869, Stat. 6, off S.W. Ireland, 90 fathoms: *Mus. Nor.* Firth of Forth; off Spurn Head; Loch Fyne (*T. S.*); Port Erin, Isle of Man (*A. O. W.*); Jersey (*Sincl & Hornell*).

Distrib. Haakelsund in Kors Fiord, Norway, 3 fathoms; Hardanger Fiord, 40 fathoms; Fosse de Cap Breton, Bay of Biscay, 35-60 fathoms (*A. M. N.*): *Mus. Nor.* South and West Norway up to Trondhjem Fiord, 20-60 fathoms (*G. O. Sars*); Kattegat and Bohuslän (*Stockholm Museum*, fide *Sars*); West France (*Bonnier & Chevreux*).

The specimens in the British Museum named *Ampelisca Gaimardi* by Bate are, as Mr. Walker has pointed out, referable (at any rate the large ones) to *A. spinipes*, Boeck; but they are females—the typical male is not there. The males of *A. typica* and *A. spinipes* are in general characters not very dissimilar; but Bate's *A. Gaimardi*, which in 1869 I described and assigned to *A. carinata*, Bruzelius, appears to me, on account of the shortness of the upper antennæ, as well as some other points, to be the species of which Sars has described both sexes under Bate's original specific name *A. typica*.

68. *Ampelisca tenuicornis*, Lilljeborg.

1855. *Ampelisca tenuicornis*, Lilljeborg, Öfvers. af K. Vet.-Akad. Förhand. p. 123.

1869. *Ampelisca lavigata*, Bate & Westwood, (1) vol. ii. p. 504 (nec *A. lavigata*, Lilljeborg).

1869. *Ampelisca tenuicornis*, Norman, "Last Report Dredging Shetland Isles," Rep. Brit. Assoc. for 1868, p. 276.

1891. *Ampelisca tenuicornis*, G. O. Sars, (142) p. 167, pl. lviii. fig. 1.

Hab. Shetland; Isle of Skye; Tobermory, Mull; Firth of Clyde; off Seaham, Co. Durham; Salcombe, Devon; Donegal Bay, Ireland (*A. M. N.*); Kirkwall Bay, Orkney (*D. R.*); 'Porcupine,' 1869, Stat. 18, west of Clew Bay, Ireland, 183 fathoms: *Mus. Nor.* Loch Fyne (*D. R.*); Firth of Forth (*T. S.*); Port Erin, Isle of Man; Guernsey; Valentia and Dunbeacon Harbour, Ireland (*A. O. W.*). The late Dr. Robertson recorded this species also under the name "*Ampelisca propinqua*" from the Clyde, as I know from an examination of the specimens.

Distrib. Christiania Fiord, Norway (*A. M. N.*); Bohuslän,

Sweden (*Lilljeborg*): *Mus. Nor.* South and West Norway up to Trondhjem Fiord, in 30-100 fathoms (*G. O. Sars*); Kattegat (*Meinert*); West France (*Chevreur*).

69. *Ampelisca spinipes*, Boeck.

1870. *Ampelisca spinipes*, Boeck, (137) p. 143.

1876. *Ampelisca spinipes*, Boeck, (138) p. 526, pl. xxxi. fig. 5.

1891. *Ampelisca spinipes*, G. O. Sars, (142) p. 173, pl. lx. fig. 2.

Hab. Shetland; Isle of Skye, 1866; Isle of Cumbrae, 1888; Northumberland coast, 1864; off Seaham, Co. Durham; near the Mewstone, Plymouth, 1889; Salcombe, Devon, 1875; Falmouth, 1884 (*A. M. N.*); Aberdeenshire, 1865 (*R. Pauson*); 25 miles off May Island, Firth of Forth, 35 fathoms, 1887 (*Sir J. Murray*); 'Porcupine,' 1869, Stat. 6, off S.W. Ireland, 90 fathoms; Stat. 18, to west of Clew Bay, Ireland, 183 fathoms; Stat. 33, south of Cape Clear, Ireland, 74 fathoms; Stat. 90, *Holtenia*-ground, N.N.E. of Butt of Lewis, 445 fathoms: *Mus. Nor.* Off Holy Island, Firth of Clyde, 36 fathoms, and near Skate Island, Loch Fyne, 80-100 fathoms (*D. R.*); common, Liverpool district and Isle of Man, also Dingle Bay and off Skellig, 70-80 fathoms (*A. O. W.*); the Minch, off Barra, 40 fathoms (*A. Somerville*, fide *D. R.*).

Distrib. Bergen Fiord, Norway (*A. M. N.*); West Norway (*G. O. Sars*): *Mus. Nor.* S. and W. Norway as far north as Lofoten Islands, in 30-100 fathoms (*G. O. Sars*); Kattegat (*Meinert*); Bohuslän (*Stockholm Museum*, fide *Sars*); Holland (*Hoek*); Western France (*Chevreur*).

70. *Ampelisca macrocephala*, Lilljeborg.

1852. *Ampelisca macrocephala*, Lilljeborg, "Havs-Crustaceer vid Kullaberg," Öfvers. K. Vet.-Akad. Förhand. p. 7.

1869. *Ampelisca macrocephala*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 278.

1876. *Ampelisca macrocephala*, Boeck, (138) p. 531, pl. xxx. fig. 6.

1891. *Ampelisca macrocephala*, G. O. Sars, (142) p. 172, pl. lx. fig. 1.

Hab. The Minch (*A. M. N.*); 25 miles off May Island, Firth of Forth, 35 fathoms (*Sir J. Murray*); Isle of Skye; Isle of Cumbrae (*A. M. N.*): *Mus. Nor.* Port Erin, Isle of Man, and off Bull Rock, S.W. Ireland (*A. O. W.*); St. Andrews (*M'Intosh*).

Distrib. Bergen Fiord and Trondhjem Fiord, Norway, 20-40 fathoms; Varanger and Klosterelv Fiords, East Finmark, 15-150 fathoms (*A. M. N.*); Holstenborg, Greenland, 'Valorous,' 1875; N.E. America (*S. I. Smith*): *Mus. Nor.* Arctic Ocean, Labrador, Iceland, Spitsbergen, the Kara Sea (*G. O. Sars*); Bohuslän (*Bruzeliüs*); Kattegat (*Meinert*).

71. *Ampelisca assimilis*, Boeck.1870. *Ampelisca assimilis*, Boeck, (137) p. 142.1876. *Ampelisca assimilis*, Boeck, (138) p. 521, pl. xxxi. fig. 2.1891. *Ampelisca assimilis*, G. O. Sars, (142) p. 168, pl. lviii. fig. 2.

Hab. Off Marsden, Co. Durham, 10 fathoms; off St. Martin's Point, Guernsey, 1868 (*A. M. N.*); 'Porcupine,' 1869, Stat. 18, west of Clew Bay, Ireland, 183 fathoms: *Mus. Nor.* Near May Island, Firth of Forth (*T. S.*); Gairlock, West Scotland (*G. Brook*).

Distrib. Bergen and Trondhjem Fiords, Norway (*A. M. N.*): *Mus. Nor.* South and West Norway (*G. O. Sars*); Bohuslän (*Stockholm Museum*, fide *Sars*); west coast of France (*Chevreux*).

72. *Ampelisca brevicornis* (A. Costa).1853. *Araneops brevicornis*, A. Costa, Rend. Acc. Napoli, p. 171, and *Amfip.* Napoli, 1856, p. 180, pl. i. fig. 2.1855. *Ampelisca levigata*, Lilljeborg, Öfvers. K. Vet.-Akad. Förhand. p. 123.1861. *Ampelisca Belliana*, Bate & Westwood, (1) vol. i. p. 135.1869. *Ampelisca levigata*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 277.1891. *Ampelisca levigata*, G. O. Sars, (142) p. 169, pl. lix. fig. 1.1893. *Ampelisca brevicornis*, Della Valle, (139) p. 473, pl. iv. fig. 4, pl. xxxvii. fig. 39 *A. b.*, pl. xxxviii. figs. 3, 5, 6, &c., *A. b.*

Hab. Shetland; Valentia, Ireland (*A. M. N.*); Kirkwall Bay, Orkney (*D. R.*); Aberdeen coast (*R. Dawson*): *Mus. Nor.* Northumberland and Durham coasts (*A. M. N.*); Firth of Clyde and Loch Fyne (*D. R.*); Firth of Forth (*T. S.*); Isle of Man; off Southport; N. Wales (*A. O. W.*); Jersey (*Sinel & Hornell*).

Distrib. Fosse de Cap Breton, Bay of Biscay, 35-60 fathoms; Naples (*A. M. N.*); Bohuslän, Sweden, as "*A. levigata*" (*Lilljeborg*): *Mus. Nor.* S. and W. Norway and northwards to the Lofoten Islands, in 20-60 fathoms (*G. O. Sars*); Kattegat (*Meinert*); Holland (*Hoek*); West France (*Chevreux*).

73. *Ampelisca gibba*, G. O. Sars.1882. *Ampelisca gibba*, G. O. Sars, (102) p. 107, pl. vi. fig. 1.1891. *Ampelisca gibba*, G. O. Sars, (142) p. 171, pl. lix. fig. 2.

Hab. 'Porcupine,' 1869, Stat. 3, off S.W. Ireland, 722 fathoms; Stats. 15 and 17, to west of Clew Bay, Ireland, 422 fathoms and 1230 fathoms: *Mus. Nor.* Guernsey (*A. O. W.*).

Distrib. 'Porcupine,' 1869, Stat. 11, outside entrance to

English Channel, 1650 fathoms; off Midtö Lighthouse, Hardanger Fiord, 150–180 fathoms, and Rödberg, Trondhjem Fiord, 150–250 fathoms (*A. M. N.*); West Norway (*G. O. Sars*): *Mus. Nor.*

74. *Ampelisca Eschrichtii*, Kröyer.

1842. *Ampelisca Eschrichtii*, Kröyer, Naturhist. Tidsskr. vol. iv. p. 155.

1862. *Ampelisca ingens* (Stimpson, MS.), Bate, Cat. Amphip. Crust. Brit. Mus. p. 92, pl. xv. fig. 2.

1876. *Ampelisca dubia*, Boeck, (139) p. 527 (young, *fide Sars*).

1876. *Ampelisca propinqua*, Boeck, (139) p. 533, pl. xxxi. fig. 8 (somewhat older, *fide Sars*).

1891. *Ampelisca Eschrichtii*, G. O. Sars, (142) p. 174, pl. lxi. fig. 1.

Hab. 'Porcupine,' 1869, Stat. 6, west of the Shannon, Ireland, in lat. $52^{\circ} 25' N.$, long. $11^{\circ} 40' W.$, 90 fathoms: *Mus. Nor.*

Distrib. 'Porcupine,' 1869, Stat. 36, lat. $48^{\circ} 50' N.$, long. $11^{\circ} 9' W.$, in 725 fathoms (the most southern known habitat), and Stat. 62, in the Faroe Channel, 125 fathoms; Tromsö (*Schneider*); Varanger Fiord, 125–150 fathoms, and Bog Fiord, both in E. Finmark (*A. M. N.*); Greenland (*Lovén*); Holstenborg, 30 fathoms, and Godhavn Harbour, 20 fathoms, 'Valorous,' 1875; Barents Sea ('Willem-Barents,' *Stebbing*); Gulf of St. Lawrence (*S. I. Smith*): *Mus. Nor.* Throughout the Arctic Ocean from Greenland to the Siberian Sea; on the Norway coast it occurs in the north, reaching as far south as Bergen (*G. O. Sars*); Bohuslän (*Lilljeborg*).

75. *Ampelisca odontoplax*.

1880. *Ampelisca odontoplax*, G. O. Sars, "Crust. et Pycnog. nova &c.," Archiv for Math. og Naturvid. p. 454.

1885. *Ampelisca odontoplax*, G. O. Sars, (104) p. 196, pl. xvi. fig. 4.

1891. *Ampelisca odontoplax*, G. O. Sars, (142) p. 176, pl. lxi. fig. 2.

Hab. 'Porcupine, 1869, Stat. 65, lat. $61^{\circ} 10' N.$, long. $2^{\circ} 21' W.$, in 345 fathoms; this station is N.E. of Shetland and on the border-line of the "British Area": *Mus. Nor.*

Distrib. Off Midtö Lighthouse, Hardanger Fiord, Norway, in 150–180 fathoms, and Rödberg, in the Trondhjem Fiord, 250–300 fathoms (*A. M. N.*): *Mus. Nor.*

The type specimens were taken by the 'Vöringen' * off Helgeland, Norway, in 142 fathoms; and Sars has subsequently procured it at Hasvig on the west coast of Finmark, and at Bejan in the Trondhjem Fiord.

* Vessel of the Norwegian North-Atlantic Expedition.

76. *Ampelisca æquicornis*, Bruzelius.

1859. *Ampelisca æquicornis*, Bruzelius, "Bidrag till känn. om Skand. Amphip. Gammarid," K. Vet.-Akad. Hand. vol. iii. p. 82, pl. iv. fig. 15.

1869. *Ampelisca æquicornis*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 276.

1876. *Ampelisca æquicornis*, Boeck, (138) p. 524, pl. xxxi. fig. 3.

1891. *Ampelisca æquicornis*, G. O. Sars, (142) p. 177, pl. lxii. fig. 1.

Hab. Shetland; Isle of Skye; Guernsey (*A. M. N.*); 'Porcupine,' 1869, off Bundoran, Ireland: *Mus. Nor.* Off May Island, Firth of Forth (*Dr. Henderson*).

Distrib. Drobäk, Christiania Fiord; off Midtö Lighthouse, Hardanger Fiord, in 50-180 fathoms; Trondhjem Fiord, 150 fathoms (*A. M. N.*); 'Porcupine,' 1869, Stat. 78, lat. 60° 14' N., long. 4° 30' W., 290 fathoms: *Mus. Nor.* Whole of south and west coasts of Norway as far north as the Lofoten Islands, in 50-200 fathoms (*Sars*); Bohuslän (*Bruzelius*); West France (*Chvreux*); Azores (*Barrois*).

Genus 2. BYBLIS, Boeck.

77. *Byblis Gaimardi* (Kröyer).

1848. *Amjelisca Gaimardi*, Kröyer, Voyage en Scand. pl. xxiii. fig. 1.

1870. *Byblis Gaimardi*, Boeck, (137) p. 148.

1876. *Byblis Gaimardi*, Boeck, (138) p. 543.

1891. *Byblis Gaimardi*, G. O. Sars, (142) p. 183, pl. lxiv.

Hab. Off Seaham, Co. Durham (*A. M. N.*); *Mus. Nor.* Off St. Abbs Head, 40 fathoms (*Metzger*); near May Island, Firth of Forth, Jan. 1890 (*T. S.*).

Distrib. Trondhjem Fiord, Norway, 250-300 fathoms; Klosterelv Fiord, E. Finmark, 3-5 fathoms (*A. M. N.*); Tromsø (*Schneider*); 'Valorous,' 1875; Holsteinborg Harbour, Greenland, 7-35 fathoms: *Mus. Nor.* Arctic Ocean from Greenland to Siberian Sea (*G. O. Sars*); Bohuslän (*Bruzelius*); Kattegat (*Meinert*).

78. *Byblis erythrops*, G. O. Sars.

1882. *Byblis erythrops*, G. O. Sars, (102) p. 109, pl. vi. fig. 3.

1892. *Byblis erythrops*, G. O. Sars, (142) p. 187, pl. lxv. fig. 3.

Hab. 'Porcupine,' 1869, Stat. 3, to the west of Valentia, Ireland, lat. 51° 38' N., long. 12° 50' W., in 722 fathoms: *Mus. Nor.*

Distrib. Hardanger Fiord, Norway, in several places; Varanger Fiord, East Finmark, in 125-150 fathoms (*A. M. N.*); Bejan, near entrance of Trondhjem Fiord (*G. O. Sars*): *Mus. Nor.* The only other locality in which Sars has taken it is off Magerø, West Norway.

Genus 3. HAPLOOPS, Lilljeborg.

79. *Haploops tubicola*, Lilljeborg.

1855. *Haploops tubicola*, Lilljeborg, Öfvers. af K. Vet.-Akad. Förhand. p. 134, ♀.
 1855. *Haploops carinata*, id. ibid. p. 89, ♂.
 1868. *Haploops tubicola*, Norman, "Crustacea Amphipoda new to Science or to Britain," Ann. & Mag. Nat. Hist. ser. 4, vol. ii. p. 411, pl. xxi. figs. 1-3 (and references).
 1869. *Haploops tubicola*, Bate & Westwood, (1) vol. ii. p. 505.
 1876. *Haploops tubicola*, Boeck, (138) p. 537, pl. xxx. fig. 5.
 1876. *Haploops carinata*, id. ibid. p. 539, pl. xxx. fig. 6, ♂.
 1892. *Haploops tubicola*, G. O. Sars, (142) p. 192, pl. lxvii.

Hab. Off Berwick-on-Tweed and near Holy Island, Northumberland; Shetland; Isle of Skye; several places in Firth of Clyde (*A. M. N.*): *Mus. Nor.* Off Durham coast and 7 miles off Tynemouth, Northumberland (*A. M. N.*); between Isle of Man and Great Ormes Head, 20-30 fathoms (*A. O. W.*); near Bass Rock and other parts of the Firth of Forth (*T. S.*); Loch Linnhe, W. Scotland (*G. Brook*).

Distrib. 'Porcupine,' 1869, Stat. 36, outside the entrance to the British Channel, in 725 fathoms; Godhavn Harbour, Greenland, in 5-20 fathoms, 'Valorous,' 1875; Bay of Fundy, N.E. America (*S. I. Smith*); Bog and Varanger Fiords, East Finmark (*A. M. N.*); Bohuslän, Sweden (*Lovén*); Naples (*Della Valle*): *Mus. Nor.* Whole coast of Norway, Arctic Ocean generally to Siberian Polar Sea; the Baltic (*G. O. Sars*); Denmark (*Meinert*); Western France (*Chevreux*).

In my Shetland Report this species was twice recorded by myself as *Haploops tubicola*, and also on Mr. Spence Bate's authority under the name "*Pontoporeia affinis*" by mistake. The species forms for itself a very thick tube of mud, in which it makes its home.

80. *Haploops setosa*, Boeck.

1870. *Haploops setosa*, Boeck, (137) p. 148.
 1876. *Haploops setosa*, Boeck, (138) p. 541, pl. xxx. fig. 7.
 1888. *Haploops setosa*, D. Robertson, Contrib. to Cat. Amphip. and Isop. Firth of Clyde, p. 23.
 1892. *Haploops setosa*, G. O. Sars, (142) p. 194, pl. lxviii. fig. 1.

Hab. Dredged off Skate Island, Loch Fyne, in 100 fathoms, mud (*D. R.*): *Mus. Nor.* There are, I believe, only three spots in our seas between our islands in which a depth of 100 fathoms can be found. The others are near Cronlin Island in the Sound of Skye and between the islands of Cumbrae and Arran in the Firth of Clyde. The immediate

neighbourhood of these deep spots is the habitat of certain Mollusca and other animals not found, or scarcely to be found, elsewhere between our islands. Thus, Loch Fyne is the well-known locality of the shells *Cuspidaria costellata*, Deshayes, *Cuspidaria abbreviata*, Forbes, and *Alvania subsoluta*, Aradas, var. *abyssicola*, Forbes; here, too, are found the Crustacea *Nyctiphanes norvegica*, Sars, and *Euchaeta norvegica*, Boeck, in the greatest profusion (two Crustacea to which the Loch Fyne herrings seem to owe their large size and fine flavour), *Bythocypris complanata*, G. S. Brady, and other deep-water forms not so restricted in their distribution. In the Sound of Skye and neighbourhood are *Poromya granulata*, Nyst & Westend., *Cuspidaria abbreviata*, Forbes; and *costellata*, Desh., *Cryptodon ferruginosus*, Forbes, *Portlandia tenuis*, Phil., *Arca pectunculoides*, Scacchi, &c. Of the inhabitants of the deep hole between Cumbrae and Arran we know less, but Sir J. Murray procured *Nyctiphanes norvegica* there in great abundance. These northern deep-water forms probably made their way to these localities at a geological period when the British Islands were more submerged than they are now, and the depths therefore were greater. It is remarkable that in our times the depths of many of the Scotch lakes far exceed the depth of any part of the sea at all near to our coasts.

By the 'Porcupine' Exped. it was taken at Stat. 3, off the south-west of Ireland, in 722 fathoms, and at Stats. 74 and 88, west of the Shetland Islands, in 203 and 290 fathoms: *Mus. Nor.*

Distrib. 'Lightning,' 1868, Stats. 3 and 6, Faroe Channel, in 229 and 510 fathoms; 'Knight Errant,' Faroe Channel, Stat. 8, in 540 fathoms; 'Porcupine,' 1870, Stat. 56, near the island Pantellaria, in the Mediterranean, 390 fathoms; Varanger Fiord, E. Finmark, 125-150 fathoms; Rødberg, Trondhjem Fiord, Norway, 250-300 fathoms, and Hardanger Fiord, 150-180 fathoms (*A. M. N.*): *Mus. Nor.* Greenland, 48-183 fathoms (*H. J. Hansen*); Arctic Ocean generally.

I have received specimens under this name from Prof. S. I. Smith, which were taken in the Bay of Fundy, N.E. America. I am inclined, however, to think that they should be referred to *Haploeps robusta*, G. O. Sars. They are the largest examples I have seen, and in most points, such as the form of the cephalon and of the third segment of the metasome, they agree with Sars's species; but the proportionate lengths of the joints of the peduncles of the two pairs of antennæ are different.