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*British Amphipoda of the Tribe Hype-
riidea and the Families Orchestiidae
and some Lysianassidae.*

BY

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*British Amphipoda of the Tribe Hyperiidæ and the Families
Orchestiidae and some Lysianassidae.* By Canon NORMAN,
M.A., D.C.L., LL.D., F.R.S., &c.

I PURPOSE in these notes to revise the species of British Amphipoda, and at the same time give an account of the Amphipoda procured during the North Atlantic Expeditions of the 'Porcupine,' 'Valorous,' 'Knight Errant,' and 'Triton.' The records of the larger number of the captures of these expeditions will fall under the British species, but in those instances where the species are not members of our fauna, that which relates to them will be enclosed in brackets.

The study of this group of Crustacea has been beset with difficulty, and in consequence of inadequate descriptions and illustrations old records of species must, in some instances, be received with caution. The publication of the splendid work of Professor G. O. Sars has supplied the student with most perfect descriptions and illustrations of the Amphipoda of Norway, which include by far the greater part of those known in our own fauna. If the critic is sometimes inclined to think that occasionally there are to be found in that work divergences described as specific which he would rather regard as varietal, after all it is a mere matter of opinion, and the author has at any rate directed our attention to modifications of character which are worthy of study. In Sars's work we recognize a standard authority, and the arrangement there set forth will here be followed.

I have only given references to such authors and papers as especially throw light upon the species and their more important synonymy. By way of shortening the references to the most frequently quoted authors, the following numbers will be employed. In those cases where the work was included in the list of works and papers on Isopoda lately given by me in the 'Annals' in my paper on "British Isopoda Chelifera"

(Ann. & Mag. Nat. Hist. ser. 7, vol. iii. 1899, p. 317) I have here repeated the same prefix number as was there used:—

- (1) BATE and WESTWOOD.—‘History of British Sessile-eyed Crustacea.’ 1861–9.
- (137) BOECK (A.).—“Crustacea Amphipoda borealia et arctica,” Vid.-Selsk Forhand. 1870.
- (138) BOECK (A.).—‘De Skandinaviske og Arktiske Amphipoder.’ 1872–6.
- (139) DELLA VALLE (A.).—‘Fauna und Flora des Golfes von Neapel.’ 20. Monographie: Gammarini. 1893.
- (140) HANSEN (H. J.).—“Oversigt over de paa ‘Dijmphna’-Togtet indsamlede Krebsdyr, ‘Dijmphna’-Togtets zoologiske-botaniske Udbytte. 1886.
- (141) HANSEN (H. J.).—“Oversigt over det vestlige Grönlands Fauna af Malakostrake Havskrebsdyr,” Vidensk. fra den Naturf. Foren. i Kjöbenhavn. 1887.
- (71) MEINERT (FR.).—Crustacea Malacostraca in Petersen’s “Det Videnskabelige Udbytte kanonbaden ‘Hauchs’ Togter ia de Danske Have indenfor Skagen 1883–86.” 1888–9.
- (102) SARS (G. O.).—“Oversigt af Norges Crustaceer med foreløbege Bemærkninger over de nye eller mindre bekjendte Arter. I,” Vid.-Selsk. Forhand. 1882.
- (104) SARS (G. O.).—‘Norwegian North Atlantic Expedition, 1876–78,’ Crustacea, i. 1885, ii. 1886.
- (142) SARS (G. O.).—‘An Account of the Crustacea of Norway,’ vol. i. Amphipoda, 1890–95.

With respect to localities given, specimens are in my own collection from all habitats by whomsoever collected which precede the indication *Mus. Nor.* As at my death my collections will be deposited in the Brit. Mus. it will be known where types and specimens thus indicated can be examined in case of doubt attaching to species. As regards all other habitats given, the authority for them is that of the carcinologists whose name is added.

In the case of those whose names will thus most frequently occur, I shall employ, for brevity’s sake, their initials as follows:—

A. M. N.—A. M. NORNAN.

D. R.—DAVID ROBERTSON. The localities are taken from his two papers on the Amphipoda and Isopoda of the Firth of Clyde. (Trans. Nat. Hist. Soc. Glasgow, vol. ii. 1888 and vol. iii. 1892.)

T. S.—THOMAS SCOTT. Localities taken from his numerous papers on the Crustacea of Scotland, for the most part published in the Reports of the Fishery Board of Scotland.

A. O. W.—ALFRED O. WALKER. With respect to the Crustacea of the district of Liverpool and the Isle of Man, I have depended on his 'Revision of the Amphipoda of the L.M.B.C. District,' as being the corrected list. Most of Mr. Walker's papers are published in the Trans. Liverpool Biol. Assoc.; others will be referred to; but one should be here mentioned as it does not embrace any descriptions of species, but contains a good list of Channel Island Amphipods: "Report on the Schizopoda, Cumacea, Isopoda, and Amphipoda of the Channel Islands," by A. O. Walker and J. Hornell (Journal of Marine Zoology and Microscopy, vol. ii. 1896.)

AMPHIPODA.

Tribe I. HYPERIIDEA.

Fam. I. Hyperiidæ.

Genus I. HYPERIA, Latreille.

(Syn. *Lestrigonus*, M.-Edw., ♂.)

1. *Hyperia galba*, Montagu.

1863. *Hyperia galba*, B. & W. (1) vol. ii. p. 12, ♀.

1863. *Lestrigonus exulans* (Kröyer), B. & W. (1) vol. ii. p. 5, ♂.

1863. *Lestrigonus Kinahani* (Bate), B. & W. (1) vol. ii. p. 8, ♂.

1869. *Hyperia galba*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 286, ♂ ♀.

1872. *Hyperia medusarum*, Boeck (*nec Müller*), p. 79, pl. ii. fig. 1.

1887. *Hyperia Latreillei* (M.-Edw.), Bovallius, Contrib. Mon. Amphip. Hyperidea, pt. 1 (Kong. Sv. Vet.-Akad. Hand. vol. xxi. no. 5), p. 164, pl. ix. figs. 31-43, pl. x. figs. 1-17.

1887. *Hyperia galba*, id. *ibid.* p. 180, pl. x. figs. 25-32.

1887. *Hyperia spinigera*, id. *ibid.* p. 191, pl. x. figs. 33-39.

1890. *Hyperia galba*, Sars, (142) p. 7, pl. ii. & pl. iii. fig. 1.

Hab. Shetland; East of Scotland; Plymouth; Birturbay Bay (*A. M. N.*); 55 miles off Valentia, Ireland, 'Porcupine,' 1869; Banff (*T. Edward*): *Mus. Nor.* Firth of Clyde (*A. M. N.*); Anglesea (*A. O. W.*); Mull (*G. Brook*); Firth of Forth (*Cunningham*); St. Andrews (*McIntosh*); Loch Fyne and Moray Firth (*T. S.*).

Distrib. Arctic regions from Greenland to Murman coast, Norway, the Baltic, west coast of France.

As I pointed out in my Shetland Report of 1863, *Lestrigonus exulans* and *Lestrigonus Kinahani* of Bate and West-

wood are different stages of development of the male of this species. Bovallius regards *Hyperia Latreillei*, M.-Edw., as a distinct species; but I agree with Sars in considering that the differences indicated are insufficient for specific distinction, and are in a great measure dependent on the ages of the individuals examined. Yet, further, I am unable to hold the *Hyperia spinigera*, Bovallius, as entitled to specific rank. The chief characters assigned are the spination of the two pairs of gnathopods and the form of the uropods. With respect to the gnathopods, I find that in young specimens of *H. galba* the spines are sparingly developed, in middle-sized individuals they become more numerous; in large examples I find them, as in *H. spinigera* (Bovallius, *l.c.* pl. x. figs. 34-36), encircling the extremities of the carpus of the gnathopods and well developed at the dorsal corners. The other points Bovallius especially emphasizes are the short branches of the last uropods. Now in the male sex the branches of the last uropods are always shorter than are those of the female (compare Sars, pl. ii. fig. *us* and pl. ii. fig. 1 *us*); and it is a male which is the subject of Bovallius's figures. Should other authors disagree with my views in this matter, the female specimens of *H. galba* taken by me at Birturbuy Bay and the one taken off Valentia by the 'Porcupine' are, from the character of their gnathopods, to be referred to *H. spinigera*.

The *Cancer medusarum* of Müller's 'Prodromus' was applied by O. Fabricius, in his 'Fauna Grœnlandica,' under the name *Oniscus medusarum*, to *H. galba*, and he has been followed by many authors. The *Metoecus medusarum* (Fabr.), Krøyer and other authors, is *Hyperoche tauriformis* (Bate & Westwood*). Lastly, Bovallius, Hansen, and Sars now consider the specific name *medusarum* (*Cancer medusarum*, Müller) to belong to *Hyperia spinipes* of Boeck. Müller applied the specific name to the animal described by Ström, and they doubtless think that weight must be attached to Ström's description of the first two pairs of legs as "hirsute and fluffy, truncated at the apex." *Hyperia medusarum* (Müller) thus considered, of which the *H. spinipes*, Boeck, becomes a synonym, has not yet been found in our sea. *Talitrus cyaneæ*, Sabine, is indeed regarded as a synonym of *H. medusarum* (= *spinipes*), but what the *Hyperia cyaneæ* of Bate and Westwood (vol. ii. p. 521) may be it seems

* I first found this species in Shetland, and soon afterwards T. Edward procured it at Banff, and sent a specimen to me and another to Bate. I recorded the specimens I had seen in my Shetland report as *Metoecus medusarum*, Krøyer; Bate and Westwood did not recognize Edward's specimen as a known form, and described it as *Hyperia tauriformis*, a name which now stands.

impossible to say. They compare it to *Hyperia galba*; but the following sentence in the description of this small form, "rather more than three-twentieths of an inch long," found by Edward at Banff, is very puzzling:—"Dactyli of three posterior pairs of pereopoda long, sharp, and furnished with a bunch of cilia in the middle."

Genus 2. HYPEROCHE, Bovallius.

[Syn. = *Metoecus*, Kröyer (in use) = *Tauria*, Boeck (not Dana).]

2. *Hyperoche tauriformis* (Bate & Westwood).

1838. *Metoecus medusarum*, Kröyer, Grönlands Amphipoder, p. 288, pl. iii. fig. 15.

1869. *Metoecus medusarum*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 287.

1869. *Hyperia tauriformis*, Bate & Westwood, (1) vol. ii. p. 519.

1872. *Tauria medusarum* and *Tauria abyssorum* †, Boeck, (138) pp. 82 & 83, pl. i. fig. 2.

1880. *Hyperoche Kröyeri*, Bovallius, l. c. p. 87; *Hyperoche abyssorum*, p. 94; *Hyperoche Lütkeni*, p. 97, pl. vii. figs. 1-26; and *Hyperoche tauriformis*, p. 115.

1890. *Hyperoche Kröyeri*, G. O. Sars, (142) p. 9, pl. iv.

Hab. Banff (*T. Edward*); Shetland (*A. M. N.*): *Mus. Nor.* Firth of Forth; Firth of Clyde; Loch Fyne (*T. Scott*); near Puffin Island, N. Wales (*A. O. W.*).

Distrib. Faroe Channel, 'Triton' Exped. (*Sir J. Murray*); Greenland, and lat. 52° 53' N., long. 23° 44' W., surface, in great abundance, 'Valorous' 1870: *Mus. Nor.* The species has an arctic range from Siberia to Greenland.

2*. *Hyperoche prehensilis* (Bate & Westwood).

1869. *Hyperia prehensilis*, Bate & Westwood, (1) vol. ii. p. 540.

1885. *Hyperoche prehensilis*, Bovallius, System. List of Amphip. Hyperiid. (K. Svenska Vet.-Akad. Handl. vol. ii.), p. 19 (sep. copy).

1889. *Hyperoche prehensilis*, Bovallius, Contrib. &c. p. 93.

The only known example "was taken at Banff by Mr. T. Edward." The characteristic feature is the subchelate character of the posterior pairs of peræopods; but this character Bovallius thinks may be a feature depending only in the young stage of the animal. Indeed Fr. Müller has described just such a difference in the posterior peræopods in his *Hyperoche Martinezii*, in which species these legs are prehensile in the young (as in *H. prehensilis*) and simple in the adult (as in *H. tauriformis*). It would appear therefore that the former will probably be proved to be the young stage

† First described by Boeck in 1870.

* I repeat the previous number here with an asterisk, because I regard *H. prehensilis* as not a satisfactorily established British species; and similarly repeated numbers must be interpreted in the same way throughout these papers.

of the latter species. (Vide *H. Martinezii*, Bovallius, 1889, p. 107.)

Genus 3. PARATHEMISTO, Boeck.

3. *Parathemisto oblivia* (Kröyer).

1838. *Hyperia oblivia*, Kröyer, Grönlands Amfip. p. 70, pl. iv. fig. 19.
 1869. *Hyperia oblivia*, Norman, "Last Report Dredging Shetland Isles,"
 Brit. Assoc. Rep. for 1868, p. 287.
 1890. *Parathemisto oblivia*, Sars, (142) p. 10, pl. v. fig. 1.

It is also *Parathemisto abyssorum* of Boeck and *Parathemisto oblivia* of Bovallius.

Hab. Shetland (*A. M. N.*); Banff (*T. Edward*); St. Andrews (*McIntosh*); 25 miles off May Island, Firth of Forth (*Sir J. Murray*): *Mus. Nor.* Off the mouth of the Tees (*G. S. Brady*); Moray Firth, Firth of Forth, and 70–80 miles off mouth of the Humber (*T. S.*); surface-net at Sanda Pay, near Mull of Cantyre (*D. R.*); off Gally Head, Co. Cork (*A. O. W.*); Valentia and Dingle Bay (*Rev. W. S. Green*).

Distrib. Faroe Channel, 'Triton' (*Sir J. Murray*); Knævanger Fiord, Finmark (*J. S. Schneider*): *Mus. Nor.* Norway and off Jan Mayen (*G. O. Sars*); Kara Sea (*Hansen*); Greenland (*Kröyer*); Bay of Biscay, 950 metres, 'Caudan' (*J. Bonnier*).

3*. *Parathemisto gracilipes* (Norman).

1863. *Hyperia oblivia*, Bate & Westwood, (1) vol. ii. p. 16.
 1869. *Hyperia gracilipes*, Norman, "Last Report Dredging Shetland Isles," Brit. Assoc. Rep. for 1868, p. 287.
 1887. *Parathemisto longipes*, Bovallius, "Syst. List of Amphip. Hyperiidea," Bih. t. K. Sv. Vet.-Akad. Hand. vol. xi. no. 16, p. 21.
 1889. *Parathemisto gracilipes*, Bovallius, "Contrib. to Monog. Amphip. Hyperiidea," K. Sv. Vet.-Akad. Hand. vol. xxii. no. 7, p. 268.

In 1868 I pointed out that Bate and Westwood's *H. oblivia* was not that of Kröyer; and as no other specimen has since been found, I cannot help suspecting that Bate has described and figured the second limb of the first gnathopods as the second gnathopod: if so *P. gracilipes* may hereafter become a synonym of Kröyer's species.

Hab. Banff (*T. Edward*)*.

* In confirmation that Bate and Westwood's figure is incorrect, it may be noticed that the figure is taken from a specimen sent to the authors by the late Thomas Edward of Banff. Now I have specimens of the true *P. oblivia* received from him, and in T. Edward's "Stray Notes on some of the smaller Crustaceans," Journ. Proc. Linn. Soc. vol. ix. 1867, pts. 143 and 166, we are told that "*H. oblivia*" occurs in enormous shoals at times in the Moray Firth, filling the rock-pools "with literally one living mass" and cast up on the shore as "a ridge or wall extending more than one hundred feet in length, and varying from one to two inches in height and breadth."

Genus 4. EUTHEMISTO, Bovallius.

4. *Ethemisto compressa* (Goës).

1865. *Themisto compressa*, Goës, "Crust. Amphip. Maris Spetsbergiam alluentis, etc.," *Œlfvers. K. Vet.-Akad. Förh.* p. 533, pl. xli. fig. 34.
 1878. *Lestrignonus spinidorsalis*, Spence Bate, "Two new Crustacea from the Coast of Aberdeen," *Ann. & Mag. Nat. Hist.* ser. 5, vol. i. p. 411, fig. 2, and as *Hyperia spinidorsalis*, id. *ibid.* vol. ii. p. 489.
 1892. *Ethemisto compressa*, Norman, "Rare Crustacea on the Yorkshire Coast," 'The Naturalist,' p. 175.
 1895. *Ethemisto compressa*, Sars, (142) p. 12, pl. v. fig. 2.

Bovallius has joined *Ethemisto bispinosa*, Boeck, with this species; but the remarkable spination of the propodos of the third peræopods (see Sars, pl. vi. fig. 2, p. 5), which is the chief distinguishing character of that species, as indicated by Sars, and as I find in Greenland specimens of *E. bispinosa*, seems to distinguish them.

Hab. Redcar, Yorkshire, in extraordinary profusion, thrown up upon the beach, April 4, 1892 (*T. H. Nelson*): *Mus. Nor.* Aberdeen (*Spence Bate*); 70-80 miles E. by N. of mouth of the Humber (*T. S.*).

Distrib. Davis Strait and Greenland, 'Valorous,' 1875; lat. 52° 33' N., long. 26° 44' W., and lat. 59° 16' N., long. 37° 16' W., 'Valorous,' 1875; Faroe Channel 'Triton,' 1882 (*Sir J. Murray*): *Mus. Nor.* Norway and Jan Mayen (*G. O. Sars*).

5. *Ethemisto libellula* (Mandt).

1822. *Gammarus libellula*, Mandt, *Observationes in Historiam Naturalem et Anatomiam Comparatam in itinere Groelandiæ factæ*, p. 32.
 1838. *Themisto crassicornis*, Krøyer, *Grönlands Amphipoder*, p. 295, pl. iv. fig. 17.
 1838. *Themisto arctica*, id. *ibid.* p. 291, pl. iv. fig. 16.
 1869. *Themisto crassicornis*, Bate & Westwood, (1) vol. ii. p. 522.
 1887. *Ethemisto Nordenskiöldi*, Bovallius, "Arctic and Antarctic Hyperids," 'Vega' Exped. *Vetensk. Iakttagelser*, vol. iv. p. 570, pl. xlvii. figs. 104-110.
 1895. *Ethemisto libellula*, Sars, (142) p. 13, pl. vi. fig. 1.

It is the *Themisto libellula* of Goës and the *Ethemisto libellula* of Bovallius.

Hab. Banff (*T. Edward*, fide *Bate*).

Distrib. Davis Strait and Greenland, 'Valorous,' 1875; Jan Mayen, Austro-Hungarian Exped.: *Mus. Nor.* In shoals on north and east coasts of Finmark (*G. O. Sars*); and Arctic region generally from Siberia to Greenland.

A good specific character by which the species may be at once recognized is that the nail of the third and longest peræopods bears a comb-like set of long spines.

[*Euthemisto bispinosa*, Boeck.1870. *Themisto bispinosa*, A. Boeck, (137) p. 8.1872. *Themisto bispinosa*, Boeck, (138) p. 87, pl. i. fig. 4.1887. *Euthemisto bispinosa*, Bovallius, "Arctic and Antarctic Hyperids," 'Vega' Exped. Vetenskap. Iakttag. vol. iv. p. 569, pl. xlv. figs. 97-103.1890. *Euthemisto bispinosa*, G. O. Sars, (142) p. 14, pl. vi. fig. 2.

Taken by the 'Valorous,' 1875, in Davis Strait and in the two following places in the North Atlantic: lat. 42° 8' N., long. 63° 39' W., and lat. 60° 24' N., long. 49° 57' W. Also taken in the Faroe Channel by the 'Triton,' 1882.

Distrib. Off Martha's Vineyard, N.E. America (*U.S. Nat. Mus.*); Gulf of Maine and 87 miles S. of Block Island, N.E. America (*Prof. S. I. Smith*): *Mus. Nor.* Sars has taken it on the coast of W. Finmark.

I entirely agree with Sars in regarding this as quite distinct from *Euthemisto compressa*; the length and very peculiar spinal armature of the third peræopoda are evident in young as well as old specimens.]

Fam. II. Phronimidæ.

Genus PHRONIMA, Latreille.

6. *Phronima sedentaria* (Forskål).1863. *Phronima sedentaria*, Bate & Westwood, (1) vol. ii. p. 23.1872. *Phronima sedentaria*, Claus, "Naturgeschichte der *Phronima sedentaria*," Zeits. f. wiss. Zool. vol. xxii. p. 331, pls. xxvi., xxvii.1879. *Phronima sedentaria*, Claus, "Der Organismus der Phronimiden," Zool. Instit. zu Wien, vol. ii. pl. ii. figs. 11-14, pls. iii.-viii.1889. *Phronima sedentaria*, Bovallius, "Contrib. Mon. Amphip. Hyperideæ," Kong. Sv. Vet.-Akad. Handl. vol. xxii. p. 354, pl. xvi. figs. 1-3.

Phronima custos, Risso, *P. borneensis*, Bate, and *P. novæzealandiæ* are regarded by Bovallius as synonyms of this species.

Hab. Taken off the S.W. of Ireland, August 1890, by the Rev. W. S. Green (*A. O. W.*).

Distrib. Naples (*Zool. Stat.*): *Mus. Nor.* Atlantic and Mediterranean, and it would seem also the Pacific.

Fam. III. Tryphænidæ.

Genus 1. TRYPHÆNA, A. Boeck.

7. *Tryphæna Malmii*, Boeck.1870. *Tryphæna Malmii*, Boeck, (137) p. 9.1872. *Tryphæna Malmii*, Boeck, (138) p. 91, pl. i. fig. 3.1887. *Tryphæna Nordenskiöldi*, Bovallius, "System. List Amphip.

Hyperiid,," Bihang till K. Sv. Vet.-Ak. Handl. vol. xi. p. 30; and "Arctic and Antarctic Hyperids," 'Vega' Exped. Vetensk. Iakttag. vol. iv. p. 573 (the male).

1888. *Tryphæna Boeckii*, Stebbing, Report 'Challenger' Amphipoda, p. 1539, pl. exciv. (the male).

1890. *Tryphæna Malmi*, Sars, (142) p. 17, pl. vii.

Hab. Banff (*T. Edward*): *Mus. Nor.*

Distrib. It is known from Norway, the Faroe Isles, and North Atlantic, lat. 18° 8' N., long. 30° 5' W. (*Stebbing*).

[Genus 2. BRACHYSCELUS, Spence Bate, 1861.

= *Thamyris*, Spence Bate, 1862.

= *Schnehagenia*, Claus, 1871.

[*Brachyscelus crustulum*, Spence Bate.

1861. *Brachyscelus crustulum*, Spence Bate, Ann. & Mag. Nat. Hist. ser. 3, vol. viii. p. 7, pl. ii. figs. 1, 2.

1862. *Brachyscelus crustulum*, Spence Bate, Cat. Amphip. Brit. Mus. p. 333, pl. liii. figs. 2, 3.

1887. *Thamyris crustulum*, Bovallius, "Syst. List Amphip. Hyperiid,," Bihang till K. Svensk. Vet.-Akad. Hand. vol. xi. p. 31.

1887. *Thamyris mediterranea*, Claus, Die Platysceliden, p. 60, pl. xvi. figs. 11-18, ♂ jun.

1888. *Brachyscelus crustulum*, Stebbing, Report 'Challenger' Amphip. p. 1544, pls. excv., excvi., ♂.

1893. *Brachyscelus crustulum*, Chevreux, Bull. Soc. Zool. de France, vol. xviii. p. 70, & woodcuts.

A young male specimen taken by the 'Triton' in the Faroe Channel in 1882, the exact locality not preserved.

Distrib. Naples (Zool. Stat.): *Mus. Nor.* In stomachs of the Tunny between the coasts of France and the Azores (*Chevreux*); North Pacific, 'Challenger' (*Stebbing*).

The Faroe Channel specimen is a very young male. Full-grown females from Naples, whence Claus procured the small male which he called *Thamyris mediterranea*, agree with Stebbing's description and figures and those of Chevreux of *B. crustulum*. It also seems questionable whether *T. globiceps*, Claus, is a valid species. The occurrence of this genus so far north as the Faroe Channel is very interesting. It was taken in the towing-net at a depth of several hundred fathoms.]

[Genus 3. LYCÆA, Dana.

[*Lycæa robusta*, Claus.

1887. *Lycæa robusta*, Claus, Die Platysceliden, p. 63, pl. xix. figs. 2-10.

A single specimen, 'Porcupine,' 1870, Mediterranean. Claus's specimens were from Messina and Naples.]

[Fam. IV. Scinidæ.

[Genus SCINA, Prestandrea.

[*Scina borealis*, G. O. Sars.1886. *Clydonia borealis*, G. O. Sars, (102) i. p. 75, pl. iii. fig. 1.1887. *Tyro borealis*, Bovallius, "Arctic and Antarctic Hyperids," 'Vega' Exped. Vetensk. Iakttag. vol. iv. p. 551.1887. *Tyro borealis*, Bovallius, "Contrib. Monog. Amphip. Hyperiidea, pt. i.," Kong. Sv. Vet.-Akad. Hand. vol. xxi. p. 16.1890. *Scina borealis*, G. O. Sars, (142) p. 20, pl. viii.*Hab.* 'Triton,' 1882, Faroe Channel, tow-net down to 300 fathoms (*Sir J. Murray*).*Distrib.* Lofoten Islands, 300 fathoms; Bejan at outer part of Trondhjem Fiord, and at Hanko, Christiania Fiord, 100-150 fathoms (*G. O. Sars*); Bay of Biscay, 960 metres, 'Caudan' (*J. Bonnier*).]

Fam. V. Lanceolidæ.

Genus LANCEOLA, T. Say.

8. *Lanceola Sayana*, Bovallius.1885. *Lanceola Sayana*, Bovallius, "Some forgotten Genera among the Amphipodous Crustacea," Bih. t. K. Sv. Vet.-Akad. Hand. vol. x. no. 14, p. 7, figs. 1, 1 a, 1 b.1887. *Lanceola Sayana*, Bovallius, "Contrib. to Monog. of Amphip. Hyperiidea," K. Sv. Vet.-Akad. Hand. vol. xxi. no. 5, p. 30, pl. iv. figs. 1-19, pl. v. fig. 1.*Hab.* 'Porcupine,' 1869, Stat. 22, lat. 56° 8' N., long. 13° 34' W.; south of Rockall, a single specimen: *Mus. Nor.**Distrib.* North and South Atlantic (*Bovallius*).

This species is stated by Bovallius to be "one of the largest of all the Amphipoda, measuring 30-42 millim." The 'Porcupine' specimen is only 5 millim. long. Nevertheless, in most essential points, such as general character, the gnathopods, the structure and proportional lengths of the peræopods, &c., it agrees with *L. Sayana*. The lower antennæ have the penultimate joint shorter in proportion to the last, and the telson is not quite so long as the basal joint of the last uropods. Bovallius lays stress upon this last character as specific throughout the genus; but age may easily make a difference in it. In form the telson corresponds to that of *L. Sayana*.

[*Lanceola Murrayi*, n. sp.

First gnathopods with a group of about six slender spines on the posterior lobes of the meral joint; carpus, as usual, somewhat cup-shaped, distal breadth only slightly exceeding greatest length, the extremity set round with slender spines;

propodos as long as carpus and narrower at the base than the extremity of carpus, one and half times as long as greatest breadth, widest near the base, thence with slightly convex margins evenly tapering to the extremity; anterior margin bearing about four slender spines; posterior margin serrated throughout, and bearing five or six long slender spines; nail equalling rather more than one-third the length of the hand, slightly serrulated quite at the base.

Second gnathopods with carpus and manus subequal in length, the length of neither exceeding two and a half times the breadth, each widest at their junction with the other, the former widening slightly distally to receive the latter; carpus with two or three small setæ on anterior border and two distal setæ; hand tapering from the base to the extremity, where it is just wide enough to receive the nail; anterior margin with three spines and two distal ones; posterior margin minutely serrulated throughout, with three slender spines about the middle and two distal spines; nail nearly straight, one-third as long as the hand, with finely serrated edge.

First peræopods with the hand longer than the wrist, inner margin of each with five or six small spines at about equal distance from each other; outer margin naked; nail long and slender, about one-fourth the length of the hand.

Hinder peræopods with the hand somewhat longer than the wrist; the curved dactylus and its sheath as usual in the genus.

Telson equals two-thirds the length of the basal joint of the last uropods; these latter with the branches narrowly lanceolate, the branches of the second pair still narrower.

This appears to differ from all described species. The first gnathopods in their less expanded wrist and proportionately longer hand differ from most species, but approach Bovallius's figure of *L. felina* (if the hand were a little longer in that species); the second gnathopods are most like those of *L. Sayana*. Bovallius does not mention or figure in any species the serration of the margin of hand and finger in this gnathopod, and *Lanceola Loveni* is the only species in which serration of margin of first gnathopods is recorded. The telson and uropods are nearly as in *L. serrata*. *L. pacifica*, Stebbing ('Challenger'), comes nearest to *L. Murrayi* as regards the gnathopods, but the telson and uropods are quite different.

A single specimen taken by tow-net sunk to 640 fathoms in the Faroe Channel: 'Triton,' 1882, Stat. 8 (*Murray*).]

Fam. VI. Vibiliidæ.

Genus VIBILIA, H. Milne-Edwards.

9. *Vibilia borealis*, Bate & Westwood.1869. *Vibilia borealis*, Bate & Westwood, (1) vol. ii. p. 524.1887. *Vibilia Kröyeri*, Bovallius, "System. List of Amphipoda Hyperideæ," Bih. t. K. Sv. Vet.-Akad. Hand. vol. xi. no. 16, p. 8.1887. *Vibilia Kröyerii*, Bovallius, "Arctic and Antarctic Hyperids," 'Vega' Exped. Vetensk. Iakttag. vol. iv. p. 555.1887. *Vibilia borealis*, Bcvallius, "Contrib. Monog. Amphip. Hyperideæ," K. Sv. Vet.-Akad. Hand. vol. xxi. no. 5, p. 57.1887. *Vibilia Kröyeri*, id. ibid. p. 58, pl. viii. figs. 18-25.*Hab.* Two specimens from Thomas Edward, taken at Banff, Scotland: *Mus. Nor.**Distrib.* West Coast of Greenland (*Bovallius*).

On referring to Edwards's own notes it is clear that Bate and Westwood have erroneously applied the profusion which Edwards saw in *Parathemisto oblivia* to *Vibilia*.

In drawing up the specific characters of *C. borealis* to distinguish it from other species, Bovallius writes:—"As the specific character given by Bate and Westwood is applicable to several of the known *Vibiliæ*, the diagnosis here is taken from the generic characters of the authors compared with the drawing." The brief diagnosis of the two species is as follows:—

The head is not rostrate.

a. The pereional segments are dorsally smooth.

aa. The fifth and sixth pairs of pereipoda are scarcely longer than the third and fourth pairs.

aaa. The femora of the first and second pairs of pereipoda (*i. e.* the gnathopods) are narrow.

1. The peduncles of the uropoda are shorter than the rami.

V. borealis, B. & W.

2. The peduncles of the uropoda are longer than the rami

V. Kröyerii, Bov.

Respecting the uropoda, Bovallius has taken the character of *V. borealis* from B. & W.'s woodcut, and while he has adopted the *generic* characters, in certain respects he has taken no notice of the statement "*Three posterior pairs of pleopoda with the peduncle long and the rami short and compressed.*" This description of the uropods agrees with my specimens received from Edward, and thus does away with the assumed difference of *V. Kröyeri* and *V. borealis*.

Tribe II. GAMMARIDEA.

Fam. I. Orchestiidæ.

Genus I. TALITRUS, Latreille.

10. *Talitrus locusta* (Pallas).1861. *Talitrus locusta*, Bate & Westwood, (1) vol. i. p. 16.1899. *Talitrus locusta*, G. O. Sars, (142) p. 23, pl. ix.

Hab. All round our coasts in suitable places, among decaying weeds at high-water mark on sandy shores.

Distrib. The whole coasts of Europe from Norway southwards, extending to the Black Sea; Azores (*Barrois*); Madeira (*Morelet*).

Genus 2. HYALE, Rathke.

(= *Allorchestes*, Dana, ♂, = *Nicea*, Nicolet, ♀.)

11. *Hyale Nilssoni* (Rathke).

1861. *Allorchestes Nilssonii*, Bate & Westwood, (1) vol. i. p. 40.

1890. *Hyale Nilssoni*, Sars, (142) p. 26, pl. xi. fig. 1.

It is *Orchestia nidrosiensis* of Kröyer.

Hab. Torquay (*Stebbing*); St. Andrews (*McIntosh*); Firth of Clyde (*D. R.*); Berehaven, Ireland (*Prof. Haddon*); *Mus. Nor.* Jersey (*Kæhler*); Firth of Forth and Loch Fyne (*T. S.*); Liverpool district and Valentia, Ireland (*A. O. W.*).

Distrib. Valencia, Spain (*P. Antiga*); Trondhjem Fiord, Norway (*A. M. N.*); *Mus. Nor.* South and West Norway (*G. O. Sars*); Sweden, Denmark, West France (*Chevreaux*); Azores (*Barrois*).

12. *Hyale Lubbockiana* (Bate).

1861. *Allorchestes imbricatus*, Bate & Westwood, (1) vol. i. p. 43, ♂.

1861. *Nicea Lubbockiana*, Bate & Westwood, (1) vol. i. p. 47, ♀.

1876. *Hyale Lubbockiana*, Stebbing, Ann. & Mag. Nat. Hist. ser. 4, vol. xvii. p. 337, pl. xviii. fig. 2 a-d.

1879. *Hyale Lubbockiana*, id. ibid. ser. 5, vol. iv. p. 396.

1890. *Hyale Lubbockiana*, Sars, (142) p. 27, pl. xi. fig. 2.

There has been great confusion between the species of this genus. Boeck confused the two British species of *Hyale*, and his figures of the entire animal of his *Hyale Nilssoni*, and of the second gnathopod of the male, "undoubtedly," as Sars says, represent *H. Lubbockiana*.

Della Valle, with Stebbing's and Sars's clear definitions of the two species before him, actually makes the *H. Lubbockiana* of Sars a synonym of his *H. pontica*, Rathke, which he makes = *H. Nilssoni*, Rathke, and keeps *H. Lubbockiana* of Bate and Stebbing as a species distinct from that of Sars! A glance with even a hand-lens at the propodos of the pereopods of the true *H. Lubbockiana* is sufficient at once to recognize the species on account of the two remarkable large serrated spines with which it is armed. These spines are shown in Bate and Westwood's figure *k*, in Stebbing's fig. 2 *c*, in Sars's fig. 2, p. 7, and are even sufficiently indicated in Boeck's small figure of the entire animal of his "*H. Prevostii*," to show that the figure really represents *H. Lubbockiana*. On the other hand, it is clear that the species described by Della Valle as *H. Lubbockiana* cannot

be that species, inasmuch as these peculiar spines are not to be seen on the large figures he gives of the peræopods.

Hab. Bantry, Ireland (*A. M. N.*); Torbay and Banff (*Stebbing*); *Mus. Nor.* Jersey and Sark (*Sinel and Hornel*); Isle of Cumbrae (*D. R.*).

Distrib. South and West Norway (*Sars*); Western France and Algiers (*Chevreaux*).

Genus 3. ORCHESTIA, Leach.

13. *Orchestia littorea* (Montagu).

1861. *Orchestia littorea*, Bate & Westwood, (1) vol. i. p. 27.

1869. *Orchestia brevidigitata*, Bate & Westwood, (1) vol. ii. p. 497 (see Barrois, 'Note sur quelques points de la Morphologie des Orchesties,' Lille, 1887, p. 13).

1890. *Orchestia littorea*, Sars, (142) p. 24, pl. x.

It is also *Talitrus tripudians* of Krøyer and *Orchestia euchore* of F. Müller. B. & W. refer it to *Cancer gamarellus* of Herbst, but that author's figure certainly does not agree, and is in fact more like *O. mediterranea*. The description of *Oniscus gammarellus* in Pallas's 'Spicilegia,' moreover, cannot, I think, be reconciled with this species.

Hab. Diffused in suitable localities round our coasts. Like *Talitrus* it is found beneath decaying seaweed, but in this case only when the seaweed is lying on pebbles, or pebbles and sand, and it is not found in pure sand, which is the habitat of *Talitrus*.

Distrib. On the West Norwegian coast as far north as the Trondhjem Fiord (*Sars*), thence southward throughout the Atlantic coasts of Europe to the Mediterranean and Black Sea (*Czerniavsky*); Madeira (*Morelet*); Azores (*Barrois*).

14. *Orchestia mediterranea*, A. Costa.

1861. *Orchestia mediterranea*, Bate & Westwood, (1) vol. i. p. 31.

1893. *Orchestia chilensis*, Dalla Valle, (139) p. 498, pl. ii. fig. 8 and pl. xv. figs. 31-38.

1899. *Orchestia mediterranea*, T. Scott, Rep. Fishery Board of Scotland, p. 264, pl. xiii. figs. 9-11.

Hab. As yet there is no record of this species occurring on the eastern shores of our islands, nor further north than the Firth of Clyde on the west. Weymouth and Inverary (*A. M. N.*): *Mus. Nor.* Topsham and Exmouth Warren (*Parfitt*); between Fairlie and Hunterston, Firth of Clyde (*T. Scott*).

Distrib. Adriatic (*Prof. Heller*); Naples (*Della Valle*): *Mus. Nor.* West France (*Chevreaux*).

Genus 4. ORCHESTOIDEA, Nicolet.

15. *Orchestoidea Deshayesii* (Audouin).

1861. *Orchestia Deshayesii*, Bate & Westwood, (1) vol. i. p. 36.

1887. *Orchestia Deshayesii*, Th. Barrois, Note sur quelques points de la Morphologie des Orchesties, Lille, p. 6, figs. 1-13.

1893. *Orchestia Deshayesii*, Della Valle, (139) p. 507, pl. ii. fig. 5, pl. xv. figs. 15-30, pl. lvii. figs. 70-73.

1893. *Talorchestia Deshayesii*, Chevreux, Bull. de la Soc. Zool. de France, vol. xviii. p. 127, fig. in text.

1899. *Talorchestia Deshayesii*, Stebbing, "Amphip. from Copenhagen Mus. and other sources, Pt. 2," Trans. Linn. Soc., 2nd ser. Zool. vol. vii. p. 400, pl. xxx. A.

Barrois, in his paper referred to, gives very useful illustrations of the change of form in the second gnathopods of the male during successive stages of growth; and Stebbing, also in the last-quoted memoir, figures the gnathopod of a young male.

Hab. Ryhope, Co. Durham (*A. M. N.*): *Mus. Nor.* Mount Batten, Devon (*Parfit*), sandy shores of North Devon (*Stebbing*).

Distrib. Adriatic (*Prof. Heller*); Naples (*Della Valle*): *Mus. Nor.* Denmark (*Meinert*); Holland (*Hoek*); Western France (*various authors*); Mediterranean (*various authors*), Black Sea (*Czerniavsky*). East coast of Africa (*Hulgendorf*).

16. *Orchestoidea brito* (Stebbing).

1891. *Talorchestia brito*, T. R. R. "Stebbing, Sessile-eyed Crustacea," Ann. & Mag. Nat. Hist. ser. 6, vol. viii. p. 327, pl. xv.

Hab. Woolacombe Sands, near Ilfracombe, North Devon (*Stebbing*): *Mus. Nor.* Saunter Sands, North Devon (*Stebbing*).

Distrib. Mouth of the Gironde, France (*Chevreux*).

Undoubtedly the two preceding species belong to the same genus. That described by Stebbing was placed by him in the genus *Talorchestia*. Chevreux finding the gnathopods of *Orchestia Deshayesii* in their general character corresponded with those of *O. brito*, removed the former species to *Talorchestia*, and in this he has been confirmed by Stebbing. This allocation of the forms I cannot but regard as mistaken. To take Stebbing's characters of two closely-allied genera:—

Talorchestia. First gnathopods subchelate in the male, simple in the female; second gnathopods strongly subchelate in the male.

Orchestoidea. First gnathopods simple in the male and female; second gnathopods strongly subchelate in male.

I am at a loss to understand how the first gnathopod male of *Talorchestia brito* and *Orchestia Deshayesii* can be called subchelate. This expression implies a palm against which the finger can close. Where is such a palm in these gnathopods? There is a tubercle near the extremity of the hand, but if the gnathopod possesses any grasping power I take it that it would be by the approximation of this tubercle with another which is situated on the wrist; but if this is so it would make the limb not subchelate but complexly subchelate. Exa-

mining my North Atlantic allied forms I find *Talorchestia longicornis* (Say) and *Talorchestia megalophthalmus* (Bate) from N.E. America (received under these names from S. I. Smith) to be true *Talorchestiae*, in which the males have the first gnathopods subchelate and similar in structure to those of *Orchestia*, and thus quite different from the two species we are now considering. From Cadiz I have examples of *Orchestoidea Fischerii* (M.-Edwards) given me by Signor Bolivar under that name. In this species, as in those which I here call *Orchestoidea Deshayesii* and *Orchestoidea brito*, there is a close correspondence in the character of the first gnathopod male, which is not subchelate, for the end of the hand is not expanded to receive the impact of the finger, but both the hand and the wrist bear a tubercle on the margin. These tubercles may prove general throughout the genus; but whether they exist in the type *Orchestoidea tuberculata*, Nicolet, I have no means of ascertaining. It is a question whether the two genera ought to be maintained. It is not necessary to go beyond Stebbing's species in the paper referred to, where in *Talorchestia novæ-hollandiæ*, Stebbing, we have a characteristic species of *Talorchestia*, in *T. Deshayesii* what I take to be an *Orchestoidea*, and in *T. tridentata*, Stebbing, an intermediate form, but one which, if the genera are to be kept distinct, must be retained in *Talorchestia*.

Fam. II. Lysianassidæ.

Genus 1. NORMANION, J. Bonnier.

= *Normania*, Boeck (*nec* Bowerbank).

17. *Normanion quadrimanus* (Bate & Westwood).

1868. *Opis quadrimana*, Bate & Westwood, (1) vol. ii. p. 503.

1876. *Normania quadrimana*, Boeck, (138) p. 188, pl. vi. fig. 3.

1890. *Normania quadrimana*, Sars, (142) p. 32, pl. xiii. fig. 1.

1893. *Normanion quadrimanus*, J. Bonnier, "Les Amphipodes du Boulonnais, III.," Bull. Sci. France et Belgique, vol. xxiv. p. 167.

Hab. Isle of Cumbræ, 20-25 fath. (*A. M. N.*): *Mus. Nor.*
Near Devaar Island, Firth of Clyde (*T. S.*).

Distrib. South and West Norway (*G. O. Sars*).

Genus 2. ACIDOSTOMA, Lilljeborg.

18. *Acidostoma obesum* (Bate).

1861. *Anonyx obesus*, Bate & Westwood, (1) vol. i. p. 98.

1865. *Acidostoma obesum*, Lilljeborg, "On *Lysianassa magellanica* and *Amphipoda lysianassina*," Nov. Act. Soc. Sci. Upsal. ser. 3, p. 34, pl. v.

1890. *Acidostoma obesum*, Sars, (142) p. 38, pl. xiv. fig. 2.

Hab. Shetland (*A. M. N.*); Banff (*T. Edward*); *Mus. Nor.*
Isle of Cumbræ (*D. R.*); St. Andrews (*McIntosh*); between

Fidra and Bass Rock, Firth of Forth (*T. S.*); Salcombe (*Stebbing*).

Distrib. Trondhjem Fiord, 20–40 fath. (*A. M. N.*): *Mus. Nor.* South and West Norway (*G. O. Sars*); Bohuslän, Sweden (*Lindström*); West France (*Chevreux*).

Genus 3. *ICHNOPUS*, Costa.

19. *Ichnopus spinicornis*, Boeck.

1860. *Ichnopus spinicornis*, A. Boeck, Forh. ved de Skand. Naturf. 8de Møde i Kjøbenhavn, p. 645.

1867. *Ichnopus calceolatus*, Heller, Beit. z. Kennt. der Amphip. des Adriat. Meeres, p. 20, pl. ii. figs. 26–28, ♂.

1872. *Ichnopus spinicornis*, Boeck, (138) p. 124, pl. ii. fig. 3, and *I. minutus*, p. 126, pl. iii. fig. 7.

1890. *Ichnopus spinicornis*, Sars, (142) p. 40, pl. xv.

Hab. A single specimen taken off Valentia, Ireland, by the 'Poreupine,' 1869 (*Mus. Nor.*).

Distrib. Haakelsund in Kors Fiord and Trondhjem Fiord, Norway (*A. M. N.*); West Norway (*G. O. Sars*): *Mus. Nor.* This Trondhjem Fiord locality is the most northern range as yet known to Sars. South-east of Belle-Ile, 130–160 metr. (*Chevreux*); Gulf of Marseilles (*Marion*); Adriatic (*Heller*).

Genus 4. *LYSIANAX*, Stebbing, 1888 (Rep. Chall. Amphip.).

= *Lysianassa*, M.-Edwards (preoccupied).

20. *Lysianax septentrionalis*, Della Valle.

1861. *Lysianassa Costæ*, Bate & Westwood, (1) vol. i. p. 74, ♀.

1861. *Lysianassa longicornis*, Bate & Westwood (nec Lucas), (1) vol. i. p. 85, ♂ (partim)*.

1872. *Lysianassa Costæ*, Boeck, (138) p. 118, pl. iv. fig. 1, ♀.

1872. *Lysianassa phumosa*, id. ibid. p. 116, pl. iii. fig. 5, ♂.

1890. *Lysianassa Costæ*, G. O. Sars, (142) p. 42, pl. xvi. fig. 1.

1893. *Lysianax septentrionalis*, Della Valle, (139) p. 778.

Della Valle makes it clear, in my opinion, that the above species cannot be the *Lysianassa Costæ*, H. Milne-Edwards. That species is too imperfectly described and figured to be recognizable; but it can scarcely be our northern species, as here understood—*first*, because the third segment of the metasome is not produced in hook-like form; *secondly*, because it was found among seaweeds at Naples; and Della Valle has not met with anything like our northern *Lysianassa* at Naples. He thinks it possible that M.-Edwards's species may be the same as that which he has himself described under the name *Lysianassa bispinosa*.

* Judging by the telson, the figures of the entire animal and of the urosome cannot have been taken from this species. *Vide* Walker, Ann. & Mag. Nat. Hist., Feb. 1892, p. 136.

Hab. Isle of Skye; Moray Firth; Isle of Cumbræ; off Berwick; Guernsey; 'Porcupine,' 1869, St. 3, west of Bantry, Ireland, 722 fath.: *Mus. Nor.* Valentia, Ireland (*A. O. W.*); Isle of Müll (*G. Brook*); Loch Fyne (*Sir J. Murray*).

Distrib. West coast of Norway, in 50–100 fathoms (*Sars*); Atlantic coast of France (*Bonnier and Chevreux*).

21. *Lysianax ceratinus*, Walker.

Lysianax ceratinus, A. O. Walker, "Third Report on Higher Crustacea," Fauna of Liverpool Bay, vol. iii. p. 200, pl. x. figs. 1–8.

Since the date of this publication the species has been frequently named in Mr. Walker's papers as *Lysianax longicornis* (Lucas), which, however, was an erroneous assignment of the form, as he has subsequently stated. I have considerable doubts as to the specific distinction of this form from *L. septentrionalis*, since specimens occur apparently intermediate with only a small spine point on the hinder margin of the third segment of the metasome, instead of the large upturned process of typical *L. septentrionalis*.

Hab. This seems to be a much more abundant form on our coasts than *L. septentrionalis*. Isle of Skye; Firth of Clyde; Berwick-on-Tweed; Plymouth; Guernsey; Strangford Lough, Ireland; Clew Bay, Co. Mayo (*A. M. N.*); Valentia, Ireland (*A. O. W.*); Salcombe, Devon (*Stebbing*); *Mus. Nor.* Liverpool district and Jersey (*A. O. W.*)*.

Distrib. Several localities, west coast of France (*Chevreux*).

Genus 5. *SOCARNES*, Boeck, 1870.

22. *Socarnes Vahlîi* (Kröyer).

1838. *Lysianassa Vahlîi*, Kröyer, Grönlands Amphipoder, p. 5.

1844. *Anonyx Vahlîi*, Kröyer, Naturhist. Tidssk., 2 Rækkes, vol. i. p. 599; Voyage en Skand. &c. pl. xiv. fig. 1.

1872. *Socarnes Vahlîi*, Boeck, (138) p. 129, pl. vi. fig. 8.

1890. *Socarnes Vahlîi*, G. O. Sars, (142) p. 44, pl. xvi. fig. 2.

Hab. Off Clack Rock, Isle of Cumbræ (*D. R.*); Firth of Forth, very rare (*T. S.*).

Distrib. Greenland; 'Valorous,' 1875; Tromsö (*Schneider*): *Mus. Nor.* Spitsbergen; Novaia Zemlia; Kara Sea; Iceland; Finmark; northern coasts of Norway.

23. *Socarnes erythrophthalmus*, Robertson.

1892. *Socarnes erythrophthalmus*, D. Robertson, Second Contribution towards Cat. of Amphip. and Isop. of Firth of Clyde and West Scotland, p. 6.

1893. *Socarnes erythrophthalmus*, J. Bonnier, "Les Amphipodes du Boulonnais," Bull. Sci. de France et Belgique, vol. xxiv. p. 183, pl. vi. figs. 1–10.

* Where in recent years *Lysianassa longicornis* has been given as a British species there should be read instead *L. ceratinus*.

Hab. Oban; Falmouth, in great abundance on dead fish in a crab-pot (*A. M. N.*); Banff (*T. Edward*); Clyde (*D. R.*); Menai Strait (*A. O. W.*); Ardbear Bay Ireland (*G. S. Brady*): *Mus. Nor.* Isle of Man and Valentia Harbour, Ireland (*A. O. W.*).

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

Genus 6. AMBASIA, Boeck.

24. *Ambasia Danielsseni*, Boeck.

? 1861. *Lysianassa atlantica*, Bate & Westwood, (1) vol. i. p. 82.

1870. *Ambasia Danielsseni*, A. Boeck, (137) p. 17.

1872. *Ambasia Danielsseni*, A. Boeck, (138) p. 121, pl. iii. fig. 6.

1890. *Ambasia Danielsseni*, G. O. Sars, (142) p. 46, pl. xvii. fig. 1.

1893. *Ambasia Danielsseni*, Walker, "Malacostraca from the West of Ireland," *Trans. Liverpool Biol. Soc.* vol. xii. p. 166.

Hab. Mr. Walker, in the last-mentioned paper, records *Ambasia* as taken off the south-west of Ireland in 750 fathoms. The specimen is preserved in the Dublin Museum of the Royal Irish Academy.

Distrib. Trondhjem Fiord, Norway, in 100–300 fathoms (*A. M. N.*); West Norway (*G. O. Sars*): *Mus. Nor.* Though rare, found by Sars in several places on the south and west coasts of Norway and as far north as Hammerfest in Finmark.

It is not improbable that the *Lysianassa atlantica*, Bate and Westwood, may be the male of *Ambasia Danielsseni*, the greater length of the filaments of the antennæ being a character distinctive of the male sex. The remarkable character of the first joint of the antennules, the form of the head, the structure of the gnathopods, all closely agree with *Ambasia*. It is true that the telson is described as "squamous and simple;" but Mr. Walker*, who has carefully examined the type in the British Museum, says that it is not so, but "cleft to the base, without lateral spines, but with a terminal spine in a deep notch in each division." If we read "deeply cleft" instead of "cleft to the base" we have in Mr. Walker's words an accurate description of the telson of *Ambasia*; and to complete the identity we learn further from Mr. Walker that "the third pleon-segment has the hinder angle acute and shortly recurved, but without a sinus."

* Mr. Walker has done excellent service in the examination of Spence Bate's specimens. His two papers on the subject are:—

1. "The Lysianassides of the 'British Sessile-eyed Crustacea,' Bate and Westwood," *Ann. & Mag. Nat. Hist.* ser. 6, vol. ix. p. 134.

2. "The Amphipoda of Bate and Westwood's 'British Sessile-eyed Crustacea,'" *Ann. & Mag. Nat. Hist.* ser. 6, vol. xv. p. 464.

British Amphipoda: Fam. Lysianassidæ (concluded).

By Canon NORMAN, M.A., D.C.L., LL.D., F.R.S., &c.

[Plate VI.]

Fam. II. **Lysianassidæ** (continued from p. 144).

Genus 7. **SOPHROSYNE**, Stebbing.

(Report 'Challenger' Amphipoda, p. 652.)

25. *Sophrosyne Robertsoni*, Stebbing & Robertson.

1890. *Sophrosyne Robertsoni*, Stebbing & Robertson, "Four new British Amphipoda," Trans. Linn. Soc. vol. xiii. p. 31, pl. v. A.

Hab. The Clyde (*D. R.*) ; Upper Loch Fyne (*J. Murray*) ;
Loch Fyne (*T. S.*).

Distrib. 'Porcupine,' 1869, St. 36, lat. 48° 50' N., long. 11° 9' W., *i. e.* outside the entrance to the English Channel, in 725 fathoms: *Mus. Nor.*

[Genus 8. CYCLOCARIS, Stebbing.

(Report 'Challenger' Crustacea, p. 664.)

[*Cyclocaris faroensis*, sp. n. (Pl. VI. figs. 5-15.)

The form of the head, the general character of the antennæ, of the gnathopods and peræopods, of all the coxæ, of the dorsal impression of the first segment of the urosome, and of uropods and telson show remarkable resemblance to *Cyclocaris tahitensis*, Stebbing, the type and only previously known species of a very marked genus. So remarkable is the resemblance, that the differences seem scarcely varietal; but I hesitate to unite a form found in the Faroe Channel with one from so distant a locality as Tahiti.

The *cephalon* has a similar concavity between the bases of the two pairs of antennæ as in *C. tahitensis*, and similarly leaves the base of the lower pair fully exposed to view.

The *upper antennæ* or antennules have the peduncle shorter than the cephalon; the flagellum twelve-jointed, the first of these joints is fully as long as the cephalon, the distal lower corner of this and of the four following joints is furnished with long slender spines: the secondary appendage is composed of six articulations, of which the first is the longest; it reaches to the seventh joint of the flagellum.

The *lower antennæ* have the peduncle short, the last two joints of the peduncle subequal, and the flagellum consists of twenty-two articulations.

No *eyes* are visible. The remarkable *mandible* (fig. 5) closely corresponds with that of the type species.

The *first maxillæ* (fig. 6) have the basal lobe narrowed almost to a point below, whence it swells out into a nearly semicircular form, furnished on the inner margin with short stiff setæ, which are verticillately plumed; the masticatory lobe is elongated and narrowed to the extremity, furnished with long flexuous spines, bearing a tooth on the side, and also with slender setæ: the palp is narrow, the last joint arcuate, and terminating in three teeth tipped with spine-points; of these the central is the longest; outside these at the outer corner is a small short spine and a small seta, and on the hinder margin another and larger seta.

The *second maxillæ* (fig. 7) have the outer lobe much longer than the inner, the latter is margined with two distinct

rows of setæ; the setæ in one of these rows are verticillately plumose, in the other simply plumose.

The basal lobe of the *maxilliped* (fig. 8) widens distally and the extremity is rather oblique and flexuous; a row of setæ is situated on the middle of the lobe; the masticatory lobe is remarkable for its great breadth and widely rounded extremity, the inner margin is faintly crenulated, the outer and distal margins are set round with simple setæ at nearly equal intervals; the palp is stout, its terminal nail strong, the antepenultimate joint just overtops the masticatory lobe.

The *gnathopods* have the coxæ small and almost entirely concealed by the overlying coxa of the first peræopod. Both pairs of gnathopods (figs. 9 & 10) closely resemble those of *C. tahitensis*, but the first pair are much more stoutly built than in that species.

The *peræopods* with their coxæ (figs. 11 & 12, coxæ of second and third pair) are in close agreement with those of the type. A comparison of fig. 13 of the last peræopod with Stebbing's figure of the same limb in *C. tahitensis* shows the remarkable resemblance, seen even in the hinder margin of the basos, which in the lower portion is slightly concave and devoid of the serrations which are present in the upper portion of the margin.

The *third segment* of the metasome has the hinder corner of the epimera slightly produced and pointed (fig. 14).

The first segment of the *urosome* has a dorsal sinus. The second uropods are longer than the first, but do not reach to more than half the length of the rami of the largely developed last pair, which have their rami fully twice as long as their peduncle: the outer branch is two-jointed; its inner margin bears four or five small spinules, and under a high power the margin itself is seen to be delicately serrulated. The *telson* (fig. 15) is narrow, very long and produced, and cleft almost to the base; it extends beyond the extremities of the first and second uropods.

Length 19 millim.

Two specimens taken by Sir John Murray in the 'Triton' Expedition of 1882, Stat. 8, Faroe Channel, lat. 60° 18' N., long. 6° 15' W., in 640 fathoms, temperature 30° Fahr.

The features which distinguish this species from the type are chiefly the more robust character of the first gnathopods and the form of the hinder margin of the third segment of the metasome.]

Genus 9. *ARISTIAS*, Boeck.26. *Aristias neglectus*, Hansen.

1872. *Aristias tumidus*, Boeck, (138) p. 148, pl. iii. fig. 4 (but not *Anonyx tumidus*, Kröyer, or any other synonyms).

1887. *Aristias neglectus*, H. J. Hansen, (141) p. 67, pl. ii. fig. 4.

1890. *Aristias neglectus*, Meinert, (71) p. 153.

1890. *Aristias Audouinianus*, G. O. Sars, (142) p. 48, pl. xvii. fig. 2.

1895. *Aristias neglectus*, id. *ibid.*, Appendix, p. 675.

1893. *Aristias neglectus*, Della Valle, (139) p. 844, pl. vi. fig. 9, pl. xxvi. figs. 16-31 a.

Hab. Shetland, 170 fathoms, the largest specimens that I have seen, and in Ascidians at lesser depths; Sleat Sound, Skye (*A. M. N.*): *Mus. Nor.*

Distrib. Trondhjem and Hardanger Fiords, Norway, 40-150 fathoms (*A. M. N.*); Naples (*Della Valle*): *Mus. Nor.* Kattegat (*Meinert*).

In cases where in the past *Aristias tumidus* has been recorded from stations in the British Isles it may be assumed that *A. neglectus* was the species taken.

Genus 10. *PERRIERELLA*, Chevreux & Bouvier, 1892.

= *Pararistias*, D. Robertson, 1892.

27. *Perrierella Audouiniana* (Spence Bate).

1861. *Lysianassa Audouiniana*, Bate & Westwood, (1) vol. i. p. 79.

1890. *Aristias Audouinianus*, Meinert, (71) p. 152, pl. i. figs. 1-6.

1892. *Perrierella crassipes*, Chevreux & Bouvier, Bull. Soc. Zool. de France, vol. xvii. p. 50, & woodcut.

1892. *Pararistias Audouinianus*, D. Robertson, "Second Contrib. Cat. Amphip. and Isop. of Firth of Clyde," Trans. Nat. Hist. Soc. Glasgow, vol. iii. p. 7.

1893. *Perrierella crassipes*, Chevreux & Bouvier, "Amphip. de Saint-Vaast-la-Houge," Ann. des Sci. Nat. sér. 7, vol. xv. p. 113, pl. ii. figs. 1-12.

1893. *Perrierella Audouiniana*, J. Bonnier, "Les Amphipodes du Boulonnais, III," Bull. Sci. de France et Belgique, vol. xxiv. p. 175, pl. v. figs. 1-10.

1895. *Perrierella Audouiniana*, Walker, "Revision of Amphipods of the L. M. B. C. District," Trans. Liverpool Biol. Soc. vol. ix. p. 291.

This is unquestionably Spence Bate's *Lysianassa Audouiniana*. Mr. Walker has examined Spence Bate's single specimen in the British Museum, and in my own collection are examples from Polperro and others from Shetland which were examined and named by Bate as above.

Hab. Shetland; in Ascidians, Oban; near Duke Buoy, Plymouth, 7 fathoms (*A. M. N.*); Polperro (*Laughrin*): *Mus. Nor.* Mull (*G. Brook*); Clyde and Loch Fyne (*D. R.*);

North Wales and Isle of Man (*A. O. W.*); Jersey (*Chevreux*).

Distrib. Trondhjem Fiord, Norway (*A. M. N.*); Denmark (*Copenhagen Museum*): *Mus. Nor.* West coast of France and Mediterranean (*Chevreux*).

Another synonym is *Aristias tumidus* of Bonnier and of Chevreux (not Kröyer).

Genus 11. *CALLISOMA*, A. Costa.

28. *Callisoma Hopei*, A. Costa.

1851. *Callisoma Hopei*, A. Costa, in Hope, Cat. Crost. Ital. p. 44, & plate, fig. 2; id. Fauna del Reg. di Napoli, Crost. p. 5, pl. viii. *bis*, fig. 1.

1857. *Scolopecheirus crenatus*, Bate, Ann. & Mag. Nat. Hist. ser. 2, vol. xix. p. 138.

1861. *Callisoma crenata*, Bate & Westwood, (1) vol. i. p. 120.

1890. *Callisoma crenata*, G. O. Sars, (142) p. 53, pl. xix. fig. 1.

1893. *Callisoma Hopei*, Della Valle, (139) p. 839, pl. vi. fig. 11, & pl. xvi. figs. 1-15.

Neapolitan specimens examined by me have the carpus of the first gnathopods longer in proportion to the hand and the telson to the last uropods than Della Valle's figures represent, and I have no doubt as to the identity of the Mediterranean and more northern forms.

Hab. Shetland; Sleat Sound, Skye; Firth of Clyde (*A. M. N.*); Seaham, Co. Durham (*G. Hodge*); 25 miles off May Island, Firth of Forth, 35 fathoms (*Sir J. Murray*); Polperro, Cornwall (*Laughrin*); off S.W. Ireland, 165 fathoms (*Bourne*); Banff (*T. Edward*): *Mus. Nor.* Northumberland coast; Inverary, N.B. (*A. M. N.*); St. Andrews (*M'Intosh*); 70-80 miles off Spurn Head (*T. S.*); N. Wales and Galley Head, Co. Cork (*A. O. W.*).

Distrib. Bergen and Trondhjem Fiords, Norway (*A. M. N.*); Naples (*Della Valle*): *Mus. Nor.* West coast of France (*Chevreux*). It has not been found within the Arctic Circle.

29. *Callisoma Kröyeri* (Bruzelius).

1859. *Anonyx Kröyeri*, Bruzelius, Skand. Amphip. Gammar. p. 45, pl. ii. fig. 7.

1872. *Callisoma Kröyeri*, Boeck, (138) p. 134.

1890. *Callisoma Kröyeri*, G. O. Sars, (142) p. 54, pl. xix. fig. 2.

Hab. Recorded by Mr. Walker from off the Skilligs and Ballycotton, S.W. Ireland, in 30-62 fathoms.

Distrib. Bohuslän, Sweden (*Prof. Lovén*); Fosse de Cap Breton, Bay of Biscay, in 35-60 fathoms (*A. M. N.*); 'Por-

cupine,' 1869, Stat. 17, lat. $54^{\circ} 25' N.$, long. $11^{\circ} 44' W.$, 1230 fathoms: *Mus. Nor.* Trondhjem Fiord, Norway, 30-40 fathoms (*G. O. Sars*); Finmark (*Bruzelius*).

Genus 12. HIPPOMEDON, Boeck.

30. *Hippomedon denticulatus* (Bate).

1861. *Anonyx denticulatus*, Bate & Westwood, (1) vol. i. p. 101.

1872. *Hippomedon Holbölli*, Boeck, (138) p. 136, pl. v. fig. 6, & pl. vi. fig. 7 (nec *Anonyx Holbölli*, Kröyer).

1890. *Hippomedon denticulatus*, G. O. Sars, (142) p. 56, pl. xx.

Hab. Shetland; Firth of Clyde; Durham coast (*A. M. N.*); 25 miles off May Island, Firth of Forth, 35 fathoms (*Sir J. Murray*); *Mus. Nor.* Hebrides; Loch Fyne; near Farne Islands, Northumberland (*A. M. N.*); St. Andrews (*M'Intosh*); 70-80 miles E. by N. from Spurn Head (*T. S.*); Isle of Man; Valentia, Ireland, and off Galley Head, Co. Cork (*A. O. W.*).

Distrib. Bergen and Trondhjem Fiords, Norway; Vadsö, E. Finmark (*A. M. N.*); Tromsö (*Schneider*); 'Porcupine,' 1869, Stat. 51, lat. $60^{\circ} 6' N.$, long. $8^{\circ} 14' W.$, in 440 fathoms; Naples (*Della Valle*); *Mus. Nor.* Sweden, Denmark, and Western France.

31. *Hippomedon propinquus*, G. O. Sars.

1890. *Hippomedon propinquus*, G. O. Sars, (142) p. 57, pl. xxi. fig. 1.

Hab. Shetland (*A. M. N.*); 'Porcupine,' 1869, Stat. 74, to the west of Shetland, 203 fathoms: *Mus. Nor.*

Distrib. Vadsö and Sydvaranger, East Finmark (*A. M. N.*); Tromsö (*Schneider*): *Mus. Nor.* Sars speaks of this as a northern form which he has not found south of the Trondhjem Fiord, but found thence northward to Vadsö in 20-100 fathoms.

[Genus 13. PARATRYPHOSITES, Stebbing.

[*Paratryphosites abyssi* (Goës).

1866. *Lysianassa alyssi*, Goës, "Crust. Amphip. Maris Spetsbergiam alluentis &c.," Öfvers. K. Vet.-Akad. Förhand. p. 3 (separate copy), pl. xxxvii. fig. 5.

1870. *Hippomedon abyssi*, Boeck, (137) p. 23.

1872. *Hippomedon abyssi*, Boeck, (138) p. 138.

1887. *Hippomedon abyssi*, H. J. Hansen, (141) p. 66.

1899. *Paratryphosites abyssi*, Stebbing, "Revision of Amphipoda," Ann. & Mag. Nat. Hist. ser. 7, vol. iv. p. 206.

Taken by the 'Valorous,' 1875, Stat. 2, off Hare Island,

Greenland, in 175 fathoms, and Stat. 3, off Disco, Greenland, in 100 fathoms.

[This species is as yet only known in the Greenland seas.]

Genus 14. ORCHOMENE, Boeck.

32. *Orchomene humilis* (A. Costa).

1853. *Lysianassa humilis*, A. Costa, Rend. Accad. fis. mat. Napoli, p. 172 (*fide* Della Valle).

1857. *Lysianassa humilis*, A. Costa, "Ricerche su Crost. Amfip. del Reg. di Napoli," Mem. del. R. Accad. del. Sc. di Napoli, vol. i. p. 187, pl. i. fig. 6.

1861. *Anonyx Edwardsii*, Bate & Westwood, (1) vol. i. p. 94.

1867. *Anonyx melanophthalmus*, Norman, "Report Committee Dredging Hebrides," Brit. Assoc. Rep. for 1866, p. 201.

1876. *Anonyx serratus*, Stebbing, "The Genera *Hyale* and *Anonyx* and on a new *Probolium*," Ann. & Mag. Nat. Hist. ser. 4, vol. xvii. p. 340, pl. xix. figs. 3 & 3 a-e (nec *Orchomene serratus*, Boeck).

1882. *Orchomene Batei*, G. O. Sars, (102) p. 81.

1890. *Orchomene Batei*, Sars, (142) p. 60, pl. xxii.

1893. *Anonyx humilis*, Dalla Valle, (139) p. 817, pl. xxvi. figs. 32-37.

Hab. Shetland; Sleat Sound, Skye; Oban; Durham coast; Starcross, Devon; Jersey; Guernsey (*A. M. N.*); Isle of Cumbrae (*D. R.*, received as *O. pinguis*): *Mus. Nor.* Loch Fyne (*D. R.*); near Bass Rock, Firth of Forth (*T. S.*).

Distrib. West Norway (*Sars*); Naples (*Della Valle*): *Mus. Nor.* Sars speaks of it as occurring in a few localities in the south and west of Norway. West France (*Chevreux*).

I have examined specimens of *A. humilis* received from Della Valle, which are the same as our northern species.

33. *Orchomene pectinatus*.

1882. *Orchemene pectinatus*, G. O. Sars, (102) p. 80, pl. iii. fig. 5.

1890. *Orchomene pectinatus*, Sars, (142) p. 64, pl. xxiii. fig. 3.

Hab. 'Porcupine,' 1869, Stat. 23 a, lat. 56° 13' N., long. 14° 18' W., that is south of Rockall, 420 fathoms: *Mus. Nor.*

Distrib. Bugo in the Varanger Fiord, East Finmark, in 120 fathoms; at three stations outside the great fishing-banks of the N.W. coast of Norway, and Arctic Ocean W. of Bear Island by the 'Vöringen' Exped. (*G. O. Sars*).

[*Orchomene serratus*, Boeck, has been three times recorded as British (by Robertson, Stebbing, and Scott), but the records have been subsequently found to be erroneous.]

Genus 15. *TRYPHOSA*, Boeck.= *Orchemenella*, G. O. Sars.34. *Tryphosa nana* (Kröyer).

1846. *Anonyx nanus*, Kröyer, Naturhist. Tidsskr., 2 Rækkes, vol. ii. p. 30; Voyage en Scand. &c. pl. xvii. fig. 2.
 1876. *Tryphosa nana*, Boeck, (138) p. 181.
 1882. *Tryphosa ciliata*, G. O. Sars, (102) p. 81, pl. iii. fig. 4.
 1888. *Tryphosa ciliata*, A. O. Walker, Proc. Biol. Soc. Liverpool, vol. ii. p. 172, pl. xiii. figs. 1-4.
 1891. *Orchemenella ciliata*, G. O. Sars, (142) p. 69, pl. xxv. fig. 2.
 1893. *Tryphosa nana*, J. Bonnier, "Les Amphipodes du Boulonnais, III.," Bull. Sci. France et Belgique, vol. xxiv. p. 191, pl. vi. figs. 1-9.
 1895. *Orchemenella nana*, G. O. Sars, (142) Appendix, p. 683.

Hab. Shetland; Durham coast (*A. M. N.*); Isle of Cumbrae (*D. R.*); Polperro, Cornwall (*Laughrin*); Firth of Forth (*T. S.*); 'Porcupine,' 1869, off W. Ireland, 40 fathoms: *Mus. Nor.* 70-80 miles off Spurn Head, near Hull (*T. S.*); Isle of Man; North Wales; Valentia Harbour and Bray Head, Ireland (*A. O. W.*).

Distrib. South Norway (*G. O. Sars*); Denmark (*Copenhagen Museum*): *Mus. Nor.* Jædaren, south coast of Norway (*G. O. Sars*); west coast of France (*Chevreux*).

My friend the late Dr. D. Robertson wrote of this species in his "Second Contribution":—"This seems to be one of the sea-scavengers. A fisherman brought to me portions of the crab *Lithodes maia* from his bait-creel, and every part of it was crowded with this species clustered on the top of each other. All the flesh was as perfectly cleaned off the body, legs, and claws of the crab as if the parts had been bleached on the shore for a twelvemonth. The number of these Amphipods was quite surprising, and I had a six-ounce bottle filled with them. So far as I have seen, they are all of the same species. The wonder is why they remained on the empty shell of the crab after having cleaned out all the soft parts, unless, like the boa-constrictor after a great feast, they require a long time to digest it. . . . It is a curious fact that the Amphipoda met with at these great banquets, so far as I have seen, are mostly of one species. Sometimes they are exclusively *Tryphosa nanoides*, or at other times wholly *Lafystius sturionis*, *Orchemenella nana* (= *ciliata*), or *Callisoma crenatum*. Whether each species has its own particular prey, or whether the weaker species give way to the stronger, cannot easily be proved." It is not always so, for I may mention that at Falmouth on a dead fish in a crab-pot I found *Orchomene humilis* and *Socarnes erythrophthalmus*

associated in thousands of each species enjoying their dinner in mutual respect. At Shetland I obtained *Tryphosa nanoïdes* in great abundance on a dead fish.

As *Orchemenella ciliata*, G. O. Sars, has been shown by J. Bonnier to be a synonym of *Tryphosa nana* (Kröyer), Boeck, and Sars has acquiesced in this view, and as *Tryphosa nana* was made by Boeck the type of his genus *Tryphosa*, it is necessary that both generic and specific names employed by Sars should give way to those which are earlier.

34*. ? *Tryphosa minuta* (Kröyer).

? 1861. *Anonyx minutus*, Bate & Westwood, (1) vol. i. p. 108.

1876. *Orchomene minuta*, Boeck, (138) p. 174, pl. v. fig. 3.

1890. *Orchemenella minuta*, G. O. Sars, (142) p. 67, pl. xxiv. fig. 1.

This is a species found throughout the Arctic Ocean, Siberian Sea, and Greenland, and though found throughout Norway, it becomes scarcer southwards.

Hab. Is *Anonyx minutus*, Bate & Westwood, this species? I do not think it can be, and am inclined to believe that the Amphipod figured and described by them was a young male of *Orchomene humilis*, Costa, which species is found abundantly at Polperro and Plymouth, whence Bate had specimens of "*Anonyx minutus*." Both figures and description accord with *O. humilis*, except the description of the posterior peræopoda, which description, however, does not accurately apply to any allied form known to me. The only other record of the occurrence of the species in our fauna is given thus by Mr. T. Scott:—"This species is reported from Minard (Loch Fyne), where it was collected in 1870 by Murray." It must be observed that Sir J. Murray does not study the Amphipods, and we do not know the authority who identified the species.

35. *Tryphosa pinguis* (Boeck).

1860. *Anonyx pinguis*, Boeck, Forh. ved de Skand. Naturf. 8de Møde, p. 642.

1876. *Orchomene pinguis*, Boeck, (138) p. 176, pl. v. fig. 1.

1890. *Orchemenella pinguis*, G. O. Sars, (142) p. 67, pl. xxiv. fig. 2.

1893. *Tryphosa pinguis*, J. Bonnier, "Les Amphipodes du Boulonnais, III.," Bull. Sci. France et Belgique, vol. xxiv. pp. 172, 196.

The above names will show the confusion which has existed among the small Lysianassids, as it seems to me from multiplying genera on insufficient characters; but not wishing to increase confusion, I have adopted for them M. Bonnier's revision.

Hab. "Dredged west of the Tan Buoy, Cumbrae, in

18 fathoms" (*D. R.*). These are the specimens which were recorded in Dr. Robertson's first paper as "*Anonyx serratus*." This is the only record of the species as British.

Distrib. Trondhjem Fiord, Norway (*A. M. N.*); Malangen Fiord, West Finmark (*J. S. Schneider*): *Mus. Nor.* Siberian Polar Sea (*Stuxberg*).

Genus 16. TRYPHOSELLA, J. Bonnier.

= *Tryphosa*, G. O. Sars (non *Tryphosa*, Boeck, typica).

36. *Tryphosella Sarsi*, J. Bonnier.

1891. *Tryphosa nana*, G. O. Sars (not *Anonyx nanus*, Kr.), (142) p. 76, pl. xxvii, fig. 1.

1893. *Tryphosella Sarsi*, J. Bonnier, *l. c.* p. 170, note.

Hab. Bressay Sound, Shetland; mouth of the Yealm, near Plymouth; Clew Bay, Co. Mayo (*A. M. N.*): *Mus. Nor.* Puffin Island, North Wales, Menai Strait, and Jersey (*A. O. W.*); Upper Loch Fyne (*T. S.*).

Distrib. South and west coasts of Norway (*Sars*).

37. *Tryphosella Höringii* (Boeck).

1870. *Tryphosa Höringii*, Boeck, (137) p. 38.

1876. *Tryphosa Höringii*, Boeck, (138) p. 182, pl. iv, fig. 4.

1891. *Tryphosa Höringii*, G. O. Sars, (142) p. 77, pl. xxvii, fig. 2.

1893. *Tryphosella Höringii*, J. Bonnier, *l. c.* p. 171.

Hab. It has been recorded from the ambulacral grooves of starfish, Bull Bay, Anglesey (*A. O. W.*); Loch Linnhe (*G. Brook*); Firth of Forth (*T. S.*).

Distrib. Trondhjem Fiord, Norway, 150 fathoms (*A. M. N.*); Denmark (*Copenhagen Mus.*): *Mus. Nor.* Sars speaks of it as found in Norway and up to Lofoten generally in the region of deep-sea corals in 50–150 fathoms. Bohuslän, Sweden (*Gunhilds Expedition*, fide *Sars*).

[*Tryphosella abyssi*, sp. n. (Pl. VI. figs. 16–20.)

Male.—In describing this form I shall take advantage of the figures on Sars's pls. xxvii. and xxviii. for illustrations of characters. Cephalon with lateral corners produced and acute (as in *Tryphosites*) (fig. 16). Coxæ of fourth segment of mesosome (fig. 17) with the posterior projection completely rounded above and below, those of fifth pair (fig. 18) as broad as deep; these characters as in *T. Sarsi*; epimera of third segment of metasome with the hinder corner well rounded (fig. 19), without any indication of an angle. First segment

of urosome deeply grooved in front, humped and distally truncate (exactly as *T. angulata*) (fig. 20). Antennæ of both pairs very much as figured for male of *T. Höringii*, but basal joint of upper less stout; flagellum of eighteen articulations, the first nearly equal in length to the basal joint of the peduncle, accessory appendages of seven articulations, first only slightly longer than the second; flagellum of lower antennæ with twenty-five articulations; both pairs furnished with calceolæ. Gnathopods of both pairs of the usual form in the genus and very like those of *T. Sarsi*; first slender, the hand slightly shorter than the wrist; the second with hand obovate, somewhat wider than the wrist, finger well developed. Last uropods with long rami and fully twice the length of the telson, which bears three pairs of lateral spines. In all that has been said this species closely resembles the characters of the genus *Tryphosella*; but on examining the mouth-organs it is seen that instead of the epistoma overhanging the upper lip, the upper lip projects beyond the epistome as in *Orchemenopsis* or as in *Tryphosa nana*, which in this respect differs from other species which Sars assigns to that genus. Indeed, these allied genera seem constituted on very unsatisfactory characters, and I cannot but think that an amalgamation is desirable.

Length 6 millim.

The angular projection of the sides of the cephalon, the character of the epistoma, the rounded hind corner of the third segment of the metasome, and the form of the first segment of the urosome distinguish this species from allies.

A single specimen taken by Sir J. Murray in H.M.S. 'Triton' in 1882, Stat. 7, lat. 60° 19' N., long. 7° 10' W., in the cold area of the Faroe Channel, 585 fathoms.]

38. *Tryphosella nanoides* (Lilljeborg).

1865. *Anonyx nanoides*, Lilljeborg, On the *Lysianassa magellanica* &c. p. 25, figs. 32-34.

1876. *Tryphosa nanoides*, Boeck, (138) p. 186.

1891. *Tryphosa nanoides*, G. O. Sars, (142) p. 79, pl. xxviii. fig. 2.

1893. *Tryphosella nanoides*, J. Bonnier, l. c. p. 171.

Hab. Shetland*, in great numbers on a dead fish; Polperro, Cornwall, on a skate (*A. M. N.*); Ardbear Bay, Ireland (*Brady & Robertson*).

Distrib. Greenland (*Copenhagen Mus.*): *Mus. Nor.* West Norway and Finmark, in 50-100 fath., and, like myself, Sars

* In my Shetland Report young specimens of this species were rightly referred to it, but full-grown examples were wrongly named "*Anonyx ampulla*."

has taken it abundantly on the back of a living skate. Bohuslän, Sweden (*Bruzelius*); Denmark (*Meinert*); off Jan Mayen ('*Vöringen*' *Exped.*).

[*Tryphosa pusilla*, G. O. Sars ('Crustacea Norwegian North-Atlantic Exped.,' 1885, p. 151, pl. xiii. figs. 2, 2*a*), has been recorded by the late Dr. Robertson as taken near the Tan Buoy, Cumbrae, in 12 fathoms. There is probably a mistake. *Tryphosa pusilla* is a blind species, dredged in the Arctic Ocean in 1004 fathoms, and is hardly likely to have been found under such circumstances. The species obtained may have been *Tryphosella Sarsi*, J. Bonnier.]

Genus 17. NANNONYX, G. O. Sars.

39. *Nannonyx Goëssii* (Boeck).

1870. *Orchemene Goëssii*, Boeck, (137) p. 36.

1876. *Orchemene Goëssii*, Boeck, (138) p. 177, pl. iv. fig. 5.

1891. *Nannonyx Goëssii*, G. O. Sars, (142) p. 72, pl. xxiv. fig. 3.

Hab. Plymouth (*A. M. N.*): *Mus. Nor.* Puffin Island, N. Wales, at spring-tides, and Jersey (*A. O. W.*).

Distrib. Two specimens at Folgerö, west coast of Norway, in 40 fathoms (*Sars*); La Croisic, France (*Chevreux*).

40. *Nannonyx spinimana*, A. O. Walker.

1895. *Nannonyx spinimana*, A. O. Walker, "Revision Amphipoda of L. M. B. C. District," *Trans. Liverpool Biol. Soc.* vol. ix. p. 292, pl. xviii. figs. 1-11, & pl. xix. fig. 6*a*.

Hab. This new species was found by Mr. Walker on two occasions on a rocky bottom in 5-8 fathoms by the Menai Bridge, North Wales.

Genus 18. TRYPHOSITES, G. O. Sars.

41. *Tryphosites longipes* (Bate).

1861. *Anonyx longipes*, Bate & Westwood, (1) vol. i. p. 113, ♀.

1861. *Anonyx ampulla*, id. *ibid.* p. 116, ♂.

1876. *Tryphosa longipes*, Boeck, (138) p. 184, pl. v. fig. 8, pl. vi. fig. 5.

1891. *Tryphosites longipes*, G. O. Sars, (142) p. 81, pl. xxviii. fig. 3, pl. xxix. fig. 1.

Hab. Shetland; the Minch; Oban; Isle of Cumbrae; Berwick-on-Tweed; Durham coast (*A. M. N.*); 25 miles off May Island, Firth of Forth (*Sir J. Murray*); Aberdeenshire (*Mr. R. Dawson*); 'Porcupine,' 1869, *Stat.* 23*a*, south of Rockall, 420 fathoms, and off S.W. Ireland, 110

fathoms: *Mus. Nor.* Galley Head, Co. Cork; off Skilligs and off Bull Rock, S.W. Ireland (*A. O. W.*); 70–80 miles off Spurn Head (*T. S.*); Loch Fyne (*Sir J. Murray*).

Distrib. Florö and Hardanger Fiord, Norway, down to 150 fathoms; Vadsö, East Finmark; Fosse de Cap Breton, Bay of Biscay, 30–60 fathoms (*A. M. N.*): *Mus. Nor.* Sars speaks of it as one of the commonest Lysianassidæ of the Norwegian coast. Denmark (*Meinert*); west coast of France (*Chevreux*); Mediterranean (*Sars & Della Valle*).

Genus 19. SCHISTURELLA *, gen. nov.

Allied to *Tryphosa* and *Uristes*, and in the structure of the maxillipeds agreeing with the latter in having the masticatory lobe scarcely reaching to the end of the antepenultimate joint of the palp, which is elongated, its terminal joint claw-like. *Epimera of first segment of mesosome rudimentary* and almost entirely concealed by the epimera of the second segment. Antennules and antennæ without calceolæ. Eyes well developed. First gnathopod with oblong hand, the palm very oblique. *Telson divided to the very base, so that it consists of two pieces.*

42. *Schisturella pulchra* (H. J. Hansen).

1887. *Tryphosa pulchra*, H. J. Hansen, (141) p. 78, pl. ii. figs. 6–6 e.

Hab. ‘Porcupine,’ 1869, a single specimen taken, Stat. 65, lat. 61° 10' N., long. 2° 21' W., 345 fathoms. This is to the N.W. of Shetland and exactly on the line which I have proposed should form the limit of the British area.

Distrib. Four examples are in the Copenhagen Museum which were taken on as many different occasions in the Greenland seas in 15–100 fathoms.

The ‘Porcupine’ specimen agrees closely with Hansen’s description and figures. The figure shows a dorsal sinus on the fourth segment of the metasome; there is no such sinus in my specimen, and Hansen in his description says “Segmentum quartum caudæ dorso integro, non carinato.” Of the third segment Hansen writes, “Angulus infero-posterior segmenti tertii caudæ rotundatus incisura perparva supra angulum in margine posteriore adest.” I should have rather described it as a spine-point placed rather above the angle (*Sars’s* figure of the same segment in *Calliopijs Rathkei* gives an idea of it, the spine-point, however, being a little

* *σχιστός*, divided, *οὐρά*, tail. I have adopted the form *Schisturella*, because *Schistura* is in use, as is also *Scissurella*.

higher up). The marked characteristics of this species are the general structure of the antennal organs, the remarkable epimera of the first segment of the mesosome, and the absolutely divided telson. The first gnathopods have the hand shorter than the wrist, oblong, very slightly tapering, the palm very oblique, defined by a cluster of setæ, and bearing on its edge a remarkably delicate plate cut into serrations, the serrations very fine and not densely placed*; nail strong, bearing a secondary tooth near the apex as in the genus *Haplonyx*. But the character which first caught my eye as distinguishing the species from any other *Lysianid* known to me, though figured by Hansen, is not mentioned in his description. From the end of the first long joint of the filament of the antennules there is projected a very long and slender spine (see Hansen, fig. 6 a), which reaches to the middle of the fifth following articulation.

Genus 20. URISTES, Dana.

= *Pseudotryphosa* (G. O. Sars).

43. *Uristes umbonatus*, G. O. Sars.

1886. *Ichnopus umbonata*, G. O. Sars, (102) p. 79, pl. iii. fig. 2.

1891. *Pseudotryphosa umbonata*, G. O. Sars, (142) p. 83, pl. xxix. fig. 2.

1899. *Uristes umbonatus*, Stebbing, Ann. & Mag. Nat. Hist. ser. 7, vol. iv. p. 211.

Hab. A single specimen, 'Porcupine,' 1869, Stat. 82, lat. 60° 0' N., long. 5° 13' W., in 312 fathoms. This station is directly north of Cape Wrath, and is on the "Wyville Thomson Ridge."

This, like the last, is a species taken by the 'Porcupine' exactly on the line which I regard as limiting the British area.

Distrib. Two other specimens are known, one taken by Sars at Hvitingsö, west coast of Norway, in 150 fathoms, the other at Skagarak (*Gunhild's Exped.*, fide Sars), in 400-420 fathoms.

Genus 21. ANONYX, Kröyer.

44. *Anonyx nugax* (Phipps).

1774. *Cancer nugax*, Phipps, Voyage towards the North Pole, p. 192, pl. xii. fig. 2.

* This serrated edge exactly corresponds in character with that figured by Stebbing as developed on the palms of *Platamon longimanus*, Report 'Challenger' Amphip. pl. xiii. fig. *gn*¹.

1838. *Anonyx lagena*, Kröyer, Grönlands Amphipoder, pp. 237 & 244, pl. i. fig. 1, ♀.
 1838. *Anonyx appendiculata*, id. *ibid.* pp. 240 & 244, pl. i. fig. 2, ♂.
 1840. *Anonyx appendiculata*, H. Milne-Edwards, *Hist. Nat. des Crust.* vol. iii. p. 21.
 1845. *Anonyx ampulla*, Kröyer (not Phipps), *Naturhist. Tidsskr.*, 2 Rækkes, vol. i. p. 578; *Voyage en Scandinavie &c.* pl. xiii. fig. 2.
 1891. *Anonyx nugax*, G. O. Sars, (142) p. 88, pl. xxxi.
 1893. *Anonyx nugax*, T. Scott, Eleventh Annual Rep. Fish. Board Scotland, p. 212.

Hab. "Several specimens of this fine species were obtained in February 1889 near May Island, Firth of Forth, the largest measuring 20 mm. (fully three quarters of an inch) in length. The eyes are lageniform, and, being large and black, give a marked character to the species." Mr. Scott has kindly allowed me to see the specimens and given me one of them.

The occurrence of this truly Arctic species so far south is of great interest. In 1869 I recorded this species as having been found by me in Shetland; but this was subsequently found to be a mistake, the specimens proving to be large examples of *Tryphosa nanoides*, Lilljeborg.

Not only are these specimens interesting as an addition to our fauna, but also on account of their size and *the time of the year* (February) in which they occurred. Sars gives as dimensions "usual length of adult female 18 mm.; maximum length of Arctic specimen 40 mm." The largest specimen I have in my collection is 43 mm. (Kara Sea). Now I have large numbers of examples of what I take to be this species procured by myself on the Norwegian and Finmarkian coasts *in the summer months*; but none of these exceed 11 mm., which is the measurement which Sars gives for *Anonyx Lilljeborgii*. Is the life of the *Anonyx* limited to a year, and do all the females after they have produced their young in the spring months then die? Herr I. Sparre Schneider has suggested that this is the case with certain Amphipods. As regards these small summer-captured specimens of *Anonyx*, are they the young of *A. nugax*, and is also *Anonyx Lilljeborgii* the equivalent of those young? I am disposed to think so. My specimens vary to some extent, but in the main agree very fairly with Sars's description and figures of *A. Lilljeborgii*. The characters of this form are mostly comparative, and, as has already been pointed out by Stebbing (*Amphipoda* 'Willem Barents'), are such as might naturally be expected as results of a younger stage. One point Sars mentions as though it were important:—"The two anterior pairs of pereopoda with a very conspicuous obtuse denticle at the end of the propodos immediately below the dactylus." This denticle is very

conspicuous in small specimens, but apparently does not increase in size with the growth of the rest of the limb; it thus becomes less and less conspicuous as the animal is more developed, but if looked for it can be found in the largest examples of *A. nugax*.

Distrib. Circumpolar throughout the Arctic regions, including the Siberian Polar Sea and Behring Strait. Examples in my own collection are from Trondhjem Fiord, Norway, 3–10 fathoms; Bog Fiord, 3–5 fathoms, and Vadsö, both in East Finmark (*A. M. N.*); ‘Porcupine,’ 1869, Stat. 65, Faroe Channel, 345 fathoms; ‘Knight Errant,’ Stat. 8, Faroe Channel, 540 fathoms; ‘Valorous’ and ‘Alert,’ Greenland, 1875; Spitsbergen (*Lovén*); Kara Sea (*Stebbing*); Vineyard Sound, N.E. America (*S. I. Smith*): *Mus. Nor.*

Genus 22. HAPLONYX, G. O. Sars.

45. *Haplonyx cicada* (Fabricius).

1780. *Oniscus cicada*, O. Fabricius, Faun. Groenl. p. 258.

1844. *Anonyx gulosus*, Kröyer, Naturh. Tidsskr., 2 Række, vol. i. p. 611; Voyage en Scand. &c. pl. xiv. fig. 2.

1851. *Anonyx norvegicus*, Lilljeborg, Ælvers. af Kong. Vet.-Akad. Förhand. p. 22.

1861. *Anonyx Holbölli*, Bate & Westwood, (1) vol. i. p. 104 (not *Anonyx Holbölli*, Kröyer).

1872. *Anonyx gulosus*, Boeck, (138) p. 157, pl. v. fig. 4.

1891. *Haplonyx cicada*, G. O. Sars, (142) p. 93, pl. xxxii. fig. 2.

Hab. Shetland; Northumberland and Durham coasts; Isle of Cumbræ; Isle of Skye; Guernsey (*A. M. N.*); ‘Porcupine,’ 1869, Stats. 6 and 23, off west of Ireland, 90 and 630 fathoms; Stat. 74, to the west of Shetland, 203 fathoms; ‘Research,’ 1890, off west of Ireland, in 165 fathoms; off S.W. Ireland (*Prof. Haddon*): *Mus. Nor.* Lower Loch Fyne, 20–29 fath. (*T. S.*); Jersey (*Sinel & Hornell*).

Distrib. Bergen Fiord, Norway; Varanger Fiord, East Finmark (*A. M. N.*); Tromsö (*Schneider*); ‘Porcupine,’ 1869, Stat. 77, Faroe Channel, 560 fathoms; ‘Valorous,’ 1875, Greenland; Spitsbergen (*Lovén*): *Mus. Nor.* Iceland; Kara Sea; Matotslikin Scar; Bohuslän, Sweden.

46. *Haplonyx similis*, G. O. Sars.

1891. *Haplonyx similis*, G. O. Sars, (142) p. 93, pl. xxxiii. fig. 1.

1895. *Haplonyx similis*, A. O. Walker, “Revision of Amphip. of L. M. B. C. District,” Trans. Liverpool Biol. Soc. vol. ix. p. 294.

Hab. A single specimen has been recorded by Mr. Walker from Laxey Bay, Isle of Man, 8 fathoms, and the late Mr. D. Robertson gives “Off Fairland Point, Cumbræ, in 20 fathoms.”

Distrib. Off Midtö Lighthouse, in the Hardanger Fiord, 150–180 fathoms, and Rödberg, Trondhjem Fiord, 150–180 fathoms (*A. M. N.*); ‘Porcupine,’ 1869, Stat. 77, in the Faroe Channel, 560 fathoms: *Mus. Nor.* Sars says that “it would seem to occur along the whole west coast of Norway at least as far up as the Trondhjem Fiord, in 50–150 fathoms.”

[*Haplonyx leucophthalmus*, G. O. Sars.

1891. *Haplonyx leucophthalmus*, G. O. Sars, (142) p. 97, pl. xxxiv. fig. 1.

With the exception of the character of the eyes, this *Haplonyx* (I cannot call it a species) is indistinguishable from *H. similis*, G. O. Sars. I assign to it a specimen procured by Sir J. Murray in the ‘Triton,’ 1882, in the Faroe Channel, in a tow-net sunk to 570 fathoms, because I can see no trace of eyes in the spirit-preserved specimen, and the depth makes it probable that the specimen belonged here rather than to *H. similis*. It has been found by Prof. Sars in the Hardanger and Trondhjem Fiords, Norway, in about 150 fathoms.]

[Genus 23. ALIBROTUS, Milne-Edwards.

[*Alibrotus littoralis* (Kröyer).

1844. *Anonyx littoralis*, Kröyer, Naturhist. Tidsskr., 2 Rækkes, vol. i. p. 621; Voyage en Scandinavie &c. pl. xxiii. fig. 1.

1876. *Onesimus littoralis*, Boeck, (138) p. 161, pl. v. fig. 7.

1891. *Alibrotus littoralis*, G. O. Sars, (142) p. 102, pl. xxxv. fig. 2.

Greenland, ‘Valorous,’ 1875.

Distrib. In several places in Sydvaranger, East Finmark, by washing mud between tide-marks (*A. M. N.*); Spitsbergen (*Lovén*): *Mus. Nor.* Widely distributed in the Arctic regions.]

[Genus 24. ONESIMUS, Boeck.

[*Onesimus Edwardsii* (Kröyer).

1846. *Anonyx Edwardsii*, Kröyer, Naturhist. Tidsskr., 2 Rækkes, vol. ii. p. 1; Voyage en Scandinavie &c. pl. xvi. fig. 1.

1876. *Onesimus Edwardsii*, Boeck, (138) p. 167, pl. vi. fig. 4.

1886. *Onesimus Edwardsii*, H. J. Hansen, (140) pl. xxi. fig. 8.

1891. *Onesimus Edwardsii*, G. O. Sars, (142) p. 105, pl. xxxvi. fig. 1.

Greenland, ‘Valorous,’ 1875, Stat. 4, lat. 67° 56' N., long. 55° 27' W., 20 fathoms.

Distrib. Finmark and West Norway (*G. O. Sars*). In

the Arctic Ocean widely diffused, but I hesitate to quote localities, as several allied forms have been confused which Hansen has separated under the names *O. caricus*, *O. breviscaudatus*, and *O. affinis*.]

Genus 25. MENIGRATES, Boeck.

47. *Menigrates obtusifrons*, Boeck.

1860. *Anonyx obtusifrons*, A. Boeck, Forhandl. ved de Skand. Naturf. Sde Möde, p. 643.

1861. *Anonyx plautus*, Bate & Westwood (not of Kröyer), (1) vol. i. p. 111.

1865. *Anonyx brachycercus*, Lilljeborg, On *Lysianassa magellanica* and Crustacea subfam. Lysianassina, p. 27, pl. iv. figs. 42-49.

1876. *Menigrates obtusifrons*, Boeck, (138) p. 169, pl. vi. fig. 2.

1891. *Menigrates obtusifrons*, G. O. Sars, (142) p. 111, pl. xxxviii. fig. 1.

1896. *Menigrates obtusifrons*, Walker & Hornell, Journ. Marine Zool. & Microsc. vol. ii. p. 54.

Hab. Guernsey (*Hornell*). The specimen recorded by Bate and Westwood was received from Thomas Edward of Banff.

Distrib. Soolvær, Lofoten Islands (*A. M. N.*). Rare on the Norwegian coast and chiefly within the Arctic Circle (*G. O. Sars*).

Genus 26. LEPIDEPECREUM, Bate.

48. *Lepidepcreum longicorne* (Bate).

1861. *Anonyx longicornis*, Bate & Westwood, (1) vol. i. p. 91, ♂.

1862. *Anonyx longicornis*, Spence Bate, Cat. Amphip. Brit. Mus. p. 72, pl. xi. fig. 4, ♂.

1869. *Lepidepcreum carinatum*, Bate & Westwood, (1) vol. ii. p. 509, ♀.

1890. *Lepidepcreum mirabile*, Meinert, (71) p. 153, pl. i. figs. 7-12.

1891. *Lepidepcreum carinatum*, G. O. Sars, (142) p. 113, pl. xxxviii. fig. 2, pl. xxxix. fig. 1.

Hab. Shetland (*A. M. N.*); 25 miles off May Island, Firth of Forth, 35 fathoms (*Sir J. Murray*); *Mus. Nor.* Off St. Monan and other parts of the Firth of Forth, and in the Moray Firth (*T. S.*); off Galley Head, Co. Cork, and off Teelin, Co. Galway, in 33-37 fathoms; also at Guernsey (*A. O. W.*), Jersey (*Sinel & Hornell*).

Distrib. Most southern part of Norway (*G. O. Sars*); Denmark (*Meinert*); Spezia, Mediterranean (*G. O. Sars*); west coast of France (*A. Dollfus*).

Genus 27. EUONYX, Norman.

49. *Euonyx chelatus*, Norman.

1867. *Euonyx chelatus*, Norman, "Report Comm. Explor. Coasts of Hebrides," Brit. Assoc. Rep. for 1866, p. 202.

1869. *Opis leptochela*, Bate & Westwood, (1) vol. ii. p. 501.

1891. *Euonyx chelatus*, G. O. Sars, (142) p. 117, pl. xl. fig. 1.

Hab. Sleat Sound, Isle of Skye, on *Echinus esculentus* (*A. M. N.*); Puffin Island, North Wales, off the lighthouse; between Holyhead and Isle of Man, 50 fathoms, on *Echinus esculentus*; 10–17 miles N.W. of Mersey Bar, on *Echinus* (*A. O. W.*). The localities given in Bate and Westwood are Shetland (*Jeffreys*), Isle of Man, on *Echinus esculentus* (*G. S. Brady*).

Distrib. Trondhjem Fiord, Norway, in 100–150 fathoms, among deep-sea corals; and at Vardö, East Finmark, in 50–60 fathoms (*G. O. Sars*).

EXPLANATION OF PLATE VI.

Fig. 1. *Lanceola Murrayi*, sp. n. First gnathopod.

Fig. 2. Ditto. Second gnathopod.

Fig. 3. Ditto. Last peræopod.

Fig. 4. Ditto. Sheath and nail of last peræopod.

(For description of *Lanceola Murrayi* see p. 135.)

Fig. 5. *Cyclocaris faroensis*, sp. n. Mandible.

Fig. 6. Ditto. First maxilla.

Fig. 7. Ditto. Second maxilla.

Fig. 8. Ditto. Maxilliped.

Fig. 9. Ditto. First gnathopod.

Fig. 10. Ditto. Second gnathopod.

Fig. 11. Ditto. Coxa of second peræopod.

Fig. 12. Ditto. Coxa and basos of third peræopod.

Fig. 13. Ditto. Last peræopod.

Fig. 14. Ditto. Hinder margin of third segment of metasome.

Fig. 15. Ditto. Telson.

Fig. 16. *Tryphosella abyssi*, sp. n. Front margin of cephalon.

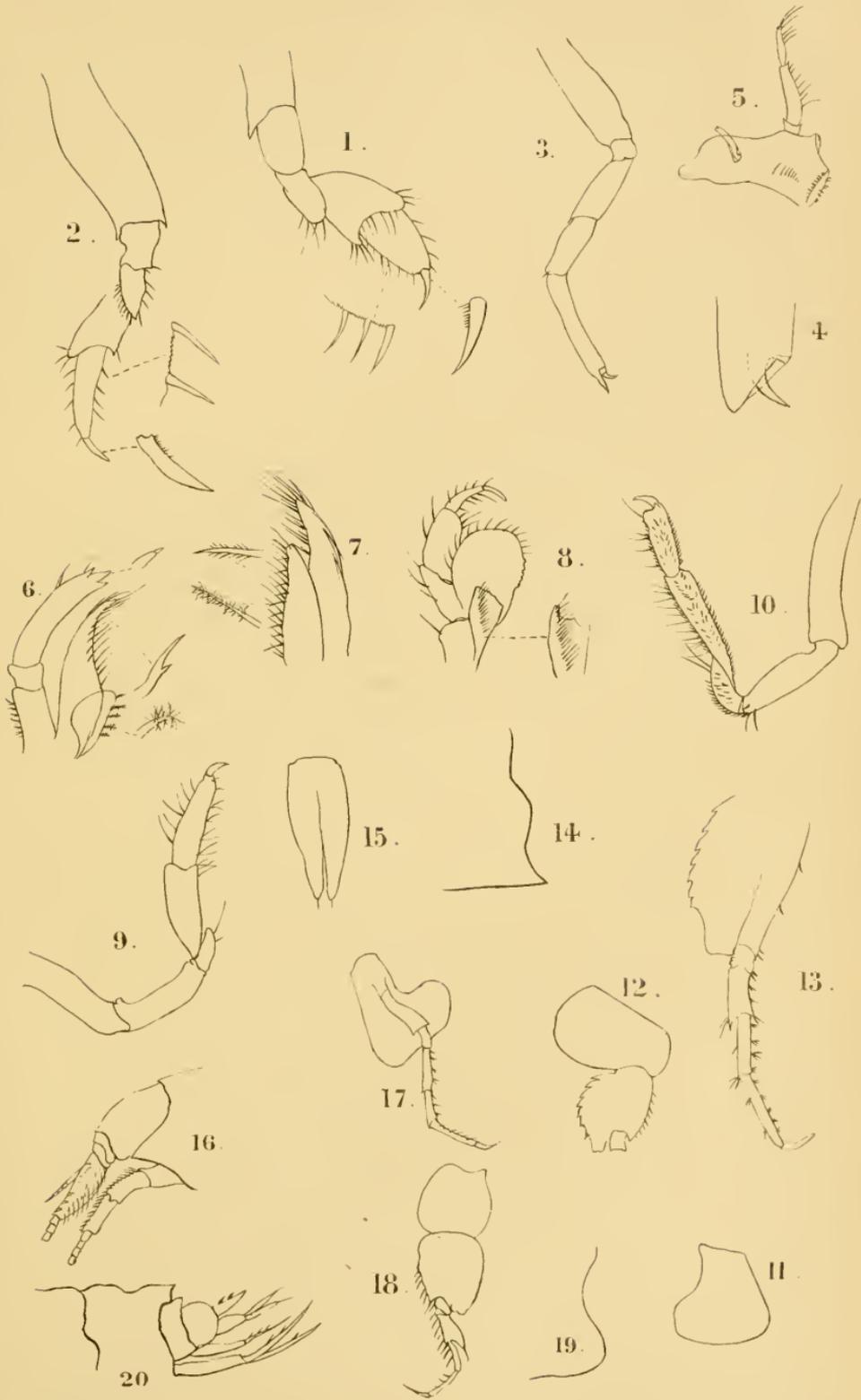
Fig. 17. Ditto. Second peræopod.

Fig. 18. Ditto. Third peræopod.

Fig. 19. Ditto. Hind margin of third segment of metasome.

Fig. 20. Ditto. Urosome.

(The figures of the Plate are of various degrees of magnification.)



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