THE CRUSTACEA OF NORTHUMBERLAND AND DURHAM

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There were no very early students of the Crustacea in these northern counties, and we are not aware of any publications on the subject prior to 1832. The following notes supply a record of all observations and papers up to the year 1862–4, at which time a stimulus was given to the study of this and other branches of Marine Zoology by grants from the British Association. These, with local contributions, enabled dredging to be carried out by means of a steam-tug in the deeper waters which lie off the coast. The earlier papers referred to are as follows :—

Johnston (George), "Illustrations of British Zoology," Loudon's Mag. Nat. Hist., vol. v., 1832. p. 520; vol. vi., 1833, p. 40; vol. vii., 1834, p. 253; vol. viii., 1835, pp. 202, 494, 565, and 668; vol. ix., 1835, p. 80. These papers contained notices of the occurrence of various species of Isopoda, Amphipoda, and parasitic Crustacea, accompanied by illustrations.

Johnston (George), Zoological Journal, vol. iii., 1827, p. 176. *Gammarus maculatus and G. dubius.*

Johnston (George), Proc. Berwickshire Naturalists' Club, vol. i., 1834, "Catalogue of the Cirrhipeda found on the coast of Berwickshire" 6 species.

Embleton (Robert), Proc. Berwickshire Nat. Club, vol. i., 1834, "List of Malacostracan Podophthalma found on the coast of Berwickshire and North Durham." Twenty-eight species are recorded, including description and figure of his new species *Galathea nexa.*

Baird (W.), Hist. Berwickshire Nat. Club, vol. ii., p. 145 (1845?), "Arrangement of the British Entomostraca." In this paper are a few records from Berwick Bay.

Baird (W.), Hist. Berwickshire Nat. Club, vol. ii. (1845?), *Caligus Strömii* described.

Hardy (James), Hist. Berwickshire Nat. Club, vol. iv., p. 212 (1845?), *Pagurus Prideauxii* Leach. "Found in deep water off Burmouth, lodged in a curious domicile formed of a sponge (*Halichondria suberea* Johnston)." It seems probable that the species found was *Pagurus cuanensis*.

Hancock (Albany), Trans. Tyneside Nat. Field Club, vol. i., 1850, and also Ann. and Mag. Nat. Hist., ser. 2, vol. iv., 1849, p. 305; pls. viii., ix., "Notice of the occurrence on the British coast of a Burrowing Barnacle belonging to a new order of the class Cirripedia." The species was named *Alcippe lampas*.

Hancock (Albany), Trans. Tyneside Nat. Field Club, vol. iv., 1858, p. 17, and also Ann. and Mag. Nat. Hist., ser. 3, vol. ii., p. 443, describes the markings on the sand caused by the crawling of the two Amphipoda *Sulcator arenarius* and *Kröyera arenaria*; which Crustacea are described by Spence Bate in the Tyneside Transactions immediately before the paper by Hancock at p. 15, and figured pl. ii., figs. 1 and 2.

Norman (A. M.), Trans. Tyneside Nat. Field Club, vol. iv., 1860, p. 326, pl. xvii., "On an undescribed Crustacean of the genus Mysis."

Norman (A. M.), Trans. Tyneside Nat. Field Club, vol. v., 1860, p. 143, pl. iii., "On species of Ostracoda found in Northumberland and Durham, new to Great Britain."

Hancock (Albany) and Norman (A. M.), Trans. Linn. Soc., vol. xxiv., 1863, p. 49, pls. xv., xvi., "On Splancnotrophus, an undescribed genus of Crustacea, parasitic in Nudibranchiate Mollusca." One of the two species, *Splancnotrophus brevipes*, had been taken on the Northumberland coast.

From this date, when the dredgings, aided by grants from the British Association, were commenced, the Crustacea of the north-east coast began to receive more attention.

The north-east coast of England is not favourable, at any rate in the littoral zone, to the development of the smaller marine animals; the swell which throughout so great a portion of the year beats on the rocky shores leaves little peace for the animals which should live there; while the almost total absence of sheltered bays or even nooks deprives the smaller Crustacea of suitable dwelling places. In years gone by Alder and Hancock made the rocks at Cullercoats famous by the number of interesting Nudibranchiate Mollusca which they discovered there. It is to be feared that they would not have been so successful had they worked there at the present time; the immense increase of population which has taken place north of the entrance to the Tyne, the sewage poured into the water, the vast amount of dredged mud carried out from the Tyne and deposited off shore have greatly changed the condition not only of the shore but of the neighbouring sea from which the Nudibranchs used to make their way landwards at the time of spawning. The North Sea, however, in its deeper parts is excellent dredging ground, whence additions to our fauna have been continually turning up, and where excellent work remains to be done by those who come after us.

We give a comparative table of the Crustacea which have been found on the north-east coast, with those from such other parts of the coasts of Great Britain as have been efficiently worked to a greater or less degree.

The authorities who are responsible for the several columns are as follows :—

1. Northumberland and Durham as in the Catalogue which follows.
2. "Notes on the Crustacea of the Channel Islands," Canon A. M. Norman, Ann. and Mag. Nat. Hist., ser. 7, vol. xx., 1907, p. 356.

3. "The Crustacea of Devon and Cornwall," Canon A. M. Norman and Thomas Scott, LL.D., 1906.

4. "Fourth and Final Report on the Marine Zoology, Botany, and Geology of the North Sea," Report Brit. Assoc., 1890, p. 457. In this report the higher Crustacea are reported on by Mr. A. O. Walker; the Ostracoda by Prof. G. S. Brady, Mr. A. Scott, and Dr. Chaster; the Copepoda by Mr. I. C. Thompson; and the Cirripedia by Mr. Marratt.

5. "Fauna, Flora, and Geology of the Clyde Area, 1901." The Crustacea are reported on by Thomas Scott, F.L.S., p. 328.

6. "A Catalogue of the Land, Freshwater, and Marine Crustacea found in the Basin of the River Forth and its Estuary," by Thomas Scott, LL.D., F.L.S., Proc. Roy. Physical Soc. of Edinburgh, vol. xvi., 1906, p. 97 and p. 267.

7. "Last Report of Dredging among the Shetland Isles." Crustacea by Rev. A. M. Norman, Brit. Assoc. Report (for 1868), 1869, p. 247. The marine species are filled in from this old report, as it is the only one of the fauna of the northern extremity of our Islands; a few additional species have since been discovered, but are not here included. The inland species, however, which have been observed by Dr. T. Scott and R. Duthie have been incorporated. The account of these will be found in *Reports of the Fishery Board for Scotland*, xiii., p. 174; xiv., p. 229; xv., p. 327; and xvi., p. 253.

Crustacea of Northumberland and Durham compared with those of some other parts of the country and seas:—

	Northumberland and Durham.	Channel Islands, 1907.	Devon and Cornwall, 1906.	Irish Sea, 1896.	Firth of Clyde, 1901.	Firth of Forth, 1906.	Shetland, Marine 1898, Inland 1903.
Brachyura	22	39	41	27	29	19	18
Anomura	15	11	16	12	16	15	17
Macrura	22	26	32	22	27	18	20
Schizopoda	14	18	29	16	25	26	11
Stomatopoda	—	1	2	—	—	—	—
Sympoda	26	9	13	17	31	21	12
Isopoda	58	52	68	23	62	44	23
Amphipoda	130	136	144	130	168	145	113
Branchiopoda—							
1. Phyllocarida ...	1	—	1	1	1	—	1
2. Phyllopoda ...	—	—	1	—	—	—	—
3. Cladocera ...	48	—	34	2	51	54	37
4. Branchiura ...	—	—	—	—	1	1	—
Ostracoda	121	64	107	58	142	132	99
Copepoda	163	31	293	195	290	306	70
Cirripedia	17	—	27	10	12	13	6
	637	387	808	513	855	794	427

The character of the fauna of the coasts of Northumberland and Durham is distinctly boreal, and much more northern than that of the same latitude on our western shores. As long ago as 1868 one of us wrote, "The distribution of animal life around our coasts appears for the most parts to have followed the direction south, west, north, and east. It would seem that comparatively few (if any) southern species have made their way far north through the Straits of Dover, which may probably be accounted for by the fact that that channel has, geologically speaking, been only a short time open. As a rule southern species are to be seen at a higher latitude on the western than they are on the eastern coasts. There are, however, some apparent, but only apparent exceptions. These consist of animals known on the north-east coast of Scotland, which we should not have expected to meet with there. On examining into the probable cause of their migration to this district, I am led to believe that they have

made their way thither round the western and northern, and down the eastern coasts to their present habitat, and not up the eastern coast, as at first might have been supposed. For example *Cerithium perversum*, *Phasianella pulla*, *Fissurella græca*, *Tellina balaustina*, *Callianassa subterranea*, *Palmipes placenta*, *Amphiura brachiata*, &c., have been found in the Moray Firth, but are wholly absent on the east coast of England. Moreover many species have been recorded on the Norwegian coast though never found on the eastern shores of England, and therefore may be presumed to have migrated thither up the western side of Great Britain and round the north of Scotland; as examples of such species may be cited *Pleurotoma striolata*, *attenuata* and *septangularis*, *Cerethiopsis tuberculatis*, *Cerithium reticulatum* and *perversum*, *Rissoa violacea*, *Pholas dactylus*, *Solen vagina*, *Psammobia costulata*, *Gastrana fragilis*, *Isocardia cor*, *Cardium aculeatum*, *Lepton squamosum*, *Xantho rivulosus*, *Portunus arcuatus*, *Gebia deltura*, &c. On the other hand, while northern forms do not extend southward on the east coast beyond Yorkshire and the Dogger Bank, on the western coast they in many instances have a range southwards to the Nymph Bank off Cork, and even to the Mediterranean Sea."*

Forty years have elapsed since the above was written, and a continued study during that time of the distribution of animal life in the North Atlantic has fully confirmed the views expressed by the writer in the foregoing extract. If re-written now a few names therein quoted as Norwegian would be struck out as erroneously recorded; but the writer would on the other hand be able to add a large number of other species as illustrative of his views. Moreover he has during these years been able to establish a remarkable fact. It is that during the last months of the year, as also during the first months, that is apparently from November to March, enormous quantities of free swimming animals are often brought down from the north along the coasts of Scotland

* Norman (A. M.) "Last Report of Dredging among the Shetland Isles," Rep. Brit. Assoc. (for 1868), 1869, p. 248.

and England; on many occasions as far as north Yorkshire. The species thus occurring are not known (or very rarely?) at other times of the year, and the conclusion the writer arrived at was that at the period of the year mentioned there was a strong southerly current sweeping along our east coast. The Arctic forms which peculiarly distinguish this southerly migration are *Clione limacina* Phipps, *Thysanoessa longicaudata* Kröyer, *Nematoscelis borealis* Norman, and *Euthemisto compressa* Goës.

These conclusions, arrived at on purely zoological grounds, have received remarkable confirmation during the last two or three years from the physical researches of the *International Council for the Exploration of the Sea*. By numerous and extended observations and experiments it has been clearly established that water which enters the North Sea through the Straits of Dover is very soon deflected from its northerly course, and flows eastwards to the continental portion of the area; and that on the other hand strong currents come from the north, along the western side of the channel; and not only so, but that the exact course of these southern-flowing waters, and also the amount of their salinity, varies at different seasons of the year.

The following Crustacea of the orders Brachyura, Anomura, and Macrura, so well known in the south of our islands, are wholly absent from the north-east coast of England:—

* *Ebalia tumefacta* Montagu.
Thia polita Leach.
Polybius Henslowi Leach.
* *Portunus arcuatus* Leach.
Bathynectes longipes Risso.
Xantho floridus Montagu.
* *hydrophilus* Herbst.
Couch? Bell.
Pilumnus hirtellus Pennant.
Nautilograpsus minutus Linné.

* The species in this list to which an * is prefixed have been recorded from the coast of Norway.

* *Pinnotheres veterum* Pennant.
Mamaia squinado Herbst.
Pisa tetraodon Pennant.
biaculeata Montagu.
Macropodia ægyptia H. M. Edwards.
Dromia vulgaris H. M. Edwards.
Pagurus sculptimanus Lucas.
Diogenes pugilator Roux.
Jaxea nocturna Chiereghin.
Axius stirynchus Leach.
Arctus ursus Dana.
Palinurus vulgaris Latreille.
Penæus caramote Risso.
Crangon sculptus Bell.
Alpheus ruber H. M. Edwards.
macrocheles Hailstone.
Hippolyte Prideauxiana Leach.
Typton spongicola O. G. Costa.

On the other hand the only species belonging to these higher Crustacea which live on the north-east coast but are unknown in the south of England are :—

Lithodes maia Leach.
Pagurus pubescens Krŏyer.
Anapagurus chiroacanthus Lilljeborg.
? *Spirontocaris securifrons* Norman.
Gaimardi H. M. Edwards.†
Pandalus borealis Krŏyer.

We are much indebted to Professor A. Meek for records of Amphipoda and other Crustacea, and to Mr. R. S. Bagnall for the result of his researches among the terrestrial Isopoda; and also to Mr. R. A. Todd, who has added two important species to the local fauna, *Calocaris macandreæ* and *Pandalus borealis*.

* The species in this list to which an * is prefixed have been recorded from the coast of Norway.

† This species has not yet been found on the coasts of Northumberland and Durham, but may be expected to occur there, as Dr. Thomas Scott has recorded it from the Firth of Forth.

The following initials are employed to indicate different collectors in the following report :—

A. Mk=A. Meek.
A. M. N=A. M. Norman.
G. H=George Hodge.
G. S. B=G. S. Brady.
R. H=Richard Howse.

The letters N. and D. after species imply that they have been found on the ("N") Northumberland and ("D") Durham coasts.

CRUSTACEA

Sub-Class I.—DECAPODA Latreille

Order I.—BRACHYURA Lamarck

Section I.—OXYSTOMATA H. Milne-Edwards

Fam. 1.—LEUCOSIADÆ

Ebalia tuberosa (Pennant)=*E. Pennantii* Leach=*E. insignis* Lucas.

Not uncommon in deep water off the coast. N.D.

Ebalia Cranchii Leach=*E. discrepans* Costa=*E. Deshayesii* Lucas=*E. chiragra* P. Fischer.

More common than the last off the north-east coast. N.D.

Fam. 2.—CORYSTIDÆ

Corystes cassivelaunus (Pennant).

The masked crab was repeatedly found by the late Mr. R. Howse cast up upon the strand in the neighbourhood of South Shields; common on the beach at Seaton Carew (G. S. B.); occasionally in great numbers in the bays of Northumberland (A. Mk.). N.D.

Atelecyclus septemdentatus (Mont.)=*Atelecyclus heterodon* Leach.

Occasionally found off our coasts in the coralline zone. N.D.

FAM. 4.—HOMARIDÆ

HOMARUS GAMMARUS (Linné).

Common. N.D.

NEPHROPS NORVEGICUS (Linné).

Taken abundantly by the trawlers off the coast. N.D.

FAM. 5.—CRANGONIDÆ

CRANGON TRISPINOSUS Hailstone.

A single specimen taken in the harbour at Holy Island in 3 fathoms, 1862 (A. M. N.); Whitburn sands, July, 1862 (G. S. B.). N.

CRANGON FASCIATUS Risso.

A single specimen dredged in shallow water within the Farne Islands in 1864 (A. M. N.)—but as the difference between this species and *C. neglectus* (G. O. Sars) was not recognised in 1864, the latter may have been mistaken for the former. N.

CRANGON NEGLECTUS G. O. Sars.

Young specimens dredged in sandy bays of Northumberland (A. Mk.). N.

CRANGON BISPINOSUS (Hailstone).

Stomachs of haddock; 40–50 miles E. by N. from Tynemouth, 40 fathoms; off Berwick and off Durham coast, 1864 (A. M. N.). N.D.

CRANGON VULGARIS (Linné).

In all sandy bays. N.D.

CRANGON ALLMANI Kinahan.

1857. *Crangon Allmani*, Kinahan, Nat. Hist. Review, vol. iv., Proc. Societies, p. 80, and woodcuts.

1861. *Steiracrangon Allmani*, Kinahan, Brit. Species Crangon and Galathea. Trans. Roy. Irish Acad., vol. xxiv., p. 65, pl. iii.

Off Berwick in 26–46 fathoms, and off other parts of Northumberland and Durham, 1862–1864 (A. M. N.) N.D.

PONTOPHILUS SPINOSUS Leach.

Frequently taken in 1862–64 off the Northumberland coast, and also 20 miles E. by S. from Tynemouth in 35 fathoms (A. M. N.) N.D.

FAM. 6.—ALPHEIDÆ

ATHANAS NITESCENS (Montagu).

Cullercoats (J. Alder). N.

FAM. 7.—HIPPOLYTIDÆ

SPIRONTOCARIS SECURIFRONS (Norman).

1862. *Hippolyte securifrons*, Norman, Trans. Tyneside Nat. Field Club, vol. v., p. 267, pl. xii., figs. 1–7.

Off the coasts of Northumberland and Durham, frequent, 1862–64 (A. M. N.) N.D.

SPIRONTOCARIS PUSIOLA (Kröyer).

1843. *Hippolyte pusiola*, Kröyer, Monog. fremstilling af Slægten Hippolyte's Nordiske Arter, p. 319, pl. iii., figs. 69–73.

1857. *Hippolyte pusiola*, Kinahan, Nat. Hist. Review, vol. iv., Proc. Societies, p. 159, pl. ix., fig. 2 a–c, pl. x., figs. 9, 10.

Cullercoats and off Northumberland, 1862–63 (A. M. N.); off Ryhope and Seaham (G. H.) N.D.

HIPPOLYTE VARIANS Leach.

Cullercoats, Seaham, and Hartlepool; off Durham and Northumberland coasts, 1862–64 (A. M. N.); Newbiggin and Whitburn (G. S. B.); off Ryhope (G. H.) N.D.

FAM. 8.—PANDALIDÆ

PANDALUS BOREALIS Kröyer.

1835. *Pandalus borealis*, Kröyer, Naturhist. Tidssk., vol. ii., p. 255, and 1845, Anden Rækkes, vol. i., p. 461—Voyages en Scandinavie, &c., pl. vi., fig. 2 a–o.

1851. *Pandalus borealis*, Brandt (F.), Middendorff Siberiske Reise, vol. ii., p. 122.

1879. *Pandalus borealis*, Smith (S. I.), "Stalk-Eyed Crustacea Atlantic Coast of North America," Trans. Connect. Acad., vol. i., p. 86.

1899. *Pandalus borealis*, Sars (G. O.), "Account Post-embryonic Development of *Pandalus borealis*," Rep. Norweg. Fishery and Marine Investigations, vol. i., pls. i–x.

Mr. R. A. Todd has added this very fine Macruran to our fauna. About twenty specimens were taken by the "Huxley" on a muddy bottom in 57 fathoms E.N.E. of the Coquet Light, July 26, 1907, in company with *Ukko Turtoni*, *Calocaris macandreæ*, *Spirontocaris securifrons*, &c.

Pandalus borealis has a wide circumpolar distribution. It is found in the Arctic seas from Greenland in the west to the Kara Sea and Murmar coast in the east. It is met with on the Norwegian coast, and as far south as the Kattegat; on the north-east coast of America as far south as Massachusetts Bay; and in the Pacific off the Island of Unalaska and in the Sea of Okhotsk. N.

PANDALUS MONTAGUI Leach=*P. annulicornis* Leach.
Common. N.D.

PANDALINA BREVIROSTRIS (Rathke).

1843. *Pandalus brevirostris*, Rathke, Beiträge zur Fauna Norwegens, p. 17.

1850. *Pandalus Jeffreysii*, Bate, Notes Fauna of Swansea, Appendix, pl. iv., fig. 2, and 1859, Nat. Hist. Review, vol. vi., Proc. Soc., p. 100, fig. 1.

1853. *Hippolyte Thompsoni*, Bell, Brit. Stalk-eyed Crustacea, p. 290.

1861. *Pandalus Thompsoni*, Norman, Contrib. British Carcinology. Ann. and Mag. Nat. Hist., ser. 3, vol. viii., p. 7 (separate copy), pl. xiv., figs. 3–9.

? 1862. *Pandalus Rathkei*, Heller, Untersuchungen Litoral-fauna Adriatischen Meeres. Sitzungsb. K. Akad. Wissensch., vol. xvi., p. 441, pl. iii., fig. 31.

? 1863. *Pandalus brevirostris*, Heller, Crustaceen des südlichen Europa, p. 247, pl. viii., fig. 9.

? 1883. *Pandalus brevirostris*, A. Milne-Edwards, Recueil de figures de Crustaces nouveaux ou peu connus.

1899. *Pandalina brevirostris*, Calman, On the British Pandalidæ. Ann. and Mag. Nat. Hist., ser. 7, vol. iii., p. 37, pl. i–iv., fig. 4.

We do not feel sure that the species figured by Heller and A. Milne-Edwards is the same as that of Rathke; the spines on the underside of the rostrum are represented as of much larger size than those which characterize the latter species.

In dredgings off Northumberland and Durham, 1862–64 (A. M. N.); Seaham, 22 fathoms (G. S. B.); Ryhope, 10–15 fathoms (G. H.) N.D.

Fam. 9.—PALÆMONIDÆ

Palæmon serratus (Pennant).

A specimen in the British Museum from Berwick presented by Dr. Johnston (see List Specimens of British Animals in Brit. Mus. Crustacea. 1856, p. 42). N.

Palæmon squilla Leach.

In pools in the bay on the north side of Holy Island, &c. (R. E.); Cullercoats (John Hancock); Whitburn (G. S. B.); Beadnell (A. Mk.) N.D.

Palæmonetes varians (Leach).

Port Clarence and Hartlepool (A. M. N.); Hylton Dene (G. S. B.) D.

Order IV.—SCHIZOPODA

The following works may be consulted with respect to the Mysidea.

1. Sars (G. O.). Carcinologiske Bidrag til Norges Fauna. 1. Monographi over Mysider, pts. i. and ii., Det. Kongl. Norsk. Videnskabss. i Trondhjem, 1870–2, and pt. iii., Universitets-Program. Christiania, 1879.

2. Sars (G. O.). Nye Bidrag til Kundskaben om Middelhavets Invertebratfauna, I. Middelhavets Mysider (Archiv for Mathem. og Naturvid., 1876).
3. Norman (A. M.). British Schizopoda of the Families Lophogastridæ and Euphausiidæ (Ann. and Mag. Nat. Hist., ser. 6, vol. ix., 1892, p. 454), and British Mysidæ, a family of Crustacea Schizopoda (Ann. and Mag. Nat. Hist., ser. 6, vol. x., pp. 143 and 242).

A description of all British species known up to 1892 is to be found in these last papers.

Section I.—EUPHAUSIACEA

Fam. 1.—EUPHAUSIIDÆ

THYSANOESSA LONGICAUDATA (Kröyer).

1849. *Thysanopoda longicaudata*, Kröyer, Voyages en Scandinavie etc., Crust., pl. viii., fig. 1 a–f.

1882. *Thysanoessa tenera*, G. O. Sars, "Oversigt af Norges Crust. I." (Christ. Vidensk. Forhand.), p. 53 (separate copy), pl. i., figs. 18, 19.

1887. *Thysanoessa longicaudata*, H. J. Hansen, Overs. over det vestlige Grönlands Fauna af malak Havskrebsdyr (Vidensk. Middel. fra den naturf. Foren. i Kjobh.), p. 54 (separate copy).

1892. *Thysanoessa longicaudata*, Norman, Ann. and Mag. Nat. Hist., ser. 6, vol. ix., p. 463, and "The Naturalist," 1892, p. 175.

In "The Naturalist," May, 1892, Mr. Thomas H. Nelson wrote (p. 144) describing what he observed off Redcar, "Feb. 10th, 11th, and 12th, attracted by the number of Kittiwakes *(Rissa tridactyla)* to be seen about a mile out at sea, I procured a boat, and went off to ascertain the cause of this vast assemblage of gulls. Both east and west, as far as the eye could reach, their graceful white forms were visible, many busily engaged dipping into the water, and others flying overhead and then darting down to pick up some object from the surface. I shot two or three examples, and found that their

mouths were full of small Crustaceans, with which the sea was literally alive; heaps of these were afterwards washed ashore by sea-winds, and afforded a feast for starlings and other frequenters of the tidal line."

Mr. Nelson sent to me a small bottle of the specimens from the shore for identification. The mass was composed of *Euthemisto compressa*; but there were also several examples of *Nematoscelis borealis* Norman, and one of *Thysanoessa longicaudata* Kröyer. Mr. Nelson would seem from his description to have seen the Kittiwakes feeding on these Crustaceans off the Durham coast, but at any rate it is certain that these Crustacea came from the north, down the Northumberland and Durham coasts, before they reached the spot where they were cast up upon the strand in the extreme N.E. of Yorkshire. They may be included therefore as occasional visitants off our coasts (A. M. N.) N.D.

NEMATOSCELIS BOREALIS (Norman).

1872. *Thysanoessa borealis*, Norman, in Sim (G.), "Stalk-Eyed Crustacea N.E. Coast of Scotland" (Scottish Naturalist), p. 8 (separate copy).

1882. *Nematoscelis megalops*, G. O. Sars, Prelim. Notices of Schizopoda of "Challenger" Exped. (Christ. Vidensk. Forhand.), p. 27 (separate copy).

1885. *Nematoscelis megalops*, G. O. Sars, Report "Challenger" Exped. Schizopoda, p. 127, pl. xxiii., figs. 5–10, pl. xxiv.

1892. *Nematoscelis megalops*, Norman, Ann. and Mag. Nat. Hist., ser. 6, vol. ix., p. 464.

In my notes in the last-named paper I have referred to some slight differences which appear to exist between the British specimens and that figured by Sars, and should those differences be not truly specific my name *N. borealis* can be adopted. For the occurrence of this species on our coast see notes on the preceding species; considering that there were the remains of several specimens of this species in the very small amount of material which I examined, it would seem to have occurred in great profusion off our coast (A. M. N.) N.D.

Section II.—MYSIDACEA

Fam. 1.—SIRIELLIDÆ

Siriella norvegica G. O. Sars.

Young specimens between tidemarks at Alnmouth (G. S. B.) N.

Siriella jaltensis Czerniavsky.

This is *S. crassipes* of G. O. Sars. Cullercoats (A. M. N.); St. Mary's Island, Craster, and Holy Island (A. Mk.) N.

Siriella armata (H. Milne-Edwards).

This would appear to have been *Mysis Griffithsiæ* of Bell and *Mysis producta* of Gosse.

Young specimens taken at Alnmouth (G. S. B.); Cullercoats, St. Mary's Island, Alnmouth Bay, and Holy Island (A. Mk.) N.

Fam. 2.—GASTROSACCIDÆ

Gastrosaccus spinifer (Goës).

Off the mouth of the Tees, May, 1866 (Mr. Davison *fide* G. S. B.); Cullercoats (A. Mk.) N.D.

Fam. 3.—LEPTOMYSIDÆ

Mysidopsis didelphys (Norman).

Forty to fifty miles off Tynemouth, 1862 (A. M. N.) N.

Leptomysis lingvura G. O. Sars.

Cullercoats and Seaham (A. M. N.); Whitburn (G. S. B.); Cullercoats (A. Mk.) N.D.

Fam. 4.—MYSIDÆ

Hemimysis lamornæ (Couch).

Seaham, July, 1861 (G. H.); Cullercoats and Craster (A. Mk.) N.D.

Macromysis flexuosa (Müller).

Common; tidemarks and shallow water. N.D.

Macromysis inermis (Rathke).

Cullercoats (A. M. N.); Sunderland (G. S. B.); abundant at Cullercoats, St. Mary's Island, and Craster (A. Mk.) N.D.

SCHISTOMYSIS SPIRITUS Norman.

Black Hall Rocks near Hartlepool, and off Northumberland and Durham, 1862 (A. M. N.); Cambois Bay (A. Mk.) N.D.

SCHISTOMYSIS ORNATA (G. O. Sars).

Seaham and other parts of the coast. N.D.

NEOMYSIS VULGARIS (Thompson).

River Lyne (Northumberland), Hartlepool, Port Clarence (A. M. N.); Hylton Dene (G. S. B.) N.D

SUB-CLASS II.—EDRIOPHTHALMA

ORDER V.—SYMPODA Stebbing

=CUMACEA Auct.

The chief works with relation to the British Sympoda are:—

1. Sars (G. O.). Nye Bidrag tel Kundskaben om Middelhavets Invertebratfauna, II. Cumacea (Archiv. f. Mathemat. og Naturvid. vol. iv.), 1879.
2. Sars (G. O.). Account Crustacea of Norway, vol. iii., Cumacea, 1900.

The name Cuma of Humphreys, 1795, being in use for a genus of Mollusca, the Rev. T. R. R. Stebbing has discarded it among the Crustacea, substituting for it *Bodotria* Goodsir, and for the Order Cumacea the more appropriate name Sympoda.

FAM. 1.—BODOTRIIDÆ

BODOTRIA ARENOSA Goodsir.

1843. *Bodotria arenosa*, H. Goodsir, Edinb. New Philos. Journ., vol. xxxiv., p. 9 (separate copy), pl. iii., figs. 8–13, pl. ii., fig. 17. ♂

1853. *Bodotria arenosa*, Bell, Brit. Stalk-Eyed Crust., p. 332. ♀

1866. *Cuma fusilla*, G. O. Sars, Beretning om en i Sommeren, 1865, foretagen Zoologisk Reise, p. 26.

1899. *Cuma scorpioides*, G. O. Sars, Crustacea Norway, vol. iii., Cumacea, p. 10, pls. i., ii., iii.

Thirty miles off Sunderland in 45 fathoms (G. S. B.) D.

This species is apparently fond of dry situations. Near Stocksfield, Devil's Water (G. S. B.). Two adult and many young under a stone at Winlaton. Found in colonies of the black ant (*Formica fusca*) at Hedley, near Stocksfield, and near Ebchester in the Derwent Valley (Bagnall). N.D.

ARMADILLIDIUM NASATUM Budde Lund.

1892. *Armadillidium nasatum*, Dollfus (A.), Tableaux synoptiques de la Faune Française. Le genre Armadillidium. Feuille des Jeunes Naturalistes, p. 10 (separate copy).

1899. *Armadillidium nasatum*, Norman (A. M.), British Land Isopoda. Ann. and Mag. Nat. Hist., ser. 7, vol. iii., p. 75, pl. vi., figs. 5–8,

1906. *Armadillidium nasatum*, Webb and Sillem, The British Woodlice, p. 40, pl. xxii.

Common in Mr. Cookson's orchid house at Wylam-on-Tyne; garden and cool greenhouse in Leazes Park, Newcastle-upon-Tyne; and a few taken at Alnwick (Bagnall). N.D.

SECTION VII.—EPICARIDA

FAM. 1.—PHRYXIDÆ

PHRYXUS ABDOMINALIS Kröyer.

Bate and Westwood write, "Mr. Alder has obligingly forwarded to us a specimen of the male on *Hippolyte Barleei* taken at Cullercoats on the Northumberland coast." N.

FAM. 2.—BOPYRIDÆ

PLEUROCRYPTA LONGIBRANCHIATA (Bate and Westwood).

This is *Phryxus longibranchiatus* B. and W. (vol. ii., p. 246). They write "The Rev. A. M. Norman announces it from a specimen of *Pagurus Thompsoni* dredged off Tynemouth, August, 1863." The specimen thus recorded had been examined and named by Mr. Bate, the name at that time being a MS. one. It and specimens recorded by Bate as taken on *Galathea squamifera* belonged probably to different

species. The specimen from the Northumberland coast remained in Mr. Bate's possession, so that it must be doubtful what it really was. Sars suggests, and perhaps rightly, that it was *Pseudione Hyndmanni* (Bate) (G. O. Sars, Crust. Nor., Isop., p. 207, cf. p. 203).

[It may be here mentioned that while the work of Bate and Westwood was in course of publication, species of Amphipoda and Isopoda, which could not be identified, were sent to Mr. Bate for use in his work. Manuscript names of some of these, including that of the foregoing parasitic Isopod, as well as *Heiscladus longicaudatus* and *Nænia caudadentata* were sent by Mr. Bate, and entered in the lists (Nat. Hist. Trans. North. and Dur., vol. i., 1865, p. 25), but the descriptions were never published, nor were the specimens returned. They were presumably lost, as Mr. Bate was usually very exact in the return of specimens.]

Order VI.—AMPHIPODA

Prof. A. Meek has during the last few years been doing excellent work on the Amphipoda, and the following list will show how much it owes to his researches (see Report on Scientific Investigations of Northumberland Sea Fisheries Committee, 1891, and Nat. Hist. Trans. Northumberland, Durham, and Newcastle-upon-Tyne, vol. xiv., pt. 1, p. 57); but many of his records are now first given here. At p. 256 the number of Amphipods from the two counties is given as 130, but it will be found that in the following notes more than that number are recorded; additional species having been discovered by Professor Meek.

Section I.—HYPERIIDEA

Fam. 1.—HYPERIIDÆ

Hyperia galba (Montagu)=*Lestrigonus exulans* and *Kinahani* B. & W. ♂

Occasionally taken off the coasts of Northumberland and Durham. N.D.