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British Schizopoda



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British Schizopoda of the Families Lophogastridæ and Euphausiidæ. By the Rev. Canon A. M. NORMAN, M.A., D.C.L., F.R.S., &c.

IN Bell's 'History of British Stalk-eyed Crustacea' a single species of these families was described which had been found by Couch in the stomach of a mackerel at Polperro. It was named *Thysanopoda Couchii*, Bell, and is the *Nyctiphanes Couchii* of the present paper.

In 1861 I briefly described in the Brit. Assoc. Report, from Shetland, *Otenomysis alata*, Norman, which is the *Lophogaster typicus* of M. Sars.

In 1868 I recorded in the "Last Report of Shetland Dredging" (Brit. Assoc. Report) *Thysanopoda norvegica*, M. Sars, = *Nyctiphanes norvegica* of this paper. The younger specimens there referred to subsequently proved to be referable to *Thysanoessa neglecta*, Kröyer.

In 1872 Mr. G. Sim recorded in the 'Scottish Naturalist,' as found at Aberdeen, *Rhoda Jardineana*, Sim (= *Boreophausia Raschii*, M. Sars), *Thysanoessa aberdonensis*, Sim (= *Thysanoessa neglecta*, Kröyer), and under a name *Thysanoessa borealis*, Norman (non G. O. Sars, 1882) the *Nematoscelis megalops* of the present paper. Mr. Sim wrote:—"This species [*T. aberdonensis*] is found in considerable abundance on our sandy beach in the months of March and April, along with *T. borealis*, a species named by the Rev. A. M. Norman, for the identification of which I am much obliged to that gentleman. The principal difference between *T. borealis* and *T. aberdonensis* is in the first pair of feet, which in *T. borealis* are terminated with from eighteen to twenty long sharp spines, all proceeding from the extremity of the limb, while in *T. aberdonensis* eighteen spines are arranged along the sides of the last segment of that member, and two more placed on the wrist. The body and rostrum also differ in the two species." Mr. Sim here greatly exaggerates the number of spines at the extremity of the limb, which are (usually) eight; but one of my mounted specimens might well be mistaken to have sixteen, since the animal being about to cast its skin, the whole of the new spines are seen within the old ones, and would easily deceive in such a mounted specimen if the observer was not prepared for the deception. In consequence of this inaccuracy with respect to the number of spines it appears to me that the

specific name *T. borealis* must yield to the later name *Nematoscelis megalops*, G. O. Sars.

In 1887 Professor McIntosh first recorded *Thysanoessa tenera*, G. O. Sars (= *T. longicaudata*, Kröyer), as British (Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 140).

Lastly, *Boreophausia inermis*, Kröyer, was first published as British by Messrs. Brook and Hoyle in their paper "On the Metamorphoses of British Euphausiidae" (Proc. Roy. Soc. Edinb. 1888, p. 414).

Such were the first records of the species of Lophogastridae and Euphausiidae which at the present time are known to live in our seas. As there is no account of them in any English work, and I consequently have specimens frequently sent to me to name, I have thought it desirable to write the following notes on this interesting group of oceanic Crustaceans, which are found either as surface swimmers or in deep water at some distance from land.

The descriptions of the families are in great measure condensed and slightly modified from the works of G. O. Sars.

Synopsis of Families, Genera, and Species.

Suborder SCHIZOPODA.

Legs furnished with exopodites used for swimming. In rare instances the first pair of legs formed for prehension, more usually this pair, as all the remaining legs, are simple. Ova borne below the carapace between the posterior pair or pairs of legs, usually enclosed in a marsupial sac formed by leaf-like processes which are developed from the base of the legs.

Fam. I. Lophogastridae.

Maxillipeds robust; the exopodite imperfectly developed, consisting of a single joint; the epipodite very large and projecting within the branchial cavity. First legs with terminal joint obtusely rounded, and densely hirsute; remaining legs having a well-developed nail. Branchiæ arborescent, complex, the largest branch freely projecting beneath the body, the remaining branches concealed by the carapace. Marsupium composed of seven pairs of plates. Caudal limbs (pleopods) well developed in both sexes. No phosphorescent organs. Inner uropods not furnished with an auditory apparatus at their base. Telson very large, in general form as in the *Macrura*.

Fam. II. Euphausiidæ.

Maxillipeds elongate, pediform; exopodite well developed, epipodite rudimentary or wanting. Legs without dactylus, posterior pairs more or less imperfectly developed. Branchiæ wholly exposed to view. Egg-pouch, when present, not formed of plates attached to bases of legs. Caudal limbs (pleopods) well developed in both sexes. Phosphorescent organs present at the bases of the first and of the penultimate legs and also on the abdomen between the pairs of pleopods*. Inner uropods not furnished with an auditory apparatus at their base. Telson very slender and tapering to an acute point, giving off on either side at a short distance from the extremity a very large spine-formed process, which extends far beyond the end of the telson itself.

Fam. III. Mysidæ.

Maxillipeds strong, with exopodite well developed, natatory, and the epipodite lanceolate and projecting within the branchial cavity. First legs differing from the following, used as gnathopods; remaining legs slender, usually without, rarely with, a terminal nail. No true branchiæ present. Marsupial pouch usually composed of two or three pairs † of leaf-like processes springing from the hinder pairs of legs. Pleopods in female small and rudimentary, in male natatory and often remarkably modified to assist in copulation. Inner uropods with an auditory apparatus at the base. No phosphorescent organs. Telson very variable in form, but never as in the Euphausiidæ.

Fam. I. Lophogastridæ.

Genus LOPHOGASTER, M. Sars.

Carapace tridentate in front, the lateral teeth as much developed as the central, this portion of carapace advanced in front of the eyes, the peduncles of which are completely concealed by it, and the eyes themselves are protruded on either side. Peduncle of

* The genus *Bentheuphausia* is, however, not furnished with these organs.

† In the genus *Boreomysis* there are seven pairs.

antennules remarkably broad and flattened, their inner flagella small, the outer greatly developed. Antennal scale broadly triangular, breadth subequal to length; inner margin ciliated, outer not ciliated, serrated on the edge, serrations four to six. All the legs biramous as in other Schizopoda. Telson very large and much longer than the uropods; extremity narrowly truncate, with a strong spine at each corner, between which the termination is serrated and furnished with two setæ. Outer uropods one-jointed *L. typicus*.

Fam. II. Euphausiidæ.

- All the legs subequal A.
- First legs much longer than the rest..... B.

A.

- Basal joint of antennules furnished at the extremity with an erect, conspicuous, leaf-like appendage *Nyctiphanes*.
- Basal joint of antennules without any erect leaf-like appendage at the extremity *Boreophausia*.

B.

- The long first legs having the two terminal joints armed with spiniform setæ on both margins *Thysanoessa*.
- The long first legs greatly produced and very slender, last joints naked (without any lateral setæ), the extremity terminating in a bunch of greatly developed porrected spines, these spines serrated *Nematoscelis*.

Genus NYCTIPHANES.

- A spine on side of carapace behind the middle. Rostrum nearly obsolete, ocular lobes of carapace produced into spine-like points. No dorsal spine over base of telson *N. norvegica*.
- No lateral spines on carapace. Rostrum distinct, shortly triangular, lobes of carapace over eyes not at all produced. A dorsal spine over base of telson *N. Couchii*.

Genus BOREOPHAUSIA.

- Rostrum narrow, about as long as first joint of antennules; no spine on the sides of the carapace; a spine over the base of the telson; telson longer than uropods..... *B. inermis*.

Rostrum triangular, shorter than first joint of antennules ; a spine on each side of the carapace in front of the middle ; no spine over the base of the telson ; telson subequal to or rather shorter than uropods *B. Raschii*.

Genus THYSANOESSA.

No spine on side of carapace. Antennal scale elongated and narrow, the extremity bluntly but narrowly rounded. First joint of antennules shorter than combined length of the two following joints. A spine over the base of the telson *T. neglecta*.

No spine on side of carapace. Antennal scale elongated and very narrow, inner margin gradually sloping to meet the outer, with which it unites at a terminal point. First joint of antennules longer than combined length of two following joints. No spine over the base of the telson *T. longicaudata*.

Genus NEMATOSCELIS.

No spine on sides of carapace. Eyes very large, constricted across the middle. First legs longer than the body in adult *N. megalops*.

A species has been found on the Norwegian coast—*Euphausia pellucida*, Dana (= *E. bidentata*, G. O. Sars)—which will probably be also met with in our own seas. It may at once be distinguished from all the foregoing by these characters:—

Two spines on each side of the carapace, one about the middle and the other behind it. Antennal scale broad and widely truncated at the extremity. First joint of antennules furnished with a leaf-like lappet (smaller than in *Nyctiphanes*) which is cut into two or many digital processes. The ventral preanal spine is *trifid*.

In the following list the words *Mus. Nor.* (Museum Normanianum) indicate that specimens from *all* the localities and collectors cited in the sentence preceding are in my collection. For instance, examples of *Lophogaster typicus* are in my possession from all the localities given except "South of Cape of Good Hope."

Synonymic List, with Habitats.

Suborder SCHIZOPODA.

Fam. I. Lophogastridæ.

Genus LOPHOGASTER, M. Sars, 1856,
= *Ctenomysis*, Norman, 1861.

Lophogaster typicus, M. Sars.

1856. *Lophogaster typicus*, M. Sars, Forhand. Skand. Naturf. Møde i Christiania, p. 160.
 1862. *Ctenomysis alata*, Norman, Brit. Assoc. Rep. for 1861, p. 151.
 1862. *Lophogaster typicus*, M. Sars, Christiania Universitetsprogram (Besk. over *Lophogaster typicus*, en mærkværdig form af de lavere tifføddede Krebsdyr), pp. 1-37, pls. i., ii., iii.
 1869. *Lophogaster typicus*, Norman, "Last Report Shetland Dredging," Brit. Assoc. Rep. for 1868, p. 265.
 1885. *Lophogaster typicus*, G. O. Sars, Report 'Challenger' Schizopoda, p. 14, pl. i. figs. 1-7.

Shetland, 1861 and 1868 (*A. M. N.*); 'Porcupine' Exped., 1869, Stat. 6 and 11 off S.W. of Ireland, in 90 and 1630 fath., Stat. 67 and 68 East of Shetland, 64 and 75 fath.: *Mus. Nor.*

Distribution. Bergen and Hardanger Fiords, Norway (*A. M. N.*); Fosse de Cap Breton, Bay of Biscay, 35-60 fath. (*A. M. N.*); Messina (*Zool. Stat. Naples*): *Mus. Nor.* South of the Cape of Good Hope, 98-150 fath., 'Challenger' Stats. 141, 142 (*G. O. Sars*).

Fam. II. Euphausiidæ.

Genus I. NYCTIPHANES, G. O. Sars, 1883.

1. *Nyctiphanes norvegica* (M. Sars).

1856. *Thysanopoda norvegica*, M. Sars, Forhand. Scand. Naturf. Møde i Christiania, p. 169.
 1863. *Thysanopoda norvegica*, M. Sars, "Om Slægten *Thysanopoda* og dens Norske Arter" (Christ. Vidensk. Forhand.), p. 2 (separate copy).
 1863. *Thysanopoda nana*, id. ibid. p. 15 (junior).
 1863. *Thysanopoda norvegica*, Goës, "Crust. decap. podoph. marina Sueciæ &c." (Gefvers. Vet.-Akad. Förh.), p. 13 (separate copy).
 1866. *Thysanopoda norvegica*, G. O. Sars, Beret. Sommeren 1865 foretagne Zool. Reise, &c., p. 15.
 1869. *Thysanopoda norvegica*, Norman, "Last Report Shetland Dredging," Brit. Assoc. Rep. for 1868, p. 265.
 1874. *Thysanopoda norvegica*, Buchholz, Zweite deutsche Nordpolarfahrt, vol. ii. p. 285.
 1879. *Thysanopoda norvegica*, S. I. Smith, "Stalk-eyed Crust. Atlantic Coast of N. Amer.," Trans. Connec. Acad. vol. v. p. 89.

1832. *Thysanopoda norvegica*, G. O. Sars, Oversigt af Norges Crust. i. p. 50.

1883. *Nyctiphanes norvegica*, G. O. Sars, "Prelim. Notices on Schizopoda of 'Challenger'" (Christ. Vidensk. Forhand.), p. 24 (separate copy).

1886. *Nyctiphanes norvegica*, Norman, Report Scotch Fishery Board, p. 157; and Ann. & Mag. Nat. Hist. ser. 5, vol. xix. 1887, p. 92.

Shetland, 1861; off Valentia, Ireland, 1870; Loch Fyne, 1855 (*A. M. N.*); Banff (*T. Edward*); Firth of Clyde (*D. Robertson*); East Scotland (*Prof. Ewart*); Moray Firth (*F. Scott*); Loch Goil, Loch Long (*Dr. J. Murray*): *Mus. Nor.* Firth of Forth (*J. B. Henderson*).

Distribution. Norway (*M. Sars*); Bay of Biscay (*A. M. N.*); off coast of Portugal, taken by Mr. Davidson in 'Porcupine,' 1870; 'Porcupine,' 1869, Stat. 64, lat. 61° 10' N., long. 2° 21' W.; Farøe Channel, 'Triton' Exped., 1882 (*Murray*); off Eastport, N.E. America (*S. I. Smith*): *Mus. Nor.* Lat. 75° N., long. 12° E. (*Goës*); off the Naze (*Metzger*); in great abundance off N.E. America and in Gulf of St. Lawrence (*S. I. Smith*).

2. *Nyctiphanes Couchii* (Bell).

1853. *Thysanopoda Couchii*, Bell, Hist. Brit. Stalk-eyed Crust. p. 246.

Polperro, Cornwall, stomachs of mackerel (*R. I. Couch*); Cornish coast, 1881 (*Dr. Day*); Polperro (*W. Laughrin*); Banff (*T. Edward*); off Valentia, Ireland (*A. M. N.*): *Mus. Nor.*

Nyctiphanes Couchii is quite distinct from *N. norvegica*, and specimens from all the above sources agree in the characters I here give to distinguish it from the latter species.

Nyctiphanes norvegica.—A spine on each side of the carapace behind the middle. Rostrum scarcely developed, so short as to leave the base of the eye-stalks exposed. Lobes of carapace over the eyes drawn out into slender spine-like points, these points projected as far as, or further forward than, the rostral lobe. No spine over the base of the telson.

Nyctiphanes Couchii.—A much smaller and more delicate species, usual length about 13 millim. No lateral spines on carapace. Rostrum more developed than in *norvegica*, in shape broadly and bluntly triangular, concealing the base of the eye-stalks; lobes of carapace over the eyes not produced. A spine over the base of the telson as well as a small ventral preanal spine. In the male, of which some examples occurred at Banff, the antennules, in addition to the usual reflexed membranous leaflet of the first joint, have another reflexed membranous leaflet at the end of the second joint of the

peduncle, the distal portion of the leaflet being cut into digitated processes*.

Nyctiphanes Couchii is very like *N. australis*, G. O. Sars ('Challenger' Report, p. 115, pls. xx. and xxi. figs. 1-7), except that in the former there is a spine at the base of the telson and a small preanal spine, which are absent in the latter. The male also of *N. Couchii* agrees most closely with *N. australis* in the form of the hinder margin of the carapace and the sexual developments of the pleopods (*vide* 'Challenger' Report, pl. xxi. figs. 3, 4, 6, 7). As regards the first pleopod, the likeness is not merely one of general character, but the serrated edge of the one margin and the single seta of the lateral lobe of the other margin are identical. But with respect to the male antennules, no leaflet corresponding to that of the second joint in *N. Couchii* is described or figured in *N. australis*.

Genus 2. BOREOPHAUSIA, G. O. Sars, 1883.

(*Vide* Sars, Prelim. Notices Schizopoda 'Challenger' Exped., Christ. Vidensk. Forhand. 1883, p. 11 (separate copy); but I am not aware that the genus has as yet been defined.)

1. *Boreophausia inermis* (Krøyer).

1849. *Thysanopoda inermis*, Krøyer, Voyage en Scandinavie &c., Crust. pl. vii. fig. 2 a-t.
 1856. *Thysanopoda inermis*, Krøyer, "Monog. Slægten *Sergestes*," Vidensk. Selsk. Skr. 5 Række, vol. iv. p. 294, pl. v. fig. 24.
 1879. *Thysanopoda inermis*, S. I. Smith, "Stalk-eyed Crust. Atlantic Coasts N. Amer.," Trans. Conn. Acad. vol. v. p. 91.
 1882. *Euphausia inermis*, G. O. Sars, Oversigt &c. (*l. c.*), p. 51, pl. i. fig. 15.
 1887. *Boreophausia inermis*, H. J. Hansen, *l. c.* p. 53.

Banff (*T. Edward*); Shetland, 1868 (*A. M. N.*); Moray Firth (*T. Scott*): *Mus. Nor.* Clyde district (*Brook and Hoyle*).

Distribution. West Norway (*G. O. Sars*); Eastport, N.E. America (*S. I. Smith*): *Mus. Nor.* Greenland (*Möller &c.*, *fide H. J. Hansen*); E. America from south of Cape Cod northwards (*S. I. Smith*); Gulf of St. Lawrence, as *T. neglecta* (*J. T. Whiteaves*); Spitsbergen (*Goës*).

* This leaflet is similar in general character to that attached to the first joint of the antennular peduncle in the genus *Euphausia*.

2. *Boreophausia Raschii* (M. Sars).

1863. *Thysanopoda Raschii*, M. Sars, "Om Slægten *Thysanopoda*" &c. (Christ. Vidensk. Forhand.), p. 14 (separate copy).
 1872. *Rhoda Jardineana*, G. Sim., "Stalk-eyed Crust. N.E. Coast of Scotland," in 'Scottish Naturalist,' p. 6 (separate copy), pl. iv. fig. A.
 1882. *Euphausia Raschii*, G. O. Sars, "Oversigt af Norges Crustaceer," i. (Christ. Vidensk. Forhand.), p. 51 (separate copy).
 1886. *Boreophausia Raschii*, Norman, Fourth Annual Report Fishery Board of Scotland, p. 156; Ann. & Mag. Nat. Hist. ser. 5, vol. xix. 1887, p. 91.
 1887. *Boreophausia Raschii*, H. J. Hansen, "Oversigt over det vestlige Grönlands Fauna af malac. Havkrebsdyr" (Vidensk. Middel. fra den naturh. Foren. i Kjöbh.), p. 53 (separate copy).
 Firth of Forth (*J. B. Henderson*); Loch Fyne, 70 fath. (*A. M. N.* in 'Medusa,' 1885); Lochs Goil and Long and between Cumbræ and Bute (*Dr. J. Murray*); East of Scotland (*Ewart*): *Mus. Nor.* Loch Broom (*Brook and Hoyle*); Aberdeen (*Sim*).

Distribution. Norway, Christiania Fiord (*M. Sars*), west coast (*G. O. Sars*); Greenland (*Möller &c.*, fide *H. J. Hansen*); German North Polar Exped. (*Buchholz*).

Genus 3. THYSAONESSA, F. Brandt, 1851.

1. *Thysanoessa neglecta* (Kröyer).

1849. *Thysanopoda neglecta*, Kröyer, Voyage en Scandinavie &c., Crust. pl. vii. fig. 3 a-d.
 1851. *Thysanopoda (Thysanoessa) longipes*, F. Brandt, in Middendorff's Sibirische Reise, Bd. ii. Th. i. p. 128, pl. vi. figs. 1-14.
 1872. *Thysanoessa aberdonensis*, G. Sim., "Stalk-eyed Crust. N.E. Coast of Scotland," in 'Scottish Naturalist,' p. 7 (separate copy), pl. v. figs. 1-8.
 1882. *Thysanoessa borealis*, G. O. Sars, Oversigt &c. (*l. c.*), p. 52, pl. i. figs. 16-18.
 1887. *Thysanoessa neglecta*, H. J. Hansen, *l. c.* p. 54.
 Shetland, 1861 (*A. M. N.*); Aberdeen, 1868 (*G. Sim*); Firth of Forth (*T. Scott*): *Mus. Nor.* Loch Seaforth, N.B. (*Brook and Hoyle*).

Distribution. West Norway (some of Kröyer's types from Copenhagen Museum); Eastport, N.E. America (*S. I. Smith* *): *Mus. Nor.* Western and northern Norway and Finmark (*G. O. Sars*); Siberian coast (*Brandt*); Greenland (*H. J. Hansen*).

* I found a single specimen accidentally mixed with a number of *Boreophausia inermis* which were kindly sent to me by Prof. S. I. Smith. I do not remember that it has been recorded previously from the United States.

2. *Thysanoessa longicaudata* (Krøyer).

1849. *Thysanopoda longicaudata*, Krøyer, Voyage en Scandinavie &c., 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 Grønlands Fauna af malak. Havskrebsdyr" (Vidensk. Middel. fra den naturh. Foren. i Kjöbh.), p. 54 (separate copy).

Thrown up in enormous quantity in St. Andrew's Bay, April 22, 1886, and sent to me by Prof. M'Intosh for determination, who wrote subsequently that this species, together with *Nyctiphanes norvegica*, occurred "so densely that the tidal wave was crowded with them, and miles of sand were strewn with their bodies which the receding wavelets left in streaks and curves"*. In 'The Naturalist' of this month (May 1892) Mr. Thomas H. Nelson, in his 'Ornithological Notes from Redcar,' writes (p. 144):—"February 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 bottleful of the Crustaceans for determination. The mass of them were *Euthemisto compressa*, Goës, an Amphipod allied to *Hyperia*, which had not been previously observed on our coast. There were also several examples of *Nematoscelis megalops*, G. O. Sars, and one of *Thysanoessa longicaudata*, Krøyer (*Mus. Nor.*).

Distribution. Greenland, 'Valorous' Exped., Stat. 8; Faroe Channel, 'Triton' Exped., 1882 (*Mus. Nor.*), lat. 59° N., long. 51° W. (*Olrik*, fide *Hansen*). Krøyer's original examples were from lat. 61° N., long. 13° W., and lat. 60° N., long. 11° W. (*Hansen*), Western Norway and Varanger Fiord, Finmark (*G. O. Sars*).

* Ann. & Mag. Nat. Hist. ser. 5, vol. xix. 1887, p. 140.

Genus 4. NEMATOSCELIS, G. O. Sars, 1883.

Nematoscelis megalops, G. O. Sars.

1872. *Thysanoessa borealis*, Norman, MS. in Sim, "Stalk-eyed Crust. 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' Schizopoda, p. 127, pl. xxiii. figs. 5-10, and pl. xxiv.

Nematoscelis is remarkable on account of the very great length of the first pair of feet, which are even longer than in *Thysanoessa* and differ markedly in character. In mature *Nematoscelis megalops* these legs exceed the length of the body, the meral and two following joints are very long and slender, especially the meros, and at the extremity of the meros the limb is capable of being bent back upon itself. The meros has a row on each side of small nearly appressed spinules and also several falcate-shaped spines, which look as if they might serve the purpose of grasping the propodos when bent back upon the meros. The carpus is quite smooth, the propodos is almost naked, but there are two or three small spinules towards the extremity, and at the extremity are two porrected and greatly developed spines, which, with six other similar spines springing from the last joint (dactylus?), form a remarkable terminal brush to the limb. These eight terminal spines are serrated in a very peculiar spiral manner, and the serrations point backwards. The ventral preanal spine in the Scotch examples is either bifid, as figured by Sars, or simple.

The British examples appear in all respects to agree with Sars's description and figures of *N. megalops*, except that he writes of the first legs that the meros and subsequent joints lack "every trace of marginal bristles, being quite naked throughout, save at the apex." This is not quite correct as regards the specimens I have seen. I think it well for the present to refer these to *N. megalops*; but if the form should hereafter prove distinct my name *N. borealis* can be adopted.

Specimens not full-grown have the first legs shorter than the body, the eyes smaller and with faint traces of bilobation, the antennal scale proportionately shorter, and thus come rather suspiciously near to *N. microps*, G. O. Sars.

Banff, 1862 (*T. Edward*); Aberdeen, 1868 (*G. Sim*); Firth of Forth, 1892 (*T. Scott*); Redcar, Yorkshire, April 1892 (*T. H. Nelson*): *Mus. Nor.*

In the 'Challenger' Expedition *N. megalops* was found in the middle of the South Atlantic on the line between Buenos Ayres and Tristan d'Acunha at Stations 331, 332, and 333. It was also taken in the North Atlantic off Nova Scotia.