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(BEING A CONTINUATION OF THE 'ANNALS' COMBINED WITH LOUDON AND CHARLESWORTH'S 'MAGAZINE OF NATURAL HISTORY.')

CONDUCTED BY

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1877.

side greyish fawn-colour; both wings with transverse, pale-bordered, brown discocellular streak, a straight discal and a lunular submarginal band; the discal band on fore wing short, the discal band on hind wing straight till where it reaches the sinuous angle; two anal, black-centred, bright orange spots. Cilia whitish.

Exp. $1\frac{3}{10}$ inch.

Hab. Masuri, N.W. Himalaya (*Capt. Lang*). In coll. F. Moore.

Distinguished from *D. ziha* (of which, at present, I know only the female) in the underside being differently coloured, the submarginal band on fore wing being uniform in colour and without the terminal spots, and in the discal transverse band on hind wing being quite straight to where the sinuous portion turns off to abdominal margin.

Fam. **Hesperidæ.**

Pamphila Mencia.

Male and *female.* Upperside dark glossy olive-brown: fore wing of male with a curved discal series of five small yellowish spots, and with a contiguous oblique prominent narrow streak; two small spots also at end of the cell: hind wing with a discal series of three indistinct spots. Female differs in the absence of the oblique narrow discal streak on fore wing and the spots on the hind wing. Underside paler, longitudinally streaked with grey; spots the same; sexual streak on male not visible.

Exp. $1\frac{6}{10}$ inch.

Hab. Shanghai. In coll. W. B. Pryer and F. Moore.

In this species the wings are much broader than in *P. sinensis* (Mabille), and the hind wing is not lobed as in that species.

V.—*Report on the Crustacea collected by the Naturalists of the Arctic Expedition in* 1875–76. By Edward J. Miers, F.L.S., F.Z.S., Assistant in the Zoological Department, British Museum.

[Plates III. & IV.]

The Crustacea collected by the naturalists of H.M.SS. 'Alert' and 'Discovery,' although not including many novelties, are of great interest on account of the high and hitherto unexplored latitudes reached by the late Arctic Expe-

dition. The number of species may appear small in comparison with the results of the late German expedition to the North Pole, or with those published in the Preliminary "Report of the Biological Results of the Cruise of the Valorous:" but in the case of the latter expedition the collections were made on the coast of Western Greenland and in Davis Straits, many degrees to the southward, and under conditions much more favourable to the production of animal life; and as regards the former, the species actually collected in the Polar Sea were few in number compared with those obtained on the east coast of Greenland.

In accordance with a suggestion of Captain Feilden, the following account of the collections of Crustacea is confined to the species collected between lat. 78° and 84° N. The few specimens of Crustacea brought home by the Expedition from localities south of 78° N. lat. which were in the collection intrusted to me, can be omitted without in any degree detracting from the chief interest of this report as an account of the fauna of a region hitherto unexplored by the carcinologist.

The most northerly species collected is *Anonyx nugax*, one of the commonest and most abundantly distributed of the Arctic Amphipoda, and first made known to science a hundred years ago by Phipps (Voy. toward the North Pole). Of this species a fine adult male example, and several smaller ones, were collected by Captain Markham and Lieut. Parr, at 83° 19′ N. lat., in May 1876, at a depth of 72 fathoms (bottom mud, containing Foraminifera). The next most northerly species, a large specimen of the well-known *Hippolyte aculeata*, was found on the shore of Dumb-bell Harbour, Grinnell Land, in lat. 82° 30′ N.

The following are the principal stations at which Crustacea were collected by the naturalists of the 'Alert' and 'Discovery':—

Floeberg Beach, the winter quarters of H.M.S. 'Alert,' from September 1875 to July 1876, in 82° 27′ N. lat. Captain Feilden states that the only means of obtaining Crustacea at this point was by letting down baited nets through the firehole, and in July through cracks made in the floe.

Discovery Bay, winter quarters of the 'Discovery,' in 81° 44′ N. lat. The Crustacea collected at this locality were obtained by dredging at a depth of 5½ to 25 fathoms, in August 1875–76. (The bottom rocky.)

Cape Fraser, Grinnell Land, in 79° 44′ N. lat. Crustacea were collected at a depth of 20 fathoms, in August 1876. (Bottom stony.)

Dobbin Bay, Grinnell Land, in 79° 40′ N. lat. The Crus-

tacea were collected at a depth of 30 fathoms, in August 1876. (Bottom consisting of stones and mud.)

Cape Louis Napoleon, a prominent headland of Grinnell Land, in lat. 79° 38′ N. The Crustacea were obtained at a depth of 25 fathoms, in August 1876.

Franklin-Pierce Bay, Grinnell Land, in 79° 29′ N. lat. Crustacea were collected at a depth of 15–20 fathoms, in August 1875.

Dr. Lütken, in his valuable "List of the Crustacea of Greenland," published in 1875, in the 'Manual of Instructions for the Arctic Expedition,' enumerates 184 species of Crustacea and Pycnogonida; and Norman, in the 'Report on the 'Valorous' Expedition,' gives 249 as the number of species belonging to the West-Greenland fauna alone, no fewer than 113 species having been collected in Davis Straits and on the west coast of Greenland by that Expedition. Only 31 species were collected by the Arctic Expedition in Smith Sound and the seas to the northward; whence it is evident that in the highest latitudes there is a great decrease in the number of *species* of Crustacea, which is but partially compensated for by the increase in number of the *individuals* of certain well-known species which attain a much larger size than specimens of the same species collected in lower latitudes. From the Table appended it appears that this decrease is mainly in the orders Amphipoda and marine Ostracoda. Of the latter group no species were collected by the naturalists of the 'Alert' and 'Discovery.'

The following Table exhibits, (I.) the number of species obtained during the 'Valorous' cruise on the west coast of Greenland and in Davis Straits; (II.) the number mentioned by Buchholz as occurring on the south and west coasts of Greenland; (III.) the number obtained by the British Arctic Expedition north of lat. 78° N. in Smith Sound and on the coasts of Grinnell Land:—

	I.	II.	III.
Brachyura	3		
Anomura	1		
Macrura	11	6	9
Stomatopoda	..	1	1
Cumacea	6		
Isopoda	7	2	4
Amphipoda	39	21	12
Phyllopoda	3	1	1
Ostracoda	34		
Copepoda	2	1	1
Cirripedia	4	1	1
Pycnogonida	3	3	2
	113	36	31

Of actual novelties not many were obtained during the expedition. A marked variety (which may prove to be a distinct species, although I do not consider it as such) of *Arcturus baffini*, a new species of parasitic Copepoda of the genus *Lernæopoda*, occurring upon the gills of the new Charr described by Dr. Günther under the name of *Salmo arcturus*, and a variety of the well-known *Nymphon hirtum*, complete the list.

One of the most interesting species obtained is the extraordinary Isopod, *Munnopsis typica*, Sars, originally discovered at great depths in the fjords of Norway and at the Lofoten Islands, and since obtained at a depth of 100 fathoms in Davis Straits, during the cruise of the 'Valorous.' Of this species several specimens were obtained off Capes Fraser and Napoleon at 20–50 fathoms. *Cetochilus septentrionalis*, which was collected abundantly south of Smith Sound, was not found north of the entrance to that channel; but specimens of a delicate species of Phyllopoda, which I refer to the *Branchinecta arctica* of Verrill, were collected by Mr. Hart in a small freshwater lake and in a stream under ice so far to the northward as Discovery Bay.

Geographical Distribution.—This has been already discussed in some detail by Buchholz (*l. c.*). The Crustacean fauna of Greenland, Spitzbergen, and the Scandinavian peninsula has been so thoroughly elucidated of recent years, through the labours of the Danish, Swedish, and Norwegian naturalists, that it is not surprising that a large proportion of the Arctic species (including, as will be seen from the following Table, nearly all collected by the British expedition) should have been recorded from these localities. Comparatively few Arctic species inhabit the North British seas; nor is it probable that their number will be greatly increased, the Crustacea of the Shetlands having been carefully investigated by the Rev. A. M. Norman, in his recently published report on the dredging-operations carried on in these islands, and that of the coast of Scotland generally by the researches of local naturalists.

For our knowledge of the Crustacea inhabiting the coasts and islands of Arctic America, we have for data only the reports appended to the earlier British voyages to the Arctic regions, and for those of North-eastern Asia, Brandt's account of the Crustacea in Middendorff's 'Sibirische Reise,' vol. ii. While a large number of the species inhabiting the northern seas of Europe and Eastern America are probably restricted in their range to the North-Atlantic basin, I believe, when the Crustacea of the north coasts of America and Asia become better known it will be found that the hardier species, which

Geographical Distribution of the Crustacea collected by the Arctic Expedition North of Lat. 78° N.

Names of the Species collected.	Greenland†.	Arctic America‡.	Iceland.	Spitzbergen.	Scandinavia.	Britain.	N.E. Asia.	Other localities.
DECAPODA.								
Cheraphilus boreas	*	*	*	*	*	..	*	California.
Sabinea septemcarinata	*	*	..	*	*	*	*	
Hippolyte Gaimardii	*	*?	*	*	*			
—— spinus	*	*	..	*	*	*		
—— turgida	*	..	..	*	*			
—— Phippsii	*	..	..	*	*			
—— polaris	*	*	..	*	*			
—— borealis	*	*	..	*	*			
—— grœnlandica	*	*	..	..	..	..	*	
STOMATOPODA.								
Mysis oculata	*	..	..	*				
ISOPODA.								
Arcturus baffini	..	*	*	*	..	..	..	Färö Islands.
——, var. Feildeni	..	..	..	..				
Gyge hippolytes	*	..	..	*	*	*		
Phryxus abdominalis	*	..	..	*	*	*		
Munnopsis typica	..	..	..	*	*	..	..	Davis Straits.
AMPHIPODA.								
Anonyx nugax	*	*	*	*	*	*	*	
—— gulosus?	*	..	*	*	*	*	..	South Europe?
Onesimus Edwardsii	*	..	..	*	..	*		
Atylus carinatus	*	..	..	*				
Acanthozone hystrix	*	*	..	*	*			
Halirages fulvocinctus	*	..	..	*	*			
Gammarus locusta	*	*	*	*	*	*	*	South Europe.
Gammaracanthus loricatus	*	*	..	*	*			
Amathilla pinguis	*	..	..	*				
Eusirus cuspidatus	*	..	..	*	*			
Tritropis aculeata	*	*	..	*	*			
Ægina spinosissima	*	*?	..	*	*	..	..	Great Manan, Colorado.
PHYLLOPODA.								
Branchipus (Branchinecta) arcticus	*	*						
COPEPODA.								
Lernæopoda arcturi, n.								
CIRRIPEDIA.								
Balanus porcatus	*	..	*	*	*	*	..	Maine, Massachusetts; China?
PYCNOGONIDA.								
Nymphon hirtum	*	*	..	*				
——, var. obtusidigitum								
—— Strömii	..	..	..	..	*			

† Including the Crustacean fauna of the southern, western, north-eastern, and eastern coasts. For information with respect to the particular species inhabiting these coasts I must refer to the table given by Buchholz (*l. c.*).

‡ With particular reference to the northern coasts and islands adjacent. These localities are important as showing the tendency to a circumpolar distribution observable in many species, and are not given by Buchholz. Further particulars are mentioned in the text.

increase in size and number as regards individuals in the highest latitudes, range over a zone comprehending the whole circumpolar or *Arctic* region, as has been already suggested by Dana, in the second volume of his work on the Crustacea collected by the United-States Exploring Expedition under Commodore Wilkes (pp. 1554, 1579), corresponding to the *Antarctic* region of the same author.

It has been thought useful to give, in the synonyma, full references to the earlier British Polar voyages and Arctic expeditions wherein lists of the Crustacea collected are published; but reference is only made to the principal works of the Danish and Scandinavian naturalists, by whose labours our knowledge of the lower orders of the Crustacea has been so greatly increased.

A small collection of Crustacea made by A. C. Horner, Esq., while on board the yacht 'Pandora,' which has been placed in my hands for examination, contains only two species collected north of lat. 78°, *i. e.* three specimens of *Atylus carinatus*, and four very small specimens of an Amphipod, perhaps belonging to the genus *Pherusa*. Both these species were collected at a depth of 7 fathoms on a clay bottom, in Pandora Habour, Smith Sound, in lat. 78° 17′ N.

DECAPODA.

Crangonidæ.

Cheraphilus boreas.

Cancer boreas, Phipps, Voy. North Pole, p. 190, pl. xii. fig. 1 (1774).
Cancer homaroïdes, O. Fabr. Fauna Grœnlandica, p. 241 (1780); Mohr, Isl. Naturh. p. 108. no. 245, pl. v. (1786).
Crangon boreas, Fabr. Ent. Syst. Suppl. p. 410 (1798); Sabine, Parry's 1st Voy. Append. no. x. p. 57 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 120 (1826); 4th Voy. p. 205 (1828); Ross and Owen, Crust. in Append. Ross 2nd Voy. p. lxxxi (1835); M.-Edw. Hist. Nat. Crust. ii. p. 342 (1837); Krøyer, Nat. Tidsskr. iv. p. 218, pl. iv. figs. 1–14 (1842–43); Brandt, Crust. in Middendorff's Sibirische Reise, p. 114 (1851); Bell, Crust. in Belcher, 'Last of the Arctic Voyages,' ii. p. 402 (1855); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarfahrt, ii. p. 271 (1874).
Cheraphilus boreas, Kinahan, Proc. Royal Irish Acad. viii. p. 68 (1864).

Coll. Feilden: Discovery Bay, lat. 81° 44′ (both males and females), at depth of 25 fathoms; Cape Napoleon, one male example, at 25 fathoms; Franklin-Pierce Bay, one female, at 15 fathoms: temperature of water 29°·50.

In the large series of this species collected, the females are uniformly larger than the males and more robust, the frontal lobe,

the spines at the antero-lateral margins of the carapace, and the teeth of the median dorsal carina less prominent and acute; the outer lamina of the antennæ is of a more broadly oval shape; the inner ramus of the first to fifth pairs of the postabdominal appendages, which in the male is quite small, in the female is, with the outer ramus, flattened and largely developed, and furnished with long marginal cilia, to which the ova adhere by the viscous matter which retains the whole mass *in situ*. The length of the largest female slightly exceeds 4 inches (103 millims.); that of the largest male is only $2\frac{2}{3}$ inches (68 millims.). The dark purple longitudinal stripes on the segments of the postabdomen are generally much more distinct in the males than in the females.

This species is found in great abundance throughout the high northern and Arctic latitudes—occurring upon the Scandinavian coasts, Greenland, Iceland, Spitzbergen, the north coast of North America (Port Bowen, Igloolik, Felix Harbour, Melville Island), and Kamtschatka. California, I may add, is mentioned as a habitat of this species by Owen and Ross in the Appendix to Ross's Second Voyage, on the authority of specimens collected during the voyage of the 'Blossom.'

Sabinea septemcarinata.

Crangon septemcarinatus, Sabine, Append. no. x. of Capt. Parry's 1st Voy. p. 58, pl. ii. figs. 11–13 (1821); Ross, Append. Capt. Parry's 4th Voy. p. 205 (1828); Milne-Edw. Hist. Nat. Crust. ii. p. 343 (1837); Brandt, Crust. in Middendorff, Sibirische Reise, p. 114 (1851).

Sabinea septemcarinata, Owen and Ross, Crust. in Append. Ross's 2nd Voy. p. lxxxii (1835); Miers, Ann. & Mag. Nat. Hist. (ser. 4) xix. p. 133 (1877).

Sabinea (*Crangon*) *septemcarinata*, Kröyer, Nat. Tidsskr. iv. p. 244, pl. iv. figs. 34–40, pl. v. figs. 41–44 (1842–43).

Coll. Feilden: Discovery Bay, 25 fathoms, abundantly, both males and females; Cape Napoleon, 25 fathoms, three specimens, males.

Coll. Hart: Dobbin Bay, at a depth of 30 fathoms, one specimen, a female with ova.

The differences between the sexes in *S. septemcarinata* are less marked than in the preceding species. The females are but little larger than the males; and the rami of the appendages of the postabdomen differ but slightly in the two sexes (see Kröyer, Nat. Tidsskr. *l. c.* figs. 43, 44). In small specimens the fourth segment of the postabdomen has a small spine at its infero-lateral angle, which is usually absent in the adult. Among the large number of specimens collected there is but a single female with ova. Length of this, the largest specimen, 2 inches 6 lines (nearly 64 millims.).

This species is probably as widely, but less abundantly distributed than *C. boreas* throughout the circumpolar region. It occurs on the coasts of Arctic America (Igloolik, Felix Harbour), the Shetlands, Norway, Greenland, and Spitzbergen; and its range extends eastward to Kamtschatka (Ryan).

ALPHEIDÆ.

Hippolyte Gaimardii.

Hippolyte Gaimardii, Milne-Edw. Hist. Nat. Crust. ii. p. 378 (1837); Kröyer, Nat. Tidsskr. 1 R. iii. p. 572 (1840–41); Monogr. Fremst. Slægt. Hippolyte's nordiske Arter, p. 74, pl. i. figs. 21–29 (1842); Goës, Œfv. Vet. Akad. Förhandl. p. 168 (1863).

Hippolyte gibba, Kröyer, Nat. Tidsskr. 1 R. iii. p. 572 (1840–41); Monogr. Slægt. Hippolyte's nord. Arter, p. 80, pl. i. fig. 30, pl. ii. figs. 31–37 (1842).

? *Hippolyte Belcheri*, Bell, Crust. in Belcher, 'Last of the Arctic Voyages,' ii. p. 402, pl. xxxiv. fig. 1 (1855).

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, one female specimen.

A single specimen (female with ova) was collected by Mr. Hart. Length 2 inches 2 lines (55 millims.). The front margin of the carapace is armed with two spines—one below the eyes, and one (very small) at the junction of the anterior and inferior margins of the carapace. The rostrum slightly exceeds in length the scale of the antennæ, is slightly directed upward at the distal extremity, and is $\frac{9}{4}$-toothed, the teeth on the upper margin becoming more crowded toward the distal extremity. The third segment of the postabdomen is without a compressed dorsal carina. The eyes are obconical. The outer maxillipeds do not reach to the apex of the antennal scale.

The dorsal tubercle or carina is, according to Goës (*l. c.*), generally characteristic of the males of this species, to which he refers the *H. gibba* of Kröyer and *H. Belcheri* of Bell.

Hippolyte Gaimardii is very generally distributed on the high-northern coasts and islands of Europe. It has been recorded from the shores of Norway, Finmark, Spitzbergen, Iceland, Greenland; also Arctic America, if the *H. Belcheri* of Bell belong to this species. Its author describes it as having but "a single tooth at the outside of the orbilar notch."

Hippolyte spinus.

Cancer spinus, Sowerby, Brit. Miscell. p. 47, pl. xxiii. (1806).

Alpheus spinus, Leach, Ed. Encycl. vii. p. 431 (1813–14); Linn. Trans. xi. p. 347 (1815).

Hippolyte Sowerbæi, Leach, Mal. Pod. Brit. pl. xxxix. (1815–17).

Hippolyte Sowerbei, Owen and Ross, Crust. in Append. Ross 2nd Voy. p. lxxxiii, pl. B. fig. 2 (1835); Kröyer, Monogr. Fremst. Slægt. Hippolyte's nord. Arter, p. 90, pl. ii. figs. 45–54 (1842).

Hippolyte Sowerbyi, M.-Edw. Hist. Nat. Crust. ii. p. 380 (1837).

Hippolyte spinus, Bell, Brit. Crust. p. 284 (1855).

Coll. Feilden: Discovery Bay, 5 specimens, at 25 fathoms.

This species is distinguishable at first sight by its compressed lamellate rostrum, the high and stongly dentated median dorsal carina, &c. As in *Hippolyte turgida*, there are four spines upon the

anterior margin of the carapace, two of which are placed above the eye-peduncle. The length of the largest specimen is 2 inches 4 lines (59 millims.). All the specimens in the collection are females; but only one bears ova.

H. spinus occurs on the British and Scandinavian coasts, at Greenland, Spitzbergen, and on the shores of Arctic America (Felix Harbour).

Hippolyte turgida.

Hippolyte turgida, Kröyer, Monogr. Fremst. Slægt. Hippolyte's nordiske Arter, p. 100, pl. ii. figs. 57–58, pl. iii. figs. 59–63 (1842); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 273 (1874).

Coll. Feilden: Discovery Bay, 25 fathoms, one specimen, female; Franklin-Pierce Bay, one specimen, female with ova.

Coll. Hart: Cape Fraser, 20 fathoms, one female example.

This species is remarkable on account of the turgid form of the body, and the convexity of the dorsal surface of the carapace. From *H. polaris* (with some varieties of which species it might be confounded on first comparison) it is distinguished by the existence of an additional spine upon the anterior margin of the carapace above the eye-peduncle. The only perfect example obtained (a female) has the rostrum $\frac{1}{6}$-toothed. Length about 1 inch 10 lines (47 millims.).

Goës, who had examined 100 specimens of this species, did not find a single male in the series; and he considered it to be the female of the *Hippolyte Phippsii* of Kröyer. By Buchholz the differences are not regarded as sexual, as he states that he had observed two male individuals of *H. turgida*, and a female of *H. Phippsii*; but he nevertheless considers the two forms probably varieties of one and the same species.

Although this species has not been noted by any of the earlier Arctic voyagers, it may not improbably, in some instances, have been confounded with *H. polaris*, to which, as stated above, it bears some external resemblance.

Its occurrence has been recorded on the coasts of Greenland, Spitzbergen, and Norway.

Hippolyte Phippsii?

? *Hippolyte Phippsii*, Kröyer, Nat. Tidsskr. 1 R. iii. p. 575 (1840–41); Monogr. Fremst. Slægt. Hippolyte's nordisk. Arter, p. 106, pl. iii. figs. 64–68 (1842); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 274 (1874).

Coll. Hart: Cape Fraser, 20 fathoms, one specimen.

A single specimen of a species of *Hippolyte* is in the collection, which I refer with but little hesitation to this species. The only point in which it differs from Kröyer's diagnosis is in the absence of the second minute supraocular spine; and this may well be a point of less than specific importance.

The rostrum is slender and straight, of the form figured by Kröyer (*l. c.*), and has ten very small teeth on its upper and five near the distal extremity of its inferior margin. Length nearly 1 inch 4 lines (33 millims.).

This species is found on the shores of Finmark, Spitzbergen, and Greenland.

Hippolyte polaris.

Alpheus polaris, Sabine, Append. Parry's 1st Voy. no. x. p. 60, pl. ii. figs. 5–8 (1821); Ross, Append. Parry's 4th Voy. p. 206 (1828).

Hippolyte polaris, Ross and Owen, Append. Ross's 2nd Voy. Zool. Crust. p. lxxxv (1835); M.-Edw. Hist. Nat. Crust. ii. p. 376 (1837); Kröyer, Monogr. Fremst. Slægt. Hippolyte's nordiske Arter, p. 116, pl. iii. figs. 78–81, pl. iv. fig. 82 (1842); Bell, in Belcher, 'Last of the Arctic Voyages,' ii. p. 401 (1855); Goës, Œfv. Vet. Akad. Förhandl. p. 169 (1863); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 275 (1874).

Coll. Feilden: Discovery Bay, 25 fathoms, abundant; Cape Napoleon, five specimens; Franklin-Pierce Bay, 15 fathoms, two specimens.

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, several specimens; Dobbin Bay, 30 fathoms, one specimen.

In this species there are three or four spines in a median series on the back of the carapace, and three spines upon its anterior margin, one above and one below the eyes, and one at the junction of the anterior and inferior margins. The rostrum is toothed above and below, and acute at the extremity, which is directed somewhat upward. The number of teeth on the upper and lower margins, however, is very variable, averaging 7–9 on the upper, and 3–4 on the lower margin. In one specimen the rostral teeth $= \frac{10}{5}$, in another $\frac{6}{3}$. Kröyer, in the diagnosis of this species in his monograph of the genus *Hippolyte* (p. 121), gives $\frac{6-7}{2-3}$ as the number of the rostral teeth; but this is somewhat below the average. The length of the largest specimen (a female with ova) is 2 inches 7 lines (66 millims.). In this specimen the rostral teeth $= \frac{9}{6}$.

I have observed no distinctive sexual characters in the individuals collected, although a greater number were obtained of this species than of any other in the genus. There are a large number of females with ova; and perhaps all the specimens are of this sex. According to Buchholz, who observed a nearly equal number of specimens of both sexes, the females are generally larger than the males, and have the upper antennæ shorter.

This species occurs abundantly on the coasts of Greenland and Spitzbergen, and is also found on the shores of Norway and the Province of Finmark and Arctic America (Melville Island).

Hippolyte borealis.

Hippolyte borealis, Owen, Append. Ross's 2nd Voy. Crust. p. lxxxiv, pl. B. fig. 3 (1835); M.-Edw. Hist. Nat. Crust. ii. p. 372 (1837)

Kröyer, Monogr. Fremst. Slægt. Hippolyte's nordiske Arter, p. 122, pl. iii. figs. 74–77 (1842); Bell, in Belcher, 'Last of the Arctic Voyages,' ii. p. 400 (1855); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarfahrt, p. 276 (1874).

Coll. Feilden: Discovery Bay, at 25 fathoms, several specimens; Cape Napoleon, at 25 fathoms, two specimens; Franklin-Pierce Bay, at 15 fathoms, three specimens.

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, four specimens; Dobbin Bay, 30 fathoms, one specimen.

This species is characterized by its elongate, slender, horizontal rostrum, the upper margin of which is straight and entire; upon the lower margin, near the apex, there are usually 3–4 small teeth; in several specimens there are 5, in one or two specimens only 2 teeth on the lower margin. There are two spines on the anterior margin of the carapace, one above and one below the eye. Length of the largest specimen collected, 2 inches 3 lines (57 millims.).

There is not among the specimens of this species a single female with ova; it is probable that all are of the male sex. No females were collected by the German Arctic Expedition, under Captain Koldewey; and Goës (Œfv. Vet. Ak. Förhandl. 1863, p. 170) states that he has never observed any among the large number of specimens examined by him.

By Goës (Œfv. Vet. Ak. Förh. p. 170, 1863) this species is considered identical with *H. polaris*; and by Buchholz (*l. c.*) it is not thought to be more than a variety. That the differences between the two forms are not sexual, as might have been surmised, would seem to be proved by the fact that Buchholz mentions the occurrence of males and females of *H. polaris* in nearly equal numbers. For the present I think it desirable to regard the two forms as distinct species. The differences are at least as great as those between many other species of the genus; and no strictly intermediate varieties have been observed.

The geographical range of *H. borealis* is the same as that of *H. polaris*.

Hippolyte grœnlandica.

Astacus grœnlandicus, J. C. Fabricius, Syst. Ent. p. 416 (1775).
Cancer aculeatus, O. Fabr. Fauna Grœnlandica, p. 289 (1780).
Alpheus aculeatus, Sabine, Zool. in Append. Parry's 1st Voy. p. 59, pl. ii. figs. 9, 10 (1821); Ross, Append. Parry's 3rd Voy. p. 120 (1826); 4th Voy. p. 206 (1828).
Hippolyte aculeata, Owen and Ross, Crust. in Append. Ross's 2nd Voy. p. lxxxiii (1835); M.-Edw. Hist. Nat. Crust. ii. p. 380 (1837); Owen, Crust. in Beechey's Voy. 'Blossom,' p. 88 (1839); Kröyer, Monogr. Fremst. Slægt. Hippolyte's nordiske Arter, p. 126, pl. iv. figs. 83–98, pl. v. figs. 99–104 (1842); Brandt, in Middendorff, Sibirische Reise, Krebse, p. 118 (1851); Bell, Crust. in Belcher, 'Last of the Arctic Voyages,' p. 401 (1855).
Hippolyte armata, Owen, Crust. in Beechey's Voy. 'Blossom,' p. 88, pl. xxvii. fig. 2 (1839), ♀.
Hippolyte cornuta, Owen, Crust. Beechey's Voy. 'Blossom,' p. 89, pl. xxviii. fig. 2 (1839), ♂.

Coll. Feilden : Dumb-Bell Harbour, lat. 82° 30′, one female specimen.

Coll. Hart : Franklin-Pierce Bay, 13–15 fathoms, one male specimen.

In this species the rostrum is short and slender, there is a strongly 4-dentate median dorsal carina, three strong spines on the anterior margin of the carapace, and the segments of the postabdomen are strongly spined upon their inferior lateral margins. The largest specimen collected has the rostrum, anterior to the front margin of the carapace, $\frac{2}{2}$-toothed; the length of this specimen is 2 inches 10 lines (72 millims.). In the male, length 2 inches 4 lines (59 millims.), the segments of the postabdomen (especially the second segment) are narrower on the sides, and the lateral spines much longer.

H. grœnlandica occurs on the coasts of Greenland, Arctic America (Port Bowen, Melville Island), and in the seas of Kamtschatka and Okhotsk.

STOMATOPODA.

Mysidæ.

Mysis oculata.

Cancer oculatus, O. Fabr. Fauna Grœnlandica, p. 245. no. 222 (1780).
Mysis Fabricii, Leach, Trans. Linn. Soc. xi. p. 350 (1815).
Mysis oculata, Kröyer, Nat. Tidsskr. ii. p. 255 (1838-9) ; 3 R. i. pp. 13, 41 (1861) ; Voy. en Scand. Crust. Atlas, pl. viii. fig. 2 ; Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 284 (1874).

Coll. Feilden : Cape Napoleon, 25 fathoms (temperature of water 29°·2).

The single specimen collected is in a very much mutilated condition. Its length is nearly 10 lines (20 millims.).

It occurs on the coasts of Greenland and Spitzbergen.

ISOPODA.

Arcturus baffini.

Idotea baffini, Sabine, Append. Capt. Parry's 1st Voy. p. 50, pl. i. fig. 4–6 (1821) ; Ross, Append. Capt. Parry's 3rd Voy. p. 117 (1826) ; 4th Voy. p. 203 (1828).
Arcturus tuberculatus, Latr. in Cuvier's Règne Animal (ed. 2), iv. p. 139 (1829).
Arcturus baffini, Westwood, Trans. Entom. Soc. Lond. i. p. 72 (1836) ; M.-Edw. Hist. Nat. Crust. iii. p. 123, pl. xxxi. fig. i. (1840) ; Bell, in Belcher, 'Last of the Arctic Voyages,' ii. p. 408 (1855).

Coll. Feilden : Cape Napoleon, at 25 fathoms, two specimens, male and female.

Coll. Hart : Dobbin Bay, 30 fathoms, one male and one female ; Franklin-Pierce Bay, 13–15 fathoms, four males and one female ; same locality, depth not stated, two females and many young.

Two very distinct varieties of this species are in the collection.

In one, which may be considered the typical, and which is probably also the commonest condition of the species, the body is of a compact, robust form; the head, and each of the segments of the body, is armed with a pair of conical erect spines, which are smaller upon the posterior segments; on the terminal segments, in lieu of spines, are two small tuberculiform prominences. The coxæ of the last three pairs of legs project laterally, and are acute at the extremity. The spines vary considerably in size; in the largest individual, a female, obtained by Mr. Hart at Franklin-Pierce Bay, length nearly 2 inches 6 lines (63 millims.), the spines on some of the segments are reduced to little more than prominent tubercles. This specimen bears a thickly clustered brood of young upon the peduncles of the large outer antennæ; in these young individuals scarcely any traces exist of tubercles or spines; they average $3\frac{1}{2}$ lines in length.

Var. *Feildeni*. Pl. III. fig. 1.

Coll. Feilden: Floeberg beach, 82° 27′ N. lat., very abundant, males, females, and young; near winter quarters of H.M.S. 'Alert,' 82° 26′ 22″ N. lat., one specimen.

In this variety, to which belong the specimens from Floeberg beach, the head and first four segments of the body are smooth, or with only the most obscure indications of tubercles; on the fifth to seventh segments, and on the first two postabdominal segments is a pair of small tubercles occupying the place of the prominent spines of the preceding variety; the terminal segment is usually quite smooth; the coxæ of the last three pairs of legs are less prominent and acute than in that which I have considered the typical form of the species. In the young animals (of which a large number were collected), the tubercles on the first four segments are sometimes clearly distinguishable. Adult specimens of both sexes were collected, the males in greater abundance. It is worthy of note, that among all the specimens collected at this locality not one exhibits any approach to the variety from Cape Napoleon.

This variety cannot, however, be regarded as a distinct species, on account of the tendency to variation in the length of the spines of the preceding form; there is, moreover, in the collection of the British Museum a specimen from Baffin's Bay, in which the spines upon all the segments are reduced to tubercles.

This common Arctic species occurs on the northern coast of America (Port Bowen), at Spitzbergen, the Färö Islands, and Iceland.

Gyge hippolytes.

Bopyrus hippolytes, Kröyer, Kongl. Dansk. Vidensk. Selsk. Afhandl. vii. p. 306, pl. iv. fig. 22 (1838); Voy. en Scand. Atlas, Crust. pl. xxviii. fig. 2 ♂ & ♀; M.-Edw. Hist. Nat. Crust. iii. p. 283 (1840).

Gyge hippolytes, Spence Bate and Westwood, Hist. Brit. Sessile-eyed Crust. ii. p. 230 (1868); Buchholz, in Koldewey, Zweite deutsche Nordpolarfahrt, Crust. p. 286 (1874).

Coll. Feilden: Discovery Bay (on *Hippolyte polaris*).

A male and female example of this curious Bopyrid Crustacean occurred in the collection, parasitic upon a specimen of *Hippolyte polaris*, and occupying the position in which it is usually found, *i. e.* a cavity beneath the carapace, at the angle formed by the junction of the posterior and lateral margins (*vide* Buchholz, 'Zweite deutsche Nordpolarfahrt,' Crust. p. 286). This cavity was nearly filled with the minute yellowish ova of the parasite. The animal agrees in all respects with the excellent figure given by Kröyer (Voy. en Scandinavie, pl. xxviii. fig. 2), except that in the minute male I have examined the body is more closely articulated, and the sutures defining the first two postabdominal segments are distinctly visible under the microscope. The length of the female is nearly 5 lines (10 millims.), that of the male about 1 line (2 millims.).

The *Gyge hippolytes* occurs, if we may judge from the few recorded localities, over a very extended geographical area; its existence has probably been unnoticed in many instances by the earlier observers. It occurs on the coasts of Greenland and Spitzbergen (on *Hippolyte polaris*), Norway (on *H. Sowerbœi*), and the British coasts, at Galway (on *H. varians*) and Cornwall.

Phryxus abdominalis.

Bopyrus abdominalis, Kröyer, Nat. Tidsskr. iii. pp. 102, 289, pls. i., ii. (1840); Voy. en Scand. Crust. Atlas, pl. xxix. fig. 1.

Phryxus hippolytes, Rathke, Nova Acta Nat. Curios. xx. p. 40, pl. ii. figs. 1–10 (1843).

Phryxus abdominalis, S. Bate and Westwood, Hist. Brit. Sessile-eyed Crust. ii. p. 234 (1868); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarfahrt, p. 287 (1874).

Coll. Feilden: Discovery Bay, male and female, on *Hippolyte polaris*; Cape Napoleon, male and female, on *H. polaris*.

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, five males and five females.

The females in the collection were found in the usual position beneath the second and third postabdominal segments of the *Hippolyte*, and the minute male was in each instance detected upon the body of the female.

It occurs frequently on the coasts of Norway and Finmark (on several species of *Hippolyte* and *Pandalus annulicornis*), Greenland (on *H. turgida*), Spitzbergen, and the northern, eastern, and southern coasts of Britain (on *Hippolyte pusiola*, *H. Barleei*, and *Pandalus annulicornis*). Its range is evidently quite as extended as that of the foregoing species.

Munnopsis typica.

Munnopsis typica, Sars, Forhandl. Videnskr.-Selsk. Christiania, p. 84 (1861); „Bidrag til kundskab om Christiania-Fjordens Fauna, p. 70, pls. vi., vii. (1868).

Coll. Feilden: Cape Napoleon, two male specimens at a depth of 25 fathoms, temperature of the water 29°·2; at 50 fathoms one male specimen.

Coll. Hart: Cape Fraser, 20 fathoms, one female specimen.

The specimens collected of this very remarkable species, which has been fully described and illustrated by the late Dr. M. Sars in the memoir above referred to, are unfortunately all much mutilated; in none are the antennæ and slender and greatly elongated legs of the third and fourth pairs in a perfect condition.

The largest specimen, the female from Cape Fraser, has the ovigerous plates greatly developed, and is about $9\frac{1}{2}$ lines (18 millims.) long.

This species has been found at a depth of 50–100 fathoms in the Christiania Sound, and at a depth of 250 fathoms at the Lofoten Islands. It is also recorded by Buchholz (Crust. in 'Zweite deutsche Nordpolarf.' p. 285, note) from Spitzbergen, and was obtained during the cruise of the 'Valorous,' in lat. 69° 31′ N., long. 56° 1′ W., at a depth of 100 fathoms.

[To be continued.]

VI.—*Note on Lists of Arctic Hydroida and Polyzoa published in the 'Annals' for February* 1874 *and January* 1877 ***.

By the Rev. Thomas Hincks, B.A., F.R.S.

In the first of the papers referred to above I have given an account of some Hydroids which were obtained by Dr. Wallich, as I supposed, off the coast of Iceland. In the second some Polyzoa which formed part of the same gathering were catalogued and several new species described.

The bottle containing the dredging, which was placed in my hands by Mr. Busk, was labelled legibly, "Off Reykjavik, in 100 fathoms, amongst icebergs grounded and drifting," or to this effect; and I had no reason whatever to suspect inaccuracy. Since the publication of the second paper, however, Dr. Wallich, whose attention had not been previously directed to the matter, has informed me that there has undoubtedly been some blunder, inasmuch as there is no water of the depth off Reykjavik, nor are there any icebergs †. He has kindly examined his journals, notes, &c. for the purpose of removing, if possible, the doubt as to the locality; and his conclusion is that the material with which I have dealt in my

* "On Deep-water Hydroida from Iceland," Annals, Feb. 1874, p. 146; "On Polyzoa from Iceland and Labrador," Annals, Jan. 1877, p. 97.

† Dr. Wallich writes (*in litt.*), "At Rekiavik Harbour I dredged *not* from the ship, but from a boat. In no part of the harbour did I find deeper water than about 20 fathoms. I do not believe there is much deeper water within half a mile of the little town; and beyond this range I did not go. The harbour is a bay in no sense comparable to a fiord, the shore being sloping, and flat, low islands scattered here and there. A berg *could* not get into the harbour. Even outside the mouth of the bay, southward of Cape Rekianess, no icebergs are ever in these days met with."

Wing 1·96 inch, tail 1·06, tarsus 0·50, culmen 0·38.

Discovered by Mr. A. H. Everett at Monte Alban, in Luzon.

Oxycerca Everetti, sp. n.

♂ and ♀. Chin and throat dark brown; breast, flanks, and thigh-coverts warm nutmeg-brown. Abdomen and vent pure white, some of the lower breast-feathers being marked with brown, and some of the flank-feathers being white on their inner webs, brown on their outer, and with white shafts. Under tail-coverts very dark brown or black. Above, wings, and coverts brown, each feather, except the frontal and upper tail-coverts, having a conspicuous pure white central line along the shaft, very prominent on the wing-coverts. Some of the upper tail-coverts tipped with ochre. Rectrices brown, the middle pair broadly margined, the laterals less so, with yellow and greyish yellow. Inner edges of the quills pale rufous seen from underneath.

Wing 1·87 inch, tail 1·75, tarsus 0·56, culmen 0·38.

Several examples of this species were obtained by Mr. A. H. Everett at Monte Alban and San Mateo, in Luzon. The sexes do not differ in plumage. A representative form of *O. leucogaster*.

XIV.—*Report on the Crustacea collected by the Naturalists of the Arctic Expedition in* 1875–76. By Edward J. Miers, F.L.S., F.Z.S., Assistant in the Zoological Department, British Museum.

[Continued from p. 66.]

AMPHIPODA.

Anonyx nugax.

Anonyx nugax, Phipps, Voy. North Pole, Appendix, p. 192, pl. xii. fig. 2 (1774).

Gammarus nugax, Sabine, Append. Capt. Parry's 1st Voy. p. 51 (1821).

Talitrus nugax, Ross, Append. Capt. Parry's 3rd Voy. p. 119 (1826); Append. 4th Voy. p. 205 (1828).

Lysianassa lagena, Kröyer, Dansk. Vidensk. Selsk. Afh. vii. p. 237, pl. i. fig. 1 ♀ (1838); M.-Edw. Hist. Nat. Crust. iii. p. 21 (1840); Bell in Belcher, 'Last of the Arctic Voyages,' Crust. p. 406 (1855).

Lysianassa appendiculosa, Kröyer, *l. c.* p. 240, pl. i. fig. 2 ♂ (1838).

Lysianassa appendiculata, M.-Edw. Hist. Nat. Crust. iii. p. 21 (1840); S. Bate, Cat. Amphip. Crust. Brit. Mus. p. 67, pl. x. fig. 8 ♂.

Anonyx ampulla, Kröyer, Nat. Tidsskr. 2 R. i. p. 578 (1844); Voy. en Scand. Atlas, pl. xiii. fig. 2; Brandt, in Middendorff's Sibirische Reise, ii. p. 131 (1851).

Anonyx lagena, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 77, pl. xii. fig. 7 ♀ (1862); Boeck, Skandin. og Arktiske Amphip. i. p. 152 (1872); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 300 (1874).

Coll. Feilden: Floeberg Beach, at 10 fathoms, male and females; fire-hole at lat. 82° 24′; and at lat. 83° 19′ at 72 fathoms.

Coll. Hart: Winter quarters of H.M.S. 'Discovery,' at 11 fathoms, two males and four females.

My observations scarcely agree with those of Hr. Buchholz and other authors as regards the rare occurrence of the males of this very common and well-known Amphipod. Of about thirty-six adult specimens collected twelve are undoubtedly males, whereas Hr. Buchholz, after a careful search, found only two examples of this sex in the series obtained by the German expedition. The adult males of this species may generally be distinguished from the females by the far longer flagella of the inferior antennæ, which, when drawn back, reach to the posterior margin of the seventh segment of the body; in the adult females they do not greatly exceed in length the flagella of the superior antennæ, but there are male examples in which this character is less strongly marked. I have not observed any marked differences in the two sexes in the form of the segments of the body and appendages. The length of the largest male, from lat. 83° 19′ N. is 1½ inch (38 millims.); of the largest female, from Floeberg Beach, nearly 1 inch 9 lines (44 millims.).

This species is one of the commonest and most abundantly distributed of the Amphipoda inhabiting the high northern latitudes; it is said by Ross, in Parry's 3rd Voyage (*l. c.*), to be "by far the most numerous of the Crustacea inhabiting the Arctic Seas;" and it is, as has been already stated, of especial interest as being the only species obtained at lat. 83° 19′ N., the most northerly point attained by the Expedition at which animals were collected.

Its range extends along the shores of Arctic America; and it occurs in the White Sea and on the coasts of Greenland, Iceland, Spitzbergen, Norway, and Britain, and in the sea of Okhotsk.

Anonyx gulosus? Pl. III. fig. 2.

Anonyx gulosus, Kröyer, Nat. Tidsskr. 2 R. i. p. 611 (1844–45); in Gaimard, Voy. en Scand. Atlas, Crust. pl. xiv. fig. 2; Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 370 (1862); Boeck, Skand. og. Arktiske Amphip. p. 157, pl. v. fig. 4 (1872).

Anonyx norvegicus, Lilljeborg, Œfv. Kongl. Vet. Akad. Förhandl. 1851, p. 22.

? *Anonyx Holbölli*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 75, pl. xii. fig. 4 (1862).

Three specimens were collected by Mr. Hart, from the largest of which the following description is taken:—

The body (for one of the group to which this species belongs) is not robust, and is everywhere distinctly punctulated. The head is subacute, but not produced at its antero-lateral angle. The segments of the postabdomen have their antero-lateral angles rounded; and the second and third segments have their postero-lateral angles acute, but not reflexed; the fourth and fifth segments have their posterior margins entire. The eyes are visible, but almost colourless. The superior antennæ in the adult are about half as long as the inferior, and the first (exposed) joint is longer than the second and third taken together; the first joint of the flagellum is about as long as the three following; the accessory flagellum 6–7 jointed, the first joint not much longer than the succeeding. The last two joints of the peduncle of the inferior antennæ are of about equal length, these antennæ are less than half the length of the body of the animal. The first pair of legs are slender and rather long, the wrist and palm subequal, each more than twice as long as broad; the palm not narrowed, but very slightly enlarged towards its distal extremity, which is obliquely truncated, and armed with a series of minute stiff hairs and longer cilia; the finger arcuate and with a subapical tooth; the second pair of legs is long and very feeble, the palm ovate and ciliated on the margins, with a very small finger. The coxa of the fourth pair of legs is not wider at its proximal extremity than that of the preceding pair, but about twice as wide at its distal extremity; the posterior margin is deeply excavated. The basa of the last three pairs of legs are ovate-oblong, those of the last pair rather the broadest at base. The rami of the appendages of the fourth to sixth segments of the postabdomen are subequal and acute. The terminal segment (telson) is more than twice as long as broad at base, narrowing slightly distally, cleft nearly to its base, the apex of each lobe notched at its outer angle, the notch bearing a single cilium. Colour whitish with greenish spots, which are most distinct upon the coxæ and bases of the legs. Length of the largest specimen a little over 1 inch (26 millims.).

Coll. Hart: winter quarters of H.M.S. 'Discovery,' at a depth of 11 fathoms.

I have referred the specimens collected by Mr. Hart with some doubt to the *Anonyx gulosus* of Kröyer, as the antero-lateral margin of the head is less broadly rounded, and the accessory flagellum is longer than that of *A. gulosus* according to Boeck's diagnosis. In the form of the first and second pairs of legs and of the terminal segment they agree well with the descriptions of *A. gulosus*, and particularly in the presence of a tooth on the inner margin of the dactyl, which is mentioned by Lilljeborg as characteristic of that species. From *A. pumilus* they differ in the shorter antennæ, and in the absence of a tooth on the posterior margin of the fifth post-abdominal segment.

Anonyx gulosus has been recorded from Greenland, Spitzbergen, Iceland, the coasts of Scandinavia, and Britain.

Onesimus Edwardsii. Pl. III. fig. 3.

Anonyx Edwardsii, Kröyer, Naturh. Tidsskr. 2 R. ii. pp. 1, 41 (1846); Voy. en Scand. Crust. Atlas, pl. xvi. fig 1.
Lysianassa Edwardsii, Goës, Œfv. Vet. Ak. Förhandl. p. 520 (1865).
Onesimus Edwardsii, Boeck, Forhandl. Vidensk. Selsk. Christiania, p. 113 (1871); Skandin. og Arktiske Amphip. ii. p. 167, pl. vi. fig. 4 (1876).

Coll. Feilden: Discovery Bay, at $5\frac{1}{2}$ fathoms, lat. 81° 44′, one specimen; Floeberg Beach, at 10 fathoms, males and females, abundantly.

The eyes in the specimens that I refer to this species are large, red, and subreniform when present; but are in some specimens scarcely distinguishable, and in others entirely absent. The first joint of the flagellum of the superior antennæ is short, not exceeding in length the two or three following joints taken together, or even less, and not quite equalling in length the first joint of the accessory flagellum. In the first pair of legs the palm is but little longer than the wrist and obliquely truncate; the second pair of legs has a short, distally enlarged and truncated palm and small arcuate finger in both sexes. The third joint of the last three pairs of legs is not dilated, the fifth joint a little shorter than the two preceding taken together; the rami of the last pair of uropoda are very short, about as long as the terminal segment. The antero-lateral angle of the head is considerably produced anteriorly. The third segment of the postabdomen is slightly produced upward and subacute at its postero-lateral angle; the terminal segment is broadly semi-oval, with a raised marginal line, very slightly emarginate at its distal extremity, but without a median fissure. The whole animal is coarsely punctulated.

Of this species adult examples of both sexes were collected; of sixteen specimens from Floeberg Beach, in spirits, six are males. Of the females, one example only bears ova. Length of the largest male nearly 10 lines (21 millims.); of the largest female 11 lines ($23\frac{1}{2}$ millims.).

The specimens collected differ from Boeck's diagnosis in one particular; the third segment of the postabdomen is slightly produced upward at the postero-lateral angle. Nothing is said of the form of this segment by Kröyer in his description of the species or in the Latin diagnosis that follows. In Kröyer's figure of the species in the Atlas of the 'Voyage en Scandinavie,' the postero-lateral angle of this segment is represented as not produced upward, but acute. There is, however, a manifest inconsistency between the diagnosis of Boeck and the figures in the Atlas referred to; *e.g.* in *Onesimus plautus* the third postabdominal segment is described by Boeck as "sursum productus acutus," but figured by Kröyer as broadly obtuse and rounded at the postero-lateral angle.

Onesimus Edwardsii has been recorded from Greenland, Spitzbergen, and Britain.

Atylus carinatus.

Gammarus carinatus, Fabr. Ent. Syst. ii. p. 515 (1793).
Atylus carinatus, Leach, Zool. Miscell. iii. p. 22, pl. lxix. (1815); M.-Edw. Hist. Nat. Crust. iii. p. 68 (1840); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 134, pl. xxv. figs. 1–3 (1862); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 357, pl. x. (1874); Boeck, Skandinaviske og Arktiske Amphipoder, ii. p. 324 (1876).
Amphithoë carinata, Kröyer, Kongl. Dansk. Vidensk. Selsk. Afh. vii. p. 256, pl. ii. fig. 6 (1838); Voy. en Scand. Atlas, Crust. pl. xi. fig. 1; M.-Edw. Hist. Nat. Crust. iii. p. 41 (1800).

Coll. Feilden: Discovery Bay, at depths of $5\frac{1}{2}$ and 25 fathoms.

In the adult males of this species, at least in such specimens as I have observed, the body is slender, the palm of the first pair of legs more elongate and narrowed distally, and the lobes of the terminal segment narrower and separated by a wider and deeper fissure. The length of the specimen (a male) obtained at 25 fathoms depth (the only one which, being preserved in spirits, could be accurately measured) is 1 inch 1 line (nearly 28 millims.).

Atylus carinatus occurs on the coasts of Greenland and Spitzbergen and in Davis Straits.

Acanthozone hystrix.

Acanthosoma hystrix, Owen & Ross, Append. Ross's 2nd Voy. Zool. Crust. p. xci, pl. B. fig. 4 (1835); Bell, in Belcher's 'Last of the Arctic Voyages,' Crust. p. 406 (1855).
Amphithoë hystrix, Kröyer, Kongl. Danske Vidensk. Selsk. Afh. vii. pl. ii. figs. 6 & 7 (1838); M.-Edw. Hist. Nat. Crust. iii. p. 40 (1840).
Paramphithoë hystrix, Bruzelius, Kongl. Vet. Akad. Handl. iii. p. 71 (1859); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 147, pl. xxviii. fig. 1 (1862).
Acanthozone cuspidata, Boeck, Forhandl. Vidensk. Selsk. p. 184 (1870); Skandin. og Arktiske Amphip. p. 229 (1876), *nec* Lepechin.
Acanthozone hystrix, Miers, Ann. & Mag. Nat. Hist. (ser. 4) xix. p. 137 (1877).

Coll. Feilden: Discovery Bay, one specimen; Franklin-Pierce Bay, two specimens.

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, three specimens.

Two of the specimens collected are adult males, another is an adult female. The length of the largest specimen from Franklin-Pierce Bay slightly exceeds 1 inch 2 lines (30 millims.).

In the elaborate plate that illustrates this species in the 'Zweite deutsche Nordpolarf.' (*l. c.*) the rostral spine is represented as conical, straight, and acute, and the basos joint of the sixth and seventh pairs of legs as armed with four strong spines upon its posterior margin. In all the specimens of both sexes that I have examined the rostral spine is laterally compressed and bent near its base, projecting horizontally forwards, and there are but two spines upon

the posterior margins of the basos joint of the sixth and seventh pair of legs.

It is probable, therefore, that a distinct species is figured by Buchholz in the plate referred to.

This species has been recorded from the shores of Arctic America (Felix Harbour, Igloolik), Greenland, Spitzbergen, Finmark, and Norway.

Halirages fulvocinctus.

Amphithoë fulvocincta, Sars, Forhandl. Vidensk. Selsk. Christiania, p. 141 (1858); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 381 (1862).

Pherusa tricuspis, Stimpson, Proc. Ac. Nat. Sci. Phil. p. 138 (1863).

Paramphithoë fulvocincta, Goës, Œfv. Vet. Akad. Förhandl. p. 525, fig. 15 (1865); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 367 (1874).

Halirages fulvocinctus, Boeck, Forhandl. Vidensk. Selsk. Christiania, p. 196 (1870); Skandinaviske og Arktiske Amphipoder, ii. p. 342, pl. xxiii. fig. 11 (1876).

Coll. Feilden: Discovery Bay, at 25 fathoms, one specimen; Floeberg Beach, one specimen.

Both of the specimens collected are in an imperfect condition: one is, I believe, an adult female; the other is a younger animal. The length of the larger specimen (that collected in Discovery Bay) is about $10\frac{1}{2}$ lines (20 millims.).

Halirages fulvocinctus has been recorded from the coasts of Greenland, Spitzbergen, and Finmark.

Gammarus locusta.

Cancer locusta, Linn. Syst. Nat. ed. 12, p. 1055 (1766).

Gammarus locusta, Fabr. Ent. Syst. ii. p. 516 (1793); Leach, Trans. Linn. Soc. xi. p. 359 (1815); M.-Edw. Hist. Nat. Crust. iii. p. 44 (1840); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 206, pl. xxxvi. fig. 6 (1862); Spence Bate and Westwood, Hist. Brit. Sessile-Eyed Crust. i. p. 378 (1863); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 343 (1874); Boeck, Skandinav. og Arktiske Amphipoder, ii. p. 366 (1876).

Gammarus arcticus, Leach, in Scoresby, Account of Arctic Regions, i. p. 541, pl. xvi. fig. 14 (1820).

Gammarus boreus, Sabine, Append. Capt. Parry's 1st Voy. p. 51 (1821); Ross, Append. Capt. Parry's 3rd Voy. Crust. p. 119 (1826); Append. Parry's 4th Voy. p. 204 (1828); Ross & Owen, Crust. in Append. Ross's 2nd Voy. p. lxxxviii (1835); Bell, Crust. in Belcher's 'Last of the Arctic Voyages,' p. 405 (1855).

Gammarus Duebeni, Lilljeborg, Œfv. Kongl. Vet. Ak. Förhandl. p. 22 (1851).

Gammarus mutatus, Lilljeborg, Kongl. Vet. Ak. Handl. p. 447 (1853).

Gammarus sitchensis, Brandt, Crust. in Middendorff's Sibirische Reise, ii. p. 137 (1851).

Coll. Feilden: Floeberg Beach, at depth of 10 fathoms, twenty-five specimens; crack between the floes in lat. 82° 24′, three specimens.

Of sixteen adult, or nearly adult, specimens from Floeberg Beach, which, being preserved in spirit, could be acurately examined, ten are males. Of the six females, all but one carried a number of young animals beneath the lamelliform ciliated plates developed from the inner side of the first five pairs of legs. In the younger animals these plates are present, but much less markedly developed, being slender and substyliform.

The length of the largest male is 1 inch 4 lines (34 millims.), that of the largest female about 1 inch $2\frac{1}{2}$ lines (31 millims.). The hands of the first and second pairs of legs (gnathopoda) are much more powerful in the male than in the female: the palm of the second pair in the female is of a suboblong shape; in the male it is ovate, and narrowed towards the distal extremity, like that of the first pair of legs.

This very common species probably occurs upon the coasts of all the circumpolar region of the globe. In Europe its range extends southward to the Mediterranean and the Black Sea.

Gammaracanthus loricatus.

Gammarus loricatus, Sabine, Append. Capt. Parry's 1st Voy. p. 53, pl. i. fig. 7 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 118 (1826); Append. Parry's 4th Voy. p. 204 (1828); Ross & Owen, Crust. in Append. Ross's 2nd Voy. p. lxxxix (1835); Kröyer, Kongl. Dansk. Vid. Selsk. vii. p. 250, pl. i. fig. 4 (1838); M.-Edw. Hist. Nat. Crust. iii. p. 52 (1840); Bell in Belcher's 'Last of the Arctic Voyages,' Crust. p. 405 (1855).

Gammaracanthus loricatus, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 202, pl. xxxvi. fig. 2 (1862); Boeck, Skandinav. og Arktiske Amphipoder, ii. p. 400 (1876).

Coll. Feilden: Floeberg Beach, at 10 fathoms, two males and two females.

The two males collected are much smaller than the females. Length of largest male nearly 1 inch 6 lines (38 millims.), of largest female about 1 inch 11 lines (49 millims.).

Gammaracanthus loricatus is found upon the shores of Arctic America (Port Bowen, Prince Regent's Inlet) and Scandinavia; also in lakes of the latter-mentioned region and of Finland, and at Greenland and Spitzbergen and in the White Sea.

Amathilla pinguis.

Gammarus pinguis, Kröyer, Kongl. Dansk. Vidensk. Selsk. vii. p. 252, pl. i. fig. 5 (1838); M.-Edw. Hist. Nat. Crust. iii. p. 50 (1840).

Amathia pinguis, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 200 (1862).

Amathilla pinguis, Boeck, Vidensk. Selsk. Forhandl. p. 218 (1870); Skandinav. og Arktiske Amphip. ii. p. 411 (1876); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 353, pl. ix. fig. 2 (1874).

Coll. Feilden: Crack between floes at lat. 82° 24′, one specimen.

The single specimen collected has been dried, and is in an im-

perfect condition. There can, however, be no doubt about its identification. Length ½ inch (about 13 millims.).

This species is found upon the coasts of Greenland and Spitzbergen.

Eusirus cuspidatus.

Eusirus cuspidatus, Kröyer, Nat. Tidsskr. 2 R. i. p. 501, pl. vii. fig. 1 (1844–45); Voy. en Scand. Crust. Atlas, pl. xix. fig. 2; Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 154, pl. xxviii. figs. 6, 7 (1862); Goës, Œfv. Vet. Ak. Förh. p. 529 (1865); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 313, pl. iii. fig. 12 (1874); Boeck, Skandin. og Arktiske Amphip. ii. p. 502 (1876).

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, one female specimen.

The single example in the collection is fully adult and bears ova. Length 1 inch 7½ lines (41 millims.).

The basos joint of the sixth and seventh pairs of legs is considerably narrowed to its distal extremity. The second and third segments of the abdomen have the posterior margins rounded and very finely serrated. This species has been described at great length and figured by Buchholz, *l. c.*; but either the figure is carelessly executed as regards many details, or it represents a very distinct species. The rostrum is represented as much longer than in the specimens I have seen, the coxa of the fourth pair of legs with its inferior margin straight (not rounded as in the examples I have examined), the second and third segments of the postabdomen with the posterior margins strongly angulated, &c.

This species has been found at Greenland, Spitzbergen, Finmark, and Norway.

Tritropis aculeata.

Oniscus aculeatus, Lepechin, Acta Acad. Sci. Petropolitana, p. 247, pl. viii. fig. 1 (1780).

Talitrus Edwardsii, Sabine, Append. x. in Capt. Parry's 1st Voy. p. 54, pl. ii. figs. 1–4 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 119 (1826); Append. Capt. Parry's 4th Voy. p. 209 (1828).

Amphithoë Edwardsii, Owen & Ross, Crust. in Append. Ross's 2nd Voy. p. xc (1835); Kröyer, Voy. en Scand. Atlas, Crust. pl. x. fig. 1.

Amphithonotus Edwardsii, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 151, pl. xxviii. fig. 5 (1862).

Amphithonotus aculeatus, Goës, Œfv. Vet. Akad. Förhandl. p. 526 (1865); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 316, pl. iv. (1874).

Tritropis aculeata, Boeck, Forh. Vid. Selsk. p. 158 (1870); Skand. og Arktiske Amphipoder, p. 511 (1876).

Coll. Feilden: Discovery Bay, at 25 fathoms, one male, four females; Cape Napoleon, at 25 fathoms, three males, seven females; Floeberg Beach, at 10 fathoms, two males, five females; Franklin-Pierce Bay, at 15 fathoms, thirteen specimens (dried).

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, twelve females;

Cape Fraser, 20 fathoms, three young females (?); Dobbin Bay, at 30 fathoms, one female.

About fifty specimens in all were collected of this species, of which only six are males. The length of the largest male is 1 inch 5 lines (36 millims.), that of the largest female, a specimen bearing ova, nearly 1 inch 9 lines (44 millims.).

None of the females in the collection carry any young animals; but the greater number have ova in a greater or less degree of development. In the youngest females in the collection, from Cape Napoleon, length 1 inch ½ line, in which no ova are present, the ovigerous lamellæ are small, much smaller than the branchial leaflets, but they are rapidly developed, and become ciliated as the animal increases in age; in the largest females, with fully ripened ova, they considerably exceed the branchial lamellæ in size, and completely infold and conceal the ova. These latter at first present the appearance of a whitish mass scarcely a line in length, but when ripe are of a reddish- or orange-yellow colour, and completely fill the cavity beneath the pereional segments.

This species is one of the commonest of the Amphipoda inhabiting the northern seas. It has been found, often in great abundance, on the shores of Arctic America (Port Bowen, Igloolik), Greenland, Spitzbergen, Finmark, and in the White Sea.

Ægina spinosissima.

Ægina spinosissima, Stimpson, Syn. Invert. Grand Manan, p. 44 (1853).
Caprella spinifera, Bell, in Belcher's 'Last of the Arctic Voyages,' ii. p. 407, pl. xxxv. fig. 2 (1855); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 338 (1874).
? *Ægina echinata*, Boeck, Forh. Skand. Nat. p. 670 (1860); Vidensk. Selsk. Forh. p. 271 (1870); Skand. og Arktiske Amphip. ii. p. 680, pl. xxxviii. fig. 6 (1876).
Caprella spinosissima, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 361, pl. lvii. fig. 3 (1862).

Coll. Feilden: Cape Napoleon, 25 fathoms, temperature of water 29°·2, one small male specimen.

Coll. Hart: Dobbin Bay, 30 fathoms, one large male specimen.

The largest specimen, length nearly 2 inches 2 lines (54 millims.), is very robust, of a green colour, and with but very few small spines and many indistinct very small tubercles; the second pair of legs has the hand armed upon its inferior margin with two very strong teeth, and a third small tooth close to the distal extremity; the finger is strong and very much curved; the first joint of the first pair of postabdominal appendages is short and much broader than the second joint.

The smaller specimen, length a little over 11 lines (24 millims.), is of a whitish colour, purplish brown at the bases of the spines, which are numerous, especially on the back. The hand of the second pair of legs is nearly of the same form as in the preceding, but the finger is less arcuate; the basal joint of the second pair of legs not broader than the second joint.

In the specimens I have before me the teeth on the interior margin of the palm of the second pair are not only much larger than in *Æ. echinata*, but the palm itself is not tuberculated as in that species, as figured by Boeck (*l. c.*). It is possible that the two forms are distinct; but the variation in the spines of the body and its limbs are known to be very great in some species of the genus.

Probably the specimens referred by Ross in Parry's 3rd and 4th Voyages to *Caprella scolopendroides*, and which he describes as having "a great number of small spines along the back," should be referred to *Æ. spinosissima*. They were collected at Port Bowen and Low Island.

This species has been recorded from the coasts of Greenland, Spitzbergen, and Norway; and if, as I believe, the species of Stimpson is identical, from the Grand Manan at the entrance of the Bay of Fundy.

ENTOMOSTRACA v. GNATHOPODA.

Phyllopoda.

Branchipodidæ.

Branchipus (*Branchinecta*) *arcticus*. Pl. IV. fig. 1.

Branchipus (*Branchinecta*) *arcticus*, Verrill, Amer. Journ. Sci. & Arts, ser. 2, xlviii. p. 253 (1869).

Branchinecta arctica, Packard, in Hayden, U.S. Geol. & Geogr. Survey, p. 621 (1874); Amer. Naturalist, xi. p. 53 (1877).

Coll. Hart: Discovery Bay, in a small freshwater lake and in a stream under ice.

Several specimens were collected, including males and females, of a species of Phyllopoda, which I refer to the *B. arcticus* of Verrill. Of these species I have only seen the descriptions in the journals above quoted, not having been able to meet with Verrill's full Report on the American Phyllopoda in the volume for 1869 of the American Association for the Advancement of Sciences and Arts. These specimens possess the elongated claspers, with serrated basal joints, and elongated egg-pouches of the species of *Branchinecta*, and are distinguished from the *Branchipus paludosus* of Müller, also from Greenland (if his figure in the 'Zool. Danica,' pl. xlviii., be correct), by the much shorter lanceolate caudal appendages. In *B. paludosa* these are represented as very slender, acuminate, and half as long as the abdomen.

These specimens differ slightly from the descriptions of *B. arcticus* and *grœnlandicus*, as will appear from the following description. If distinct (which may be possible, although I think it more probable that the three forms are varieties of one and the same species), the species may be designated *B. Verrilli*.

The antennnæ are slender, linear, and nearly as long as the basal joint of the claspers. The large prehensile antennæ, or "claspers," as they are called by Verrill, are nearly half as long as the

body, two-jointed, the basal joint as long as the second, nearly straight, and of the same thickness throughout, with a not very prominent rounded lobe at the distal extremity on the inner side; this, and the distal half of the inner margin, armed with a series of ten or a dozen small teeth or spines. The second joint is smooth, slightly tapering to its distal extremity and concave on its inner surface. The branchial feet are eleven in number, and the lobes on the inner margin are beautifully fringed with long, close, flexible hairs; the fifth and sixth pairs are the longest; and the others decrease regularly in size. The vesicular body is narrow oblong-oval; the terminal lobe of the second joint is regularly oval in shape. The caudal appendages lanceolate, small; margins with slender setæ, which become longer as they approach the distal extremity. The specimens are smaller than that collected by Dr. Packard, averaging only 12 millims. in length.

Verrill's specimens of this species were from Labrador; and if, as is thought possible both by Packard and Verrill, this species be not distinct from the *B. grœnlandicus* and *B. coloradensis*, it must have a very extended geographical range.

Specimens of *B. grœnlandicus* are mentioned by Packard as having been obtained during the late American expedition of the 'Polaris' at Polaris Bay, between lat. 81° 20′ and 81° 50′.

Copepoda.

Lernæopodidæ.

Lernæopoda arcturi, sp. n. Pl. IV. fig. 2.

Coll. Feilden: Floeberg Beach, parasitic on the gills of *Salmo arcturus*, Gthr.

On the new charr collected by Capt. Feilden, and recently described by Dr. Günther, were many specimens of a parasitic Lernæoid crustacean, which I cannot certainly identify with any previously recorded, and of which the following is a description:—

The cephalothorax is narrow-ovate, nearly or quite as long as the abdomen, which is ovate, turgid on its dorsal surface, and smooth, there being no trace of articulations or of the tubercles which are so characteristic of *Basanistes huchonis*; the ovaries are about as long as the abdomen. The oral aperture is circular and not prominent. The inner antennæ are very small and apparently two-jointed. The outer antennæ are stout, broad at base; the terminal joint is produced on its inner side into an ovate lobe, which is ciliated on the margins, and bears on its outer side a two-jointed accessory appendage, the terminal joint of which is conical and acute; hence the outer antennæ appear bifid at the extremity; the palpi at the base of these organs are very small.

The first pair of maxillipeds are robust; the basal portion is stout, and tapers slightly towards the distal extremity, the terminal joint is much slenderer, and bears at its extremity a small ungui-

form lobe. The second pair of maxillipeds are cylindrical and about as long as the cephalothorax, with a thickened marginal rim at the distal extremities, which are united, and terminate in a large membranous conical *bulla*, which is imbedded in the body of the animal to which the parasite adheres.

The nearest ally of this species is evidently the *Lernæopoda Edwardsii* of Olsson, Acta Universit. Lund., p. 36 (1868), from Norway, from which it differs in the somewhat shorter ovaries and abdomen and the form of the claw of the first maxilliped. This species has not been figured; and a comparison of specimens might prove the *L. arcturi* to be identical with it. From the *L. carpionis* of Kröyer, to which it is also nearly allied, it differs in the form of the bulla of the second maxilliped, &c.; from the *L. salmonea* of Mayor (Bull. Soc. Philom. p. 24, 1824), which Olsson, who had not seen Mayor's original description, considers synonymous with his *L. Edwardsii*, but which is probably a different species, in the smooth abdomen, and, if Milne-Edwards's figure be correct, in the form of the head, ovaries, &c.

The *Achtheres Carpenteri*, described by A. S. Packard, junr., from a trout in the East River, Colorado (Rep. U. S. Geol. and Geogr. Survey, 1874, p. 612), to judge from the outline figure which accompanies the very brief description, resembles this species. The abdomen, however, is said to possess indications of division into three segments, which are not indicated in the figure.

CIRRIPEDIA.

Balanidæ.

Balanus porcatus.

Balanus porcatus, Da Costa, Hist. Nat. Test. Brit. p. 249 (1778); Darwin, Monogr. Cirripedia, Balanidæ, p. 256, pl. vi. fig. 4 (1854); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 396 (1874).

Coll. Feilden: Cape Napoleon, from a depth of 50 fathoms, five specimens, 25 fathoms, two specimens; Richardson Bay, 80° 2′ N. lat., 70 fathoms, one specimen.

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms.

The largest specimen collected has a greatest height of rather over 1 inch 1 line (28 millims.), and greatest diameter of nearly 1 inch 2 lines (29 millims.). The specimens from Cape Napoleon agree well with *B. porcatus* in the sharply and strongly ribbed parietes of the shell, the radii of which are parallel to the base, and in the characters of the opercular valves. The small specimen from Richardson Bay, height 7 lines (15 millims.), greatest diameter 6 lines (nearly 13 millims.), I was at first inclined to think might be *B. crenatus*, on account of the very oblique and narrow radii; but the characters of the opercular valves are those of *B. porcatus*,

the apex of the terga being produced and acute, and the spur placed close to the basiscutal angle.

This species occurs on the coasts of Greenland, Iceland, Spitzbergen, Norway, Finmark, and Britain—also on the shores of Maine and Massachusetts, and perhaps at China (see Darwin, *l. c.*)

PYCNOGONIDA.

Nymphonidæ.

Nymphon hirtum.

? *Nymphon hirtum*, Fabr. Ent. Syst. iv. p. 417 (1794); Kröyer, Nat. Tidsskr. 2 R. i. p. 113 (1844–45); Voy. en Scand. Atlas, Crust. pl. xxxvi. fig. 3; Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 397 (1874).

Nymphon hirsutum, Sabine, Append. Capt. Parry's 1st Voy. no. x. p. 48 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 117 (1826); Append. Parry's 4th Voy. p. 203 (1828).

Nymphon hirtipes, Bell, in Belcher's 'Last of the Arctic Voyages,' Crust. p. 401, pl. xxxv. fig. 3 (1855).

Coll. Feilden: Franklin-Pierce Bay, five specimens; Discovery Bay, one specimen; Floeberg Beach, at depth of 10 fathoms, two specimens.

Coll. Hart: Franklin-Pierce Bay, 13–15 fathoms, three specimens.

I have referred the specimens collected with some doubt to *N. hirtum*, as in Kröyer's figure of that species not only is the animal represented as much slenderer, but also the chelæ of the mandibles have the fingers much shorter and scarcely denticulated on their inner margins. In the specimens before me the fingers are very slender, somewhat curved at the tips, and armed with a row of spinules on their inner margins. In some examples the immobile finger is shorter than the other, as in the form to which Bell (*l. c.*) has assigned the name of *N. hirtipes*, which does not otherwise differ from the present species, except in the absence of hairs upon the segments of the body, and can hardly be regarded as distinct from it.

Fourteen specimens in all were collected of this species; of these, two are adult females with ova. Length of largest specimen about $6\frac{1}{2}$ lines (14 millims.), greatest length between tips of legs when extended nearly 3 inches 3 lines (82 millims.); of the largest ova-bearing female, nearly 6 lines (12 millims.), greatest length between legs 2 inches 11 lines (74 millims.).

In the males of this species the whole animal is more robust, the joints of all the legs, as stated by Buchholz (*l. c.*), thicker and more compressed; in the females the second joint of the legs is proportionally longer than in the males. I may add that in the two ova-bearing females in the collection the fifth joint of the third (ovigerous) pair of appendages is dilated and geniculated near its distal

extremity, the angle being armed with a tuft of stiff hairs, which evidently serve as points of attachment for the ova. It is probable that this peculiarity of structure only attains its greatest development in females in which the ova are present.

This species appears to be a common inhabitant of the high northern latitudes, and has been recorded from the coasts of Greenland, Spitzbergen, and Arctic America (Port Bowen, Northumberland Sound).

Nymphon hirtum, var. *obtusidigitum*. Pl. IV. fig. 3.

Among the specimens from Franklin-Pierce Bay is a single example, which differs from the males of the foregoing variety only in the legs being cylindrical, not dilated and compressed, and in the form of the chelæ of the mandibles. These have the fingers arcuate, meeting only at the tips, which terminate in small knobs. The chelæ are slender, not globose, as in the form figured by Bell, in Belcher (*l. c.*) p. 409, pl. xxxv. fig. 4, under the name of *N. robustum*, and that recently described by Heller as *N. hians* (Sitz. der k.-k. Akad. Wien, Naturw. lxxi. p. 610, 1875), in which species the fingers although arcuate are represented as acute. The second joint of the legs is short, as in the males of *N. hirtum*. Length rather more than 5 lines (11 millims.); greatest width between legs about 2 inches 7 lines (66 millims.).

Nymphon Strömii.

Nymphon Strömii, Kröyer, Nat. Tidsskr. 2 R. i. p. 111 (1844); Voy. en Scand. Crust. Atlas, pl. xxxv. fig. 3.

Coll. Feilden: Floeberg Beach, lat. 82° 27′, at depth of 10 fathoms, three specimens, and at lat. 81° 56′, one specimen; Cape Fraser, at a depth of 80 fathoms, bottom hard, one adult and three young specimens.

One (the largest) specimen collected is a female with ova; length $6\frac{1}{2}$ lines (16 millims.), greatest width between legs 5 inches 6 lines (140 millims.). All the specimens obtained are more or less imperfect.

The examples obtained by Captain Feilden of this fine species agree in all respects with the figure given by Kröyer in the Atlas of Gaimard's 'Voyage en Scandinavie,' above quoted. The female (at least the example I have examined) has not the peculiar dilatation of the fifth joint of the third pair of appendages noted in the female of *N. hirtum*.

This species is usually (as stated by Kröyer *l. c.*) glabrous; but in one or two specimens there are a few scattered hairs upon the legs. The chelæ in the adult are very large, with long fingers armed with spines upon their inner margins; the third and fourth joints of the second pair of appendages are subequal and together much longer than the second joint; the seventh joint of the legs is long and slender, a little longer than the eighth joint.

Kröyer gives Norway, with doubt, as the habitat of his specimens of this species.

EXPLANATION OF THE PLATES.

Plate III.

Fig. 1. *Arcturus baffini*, var. *Feildeni*; natural size.

Fig. 2. *Anonyx gulosus*?, slightly enlarged: *a*, head and antennæ (lateral view); *b*, maxilliped; *c*, *d*, hands of first and second pairs of legs; *e*, end of postabdomen, showing the form of the third segment; *f*, terminal segment and last pair of uropoda; all much enlarged.

Fig. 3. *Onesimus Edwardsii*, slightly enlarged: *a*, head and antennæ (lateral view); *b*, maxilliped; *c*, *d*, hands of first and second pairs of legs; *e*, end of postabdomen, showing form of third segment (lateral view); *f*, terminal segment and last two pairs of uropoda; all much enlarged.

Plate IV.

Fig. 1. *Branchipus* (*Branchinecta*) *arcticus*, greatly enlarged: *a*, one of the large prehensile antennæ; *b*, one of the branchial feet; *c*, caudal appendages; all still further enlarged.

Fig. 2. *Lernæopoda arcturi*, greatly enlarged: *a*, outer antennæ; *b*, first maxilliped; further enlarged.

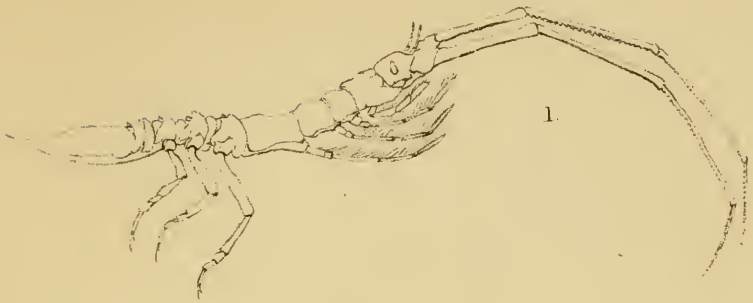
Fig. 3. *Nymphon hirtum*, var. *obtusidigitum*, natural size: *a*, mandible; *b*, *c*, one of the appendages of the first and second pairs; enlarged.

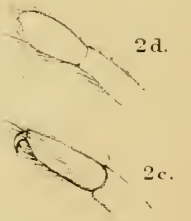
XV.—*Descriptions of new Species of Heteropterous Hemiptera collected in the Hawaiian Islands by the Rev. T. Blackburn.* —No 1. By F. Buchanan White, M.D., F.L.S.

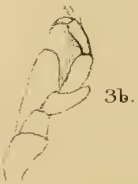
Cydnidæ.

Geotomus subtristis, n. sp.

G. subòvatus, piceo-niger, subnitidus, pronoti margine postico, scutelli apice, pedibus antennisque piceis, harum articulorum apicibus et toto articulo ultimo, necnon tarsis piceo-luteis; membrana sordide albida, apicem abdominis paullo superante. Marginibus capitis et lateralibus thoracis paucis pilis sat longis ciliatis. Capite obtusiuscule rotundato, margine antico subreflexo, lobis lateralibus parce punctulatis, lobo centrali ad apicem haud angustato; antennarum articulo secundo quam tertius paullo breviore, tertio, quarto, quintoque subæquilongis, duobus ultimis fusiformibus. Pronoto antice et ad latera irregulariter rudeque punctato; disco lævi, fovea parva in medium, et pone medium fovea majore rude punctata utrinque instructo; lobo postico 5 vel 6 rugis transversis plus minus punctulatis instructo; angulis posterioribus lævibus







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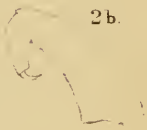
2a.


2.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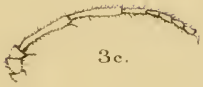
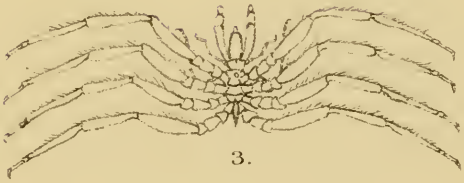

3c.


3a.


3b.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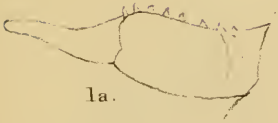
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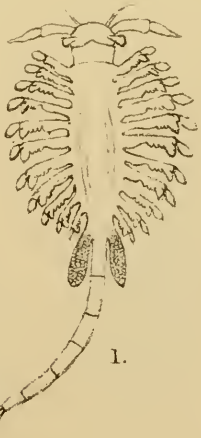
1.


1c.


1b.