

THE  
LAST OF THE ARCTIC VOYAGES;

BEING A NARRATIVE OF

THE EXPEDITION IN H.M.S. ASSISTANCE,

UNDER THE COMMAND OF

CAPTAIN SIR EDWARD BELCHER, C.B.,

IN SEARCH OF SIR JOHN FRANKLIN, DURING THE

YEARS 1852-53-54.

WITH

NOTES ON THE NATURAL HISTORY,

BY

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## ACCOUNT OF THE CRUSTACEA.

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THE collection of Crustacea brought by Captain Sir Edward Belcher is not very numerous, but there are a few new species, besides some interesting ones which have been described by former naturalists. The specimens were all obtained by the dredge between Beechey Island and Northumberland Sound, and generally in depths exceeding thirty fathoms.

I have found it necessary in some instances to revise the specific characters given by former writers.

*DECAPODA MACRURA.*

## HIPPOLYTE BOREALIS (Owen).

Thorace cylindræo, anticè subcarinato, angulo antico-inferiore mutico, caudæ laminâ mediâ spinis minutis 16 ad 20 armatis.

*Hippolyte borealis*, Owen, in Append. to Captain Sir John Ross's Voyage, p. lxxxiv. t. B. f. 3; Edw. Hist. Nat. des Crust. ii. p. 373.

It was very truly observed by Colonel Sabine, in his account of the Crustacea obtained in Parry's voyage, that the number of teeth on the rostrum in the different species of *Hippolyte* is no good criterion of specific distinction, and this is particularly true of the present species. The rostrum is straight, in some individuals with, in some without, an inferior carina;

in some there are no teeth at all, either on the carapace or the rostrum; in others, a few small inconspicuous serrations, and in others a few small teeth. It is readily distinguished from *H. polaris*, and from all other species, by the characters given above.

#### HIPPOLYTE ACULEATA (Fabr.).

Thorace gibboso, fortiter quinque-dentato, rostro tenui, pedunculo antennæ superioris vix longiore.

*Cancer aculeatus*, Oth. Fabr., Fauna Grœnl., No. 217.

*Alpheus aculeatus*, Sab., App. to Parry's Voyage, p. cccxxxvii. t. ii. f. 9, 10.

*Hippolyte aculeata*, Edw., Hist. Nat. ii. p. 380.

A single small specimen only was found in the collection, without any distinct locality being named. Colonel Sabine states that several specimens were found at Melville Island. It is at once recognized by the slender short rostrum and the extraordinary gibbosity of the carapace.

#### HIPPOLYTE POLARIS (Sabine).

Thorace gibboso, anticè carinato, rostro lamellâ antennæ superioris brevioris, chelis et unguibus apice nigris.

*Alpheus polaris*, Sabine, App. to Parry's Voyage, p. cccxxxviii. t. ii. f. 5-8.

*Hippolyte polaris*, Edw., Hist. Nat. des Crust. ii. p. 376; Owen, in Ross's Voy., p. lxxxv.

In this species the female is so much larger than the male, and the thorax so much more strongly gibbous, that the two sexes might at first sight be readily mistaken for different species. The figure given by Colonel Sabine is that of a male.

The number of teeth on the rostrum varies greatly; I found from two to four on the upper, and from two to five on the under side. Colonel Sabine states from three to six above and from two to six below. Milne Edwards has erroneously given eight to ten on the upper, and two or three on the under side. The carapace has invariably three teeth on the carina.

It would appear to be an abundant species, as there were

numerous specimens in the collection, and Colonel Sabine states that "several were brought up in the same drag-net, from fifty fathoms on the coast of Melville Island."

### HIPPOLYTE BELCHERI (n. s.).

PLATE XXXIV., fig. 1.

Thorace subcylindræco, haud gibboso, rostro recto, abdominis segmento tertio spinâ uncinatâ forti armato.

In this new species, the body is slender and smooth; the carapace nearly cylindrical, with a single tooth at the outside of the orbilar notch, slightly carinated on the anterior half, but not gibbous, the carina with two small teeth; the rostrum straight, narrow, with three very small teeth above and two beneath, in the single specimen observed; the outer filament of the superior antenna thickened near the base, and gradually tapering to the extremity. The abdomen is strongly bent at the third segment, which is armed, near the posterior margin, with a strong hooked spine, curved backwards; the fifth and sixth segments with a small triangular spine at the anterior angle; the seventh (middle lamina of the tail), with five pairs of minute spines above. Antennæ, legs, and pedipalps very slender; first pair of abdominal false feet as large as the others.

Length from rostrum to tail, 1·8 inch.

This species has the strong hooked spine which is characteristic of *H. Sowerbæi*, but it differs widely from it in its general character. It belongs, in fact, with that exception, to the more smooth and slender section of the genus.

A single specimen only was found in the collection, without any particular locality being designated.

### CRANGON BOREAS (Auct.).

*Cancer boreas*, Phipps' Voy., App. 190. t. 12. f. 1.

*Crangon boreas*, Sab., Parry's Voy. ccxxxv.; Edw., Hist. Nat. des Crust. ii. p. 342.

Two specimens were obtained, one of which was a remarkably large one.



## FAM. CUMADÆ.

## ALAUNA GOODSIRI.\*

PLATE XXXIV., fig. 2.

Rostro recto, segmentis abdominis angulatis.

“In the thirteenth volume of the ‘Annales des Sciences Naturelles,’ Dr. Milne Edwards described a small crustacean under the name of *Cuma Audouinii*; but in his ‘Histoire Naturelle des Crustacés,’ he expresses his doubt whether this little animal be anything more than the larva of a decapodous form, and places it amongst other doubtful examples, in an Appendix.

“In 1843, however, Mr. Harry Goodsir published, in the ‘Edinburgh New Philosophical Journal,’ a very full and clear description of this and two other species of *Cuma* and of two allied species, which he considered as the types of two new genera, to which he gives the names respectively of *Alauna* and *Bodotria*. The whole of these I have ventured to consider, *provisionally*, as constituting a small family, probably belonging to the lower Decapoda, which appears also to be Mr. Goodsir’s own opinion, though expressed with doubt, in which doubt I entirely agree. This author satisfactorily determined that they are perfectly developed animals, and not mere larvæ.”†

Such is a succinct account of what was known respecting the little animals which I ventured to consider as constituting the family CUMADÆ, but the details of their structure given by Mr. Goodsir afforded very imperfect grounds for judging of their real position in the Class.

\* It is with a melancholy sense of duty that I dedicate this species to the lamented naturalist, whose untimely fate is connected with the saddest associations; and this feeling is enhanced by the recollection of that remarkable zeal and talent by which he was distinguished, and from which, had he been spared, results the most important to the extension of natural science might have been anticipated.

† Bell’s Brit. Crust., p. 321.

The occurrence of a very large specimen of a new species of *Alauna* in Sir Edward Belcher's collection has afforded to Mr. Westwood an opportunity of figuring, for the present Paper, the details of the anatomy of all the essential parts,—a task which, as a reference to the figures will show, he has executed with his usual unrivalled accuracy and tact. These details appear to confirm the opinion that this family must be placed amongst the lower forms of the decapodous group. The number and general structure of the parts connected with the office of manducation, and of the thoracic feet, are entirely consistent with this view; and the structure of the tail, which is formed of the appendages to the sixth abdominal segment and of the seventh, no less agrees with it. The absence of any ocular peduncle however shows an aberration from the type, of such importance as to throw a strong apparent doubt upon the subject. Besides the single large specimen, there are several others in the collection considerably smaller (fig. 3), which differ in some characters, as the less convex form of the carapace, more obvious rugæ on the fore part of it, and the existence of an acute point on each side of the last leg-bearing segment. These may be immature individuals, or possibly males, or they may perhaps be specifically different.

*Hab.* Wellington Channel, in thirty-five to seventy fathoms.

#### STOMOPODA.

A single specimen of a *Mysis*, probably *M. Fabricii*, was in too decomposed a condition to be identified with certainty.

#### AMPHIPODA.

##### GAMMARUS SABINI (Leach).

*Gammarus Sabini*, Leach, in Ross's Voyage, ii. p. 178; Sabine, Parry's Voyage, Append., p. ccxxxiii.; Kroyer, Amphip., p. 16. t. i. f. 3; Edw., l. c. iii. p. 50.

## GAMMARUS LORICATUS (Sabine).

*Gammarus loricatus*, Sabine, Parry's Voyage, Append., p. cccxxxi. t. i. f. 7. Kroyer, l. c., p. 22. t. i. f. 4; Edw., l. c., p. 52.

## GAMMARUS BOREUS (Sabine).

*Gammarus boreus*, Sabine, l. c., p. cccxxix.

? *Squilla pulex*, Degeer, Ins. vii. p. 525. t. xxxiii. f. 1, 2.

For an excellent description of this species, and a critical examination of its identity with *Squilla Pulex* of Degeer, I must refer to the original account of it by Colonel Sabine, above quoted.

## GAMMARUS KROYERI (n.s.).

PLATE XXXIV., fig. 4.

Antennis superioribus inferioribus dimidio longioribus, abdominis segmentis quatuor anterioribus in medio, secundo et tertio ad angulum inferiorem posticum, in dente productis.

Superior antennæ half as long again as the inferior; the accessory filament extremely minute; the anterior (four) thoracic epimeral plates increasing gradually in size, rounded beneath, the fourth slightly produced at the posterior margin; the fifth and sixth with a lobe at the anterior-inferior portion; the seventh oval. First and second pairs of thoracic feet cheliform; the second with the penultimate joint very broad, obliquely truncate; third and fourth simple; the three following with the third joint very large and oval. Abdominal false feet normal. There is a small triangular dentiform process, directed backwards, on the middle of the posterior margin of the anterior four segments of the abdomen, and the postero-inferior angle of the second and third is similarly produced.

This species has a very close resemblance to *Amphitoe bicuspis* of Kroyer. It is however a true *Gammarus*, as the accessory filament of the superior antennæ does exist, although extremely small.

*Hab.* Wellington Channel, in thirty-five fathoms.



## LYCIANASSA LAGENA (Kroy.).

*Lycianassa lagena*, Kroy., Grænl. Amfip., p. 9. t. i. f. 1; Edw. Crust. iii. p. 21.

*Anonyx lagena*, Kroy., l. c., p. 16.

Of this species numerous fine specimens are in the collection.

## AMPHITÖE LÆVIUSCULA (Kroy.).

*Amphitöe læviuscula*, Kroy., Grænl. Amfip., p. 53. t. iii. f. 13; Edw. Crust., p. 30.

## AMPHITÖE JURINII? (Kroy.).

A specimen in a broken state occurs, which may probably be of this species.

## ACANTHOSOMA HYSTRIX (Owen).

*Acanthosoma hystrix*, Owen, Append. to Ross's Second Voyage, p. xci., pl. 8. f. 4-7.

*Amphitöe hystrix*, Kroy., Grænl. Amfip., p. 31. t. ii. f. 7; Edw. Hist. Nat. Crust. iii. p. 40.

## STEGOCEPHALUS (Kroy.) AMPULLA (Phipps).

PLATE XXXV., fig. 1.

*Cancer Ampulla*, Phipps' Voy. Append. p. 192. t. xii. f. 3; Herbst, ii. p. 117. t. xxxv. f. 2.

*Gammarus Ampulla*, Sab., Suppl. Parry's First Voyage, p. cccxix.; Ross, Append. to Parry's Polar Voyage, p. 204.

*Amphitöe Ampulla*, Edw., l. c., iii. p. 22.

*Stegocephalus Ampulla*, Kroy., Naturh. Tijdsk., iv. 150.

An opportunity offered, by the occurrence in the collection of several fine specimens of this species, of giving a correct figure of the animal, together with the details of the essential parts of its organization. The figures hitherto published, and referred to above, are exceedingly imperfect and incorrect;



Herbst's is merely a bad copy of that of Phipps. Mr. Westwood's, now given, is remarkably characteristic, and the anatomical details are extremely correct and interesting. A reference to the Plate will render any particular description of these parts unnecessary.

There were numerous young contained in the ovigerous pouch of the female figured in the Plate. They had undergone their metamorphosis, and were in every respect like the parent, with the exception of the antennæ, which were thicker, and less numerously jointed.

*Hab.* Northumberland Sound, in seven fathoms.

### LÆMODIPODA.

#### CAPRELLA SPINIFERA (n. s.).

PLATE XXXV., fig. 2.

Segmentis omnibus corporis spinis armatis.

The head in this very distinct species is very short, the eyes round and black; the superior antennæ almost as long as the body, of which length the peduncle constitutes nearly half; the first joint cylindrical, half as long as the second, which is slightly enlarged forwards; inferior antennæ about half the length of the superior; the first joint of the peduncle very short, the second only a little longer, the third three times as long as the first and second. Footjaws four-jointed, slightly curved; first segment of thorax somewhat pyriform, with several minute tubercles, and two little spines close to its junction with the head; the second, third, and fourth segments thickened at the middle, at which part is a partial circle of spines, as well as several others at the anterior and posterior part; fifth segment largest at the posterior part, and spined as the others; sixth and seventh segments very short, narrowed anteriorly; the seventh furnished with a pair of simple curved appendages. Abdominal segment extremely small, with two pairs of appendages, of which the smaller pair are simple, and the larger two jointed. Anterior pair of legs slender and weak, scarcely twice

as long as the first thoracic segment; the second pair long and robust; the hand thick, with a strong spine near the base beneath, which is met by the finger when bent. The three posterior pairs slender, the penultimate joint with a small spine or tubercle, meeting the nail when closed, as in the hand of the second pair.

Length of body, 1·4 inch.

*Hab.* Throughout the Strait: motion barely perceptible.

### ISOPODA.

#### ARCTURUS BAFFINI (Sabine).

*Idotea Baffini*, Sab., Append. to Parry's Voy. p. 50. t. i. f. 4-6.

*Arcturus tuberculatus*, Latr., Reg. An. Cuv., ed. 2, iv. p. 139.

*Arcturus Baffini*, Westwood, Trans. Ent. Soc. i. p. 72; Edw. Hist.

Nat. Crust. iii. p. 123. t. 31. f. 1.

#### IDOTLEA ENTOMON (Lin.).

*Oniscus Entomon*, Lin., Faun. Suec. et Syst. Nat.

*Cymothoa Entomon*, Fabr., Ent. Syst. ii. p. 605.

*Idotea Entomon*, Bosc. Latr.; Edw. Crust. iii. p. 128.

Numerous fine specimens of these two species of Isopods are in the collection.

### PYCNOGONIDÆ.

#### NYMPHON HIRTIPES.

PLATE XXXV., fig. 3.

Pedipalparum digito mobili curvo, digito immobili multò superante; pedibus omnibus hirtis.

The rostrum is cylindrical, rounded at the apex; head with the anterior margin notched; the footjaws rather slender, the second joint having the immovable finger straight, the movable one much longer and moderately curved; the palps of the footjaws, or first pair of articulate appendages, five-jointed,

having the thoracic segments nearly equal, the legs with all the joints hairy, the nails abruptly bent.

As there is no figure of *Nymphon hirtum* of Fabricius, it is not possible to ascertain whether the present animal is identical with that or not, but it appears to me that it is distinct, as there is no hairiness about the body of *hirtipes*.

*Hab.* Northumberland Sound, in thirty-three fathoms.

## NYMPHON ROBUSTUM.

### PLATE XXXV., fig. 4.

Pedipalparum chelis globosis, digitis valde curvis: pedibus compressis levibus.

This very large species is remarkable for the peculiar structure of the pedipalps, which are robust and thick, the terminal portion or hand almost globular, with the fingers much curved, meeting at the points, and thus forming nearly a circle; the legs are strong and large, somewhat compressed, and quite naked.

In these descriptions I have considered the segment next to the cylindrical rostrum as the head, of which it is clearly the homologue, as the footjaws and the articulated appendages are attached to the anterior part of this segment.

*Hab.* Northumberland Sound, in thirty-three fathoms.

## EXPLANATION OF THE PLATES.

### PLATE XXXIV.

Fig. 1. *Hippolyte Belcheri*.—1 *a*, natural size; 1 *b*, superior antennæ, the tip of the inner filament removed; 1 *c*, terminal segment, with the caudal plates on one side.

Fig. 2. *Alauna Goodsiri*.—2, natural size, viewed above. 2 *a*, natural size. 2 *b*, upper antenna. 2 *c*, one of a pair of delicate knife-like plates, having a thickened line running obliquely from base to apex; the thin outer edge rounded at the tip, folding over on the inner edge; these rest within the concavities of the two portions of the rostrum, and are supposed

by Mr. Westwood, with much probability, to be the representatives of the scales of the antennæ. *2 d*, two lower antennæ, with the second antennal segment. *2 e*, mandibles. *2 f*, upper maxilla. *2 g*, lower maxilla. *2 h*, labium. *2 i*, inner foot-jaw. *2 l*, one of the first pair of compound feet. *2 m*, one of the last pair of compound feet. *2 n*, one of the middle pair of compound feet. *2 o*, one of the first pair of simple feet. *2 p*, front of the body seen from above. *2 q*, under side of the middle portion of the foot-bearing segments; those bearing the compound feet furnished with a pair of flattened compressed leathery plates, the faces of which are opposed to each other.

**Fig. 3.** The carapace, pedigerous segments, and basal segment of the abdominal portion of the smaller individuals found, of which there were no fewer than twenty-seven. The carapace is less convex, more transversal, angose at the anterior part; the last leg-bearing segment produced into an acute point on each side.

**Fig. 4.** *Gammarus Kroyeri*.—*4 a*, natural size. *4 b*, the two central divisions of the terminal segment.

#### PLATE XXXV.

**Fig. 1.** *Stegocephalus Ampulla*.—*1 a*, front of head; both antennæ on one side removed. *1 b*, labium of two mandibles. *1 c*, under side of left mandible, showing the articulation of the flattened articulated appendage. *1 d*, first maxilla. *1 e*, second maxilla. *1 f*, half of the labrum. *1 g*, a minute ciliated membranous appendage, which may possibly be a portion of a maxilla. *1 h*, footjaws. *1 i*, one of the first pair of feet. *1 k*, tail-pieces. *1 l*, one of about fifty young taken from the ovigerous pouch.

**Fig. 2.** *Caprella spinifera*.—*2 a*, natural size. *2 b*, upper lip. *2 c*, "palpigerous mandibles?" *2 d*, first maxilla. *2 e*, second maxilla. *2 f*, labium. *2 g*, footjaws. *2 h*, terminal segments of the body seen from above. *2 i*, the same seen sideways, showing a pair of short exarticulate filaments attached to the last leg-bearing segment, and a pair of similar

appendages, accompanied by a pair of larger two-jointed ones, attached to the minute terminal representative of the abdomen.

Fig. 3. *Nymphon hirtipes*.—3 *a*, oculigerous footstalk seen from above. 3 *b*, chelæ (footjaws). 3 *c*, one of the first pair of articulated appendages (palps of footjaws).

Fig. 4. *Nymphon robustum*.—4 *a*, a chela or footjaw. 4 *b*, palp of footjaw, or first articulated appendage. 4 *c*, one of the ovigerous appendages. 4 *d*, one of the same in one of the young ones attached to 4 *c*.

For the elaborate anatomical details of the Plates, and for the greater part of the description of them which I have adopted, I have to acknowledge my obligation to Mr. Westwood.