XXIX.—Contributions to British Carcinology.—I. Characters of undescribed Podophthalmia and Entomostraca. By the Rev. Alfred Merle Norman, M.A.

[Plates XIII. & XIV.]

Under the above title I propose to publish, from time to time, notes upon our rarer Crustacea, together with descriptions of such new species as may come into my hands. I regret to learn from Mr. Van Voorst that there is no prospect at present of a new edition or supplement to Bell’s ‘History of British Crustacea’ being published; may I be allowed, however, through this channel, to express a hope that Dr. Baird may be induced to prepare a Supplement to his admirable ‘Monograph of British Entomostraca.’ Ample material is in existence; and such portion of it as is in my own collection would be most gladly placed in his abler hands for description, if such a supplement were undertaken.

Subclass PODOPHTHALMIA.

Fam. Paguridae.

Pagurus ferrugineus, n. sp. Pl. XIII. figs. 1–3.

Pedes chelati ciliati, laeves, neque spiniferi neque granulati (præter quod margo carpi interior spinulosus est); margo brachii dextri interior setarum scopas gerens. Manus dextra ovata; sinistra minor, angustior, lateribus subparallelis, supra haud angulata. Oculorum pedunculi elongati. Longitudo 1 unc.

The carapace in this species is somewhat depressed anteriorly, with the margin not rostrate and scarcely flexuous. The long and slender eye-stalks reach to the middle of the last basal joint of the external antennæ, and to about one-third the length of the last joint of the peduncle of the interior antennæ. The first pair of feet, which are very unequal, are clothed with fine silky hairs.

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The right leg is furnished with a conspicuous brush of hair on the lower edge of the inner margin of the third joint; the wrist has spinose tubercles on the inner margin; the hand elongate-ovate, about equal to the wrist in length, not sculptured (neither spinose nor granular), clothed with scattered hair; fingers half the total length of the hand. Left hand very much smaller, with nearly parallel sides, and not angulated on the centre of the upper surface; fingers elongated, not toothed. Second and third legs slightly hairy, their upper margins not spinose. Colour reddish brown, uniform all over. Total length 1 inch.

The hairiness of the fore legs distinguishes this species from all its British congeners except cuanensis and Thompsoni; and from these, as well as, I believe, from all our species, it may be at once known by the smoothness of the bands, which have neither surface nor margins spinose or granular. The form of the fore legs in *P. levis* approaches closely to that of *P. ferrugineus*; but the surface of the former is minutely granular, and never hairy, the wrist and fore-arm are also more spiny on the inner edge, and the hand is always pale in colour, with a bright crimson central stain, which bifurcates and extends up the fingers.

In July 1859, when dredging in Moulin Huet Bay, Guernsey, I procured two small individuals of the new species now characterized, which were at once laid aside for description. This summer, while dredging with my friend Mr. Jeffreys in the Shetland Isles, two larger specimens were taken in Dourie Voe; and while drawing up this description, and looking through my collection of Hermit Crabs, I found a fifth example, mixed with the young of *P. Thompsoni*, which was taken, in February 1853, in Lamlash Bay.

**Fam. Palæmonidæ.**

**Subfam. ALPHÆINÆ (Dana).**

**Genus Hippolyte (Leach).**


*Rostrum* long, more or less sword-shaped, not articulated at the base. Third segment of abdomen produced behind, and the abdomen thence suddenly bent downwards. Eyes prominent. Internal antennæ generally with a spine externally at their base,
ending in two filaments; external antennæ always furnished with a scale. Pedipalps with their last joint flattened and toothed on the edge like a comb. First pair of legs shorter than the foot-jaws, and having small hands; second pair longer, their wrists many-jointed, and hands smaller than those of the first pair.

I have drawn up fresh characters of this well-known genus, for comparison with those hereafter to be described.

**Hippolyte producta, n. sp.** Pl. XIII. fig. 5.


This is by far the most slender member of the genus with which I am acquainted; every part is elongated, the body and all its members. The carapace is cylindrical; it does not present the slightest gibbosity on the back, nor at all exceed in size the first segment of the abdomen; the lateral margins are bent inwards below or wrapped round the body, instead of being produced downwards, as is usually the case. The rostrum is remarkably long, extending beyond the apices of the narrow antennal scales, which are themselves much produced; above, there is a single tooth near the base and over the eyes; below, there are four teeth, of which the last is the smallest, and is situated close to the apex. There is a tooth on the carapace on either side of the base of the rostrum, and another behind the origin of the external antennæ; the front margin of the carapace is also produced into two very minute spine-like expansions immediately below the eyes. The telson has one pair of minute teeth. The eyes, which are remarkable for their small size, are placed side by side, close together, and directly under the rostrum, so that, if looked at from above, they are almost entirely concealed.

From the above description it will be at once evident that, with respect to the armature of the rostrum, *H. producta* approaches both *H. varians* (Leach) and *H. viridis* (Otto)*. From

* *This species is the *H. Whitei* and *H. Mitchellii* of Mr. William Thompson (Ann. Nat. Hist. ser. 2. vol. xii. p. 110, pl. 6). Mr. Adam White, in 18*
the former it may be known by the larger number of teeth on the under side of the rostrum, from the latter by the presence of the tooth near the base of the rostrum above; from both by the single pair of spines on the telson. The remarkable elongation and slenderness of this species is, however, its most marked characteristic. It is quite a Mysis in form, and indeed, when I first took the species, I was under the impression that it belonged to that genus. The dredge came up one day in Lamlash Bay, Arran, full of Laminaire, among which were hopping numerous Hippolyte (varians, Cranchii, pandaliformis, &c.) and Pandali (annulicornis and Thompsonii): from these I at once singled out what I took to be a Mysis I had never seen before; the specimen was accordingly bottled, when, on reaching home, examination proved it to be the Hippolyte now described.

The colour, when alive, was a deep green (not so vivid as in H. viridis), with a black line down the back of the abdomen.

The species measures 1 inch from the extremity of the rostrum to the end of the telson; length of carapace $\frac{5}{10}$ inch, of rostrum $\frac{3}{6}$ inch; greatest depth of carapace $\frac{1}{10}$ inch.

Genus Doryphorus *, n. g.

Rostrum, oculi antennaeque eadem quae in Hippolyte. Abdominis segmentum tertiun non productum. Spina antennarum interiorum magna. Maxillipedum articulus ultimus ciliarius, spinulis (non in pectinis formam dispositis) paucis ad apicem instructus. Pedes primi secundique inter se maxillipedibusque fere pares, manibus elongatis instructi; secundi carpum annulati.

Rostrum, eyes, and antennae as in the genus Hippolyte; the spine at the base of the internal antennae large. Last joint of pedipalps cylindrical, ciliated, ending in a few spines, which, however, are not disposed in the form of a comb. First pair of feet much longer than in Hippolyte, about equal to the pedipalps and second pair of feet; third, fourth, and fifth pairs of feet long and slender, exceeding the first two pairs. Wrist of

his 'Popular History of British Crustacea,' quotes a note of mine, in which I stated my opinion that H. Mitchellii was a variety of H. varians. That opinion I now retract. I had then only seen two small specimens of "Mitchellii;" but having since taken that form as well as "Whitei" in considerable numbers at Jersey, Guernsey, and Bantry Bay, I am now satisfied that Mr. Thompson's Hippolytes are varieties of one species, which may always be known from varians by the absence of teeth on the upper side of the rostrum, as well as by its more produced form and larger size. The species would seem to be identical with Hippolyte viridis (Otto) (Alpheus viridis, Otto, Mem. de l'Acad. des Cur. de la Nat. de Bonne, lxiv. pl. 20. f. 4; Hippolyte viridis, Milne-Edwards, vol. ii. p. 372).

* Δορυφόρος, a spear-bearer, lancer.
the second pair not simple. Third segment of the abdomen not produced behind, nor differing from the other segments.

**Doryphorus Gordoni** (Spence Bate). Pl. XIII. figs. 6 & 7.


Rostrum moderately long, and very elegant from the fact of its being doubly bent; in the middle it inclines slightly downwards, and at the apex it again bends upwards. There are seven or eight equidistant and equal-sized teeth above, of which not more than two are situated posteriorly to the orbit; the apex is simple and bent upwards; the single tooth below is placed near the apex of the rostrum and opposite to the last tooth of the upper side. On either side of the carapace, below the orbit, is a single tooth. The interior antennæ are long, and considerably exceed the antennal scales in length. Two pairs of spines on the telson. The first feet are long, and, when directed forwards, project beyond the antennal scale by the length of the fingers, which in both the first and second pairs of feet are much larger than in the genus *Hippolyte*, elongated and curved. Colour reddish. Length, from the apex of the antennal scales to the end of the telson, 3 3/4 inch.

I took two specimens of *Doryphorus Gordoni* in Lamlash Bay in 1853, and afterwards found it among some Crustacea sent to me from the Moray Firth by Mr. Edward—the same locality from whence Mr. Spence Bate subsequently described the species. The absence of any prolongation in the third segment of the abdomen, the large size of the first pair of feet, the elongated hands of the first two pairs, and the greater length of the first, third, fourth, and fifth pairs, as compared with the second, seem to afford ample grounds for raising this interesting species to generic rank; and I had already drawn up the characters of the genus in MS. when Mr. Spence Bate's description appeared in the 'Natural History Review.'
Genus Dennisia, n. g.

Rostrum, abdomen oculique eadem que in Hippolyte. Antennae et externae et internae squama basali ornatae; internae tribus flagellis confectae. Maxillipedum articulus ultimus cylindricus, ciliatus. Pedes primi maxillipedibus longiores, manibus elongatis instructi.

Rostrum, abdomen, external antennae, and eyes as in the genus Hippolyte; the internal antennae have the basal joint compressed and flattened out into a scale similar in form to that attached to the external antennae, but smaller; their filaments are similar to those of the genus Athanas, the thicker of the two ordinary filaments being divided and sending out a slender branch near its termination. The last joint of the pedipalps is cylindrical and ciliated, not spinose. The first feet are longer than the pedipalps, and have lengthened hands, as in the genus Palæmon. The second feet in my specimens are injured, and I am consequently unable to draw characters from them. The palp of the mandibles appears to consist of a single joint.

Dennisia sagittifera, n. sp. Pl. XIII. figs. 8–13.

Scutum antice dentatum atque carinatum. Rostrum horizontale, cultrellatum, squamam antennarum exteriorum paulo superans: dentes marginis superioris octo, quorum duo in scuti carina positi; marginis inferioris tres; dentes ciliati. Margo scuti anterior duo aculeorum paria infra oculos posita gerens. Telson duobus aculeorum paribus ornatum.

The fore part of the carapace keeled. Rostrum nearly straight, a little longer than the scale of the exterior antennae, and deep in proportion to its length; of the eight teeth which are on the upper edge, two are on the carapace and six on the rostrum itself; below there are three teeth: all the teeth are ciliated. There is a spine at the origin of the external antennae, and a second spine on the carapace behind and a little below the first. Third segment of the abdomen gibbous and produced behind, as in the genera Hippolyte and Pandalus. There are two pairs of spines on the telson.

The colours of this species were very vivid and extremely beautiful when alive. The carapace was pale green, delicately spotted and mottled with brown; the abdomen very pale lilac, elegantly painted on the third segment with a chevron of a bright lilac (from this mark the specific name is derived), and before this were two oval brown spots. The legs were prettily banded with violet.

Among many rare Crustacea which were dredged by the Rev. R. N. Dennis and myself at Jersey, in 1859, was the present species. It was found among Zostera from about 4 fathoms water in St. Catherine’s Bay. I have named the genus after
my friend and brother carcinologist, in remembrance of the
happy hours which we have spent together, and as a tribute to
an excellent field naturalist.

Subfam. II. Pandalinae (Dana).

Genus Pandalus, Leach.

‘Pandalus Thompsoni’, Bell. Pl. XIV. figs. 3–9.

Crust. p. 123.
Pandalus Jeffreysii, Spence Bate, Fauna of Swansea; and Nat. Hist. Re-
view, vol. vi. p. 100, with woodcuts.

Bell has described a Hippolyte, but figured a Pandalus, for this
species. Any one looking at the woodcut in the ‘History of
British Crustacea,’ will see that the first feet are rightly drawn
with “the terminal joint styliform and simple,” which is the
chief character of the genus Pandalus. Hippolyte Thompsoni is
thus undoubtedly synonymous with Mr. Spence Bate’s Pandalus
Jeffreysii. Mr. Gosse was near discovering the truth. In his
“Notes on some new and little-known Marine Animals” (Ann.
Nat. Hist. ser. 2. vol. xii. p. 155), he remarked that the rostra!
spines of Hippolyte Thompsoni are not simple serratures, but
“triangular spines articulated to the edge,” as in Pandalus an-
nulicornis; but there his observations appear to have ceased, and
he failed to notice that the shrimp which he was examining was
in all respects a true Pandalus.

Subfam. III. Palemoninae (Dana).

Genus Palemon, Fabr.

Palemon minans, n. sp. Pl. XIV. figs. 1 & 2.

Scutum dorsale vix carinatum. Rostrum hauud longe ab origine
subito resimum; squamam antennarum non superans. Dens unus
in scuti tergo positus. Rostri dentes, marginis superioris nulli,
inferioris tres, ciliati.

This Palemon may be known at a glance from the other
British species by the remarkable form of the rostrum, which,
instead of being horizontal or nearly so, is suddenly bent up-
wards at a short distance from its base. There is a single tooth
on the back of the carapace, but none on the upper margin of
the rostrum. The under side of the rostrum is furnished with
three large teeth, which are fringed with fine hairs.

Palemon minans was taken at Guernsey in 1857. The specific
name has reference to the “threatening” aspect of the rostrum
—upraised, as it were, to strike.
Subclass ENTOMOSTRACA.

Fam. Cypridinidae.

Genus Cypridina, Milne-Edwards.

Cypridina teres, n. sp. Pl. XIV. fig. 10.

Shell ovate, not produced, very slightly widening just below the middle, quite smooth, pure white, moderately and regularly convex. Oral slit narrow and somewhat semicircular in form. Length $\frac{1}{3}$ inch.

The nearest ally to this species is perhaps Cypridina Marie (Baird); but the form of the latter is more produced, narrower in proportion to its length, of more equal breadth throughout, and much more tumid.

Cypridina teres was kindly added to my collection by the Rev. R. N. Dennis, who found it among shell-sand which had been dredged at Oban.

Genus Philomedes, Lilljeborg.

The genus Philomedes is distinguished from Cypridina by the antennae, which are furnished with a remarkable, long seta.

Philomedes longicornis, Lilljeborg. Pl. XIV. fig. 11.

Shell subquadrangular-ovate, slightly convex. Anterior margin generally retuse, but sometimes rounded; dorsal and ventral margins moderately arched; posterior margin obliquely truncate, the ventral angle being the lower. A short spine is frequently, but not always, present at the dorsal angle of the posterior extremity. Oral aperture wide, gaping, triangular. The surface of the shell seems to be always more or less excavated with large irregularly disposed circular or subcircular pits, which in aged examples are often confluent and form large scars. Length $\frac{4}{20}$ inch.

I met with this species, now first added to the British fauna, in some numbers among dredged stuff sent to me by W. Webster, Esq., from Plymouth Sound, on account of its containing Chemnitzia fenestrata and Odostomia acuta in great abundance. I am indebted to Dr. Baird for pointing out to me the identity of the Plymouth Entomostracan with Lilljeborg's species.

In concluding these descriptions, I must return my best thanks to my friend Mr. Hodge for the valuable assistance he has given me in illustrating the paper.