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[FIFTH SERIES.]

“..... per litora spargite muscum,
Naiades, et circum vitreos considite fontes:
Pollice virgineo teneros hic carpite flores:
Floribus et pictum, divæ, replete canistrum.
At vos, o Nymphæ Craterides, ite sub undas;
Ite, recurvato variata corallia trunco
Vellite muscosis e rupibus, et mihi conchas
Ferte, Deæ pelagi, et pingui conchylia succo.”

N. Parthenii Giannettasii Ecl. 1.

No. 19. JULY 1879.

I.—*Descriptions of new or little-known Species of Maioid Crustacea (Oxyrhyncha) in the Collection of the British Museum.* By EDWARD J. MIERS, F.L.S., F.Z.S., Assistant in the Zoological Department.

[Plates IV. & V.]

THE present paper contains descriptions of all the species of *Oxyrhyncha* in the British-Museum collection that appear to have been hitherto unrecorded, with the exception of a few specimens whose age or condition is such as to render it unadvisable to describe them as new to science. Two or three were noticed, but not described, by White, so long ago as 1847, in the ‘List of Crustacea in the Collection of the British Museum.’

For diagnoses of the new genera briefly referred to below, and characters of the families, I must refer to my paper on “The Classification of the Maioid Crustacea,” published in the ‘Journal of the Linnean Society, Zoology,’ vol. xiv. p. 634, for the present year.

The following is a systematic list of the species:—

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Systematic List of the Species described.

INACHIDÆ.

- Achæopsis Güntheri*, sp. n.
Eucinotops ? *Stimpsoni*, sp. n.
Halinus truncatipes, sp. n.
Trigonothir obtusirostris, gen. et sp. nov.
Huenia pacifica, sp. n.
Simocarcinus (g. n.) *simplex* (*Dana*).
Cyclonyx (g. n.) *frontalis* (*White*).

MAHDÆ.

- Chorilibinia gracilipes*, sp. n.
Paramithrax (*Leptomithrax*) *compressipes*, sp. n.
 — (—) *brevirostris*, sp. n.
 — (*Paramithrax*) *spinosus*, sp. n.
 — (—) *halimoides* (*White*, *ined.*).
Acanthophrys paucispina, sp. n.
Pisa carinimana, sp. n.
Hyastenus (*Chorilia*) *gracilirostris*, sp. n.
Pseudomicippe ? *varians*, sp. n.
Paramicippe affinis, sp. n.
Micippe parvirostris, sp. n.

PERICERIDÆ.

- Tylocarcinus* (g. n.) *styx* (*Herbst*).

- Tylocarcinus gracilis*, sp. n.
Othonia quadridentata, sp. n.
Parathoë rotundata, gen. et sp. nov.

PARTHENOPIDÆ.

- Lambrus* (*Lambrus*) *longispinus*, sp. n.
 — (—) *Holdsworthi*, sp. n.
 — (—) *lævicarpus*, sp. n.
 — (—) *longimanus* (*Linn.* ?).
 — (—) *deflexifrons*, sp. n.
 — (—) *hoplonotus*, *Ad.* & *White*.
 — (—) —, var. *granulosus*, n.
 — (—) —, var. *longioculis*, n.
 — (—) —, var. *planifrons*, n.
 — (—) *curvispinus*, sp. n.
 — (*Parthenopoides*) *erosus*, sp. n.
 — (—) *expansus*, sp. n.
Cryptopodia spatulifrons, sp. n.
 —, var. *lævimana*, n.
Ceratocarcinus spinosus, sp. n.

Inachidæ.

Achæopsis Güntheri, sp. n. (Pl. IV. fig. 1.)

Carapace broadly triangulate, moderately convex. Rostrum short, spines acute. There is a small supraocular spine. The spines of the carapace are disposed as follows:—There is a very large perpendicular spine upon the gastric region, a large blunt conical tubercle upon the cardiac, and a smaller tubercle upon each of the branchial regions. The postocular spine is small. Behind the eyes, on the subhepatic region, is a blunt tubercular prominence. The anterior legs (in the female) are small. The ambulatory legs are smooth, of moderate length; the terminal joints in the first pair long, slender, and nearly straight; in the following pairs slightly curved. Length to base of rostrum $\frac{1}{2}$ inch.

Hab. Cape of Good Hope (*H.M.S.* 'Herald').

A single adult female is in the collection. Length of carapace about $\frac{1}{2}$ inch.

This species is easily distinguished by the remarkably prominent gastric spine. The terminal joints of the legs and the carapace in front of the gastric spine are slightly hairy. In

Achæropsis spinulosus, Stm., also from the Cape of Good Hope, of which specimens of both sexes are in the collection, and which is the only other known species of the genus, there are three spinules on the gastric region and several upon the sides of the carapace. The genus *Achæropsis* appears to represent *Inachus* in the southern hemisphere.

I dedicate this species, which is certainly one of the most striking of those here to be described, to Dr. Günther, F.R.S., Keeper of the Zoological Department, by whose continual kindness and encouragement my studies have been so greatly facilitated.

Eucinetops? Stimpsoni, sp. n.

Carapace subpyriform and convex, upper surface without spines or tubercles. Rostrum deflexed; the spines of which it is composed small, flattened, acute, and separated by a narrow fissure. Immediately behind the eyes are two small blunt prominences; and a third, at a little distance, represents the postocular spine. There are two very small tubercles at the distal end of the slender basal antennal joint. The second and third joints are not, as in *E. Lucasii*, very broad, but cylindrical. Anterior legs (in the female) very slender and smooth. Both the body and legs are pubescent. Length of carapace $\frac{5}{8}$ inch.

Hab. N.E. coast of Australia (*Cuning*).

This species is represented only by a single female specimen.

I am in some doubt as to whether this species should not be made the type of a genus distinct from *Eucinetops*. It resembles the Californian *E. Lucasii*, Stimpson, in the small and deflexed rostrum, the great length and mobility of the eyes, the very small epistome, &c., but differs in the more elongate-triangular carapace, and in the non-dilatation of the second and third joints of the flagellum of the antennæ. If distinct as a genus, I should propose to designate it as *Anacinetops*. It comes very near to *Camposcia*, but is distinguished by the presence of a distinct rostrum and by the longer, slenderer eye-peduncles.

Halimus truncatipes, sp. n.

Carapace elongate-ovate, moderately convex; gastric region with about eleven tubercles, of which four anterior are arranged in a transverse series, and three posterior in a median longitudinal series, the others are lateral; cardiac region with two obtuse tubercles, and, posterior to these, three in a longitudinal median series; the last of these, on the posterior margin of the carapace, is an acute spine. There are three

or four obscure tubercles on each branchial region, and six spines on each lateral margin, including the two spines which represent the upper orbital margin. The spines of the rostrum are acute and strongly divergent. There is a spine at the extero-distal angle of the basal antennal joint. The merus joint of the outer maxillipedes is strongly produced at its antero-external and the ischium joint at its antero-internal angle. The anterior legs (in the male) are small; arm with a spine at the distal end of its upper margin; wrist obliquely carinated; palm slender, smooth, and compressed; fingers straight and acute. The penultimate joints of all the ambulatory legs are dilated and almost square-truncated at their distal ends, and the terminal joints strongly curved and acute. Postabdominal segments (in the male) with a slight convexity in the middle line. Length of female nearly $1\frac{1}{2}$ inch.

Hab. Australia (*Bowerbank*).

The legs are clothed with long fulvous hairs.

This species is distinguished from *H. aries* and specimens I refer to *H. spinosus* by the much more squarely truncated joints of the ambulatory legs, from *H. auritus* by the existence of a spine on the posterior margin of the carapace, and from *H. tumidus* by the prominent lateral marginal spines, &c. In Hess's description of *H. spinosus* the form of the penultimate joints of the ambulatory legs is not stated. If the specimens now described as *H. truncatipes* belong to that species, it will be necessary to give a distinct designation to those in the Museum collection (from Victoria and King George's Sound, West Australia) which are now referred to *H. spinosus*.

Of *H. truncatipes*, besides a fine female example from Australia, there is a male, without definite locality, in the British-Museum collection.

Trigonothir obtusirostris, gen. et sp. nov.

(Pl. IV. fig. 2.)

The carapace is triangular, narrowing anteriorly, and smooth; cardiac region convex. There is a large and prominent rounded tubercle on the cardiac region; and the antero-lateral margins, which are straight and otherwise unarmed, terminate posteriorly in similar prominent lobes; on the posterior margin of the carapace are two small tubercles. The very prominent rostrum is rounded above and in front, and perfectly flat on its under surface; the lateral carinæ are acute and on a level with the flat under surface. The basal antennal joint is unarmed; and the slender flagellum is concealed beneath the rostrum. The anterior legs (in the male)

are rather small, palm compressed, and fingers excavate at tips. The ambulatory legs are smooth, decrease regularly in length, and their terminal joints are slightly arcuate and acute.

The male postabdomen is apparently six-jointed (though now broken at the tip), the penultimate and antepenultimate joints coalescent. Length nearly $\frac{3}{4}$ inch.

Hab. Unknown.

A single male is in the collection.

The *Huenia pyramidata* of Heller, from the Red Sea, should perhaps be referred to the genus *Trigonothir*, but differs from *T. obtusirostris* in the absence of the lateral rostral carinæ, &c.

The genus *Trigonothir* is characterized principally by the form of the prominent obtusely rounded rostrum, which is armed, in *T. obtusirostris*, with lateral carinæ. It is further distinguished from *Menathius* by its immobile eyes and the want of a præocular spine; from *Huenia* by the latter character; and from *Simocarcinus* by the form of the anterior legs.

Huenia pacifica, sp. n. (Pl. IV. fig. 3.)

Carapace elongate-triangular, smooth, with three small tubercles on the gastric region, which is somewhat elevated, and a more prominent tubercle on the cardiac region. The antero-lateral margins, which are nearly straight, terminate posteriorly in a small tubercle or spine. The rostrum is very long, slender, compressed, and straight; the præocular spine is very small. The basal antennal joint is angulated, and has a very small tubercle at its extero-distal angle. Postabdomen of male 7-jointed, smooth; the edge of the sternal plastrum is reflexed, and forms a raised rim around the margin of the terminal postabdominal segment. Length of carapace $5\frac{1}{2}$ lines, rostrum 4 lines.

Hab. Fiji Islands, Ngau (*H.M.S. 'Herald'*).

The description is taken from a male example, in which, unfortunately, all the legs are wanting.

In a female specimen in the collection from Ovalau in the Fiji group, which may very probably belong to the same species, the rostrum is much shorter, the lateral expansions of the carapace are unequal and separated by a semicircular emargination, the anterior are larger and rounded, the posterior truncated at the end. The ambulatory legs are very slender and not at all dilated, with a small tubercle at the distal end of the merus joints. The fourth to sixth postabdominal segments coalescent.

This species differs from the *H. proteus*, De Haan, and *H.*

heraldica, White, in the much longer, slenderer rostrum of the male, which is not vertically deep as in those species.

H. Grandidieri, A. M.-Edwards, from Zanzibar, is founded on a female example, which differs from the female from the Fijis in the Museum collection in the truncated anterior lateral and subacute posterior lateral lobes of the carapace. *H. depressa*, A. M.-Edwards, also founded on a female example, seems to belong to the following genus (*Simocarcinus*).

SIMOCARCINUS, Miers.

I propose to establish a new generic division under the above name for the species *Simocarcinus simplex*, typified by the *Huenia simplex*, Dana, from the Sandwich Islands, which differs from the typical *Huenia* in having a more robust body, much shorter rostrum, no præocular spine, the lateral lobes of the carapace in the female much smaller, the anterior legs in the male with the palms turgid, not compressed, and ambulatory legs cylindrical, not compressed or dilated.

The two species described by Dana (*H. simplex* and *H. brevirostrata*) are, beyond a doubt, the male and female of one and the same form. Specimens from the Sandwich Islands are in the collection of the British Museum, of both sexes. The females in the Museum collection differ slightly from that figured by Dana in having the anterior lateral lobes of the carapace larger and subtruncated; but this is perhaps due to the age of the specimens.

CYCLONYX, gen. nov.

This new generic division is established for the remarkable species described by White as *Huenia frontalis* (P. Z. S. 1847, p. 223; and Zool. Samarang, Crust. p. 21, pl. iv. f. 3, 1848). The single specimen in the British Museum is apparently the exuvia of a female, and resembles the females of *Huenia* in the laterally expanded carapace; but in *Cyclonyx frontalis* the lateral expansions are continuous, not divided into anterior and posterior lobes. The rostrum is flattened and of a transversely oval form, and completely conceals the flagellum of the antennæ, whose basal joint is scarcely distinguishable from the surrounding parts of the body. The eyes are set in the narrow emargination between the margins of the carapace and rostrum. The epistome is short. The outer maxillipedes have the merus joint small and not much produced at its antero-external angle. The anterior legs are now wanting. The ambulatory legs (of which only the second and third are now perfect) are angulated, cristate above, the penultimate

joints truncated at their distal ends, against which the terminal joints are retractile. In the postabdomen the sutures of all the joints are clearly distinguishable.

Hab. —?

Perhaps, when the examination of specimens in good condition shall have determined the structure of the orbits and antennæ of this remarkable form, it will be found necessary to remove it to the Periceridæ. For the present I retain it in the neighbourhood of *Iluenia*, to which it is allied in many respects. The form of the rostrum alone suffices to distinguish it from all its allies.

Maiidæ.

Chorilibinia gracilipes, sp. n. (Pl. IV. fig. 4.)

Carapace subpyriform, smooth, and spinose above, the spines disposed as follows:—four in the middle line, of which two are on the gastric, one longer on the cardiac, and one strong curved spine upon the posterior margin. There are two strong spines upon the branchial regions above; and below them, immediately above the bases of the ambulatory legs, are four small blunt spines. The posterior margin of the carapace is produced and forms a thin edge. Below, upon the pterygostomian region, is a rather strong spine; and there is a blunt spine at the antero-lateral angles of the buccal cavity. The rostrum is prominent, the spines coalescent at base and divergent in their distal half. The upper orbital margin is prominent and divided by a narrow fissure; and there is a wider fissure below. The anterior legs are small, slender, smooth, palm slightly compressed, and fingers straight and acute. The ambulatory legs are long and very slender, and are clothed with distant tufts of small curled hairs. The first ambulatory legs in particular are very greatly elongated, and with the terminal joints very long and slender. The postabdominal segments (in the male) are all distinct. Length of carapace to base of rostrum, in the larger specimen, nearly $\frac{1}{2}$ inch.

Hab. Papua (*H.M.S.* 'Herald;') the locality may be doubtful).

Two male individuals are in the collection of this very interesting species. I assign it to the genus *Chorilibinia* of Lockington without much hesitation, although the generic diagnosis and specific description of his species (*C. angusta*) from California leaves much to be desired in point of completeness. The structure of the rostrum and orbits is the same; and the basal antennal joint bears a long spine on its outer margin. The inferior surface of the body is densely pubes-

cent. *C. angusta* is distinguished by the existence of three spines on the antero-lateral margins &c.

Paramithrax (Leptomithrax) compressipes, sp. n.

Carapace svopyriform, moderately convex, and covered with numerous small, wart-like, rounded tubercles, but without spines, except that on the gastric and cardiac region there is a small conical spine. On the antero-lateral margins, behind the strong spines of the upper margin of the orbit, is a series of six small spines. The spines of the rostrum are short, slender, and but slightly divergent. The basal antennal joint is not much enlarged, and has two granulated spines at its distal end, and one on its inner margin. There is a blunt granulated tubercle on the anterior margin of the epistome, below the antennular fossæ. The merus joint of the outer maxillipedes is broad and rounded at its antero-external and produced and subacute at its antero-internal angle. The anterior legs (in the female) are small, slender, and perfectly smooth, without spines or tubercles. The ambulatory legs are smooth and very robust, with the antepenultimate and penultimate joints longitudinally sulcated; the antepenultimate joints in all except the last pair are flattened and greatly dilated distally; the terminal joints are straight and smooth; postabdomen wanting. Length of carapace to base of rostrum $\frac{2}{2}$ inches.

Hab. Canton (*Hon. E.-India Co.*).

This species is represented by a single female specimen. In the form and tuberculation of the carapace it resembles *P. barbicornis*, Latr., but differs from that species and all others of the genus in the smoothness of the anterior legs and the remarkable dilatation of the antepenultimate joints of the ambulatory legs. It is probable that the carapace and legs were densely pubescent in the living animal. It would also appear to be allied to *P. ursus*, Herbst, which, according to Gerstæcker's description, has the "tibia" anteriorly triangularly dilated, but differs in having very broad and short rostral spines and a greatly enlarged tooth posterior to the postocular tooth.

Paramithrax (Leptomithrax) brevisrostris, sp. n.

Carapace subtriangular, without spines on its upper surface, but covered with small scattered tubercles. Antero-lateral margins with five spines (not including the postocular). Spines of rostrum very short, triangular, and acute. Basal antennal joint with two prominent spines at its distal end. Anterior legs (in the female) slender; arm minutely spinulose above;

wrist with small tubercles; palms smooth, longer than the wrists; and fingers straight, smooth. Ambulatory legs with the antepenultimate joints longitudinally sulcated, but not dilated (as in the preceding species). Postabdominal segments (of the female) smooth, distinct. Length of carapace to base of rostrum $1\frac{5}{8}$ inch.

Hab. — ?

The form and extreme shortness of the spines of the rostrum serve to distinguish this species from its congeners.

Paramithrax (Paramithrax) spinosus, sp. n.
(Pl. IV. fig. 5.)

Carapace subpyriform; surface covered with small scattered granules, and with spines disposed as follows—an acute spine, followed by a rounded tubercle, on the gastric region, a bituberculated prominence on the cardiac region, two spines on each branchial region, a spine on the intestinal region, and a very small spine on the posterior margin of the carapace. The spines of the upper orbital margin are blunt; and posterior to them, on the antero-lateral margins, are one or two small spinules. Spines of rostrum divergent and acute. Pterygostomial regions granulated. Basal antennal joint rather narrow, longitudinally sulcated, and with a small tubercle at its antero-external angle. Merus joint of outer maxillipedes small and without a distinct notch at its antero-internal angle. Anterior legs (in the male) robust; arm granulated on its outer surface, and with two or three spinules above; wrist spinulose above and with a dentated crest on its outer surface; palm compressed and perfectly smooth; fingers arcuate and meeting only at the tips, which are denticulated and acute; there is a strong tubercle on the inner margin of the upper finger near the base. Ambulatory legs slender. Postabdominal segments distinct, the terminal one the longest. Length to base of rostrum $\frac{3}{4}$ inch.

Hab. Norfolk Island, on a fish taken at a depth of 23 fathoms (*H.M.S. 'Herald.'*)

One male individual is in the collection. This species, in the form of the merus joint of the outer maxillipedes, approaches *Acanthophrys*. It comes near in external appearance to specimens in the Museum collection from Australia and New Zealand, which I formerly referred to *P. Gaimardi*, M.-Edwards, but now to *P. sternocostulatus*, M.-Edw., but differs in the number and position of the spines on the branchial regions and lateral margins, and in the much slenderer basal antennal joint, which has not two spines at its distal extremity.

Paramithrax (Paramithrax) halimoides, sp. n.

Carapace elongated, and scarcely narrowing anteriorly, with five long spines in a longitudinal median series, of which two are on the gastric, one on the cardiac, and one on the intestinal region, and one on the posterior margin directed backward; also one on each branchial region. The spines of the rostrum are long, acute, and slightly divergent. The præocular spine is prominent and acute, the postocular large and lamellate, and it is followed by a smaller prominence on the hepatic region. Basal antennal joint rather narrow, with two spines, of which one at the antero-external angle is prominent and directed outward. Merus joint of the outer maxillipedes with a notch for the insertion of the following joint at its antero-internal angle; exognath narrow. Anterior legs (in the male) small and slender; arm with a slight dentated crest on its under surface, wrist carinated above, palm compressed, and fingers straight and acute. Ambulatory legs slender, with a prominent spine at the distal end of the merus joints. Postabdominal segments (in the male) distinct, slightly tuberculated in the middle line. Length of carapace to base of rostrum about $\frac{2}{3}$ inch.

Hab. Eastern seas (*H.M.S. 'Samarang'*).

This species is mentioned but not described, under the name of *Chorinus halimoides*, by White, in the 'List of Crustacea in the British Museum,' p. 123 (1847); and De Haan's *Halimus incisus* is referred to doubtfully as synonymous with it; but it has nothing to do with that species, which belongs to the genus *Pugettia*, and has recently been received by the British Museum from the Japanese seas. It is not referred to in the 'Zoology of the Voyage of the Samarang.' It is distinguished from *Paramithrax aculeatus* (*Chorinus aculeatus*, M.-Edw.), and *Paramithrax longispinus* (De Haan), and *P. acanthonotus* and *P. verrucosipes*, Ad. & White, all of which have been referred to *Chorinus*, by the number and disposition of the spines of the carapace. I believe it to be necessary to restrict the genus *Chorinus* to the single species comprehended in Milne-Edwards's first section of the genus, the West-Indian *C. heros* (Herbst).

Acanthophrys paucispina, sp. n.

Carapace subpyriform and spinose above; there are two or three small spinules in a longitudinal median series on the gastric region, another on the cardiac region, followed by a prominent spine, and a tubercle on the intestinal region; there

are two spines on each branchial region. Over the eye is a very prominent and triangular spine; the postocular is smaller and blunt, the rostral spines are acute and divergent, the basal antennal joint is very large, with a spine, directed forward, at its antero-external angle. Outer maxillipedes smooth; ischium joint very narrow; merus joint large, concealing the following joints, without a notch at its antero-internal angle, and much produced and rounded at its antero-external angle; exognath very large, broader than the ischium joint. Anterior legs (in the male) smooth; palm compressed and carinated above, fingers nearly as in *Paramithrax spinosus*. Ambulatory legs slender and smooth, terminal joints slightly curved. Postabdominal segments (in the male) smooth, distinct. Length of carapace to base of rostrum nearly $\frac{1}{4}$ inch.

Hab. Fiji Islands, Ovalau (*H.M.S. 'Herald'*).

I propose to restrict the genus *Acanthophrys* to the species having the outer maxillipedes of the form described above. I have not seen the type specimens of either of M. A. Milne-Edwards's species; but this character (if we may judge from the figure) seems to exist in his *Acanthophrys cristimanus*; and it certainly does in a specimen which I refer to it from the Marquesas in the British-Museum collection, and which is labelled "*Pisa cristimana*." There seems to be no other positive character to distinguish this genus from *Paramithrax*. One male individual of *A. paucispina* is in the collection.

Pisa carinimana, sp. n. (Pl. IV. fig. 6.)

The carapace of this pretty little species is subpyriform, closely pubescent, and with a few longer curled hairs. There are six very obscure tubercles or granules disposed in two transverse series of three each upon the gastric region, and two tubercles on the branchial regions, besides the small lateral epibranchial spine; the cardiac region is very convex, elevated, and rounded; and there is a small median tubercle upon the posterior margin of the carapace. The upper orbital margin projects considerably; and the hiatus in it encloses a small tooth. Behind the postocular tooth or lobe is another small tooth. There is a row of granules on the pterygostomian regions. The spines of the rostrum are rather long, slender, and divergent from a point at some distance above their base. The anterior legs in the male are rather small; arm granulated on its upper, outer, and lower margins; wrist obscurely carinated on its outer surface; palm compressed, carinated above and below, and longitudinally faintly sulcated on its outer surface. The second pair of legs are much longer than the succeeding. Fingers denticulated on their inner

margins, and nearly straight. All the ambulatory legs are slender, cylindrical, and unarmed. Length to base of rostrum 5 lines, breadth $4\frac{1}{2}$ lines.

Hab. Canaries (*R. MacAndrew, Esq.*).

This species shows a relation to *Hyastenus* in its greatly elongated second legs. In the form of the rostrum it approaches *P. erinacea*, A. M.-Edw., a West-Indian species. It differs very markedly from the *Micropisa ovata*, Stimpson, from the Cape-Verds, as figured by M. A. Milne-Edwards, in its slenderer, more divergent rostral spines, narrower carapace, and longer second legs. Specimens both of *M. ovata* and of *M. violacea*, A. M.-Edwards (the latter from W. Africa), are in the Museum collection, and have so great an affinity with the species of *Rhodia*, Bell, and *Herbstia*, that I think it will be impossible to maintain the genera *Micropisa* and *Rhodia* as distinct from *Herbstia*.

Hyastenus (Chorilia) gracilirostris, sp. n.
(Pl. IV. fig. 7.)

Carapace subpyriform, with three spinules in a longitudinal median series on the gastric region, a strong conical spine on the cardiac, a tubercle on the posterior margin, and two spines on each of the branchial regions, of which the larger occupies the usual position of the lateral epibranchial spine. Spines of the rostrum very slender and divergent. Basal antennal joint rather broad, and with only a small tubercle at its antero-external angle. Merus joint of outer maxillipedes small, transverse. Anterior legs rather small; arm and wrist slender; palm compressed; fingers arcuate and meeting only at the tips, which are denticulated and acute. Ambulatory legs very slender, the first pair much the longest. Postabdominal segments distinct. Length of carapace to base of rostrum about $\frac{1}{2}$ inch.

Hab. Fiji Islands, Nairai (*H.M.S. 'Herald'*).

One male example is in the collection.

This species differs from all its congeners in the disposition of the spines and tubercles of the carapace.

Pseudomicippe? varians, sp. n.? (Pl. IV. fig. 8.)

I designate by this name, with much hesitation, two specimens, male and female, in the British Museum. They agree with one another in the characters of the orbital and antennal region, and in the number and disposition of the tubercles of the carapace, and also in these particulars with the figures and description of *Pseudomicippe tenuipes*, A. Milne-Edwards. There do not exist, however, on the ventral surface of the

cephalothorax the granulated crests mentioned by A. Milne-Edwards. Moreover these specimens differ very remarkably in the form of the rostrum from one another. In the female the gastric region is very convex and the rostral spines deflexed and short, as in the other species of *Pseudomicippe*, whereas in the male they are much longer, slender, and nearly horizontal. The anterior legs, as usual in the male sex, are more developed, palm larger and compressed. It seems scarcely possible that these specimens, which were collected on the same occasion and at the same locality, can belong to distinct species; and if not, it is very remarkable that the deflexed rostrum, which is one of the principal characters of the genus, should fail in the male sex in this particular species. Length of carapace to base of rostrum (in the male) 7 lines.

Hab. Shark's Bay, Western Australia (*H.M.S.* 'Herald').

Paramicippe affinis, sp. n.

Carapace suboblong, deeply concave on the hepatic regions, surface uniformly and evenly granulated; on the gastric region are two somewhat larger granules, placed one behind the other, and followed by one on the cardiac region; there is also one on each branchial region; the lateral and posterior margins are granulated; the fissures of the upper orbital margins are very small; the rostrum is broad, spatulate, obliquely deflexed, with a small triangular notch at its distal end, and with its antero-lateral angles rounded, without teeth or spines. The anterior legs (in the female) are very small and smooth; the ambulatory legs are densely hairy. Length about 6 lines.

Hab. Bass's Straits (*H.M.S.* 'Challenger').

The single example (a female) was found among the 'Challenger' collection of fishes, and is very nearly allied to *P. platipes*, Rüppell, with which *P. bicarinata*, Ad. & White, and *Micippe hirtipes*, Dana, are probably identical. It differs in its more evenly granulated carapace, the absence of the spine on the antero-lateral margins of the rostrum, and the more densely hairy legs.

Micippe parvirostris, sp. n. (Pl. IV. fig. 9.)

Carapace triangulate-oblong, narrowing anteriorly; its whole surface covered with close-set but very prominent granules, which tend to become small spinules; rostrum composed of two very small, truncated, subvertically deflexed spines. The lateral margins are armed with six spines, including the postocular, which is bifid. The sides of the body, beneath the lateral marginal spines, are granulated, like the

surface of the carapace. The eye-peduncles are very long, compressed, smaller at the distal end, with a small blunt tooth on their anterior margin. The basal antennal joint is but moderately enlarged, with a very small spine at its antero-external angle; and the two following are somewhat dilated and compressed. Anterior legs (in the female) very small; arm and wrist granulose, palm and fingers smooth. Ambulatory legs robust; merus joints slightly granulated. Post-abdominal segments (of the female) distinct. Length $6\frac{1}{2}$ lines.

Hab. South Australia, Port Lincoln (*Mus. Zool. Soc.*).

This species is remarkable for the length and mobility of the eyes, the smallness of the basal antennal joint, the non-definition of the lower orbital wall, and the smallness of the rostrum. One female example is in the collection.

Periceridæ.

TYLOCARCINUS, Miers.

The genus *Tylocarcinus* is nearly allied to *Microphrys*, M.-Edwards (*Milnia*, Stimpson), and to *Tiarinia*, Dana, but differs from them both in the very slender basal antennal joint, the distal spine of which is short, as in *Tiarinia*, and is not visible in a dorsal view; from the former genus it is further distinguished by the narrow and elongated carapace, and from the latter by the divergent rostral spines.

Tylocarcinus styx.

Cancer styx, Herbst, Naturg. Krabben, &c. iii. p. 53, pl. lviii. fig. 6 (1803).

Pisa styx, Latreille, Encycl. Méth. x. p. 141 (1825); M.-Edw. Hist. Nat. Crust. i. p. 308 (1834).

Microphrys styx, A. M.-Edwards, Nouv. Arch. Mus. Hist. Nat. viii. p. 247, pl. xi. fig. 4 (1872).

Carapace subpyriform and covered with rounded tubercles; of these, two are placed in the interorbital space, four in a transverse series on the front of the gastric region, followed by three in a triangle. There are three, similarly disposed, on the cardiac, two on the intestinal region, three on the posterior margin, three or four on the front and two on the hinder lobe of each branchial region, and about six on the lateral margins. The spines of the rostrum are acute, rather short, and divergent from a point at some distance above their base. Præocular spine prominent, acute. Anterior legs (in the male) slender and nearly smooth. Ambulatory legs robust, with the merus joints spinulose, the following joint (in the first

and sometimes the succeeding pairs) armed with a strong spine. Postabdominal segments smooth, distinct. Length of carapace in the largest individual $\frac{2}{3}$ inch.

Hab. Fiji Islands, Ngau, Totoya, Ovalau; Conway Reef (*H.M.S. 'Herald'*).

The tubercles of the carapace are larger posteriorly, and are most distinct in the oldest individuals. In some examples the carapace is narrower and the rostral spines are longer; but these are not characters confined to one or the other sex. This species inhabits the coral reefs.

To facilitate the identification of the types of this new genus, I have given at length the description of the above, which I refer with some hesitation to the *Cancer styx* of Herbst. It is certainly the species figured by M. A. Milne-Edwards (*l. c.*) as *Microphrys styx*.

There is an adult male from the Mauritius in the British-Museum collection, which differs from an adult male of the species described above only in the greater enlargement of the hands, and in the greatly arcuated fingers, which meet only at the tips. I am not disposed to regard it as distinct, since M. A. Milne-Edwards has noted that *P. styx* is distributed throughout the Indo-Pacific region.

Tylocarcinus gracilis, sp. n.

Carapace elongate-pyriform, surface covered with granules and small tubercles. On the front of the gastric region are several small granules followed by four in a transverse line; the branchial, cardiac, and intestinal regions are very indistinctly tuberculated. The spines of the rostrum are long, very slender, and divergent nearly from their base. The spines on the third and fourth joints of the first pair of ambulatory legs are long and acute.

Hab. "Eastern seas" (*H.M.S. 'Herald'*).

This species differs from the foregoing principally in the much narrower and less distinctly tuberculated carapace, and in the form of the rostrum, and may perhaps prove to be only a variety of it; the spines of the rostrum are in *T. gracilis* more than half the length of the carapace; in *T. styx* they are much less than half its length.

Othonia quadridentata, sp. n. (Pl. V. fig. 1.)

Carapace rather broadly ovate, and smooth, without any trace of tubercles or granules. Lateral margins armed with four well-developed acute spines, without any trace of the fifth and sixth spines, which are observable in other species of this

genus. Basal antennal joint not dentated, or with a single small tooth on its anterior margin. Anterior legs (in the female) small and weak. Ambulatory legs smooth, without tubercles or spines. Postabdominal segments (in the female) distinct. Length of carapace about $\frac{1}{2}$ inch, breadth between the third and fourth lateral marginal spines $\frac{3}{4}$ inch.

Hab. West Indies (*Scrivener*).

There are in the British Museum the carapaces of two individuals (sex unknown), which differ only in their somewhat greater proportional breadth. The length of the larger individual is about 1 inch and $\frac{1}{2}$ line, the breadth $11\frac{1}{2}$ lines. The colour of these carapaces is greenish upon a pale ground, the green hue predominating on the anterior portion and forming reticulations upon the back and sides of the carapace. Traces of the same reticulations are visible on the sides of the carapace in the typical specimens of *O. quadridentata*.

That all these examples belong to the same species can scarcely be doubted; the greater breadth of the carapace in the two last-mentioned may be due to age or sex. This species is distinguished from all its congeners by the non-existence of the fifth and sixth lateral marginal spines, even in a rudimentary condition. The smoothness of the carapace further distinguishes it from all the species known, except *O. levigata*, A. M.-Edwards. These may appear but slight diagnostic characters; but this species is more distinct from its nearest allies than *O. Lherminieri* (for example) is from *O. levigata* or *O. sexdentata* from either. There appears to be no alternative between separating the species on such slight differences and uniting all, both from the eastern and western American coasts.

Parathoë rotundata, gen. et sp. n. (Pl. V. fig. 2.)

Carapace subtriangular, rounded behind, and indistinctly tuberculated; the gastric and cardiac regions are distinctly defined and nearly smooth; there are four or five indistinct rounded elevations on the branchial regions, and two tubercles on the posterior margin. The rostrum is very small, little prominent, and notched at its extremity. The anterior legs (in the male) are robust; arm and wrist smooth; palm enlarged, smooth and compressed; fingers arcuate, and meeting only at the tips, which are excavated. On the inner margin of the mobile finger, near its base, is a small tubercle. The ambulatory legs are robust, with the merus joints strongly tuberculated. The rather narrow basal antennal joint is unarmed at its distal end. The postabdominal segments (in the male and female) are smooth and distinct. Length $3\frac{1}{2}$ lines.

Hab. Totoya, Fiji Islands (*H.M.S. 'Herald'*); Port Curtis (*H.M.S. 'Herald'*).

Notwithstanding the small size of the specimens, they have all the appearance of being adult.

There is in the Museum collection a female example from the Gulf of Suez (*MacAndrew*), which seems to belong to this species.

The genus *Parathoë*, as its name imports, is most nearly allied to *Thoë*, Bell, but differs in the much narrower basal antennal joint, and in the non-dilatation of the merus joints of the ambulatory legs. From *Mithraa*, which it may be supposed to represent in the Indo-Pacific seas, it differs in the first-mentioned character and also in the form of the carapace and absence of antero-lateral marginal teeth.

Parthenopidæ.

LAMBRUS.

The genus *Lambrus* is one which is remarkable for the number and variety of its species; and it greatly stands in need of revision. Several of the described forms are insufficiently characterized; and it is therefore not without considerable hesitation that I have described so many below as new to science. The genus can be conveniently divided into two subgenera:—the first containing the typical *Lambri**, in which the carapace is rhomboidal rather than triangular, or rounded behind, and the anterior legs greatly elongated, considerably more than twice the length of the body, and more or less spinose; the second containing those forms in which the carapace is subtriangular, somewhat produced over the bases of the ambulatory legs at its postero-lateral angles, with the posterior margin straight or nearly so, and the anterior legs shorter, rarely exceeding twice the length of the carapace.

In the first of these subgenera the species may be further subdivided, according as the merus joints of the ambulatory legs are or are not spinulose along their margins. The second subgenus, in the shortness of the anterior legs, approaches *Parthenope*, and contains several forms which have been described as members of that genus. I believe it to be more convenient, however, to restrict the designation *Parthenope* to the long-known *P. horrida*, Lam., and its near ally *P. spinosissima*, A. M.-Edwards, which are characterized by the greater development of the basal antennal joint and of the spines of the ambulatory legs.

* The type of this subgenus is *L. longimanus*, and not, as stated by a *lapsus calami* in Journ. Linn. Soc. xiv. p. 672, *L. crenulatus*, Saus.

I may here observe that Dr. Stimpson has proposed to separate under the name of *Platylambrus* a certain number of *Lambri*, characterized by the excavation of the subhepatic and pterygostomian regions (the excavation forming an afferent branchial channel); but this peculiarity is developed in species otherwise so dissimilar, and these species pass so completely into the forms in which this channel is not developed, that I think the proposed character can scarcely be retained as a generic distinction.

- § 1. Carapace usually rounded behind (the postero-lateral margins not in a line with the posterior margin); anterior legs greatly elongated and usually spinose. (Typical *Lambrus*.)
 a. Merus joints of the ambulatory legs spinulose along their upper or under margins, or both margins.

Lambrus longispinus, sp. n.

Carapace broader than long to base of rostrum, spinose and tuberculate above; there are four prominent spines in the middle line, of which three are on the cardiac and one on the gastric region; in front of the latter are two smaller spines; and there are also two on the posterior margin. On the branchial regions are several small spines, principally arranged in two oblique series on each side, and one larger spine. On the antero-lateral margins are about nine small, blunt, very faintly lacinated teeth, increasing in size posteriorly, and on the postero-lateral margins two long spines. The rostrum is prominent, triangular, acute, and obliquely deflexed. The anterior legs have ten or twelve spines on the anterior* margins of the arms, alternating in size, except the three or four nearest the distal end, which are small; also three very prominent spines on the upper surface, and two or three on the posterior margin of the arm; on the anterior margin of the upper surface of the hands are seven larger, granulated, triangular spines and two or three smaller, and four larger and three smaller on the posterior margin. The lower surface of the arms, wrists, and hands is covered with rather large, rounded, granulated tubercles. The merus and sometimes the following joints of the ambulatory legs are compressed and dentated. Length to base of rostrum about 1 inch, breadth nearly 1 inch 2 lines.

Hab. Shanghai (*Jamrach*).

This species is allied to the Japanese *L. validus* and *L.*

* In describing the species of *Lambrus* I have regarded the large anterior legs as fully laterally extended; consequently the terms "anterior" and "posterior" are used for the margins of these limbs, instead of "inner" and "outer," the latter terms being often misleading.

laciniatus, De Haan, and also apparently to the West-Indian *L. Pourtalesii* and *L. fraterculus*, Stm., but differs in the longer spines of the carapace and the form and disposition of the tubercles on the under surface of the anterior legs, and in other characters.

There is in the British Museum a female from Australia (*Stutchbury*) in very bad condition, which probably belongs to this species, but differs in the broader, more obtuse and rounded rostrum, and the shorter spines on the posterior margin of the arms. If distinct, it may be named *L. latirostris*.

Lambrus Holdsworthi, sp. n. (Pl. V. fig. 3.)

Carapace broader than long to base of rostrum; branchial and cardiac regions covered with small, scattered, unequal tubercles; there are three blunt prominences or spines in a median longitudinal series, of which one is on the gastric and two are on the cardiac region. The antero-lateral margins are armed with about ten small tubercles, after which follow, on the postero-lateral margins, three prominent triangular flattened spines, which are granulated on their margins; the last of these is the smallest; the posterior margin is tuberculated, three of the tubercles being larger. The rostrum is prominent, triangular, smooth, and slightly concave above. The anterior legs have the arms tuberculate and spinose on their upper surface and anterior and posterior margins; of these, four on the anterior margin, three to four on the upper surface, and two to three on the posterior margin are larger; the wrist is tuberculated on its upper surface and armed with spines, similar to those of the hand, on its outer margin; the upper surface of the hand is flat and smooth, but has a few irregular tubercles near its posterior margin; on its anterior margin are about a dozen flattened triangular spines, which increase in length distally; on the posterior margin are about nine flattened triangular spines, of which four are larger; the inferior surface of wrist and hand has a longitudinal series of small tubercles, but is elsewhere smooth. The merus joints of the ambulatory legs are spinulose on their upper margins. Length to base of rostrum about 6 lines, breadth about 7 lines.

Hab. Ceylon (*E. W. H. Holdsworth, Esq.*).

This species is apparently most nearly allied to *L. laciniatus*, De Haan (among the forms having the merus joints of the ambulatory legs spinulose above), but differs in the form and number of the spines of the anterior legs. In *L. Holdsworthi* the spines of the outer margin of the hand are much broader and in contact at their bases. I may notice that the subhepatic region is channelled, but the channel does not lead

to the afferent branchial aperture, but is continued beneath the margin of the carapace.

All the specimens are females. The smallest of all (length 4 lines) bears ova. In two of intermediate size, the smaller tubercles of the carapace are nearly obsolete.

Lambrus lævicarpus, sp. n. (Pl. V. fig. 4.)

Carapace scarcely broader than long (to base of rostrum), with numerous tubercles on its upper surface, and four small spines in a longitudinal median series, of which one is on the gastric and three are on the cardiac region; there are also two spines on each branchial region. The lateral marginal tubercles (about twelve in number) are small, and similar to those of the surface of the body. The front is moderately prominent, triangular, acute, with a tubercle on each side near the base. Anterior legs with the arm spinose and tuberculate above, the teeth granulated and principally disposed in three longitudinal series of alternately larger and smaller ones on the anterior and posterior margins and upper surface; there are about seven larger teeth on the anterior and posterior margins, and four on the upper surface; the wrist is spinose on its posterior margin, granulated on the anterior, and smooth above; the anterior margin of the hand is armed with sixteen to eighteen granulated tubercles, which are larger toward the distal extremity; the upper surface is flat and smooth, with about a dozen tubercles in an irregular longitudinal series; on the posterior margin are about seven larger granulated tubercles alternating with smaller ones. The under surface of the anterior legs is perfectly flat and smooth, and the inner margin of the under surface of the hands is finely granulated. The tubercles on the merus joints of the ambulatory legs are very small. Length (to base of rostrum) and breadth about 5 lines.

Hab. Eastern seas (*H.M.S. 'Samarang'*).

This species is remarkable for the perfect smoothness of the under surface of the anterior legs and of the upper surface of the wrists. It presents also another character which is rarely found among the species of *Lambrus*; the basal (*i. e.* the real second) joint of the outer antennæ is larger than the next joint.

Lambrus longimanus?

?*Cancer longimanus* ♀, Linn. Mus. Lud. Ulr. p. 441 (1764); Syst. Nat. p. 1047 (1766).

Lambrus longimanus, M.-Edw. Hist. Nat. Crust. i. p. 354 (1834).

Carapace depressed, much broader than long, with shallow

concave interspaces between the regions, and covered with small conical acute tubercles; the spines of the lateral margins are conical and scarcely longer than those of the surface of the body. Rostrum very small, acute, with a spine on each side of the median one; interocular space smooth, concave. Anterior legs greatly elongated; arm spinulose above and on its anterior margin; on the posterior margin are seven longer spines, alternating with smaller ones; wrist minutely tuberculate above, and with six or seven alternately larger and smaller spines on its posterior margin; hand spinulose or tuberculate above, its anterior margin with fifteen to eighteen compound or branching spines, which increase in size towards the distal extremity, posterior margin with five to eight longer, alternating with smaller spines; under surface of arm and wrist nearly smooth, of hand minutely granulated or tuberculate. Spinules of the merus joints of the ambulatory legs very small. Penultimate joint of the postabdomen of the male armed with a spine or tubercle. Length of an adult male to base of rostrum $\frac{5}{8}$ inch; breadth 1 inch.

Hab. Eastern Seas; Javan Sea (*H.M.S. 'Samarang'*); Dunk Island (*J. Macgillivray, Esq., H.M.S. 'Rattlesnake'*); Isle of France (*Old Collection*).

I have described this species at length because, although it is probably the species intended by M.-Edwards in his short diagnosis of *L. longimanus*, it is possibly not the *Cancer longimanus* of Linnaeus. I may here note that the specimens in the British Museum from India, Singapore, and the Philippines, referred by White ('List Crust. B. M.' p. 11) to *Lambrus longimanus*, appear to belong to *Lambrus affinis*, A. M.-Edwards. This latter species has evidently a very wide range, and may perhaps be identical with the long-previously described *L. pelagicus*, Rüppell, as it differs only in the smoothness of the arms on the front part of their upper surface, and in the greater prominence of some of the tubercles on the posterior (outer) margin of the hand; and specimens of both varieties are in the British Museum from Zanzibar.

- b. Merus joints of the ambulatory legs not armed with spines or distinct tubercles.

Lambrus deflexifrons, sp. n. (Pl. V. fig. 5.)

The carapace is strongly constricted behind the orbits, with the cardiac region very convex, and with an oblique but shallow sulcus on the branchial regions, and is covered with closely-set small tubercles; the antero-lateral margins are

unarmed; but there are two larger tubercles or small spines on the postero-lateral margins. The rostrum is vertically deflexed, triangular, and granulated above. The basal antennal joint is very small; the epistoma is large; the subhepatic and pterygostomian regions are not channelled. The anterior legs have the arm rounded and tuberculate above, with small spines on its anterior margin; the wrist is tuberculate; the hand with a few tubercles on its upper surface, the anterior margin armed with about ten, and the posterior with four granulated spines. The under surface of arm, wrist, and hand is closely granulated. The ambulatory legs are smooth, and are not compressed and cristate as usual in the genus. Length to base of rostrum, and breadth, nearly $\frac{1}{2}$ inch.

Hab. Ceylon (*E. W. H. Holdsworth, Esq.*).

The vertically deflexed rostrum and carapace, devoid of spines on its surface and anterior margins, and non-compressed ambulatory legs are characteristic of this species. It seems to be allied to *L. gracilis*, Dana, a species from the Fijis, in the form of the carapace and legs; but in that species the carapace has a spine on the cardiac and each branchial region, and elsewhere appears to be smooth.

Lambrus hoplonotus.

Lambrus hoplonotus, Ad. & White, Zool. Samarang, Crust. p. 35, pl. vii. fig. 3 (1848).

In the typical form of this species, as exemplified by the specimen bearing White's label in the Museum collection, the carapace is covered with large, rounded, granulated tubercles, and the spines of the antero-lateral margins are small, obtuse, and rounded, the last only (lateral epibranchial spine) being greatly elongated. The rostrum is very small, triangular, and acute. The eye-peduncles are short and thick. The upper surface of the arm, wrist, and hand is covered with irregularly disposed rounded tubercles; the spines of the anterior and posterior margins of the hand are straight and granulated at base; the under surface of the arms is strongly tuberculated. White's specimen is labelled only as from the "Eastern Seas."

Below are described three very distinct forms which are provisionally regarded as varieties of *L. hoplonotus*. They are, unfortunately, represented each by only one, two, or three specimens; and a larger series might either establish them as distinct species, or show that *L. hoplonotus* is a widely distributed form, subject only to local variations.

Var. *granulosus*.

Carapace considerably broader than long, granulated above, the granules closest upon the surface of the branchial, gastric, and cardiac regions. Antero-lateral margins with about a dozen small obtuse teeth, followed by a very long acute spine, to which succeeds a shorter spine on the back of each of the branchial regions; the posterior margin of the carapace between these spines is granulated. Rostrum triangular, not deflexed, and minutely granulated on its lateral margins. Anterior legs elongated; arm with about five long spines on its posterior margin, alternating with very small spines, with about four tubercles on its upper surface, in a longitudinal series, and twelve to fourteen unequal tubercles on its anterior margin; wrist granulated above, and with four or five spines on its posterior margin; hand with about six long spines, alternating with smaller ones, on its posterior margin, with about four distant tubercles in a longitudinal series on its upper surface, and nine or ten spines on its anterior margin, increasing in length toward the distal extremity; the under surface of arm, wrist, and hand is nearly smooth. Length of carapace to base of rostrum 5 lines, breadth 6 lines.

Hab. Philippine Islands, Corregidor (*Cuming*).

The specimens described above have been referred by White, in the 'List of Crustacea in the British Museum,' p. 12 (1847), to *L. serratus*, M.-Edwards; but they differ in nearly all the characters mentioned in his brief diagnosis. They are much more nearly allied to the typical *Lambrus hoplonotus* of Adams and White, and may, indeed, be the young of that species, but differ in the much smaller granules of the carapace, and much fewer tubercles on the upper surface of the hands. In both varieties the margins of the carapace and anterior legs are clothed with close long hairs.

Var. *longiocularis*. (Pl. V. fig. 6.)

This variety is allied to the preceding and to the typical *L. hoplonotus*; but the tubercles of the carapace and of the upper surface of the anterior legs are much longer, and, like the teeth of the antero-lateral margins, tend to become veritable spines. The lateral epibranchial spine is relatively much shorter than in *L. hoplonotus*. The rostrum is perfectly smooth above and upon the lateral margins. The eyes are remarkably long for a species of this genus, and project beyond the orbits, the outer margins of which are deeply sul-

cated. The ambulatory legs are more robust. Length of carapace to base of rostrum, and breadth, $\frac{1}{2}$ inch.

Hab. Australia, between Percy Islands and the main, lat. $21^{\circ} 50'$ S., long. $150^{\circ} 20'$ E. (*H.M.S. 'Rattlesnake,' J. Macgillivray*).

Two specimens, males, are in the collection, dredged in 17 fathoms, on a bottom of coarse sand and shells.

Var. planifrons. (Pl. V. fig. 7.)

In this variety the carapace is covered with numerous, small, rounded tubercles or granules, and with rather larger rounded tubercles on the antero-lateral margins. The lateral epibranchial spine (in an adult female) is rather short. The eyes are short and thick. The orbital margins are distinctly granulated; the rostrum is triangular, rather prominent, flat, smooth, and scarcely acute at its distal end. The upper surface of arm, wrist, and hand are tuberculated. The spines of the anterior and posterior margins of the hands are straight, flattened, and rather broad and not granulated at base; the under surface of the anterior legs is nearly smooth. Length of carapace to base of rostrum nearly $\frac{2}{3}$ inch.

Hab. Ceylon (*E. W. H. Holdsworth, Esq.*).

The form of the rostrum, of the spines of the hand, the granulations of the carapace, and the short lateral epibranchial spine serve to distinguish this variety.

There are some young individuals from the Gulf of Suez (*MacAndrew*) which differ from all the preceding forms in the existence of a small blunt tooth on each side of the rostrum, which is sulcate above; but these I will not at present designate by a distinct name.

Lambrus curvispinus, sp. n.

This is a species belonging to the same section of the genus as *L. hoplonotus*, and closely allied to it. It has the granules of the upper surface of the carapace small and subspiniform. The rostrum is very small, acute, and granulous on its lateral margins. The teeth of the antero-lateral margins are much longer and become well-developed spines as they approach the lateral epibranchial spine, which is extremely long. The inner margin of the arms is minutely spinulose; and the spines of the anterior margin of the hands are long, acute, and curved upward and forward at the tips. Length of carapace to base of rostrum $\frac{1}{3}$ inch.

Hab. Java Sea (*H.M.S. 'Samarang'*).

- § 2. Carapace usually produced over the bases of the ambulatory legs at its postero-lateral angles, and with the postero-lateral margins nearly in a straight line with the posterior margin. Anterior legs shorter, margins dentate, but rarely spinose. (Parthenopoides.)

Lambrus (Parthenopoides) erosus, sp. n.
(Pl. V. fig. 8.)

Carapace triangular, slightly produced over the bases of the ambulatory legs, its postero-lateral angles forming a decided angle with the straight posterior margin; its surface is without tubercles or spines, but is uniformly and deeply pitted and eroded; somewhat larger pits mark the interspaces between the gastric, cardiac, and branchial regions; the rostrum is small, triangular, and deflexed. The inferior surface of the carapace is similarly but more regularly pitted. The anterior legs are robust and eroded; the arm greatly dilated; the hand with a prominent, oblique, scarcely dentated crest on its anterior surface; lower finger broad and triangular in shape. The ambulatory legs are eroded and pitted like the body. Length 5 lines, breadth about 6 lines.

Hab. Eastern Seas (*H.M.S. 'Herald'*).

This species cannot be confounded with any other of the genus known to me.

Lambrus (Parthenopoides) expansus, sp. n.
(Pl. V. fig. 9.)

Carapace subtriangular, and greatly produced at its postero-lateral angles over the bases of the ambulatory legs; the gastric and cardiac regions are very prominent; the surface of the carapace behind and on either side of the gastric region is very concave. There are three obscure rounded tubercles on the gastric region, an obscurely granulated ridge on the branchial regions, parallel to the antero-lateral margins, and a few small granulations on each side nearer the cardiac region. The straight posterior margin of the carapace and the lateral margins, near the postero-lateral angles, are minutely denticulated; the lateral marginal series of denticles are continued forward onto the pterygostomian regions. The front is rather prominent, slightly concave above, granulated near and obtuse at its distal end. The anterior legs are smooth and not eroded above; arm with a series of closely-set granulated teeth on its anterior margin; upper surface and posterior margin obscurely granulated; hand very robust, with five or six teeth on its anterior margin; posterior margin uneven, but not toothed; fingers thick, smooth, and curved.

The under surface of the arm, wrist, and hand is obscurely granulated. The ambulatory legs are compressed, but scarcely denticulated. Length to base of rostrum $3\frac{1}{2}$ lines, breadth $5\frac{1}{2}$ lines.

Hab. Madeira (*Rev. R. Boog Watson*).

This species is distinguished by the great development of the postero-lateral expansions of the carapace and the smoothness of its upper surface and of the anterior legs, in which respects it is distinguished from the *L. rugosus*, Stim., and *L. pulchellus*, A. M.-Edwards, both from the Cape-Verd Islands. It would seem to be more nearly allied to the species very shortly characterized by A. M.-Edwards under the name of *P. trigona*, of which the habitat is not known; but that species is described as having the arm strongly eroded.

A single male example is in the collection of the Museum.

Cryptopodia spatulifrons, sp. n. (Pl. V. fig. 10.)

Carapace transversely triangulate, with the postero-lateral angles truncated, everywhere punctate and granulated, the granulations being largest and most conspicuous on the elevated cardiac and branchial regions, and on the postero-lateral and posterior expansions of the carapace. The branchial and cardiac regions are much elevated; there is a strongly marked depression in the centre of the carapace; and the surface of the carapace behind the antero-lateral margins and posterior margin are concave; the antero-lateral margins are denticulated and the postero-lateral and posterior margins crenulated. The rostrum is prominent, not deflexed, smooth, and of a semielliptical shape, subacute at the extremity, and with a series of submarginal punctures. The anterior legs are very robust; surface smooth but coarsely punctured; the anterior and posterior margins of the arm are produced into dentated crests, the posterior expansion being greatly dilated towards the distal extremity; the oblique crest on the anterior surface of the hand is armed with six prominent triangular teeth, the posterior margin being three-dentated; the under surface of the anterior legs is coarsely punctulated and granulated. The ambulatory legs are smooth, longitudinally carinated on their upper and under surfaces. Length of carapace to base of rostrum about 1 inch, breadth nearly 2 inches.

Hab. Shark's Bay, Western Australia (*H.M.S. 'Herald,' F. M. Rayner, Esq.*).

The description is taken from an adult male example. It is distinguished from *C. fornicata* by the granulated carapace, from *C. contracta*, Stm., from Hong Kong, by the non-con-

traction of the carapace behind the orbits. Moreover the carinæ on the merus and ischium joints of the ambulatory legs are not armed with spines as in *C. contracta*.

Cryptopodia spatulifrons, var. *levimana*.

There are in the British Museum two smaller specimens (males) which probably belong to the same species as the one described above. The carapace is tuberculated only upon the elevated parts of the branchial and cardiac regions, and on the posterior and postero-lateral expansions; elsewhere it is smooth, scarcely even punctured. The upper surface of the arm and hand is smooth; the lower is also smooth, except for a longitudinal median ridge of granules. Of this variety one specimen was obtained on the coast of Borneo, the other is without indication of locality. As the specimens are of smaller size, they probably represent the younger condition of the species.

Ceratocarcinus spinosus, sp. n. (Pl. V. fig. 11.)

By this name I propose to designate a specimen of very small size, which may be immature, yet differs more remarkably from the type species of the genus (*C. longimanus*, Ad. & White) than do the other described species, *C. speciosus*, Dana, and *C. dilatatus*, A. M.-Edwards. The spines of the rostrum, lateral margins, and gastric region are far longer than in either of the species above mentioned; and there is in addition a smaller spine upon each of the branchial regions, two spines upon the wrist, and one at the distal end of the upper margin of the hand and of the merus joint of each of the ambulatory legs. Length only $1\frac{1}{2}$ line.

Hab. Eastern seas (*H.M.S.* 'Herald').

The specimen appears to be a female; as in the other species of the genus, the antennæ are completely excluded from the inner orbital hiatus.

EXPLANATION OF THE PLATES.

PLATE IV.

- Fig. 1.* *Achæopsis Güntheri*, female individual: nat. size. 1*a.* Lateral view of carapace of the same, showing the very prominent dorsal spine: nat. size.
Fig. 2. *Trigonothir obtusirostris*, male individual: $\times 1\frac{1}{2}$ diam. 2*a.* Rostrum of the same, viewed from the side: further enlarged.
Fig. 3. *Huenia pacifica*, male individual: $\times 1\frac{1}{2}$ diam. 3*a.* Lateral view of rostrum of the same: $\times 2$ diam.

- Fig. 4. *Chorilibinia gracilipes*, male individual: $\times 1\frac{1}{2}$ diam. 4a. Lateral view of carapace of the same, showing the disposition of the dorsal spines: $\times 1\frac{1}{2}$ diam.
- Fig. 5. *Paramithrax (Paramithrax) spinosus*, male individual: nat. size.
- Fig. 6. *Pisa carinimana*, male individual, $\times 1\frac{1}{2}$ diam. 6a. Outer view of hand of the same: $\times 3$ diam.
- Fig. 7. *Hystemus gracirostris*, male individual: $\times 1\frac{1}{2}$ diam.
- Fig. 8. Lateral view of front of carapace and rostrum of *Pseudomicippe varians*, male individual: $\times 3$ diam. 8a. Lateral view of the same parts in a female individual, showing variation in the form and direction of the rostral spines: $\times 3$ diam.
- Fig. 9. *Micippe parvirostris*, female individual: nat. size.

PLATE V.

- Fig. 1. Carapace of *Othonia quadridentata*: nat. size.
- Fig. 2. *Parathoe rotundata*, male individual: $\times 2$ diam. 2a. Inferior view of frontal and antennal region of the same: $\times 4$ diam.
- Fig. 3. *Lambrus Holdsworthi*, female individual: nat. size.
- Fig. 4. *Lambrus levicarpus*, male individual: nat. size.
- Fig. 5. *Lambrus deflexifrons*, male individual: nat. size. 5a. Lateral view of front of the cephalothorax of the same, showing the deflexed rostrum: $\times 2$ diam.
- Fig. 6. Front of carapace and rostrum of *Lambrus hoplonotus*, var. *longioctidus*: $\times 3$ diam.
- Fig. 7. Front of carapace and rostrum of *L. hoplonotus*, var. *planifrons*: $\times 2$ diam.
- Fig. 8. *Lambrus (Parthenopoides) erosus*, male individual: $\times 1\frac{1}{2}$ diam.
- Fig. 9. *Lambrus (Parthenopoides) expansus*, male individual: $\times 1\frac{1}{2}$ diam.
- Fig. 10. *Cryptopodia spatulifrons*, male individual: nat. size.
- Fig. 11. *Ceratocarcinus spinosus*, female individual: $\times 2$ diam. 11a. Inferior view of antennal and orbital region of the same: further magnified. 11b. Outer view of hand: further magnified.

II.—Notes on the Palaeozoic Bivalved Entomostraca. No. XII. Some Carboniferous Species belonging to the Genus *Carbonia*, Jones. By Professor T. RUPERT JONES, F.R.S., and JAMES W. KIRKBY, Esq.

[Plates II. & III.]

IN previous papers on Carboniferous Entomostraca we have attempted to show, and critically examine, what has been already done in investigating this interesting though somewhat difficult group of fossils.

In a paper published in May 1865*, we gave the result of an examination of a series of specimens from Bavaria,

* Ann. & Mag. Nat. Hist. ser. 3, vol. xv. p. 404.

illustrative of the species described by Count Münster in 1830*.

In July 1866, in another paper †, we discussed what had been done by British authors, from the time of Ure (1793) to that of M'Coy (1844), our observations being based, in several instances, on an examination of type specimens.

In 1867 we gave, in the 'Transactions of the Geological Society of Glasgow,' a list and short account of the Entomostraca occurring in the Carboniferous rocks of Scotland ‡. The list included a great many new species (discovered by Mr. John Young and other Members of the above Society), most of which have yet to be described and figured.

In 1870 one of us described some species (*Carbonia* &c.) from South Wales §.

Lastly, in 1875 ||, we noticed some Russian specimens presented to us by the late M. d'Eichwald, with a few from the late Sir R. I. Murchison's collection.

These papers, though slight, have helped to clear the way for the description of new species, by showing what others have done in this field of research, and what our opinion was of the results of their work, with a view to the rectification and unification of the synonymy, and to the determination of numerous species not yet described.

Among other materials which have accumulated in our many years' study of Carboniferous Entomostraca is a large suite of specimens belonging to a group of seven species, hitherto referred to *Cythere*, but which apparently belong to the genus *Carbonia*, established by one of us, in 1870, for the reception of two species from the Coal-measures of South Wales. It is proposed to give a brief account of the seven species in the present paper.

The species in question have the form of ordinary *Cytheræ*, but differ from them in possessing a circular muscle-spot near the centre of each valve, after the manner of *Leperditia*. The muscle-spot is commonly seen in casts as a slightly raised tubercle. When the interior of the carapace-valves is exposed (which is not often), the spot appears as a shallow excavation. In some of the ironstones of the west of Scot-

* Leonhard und Bronn's 'Jahrbuch für Mineralogie' &c. Jahrg. 1830, pp. 60-70.

† Ann. & Mag. Nat. Hist. ser. 3, vol. xviii. p. 32.

‡ Trans. Geol. Soc. Glasgow, vol. ii. p. 213.

§ Geol. Mag. vol. vii. p. 214.

|| Ann. & Mag. Nat. Hist. ser. 4, vol. xv. p. 52.



