

Revision of the *Hippidea*. By EDWARD J. MIERS, F.L.S., F.Z.S.,
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(PLATE V.)

Introductory Remarks.—The determination of the different species of this small and peculiar group of Anomurous Crustacea, and their identification with the brief descriptions of the earlier authors, are often very difficult. Where the type specimens no longer exist, it must of necessity remain uncertain what species were known to Linnæus and Fabricius. But three or four species are mentioned by Lamarek and Latreille; and only five are described by M. Milne-Edwards in the second volume of the 'Histoire Naturelle des Crustacés' (1837). In the twenty years following the publication of that work the number of species was more than quadrupled, as we find that Stimpson, in 1858, in the preliminary Report on the Crustacea collected by the United States Expedition to the North Pacific, enumerates (but does not describe) 23 species, contained in 6 genera; and since the publication of his list several additional species have been described. In the present revision of the group I have endeavoured, as far as the state of our knowledge and the materials afforded by the extensive collection of the British Museum will permit, to determine the geographical range and the extent of individual variation in the several species, and to indicate reliable characters by which they may be distinguished; but as several species are either *desiderata* or insufficiently represented in the national collection, there yet remain several points requiring further elucidation.

Three new species are described; but as several of those previously recorded are reduced to the rank of synonyma, the total number is only 22.

It may be desirable to present a brief summary of the views held by the different authors upon the classification and affinities of the *Hippidea*, beginning with Latreille, who, by his *recherches*, may be considered to have laid the foundation of the natural arrangement of the Crustacea. By this author (*Gen. Crust. et Ins.* i. p. 44, 1806) the genera *Remipes*, *Hippa*, and *Albunea* were arranged in the family *Paguriens* of the tribe *Macroures*; but he subsequently (*Cuvier R. A.* ed. 1, iii. p. 27, 1817) constituted a distinct section, *Anomaux*, to contain these genera, together with the *Paguridæ*, *Porcellanidæ*, and *Galatheidæ*. Lamarek (*Hist.*

Nat. Animaux sans Vert. v. p. 218, 1818), observing the external relationship of the *Hippidæ* with *Ranina*, arranged them with the latter genus in a distinct section of the family, characterized by the lamellated terminal joints of the legs.

M. H. Milne-Edwards (Hist. Nat. Crust. ii. p. 167, 1837) considered the *Hippiens* a distinct tribe of the family *Ptérygures* of his *Crustacés Anomoures*, but regarded them as allied to the *Raninidæ* (p. 198).

De Haan ("Crustacea," in 'Fauna Japonica,' dec. vi. p. 195, 1849) retains in a somewhat wider sense the division *Anomala* of Latreille, in which he includes the *Hippideæ*, recognizing (p. 136) their relationship to the *Raninidæ* in external appearance and the form of the legs, from which, however, he points out they are widely separated in the form of the pterygostomial region, number of the branchiæ, and characters of the sternum and postabdomen.

By Dana (Crustacea in U.S. Explor. Exped. xiii. pp. 51 & 402, 1852) a very different view is taken of the affinities of these animals. This author traces with great care and accurate knowledge the relations of the different groups of Anomura with the higher Brachyural types, of which they are severally degraded forms, showing that they may, with equal propriety, be classified (*a*) as in a linear descending series they deviate from the Brachyural to the Macrural type, or (*b*) according to their respective natural affinities with the higher Brachyural subtribes. In the former system the *Hippideæ* are ranked by him with the *Porcellanidæ*, as constituting the second section, *Anomoura media*, of the tribe *Anomoura*; in the latter they are classed as *Anomoura Corystidica*, immediately beneath the *Corystoidea*, which latter are undoubtedly *Cancroid* Crustacea. With all deference to the opinion of the distinguished American naturalist, I must regard the older view of their affinities as the more correct.

Although in their elongated carapace and antennæ the *Hippideæ* have a considerable resemblance to certain of the *Corystoidea*, as will be seen, *e. g.*, by comparing the Chilian *Blepharopoda spinimana* and *Pseudocorystes sicarius*, I believe their true affinities are with the Oxystomatous Brachyura, through the *Raninidæ*. They resemble these latter in their narrow and elongated form, natatorial legs, and, in the case of the *Albuneidæ*, in the high and laterally compressed hands of the anterior legs, which altogether resemble those of the Oxystomatous *Calappa* and allied genera. On account of the imperfect definition of the buccal cavity, it is

not easy to trace any resemblance either to the *Cancroidea* or to the *Oxystomata* in the form of the mouth and oral appendages. There exists, however, an important characteristic, and one, I believe, not hitherto noted, in the form of the terminal lobe of the exognath of the first pair of maxillipedes, which in the *Hippidea* is elongated and narrow, as in the *Oxystomata*, where it is usually applied to the opening of the efferent branchial channel. In the *Cancroidea* and *Oxyrhyncha* this joint is more or less obtriangular, short, and truncated at its distal extremity.

Stimpson, in the Report already referred to (Proc. Ac. Nat. Sci. Philad. p. 229, 1858), places the *Hippidea* in the second section, *Schizosomi*, of the Anomura. He establishes the two very distinct and natural families, *Hippidæ* and *Albuneidæ*, gives diagnoses of the known genera, and adds two, previously unrecorded, to the list*.

Geographical Distribution.—The *Hippidea* inhabit all the warmer temperate and tropical seas of the globe. *Remipes testudinarius*, one of the most variable, is also the most widely distributed species, occurring throughout the whole Indo-Pacific region, from the east coast of Africa, along the southern and south-eastern coast of Asia, in Australia, through the islands of the Pacific, to the Galapagos and Cape St. Lucas in California. Another species, *R. scutellatus*, is found on both the eastern and western shores of the Atlantic Ocean. The majority of the species of the family appear, however, to be somewhat restricted in their range. Those belonging to the family *Albuneidæ* are, with two exceptions, restricted to the American continent, where these Crustacea are especially abundant. The only species at present certainly known to inhabit the seas of Europe is *Albunea guerinii* from the Mediterranean.

List of the Species of Hippidea.

Fam. HIPPIDÆ.

REMIPES.

<i>Names of the Species.</i>	<i>Geographical Range.</i>
1. <i>R. testudinarius</i> , Latr.	Whole Indo-Pacific region.
,, var. <i>denticulatifrons</i> .	,,
2. <i>R. scutellatus</i> (Fabr.).	Florida, West Indies, West coast of Africa, Cape-Verd Islands, Ascension Island.

* Dr. Claus ('Untersuch. Crust. Syst.' pp. 59-61, Wien 1876) rejects the suborder Anomura, and refers the *Hippidea* to the Brachyura on account of what is known of their development. I regret that I have not yet had an opportunity of studying this important work.

<i>Names of the Species.</i>	<i>Geographical Range.</i>
3. <i>R. strigillatus</i> , Stimpson.	California.
4. <i>R. truncatifrons</i> , n. sp.	China.

MASTIGOCHIRUS.

1. <i>M. gracilis</i> , Stm.	China.
2. <i>M. quadrilobatus</i> , n. sp.	Philippines.

HIPPA.

1. <i>H. emerita</i> (Linn.).	Eastern coast of America (Cape Cod to Brazil).
2. <i>H. analoga</i> , Stm.	Western coast of America (California to Chili).
3. <i>H. asiatica</i> , M.-Edw.	Indian Ocean, Indo-Malayan archipelago.

Fam. ALBUNEIDÆ.

ALBUNEA.

1. <i>A. symnista</i> (Linn.).	Indian Ocean, Indo-Malayan archipelago.
2. <i>A. guerinii</i> , Lucas.	Gulf of Algiers.
3. <i>A. microps</i> , White, MS.	Sooloo Island.
4. <i>A. gibbesii</i> , Stimpson.	South-east coast of United States.
5. <i>A. oxyophthalma</i> , Leach (ined.).	West Indies, Cayenne, Brazil.
6. <i>A. lucasii</i> , Saussure.	Mazatlan.
7. <i>A. speciosa</i> , Dana.	Sandwich Islands.

LEPIDOPS.

1. <i>L. scutellata</i> (Desm.).	Peru? St. Thomas.
2. <i>L. venusta</i> , Stm.	West Indies (St. Thomas).
3. <i>L. myops</i> , Stm.	California (Cape St. Lucas).

BLEPHAROPODA.

1. <i>B. spinimana</i> (Philippi.).	Chili.
2. <i>B. occidentalis</i> , Randall.	California.
3. <i>B. spinosa</i> , M.-Edw. and Lucas.	Peru.

As to Habits.—Until quite recently but little was known respecting the life-history and habits of the *Hippidea*; but Mr. S. I. Smith has, in his most interesting and valuable memoir on the early stages of *Hippa talpoidea* (Trans. Connect. Acad. iii. 1877), furnished a fully detailed account of the development of the common species of the Eastern shores of the United States. He states, with regard to its habits, that this animal is far more abundant on the sandy coasts of the Southern United States, and gives reasons for believing that the northern range of this, as of

many other southern species, is restricted by the extreme cold of the winters*.

He states, moreover, that *H. talpoidea* lives gregariously, burrowing in the loose and changing sands at or very near low-water mark, but that it is occasionally found swimming about in pools left by the tide, and when undisturbed sometimes comes out and swims in the same way along the shore, although probably never venturing far from the bottom.

It may be noted that Dana found his specimens of *R. hirtipes* swimming along the sandy bottom in shallow waters, near the shores of a small island off Soung, the principal harbour of the Sooloo Islands. Occasionally, however, these animals are collected at greater depths. Thus Lucas collected his specimens of *Albunea guerinii* at depths of 16–21 fathoms in the Gulf of Algiers; and *Mastigochirus gracilis*, Stimpson, was collected on a shelly bottom at a depth of 20 fathoms, at the island of Ousima. So also specimens of the rare *Blepharopoda spinimana* in the British-Museum collection were obtained by fishermen in deep water in the Bay of Valparaiso.

Fam. HIPPIDÆ.

Hippidæ, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 229 (1858).

Anterior legs not subcheliform. Antennæ with the accessory joint minute or obsolete. Third maxillipedes suboperculiform, the third joint greatly enlarged and without an exognath; last tail-segment greatly elongated, lanceolate, and acute at the extremity.

REMIPES.

Remipes, *Latr. Gen. Crust. et Ins.* p. 45 (1806); *M.-Edw. Hist. Nat. Crust.* ii. p. 204 (1837); *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 229 (1803).

Antennules of moderate length. Antennæ very short. Third maxillipedes with the last joint somewhat unguiform. First legs elongated, subcylindrical, robust; the last joint not annulated, styliiform, similar to the preceding.

REMIPES TESTUDINARIUS. Pl. V. fig. 1.

? Hippa adactyla, *Fabr. Ent. Syst.* ii. p. 474 (1793), *Suppl.* p. 370 (1798); *Latr. Hist. Nat. Crust.* vi. p. 176 (1803).

* The advance northwards of species common to the east coast of North America is probably checked by the cold Arctic current which impinges on the shores of the United States and flows southwards between the coast and the warm waters of the Gulf Stream?—EDITOR.

Cancer emeritus, *Herbst, Naturg. Krabben u. Krebse*, ii. p. 8, pl. xxii. fig. 4 (1796), *nec Linn.*?

Remipes testudinarius, *Latr. Gen.-Crust. et Ins.* i. p. 45 (1806); *Lam. Hist. Anim. sans Vert.* v. p. 223 (1818); *Desm. Consid. Crust.* p. 175, pl. xxix. fig. 1 (1825); *M.-Edw. Hist. Nat. Crust.* ii. p. 406, pl. xxi. figs. 14-20 (1837); *Crust. in Cuvier R. A.* (ed. 3), *Atlas*, pl. xlii. fig. 1; *Guérin-Ménév. Icon. R. A. Crust.* pl. xv. fig. 3; *Heller, Reise der Novara, Crust.* p. 72 (1865); *Hilgendorf, Crust. in Vander Decken's Reisen in Ost-Afrika*, iii. p. 94 (1869).

Remipes marmoratus, *White, List Crust. Brit. Mus.* p. 58 (1847), *sine descr.*

Remipes pacificus, *Dana, U.S. Expl. Exp. xiii. Crust.* i. p. 407, pl. xxv. fig. 7 (1852); *Stimpson, Ann. Lyc. Nat. Hist. New York*, vii. p. 241 (1862); *Miers, P. Z. S.* (1877) p. 74.

Remipes hirtipes, *Dana, l. c.* p. 408, pl. xxv. fig. 8 (1852).

Remipes marmoratus, *Jacq. et Lucas, Crust. in Voy. Pôle Sud, Zool.* iii. p. 97, pl. viii. figs. 22-26 (1853); *Miers, Cat. New-Zeal. Crust.* p. 59 (1876).

Remipes pictus, *Heller, Crust. Rothen Meeres, in Sitzungsab. Ak. Wiss. Wien*, xliv. i. p. 243 (1862).

Remipes ovalis, *A. M.-Edw. Faune Carcinol. in Maillard, Ile Réunion*, ii. *Annexe F*, p. 12, pl. xvii. fig. 5 (1863).

Moderately convex, the carapace marked with numerous fine interrupted transverse lines, postfrontal sinus usually distinct. Frontal lobes moderately prominent, obtuse, and rounded, the lateral lobes (in the typical form) scarcely projecting beyond the median ones. Sides of the carapace with a series of shallow pits bordered with tufts or lines of short hairs, forming a linear sub-marginal striated area. Eye-peduncles slender, and usually extending a little beyond the end of the basal joint of the antennules, which, like the antennæ, are short and clothed with longish hairs. Anterior legs elongated, and clothed with rather long hairs, which are densest on the inner margins, and show a tendency to disposition in oblique series on the upper and outer margins of the last two joints; the last joint is similar to the preceding, and tapers somewhat to its extremity, which is clothed with long hair. The second, third, and fourth pairs of legs are robust; the terminal joint of the second and third pairs but slightly falcate, its distal half short, broad, and obtusely rounded at the extremity; that of the fourth pair narrow and straight. Rami of the appendages of the penultimate postabdominal segment ovate and unequal, the inner the larger. Terminal segment elongated, oblong-lanceolate.

Hab. Australian Seas (*Coll. Mus. Paris, Brit.*); Red Sea (*Heller*); Mauritius (*Coll. Mus. Brit.*); Zanzibar (*v. der Decken*); Réunion (*Maillard*); Nicobars (*Heller*); Sooloo Island (*Dana*); Moluccas, Flores (*v. Martens*); Philippines (*Coll. Brit. Mus.*); Ousima (*Stimpson*); New Hebrides, Mallicollo (*Coll. Brit. Mus.*); Fiji Islands, Ovalau (*Dana; Coll. Brit. Mus.*); Samoa or Navigators' Islands (*Coll. Brit. Mus.*); Sandwich Islands (*Dana*); Tahiti (*Heller, Coll. Brit. Mus.*); California, Cape St. Lucas (*Stimpson, Coll. Brit. Mus.*).

This species, as has already been observed, is the most common and widely distributed of the family, and varies somewhat in the form of the frontal lobes, tarsal joints, &c. In the figure given by Milne-Edwards, in the 3rd edition of Cuvier's 'Règne Animal,' and Guérin in the 'Iconographie,' and in specimens observed by Hilgendorf from Zanzibar, as in one specimen in the British-Museum collection, from Australia, there is a small tooth in the notch separating the median frontal teeth; but this peculiarity can hardly be considered to indicate a distinct variety of the species. The greater number of the specimens in the Museum are of the female sex; and between these and the males I have not remarked any striking sexual distinctions; the terminal segment of the male, however, is narrower than that of the female. The length of the carapace of the largest specimens in the collection does not exceed $1\frac{1}{3}$ in.

I have not discovered among the Banksian specimens now in the British Museum the type specimen of Fabricius's *H. adactyla*, which has been referred to by Milne-Edwards as synonymous with this species, but is described as having "*cauda inflexa, articulo primo longitudine thoracis*," which certainly does not apply to it; and I therefore retain the designation *testudinarius*, by which it is generally known.

I follow Hilgendorf in uniting *R. pictus*, Heller, and *R. ovalis*, Edw., with this species, as no characters are given which suffice to distinguish them from the common form. The same may be said of *R. pacificus* and *hirtipes*, Dana: of the former species specimens from the Smithsonian Institution are in the British-Museum collection which certainly belong to *R. testudinarius*.

Var. DENTICULATIFRONS. Pl. V. fig. 2.

Remipes denticulatifrons, *White, List Crust. Brit. Mus.* p. 57 (1847), sine descr.

In this variety the lateral lobes of the front are narrower, spiniform or tuberculiform, and project beyond the level of the median lobes. The frontal margin in the adult is denticulated. The striations of the lateral margins are smaller than in the typical variety, forming a very narrow marginal band. The terminal joint of the second and third pair of legs is much more strongly falcate, its distal half narrower, and its apex more acute.

Hab. Zanzibar; Philippine Islands, Maibate; Java; New Hebrides, Aneiteum; Loyalty Islands, Lifu; Galapagos, Charles Island (*Coll. Brit. Mus.*).

The characters of this variety are so marked in the adult that I was at first inclined to consider it a distinct species; but they are much less evident in the young animal. Most of the specimens I have examined are of the female sex; but the characters are not sexual, as there are adult females of the preceding variety in the collection. It would appear, from the localities given above, that the range of this form is equal in extent to that of the typical variety. The largest specimen, that to which White originally applied the name, is much larger than any other of the genus which I have seen—the carapace having a length of $1\frac{2}{3}$ inch, and greatest breadth of $1\frac{1}{2}$ inch.

REMIPES SCUTELLATUS.

Squilla barbadensis ovalis, *Petiver, Pterigraph. Amer.* pl. xx. fig. 9.

Hippa scutellata, *Fabr. Ent. Syst.* ii. p. 474 (1793).

Remipes scutellatus, *List Crust. Brit. Mus.* p. 57, sine descr. (1847).

Remipes cubensis, *Saussure, Rev. et Mag. Zool.* ix. pp. 304, 308 (1857);
Mém. Soc. Phys. et Hist. Nat. Genève, xiv. p. 452, pl. ii. fig. 19 (1858).

Remipes barbadensis, *Stimpson, Ann. Lyc. Nat. Hist. New York*, x. p. 120 (1871).

Body depressed, broad. Front very broad, anterior margin sinuated on either side of the very slightly prominent median frontal lobe, which is less acute than in *R. strigillatus*. The obliquely striated area forms a narrow marginal band on each side of the carapace, and is but very little broader posteriorly. Eye-peduncles short, projecting but very little beyond the penultimate joint of the antennules—which is scarcely visible from above, beyond the frontal margin of the carapace. Anterior legs of moderate length; terminal joint slightly compressed, with two strong oblique setose ridges on its extero-inferior surface. Ter-

minal joints of the second and third pairs of legs falcate, with the distal as long as, and slenderer than the proximal half. Inner ramus of the appendages of the penultimate segment longer than the outer. Terminal segment elongated-lanceolate. Length of carapace of largest specimen nearly 1 inch.

Hab. Cuba (*Saussure, Coll. Brit. Mus.*); Barbadoes (*Prof. Gill, Coll. Brit. Mus.*); Key Biscayne, Florida (*G. Wurdemann*); St. Christopher's (*Coll. Brit. Mus.*); St. Vincent, Cape-Verdes (*Cunningham, Coll. Brit. Mus.*); Ascension Island (*Coll. Brit. Mus.*); West Africa (*Coll. Brit. Mus.*).

There can be little doubt that the *R. cubensis* of Saussure and *R. barbadensis* of Stimpson are identical. Stimpson does not indicate any distinct specific characters in his description of the latter species; and there are even specimens from Barbadoes in the British-Museum collection, received from the Smithsonian Institution, labelled *R. cubensis*. The specimens named by Dr. Leach *R. scutellatus*, and mentioned by White in the 'List of Crustacea' (*l. c.*), which in all probability were the type specimens of the *Hippa scutellata* of Fabricius, are the types of my description of this species. It is to be observed, however, that Fabricius in his short description says, "*manibus chelatis; chelæ læves.*" It is possible that Fabricius mistook the maxillipedes, which present a subchelate appearance when applied to the buccal cavity, for the anterior legs. His description as it stands would certainly apply better to a species of *Lepidops*, to which it is considered to belong both by the earlier authors and Dr. Stimpson.

REMIPES STRIGILLATUS. Pl. V. figs. 3, 4.

Remipes strigillatus, *Stimpson, Ann. Lyc. Nat. Hist. New York*, vii. p. 241 (1862).

Body much depressed, broad. Front very broad, with a very slightly projecting median frontal lobe, anterior margin nearly straight, entire, smooth. The obliquely striated area on the sides of the carapace very broad in its posterior half, where it occupies one fourth of the width of the carapace, striæ sharp, minutely setose, not interrupted, but extending quite to the margin. Eye-peduncles short, reaching to the end of the penultimate joint of the antennules. First pair of legs short, terminal joint slightly compressed, with two strong oblique setose ridges on its extero-inferior surface. Terminal joints of the second and third pairs of legs short, broad, obtuse, and very slightly falcate. Inner

ramus of the appendages of the penultimate segment but little longer than the outer. Last segment oblong-lanceolate.

Hab. Cape St. Lucas (*Stimpson, Coll. Brit. Mus.*).

The broad striated area on the sides of the carapace at once serves to distinguish this species. The three specimens of this species in the British-Museum collection from the Smithsonian Institution are of small size, length of the carapace of the largest not exceeding $\frac{7}{12}$ inch (*Stimpson* gives 1 inch as the length of the carapace). The median frontal projection is very obscure; and in one specimen the anterior margin appears nearly straight.

REMIPES TRUNCATIFRONS, sp. n. Pl. V. figs. 5, 6.

Body depressed; frontal margin straight, entire, smooth, with scarcely any trace of a median frontal lobe. Sides of the carapace without any trace of the defined striated marginal area existing in other species of the genus. Eye-peduncles very slender, projecting but little beyond the rather prominent penultimate joint of the antennules; cornea small, subterminal. Anterior legs small and slender; terminal joint of the second and third pairs of legs short, broad at base, distinctly falcate, with the distal portion much slenderer than the proximal. Outer ramus of the appendages of the penultimate segment of the postabdomen much shorter than the inner. Terminal segment oblong-lanceolate.

Hab. China (*J. R. Reeves, Esq., Coll. Brit. Mus.*).

The obsolescence of the median frontal lobe, and the absence of a lateral marginal striated area, serves to characterize this species. The eye-specks, viewed from above, are placed at a little distance from the distal extremity of the peduncle. The single specimen in the British-Museum collection is a female. Length of carapace $\frac{7}{12}$ inch.

MASTIGOCHIRUS.

*Mastigopus**, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858) (nom. præoc.).

Antennules and antennæ short. Third maxillipedes rather slender. First legs very long and very slender, with the last joint especially greatly elongated and multiarticulate.

* This name was adopted in 1853 by Leuckart (*Wiegmann Archiv f. Naturg.* xix. p. 258) for a curious Macrurous Crustacean. I have, therefore, altered the termination, whilst retaining the allusion to the whip-like character of the anterior legs.

The two species known of this remarkable genus are both from the Asiatic Region, perhaps the richest in remarkable forms of all the great geographical areas.

MASTIGOCHIRUS GRACILIS. Pl. V. fig. 7.

Mastigopus gracilis, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 244 (1858).

Carapace elongate-ovate, very convex, with short crenulated setose lines. Front 3-toothed; the median tooth triangular, the lateral slender, and longer than the median one. Antero-lateral margins 6-toothed, the teeth diminishing in length posteriorly. Eyes slender, and more than half as long as the antennules. Second joint of the maxillipedes oblong, longer than broad. Anterior legs greatly elongated, slender, cylindrical; the dactylus is longer than the carapace, and consists of 12-14 elongated joints; terminal joints of the legs of the second and third pairs very slightly falcate. Last segment of the postabdomen elongate, thick, longitudinally sulcate in the middle, and bicarinate near its base. Length about $\frac{1}{2}$ inch.

Hab. China Seas (*Stimpson, Coll. Brit. Mus.*).

The single example of this species in the national collection was presented by the Smithsonian Institution.

MASTIGOCHIRUS QUADRILOBATUS, sp. n. Pl. V. fig. 8.

Body elongate-ovate, very convex, marked with short crenulated setose lines, as in the preceding species. Front 4-lobed, the two median lobes small, rounded, and not nearly as prominent as the spiniform lateral lobes. The striated lateral area is reduced to a narrow line, bordering the whole length of the carapace, which is without lateral marginal teeth. Eyes long, slender, and half as long as the antennules; second joint of the maxillipedes broad, with the inner margin arcuate. Anterior legs very long, when thrown forward longer than the body; the terminal joint consists of ten or a dozen obscure unequal joints, and is clothed with long fulvous hairs; the terminal joints of the second and third pairs of legs are long, and very slightly falcate. The outer ramus of the appendages of the penultimate segment is about half as long as the inner. The terminal segment is oblong-lanceolate. Length of carapace 5 lines.

Hab. Philippine Islands, Guimaras (*Coll. Brit. Mus.*).

The form of the front, and the absence of antero-lateral marginal teeth, at once distinguish this species from the foregoing.

The single specimen in the Museum was purchased of H. Cuming, Esq.

HIPPA.

Hippa, *Fabr. (part.), Mantissa Ins.* i. p. 329 (1787); *M.-Edw. Hist. Nat. Crust.* ii. p. 207 (1837); *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858).

Antennules of moderate length. Antennæ with a very long, robust, multiarticulate, and strongly ciliated flagellum. Third maxillipedes with the last joint narrow, laminate, and compressed. First legs with the last joint lamellate-oval.

The species of this genus, of which two inhabit the opposite shores of the American continent, and one the Indian and Indo-Malayan region, bear a very close resemblance to one another; but the distinctive characters, although slight, appear constant in large series of specimens.

HIPPA EMERITA. Pl. V. fig. 9.

? *Cancer emeritus*, *Linn. Syst. Nat.* (ed. 12) p. 1055 (1766).

? *Astacus emeritus*, *Fabr. Ent. Syst.* ii. p. 484 (1793).

Cancer testudinarius, *Herbst, Naturg. Krabben*, ii. p. 8, pl. xxii. fig. 3 (1796). 1791

Hippa emeritus, *Fabr. Ent. Syst. Suppl.* p. 370 (1798).

Hippa emerita, *Latr. (?) Hist. Nat. Crust.* vi. p. 176 (1803); *Lamarck (?) Hist. Anim. sans Vert.* v. p. 222 (1818); *Desmarest, Consid. Crust.* p. 174, pl. xxix. fig. 2 (1825); *M.-Edw. Hist. Nat. Crust.* ii. p. 209 (1837); *Crust. in Cuvier R. A.* (ed. 3) pl. xlii. fig. 2; *Gibbes, Proc. Amer. Assoc.* p. 188 (1850); *Dana, U.S. Expl. Exp.* xiii. *Crust.* i. p. 409, pl. xxv. fig. 9 (1852); *Guérin-Ménéville, Icon. R. A. Crust.* pl. xv. fig. 2; *in Ramon de la Sagra, Hist. Isla de Cuba*, vii. *Crust.* p. xxxiv. (1856); *Heller, Crust. in Reise der Novara*, p. 73 (1865).

Hippa talpoidea, *Say, Journ. Ac. Nat. Sci. Phil.* i. p. 160 (1817); *De Kay, Zool. New York Fauna*, pt. vi. p. 18, pl. vii. fig. 17 (1844); *Gibbes, Proc. Amer. Assoc.* p. 188 (1850); *Smith, Trans. Conn. Ac.* iii. p. 311 (1877).

Body very convex. Median lobe of the front *triangular, subacute*, and separated from the lateral lobes by a distance usually greater than its own breadth at base; the lateral frontal lobes are narrow, acute, and much more prominent than the median lobe. Carapace marked with irregular crenulated transverse lines, which are nearly obliterated on the sides and towards the posterior margin; and with a distinctly marked postfrontal and postgastric incised line. Eyes very long and slender. Antennules densely

hairy. Second joint of outer antennæ with three spines at its distal extremity, of which the median is very much the longest, and directed slightly outward; flagellum very long, robust, multi-annulated, and ciliated on its outer margin. Third joint of the outer maxillipedes with the lobe at its antero-internal angle triangular and subacute. Terminal joint of the first pair of legs ovate; those of the second and third pairs of legs falcate, very broad at base, narrow and subacute in their terminal halves. Rami of the appendages of the penultimate postabdominal segment short, the outer shorter and broader oval than the inner.

The length of the carapace of the largest specimen from Brazil is 1 inch 2 lines; but in a specimen of uncertain locality in the collection the carapace is nearly $1\frac{3}{4}$ inch long.

Hab. Brazil (*Mus. Paris, Brit.*); Rio Janeiro (*Dana, Heller, Coll. Brit. Mus.*); Five-Fathoms Bay (*Coll. Brit. Mus.*); Venezuela (*Coll. Brit. Mus.*); Martinique (*Herbst*); Cuba, Mexico (*Guérin-Méneville*); United States (*Coll. Brit. Mus.*); Boston, New York, Charleston Harbour, Key West (*Gibbes*).

Specimens from Mazatlan, referred to this species by De Saussure, belong in all probability to *H. analoga*. I think there can be little doubt that *H. talpoidea*, Say, is identical with the Brazilian *H. emerita*, although Gibbes, founding his conclusions upon a comparison of four specimens from Carolina with two from Brazil, is of the opposite opinion. The specimens from the United States in the British Museum, presented by Say, are small, and scarcely suffice to determine the question, but certainly do not appear specifically distinct.

According to De Kay (*l. c.*) and Smith (*Trans. Conn. Ac. iii. p. 111, 1877*), *H. talpoidea* inhabits the entire eastern coast of the United States from Cape Cod southward to the west coast of Florida, Egmont Key being the most southern and western habitat known to the latter author.

It is impossible to say to what species belong the specimens from the Sandwich Islands referred by Randall to *H. emerita*, as no description accompanies them.

HIPPA ANALOGA. Pl. V. fig. 10.

Hippa emerita, *M.-Edw. & Lucas, Crust. in D'Orbigny's Voy. Amér. mérid. vi. p. 32 (1843)*; *Nicolet, Crust. in Gay, Hist. Chile, iii. p. 185 (1849)*; *De Saussure, Rev. et Mag. Zool. v. p. 367 (1853)*, nec *Edwards*.

Hippa talpoides, Dana, *Crust. in U.S. Expl. Exp.* xiii. 1, p. 409, pl. xxv. fig. 10 (1852); *Proc. Ac. Nat. Sci. Phil.* vii. p. 175 (1854), nec Say.
Hippa analoga, Stimpson, *Proc. Boston, Soc. Nat. Hist.* vi. p. 85 (1856-59); *Journ. Bost. Soc. Nat. Hist.* vi. p. 486 (1857).

This species is nearly allied to *H. emerita*; but the carapace is generally more rugose anteriorly, and the posterior margin is straight. *The median frontal lobe is broader, less acute, and not separated so widely from the lateral lobes*, which are acute but far less prominent. The median spine of the second joint of the antennæ is proportionally not so long, *and is directed slightly inward* (not outward, as in *H. emerita*). The lobe of the antero-internal angle of the third joint of the outer maxillipedes, in the specimens I have examined, is broader, more rounded, and less prominent. Length of the carapace of the largest specimen about 1 inch 2 lines.

Hab. Chili, Valparaiso (*M.-Edw. & Lucas, Dana*); Chiloe, Ancud, Luco Bay, and San Vincente (*Cunningham, Coll. Brit. Mus.*); Mexico (*Coll. Brit. Mus.*); Mazatlan (*Saussure*); California, Tomales Bay (*Stimpson*); San Francisco and Monterey (*Stimpson, Coll. Brit. Mus.*).

There are in the British-Museum collection two specimens obtained by purchase, and labelled as having been obtained, with a number of other Crustacea, from "New Zealand and New Holland." They are of small size; carapace about 7 lines in length, and appear to belong to *Hippa analoga*, the form of the frontal lobes and second joint of the antennæ being the same. There may be some mistake in regard to their habitat.

HIPPA ASIATICA. Pl. V. fig. 11.

Hippa asiatica, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 209 (1837);
Heller, Reise der Növara, Crust. p. 73 (1865).

The specimens which I refer to this species are very nearly allied to the two preceding, but differ from them in the following particulars:—The body is very convex and narrow, appearing almost cylindrical when viewed from above. The lobes of the front are very narrow and acute, the median is separated by an interval of nearly twice its own breadth from the lateral ones, which do not project much beyond it. The median spine of the second joint of the antennæ is very long, and bent very slightly inward. The antero-internal lobe of the third joint of the maxillipedes is broad, rounded, and but little prominent. The terminal joint of the

first pair of legs is acute, and terminates almost in a spine. Length of carapace of largest specimen, 1 inch 2 lines.

Hab. Seas of Asia (*Mus. Paris*); Ceylon (*Heller, Mus. Brit.*); Madras (*Heller*); India, Java (*Mus. Brit.*).

FAM. ALBUNEIDÆ.

Albunidæ, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858).

Anterior legs terminating in a more or less perfectly subchelate hand. Third maxillipedes subpediform (the third joint not greatly enlarged), and furnished with an exognath. Last tail-segment not greatly elongated, ovate-lamellate.

ALBUNEA.

Albunea, *Fabr. Ent. Syst. Suppl.* pp. 372, 397 (1798); *M.-Edw. Hist. Nat. Crust.* ii. p. 202 (1837).

Albunæa, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858).

Eye-peduncles lamellate compressed; cornea very small. Antennules with an extremely long multiarticulate flagellum. Second joint of antennæ with a narrow but well-developed accessory joint; flagellum very short. Third maxillipedes with the third joint but slightly enlarged, and the fourth joint but shortly produced at its antero-external angle.

ALBUNEA SYMNISTA.

Cancer symnista, *Linn. Syst. Nat.* p. 1053 (1766).

Hippa symnista, *Fabr. Ent. Syst.* ii. p. 474 (1793).

Cancer dorsipes, *Herbst, Naturg. Krabben u. Krebse*, ii. p. 5, pl. xxii. fig. 2 (1796), nec *Linn.*

Albunea symnista, *Fabr. Ent. Syst. Suppl.* p. 397 (1798); *Latr. Hist. Crust.* vi. p. 172 (1803); *Lamarck, Hist. Anim. sans Vert.* v. p. 224

(1818); *Desmarest, Consid. Crust.* p. 173, pl. xxix. fig. 3 (1825);

M.-Edwards, in Cuvier's Règne Animal (ed. 3), *Crust.* pl. xlii. fig. 3;

Hist. Nat. Crust. ii. p. 203 (1837); *Guérin-Méneville, Icon. Règne*

Anim. Crust. pl. xv. fig. 1; *Heller, Crust. in Voy. Novara*, p. 72 (1865).

Moderately convex, shining; carapace marked with transverse interrupted impressed lines, of which the postfrontal and the angulated line separating the gastric from the branchial region are the most distinct. Anterior margin with 12-14 closely placed spiniform teeth, a semicircular median emargination, and a small median tooth. Antero-lateral angles of the carapace with a small acute spine. Eye-peduncles about twice as long as broad at base, with their outer margins arcuated; the cornea minute. Antennæ not longer than the carapace, very hairy; basal joint with

a spine at its antero-external angle; flagellum with the joints diminishing successively in size. Antennules very long, exceeding the body in length; the flagellum multiarticulate, and fringed with long hairs on its upper and inner margin. Anterior legs with the hand very short, and high in proportion to its length, with short interrupted and setose ridges on its outer surface; its anterior margin straight, with a short spine at the antero-inferior angle; finger arcuate, acute. Terminal joint of second pair of legs strongly falcate, the distal half rather sharply bent; that of the *third pair slender, arcuate, with a prominent and narrow lobe near its proximal end*; that of the fourth pair broad, slightly falcate, and acute at its distal extremity. Terminal joint of the postabdomen longer than broad, spatulate, ovate, not narrowed and produced at its distal extremity. Length of carapace about 1 inch.

Hab. India, Pondicherry (*Coll. Brit. Mus.*); seas of Asia (*Coll. Mus. Paris*); East Indies, Amboina (*Herbst*); Nicobars, Madras (*Heller*).

Albunea symnista, Fabr., is mentioned by Brullé in his list of the Crustacea inhabiting the Canaries, given in Webb and Berthelot's *Hist. Nat. des îles Canaries*, ii. *Zool. Crust.* p. 17; but this may prove on comparison to be one of the species inhabiting the Mediterranean or Eastern American coast.

In the males of this species the terminal segment is notched at its base, where it is articulated with the penultimate, and attains its greatest width near its broadly rounded distal extremity, toward which it is suddenly narrowed. In the females this segment is narrow-ovate (see Lucas, *Rev. et Mag. Zool.* v. p. 47, pl. i. fig. 8, *a, b*).

The form of the eye-peduncles, with the number of teeth on the anterior margin of the carapace, and the form of the terminal joint of the third pair of legs, suffice to distinguish *A. symnista* from its congeners.

ALBUNEA GUERINII*.

Albunea symnista, Lucas, *Crust. in Explor. Algérie*, p. 27, pl. iii. fig. 2 (1849); *Heller, Crust. südl. Europa*, p. 153 (1863).

* It is possible that this is the species described by Linnæus (*Syst. Nat.* p. 1052) from the Mediterranean, under the name of *Cancer carabus*. By "*Rostrum dentibus 2 parallelis mobilibus depressis*," the eye-peduncles may be meant. The remainder of the description would apply fairly well to a species of the genus *Albunea*.

Albunea guerinii, Lucas, *Rev. et Mag. Zool.* (sér. 2) v. p. 47, pl. i. fig. 9 (1853).

This species, according to M. Lucas, differs from *Albunea symnista* (with which species he confounded it in the Explor. Algérie, i. p. 27, pl. iii. fig. 2) in the shorter and narrower ocular peduncles, less elongated and crowded frontal spines, which are broader at base, and in the form of the terminal segment of the postabdomen, which is altogether cordiform in the male, broader and ovate in the female. Length of the male 30–33 millims. (1 inch 2–3½ lines); of female 40 millims (nearly 1 inch 7 lines).

Hab. Gulf of Algiers (Lucas).

As compared with *A. symnista*, M. Lucas has shown (*l. c.* fig. 9, *a, b*) that the terminal segment is scarcely notched, and attains its greatest width nearer the base than the distal extremity, which is represented as more acute than in that species. In the female the terminal segment in *A. guerinii* is more broadly ovate.

No explanation of the figures accompanies the description of this species; but if, as appears certain, the figure 9*b* represents the tarsus of the third pair of legs, a comparison of it with the same joint of *A. symnista* figured on the same plate (fig. 8*d*) reveals another very marked distinction between the two species. In *A. symnista*, as stated above, the terminal joint has a prominent narrow linear lobe near its articulation with the preceding joint. In *A. guerinii* this lobe is *almost obsolete*, scarcely indicated by an obscure tubercle.

ALBUNEA MICROPS, sp. n. Pl. V. figs. 12, 13.

Albunea microps, White, *List Crust. Brit. Mus., Append.* p. 129 (1847), *descript. nulla*.

In this species the carapace is somewhat broad and depressed, with nine teeth on its anterior margin; the eye-peduncles are even broader and shorter than in *A. symnista*, being not twice as long as broad at the base; and the cornea is borne on a small tuberculiform lobe or prominence. The terminal joint of the third pair of legs is slightly broader, but not lobate at its proximal end. The last segment of the postabdomen of the male is nowhere as broad as that of *A. symnista*, and is narrowed to its rounded distal extremity. Length of carapace a little over ½ inch.

Hab. Sooloo Island (*Coll. Brit. Mus.*).

A single specimen is in the collection.

The rami of the appendages of the sixth segment are arcuate,

the inner longer and much narrower than the outer. The terminal segment is membranaceous in its distal half, and the lateral margins are inflexed. The transverse interrupted ridges on the carapace are very distinctly marked, giving the animal a rugose appearance.

ALBUNEA GIBBESII.

Albunea symnista, *Gibbes, Proc. Amer. Assoc.* p. 187 (1850).

Albunea gibbesii, *Stimpson, Ann. Lyc. Nat. Hist. New York*, vii. p. 78, pl. i. fig. 6 (1862).

This species bears a general resemblance to *A. symnista*; but the carapace is much broader in proportion to its length. There are but six or eight teeth on the anterior margin of the carapace. The ocular peduncles are narrower in proportion to their length, and their outer margin is straight. The last joint of the second pair of legs has a broadly triangular, not a narrow and prominent lobe near its proximal end; that of the third pair is broader than in *A. symnista*. The inner ramus of the penultimate pair of post-abdominal appendages is much broader and nearly as long as the inner; and its terminal joint in the male is somewhat oblong, *with a narrow prolongation at its distal extremity*.

Hab. Florida, St. Augustine and among the Keys (*Stimpson*); Charleston Harbour (*Gibbes*); south-eastern coast, United States (*Coll. Brit. Mus.*).

The single specimen of this species in the British-Museum collection is a male. The form of the terminal segment in the female is not stated; that of the same segment in the male serves to distinguish the species from all its congeners. The length of the carapace a little exceeds 1 inch.

ALBUNEA OXYOPHTHALMA. Pl. V. figs. 14, 15.

Albunea oxyophthalmus, *Leach (MS.)*; *White, List Crust. Brit. Mus.* p. 57 (1847), sine descr.

This species is nearly allied to *A. symnista*, but differs as follows:—The eye-peduncles are very long, narrow, more than three times as long as broad at the base, with their outer margins straight. There are ten to twelve teeth on the anterior margin of the carapace, on each side of the median notch. The lobe at the proximal end of the last joint of the third pair of legs is prominent, triangular, and acute, but not so narrow at base as in *A. symnista*. The terminal segment of the postabdomen in the male is scarcely longer than broad, broadest in the middle, nearly

straight at its proximal extremity; that of the female is longer than broad, oblong-ovate. Length of carapace of largest specimen about $1\frac{1}{3}$ in.

Hab. West Indies, St. Christopher's; Cayenne; Brazil (*Coll. Brit. Mus.*).

In this species, as in all the preceding, the spine at the anterolateral angle of the carapace is of moderate length, not reaching beyond the level of the anterior margin of the carapace, and the median semicircular emargination of the front about twice as wide as deep.

Albunea paretii, Guérin-Ménéville, *Rev. et Mag. Zool. sér. 2*, v. p. 48, pl. i. fig. 10 (1853), may not improbably belong to this species. The type specimen was, as its author states, given to him by the Marquis Pareto with some Crustacea obtained in the neighbourhood of Genoa; but he had also received other Crustacea from America from the captain of a merchant vessel, and consequently was unable to speak positively as to the habitat of the species. It differs from *A. symnista* and *A. guerinii* principally in its elongated and very narrow eye-peduncles (which are represented as even longer and narrower at base than are those of *A. oxyophthalma*), subelongate and less crowded frontal spines, and narrower terminal postabdominal segment. The uncertainty of the habitat and brevity of the description render it impossible to determine its position with certainty, without an examination of the typical specimen.

ALBUNEA LUCASII.

Albunea lucasia, *Saussure, Rev. et Mag. Zool.* v. p. 367, pl. xii. fig. 4 (1853).

Albunea lucasii, *Stimpson, Journ. Bost. Soc. Nat. Hist.* vi. p. 485 (1857).

This species is characterized by De Saussure as having a very deep median frontal emargination, styliform ocular peduncles, and a very long spine on each side of the carapace. Length of carapace about 1 inch.

Hab. Mazatlan (*De Saussure*).

This species, in the form of the eye-peduncles, very nearly resembles the preceding; but the differences instanced by De Saussure appear sufficient to warrant its specific separation, if regard be had to its recorded habitat being on the western, not the eastern, coast of the American continent. In De Saussure's figure of the carapace, the frontal margin is represented as 8-10-

toothed, the median frontal notch not wider than deep, and the spine at the antero-lateral angle much longer than in *A. oxyophthalma*. The anterior legs were wanting; and nothing is said of the form of the tarsal joints of the remaining legs, or of the form of the terminal segment, by De Saussure.

ALBUNEA SPECIOSA.

Albunea speciosa, Dana, *U.S. Expl. Exp.* xiii. *Crust.* i. p. 405, pl. xxv. fig. 6 (1852).

This species is characterized by Dana as having the carapace marked with transverse lines, anterior margin either side of middle about 10-toothed, sides of thorax nearly parallel; peduncles of eyes slender, attenuate; anterior or upper margin of last joint of fourth pair of legs nearly straight; terminal segment a little oblong, quite entire, at apex subtriangular, its sides nearly parallel, sparingly arcuate. Length of carapace $7\frac{1}{2}$ lines.

Hab. Sandwich Islands (*Dana*).

This species appears to be well characterized by the form of the eye-peduncles, which are represented in the figure as much narrower in their distal than in their proximal half; *concave, not convex or straight, on their outer margins*. The spine at the antero-lateral angle is very small, and does not reach to the anterior margin of the carapace. The form of the tarsal joint of the third pair of legs is not mentioned; that of the fourth pair is broad and scarcely at all falcate. The terminal segment (apparently of the female) is oblong-ovate. I have seen no specimens of this species.

LEPIDOPS*.

Lepidopa, Stimpson, *Proc. Ac. Nat. Sci. Phil.* p. 230 (1858).

Eye-peduncles lamellate, compressed, almost squamiform, cornea not visible. Antennules long. Antennæ with a very small accessory joint, flagellum very short. Third maxillipedes with the fourth joint produced at its antero-external angle into a lobe, which reaches to or beyond the distal extremity of the fifth (penultimate) joint.

By the opposition of the last two joints of the third maxillipedes to the lobe of the antepenultimate joint, a prehensile organ is developed similar to that formed in the same pair of limbs in

* The generic name *Lepidopa* is more correctly written *Lepidops* by Stimpson in his description of *L. myops*.

certain Amphipoda (e.g. *Cerapus*), except that in the Amphipoda the antepenultimate joint is produced at its antero-inferior angle.

The species are all from America.

LEPIDOPS SCUTELLATA.

Albunea scutellata, *Desm. Consid. Crust.* p. 173 (1825); *M.-Edw. Hist. Nat. Crust.* ii. p. 204, pl. xxi. figs. 9-13 (1837); *Gibbes, Proc. Amer. Assoc.* p. 187 (1850); *Dana, U.S. Expl. Exp. xiii. Crust.* i. p. 406 (1852).

Lepidopa scutellata, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858); *Ann. Lyc. Nat. Hist. New York*, vii. p. 79 (1862).

Carapace scarcely emarginate, and without any noteworthy denticles or spines on its anterior margin. Eye-peduncles much broader than long, and truncate anteriorly. Length of carapace 7 lines.

Hab. Peru, San Lorenzo? (*Dana*); Island of St. Thomas (*A. H. Riise*).

No locality is mentioned by Desmarest* or Milne-Edwards for this species. Dana observes of the specimens collected at San Lorenzo that the proportions are different from those in the figure by Edwards. The hand is very thin and high, the height being equal to the length; the lower margin is slightly arcuate, and not at all deflexed at the base of the immobile finger; this finger is acute and short, the margin above it vertical and hairy. The front margin has a low median point, and also another equally advanced, halfway to the side, with the margin between sinuous. It is not improbable that the specimens from St. Thomas and San Lorenzo may prove upon comparison to belong to distinct species. Length of carapace of female 6 lines. I have seen no specimens.

LEPIDOPS VENUSTA.

Lepidopa venusta, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858, sine descr.); *Ann. Lyc. Nat. Hist. New York*, vii. p. 79 (1862).

Carapace glabrous, of a silvery hue, with bluish reflections (in specimens preserved in spirits). The markings of the dorsal surface of the carapace are less profound and less numerous than in *L. scutellata*; and the principal transverse sulcus is nearly straight and not undulated as in that species. Front tridentate; lateral teeth situated at about halfway between the median one and the lateral angles, and consequently nearer the median one

* Desmarest considered his specimens to be the *Hippa (Albunea) scutellata* of Fabricius; but see above, under *Remipes scutellatus*.

than in *L. scutellata*. Eye-peduncles large, oval, diverging, and a little thickened below the middle, the minute eye being situated on the inferior surface near the extremity. Antennules slender, with flagella more than five times as long as the carapace. Feet nearly as in *L. scutellata*; but the dactylus of the second pair is more sharply excised, and the dactyli of the following pairs are more slender.

Hab. St. Thomas (*Stimpson*). I have seen no specimens of this species.

LEPIDOPS MYOPS. Pl. V. fig. 16.

Lepidops myops, *Stimpson, Ann. Lyc. Nat. Hist. New York*, vii. p. 241 (1862).

Carapace with the same markings on the surface as in *L. scutellata*, but stronger. Postfrontal transverse groove broad, with granulated surface. Median lobe of front rounded; margin armed with small teeth like those of a comb, which become more conspicuous outwardly as far as the lateral lobes, where the margin becomes smooth. Eye-peduncles or scales obliquely oblong, rather thick, broader behind, antero-lateral angle prominent, subacute; inner angle rounded; eye-specks obsolete in most of the specimens, in others barely visible on the inferior side of the ocular plate, near the exterior angle. In other characters this species approaches very near to *L. scutellata*.

Hab. Cape St. Lucas (*Stimpson, Coll. Brit. Mus.*).

Two specimens (a male and a female) are in the British-Museum collection, from the Smithsonian Institution. The fifth segment in both sexes has slender lateral lobes or wings. The terminal segment in the male is triangular, broad, and rounded on the sides at its proximal and acute at its distal extremity; that of the female is ovate-triangular, more rounded and obtuse at its distal extremity. They are both of small size. Length of carapace about 5 lines.

BLEPHAROPODA.

Blepharipoda, *Randall, Journ. Ac. Nat. Sci. Phil.* viii. p. 130 (1839);

Stimpson, Proc. Ac. Nat. Sci. Phil. p. 230 (1858).

Albunhippa, *M.-Edw. & Lucas, Arch. Mus. Hist. Nat.* ii. p. 477 (1841).

Abrote, *Philippi, Arch. f. Naturg.* xxiii. p. 124 (1857).

Eye-peduncles very slender, elongated, cylindrical, and articulated in the middle. Antennules and antennæ rather long, and with a multiarticulate flagellum; antennæ without an accessory joint.

Third maxillipedes with the third joint narrow and similar to the fourth, which is not produced at its antero-external angle.

It is possible that the three species of this genus belong in reality to one and the same form; but as I have not the material on which to base an accurate comparison, it may be advisable to consider them for the present as distinct. All are from the western American coast.

BLEPHAROPODA OCCIDENTALIS.

Blepharipoda occidentalis, *Randall, Journ. Ac. Nat. Sci. Phil.* viii. p. 131, pl. vi. (1839); *Gibbes, Proc. Amer. Assoc.* p. 187 (1850); *Stimpson, Journ. Bost. Soc. Nat. Hist.* vi. p. 486 (1857).

Carapace convex, somewhat obliquely elevated toward the centre, which is faintly carinate; a median transverse sinuous impression, behind which the surface is polished, but anterior to it densely marked with small transverse impressions, most of which are pectinate and hairy; a lateral transverse impression and a very profound oblique one connected with it inferiorly; frontal edge strongly 3-toothed, and excavated between the teeth; a distinct postfrontal transverse groove, behind which is a strong tooth; antero-lateral margin of the carapace with four stout teeth on each side, posterior margin excavated: second, third, and fourth pairs of feet more or less roughened laterally, and with the anterior edge minutely dentate; anterior pair stout; arm with a strong tooth near its anterior inferior extremity; carpus elongate, rather convex, laterally impressed, and having on its upper anterior edge a great spiniform crest, which is itself bordered with smaller spines; hand flattened on the side, and armed with two or three strong sharp teeth, having between them a great multitude of impressions similar to those of the carapace; pincers flattened, acute at tip, and armed with sharp spiniform teeth both on their outer edges and on their prehensile side. Length about 2 inches.

Hab. California, San Diego (*Randall, Stimpson*); Monterey (*Coll. Brit. Mus.*).

The above is Randall's description.

There is in the collection of the British Museum a very much mutilated specimen of this species, gummed in detached fragments on cardboard, from Monterey, California, the imperfect condition of which precludes the possibility of description. It may be noted, however, that the anterior margin of the palm and the outer margin of the mobile finger are armed with a series of four spines, which decrease in size toward the articulation and are

none of them very large. In a second (female) specimen of unknown locality which is in the collection, and appears to belong to this species, the number of spines varies from three to four. The terminal segment is almost orbiculate in outline.

BLEPHAROPODA SPINIMANA.

Abrote spinimana, *Philippi, Archiv f. Naturg.* xxiii. p. 129, pl. viii. (1857).

Blepharipoda spinimana, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858).

Carapace elongate-ovate and convex above. Front 3-toothed, the teeth triangular, and ending in long spines, the median tooth rather less prominent than the lateral. There is a small median spine immediately behind the groove defining the anterior margin of the gastric region, and four spines on the antero-lateral margins, of which the first is long and the last very small. The eye-peduncles are very slender; and their penultimate about equals the last joint in length. The flagella of the antennæ have a series of long hairs. The anterior legs have the arm short, with a long spine on its inferior margin; wrist with a strong triangular tooth on the upper margin at the distal extremity, behind which is a spine; palm slightly rugose externally, with two spines on its outer surface, one on its inferior margin at its infero-distal angle, and two very strong spines on its anterior margin and on the upper margin of the mobile finger. Terminal joints of the second and third legs strongly falcate, those of the second pair broader and shorter than those of the third pair, those of the fourth pair but slightly falcate, the fifth pair slender, small, and monodactyle. Tail-segments (the last excepted) short, with horizontal ovate lateral lobes; the last joint of the male is twice as broad as the foregoing at base, as broad as long, with the sides converging to the distal extremity.

Hab. Chili, at Tomé, in Bay of Talcahueno (*Philippi*); Bay of Valparaiso (*Coll. Brit. Mus.*).

The specimens described by Philippi were found by Herr Ph. Germain on the sea-shore. The specimen (a male) in the British-Museum collection was found by fishermen in deep water in the Bay of Valparaiso, where it is stated to be of rare occurrence. The length of its carapace is nearly 1 in. 2 lines.

BLEPHAROPODA SPINOSA.

Albunhippa spinosa, *M.,-Edw. & Lucas, Arch. Mus. Hist. Nat.* ii. p. 477,

pl. xxviii. figs. 1-13 (1841); *Dana, U.S. Expl. Exp.* xiii. *Crust.* i. p. 406 (1850).

Blepharopoda spinosa, *Stimpson, Proc. Ac. Nat. Sci. Phil.* p. 230 (1858).

Hab. Peru, San Lorenzo (*Dana*).

The locality whence the specimen described by Milne-Edwards and Lucas was obtained is not stated; and there is nothing in their description to distinguish it from either of the foregoing species. The hands are represented in the figure as devoid of spines, but are described as spinose. *Dana* gives no particulars which would serve to characterize the specimens collected by the U.S. Exploring Expedition.

EXPLANATION OF PLATE V.

- Fig. 1. Front of *Remipes testudinarius*, nat. size.
 2. " " " var. *denticulatifrons*, also nat. size.
 3. *Remipes strigillatus*, Stimpson, nat. size.
 4. The same, lateral view.
 5. *R. truncatifrons*, n. sp., nat. size.
 6. The same, lateral view.
 7. *Mastigochirus gracilis*, Stimpson, $\times 2$ diam.
 8. *M. quadrilobatus*, n. sp., $\times 2$ diam.
 9. Front of *Hippa emerita*, Latr., nat. size.
 10. " " *analoga*, Stimpson, nat. size.
 11. " " *asiatica*, M.-Edw., nat. size.
 12. *Albunea microps*, White, MS., nat. size.
 13. " " " abdomen of male, $\times 2$ diam.
 14. *A. oxyophthalma*, Leach, nat. size.
 15. " " " abdomen of male, $\times 2$ diam.
 16. *Lepidops myops*, Stimpson, nat. size.

Descriptions of new Species of Phytophagous Coleoptera.

By JOSEPH BALY, Esq., M.R.C.S., F.L.S., &c.

[Read December 20, 1877.]

List of Species and their Habitat.

<i>Sagra longipes</i>	Burmah.
" <i>ferox</i>	South Africa, Ribé.
<i>Megascelis posticata</i>	Pebas, Upper Amazons.
" <i>femorata</i>	Amazons.
" <i>basalis</i>	Rio Janeiro.
<i>Megalostomis placida</i>	Ega, Upper Amazons.
<i>Diaspis batesi</i>	Ega, Upper Amazons.

