

5. On Crustaceans from the Mauritius.—Part II.

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(Plate XXXVI.)

Of the interesting Crustaceans of which I submit descriptions as a sequel to my former paper on Crustaceans received by the British Museum from M. V. de Robillard, the first to be mentioned, a *Palinurus*, was taken in a fishing-net at a depth of 40 fathoms. With it were sent, with other marine animals, a specimen of a species of *Dromia* (apparently *D. vulgaris*¹) completely covered with a sponge of the genus *Dysidea*; and also a specimen of *Lysiosquilla maculata*, one of the commonest and best-known of the Oriental Squillidæ, of which, however, there were previously no specimens from the Mauritius in the British-Museum collection, and which is marked as "rare" by M. Robillard.

The Crawfish, of which a detailed description follows, and which belongs to the restricted genus *Palinurus* of Gray², I regard as specifically identical with a West-Indian form long since described and roughly figured by Parra³ under the designation "Cameron de lo alto," which M. H. Milne-Edwards⁴ has briefly described as *Palinurus longimanus* from a West-Indian type in the collection of the Paris Museum. M. Guérin-Méneville⁵ also mentions this species, but without adding any thing to our knowledge respecting it; and yet more recently Dr. Edward v. Martens⁶ has published a few remarks upon a male example obtained at Cuba by Dr. J. Gundlach. Thus the West-Indian habitat of *P. longimanus* is established beyond question.

The original description of Parra, although of considerable length, is, as might be expected in so early a work, insufficient from a scientific point of view; but as far as it goes it is applicable in almost every particular to the species from the Mauritius. Nevertheless, as

¹ I have already, Ann. & Mag. Nat. Hist. (ser. 5) v. p. 370 (1880), remarked on the occurrence of this species in the Oriental region.

² I may observe here that Dr. G. Pfeffer, in a memoir on the *Palinuridæ* in the collection of the Hamburg Museum (Verhandl. des naturwissenschaftlichen Vereins von Hamburg-Altona, v. p. 30, 1881), has proposed for the subgenus *Panulirus* of Gray (ined.?) and Heller (1865), which includes by far the greater number of known Crawfishes, and has been generally adopted, the new designation *Senex*. This name cannot be adopted, having been long ago preoccupied in the class Aves; and I will add that, in my opinion, it would be productive of much inconvenience were a generic name liable to alteration merely because (as in the present instance) it is composed of the transposed letters of another name; to cite only one instance, it would then become necessary to name nearly all the older genera of Fish-lice (*Cymothoidæ*).

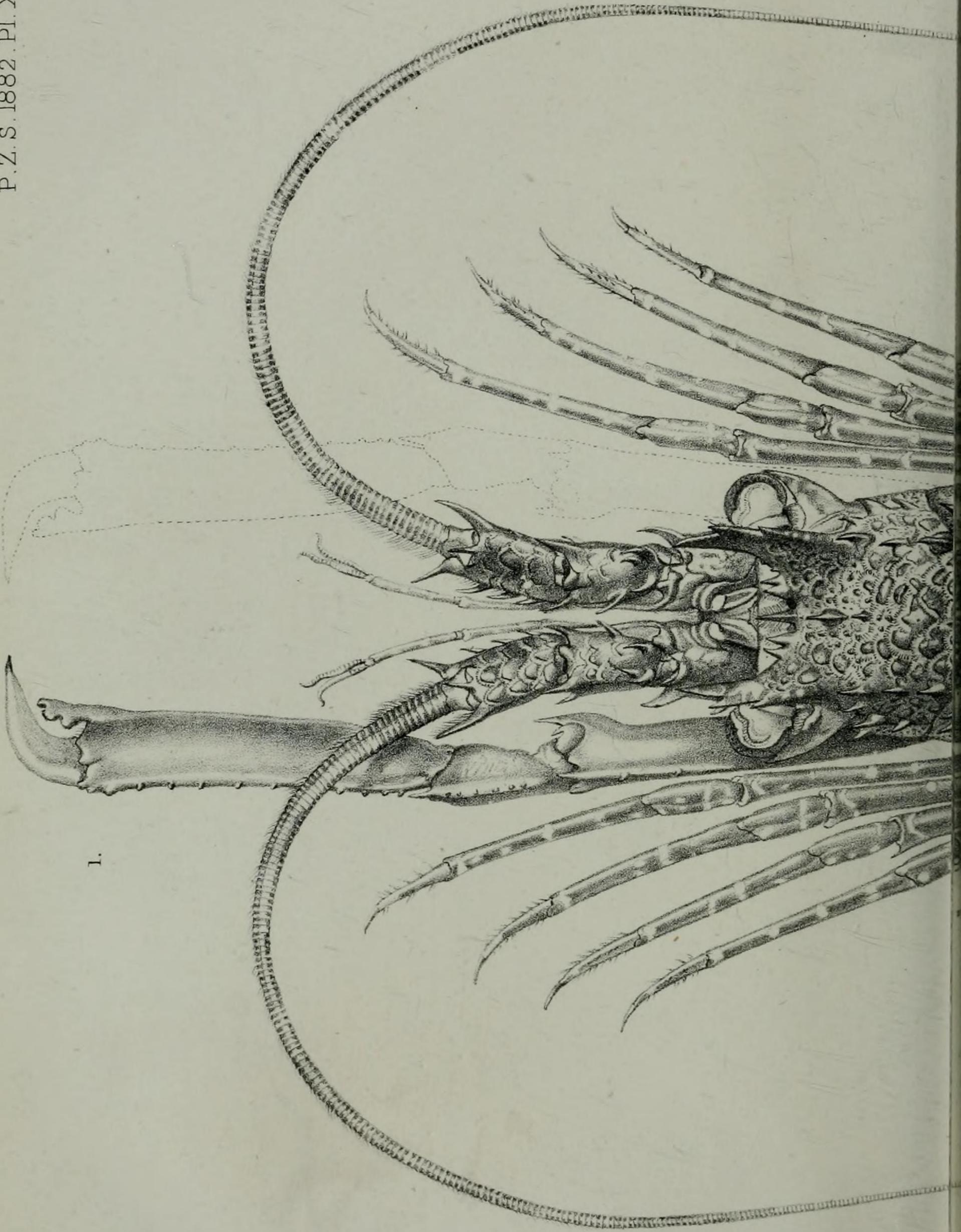
³ Descripción de diferentes Piezas de Historia natural, &c., p. 154, pl. lv. fig. 1 (1787).

⁴ Histoire naturelle des Crustacés, ii. p. 294 (1837).

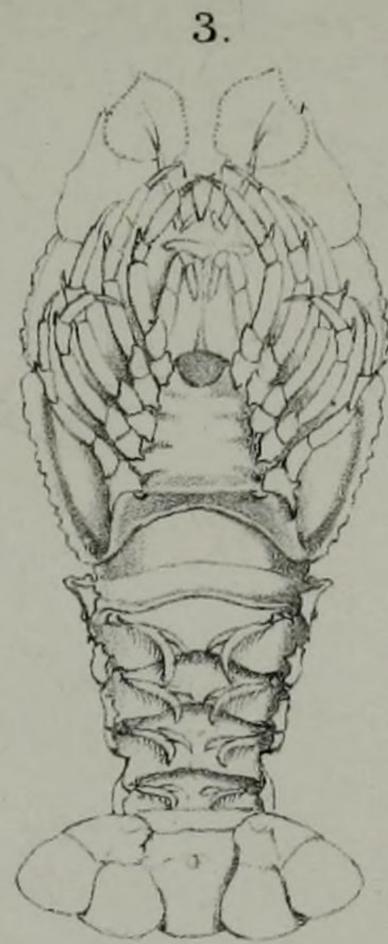
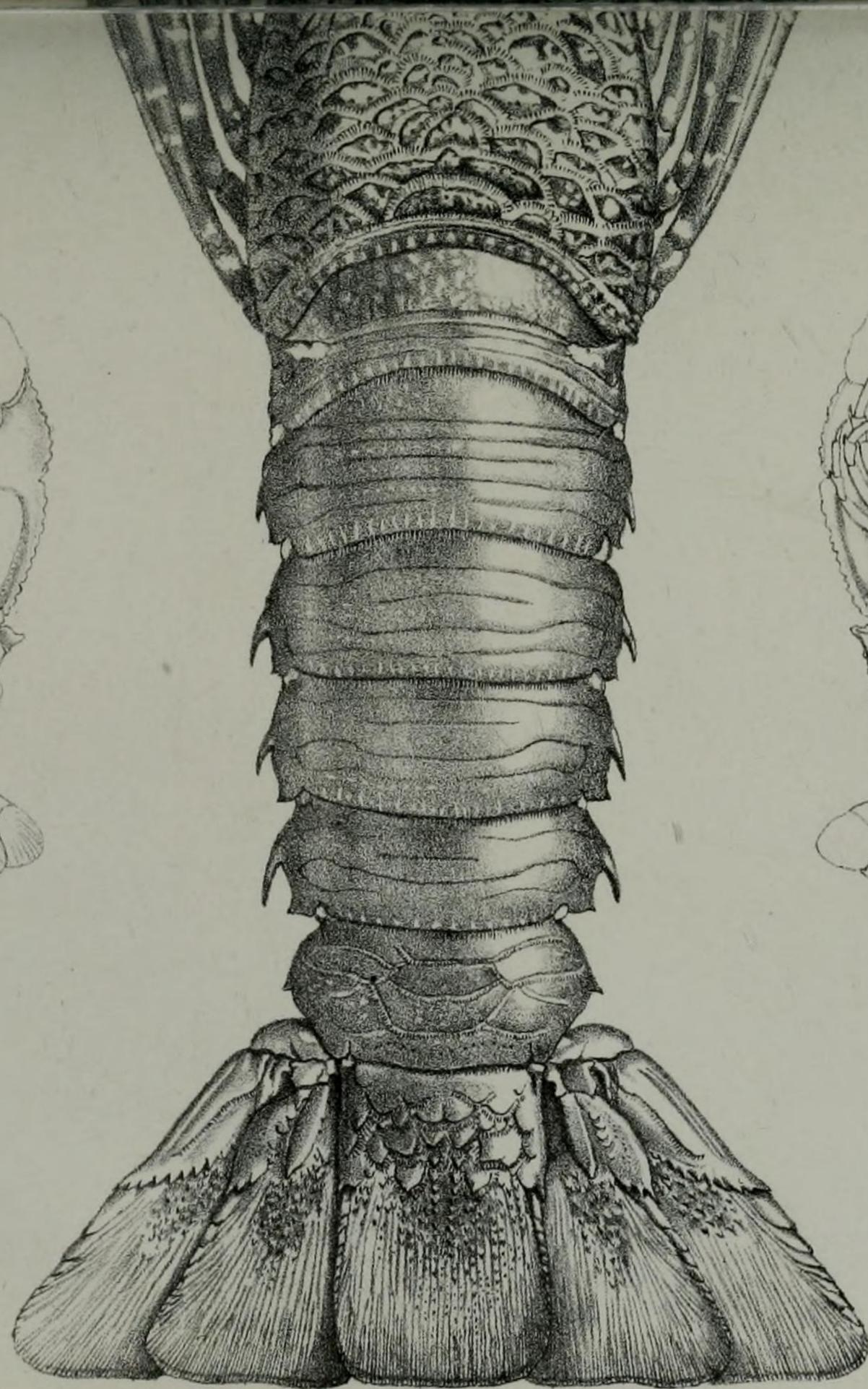
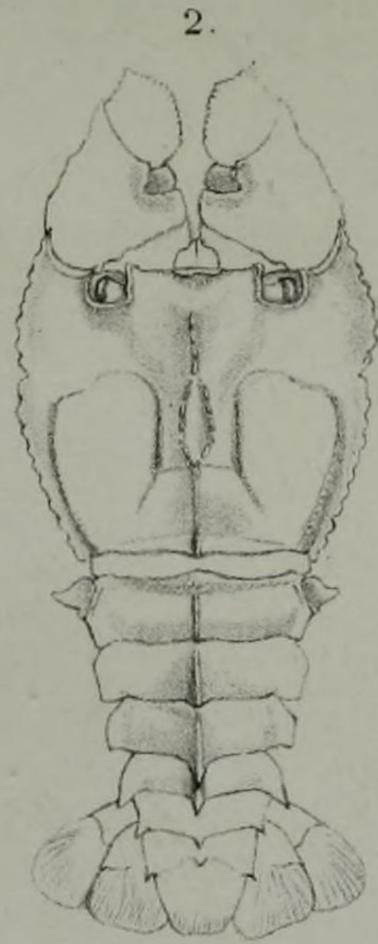
⁵ "Anim. Articulés," in R. de la Sagra's Hist. de l'île de Cuba, p. xciii (1857).

⁶ Archiv f. Naturgeschichte, xxxviii. p. 125 (1872).





I.



Edwin Wilson del. et lith.

Mintern Bros. imp.

Fig: 1. PALINURUS LONGIMANUS *var.* MAURITIANUS. Figs. 2. 3. PSEUDIBACUS PFEFFERI.



the figure showed distinct differences in the proportions of the penultimate joints and dactyli of the chelipedes, and in the coloration of the ambulatory legs, and as Milne-Edwards in his later diagnosis mentioned the existence of seven series of spines on the carapace, a character scarcely applicable to the specimen from the Mauritius, and also on account of the widely separated habitats of the two forms, I was at first inclined to regard the species as distinct. Before, however, applying a new specific name to the specimen from the Mauritius, I submitted a sketch of the chelipede and cephalothorax to Prof. A. Milne-Edwards, who very kindly compared them with the type of *P. longimanus* in the Paris collection, and sent me the following observations, with an outline drawing of the Paris type:—

“Le *Palinurus longimanus* (M.-Edwards) ressemble beaucoup à l'espèce qui a été trouvée au voisinage de l'île Maurice et dont vous m'envoyez un croquis. Il y a cependant quelques légères différences dans la disposition des épines. Vous pouvez en juger par le dessin où j'ai figuré la carapace du *P. longimanus* type de notre collection. En arrière de l'épine latérale postorbitaire il s'en trouve une seconde qui me paraît manquer sur l'exemplaire de Maurice. Le doigt de la main du *Palinurus* du Muséum de Paris est moins courbé, mais la forme du membre est bien la même. Ce sont, comme vous voyez, de bien petits différences.”

These remarks and the figures so courteously sent leave no doubt in my mind as to the specific identity of the two forms. The spine behind the lateral postorbital spine, which was not represented in the sketch sent to M. Milne-Edwards, is distinctly developed on one (the left) side only of the Mauritius specimen, where, however, it is very small.

As no sufficient description or accurate figure has as yet appeared of this *Palinurus*, which is certainly one of the most remarkable described, those which are now given will not be without interest; and the minor distinctions referred to below will, I think, justify me in considering the Mauritius specimen as belonging to a distinct variety—the more so as this is, I believe, the first recorded instance of a Crustacean from the Mascarene subregion being specifically identical with one from the West Indies, unless, indeed, certain species having an almost cosmopolitan distribution are to be excepted. This, moreover, is in itself a fact of much interest on account of the well-known affinities that exist between the Mascarene and South-American faunas.

Whether *P. longimanus* is to be regarded as an instance of a once widely-spread species surviving to the present period in these widely distant and isolated localities, or whether further researches will demonstrate its existence at Cape Verd or on the western coast of Africa (whence it may have passed round the Cape of Good Hope into the Oriental region), time only will show. Certain it is that it differs widely from the typical *Palinuri* in the remarkable development and dilated palms of the anterior legs, which may be taken by some zoologists as indicative of an affinity with the Astacina.

PALINURUS LONGIMANUS, var. MAURITIANUS, n. (Plate XXXVI. fig. 1.)

The carapace is of the form usual in *Palinurus*, with the cervical suture very distinctly defined, and is everywhere covered with flattened tubercles whose anterior margins are bordered with a fringe of *setæ*; the tubercles are smaller upon the hepatic and antennal regions; the median rostral spine is small and narrow-acuminate; on either side of it are two spines, and behind it, in a median longitudinal series, are three other small spines, of which the second is the largest; the supraocular spines are very large, the upper margin of each is armed with two smaller spines, the lower margin is entire; behind each of the supraocular spines, on the gastric region of the carapace, are three spines in a longitudinal series; below these are placed three spines on the hepatic region; there is a strong spine, followed by a second much smaller spine, on the antennal region of the carapace below the eyes; about eight spines are placed in a transverse series along the front of the cardiac and branchial regions, immediately behind the cervical suture. The segments of the postabdomen are without spines or tubercles (except the lateral and marginal spines), and are marked with transverse linear sutures, which are often interrupted, and vary in number and disposition on the several segments; their arrangement will be best understood by a reference to the figure; the lateral lobes in the first to sixth segments terminate in a strong spine, which, in the second to fifth segments, is long and curved backward, and is followed by a small spinule on the rounded postero-lateral margins. On the sternal surface of the body, on those segments with which the second to fourth legs are articulated, a prominence bearing two spines or tubercles is situated on each side of the middle line of the body; the last sternal segment is armed with a strong spine on each side of the middle line of the body and one near the bases of the fifth legs; the inferior surface of the first postabdominal segment is armed with about six spinules, the second to fifth segments with two, and the sixth segment with three spinules. The eye-peduncles are of moderate thickness; the eyes (with their corneæ) are very large and subspherical; the median portion of the ophthalmic segment is visible in a dorsal view, as in the typical *Palinuri*; and in form the antennular segment with its stridulating apparatus, and the antennules and antennæ, do not essentially differ from the same parts in *P. vulgaris*; the flap of the stridulating apparatus is indurated: the antepenultimate joint of the peduncle of the antennules nearly reaches to the end of the peduncles of the antennæ. The antennæ are broken, but are considerably longer than the body; the joints of the peduncles are covered with flattened, ciliated, squamiform prominences resembling those of the carapace, and are armed with strong spines; the flagella have a line of longish hairs on their under surface. The left chelipede (the only one preserved) is very long and robust, more than half as long again as the first ambulatory legs; the merus has its upper margin compressed and subacute, armed with a spine at the distal end of its upper margin; behind it, and at some distance from one another, are two

smaller spines; the wrist has its upper margin subcarinated, with a spine at the distal end, behind which are several granules; the palm is nearly three times as long as broad, laterally somewhat compressed, with the upper and lower margins subacute—the upper armed with ten small tubercles and with a short spine placed above the base of the dactylus, which is much thickened at base and has its inner margin unarmed; except for a small tubercle at base, it curves downward nearly at right angles with the base against the small immobile finger, which is armed with two blunt teeth on its inner margin. The ambulatory legs are slender and smooth; the merus joints are armed below with a small distal spine, and are longitudinally canaliculated on their outer surface; traces of similar *canaliculi* are seen upon some of the following joints, and particularly of the dactyli, which are hairy. The distal portions of the terminal segment and uropoda are membranaceous and minutely spinulose as in the typical *Palinuri*, the margins of the indurated parts being denticulated nearly as in *P. vulgaris*.

The ground-colour of the carapace (in the dried example) is red, blotched or variegated with yellow; the postabdominal segments are orange-red, minutely punctulated with yellow; and the first to fifth segments have a transverse series of large yellowish-white spots bordering their posterior margins and the margins of the lateral lobes and spines; the flagella of the antennæ are alternately banded with yellow and red; the ambulatory legs are orange-yellow, with numerous irregular yellowish-white spots. The length of the body is a little over 6 inches (152 mm.), of the left chelipede about $6\frac{1}{3}$ inches (160 mm.), of the first ambulatory legs nearly $4\frac{1}{4}$ inches (108 mm.). The unique example being dried, and the parts not always fully extended, it is difficult to give the exact measurements.

A single adult male is in the collection (preserved dry).

The Mauritian variety is to be distinguished from the West-Indian type of *P. longimanus* (if Prof. A. Milne-Edwards's outline drawings may be referred to for these minute details) only by the minute or obsolete second lateral postocular spine, the stouter leg of the first pair with more robust palm and stronger abruptly-curved dactylus, by the much greater development of the spines of the peduncular joints of the antennæ, and the existence of a spinule behind the long lateral spines of the second to fifth postabdominal segments—distinctions which, even if they exist, assuredly cannot be regarded as of specific importance.

Although *P. longimanus* differs so markedly from its congeners in the form and great development of the chelipedes, in what are usually regarded as the essential generic characters—*i. e.* in the distinct rostrum, the narrow antennal segment, approximated bases of the antennæ, and short antennular flagella—it belongs, as already stated, to the typical *Palinuri*.

The genital apertures are situated upon a slender styliform prolongation of the coxal joints of the fifth ambulatory legs, which is directed inward toward the middle line of the sternum, and bears a small spine near the distal extremity. In *P. vulgaris* the rounded

prominences on which the genital apertures are placed are quite short and unarmed.

Reference should have been made in my previous paper on Mauritian Crustacea obtained by the British Museum from M. Robillard, to two species which were received from him last year. One of these is a fine and large specimen of an *Alpheus*, which I refer somewhat doubtfully to the *Alpheus rapax* of Fabricius, as described by De Haan. It has the rostrum prolonged backward as a median dorsal carina to the middle of the carapace, and in other particulars agrees excellently well with De Haan's description¹, but differs from the figure in having the mobile finger of the larger chelipede vertically deeper than in that author's figure and subtruncated at its distal extremity. The other species is an apparently undescribed species of *Pseudibacus*, Guérin-Méneville, a genus previously unrepresented in the collection of the British Museum.

PSEUDIBACUS PFEFFERI, sp. n. (Plate XXXVI. figs. 2, 3.)

The carapace is broader than long; the ambulatory legs are concealed beneath its lateral prolongations. The upper surface of the carapace is nearly smooth; the antero-lateral margins are thin, acute, and regularly crenulated on each side; a notch marks apparently the line of demarcation between the cervical and postcervical regions; in front of the lateral notches are seven or eight, and behind them eleven or twelve crenulations; a longitudinal depression exists on each branchial region, not far from the lateral margins. The median dorsal line of the carapace is marked by a longitudinal ridge or keel, which originates at a short distance behind the anterior margin, and on the cardiac region is bifurcated—the two carinæ thus formed enclosing a median depression or shallow pit, behind which they reunite and are continued as a simple ridge to the posterior margin of the carapace; the anterior and the two median carinæ are each divided into three or four obscurely indicated lobes; the posterior carina is entire, but terminates in a small tubercle on the posterior margin of the carapace. The anterior margin of the front is bisinuated in its median portion, where the basal lobe of the rostrum is articulated with it; the terminal plate of the rostrum is transverse, with the extremity subacute, and is divided through about half its length by a median, longitudinal, nearly closed fissure. The orbits are situated about midway between the median line and the lateral angles of the carapace, and are merely closed by a process of the basal antennal joint as in *Pseudibacus gerstaeckeri*. The postabdomen resembles that of *P. gerstaeckeri* as described by Dr. Pfeffer in all essential characters: thus the second to fifth segments are each armed with a median dorsal carina, which slopes obliquely downward to the anterior margin (except on the second segment), and is posteriorly produced and ends in an acute tooth on the fourth and fifth segments; the sixth segment has a small median tubercle on its posterior margin, and the seventh three at the line of demarcation between the

¹ *Vide* Crustacea, in Siebold's 'Fauna Japonica,' p. 177, pl. lxxv. fig. 2 (1849).

chitinous and membranaceous portions of this segment, situate one in the median line and one on each lateral margin; the lateral margins of the second to sixth postabdominal segments are divided into several somewhat triangulate lobes or teeth. The eyes are short, and in a dorsal view are completely contained within the orbits; the antennules are short, and terminate in two flagella, whereof one is much thicker than the other. The large leaf-like external processes of the antepenultimate joints of the antennæ terminate in a small spine at their antero-external angles, behind which are two teeth on their outer margins, and have a small tuberculiform tooth on their inner margins; the terminal antennal joints are somewhat obtusely angulated at the distal extremity, and have their margins minutely crenulated or serrated; the outer maxillipedes are small, with the ischium as long as the merus joints. The legs are short, concealed beneath the carapace, with the margins of the joints angulated; the dactyli of all are strong, slightly curved and acute; the antepenultimate joints have a short spine at the distal ends of their upper margins; the coxal joints of the fifth legs bear a strong spine.

Colour (of dried *exuviae*) reddish-yellow, with darker reddish markings on the sides of the branchial regions of the carapace and of the postabdomen, on the inner margins of the antepenultimate joints of the antennæ and of the legs. Length of the body about 1 inch 3 lines (32 mm.), greatest breadth about $8\frac{1}{2}$ lines (18 mm.).

Three cast shells are in the collection.

From the Mediterranean *Pseudibacus veranyi*, Guérin¹, this species is distinguished by the very different tuberculation of the carapace, and the emargination of its lateral margins, the closed median fissure of the rostrum, &c. These characters will also suffice to distinguish our species from the Californian form described by Prof. S. I. Smith² as *Evibacus princeps*, but which I think can scarcely be generically distinct from *Pseudibacus*. *P. pfefferi* is most nearly allied to an Atlantic species described by Dr. G. Pfeffer in his memoir already referred to³ as *Pseudibacus gerstaeckeri*, which, however (as it would appear from the description), has the carinæ of the carapace differently disposed, and has no median depression on the cardiac region, but in place thereof a continuous median keel; moreover no mention is made of any spines at the distal ends of the antepenultimate joints of the ambulatory legs. I must therefore consider our species distinct from *P. gerstaeckeri*; and I have much pleasure in associating with it the name of the author of that important memoir, which is of much value to the student of the classification of this group.

EXPLANATION OF PLATE XXXVI.

- Fig. 1. *Palinurus longimanus*, var. *mauritanus* (p. 540) male adult, nat. size.
 2. *Pseudibacus pfefferi*, p. 542, $\times 1\frac{1}{2}$ diam.
 3. Inferior view of the same, $\times 1\frac{1}{2}$ diam.

¹ Rev. et Mag. de Zoologie, vii. pp. 139, 140, pl. v. (1855).

² Amer. Journ. Sci. and Arts, xlii. p. 118 (1866).

³ Verhandl. naturwissensch. Vereins Hamburg-Altona, p. 51 (1881).