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	Page
LE SOUËF, ALBERT, A. C., C.M.Z.S.	
Letter from, containing remarks upon the Hatching of two Cygnets from one Egg of a Black-necked Swan	390
LUMHOLTZ, CARL, M.A., of the University of Christiania.	
Notes upon some Mammals recently discovered in Queens- land	406
LÜTKEN, DR. CH. W., F.M.Z.S.	
Letter from, containing remarks as to the possibility of there being more than one Species of the Genus <i>Tachyglossus</i> inhabiting Australia	150
MIERS, E. J., F.L.S., F.Z.S., Assistant in the Zoological Department, British (Natural History) Museum.	
On some Crustaceans from Mauritius. (Plate I.)	10
MIVART, ST. GEORGE, Ph.D., F.R.S., V.P.Z.S., M.R.I., &c.	
On the Development of the Individual and of the Species as Forms of Instinctive Action	462
NORMAN, Rev. A. M., and STEBBING, Rev. T. R. R.	
Notice of the first part of a Memoir on the Crustacea Isopoda of the 'Porcupine,' 'Lightning,' and 'Valorous' Expeditions	562
O'HALLORAN, J. C.	
Exhibition of a rare Lizard from Rodriguez.	1
OWEN, Sir RICHARD, K.C.B., D.C.L., F.R.S., F.L.S., F.Z.S., &c.	
Notice of the twenty-fifth of his series of Memoirs on Extinct Birds of the Genus <i>Dinornis</i>	176
PARKER, T. JEFFREY.	
Abstract of a Memoir on <i>Regalecus argenteus</i>	207
PARR, J. C., F.Z.S.	
Exhibition of, and remarks upon, a chick of the Vulturine Guinea-Fowl hatched in Lancashire	477

3. On some Crustaceans from Mauritius. By E. J. MIERS, F.L.S., F.Z.S., Assistant in the Zoological Department, British (Natural History) Museum.

[Received December 12, 1883.]

(Plate I.)

M. V. de Robillard having recently forwarded to the Zoological Department a small but interesting collection of Crustaceans from Mauritius, the following notes on the species are laid before the Society, in continuation of the reports upon Crustaceans from the same locality sent by M. Robillard on two previous occasions¹.

The collection comprised in all examples of only eighteen species; but of twelve of these, which were retained for the Museum, several have been hitherto *desiderata* in the collection; and one species, which I have designated *Callianassa martensii*, is, I believe, new to science. With three or four exceptions, however, the species have a wide oriental distribution.

Besides the species selected for the Museum, which are referred to in the following notes, there were in the collection specimens of *Menaethius monoceros*, *Schizophrys serratus*, *Trapezia ferruginea*, *Neptunus sanguinolentus*, *Thalamita crenata*, and *Podophthalmus vigil*.

The following is a list of the species included in the present report; those marked with an asterisk are such as I believe to be now recorded for the first time from Mauritius.

- Actæodes pubescens* (M.-Edw.). Indian Ocean (v. Martens).
- Chlorodius niger* (Forskal). Oriental Region.
- **Trapezia flavopunctata*, Eyd. & Soul. Sandwich Islands.
- Lissocarcinus orbicularis*, Dana. Oriental Region.
- Xenophthalmodes mæbii*, Richters.
- Myra fugax* (Fabr.). Oriental Region.
- **Phlyxia erosa*, A. M.-Edw. Oriental Region.
- Dynomene hispida*, Desm. Oriental Region.
- **Callianassa martensii*, sp. n.
- **Penæus monodon*, Fabr. Oriental Region.
- **Solenocera lucasii*, S. Bate? S. of New Guinea.
- Leptosquilla schmeltzii* (A. M.-Edw.). Samoa Islands.
- Gonodactylus trachurus*, v. Martens. Pelew Islands.

ACTÆODES PUBESCENS.

Zozymus pubescens, Milne-Edwards, Hist. Nat. des Crust. i. p. 384 (1834).

Liomera pubescens, A. M.-Edwards, Nouvelles Archives du Muséum d'hist. naturelle, i. p. 223, pl. xii. fig. 6 (1865).

A specimen (adult female) referred to this species agrees with the descriptions and figure in nearly every thing except in the coloration,

¹ See P. Z. S. 1882, pp. 339-342, pl. xx., and pp. 538-543, pl. xxxvi.

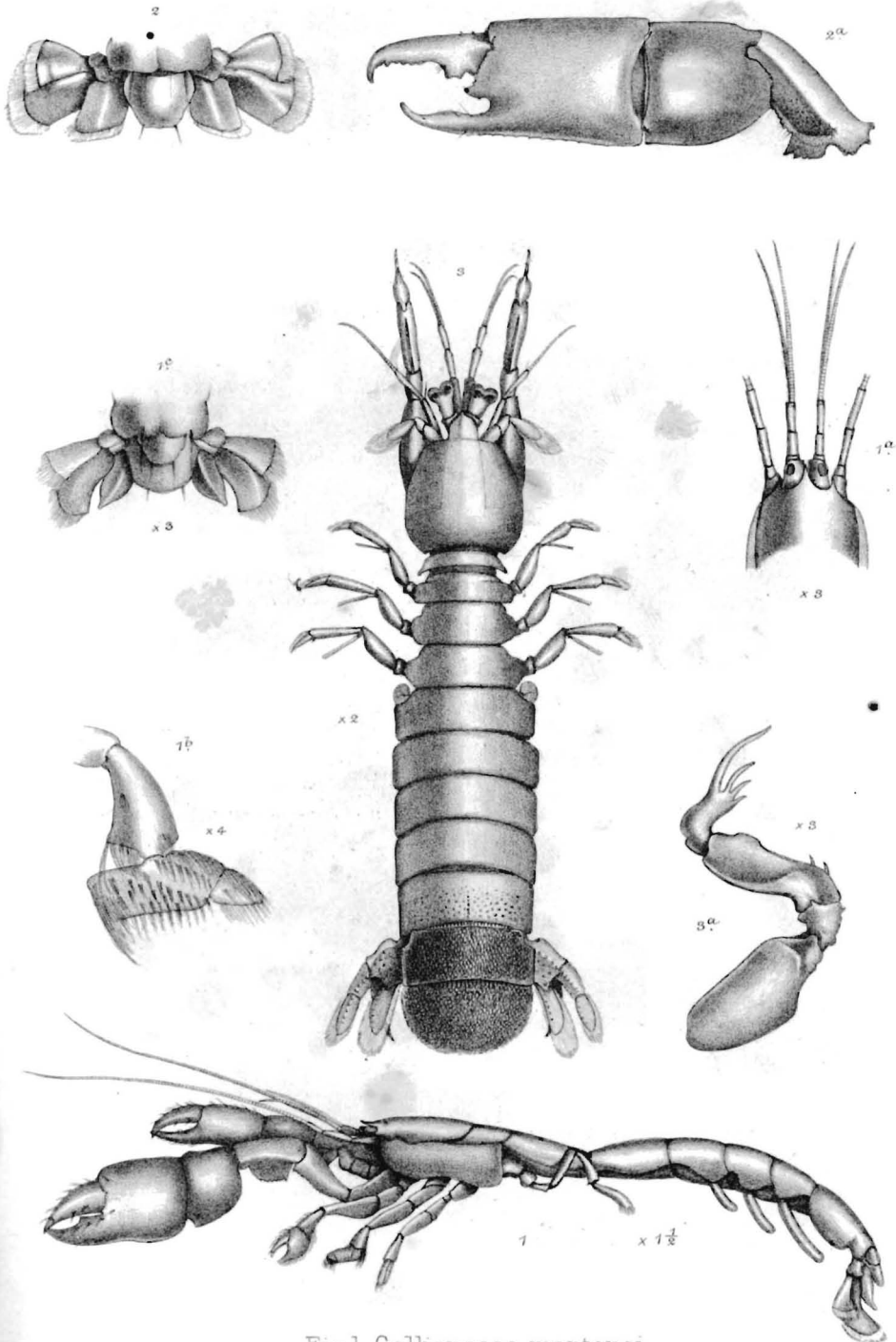


Fig.1. *Callinassa martensi*.
Fig.2. *C. mauritiana*. Fig.3. *Conodactylus trachurus*.

which in the specimen received from M. Robillard is of a bright rose-pink, the dorsal surface of the carapace covered with numerous rather large white spots, which are smaller near to the front and antero-lateral margins; the chelipedes are slenderer (a character probably due to the sex of the specimen). Milne-Edwards describes the coloration as whitish, but it is probable that his specimen was bleached.

The correct generic position of *A. pubescens* is doubtful; in external appearance (*i. e.* in the very widely transverse granulated carapace) it has altogether the *facies* of a species of *Carpilodes*, but the basal antennal joint does not, as in that genus, enter the inner orbital hiatus. It cannot, in the classification proposed by Prof. Dana (the only complete system since that of H. Milne-Edwards), be retained in *Liomera*, since the fingers of the chelipedes are strongly excavated. I place it therefore in the genus *Actæodes*, to which it belongs in essential generic characters.

This species has been hitherto a desideratum in the Museum collection.

CHLORODIUS NIGER.

Cancer niger, Forskal, Descript. Animalium, p. 89 (1775).

Chlorodius niger, Rüppell, Beschreib. 24 kurzschwanzigen Krabben des Rothen Meeres, p. 20, pl. iv. fig. 7 (1830); M.-Edwards, Hist. nat. des Crust. i. p. 401 (1834); A. Milne-Edwards, Nouvelles Archives du Muséum d'hist. naturelle, ix. p. 214 (1873), and *ref. to synonyma*.

Chlorodius rufescens, Targioni-Tozzetti, Zoologia del viaggio della R. piro corvetta 'Magenta,' Crostacei, p. 43, pl. iv. figs. 6-8, 10-12, 14, 18 (1877), *var.*

An adult male of large size of this common and widely distributed Oriental species is in the collection.

The characters mentioned by Targioni-Tozzetti as distinctive of his *C. rufescens* are, I think, not of specific importance. I have examined specimens in which the posterior lateral marginal tooth only is spiniform, and the other teeth of the lateral series are rounded and obtuse.

TRAPEZIA FLAVOPUNCTATA.

Trapezia flavopunctata, Eydoux and Souleyet, Voyage de la 'Bonite,' Zoologie, Crustacés, p. 230, pl. ii. fig. 3 (1841).

An adult male and female of large size are in the collection. They agree with the description and figure cited in nearly every particular, except in having no distinct carina on the outer margin of the merus of the chelipedes; the red areolations of the carapace and limbs (defining the yellow spots) are even larger than in the figure of MM. Eydoux and Souleyet.

This species is apparently well distinguished from *Trapezia areolata*, Dana¹, by the extension of the areolæ of the body over the ambulatory

¹ U.S. Exploring Expedition, xiii., Crustacea, p. 259, pl. xv. fig. 8 (1852).

legs, and by having a series of granules or small tubercles on the inferior margin of the palm of the chelipedes. It has been hitherto a desideratum in the Museum collection.

The types of MM. Eydoux and Souleyet were obtained at the Sandwich Islands: hence it is evidently a widely-distributed Oriental species.

The largest specimen (the female) presents the following dimensions:—

	lines.	millim.
Length of carapace	10	21
Breadth of carapace	11½	24·5
Length of larger chelipede, nearly	22	46

I believe the *Trapezia latifrons*, A. Milne-Edwards¹, from the Sandwich Islands and New Caledonia, to be very probably a younger condition of this species. The carapace, however, is represented as broader and more triangulate in shape, the frontal lobes as less prominent, the lateral marginal teeth of the carapace as more acute, and the areolæ of its dorsal surface yet larger and less numerous. I therefore hesitate to quote it as synonymous with *T. flavopunctata*.

LISSOCARCINUS ORBICULARIS.

Lissocarcinus orbicularis, Dana, Proc. Acad. Nat. Sci. Philadelphia, p. 86 (1852); Crustacea in U.S. Exploring Expedition, xiii. (1) p. 288, pl. xviii. fig. 1 (1852); A. Milne-Edwards, Archives du Muséum d'hist. naturelle, x. p. 418 (1861).

A small male is in the collection, which in coloration and all other particulars nearly agrees with Dana's description and figure, based on a specimen from the Fijis.

XENOPHTHALMODES MÖBII.

Xenophtalmodes möbii, Richters, Decapoda in Möbius's Beiträge zur Meeresfauna der Insel Mauritius, p. 155, pl. xvi. fig. 29, and pl. vii. figs. 1-9 (1880).

Two females are in the collection.

This form has been hitherto a desideratum in the collection of the British Museum. I believe its true generic position to be in the family *Rhizopidæ* in the vicinity of *Rhizopa* and *Typhlocarcinus*, Stimpson²; and perhaps it may not be generically distinct from one or the other of the above-mentioned genera, a point which, in the absence of males for comparison, I will not undertake to determine. In external aspect it altogether resembles *Typhlocarcinus*; it is distinguished, however, from all the species both of *Typhlocarcinus* and *Rhizopa* with which I am acquainted by the entire antero-lateral margins of the carapace. It has apparently no very near affinities with *Xenophtalmus*, White, with which Dr. Richters compares it; although

¹ Annales de la Société Entomologique de Paris, vii. p. 281 (1867); Nouvelles Archives du Muséum, ix. p. 259, pl. x. fig. 7 (1873).

² Proc. Acad. Nat. Sci. Philadelphia, pp. 96, 97 (1858).

bearing a close external resemblance to that genus; it is distinguished not only by the very different form of the orbits (which in *Xenophthalmus* are narrow and longitudinal, with a dorsal aspect), but also by the form of the buccal cavity and the exterior maxillipedes, concerning which nothing is stated by White. The buccal cavity in *Xenophthalmus* is antero-laterally arcuated, the ischium-joint short and broad, the merus as large as the ischium, narrowing to and truncated at its distal extremity, the following joint articulated with the merus at its summit, not at its antero-internal angle.

MYRA FUGAX.

Leucosia fugax, Fabricius, Ent. Syst. Supplemen. p. 351 (1798).

Myra fugax, Leach, Zool. Miscell. iii. p. 24 (1817); M.-Edwards, Hist. Nat. des Crust. ii. p. 126 (1834); Crust. in Cuvier, Règne Animal, pl. xxv. fig. 3; De Haan, Crustacea in Siebold, Fauna Japonica, p. 134, pl. xxxiii. fig. 1 (1841); A. Milne-Edwards, Nouvelles Archives du Muséum d'hist. naturelle, x. p. 45 (1874).

Myra subgranulata, Kossmann, Crustaceen in Zool. Ergebnisse einer Reise in Küstengebiete des Rothen Meeres, Brachyura, p. 65, pl. i. fig. 7 (1877), *vide* Hilgendorf.

An adult male is in the collection.

PHLYXIA EROSA.

Phlyxia erosa, A. Milne-Edwards, Journ. d. Muséum Godeffroy, iv. p. 86 (1873); Nouvelles Archives du Muséum d'hist. naturelle, x. p. 47, pl. iii. fig. 2 (1874).

Two adult females agree in all essential characters with the description and figure of Milne-Edwards, based on types from Bass's Straits and New Caledonia, and with specimens from Savage Island, and with others from the Fijis (H.M.S. 'Herald') in the collection of the British Museum.

DYNOMENE HISPIDA.

Dynomene hispida, Desmarest, Consid. générales sur la classe des Crustacés, p. 133 (footnote), and pl. xviii. fig. 2 (1825); A. Milne-Edwards, Mémoire sur les Crustacés Décapodes du genre Dynomène, p. 5, pl. viii. figs. 1-15 (ex Annales des Sciences naturelles, 6me série, Zoologie, 1878), and *references to literature*.

A small female is in the collection¹.

CALLIANASSA MARTENSI, sp. n. (Plate I. fig. 1.)

This form in many of its characters is closely allied to *Callianassa tridentata*, v. Martens², from Java, but is distinguished by the form of the penultimate joint of the third pair of legs, which is not trilobate as in the description of v. Martens, and in a specimen apparently belonging to *C. tridentata* from Ceylon, in the collection

¹ The British Museum has lately received a specimen of the rare *Dynomene prædator*, A. Milne-Edwards, from Tamatave, Madagascar (*The Rev. Deans Cowan*). This species, which Milne-Edwards records from the Samoa Islands and New Caledonia, has been hitherto a *desideratum* in the Museum Collection.

² Monatsb. d. Akad. Wissenschaft. zu Berlin, p. 614 (1868).

of the British Museum (*E. W. H. Holdsworth, Esq.*), but simple, flattened and compressed, articulated with the preceding joint in the middle of its dorsal margin, and with the terminal joint at its distal extremity (see the figure).

The carapace, as usual in the genus, is laterally compressed, with the cervical suture strongly defined, the rostrum trispinose, the lateral a little shorter than the median spines. Of the segments of the postabdomen, the first, second, and sixth are longest, the sixth about as long as the two preceding segments taken together, whereas in the specimen referred to *C. tridentata* in the Museum Collection the sixth segment but little exceeds the fifth in length. The terminal segment is small, slightly transverse, and subtruncated at its distal extremity. The eyes project very slightly beyond the median spine of the rostrum and are bluntly pointed at their inner and distal angles; the corneæ are small and placed on the dorsal surface of the peduncles. The antennules are less than half the length of the antennæ; the terminal joint of the peduncle very slightly exceeds the penultimate joint in length; the inferior of the two flagella is fringed with long hair on its lower margin. The antennæ are about twice the length of the carapace; the antepenultimate peduncular joints bear a small spinule at the distal extremity on the outer margin; the penultimate and terminal joints are subequal. The left chelipede is the larger; the merus-joint is less than twice as long as broad, and its inferior margin is acute and serrated, but without strongly developed teeth or spines. The carpus is rather shorter than, but as broad as, the palm, smooth, its inferior margin acute and entire; palm rather longer than broad, smooth and polished, with the upper and lower margins fringed with hair, the lower margin acute; several tufts of *setæ* occur on its outer surface near to the base of the fingers, which are shorter than the palm, with the tips incurved; the uppermost arcuated, with the inner margin acute and entire, the lowermost with a small tooth or lobe on the inner margin, both clothed on their outer surface with several tufts of hair. In the smaller chelipede the joints are all much slenderer, and the merus-joint is not serrated on its inferior margin. The third legs have the antepenultimate joint armed with a low triangular lobe on the inferior margin; the produced posterior lobe of the hairy penultimate joint is broad and obtuse; the dactylus small, hairy, and subacute.

	lines.	millim.
♂. Length of the body, nearly	22	46
Length of larger chelipede, nearly.	12½	26

In the specimen in the Museum Collection referred to *C. tridentata*, v. Martens, there is a strong tooth or lobe at the proximal end of the inferior margin of the merus of the larger chelipede. Nothing is said as to the existence of this lobe by v. Martens; but Milne-Edwards, in his monographic revision of the genus *Callianassa*¹, describes *C. tridentata* as having the merus unarmed.

¹ Nouvelles Archives du Muséum, v. p. 101 (1869).

Callianassa mauritiana, described in my last notice of the Crustacea received from M. Robillard, differs altogether from *C. martensi* in the form of the front and larger chelipede (see fig. 2).

Callianassa madagassa, Lenz and Richters¹, from Madagascar, is at once distinguished by the absence of lateral spinules from the front and the remarkable spinulation of the fingers of the right chelipede from *C. martensii*, and the form of the terminal segment and uropoda is very different from that of *C. mauritiana*².

PENÆUS MONODON.

Penæus monodon, Fabricius, Entom. Syst. Supplementum, p. 408 (1798); M.-Edwards, Hist. Nat. des Crust. ii. p. 416 (1837); S. Bate, Ann. & Mag. Nat. Hist. (ser. 5), viii. p. 178, pl. xii. fig. 5 v. p. (1881).

An adult female of very large size was received from M. Robillard at the beginning of the year.

If Mr. Spence Bate is right in his synonymical citations as regards this species, it ranges throughout the Oriental Region.

SOLENCERA LUCASII?

?*Solenocera lucasii*, S. Bate, Annals & Mag. of Nat. Hist. (ser. 5), viii. p. 185 (1881).

I refer to this species with much doubt a small female, which differs from Mr. Spence Bate's diagnosis in the somewhat more numerous and differently disposed teeth of the rostrum; and to facilitate its future identification (since the original diagnosis is in few words) I subjoin the following description.

Mr. S. Bate's type was dredged in 130 fathoms south of New Guinea, and is of much larger size.

Carapace nearly smooth, with the cervical and hepatic sutures distinct, and armed with a distinct antennal and a small hepatic spine, and with a small spine (the supraorbital?) on either side of the rostrum, placed a short distance behind the anterior margin of the carapace. There is no pterygostomial spine. The rostrum is shorter than the eyes (but broken at the tip), ascends very slightly from the base, and is armed above with eight or nine blunt serratures or teeth, whereof the three posterior are placed on the dorsal surface of the carapace and the last is separated by a much wider interval from the rest than these are from one another; there is no median dorsal carina on the carapace behind the last tooth. The eyes are moderately large; ophthalmopod setose at base on its upper surface. The segments of the postabdomen are nearly smooth, the fourth to sixth distinctly longitudinally carinated on the dorsal surface, and the third less distinctly so; the carina on the sixth segment ends posteriorly in a

¹ Abhandl. d. Senckenb. Naturforsch. Gesellschaft. xii. p. 427, figs. 20-23 (1881).

² The larger chelipede of *C. martensi* bears a very close resemblance to the mutilated fossil claw from the Trocadero, described and figured by A. Milne-Edwards as *C. parisiensis* (t. c. p. 99, pl. ii. f. 3); but *C. parisiensis* is too imperfectly known to be certainly identified with any recent species of the genus.

small spine; the postero-lateral angles are not acute in any of the segments; the terminal segment is obscurely longitudinally sulcated above, and is shorter than the *rhypidura* or appendages of the penultimate segment; it is acute at its distal extremity, and bears a pair of lateral spinules at some distance behind the apex. The antennules have the peduncle dorsally flattened and excavate for the reception of the eyes, the terminal joint is very short, the flagella stout, tapering very slightly, longer than the carapace, and the outer longitudinally concave for the reception of the inner flagellum, as in other species of the genus; the *scaphocerite* of the antennæ is slightly longer than the peduncle of the antennules, it narrows somewhat to the rounded distal extremity, and bears a small subterminal spine on its outer margin; the flagellum is wanting. The outer maxillipedes are slender and reach beyond the apex of the antennal scale. The legs of the first three pairs increase successively in length, they present nothing remarkable: the chelæ are very slender, with the fingers longer than the palm; the fourth pair have the merus-joints somewhat thickened, fifth and sixth joints not elongated, dactyli shorter than the sixth joint. The fifth legs are much longer than the carapace; fourth, fifth, and sixth joints all slender and much elongated; dactylus less than half the length of the carapace, and little more than half the length of the penultimate joint, and slightly compressed; the rami of the *rhypidura* are narrow, the outer longer than the inner, with a straight outer margin, the inner narrow-ovate.

	lines.	millim.
♀. Length of body about	15	32
Length of fifth legs about	12	25

LEPTOSQUILLA SCHMELTZII.

Squilla schmeltzii, A. Milne-Edwards, Journ. d. Mus. Godeffroy, i. (Heft 4), p. 87, pl. ii. fig. 7 (1873).

Leptosquilla schmeltzii, Miers, Ann. & Mag. Nat. Hist. (ser. 5), v. p. 13 (1880).

A small male of this species, hitherto unrepresented in the collection of the Museum, agrees in almost all particulars with the description and figure of Milne-Edwards, whose type was from Upolu. There can, I think, be no question of the generic distinctness of this form from the typical *Squilla*.

The median rounded keel of the terminal segment is more strongly developed, and the dactyli of the raptorial limbs are six-spined as in the figure cited, not seven-spined as in the description.

GONODACTYLUS TRACHURUS. (Plate I. fig. 3.)

Gonodactylus trachurus, V. Martens, Sitzungsber d. Gesellschaft. naturforschender Freunde zu Berlin (no. 6), p. 93 (1881).

An adult male is in the collection.

This species is evidently very nearly allied to *Gonodactylus bradyi*¹,

¹ *Squilla bradyi*, A. Milne-Edwards, in 'Les Fonds de la Mer,' by MM. de Folin et Périer, i. (livr. ix.) p. 137, pl. xvii. fig. 11 (1869).

from St. Vincent, but is I think sufficiently distinguished by the following characters:—the fine acute spines of the penultimate and terminal segments are here replaced by conical or rounded tubercles, and the posterior half of the antepenultimate segment, which is represented as smooth and entire in *G. bradyi*, is granulated in *G. trachurus* on the dorsal surface and minutely spinulose on the posterior margin.

EXPLANATION OF PLATE I.

Fig. 1. *Callianassa martensi*, sp. n., male, $\times 1\frac{1}{2}$ diam. (p. 13).

- 1a. Frontal region and antennæ of the same species, showing the form of the frontal spines, $\times 3$ diam.
- 1 b. Extremity of one of the legs of the third pair, showing the form of the produced posterior lobe of the penultimate joint and of the dactylus, $\times 4$ diam.
- 1 c. Terminal segment and uropoda, $\times 3$ diam.
2. Terminal segment and uropoda of *C. mauritiana*, enlarged.
- 2 a. Larger chelipede of *Callianassa mauritiana*, Miers, natural size.
3. *Gonodactylus trachurus*, v. Martens, adult male, $\times 2$ diam. (p. 16).
- 3a. Raptorial limb (second maxillipede) of the same species, $\times 3$ diam.

4. On Races and Hybrids among the *Salmonidæ*.

By FRANCIS DAY, F.Z.S.

[Received December 24, 1883.]

In March 1882 I laid before the Linnean Society the results of some observations which I had made on the British Salmonidæ, tending to show that the number of species existing in these islands had been unduly multiplied by local races or varieties having been considered species. In the month of December I communicated to this Society some facts respecting the hybridization of Salmon and Trout, and likewise adverted to Sir J. Gibson-Maitland, Bart., F.L.S., having kindly instituted, on November 15th, 1882, three additional experiments upon crossing different forms of Charr, or Charr with Trout, the results of which, so far as they have gone, I propose describing this evening.

I have also to thank Sir J. Gibson-Maitland for permitting me to take examples of all the various crosses which have been made at Howietoun (many of which are on the table for examination), while he has also freely furnished me with information on all points, and access to his notes. There are likewise a series of Salmonidæ hatched in the great International Fisheries Exhibition, from eggs brought from Canada by Mr. Wilmot, the Canadian Commissioner, who gave me specimens at short intervals, so that I have a connective series. I shall have to refer to a pair of fine Trout sent to me in ice from the Otago Acclimatization Society, through the kind offices of Mr. Arthur, which are now preserved in spirit in the Economic Fish Museum at South Kensington. Lastly, I shall describe the *Salmo gracilis* of Couch (? Cuv. & Val.), a local race which I had the