

round or oval form, situated in the anterior part of the abdomen, and resting against the almost horizontally expanded lateral processes of the first two vertebræ, to which it has also tendinous attachments.

MACRONES NANGRA, Ham. Buch.

D. $\frac{1}{8}$ | 0. P. $\frac{1}{8}$. V. 6. A. $\frac{2}{8}$. C. 17.

Length of head $\frac{2}{9}$, of caudal $\frac{2}{9}$, height of body $\frac{2}{11}$ of the total length.

Eyes rather high up, situated in the anterior half of the head, and $\frac{1}{4}$ diameter from the end of the snout.

A wide and deep superior longitudinal furrow extends from the snout to the posterior end of the occipital process, which latter is above half longer than broad at its base. The basal bone of the dorsal fin is extended laterally as well as anteriorly, where it meets the occipital process, there being no separate interneural bone. The width of the head at the opercles equals its length.

Mouth wide, cleft shallow, the upper jaw much longer than the lower. Nasal barbels slightly longer than the head, the maxillary ones reach the vent, the external mandibular ones extend to the base of the ventral, the internal ones to the base of the pectoral.

Teeth villiform, in an uninterrupted crescentic band.

Fins. Dorsal spine weak, smooth, half as long as the head; pectoral spine moderately strong, nearly as long as the head without the snout, and having nine strong denticulations internally. Length of base of adipose dorsal equals the distance the fin commences from the termination of the base of the first dorsal, and is as long as that of the anal. Caudal deeply forked, lobes of equal length and pointed.

Colours. Muddy, slightly clouded in places.

Hab. Allahabad, in the Ganges, attaining $1\frac{1}{2}$ inch in length, and not uncommon.

Genus RITA.

In the *R. crucigera*, Owen (if differing from the *R. kuturnee*, Sykes, which appears doubtful), the air-vessel is in the abdominal cavity; it has a strong white tendinous covering, which sends down partitions subdividing it into three portions, the one being anterior, the other two posterior and lateral, whilst their walls are very thin.

Genus HEMIPIMELODUS.

In the *H. cenia*, Ham. Buch., the air-vessel is laterally divided into two lobes and entirely enclosed in bone, as in the majority of the Loaches (*Cobitidina*).

GLYPTOSTERNUM TELCHITTA, H. Buch.

D. $\frac{1}{8}$ | 0. P. $\frac{1}{8}$. V. 6. A. $\frac{1}{10}$. C. 15.

Length of head $\frac{1}{5}$, of caudal above $\frac{1}{5}$, height of body $\frac{2}{13}$ of the total length.

Eyes small, situated in the commencement of the posterior half of the head.

Head longer than broad; occipital process three times as long as wide at its base. Free portion of tail twice as long as high. Thoracic adhesive apparatus lozenge-shaped.

Lips roughened, not fringed; maxillary barbels reach to below the posterior margin of the orbit, the nasal ones short, the outer mandibular pair do not reach the gill-opening, but they are longer than the internal mandibular pair.

Fins. Dorsal nearly as high as the body, its spine slender, its osseous portion being two-thirds as long as the head; base of adipose fin as long as that of the first dorsal, and equalling two-fifths of the distance between the two fins. Pectoral spine broad and strongly denticulated, extending two-thirds of the distance to the base of the ventral. Caudal deeply forked.

Air-bladder in two rounded lateral portions, very thin, and entirely enclosed by bone.

Colours. Blackish brown. Fins yellowish, with black bands. Caudal black, with yellow margins.

The *G. trilineatum*, Blyth, is distinct from this species, and apparently identical with that described by Dr. Günther. The specimens in the Calcutta Museum do not appear to have comprised Mr. Blyth's typical example; but a *G. trilineatum* has lately been received from Rangoon.

3. A Review of the *Cypridinidæ* of the European Seas, with Description of a new Species. By GEORGE STEWARDSON BRADY, C.M.Z.S.

[Received March 29, 1871.]

(Plates XXVI. & XXVII.)

Dr. G. O. Sars, in a memoir published in 1869*, expressed his belief that two well-known Cypridinidæ, heretofore considered as belonging to entirely distinct genera, are in fact merely the male and female of the same species,—*Philomedes longicornis* (Lilljeborg) representing the male, and *Bradycinetus brenda* (Baird) the female. He also, in the same place, propounded a similar view as regards *Cypridina mariæ* (Baird) and *C. teres* (Norman). The latter proposition seemed to present no very great difficulty; but as regards the former several almost insurmountable obstacles presented themselves to my mind. Thus a male form of *Bradycinetus brenda*, quite distinct from *Philomedes longicornis*, and nearly approaching in shape to the female, had already been described by Sars himself; so that the new theory involved the supposition of two distinct males; then the structure and shape of the shell in *B. brenda* and *P. longicornis* are widely different; and, lastly, while (the male) *P. longi-*

* Undersøgelser over Christianiafiordens Dybrandsfauna anstillede paa en i Sommeren 1868 foretagen Zoologisk Reise.

cornis is at some seasons abundant on certain parts of the British coast, *B. brenda* has never been met with, except very sparingly, and in only two localities.

The following is a brief abstract of Sars's remarks on this subject:—"I had long remarked that all the individuals of *Philomedes longicornis* appeared to be males; there were no egg-bearing females; but it did not occur to me to look for the female in so different a form as *C. globosa* (*brenda*), especially as I had already found what appeared to be the male of that species. But we find in other Crustacea (*Apeudes anomalus* and certain Cumacea) two forms of males,—one and much the commoner form being very similar to the female, the other and scarcer differing in many important details, especially in the great development of the eyes and antennæ. The parts of the Cypridinidæ which appear to be least liable to alteration are the mandible-palp, the last pair of jaws, the ringed appendage ("oviferous foot"), and the postabdominal lamina; and these parts are all alike in *Cypridina globosa* and *Philomedes longicornis*. A further confirmation of the truth of my view is, that I have found a similarly formed male of a closely allied species, *P. lilljeborgii*. This differs from *P. longicornis* in having the postero-inferior spine of the shell more strongly developed, the ringed appendage showing also the same distinctive marks as does that of the female, in having only about nine spines instead of thirty as in *C. globosa*."

Among a number of Ostracoda dredged at various depths in the Fosse de Cap Breton (Bay of Biscay) by M. le Marquis de Folin, and sent to me for identification, were several specimens of a very remarkable undescribed species, one of which was so far different in size and form from the rest, though retaining the same characters as to shell-sculpture, that I immediately took it to be the male of the more abundant female form. And on further examination the smaller example proved to have all the anatomical characters of Lilljeborg's genus *Philomedes*, while the larger ones belonged to *Bradycinetus*, Sars. The shell-structure is here of so novel a type (no similar deep excavation and ribbing having heretofore been noticed among the Cypridinidæ) that I could no longer doubt as to the sexual relations of *Philomedes* and *Bradycinetus* in this instance; and I was therefore disposed to regard Sars's case as proved with respect also to *P. longicornis* and *B. brenda*. This conclusion, however, I had adopted too hastily, as will presently appear; for in the same gathering (Cap Breton) were found several examples of a *Philomedes* (Pl. XXVI. fig. 1) agreeing in general aspect with "*P. longicornis*," but rounder in lateral outline and more tumid, having also a reticulated shell-structure exactly the same as that of the common form, but differing constantly in the presence of two well-marked sharp spines on the postero-superior and postero-inferior angles of the shell. Anatomical investigation showed that this was in fact the true female of *P. longicornis*, the only appreciable differences consisting in the shortened filaments of the upper antennæ, and the smaller development of the eyes, mandibular feet, and secondary branch of lower antenna, the vermiform appendage and abdominal

laminae being the same in both sexes. The structure is, in fact, entirely that of a female *Bradycinetus*. Further, on examining a specimen of *Asterope grælandica*, Fischer, taken in the same locality, I found that its characters were those of a male *Bradycinetus*; and on comparison of the shell with that of *B. brenda*, the points of resemblance appear so striking that I entertain no doubt of its being the male of that species. And I may here mention that although Sars appears to have found the excessive spinous armature (spines nearly thirty in number) of the vermiform appendage of *B. brenda* reproduced in "*P. longicornis*," I have myself never been able to see more than eight or nine spines in the latter species; while in "*A. grælandica*" they number about thirty as in *B. brenda*. Adopting these views, the genera of European Cypridinidæ may be briefly characterized as follows:—

CYPRIDINA (M.-Edwards).

Shell smooth, thin, and flexible; notch shallow; its posterior extremity only slightly exerted. Superior antennæ seven-jointed; setæ of moderate length; natatory branch of inferior antenna nine-jointed, bearing moderately long setæ; secondary branch very small, subulate. Basal joint of mandibular feet bearing an entire subconical and densely hairy process; penultimate joint much elongated and beset on the interior margin with numerous ringed setæ; last joint very short and almost obsolete.

BRADYCINETUS (G. O. Sars).

Shell much denser than in *Cypridina*, punctate; notch deep. Superior antennæ six-jointed; the apical setæ of moderate length, subequal, rather longer in the male than in the female; inferior antennæ nearly as in *Cypridina*; length of joints nearly alike in both sexes; filaments very short in female, rather longer in male; secondary branch of the inferior antenna in the female biarticulate, very small, in the male larger and triarticulate. Mandibular feet in the female armed on the basal joint with a strong bifurcate process, in front of which are three toothed spines; in the male bearing on the basal joint a large densely setose triangular process, and having the last joint very much elongated; second pair of jaws having a strong mandibular appendage consisting of two robust tooth-like processes. Eyes of the female small and pale-coloured, of the male large, deep-red, and multilenticular.

PHILOMEDES (Lilljeborg).

Shell of moderate strength and density. Superior antennæ six-jointed; in the female short and thick, and bearing several subequal terminal setæ of moderate length; in the male more elongated, two of the terminal setæ of excessive length, the antepenultimate joint bearing a stout and densely setose auditory filament. Natatory branch of lower antennæ nine-jointed; in the female having the first joint very long, the rest short and subequal; in the male the first

and third joints long, the second much shorter, the rest short and subequal: secondary branch in female indistinctly jointed, setose; in the male long, three-jointed, cheliform. Mandibular feet nearly alike in both sexes; in the female armed, as in the female *Bradycinetus*, with mandibuliform processes and spines, in the male bearing on the basal joint a small tubercle with two short hairs; second pair of jaws in the female armed with mandibuliform processes. Eyes as in *Bradycinetus*.

ASTEROPE* (Philippi).

Shell subcylindrical, beak not at all produced. Upper antennæ as in the preceding genus. Second joint of the natatory branch of the lower antennæ in the male elongated, in the female scarcely longer than the succeeding joints; secondary branch in the male robust, subchelate; terminal joint slender, curved upwards; in the female simple, triarticulate, last joint setiform. First maxilla consisting of a broad subquadrate or crescentic lamina, densely clothed on its distal margin with long bristles; second swollen at the base, narrowed at the apex, where it bears six plumose setæ, basal portion setose along its convex margin; third maxilla narrow, elongated, setose along the inner margin. Abdominal laminæ broad and short, subtruncate at the extremity.

1. CYPRIDINA NORVEGICA, Baird.

Hab. Norway, Shetland.

2. CYPRIDINA MESSINENSIS, Claus.

Hab. Mediterranean.

3. BRADYCINETUS BRENDA, Baird, sp. (Plate XXVI. fig. 6.)

Cypridina brenda, ♀, Baird, 1850.

Cypridina globosa, ♀, Lilljeborg, 1853.

Bradycinetus globosus, ♀, G. O. Sars, 1865.

Bradycinetus brenda, ♀, Brady, 1868.

Asterope grælandica, ♂, Fischer, 1854.

Two specimens of a form exactly conforming to Fischer's description of *Asterope grælandica* occurred in M. de Folin's dredgings from the Fosse de Cap Breton. The shell differs from that of the female *B. brenda* in being less tumid and slightly more angular in outline; it is also quite smooth and free from villosity. The swimming-filaments of the upper antennæ are a little longer than those of the female, and more decidedly plumose. There is also a stout auditory seta; the natatory branch of the lower antenna is nearly alike in both sexes, but the secondary branch in the male is largely developed and triarticulate. The mandibular foot is much elongated (Plate XXVI. fig. 6), and bears on its basal portion a large and strong

* This genus might perhaps with more propriety (on account of the widely different structure of the maxillæ) be made the type of a distinct family. It is identical with *Cylindroleberis* (Brady), a fact of which I was not aware when that name was proposed.

triangular densely setose process. The vermicular appendage* and abdominal lamina are precisely as in the female.

Hab. Greenland (♂ & ♀), Shetland (♀), Norway, North Sea off Northumberland coast (♀), Bay of Biscay (♂).

I think there can be little doubt, from anatomical characters taken together with the agreement in shell-form, that Fischer's species is simply the male of the better-known form; the exactly similar spinous armature of the vermicular appendage is very striking, so large a number as twenty-eight or thirty spines being met with, as I believe, in no other instance.

4. BRADYCINETUS MACANDREI, Baird, sp.

Cypridina macandrei, Baird, 1850.

Bradycinetus macandrei, Brady, 1868.

Hab. North Atlantic, west of Scotland.

5. BRADYCINETUS LILLJEBORGII, G. O. Sars.

Hab. Norway, North Atlantic.

6. PHILOMEDES INTERPUNCTA, Baird, sp. (Plate XXVI. figs. 1-5.)

Cypridina interpuncta, ♂, Baird, 1850.

Philomedes longicornis, ♂, Lilljeborg, 1853; G. O. Sars, 1865; ♀, Norman, 1861.

Philomedes interpuncta, ♂, Brady, 1868.

Female. Carapace much more rounded and more tumid than that of the male, and rather smaller; seen from the side subelliptical, highest in the middle; superior and inferior margins both strongly convex; posterior extremity obliquely truncate, and bearing at the angles two distinct and sharp backwardly projecting convergent spines; height equal to two-thirds of the length. Seen from above regularly ovate, widest in the middle; width equal to about half the length; mucronate behind, obtusely acuminate in front. Superior antennæ short and stout; setæ short and subequal; natatory branch of the inferior antenna having its setæ exceedingly short, secondary branch indistinctly biarticulate, the first joint bearing three setæ (one of which is of moderate length and plumose) on its outer margin, second joint having one marginal and two very minute terminal setæ. Length $\frac{1}{8}$ inch.

Hab. Norway, west coasts of Scotland and Ireland, Shetland, Northumberland coast, Plymouth Sound, Channel Islands, Fosse de Cap Breton.

The only places where the female has been found are Cap Breton and Loch Long in Scotland, in the last of which localities both sexes were dredged in considerable numbers, at a depth of 4-10 fathoms, by my friend Mr. D. Robertson. The Scottish specimens are smaller than those from the Bay of Biscay, but in other respects present the same characters.

* The term "oviferous foot" seems scarcely applicable to this limb, as it exists in the male in precisely the same degree of development as in the female.

The male of this species is already sufficiently well known; but the female has not heretofore been described, unless, indeed, the form figured by Mr. Norman in the 'Annals and Magazine of Natural History' for 1861 may be supposed to belong to that sex. Mr. Norman's description, however, so far as the structure of the antennæ is concerned, applies only to the male. Externally the male is easily distinguished by its more elongated and angular form, and by the want of spinous armature at the posterior extremity, the lower angle of which is produced into a blunt subangular prominence; the upper angle, however, occasionally bears a small tooth.

7. *PHILOMEDES FOLINI*, nov. sp. (Plate XXVII.)

Female. Carapace as seen from the side subrhomboidal; greatest height situated in the middle and equal to at least two-thirds of the length; anterior extremity very prominent in the middle, beak broad and blunt, notch wide and rather shallow; posterior produced at the ventral angle into a broad triangular projection; superior margin boldly and evenly arched, inferior also distinctly but somewhat less strongly convex. Seen from above the outline is subhexagonal, with nearly parallel sides, which converge suddenly and angularly towards the extremities; anterior extremity truncate, notched in the middle, posterior very broadly and bluntly mucronate; greatest width equal to rather more than half the length: the end view is irregularly heptagonal, the nearly parallel lateral margins ending above and below in prominent rounded angles, the two superior margins converging into an irregular arch, the basal margin nearly flat. The surface of the shell is irregularly undulated and closely set throughout with rounded or subangular sharply cut pittings of moderate size and depth, and is strengthened by several strongly projecting rounded ribs, which are disposed as follows: one commencing immediately below the antennal notch, in a conspicuous angular projection, is continued round the interior part of the shell and terminates in the postea spine; a second (which is irregularly nodulated at the hinder extremity) rises in the postea spine, runs upwards within the posterior margin, and then strikes somewhat obliquely across the valve, terminating in a long and sharp beak, which forms the anterior margin of the antennal notch: these two ridges are connected behind the notch by a short transverse prolongation, which gives off from near its middle a third long and rather flexuous rib running parallel with and midway between those already described, but losing itself before quite reaching the posterior margin; just within the antero-superior border a fourth but much more feebly developed rib runs backwards to the middle of the superior margin, where it joins an encircling dorsal ridge of about equal development. Length $\frac{1}{11}$ inch.

Male. The shell of the male (possibly a young specimen) is altogether smaller, but comparatively much more elongated, the height being equal to only half the length; the shell-structure is similar in character to that of the female, but very feebly developed. Length $\frac{1}{12}$ inch. The secondary branch of the lower antennæ in the female

is composed of one small joint, from the expanded base of which arise four short setæ, from the apex one minute seta, and from the middle of the upper margin one of excessive length and plumose. The length of the secondary branch in the male is very great, equalling that of the primary branch.

Hab. Fosse de Cap Breton (Bay of Biscay), 70 fathoms.

8. *ASTEROPE ELLIPTICA*, Fischer.

Hab. Mediterranean.

9. *ASTEROPE MARIÆ*, Baird, sp.

Cypridina mariæ, Baird, 1850.

Cylindroleberis mariæ, Brady, 1868.

Hab. Shetland, West of Scotland, Penzance, Channel Islands, Bay of Biscay.

10. *ASTEROPE TERES*, Norman, sp.

Cypridina teres, Norman, 1861.

Cylindroleberis teres, Brady, 1868.

I am not disposed, without further proof, to indorse the opinion of G. O. Sars that this is the female of the foregoing species. It is indeed possible that such may be the case, and their occurrence in company (taken in the same gatherings) lends some probability to the supposition; but I have already described, in my "Monograph of the Recent British Ostracoda," a form differing in anatomical structure very remarkably from the male *A. mariæ*, and differing, too, just in those parts where sexual distinctions would be likely to show themselves. I have not materials at hand to reinvestigate this subject; but the examples from which my descriptions were taken certainly bore a closer resemblance to the male *A. mariæ* than does *A. teres*. If, then, *A. teres* be the true female of *mariæ*, we must also have another and very closely allied species confused with the former. Further examination is requisite before pronouncing decidedly in the matter.

11. *ASTEROPE ABYSSICOLA*, G. O. Sars.

Hab. Norway.

12. *ASTEROPE NORVEGICA*, G. O. Sars.

Hab. Norway.

EXPLANATION OF THE PLATES.

PLATE XXVI.

Philomedes interpuncta.

- Fig. 1. Carapace of female, seen from left side. $\times 40$.
 2. Carapace of female, seen from above. $\times 40$.
 3. Superior antenna of female. $\times 84$.
 4. Inferior antenna of female: *a*, portion of basal joint; *b*, natatory branch; *c*, secondary branch. $\times 84$.
 5. Mandibular foot of female. $\times 84$.

Bradycinetus brenda.

Fig. 6. Mandibular foot of male: a, mandibular process.

PLATE XXVII.

Philomedes folinii.

- Fig. 1. Carapace of male, outline, seen from left side. × 20.
 2. Carapace of female, seen from left side. × 40.
 3. Carapace of female, seen from above. × 40.
 4. Carapace of female, seen from front. × 40.
 5. Secondary branch of lower antenna of female. × 210.

4. Additional Notes on *Rhinoclemmys mexicana.*

By Dr. J. E. GRAY, F.R.S. &c.

[Received April 3, 1871.]

(Plate XXVIII.)

In the 'Proceedings' of this Society for 1870, p. 659, I described a species of *Rhinoclemmys*, under the name of *R. mexicana*, from a specimen which we had received from M. Sallé; and in the month of November for the same year I figured the head of the animal (P. Z. S. 1870, p. 723, fig. 4). The specimen I first described appeared to have the normal colouring of the genus; that is to say, the shell appeared to be of a nearly uniform dark colour above and below, with a pale margin forming a submarginal ring to the sternum. The specimen since I described it has been mounted and varnished; and it now appears to be more olive-colour, slightly variegated with darker streaks and imperfect irregular paler rings; and each of the dorsal shields is marked with a yellow spot, which I had not observed in any other species of this natural genus.

We have lately received from M. Boucard two other specimens of Emydes from Mexico with their heads; and, from the colouring of their heads, there can be no doubt (though the shells look very unlike the typical specimens of *Rhinoclemmys mexicana*) that they belong to the same species; and in both of them the yellow spot in the centre of the areola is distinctly marked, being linear in the adult and large and circular in the young. And the colouring of the young explains the slightly variegated appearance of the typical adult specimen first described.

The young specimen is olive-brown above, and pale yellow-brown, being darker in the central line of the sternum and over the sternal costal suture, below. The marginal shields are pale-spotted, and with a distinct pale semitransparent acute outer margin. The vertebral shields have two or three ovate concentric yellow rings, most distinct on the second and third, and an oblong central yellow spot, which is sometimes divided in half. The costal shields have two yellow subcircular rings, and a large yellow spot on the middle of the large areola. The head of this animal is coloured like that of

the adult animal originally described and figured. The hinder costal shield and the last vertebral one are small compared with the rest, and are about equal in size.

The other adult specimen has an entirely different external appearance from the typical specimen, so much so that one would hardly believe that it belonged to the genus *Rhinoclemmys*, which is usually so uniformly coloured and generally so smooth. It is of a pale brownish yellow above and below, being only rather darker on the sutures between the marginal and dorsal shields, between the sternal shields and the marginal shields. The dorsal and marginal shields are deeply concentrically grooved, and marked with elevated ridges radiating from the angles of the areola; the lower shields are similar, but not so uniformly grooved. When the dorsal shields are very closely examined they are found to be variegated with numerous dark-brown dots leaving indications of concentric rings; and these spots are more abundant in the areola, which is marked with a distinct yellow streak or oblong spot surrounded by a dark edge. The two hinder costals are small, regular in their shape, and partly overlap the small irregular last vertebral shield.

5. Additional Notes on the Genera *Eupleres* and *Galidia*, and Note on *Lemur ruber*. By Dr. J. E. GRAY, F.R.S.

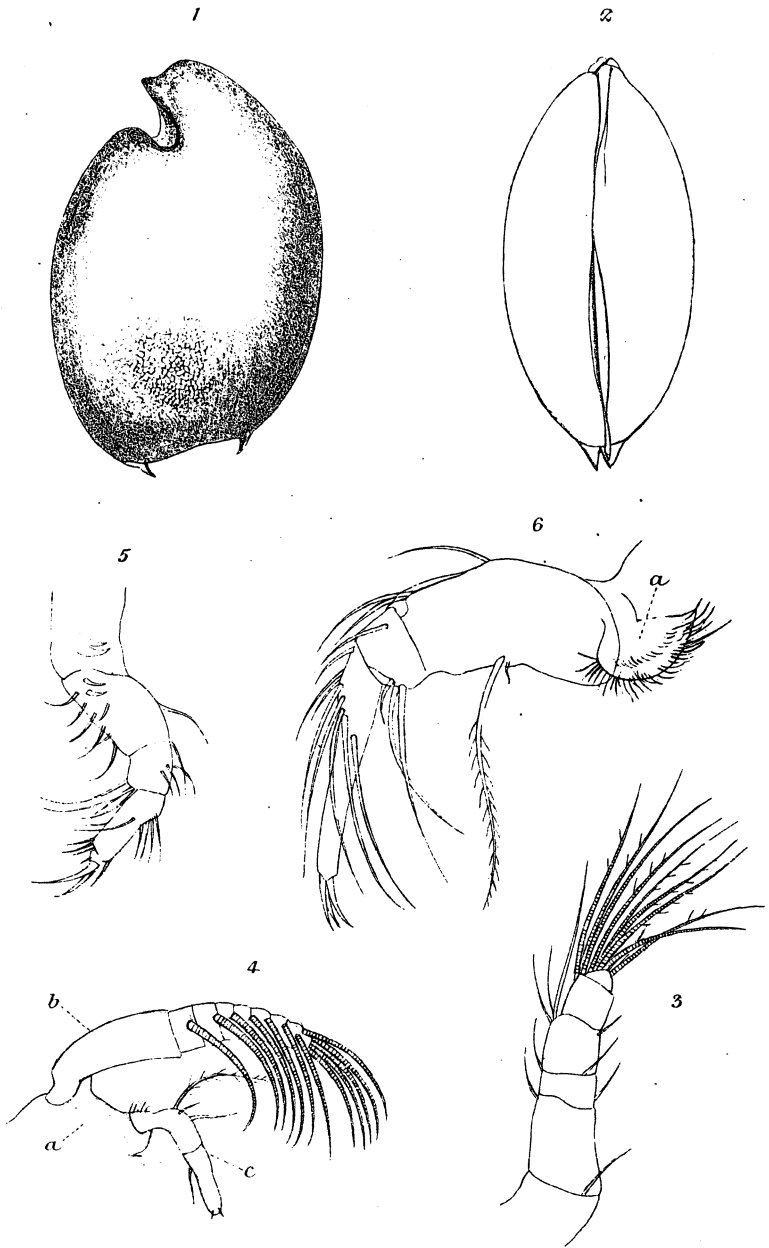
[Received April 3, 1871.]

The British Museum has recently received some additional specimens of Mammalia from Madagascar, collected by Mr. Crossley, who was sent out for the purpose by Mr. Ward of Halifax. Among the animals received is a skin, in a more perfect state, of *Eupleres goudoti*, and two skeletons of the same, which I hope to induce Mr. Flower or some other osteologist to describe in detail.

The skin shows that the acute nose of *Eupleres* has a distinct but narrow central groove, and that it must be referred to the family *Viverridae*, and will form, in the first section of that family with hairy soles to the feet, a peculiar tribe called *Euplerina*, characterized by the form of the skull.

In the same collection are adults of *Galidia elegans* and *G. concolor*, which are easily distinguished by having a naked band extending on the sole of the hinder feet. The nose of this genus is rather produced beyond the teeth, and has a distinct groove beneath. The claws of *Galidia* and *Eupleres* are arched, compressed, and acute, and partly retractile, but are evidently always raised from the ground, so as to be kept in this acute state.

In the collection there was also a series of specimens of *Varecia rubra*, Gray, Cat. Monkeys & Lemurs British Museum, p. 71. All the specimens had the head, the tail, and the fore feet, and the underside of the body and four legs, intense uniform black, the back of the neck and a spot on the upperside at the base of the tail pure

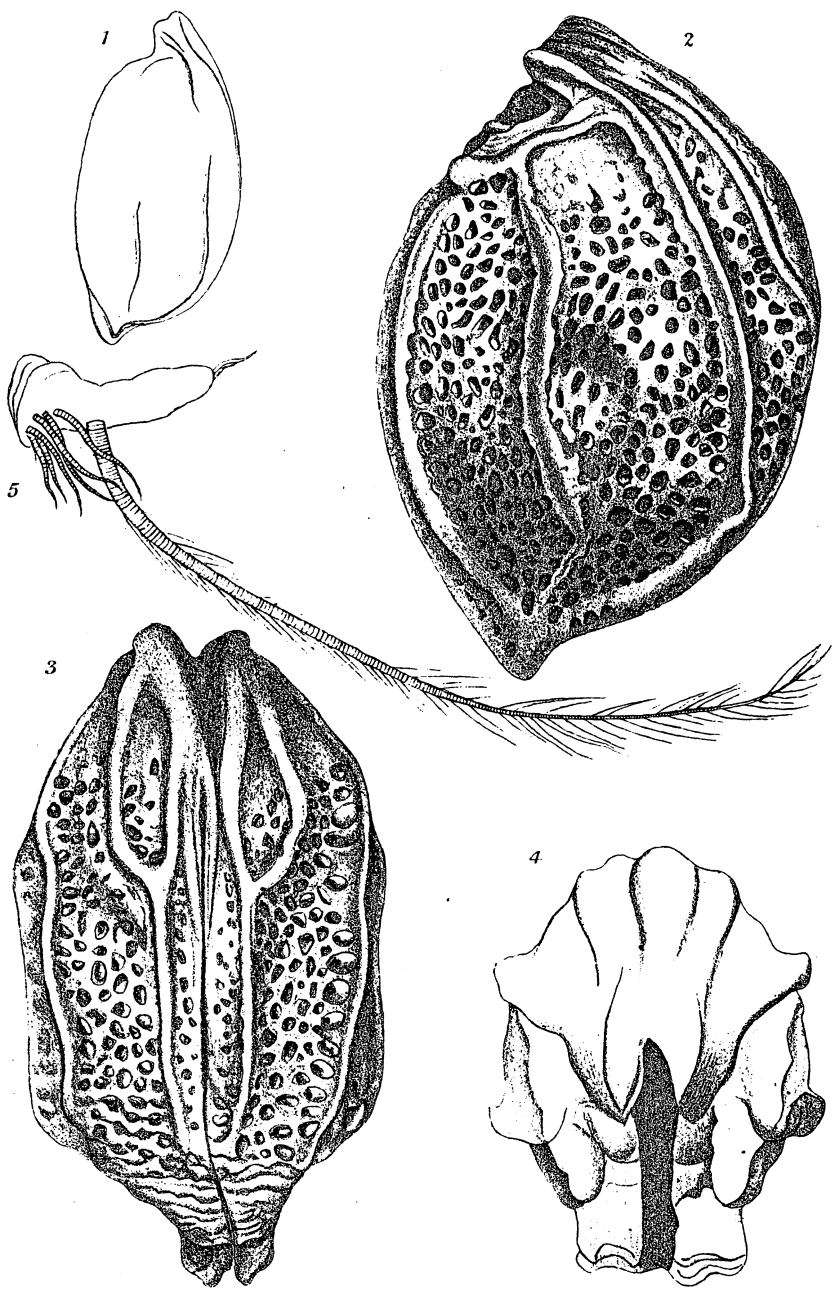


G.S. Brady del. A. Thérion lith.

Mintern Bro^s imp.

1-5 PHILOMEDES INTERPUNCTA ♀

6. PHILOMEDES INTERPUNCTA ♂



G. S. Brady del. A. T. Hollick lith.

Mintern Bro' imp

PHILOMEDES FOLINII.