

all the American species, even those with only one apical spine to the elytra, by the spine (or sharp tooth) being a prolongation (a little divergent) of the sutural angle, and not distant from it; from the spine the apex is gradually rounded to the sides. The punctuation of the elytra is scanty and in lines. The thorax is rather wider than usual in the middle, and the discoidal tubercles are very obtuse. The head is tumid behind the eyes, more distinctly so in the ♂ than in the ♀. The scape of the antennæ is roughly punctured. There is no long pubescence on body or limbs.

[To be continued.]

XXII.—*Notes on Chinese Mud-Tortoises (Trionychidæ), with the Description of a new Species sent to the British Museum by Mr. Swinhoe, and Observations on the Male Organ of this Family.* By Dr. J. E. GRAY, F.R.S. &c.

[Plate V.]

MR. SWINHOE has most kindly sent to the British Museum several specimens, preserved in spirits, of Mud-Tortoises from the neighbourhood of Shanghai.

The collection contains:—a large specimen of the most beautiful species of Mud-Tortoise which I have yet observed from any country; and I believe it to be new to science; three specimens of a very plain olive Mud-Tortoise, which are peculiar for having the crown of the head and nose covered with a hard very thin skin, somewhat like the skin which covers the head of the Terrapins; and several specimens of different ages, but all young, of *Landemania perocellata*, showing the change of colour in the young animals of this species as they increase in age.

This collection is also interesting as showing the form of the male organ and the external sexual character of the males of this group of Chelonians. The specimens having been killed by being placed in spirit, the male organ has been exerted in two of the specimens. It is expanded and fan-shaped, with the urethral grooves on the lower side forked and ending in conical claw-like terminations. In both specimens the tail is short, tapering to a very fine point, and ending in a hard spine; while the tails of the other specimens are all without points, soft, and rather blunt at the end. The armed tail is the character that Leconte gives of the males of *Kinosternon*.

The Reptiles have been divided into:—those which have a single male organ for intromission, as the Tortoises, the Crocodiles, &c.; and those which have a pair of organs for the

same purpose, as the Lizards and Snakes. In the 'Annals' some time ago I showed that the two organs above referred to were not for the purpose which they have generally been considered to serve, but claspers or cramps, like those found in Skates; only, instead of being exposed as in those fishes, they are retractile under the skin of the body when not required for holding the female. I am now able to show that Tortoises or at least the Mud-Tortoises (*Trionychidæ*), are provided with a well-developed organ for the intromission of the semen, differing in outline in two allied species.

OSCARIA.

Skull broad. Nose short, not half the diameter of the orbit. Palatal groove wide, deep, gradually narrowing from the back edge of the internal alveolar process, and rounded in front. Internal nostrils large, roundish, about half the length of the internal alveolar margin, with a deep broad concavity in front. The alveolar process of the lower jaw simple, concave in front, with a slight indication of a longitudinal ridge on the outer side of the middle of the front end, deeply concave and rather widened on each side, with a slightly elevated end and much more elevated outer edge. Tympanic cavity very deep, subtriangular, with a rounded front edge.

This genus is very like *Trionyx*, but differs in the shape of the palatal groove and in the form of the alveolar surface of the lower jaw.

The genus *Oscaria* has the short broad face of *Trionyx*, and the internal nostrils more anterior than in *Isola*. The skull of *Trionyx Leithii* is very like the skull of *Isola peguensis*; and perhaps this species ought to be referred to the genus *Isola*, and called *Isola Leithii*. These species, in the form of the skull, the palatine, in the hinder position of the internal nostrils, and in the form of the alveolar surface of the lower jaw, bear a considerable resemblance to the skull of *Aspilus*.

1. *Oscaria Swinhoei*. Pl. V.

The body oblong, nearly flat, only slightly convex; upper surface smooth and polished, uniform dark olive-green, with very numerous yellow spots, and a great number of minute yellow circular dots between them, sometimes forming more or less irregular circles round the larger spots. The dots on the fore part of the back, and on the sides and hinder part of the back, are the largest, sometimes confluent into short curved lines, at others forming a ring enclosing a small olive dot.

The middle of the front of the back covering the oblong bony shield marked down its centre on each side with diverging, more or less elongate, transverse lines. On the sides of the broad central convex part of the back there are a number of short parallel longitudinal lines, placed in clusters between the diverging lines of elongated spots on the sides of the middle of the back.

The head, neck, and upper part of the limbs blackish olive above and yellow below, the underside of the hinder margin of the disk and the sternum more or less varied with lead-colour. The upper part of the head to the occiput with close, very irregular-shaped yellow spots, which are somewhat alike on each side, but can scarcely be called symmetrical. The sides of the neck and chin yellow, with narrow olive reticulations. The back of the neck and the upperside of the legs and feet olive, with numerous small yellow dots, giving it a mottled appearance. Tail very short, conical.

Skull $2\frac{1}{4}$ inches long, and 2 inches wide, very like *Trionyx gangeticus* in external appearance; but the palatal groove in front of the internal nostrils is very wide, and gradually narrowed and rounded in front; indeed the internal edges of the upper alveolar surface form continuous converging lines from the back to the front of the broad concave palatal groove. The alveolar surface of the lower jaw slightly concave in the front half; the centre of the front with a very slight longitudinal elevation, which is most visible on the outer edge; the sides deeply concave, with a well marked inner and a more elevated outer edge.

The palatal groove is very broad and short, as in *Trionyx gangeticus*, but is wide behind and rather narrowed in front, very unlike the narrow, deep, much longer groove of *T. Leithii*. The alveolar surface of the lower jaw differs from that of *T. gangeticus* in being slightly concave in front without any pit on each side of the keel in the centre of the hinder margin.

The specimen sent had the front and hind legs of the left side tied together by a string passed through the web of the feet, as if this were the way in which the Chinese fishermen prevented the specimen from escaping after it was caught, as it would cause the animal to constantly progress in a small circle. This seems to be the common way of the fishermen; for I find the feet of several other specimens of Mud-Tortoise so united. Length of dorsal disk 12 inches, width $10\frac{1}{4}$ inches.

This is the most beautiful species of Trionychidæ that has yet occurred, and most distinct by its beautiful coloration; the lines on the back have some resemblance to Chinese printing.

2. *Landemania perocellata*.

Mr. Swinhoe has sent a series of five young specimens of this species in spirit. They are all dark olive-green above, with more or less distinct black spots on the dorsal disk; beneath white, with a black triangle which reaches nearly across the middle of the sternum, the front angle being continued in a longitudinal line up to the front margin of the sternum. There is an oblong black spot on each side of the front portion of the sternum, and a pair of large black spots nearly united in the middle line of the hinder portion. The sides of the dorsal disk, the front of the thighs, the front of the hind legs, and each side of the hinder part of the thigh black. These black marks are very distinct in one of the individuals; in the other specimens they are more or less obliterated, but what spots do remain show that the above is the normal colouring. The upper part of the head is marked with peculiar bridle-shaped black stripes; the underside is marked with more or less symmetrical oblong white spots surrounded by a black edge, which are sometimes more or less confluent; and those on the hinder part of the gullet are the largest. Those on the sides of the throat sometimes form two lines converging towards the centre of the throat, the first one commencing from the black streak from the middle of the back edge of the eye.

Mr. Swinhoe had previously sent eight specimens of this species, of a rather larger size, the dorsal disk of the largest one being 7 inches long. The backs of the dorsal disks of all these specimens are black-spotted like the younger ones; the chin and throat dark, and spotted and varied with white. The underside of the body is white—the smaller ones being varied, like the smaller ones before described, with more or less distinct black marks.

Among the specimens of *Landemania perocellata* is a well-developed one (about 5 inches long and $4\frac{1}{2}$ broad) that has a contracted very convex dorsal shield, somewhat like a large limpet. It agrees with the other young specimens of this species by its having the narrow black bridle-like lines on the sides of the face, and the white spots on the throat, exactly like specimens of the usual form. There are in the British Museum, from North America, two specimens of *Platypeltis ferox* exhibiting the same malformation, which seems to be incidental to the species of this family. The Shanghai specimen is a male with the penis exerted, probably from its having been killed by being put in spirit; but the form of the dorsal disk is not a sexual character.

The penis is very peculiar in shape, being expanded and

folded together longitudinally; when it is spread out it is nearly triangular, rather longer than broad, and marked on the underside with a groove with raised edges, which is simple at the base and forks off into two branches about two thirds of its length, which fork again before they reach the margin, the margin of the end of each groove being furnished with two short, conical, curved, claw-like, fleshy tentacles; and in the middle, at the end of the central fold, is a broad half-ovate fleshy lobe, probably formed of two united processes, which are dark-coloured like all the rest. The end of the short tail of this male is also produced into a sharp conical claw-like point.

3. *Landemania irrorata*.

Head covered with a very thin skin. Temples, sides of occiput, and lips marked with a number of small sinuous and often anastomosing spots. Upper part of animal and margin of the dorsal shield olive, with very numerous distinct white dots, which are largest on the margin of the shield. Chin, throat, and underpart of body white. The expanded hinder part of the dorsal disk is only slightly tubercular, not so rough as the same part of the disk of *L. perocellata* of the same size. There are no bridle-like marks on the sides and top of the head, as in *L. perocellata*, but only a slight indication of a streak from the side of the nose to the front side of the eye. The front odd bone of the dorsal disk is very long and band-like, and united to the front edge of the first rib and vertebral disk by a straight continuous suture. The back does not show any indication of black spots, as in *L. perocellata*, nor the neck any indication of the white spots so characteristic of that species.

On reexamining the original specimen on which I established *Landemania irrorata* (Proc. Zool. Soc. 1869, pp. 212 & 216, fig. 18; Suppl. Cat. Shield Rept. p. 96, fig. 31), I have no doubt that it is of the same species as the specimens here described, and that they establish the fact that it is a second species of the genus *Landemania*, and not a half-dried specimen of *Landemania perocellata*, as I have considered it in the 'Hand-list Shield Rept.' p. 81. The first-described specimen shows the white marks much more distinctly than the two specimens in spirit received from Mr. Swinhoe; and the underside of the head and throat are marked with minute brown spots not seen in the new specimens. The under jaw of the half-dried specimen is figured in Proc. Zool. Soc. 1873, p. 53, fig. 6 a, showing that it is a true *Landemania*, and distinct from *L. perocellata*.

One of the specimens is a male with the penis exerted, which is of quite different form from that of *L. perocellata*. The penis is ovate, lobed and hooked on the edge, folded together, ending in a broad, oblong, triangular hard claw, with a groove on its underside; the two sides of the expansion are folded, but not exactly in half, so that the fold is on one side of the terminal claw. There is a distinct groove at the base, with raised edges, which fork off to each side a little above the base, and which again fork off on each of its sides just above their base; and on the end of one side of each groove are a couple of small, more or less hard, curved hooks. The end of the tail is tapering, acute, and hard.

XXIII.—*On the Deer of the West Coast of South America, with the Description of a new Species from Peru (Cervus Whitelyi)*. By Dr. J. E. GRAY, F.R.S. &c.

MR. WHITELEY, Junior, has sent to the British Museum from the mountains of Peru the skull of an adult female, and the skull of a young smaller deer from the valley of Cosnipata, which, from its having rudimentary canine teeth, is perhaps that of a male. The skins belonging to these skulls were destroyed in the journey from the Indian country to Cuzco, he having been caught in the rain.

These skulls, and the other skulls of deer from the west coast of America, distinctly show that there are four deer, besides the Pudu (*Cervus chilensis*), which inhabit the Cordilleras from Patagonia to Peru, specimens of the skulls of which are all in the British Museum—and most distinct from each other, differing in the general form, size, and depth of the preorbital pit, and in the form and size of the intermaxillary bone.

It is to be observed that the two skulls of the adult female *Xenelaphus* in the Museum have well-developed, very slender, rudimentary canines; so that the existence of canines is not a certain mark that the skulls belong to the male sex. Canine teeth are observed in the two sexes of *Xenelaphus*, and in the skull of *Cervus Whitelyi*; I see no indication of the canine teeth in the skulls of the male or female *Huamela leucotis* or in those of *Furcifer antisiensis* in the British Museum.

The Peruvian Roebucks may be thus defined:—

1. *Xenelaphus chilensis*.

On recomparing the skull of the female from the Andes
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