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On the embryo of *Macropus major*

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Elseya latisternon (Cat. Shield Rept. Suppl. p. 77).

There are two specimens in Mr. Krefft's collection received from Burnett's River. They differ from the specimens in the British Museum, which I previously described, in the underside being dark-coloured and black-dotted; and the neck of this species is spinous on the upper surface, like *Euchlemys spinosa*, but is known from it by not having any nuchal shield.

Note on Comephorus baicalensis. By Dr. ALBERT GÜNTHER, F.R.S.

The Trustees of the British Museum have lately purchased a collection of fishes from Lake Baikal, and among them four specimens of *Comephorus baicalensis*; another example has been presented by Prof. Peters. Valenciennes denies the presence of pyloric appendages (xii. p. 333); however, I find five, each from 4 to 7 millims. long. With regard to the systematic position of the fish, I still think that it should be placed among the Acanthopterygians, in the division of the *Cotto-scombriformes* (see the "Systematic Synopsis of the Families of Acanthopterygians," Catal. iii. Appendix). In some respects it resembles a Gadoid fish; but there are true spines in the first dorsal fin: the air-bladder and, consequently, a pneumatic duct are absent.

On the Embryo of Macropus major.

By H. A. PAGENSTECHER.

In the first place it may be stated, with regard to the generative organs, that Owen is perfectly right in saying that in *Macropus major* no communication at all exists between the median vaginal cæcum and the portion designated by him as the vestibule, whilst, on the contrary, *Halimatus ruficollis* (Bennetti) in our collection shows a complete open communication. The vaginal vestibule contained a great quantity of thrown-off epithelium, which was accumulated in the very narrow canals of the lateral paired vaginæ, the *uterus anfractuosus* of authors; the median cæcum, which had flabby walls, contained a very small quantity of a turbid fluid.

The left tube contained an embryo, although no yellow body was to be recognized in the ovary. The very vascular decidua separated pretty readily from the walls of the tube, except a few stronger vascular adhesions. The chorion had no connexion at all with the decidua, so that it slipped quite easily out of the envelope. The embryo was exactly of the size and maturity of the specimen of which Owen says that it was born thirty-eight days after copulation, and which he has figured. It was enveloped in the amnios. The length, from the snout to the extremity of the tail, was about 4 centimetres.

The amniotic peduncle contained five spiral convolutions of the intestine. With its inner surface were connected the membranes and vessels of a vesicle over 1.5 centimetre in diameter, which projected from the peduncle and was itself supported on a peduncle

nearly a centimetre in length—and of a membranous expansion, likewise projecting from the peduncle, which in its periphery was inseparably amalgamated with the chorion.

I was at first inclined to regard the former vesicle as the yolk-sac. From its mode of union I now think that it must undoubtedly be regarded as the allantois. A fine vascular system was distinctly visible upon it in the fresh state, even to the naked eye. Its contents, which were in other respects limpid, contained a few turbid flakes. Its form was spherical, and, except by its fine long peduncle, the vesicle had no attachments.

The peduncle entered upon the right side into the rounded mouth of the peduncle of the amnios or umbilical cord, and remained for a time quite free. It was only far down that it united with the wall so as to form a fold upon the latter, lying upon the side of the amniotic peduncle turned towards the posterior ventral region (bladder and penis).

The other membranous expansion (Owen's *vasculosa*) appeared to be inseparably united to the left side of the amniotic peduncle from its entrance into the latter. It contained three large vessels, probably two arteries and a vein, which in the peduncle lay on the anterior wall and could be easily separated from the wall. One of these vessels, probably the vein, united itself to the extreme loops of the intestine; the others, the arteries, passed into the interior.

From this we must conclude that these are vitelline vessels, which alone maintain the connexion with the decidua, and to the support of which the vitelline membrane, the outer lamina of the amnios, and the chorion contribute. The state here described must, by comparison with Owen's observations, be regarded as that of the mature embryo. The allantois was therefore at this time very finely developed, constricted into a peduncle, surrounded by delicate vessels, and with no trace of any contact with the periphery of the ovum. In the vascular knots of the vitelline vessels there were scattered whitish deposits. At this time, when the umbilical vessels should take the place of the omphalic vessels, but for want of further development and attainment of attachments do not do so, the early birth takes place.

Nothing was to be observed in the way of a preparation of the median sac for the further retention and nourishment of the ovum, nor any thing of a preparatory dilatation of the lateral passages.

In the ventral pouch the left test was much longer than the right one; but whether from previous sucking, or as a preparation, I cannot say.

In comparison with other embryos, that of the giant kangaroo is very considerably inferior to an unborn rabbit or a newly born ferret; its size agrees pretty closely with that of an unborn mouse.

In this comparison the small development of the hinder extremities is remarkable. Whilst on the fore feet the five toes are very distinctly formed even to the claw-tips, the hind feet resemble a short-stalked fin, slightly notched into three lobes; the inner lobe is again scarcely perceptibly divided, to correspond with the

ultimate number of toes. This imperfection of a subsequently most important pair of limbs, in contrast with the perfection of a pair which are afterwards much weaker, is doubtless in accordance with the general law, according to which early completion of form limits growth.

In the anatomy of the adult animal it may be interesting to mention the existence of a long but fine *ductus Botalli*, showing that even before birth the formation of the partitions of the heart arrives at the same completeness as in Placental Mammals. The dissection of the embryo itself was not made, on account of the rarity of the specimen.

Our investigation of the unborn embryo still in the tuba, when compared with Owen's of the embryo immediately after birth, may make it certain, from the agreement in size and development, that the embryo makes no considerable stay and undergoes no growth and development in the other sexual passages.—*Verhandl. des Naturh. Vereins zu Heidelberg*, v.

On the Oviposition of Mantis religiosa.

By EDMOND PERRIER.

It has long been known that the ova of *Mantis religiosa* are enclosed in a case which has sometimes been described as a silky case. In the course of last September I witnessed the oviposition of these insects, and can give an exact account of the process employed by the female *Mantis* in fabricating her case.

The material of which this shelter is composed has nothing of the aspect of silk. At the moment when it is ejected it is a frothy liquid very similar in appearance to the frothy liquid with which the larvæ of *Cercopis* surround themselves, but rather less transparent. This matter becomes solidified very quickly, and thus forms for each of the eggs a sort of cell, in which it remains enclosed.

To build its case the *Mantis* employs two instruments—the extremity of its abdomen and the extremity of its elytra. The insect, clinging to the stalk of a broom-plant or of a fern, begins to deposit some portions of its frothy liquid, and sustains them by means of the extremity of its elytra, which form a sort of spoon, at first preventing the liquid from flowing downwards, and then constituting an actual natural mould, in which the first layers of the nest are fashioned. Very soon the latter presents a form very similar to that of a swallow's nest. The *Mantis* then moves the extremity of its abdomen upon the circumference of the nest. The terminal filaments are elevated and spread out; they do not appear to play any very important part in the oviposition. In proportion as the extremity of the body is directed towards a point, the contractions of the abdomen drive on both the frothy liquid and the eggs. The elytra remain motionless, although applied pretty strongly to the consolidated part of the nest, upon which we can distinguish the traces which they have left, which forms a sort of median longitudinal ridge. It is evident that by their adhesion to the nest they