

édition française du »Lehrbuch der Anatomie des Menschen« de C. Gegenbaur. Je ne pourrai les livrer à la publicité que dans le courant du mois de Décembre ou de Janvier prochain. Je discuterai alors le mémoire du Dr. Dohrn, en fournissant toutes preuves à l'appui de ma manière de voir et en exposant les faits que j'ai observés.

Liège le 26 Juillet 1888.

## 6. The Nest and Eggs of the Alligator: *Alligator lucius* Cuv.

By Prof. Samuel F. Clarke, Williams College, Mass. U. S.

eingeg. 28. Juli 1888.

It is somewhat remarkable that so promising a field of inquiry as that of reptilian embryology should have been so generally neglected; and it is certainly remarkable that almost nothing is known of the development of the Crocodilia or *Loricata*, the largest and most highly organised of the reptiles. The eggs and young alligators are such common objects in the shop windows in many of the southern states that it appeared to be a simple matter to secure the eggs at the right time and in abundance. It proved on the contrary to be very difficult. I was assured by various hunters in Florida that each month from January to September inclusive was the only month in which the alligators lay their eggs and this resulted in my having to make two journeys of over twenty-six hundred miles each.

At the time of my first visit, the first week in April us eggs had been laid and the ovaries of adult female alligators were full of eggs of all sizes up to 26 mm in diameter. I returned to Florida June 4 and found that I was still somewhat early as the nests were then being built. With the aid of five experienced hunters I at last succeeded in finding on the ninth of June a nest evidently just completed in which there were twenty-nine eggs. The next day at a point forty miles farther north a second nest was found with thirty-one eggs.

There were many nests found old and new, but only these two contained eggs.

The nests vary much in size, the largest being about two and one half metres in diameter at the base and eighty cm high in the central part, the whole having the shape of a rounded cone: they are located generally on a slightly elevated place which is higher by a metre, or slightly more, than the surrounding level and covered with a thick growth of palmettos, mangroves, magnolias etc. These are called »hummocks« by the natives. On one side of the hummock at least, in some cases on all sides, is a pond from one third to two metres in depth, and in the bank, under the water the female alligator digs a cave which

in some cases extends three metres under the hummock and which is always close to her nest. The nest is made by scratching together a great pile of dead leaves and twigs and humus which forms the surface of the ground, and which is arranged with some care; the inside is made of the more finely divided almost powdery material of the deeper layers of the top soil, while the outside even to the top is covered with twigs and leaves which are whole or but little broken and with many of the long unbroken leaves or needles of the southern pine. The eggs are deposited about twenty cm from the top and in the nests found were lying on top of one another making fine rows or layers with the fine humus filling all interstices. The top of the nest is always well exposed to the sun.

The eggs are white, elliptical and vary in the shorter diameter from 39 to 45 mm; in length they vary from 67 to 88 mm. The shell is thicker than that of a hen's egg and more brittle; the shell membrane is also thicker than that of the hen's egg and consists of an inner and an outer layer; the fibres of both extend obliquely around the egg and those of the two layers are always at right angles to each other: the shell membrane is most closely attached to the shell in a zone around the smaller diameter which varies greatly in width and wherein the membrane is less translucent than toward either end being much more opaque white. The white of the egg has the consistency of a very thick jelly so that it will adhere to the yolk after the shell membrane has been removed to such a degree that the whole egg can be held on the palm of the hand and transferred from one hand to the other. The yolk is spherical large and of the faintest yellow, or straw color; it is so large that it nearly touches the shell membrane in the middle line of its opaque zone, leaving but an extremely thin layer of white between yolk and membrane and which white adheres very closely to the membrane throughout the opaque zone: this layer of white grows thinner as incubation proceeds and a very light watery liquid increases.

After the first day it is almost impossible to get off the membrane without rupturing the thin pellicle of white, and if this be done the embryo is carried away with the outflowing liquid and is quickly broken into innumerable pieces.

They are for these reasons the most difficult eggs that I have ever tried to work with.

Very often the opaque zone is larger at one point and that always marks the position of the embryo; when the zone is of equal breadth throughout it is impossible to determine its exact position.

Examining an egg on the day after they were found and finding that no change had occurred I concluded to pack them all carefully

and get back to my laboratory with then as quickly as possible, where I could have the best facilities for the difficult work in hand.

This took six days of day and night travel, owing to unfortunate conditions, and I found upon my arrival that incubation had been going on for some time and the neural folds had nearly completed their coalescence.

While it is possible to get several chapters of value in the life-history from the material secured, it will be necessary to make another trip and a more prolonged stay next summer to get the more important early stages.

Biological Laboratory Williams College, July 12, 1888.

## 7. Über die Larve des *Proteus anguineus*.

Von Dr. Ernst Zeller.

eingeg. 30. Juli 1888.

Meine in einem Gartenbassin gehaltenen Olme hatten vom 14. bis zum 16. April d. J. 76 Eier abgelegt. Von diesen ließ ich 50 an Ort und Stelle, nahm aber 26 am 14. April gelegte noch am gleichen Tage in die Wohnstube und brachte sie hier in einem Glase unter, das in einer Ecke so aufgestellt war, daß die Eier nicht unmittelbar vom Sonnenlicht getroffen werden konnten, im Übrigen aber ohne eine weitere Schutzvorrichtung gegen das Licht in Anwendung zu bringen. Das Wasser, in welchem die Eier sich befanden, konnte auf einer durchschnittlichen Temperatur von 12—13° R. erhalten werden.

Von diesen 26 Eiern sind mir nun die meisten zu Grunde gegangen, die einen früher, die anderen später, doch haben wenigstens einige eine ungestörte Entwicklung durchgemacht und am 12. Juli — also nach 90 Tagen — sind auch zwei Larven glücklich aus ihren Eiern ausgekommen.

Entsprechend der langen Zeit, welche die Larve im Ei verweilt, zeigt sie sich beim Ausschlüpfen auch wesentlich weiter entwickelt, als dies bei den Larven der Tritonen und des Axolotl der Fall ist. Sie mißt 22 mm in der Länge, von welchen ungefähr 5 mm auf den Schwanz kommen. Die Gestalt des Ganzen ist der des erwachsenen Thieres schon sehr ähnlich. Der Körper ist gestreckt und sehr schlank, doch ist noch ein ansehnlicher Flossensaum vorhanden, welcher den Schwanz umgiebt und sich ungefähr über drei Viertel der Rückenlänge nach vorn erstreckt. Der Kopf ist länglich mit leichter seitlicher Einbuchtung in der Augengegend und mit abgestufter verhältnismäßig breiter Schnauze. Die Kiemenbüschel sind von blaßröthlicher Farbe, kurz und keineswegs entwickelter als wir sie bei dem erwachsenen Thiere

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Zeitschrift/Journal: [Zoologischer Anzeiger](#)

Jahr/Year: 1888

Band/Volume: [11](#)

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Artikel/Article: [6. The Nest and Eggs of the Alligator: Alligator lucius Cuv. 568-570](#)