

considers the reading of the above paper as securing all rights to its author that he might acquire by publication.

“Mr. Grote’s paper has been accepted by the Publication Committee of this Society for publication in its Bulletin.

“Yours respectfully,

LEON F. HARVEY,

Corresponding Secretary B.S.N.S.”

In characterizing this proceeding on the part of one of the youngest publishing societies in the world we are forced to cull a phrase from the slang dictionary; it is simply the “cheekiest” thing we ever remember to have seen. The use of legal phraseology in the words which we have put in italics has quite a peculiar charm, and will doubtless produce its due effect in causing entomologists in all quarters of the world to avoid trespassing on those unknown premises which have been formally handed over by “these Presents” to Mr. Grote by the Buffalo Society of Natural Sciences. It seems hardly credible that experienced naturalists, such as Mr. Grote at any rate is, should have even dreamed of adopting so absurd a course as this. Another favourite American dodge of printing descriptions of new species, with a date attached to them, for private circulation and not for sale, is bad enough, but it must yield the palm to the Buffalo invention.

On Hylodes martinicensis and its Metamorphoses. By M. BAVAY.

The facts observed by M. Bavay display an exception in the development of the Batrachia which is perhaps more interesting than any of those previously known. They relate to a tree-frog which, before hatching, undergoes all the changes through which the tadpoles of the Anura pass.

Hylodes martinicensis, a very abundant species at Guadeloupe, deposits, under the remains of leaves in very damp places, a mass of about 20 eggs, each about 2 millims. in diameter at the moment of its deposition. The chorion is then separated from the vitellus by a very thin zone of gelatinous matter.

As early as the second day after deposition this gelatinous matter is observed to be swelled, and the lineaments of the embryo appear. On the evening of the second day the embryo already appears as a little white mass, widened at one end and furnished with four appendages, which are the first traces of the feet. Beyond the base of the posterior feet there is the rudiment of a tail. The embryo is endowed with a rotatory movement, due, no doubt, to vibratile cilia, which, however, M. Bavay was unable to detect.

On the third day the forms become more distinctly marked; the tail is visible, as also two prominences which indicate the future position of the eyes on the head. The heart appears a little before the anterior feet. On each side of the neck two little processes (the branchiæ) make their appearance.

On the fourth day the eyes are more developed; the branchiæ may

be distinguished in the form of a simple vascular loop: the limbs are still styliform; but the proper movements of the young animal are already manifested when the egg is pressed.

On the fifth day the heart, as well as the branchiæ, are visible to the naked eye. The circulatory system has become perfect.

On the sixth day the feet are well formed, and the toes appear. The tail, on the contrary, shows signs of atrophy. The branchiæ are still perceptible; but their absorption has also commenced.

On the seventh day the branchiæ have disappeared, and the tail withers and folds.

On the eighth day the coloration, which began to show itself on the fifth day, increases throughout; and even some markings are produced at certain points. The tail disappears, and then the vessels which nourished it.

On the ninth or tenth day the eggs hatch. The vitellus, which is pretty voluminous in the young tree-frog, is still very visible through the walls of the abdomen; but this does not prevent the animal from leaping and being very free in its movements.

During incubation the gelatinous mass interposed between the chorion and the vitellus swells up considerably, so that the diameter of the egg becomes as much as 6 millims. When one of these greatly inflated eggs is opened there issues from it a considerable quantity of a clear liquid, in which the young animal floated.

M. Bavay puts forward the supposition that nearly pure water penetrates through the chorion into the cavity occupied by the embryo and its vitellus, and that it is in this water that the rotatory and voluntary movements of the embryo are performed. It would be in this aerated liquid that it would respire—at first by its branchiæ, and afterwards by the whole surface of its blastoderm. Respiration would be effected especially, during this second phase, by vessels which, starting from each side of the neck, pass into the vitellus, at the surface of which they develop abundant ramifications. A remarkable fact is that the appearance of these vessels coincides with the commencement of the withering of the branchiæ.—*Revue des Sci. Nat.* tome i. 1872, p. 281, and *Journ. de Zool.* tome ii. 1873, p. 13; *Bibl. Univ.* June 15, 1873, *Bull. Sci.* p. 155.

Mode of Walking of the Armadilloes.

Mr. Bartlett has kindly examined for me the way of walking of the living armadilloes in the Zoological Gardens. He observes that *Chaetophractus villosus* and *C. vellerosus* walk on the tips of their toes like *Xenurus*. *Euphractus minutus*, belonging to the same family as the preceding, and *Tatusia peba*, *T. hybrida*, and *Praopus Kappleri*, belonging to the family Tatusiadae, walk on the palms of the fore feet, with the claws spreading out and the tips elevated from the soil.—J. E. GRAY.



Bavay, Arthur. 1873. "On hylodes matrinicensis and its metamorphoses." *The Annals and magazine of natural history; zoology, botany, and geology* 12, 79–80.
<https://doi.org/10.1080/00222937308680713>.

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DOI: <https://doi.org/10.1080/00222937308680713>

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