

During the discussion in the French Academy the theory suggested by M. Berigny that an eclipse of the moon might have an appreciable effect upon the temperature-conditions of our atmosphere, namely, by cooling the latter, does not seem to have met with much encouragement. It would be more extraordinary if such a phenomenon as a total eclipse of that luminary were found to exercise no disturbing influence of any kind upon the terrestrial atmosphere during the time of its occurrence.

J. J. WILD

The Development of Batrachians

IN reference to the article in NATURE (vol. xv. p. 491) on the development in certain instances of Batrachians without metamorphosis, Mr. B. G. Wilder writes to the *American Naturalist* (vol. xi. No. 8, August, 1877, p. 491) to point out that the author of the article in NATURE has overlooked Prof. Wyman's observations on the development of *Pipa americana*, published in the *American Journal of Science and Art* for 1854 (ser. 2, xvii. pp. 369-374).

Wyman has there stated that the eggs of *Pipa* are transferred by the male to the back of the female, which presents "a uniform surface throughout." "Their presence excites increased activity in the skin, which thickens, and is gradually built up around each egg, so as at length to inclose them in a well-defined pouch." On pages 370 and 371 he figures and describes the earlier embryos as having "three branchial appendages on each side of the head." "In a later stage the external branchiæ had disappeared, but a small branchial fissure was detected on each side of the neck, and within this on each side a series of fringed branchial arches."

In endeavouring to obtain some confirmation of Prof. Wyman's observations, Mr. Wilder suggested an examination of certain eggs of this singular Batrachian preserved in the Warren Anatomical Museum of Harvard University. The examination was made by Mr. C. S. Meriot, who reported as follows:—

"I have examined two eggs from the back of the *Pipa*, and found the embryos a little more advanced than that figured by Prof. Wyman; they are between 12 and 13 mm. in length. The gills were partly absorbed, but a single slit with the gills still projecting could be readily seen on each side at the back of the head. I could not make a more detailed examination, as the eggs were not well enough preserved."

It would therefore appear that Dr. Peters' remark (which was translated in the above-mentioned paper in NATURE on this subject) that "no one has detected branchiæ in the embryo of the Surinam toad" is not well founded. It would be very desirable, however, to have further observations on this interesting subject made, as likewise on the development of *Hylodes martinicensis*, which was the principal subject of the former communication to NATURE.

P. L. S.

Notes on the North East Australian Monotremata

ENGLISH naturalists seem to be "all abroad" on this subject, judging from some remarks in NATURE, vol. xv. p. 257.

P. L. S. states his conviction that *Tachyglossus* will be discovered in the ranges of N. Queensland when these have been properly examined, being evidently quite unaware that both *Tachyglossus* and *Ornithorhynchus* have been known to inhabit the northern part of this colony for several years, and that a discussion has been carried on for some months in the columns of the *Queenslander*, on the "Generation of the Echidna and Platypus," between Dr. Bancroft and Mr. Bennett. I merely allude to this subject to give English naturalists the latest discoveries made by Dr. Bancroft in his researches into this more than usual prickly subject.

Dr. Bancroft dissected a female specimen and found a quantity of milk in the stomach. He was unable to find any mammary glands, and came to the conclusion that the mother Echidna fed its young by regurgitation. This theory was combated by Mr. Bennett.

On dissecting a second female Dr. Bancroft discovered the mammary glands, but not like those of any other known mammal, for the nipples were inverted, the cavities thus formed being protected by stiff bristle-like hairs.

The young Echidna has to thrust its bill into the cavity to obtain its food. This is a curious adaptation to the wants of an animal, for it is certain, from the curious formation of the head

and rostrum, that it would be impossible for the young to suck a nipple; as it is the forcing in of the bill expresses the milk which it is enabled to suck in when lying in the bottom of the cavity.

I secured a specimen of an adult female having a fine healthy young one in the pouch, and preserved both. On opening the stomach I noticed a quantity of a white substance which seemed to be inclosed in a thin membrane. I did not know what this was until I read Dr. Bancroft's letter on the subject, but unlike him I arrived at a different solution of the puzzle. Instead of the females sucking themselves (the way in which Dr. Bancroft accounts for the presence of milk in the stomach), I believe that, after a certain time, when the spines begin to grow on the young Echidna, the irritation causes the mother to take it out of the pouch, and to feed it by regurgitation, until its spines are sufficiently grown to protect it from its enemies. I was led to this belief by discovering a nearly adult male with no sign of any food in its stomach except milk.

I was encouraged to dig this individual out of its stronghold, by noticing several unusually large tracks going in and out of the burrow. These, undoubtedly, were the footprints of the female when she came to feed the young. The spines on this specimen were not at all stiff, especially at their bases, and would have offered little or no protection against the attacks of a native dog or eagle. This may seem a wild proposition, but I have only adopted it after mature thought, and observing four different females.

We must adopt some explanation to account for so strange a phenomenon, unless we jump the question by allowing that the females of *Tachyglossus* suck themselves, a most unlikely proceeding on their part, and a solution to the difficulty as unsatisfactory as it is improbable. We have only to guard against chronicling false facts which seem to me to be the greatest enemies which science has to contend with, and we are not so apt to go wrong. Mistakes are often made, but invariably meet with a correction, and should the above solution to a difficulty which has taxed, and is still employing, some of our wisest heads, prove wrong, I shall be only too glad to accept the correction, thankful that my blunder has assisted in rightly solving an interesting and vexed question. The blacks inform me that the Echidna lays a white egg, and the Platypus a black one, which are hatched in the abdominal pouch.

I trust that some of your many scientific contributors will come to our rescue in solving this point.

W. E. A.

The late discoveries by Goldie, D'Alberis, and MacFarlane, have produced a number of forms (botanical) identical with those obtaining in N.E. Queensland, thus further proving the original fundamental unity of the two countries. The Australian Dingo ought to be found in New Guinea as also our tiger cat.

W. E. A.

On Time

I HAVE deferred my answer to the remarks of Mr. J. J. Murphy (NATURE, vol. xvii. p. 182) till now, in order to see if my letter of June 14 would cause more discussion. But it seems that my views are not deemed worthy of much consideration in England; I shall therefore say only a few words in conclusion here, but hope to take up the question elsewhere.

Mr. Murphy thus summarises a part of my letter:—"The postulate that a velocity, *e.g.*, that of the earth's rotation continues unchanged, is arbitrary, incapable of proof, and justified only by practical convenience." I should wish that he had added, "and to be settled by definition." Mr. Murphy goes on to say, "It seems to me, on the contrary, that the postulate is not necessarily arbitrary but may be absolutely justified by fact." I do not believe there is a great difference between "justifying something by practical convenience" and "justifying it absolutely by facts." Perhaps, in the opinion of Mr. Murphy, the constancy of the velocity of the earth's rotation is proved by the pendulum. But it is universally admitted that the pendulum is controlled by the earth and not the earth by the pendulum.

Mr. Murphy, in admitting that he sees no way of proving that the force of gravitation continues unchanged, acknowledges that in natural philosophy many things are taken for granted which call for closer consideration, and this was precisely my motive for writing my letter.

Though Mr. Murphy does not agree with me in all points I am thankful for his remarks.

V. A. JULIUS

Breda, Holland, August 29