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Reproduction in *Amphileptus fasciola*

Andrew S. Parker M.D. Ph.D.

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it. No layer of vibratile cilia was to be seen distinctly, but indications of them seemed to exist upon portions which had been long in osmic acid. The cells taper at their base and at the same time bend in different directions; and these basal prolongations anastomose and form a very delicate network of fibrillæ, which, by their union, constitute at the base of the epithelial layer a regular little zone, intermediate between the nerve-fibres and the foot of the cells; a few nuclei are distinguishable in it. This plexus rests against the connective envelope, which is formed by a thin and dense membrane, presenting perforations, through which the basilar plexus enters into relations with the nerve-fibres.—*Comptes Rendus*, March 24, 1884, p. 757.

On Prof. Lindström's Remarks on Prof. Martin Duncan's Criticisms.

To the Editors of the Annals and Magazine of Natural History.

GENTLEMEN,—With reference to Prof. Lindström's communication to the Ann. & Mag. Nat. Hist. for March 1884, p. 162, I wish to inform you that, having sought the opinion of some naturalists well qualified to judge between Prof. Lindström and myself, I find that the language I used was not of a kind to merit the condemnation of being "by no means consistent with the quiet tone that ought to prevail in scientific discussions." It appears to them and to me that Prof. Lindström took unnecessary offence and that his tone was very uncourteous.

I can assure you that nothing was further from my thoughts than to give him personal offence; but he must remember that his communication which I wrote upon was eminently critical, and was bound sooner or later to provoke discussion. I gave the reasons for not having sooner attempted a reply. Probably when some time has elapsed Prof. Lindström will read my essay with more charitable and kindlier feelings; and it may happen that we may criticize one another as Pourtalès and I did, with advantage to ourselves and with the establishment of a sincere friendship.

Yours truly,

P. MARTIN DUNCAN.

April 10, 1884.

Reproduction in Amphileptus fasciola.

By ANDREW S. PARKER, M.D., Ph.D.

Several years ago, while examining some Infusoria, I noticed a specimen of *Amphileptus fasciola* undergoing some curious changes, the nature of which, at that time, I did not fully appreciate, supposing them to be due to the dissolution of the animal. Recently I observed the same series of phenomena occurring in another individual, and on tracing them out more fully I found that they were due, not to the death of the Infusorian, but to what I believe is a method of reproduction not hitherto observed, or at least not described, in this group. My attention, in both instances, was attracted by a peculiar oscillating movement, the *Amphileptus* rocking from side to side, the animal remaining stationary, although its

cilia were in active motion. In other respects the animal appeared normal, no changes being observed in its nucleus, protoplasmic contents, or contractile vesicle. Shortly after I had noticed this peculiar rocking movement I found that the elongated extremity was breaking up into small masses of protoplasm; these gradually separated from the parent body, and each of them exhibited distinct amœboid movements. Although the cilia seemed to break off with the small masses, I could not detect any signs of their presence after separation. For about five minutes small protoplasmic masses, exhibiting distinct and independent amœboid movements, continued to be shed.

The rocking movement still continued, but now began to show signs of being converted into a movement of rotation. Finally a rotary motion was established, and the animal began to change its position. At the same time I noticed a distinct elongation occurring at the end where the changes described above had taken place, a rounded projection appearing, which gradually elongated, until finally, in the course of about two hours, the individual had assumed its original shape and activity, although apparently somewhat diminished in bulk. Cilia covered the new growth, but they did not seem to be a new formation, but were produced by a simple elongation of the ectosarc, this being carried forward by the growing endosarc. As regards the protoplasmic masses that were shed or discharged, I observed them for about four hours, at which time they were still active and the parent mass still in active motion. On the following day I was unable to detect them, and as to their subsequent history I know nothing.

To characterize the phenomena as described above, I propose the term "Reproduction by Partial Dissociation." Reproduction by fission, gemmation, conjugation, and encystation have all been observed in the ciliated Infusoria; and some of the older writers, such as Ehrenberg and others, have described a mode of increase, in which the substance of the body breaks up into a number of fragments, each of which is capable of becoming a distinct individual. This process they called diffuence; but Stein and other more recent observers have denied the existence of this process, claiming that it was merely a form of increase from encysted forms. The phenomena as exhibited by *Amphileptus fasciola* seem to be quite different from those described as occurring in diffuence, and it certainly was not a case of encystation. I have been unable to find any account of reproduction in the Infusoria resembling that described above, and I therefore place the facts on record, in order that the attention of other observers may be directed towards the verification of the phenomena and views expressed above.—*Proc. Acad. Nat. Sci. Philad.* 1883, p. 313.

On the Anatomy of Peachia hastata. By M. FAUROR.

The Actinia discovered by Gosse (in 1855), and named by him *Peachia hastata*, is known only by its external characters. Hitherto any exact observation of its internal organization has been impos-