Proceedings of the Iowa Academy of Science

Volume 21 | Annual Issue Article 46

1914

An Observation of Longitudinal Division of Hydra

L. S. Ross
Drake University

AN OBSERVATION OF LONGITUDINAL DIVISION OF HYDRA.

L. S. ROSS.

Upon stopping at the laboratory table of one of the members of the class in freshman zoology one day in the fall semester of 1913, my attention was attracted to a drawing of a Hydra that aroused my interest at once. At first I thought the student had found two Hydras attached to debris close together, and through an error in observation had made a drawing representing them as connected. But upon looking at the specimen I saw, for the first time in my experience, a Hydra

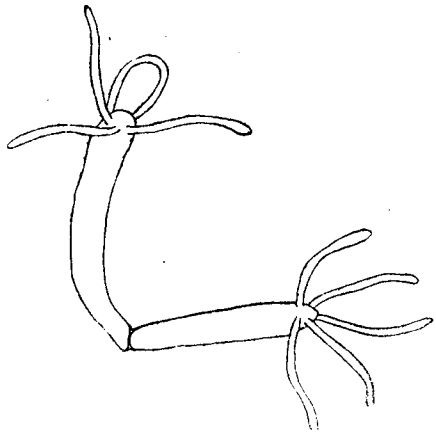

Fig. 10. Hydra divided through length of body.

in the process of longitudinal division, the fission having proceeded through the length of the body, the two parts being connected only at the foot. There could be no question as to its being a case of longitudinal division as the two parts were of equal size and the point of connection was so near the end of the specimen. The specimen was kept under observation for several days but fission did not seem to extend any further. One day the specimen showed an injury to one of the tentacles as though it had been slightly crushed and the next day two tentacles were grown together into a loop as represented in figure 10. This connection remained several days but finally it separated at the outer part of the loop into two tentacles.

During a portion of the time the specimen was under observation, another larger individual was located near by. A fragment of meat being offered, the two parts of the double specimen and the larger individual all siezed upon it; the large Hydra succeeded in ingulfing the meat but as the double individual would not release its hold it was ingulfed also, the tentacles and at least two-thirds of the body being taken in. In a few minutes, however, the specimen withdrew itself leaving the meat in the possession of the larger Hydra. Another observation somewhat similar to this was made upon another Hydra that had ingulfed one of its own tentacles together with some prey it had captured. The tentacle was withdrawn in about five minutes after it was first noticed.

As I wanted to preserve the double Hydra as a permanent specimen I did not wait for division to be completed. Upon attempting to anesthetize it with chloretone I added the solution too rapidly when it was almost anesthetized and the result was its sudden contraction.

Not many days after finding the first specimen in process of longitudinal division, I found another in the aquarium. Division had proceeded through the hypostome and a short distance down the length of the body. This one was kept under observation several days and then it was killed by flooding with hot corrosive sublimate to be preserved as a permanent specimen. It is shown in plate XXXVII.

It seems that this method of multiplication is rarely seen as only a few instances are recorded. The latest paper I found upon the subject is by W. Koelitz in the Zoologischer Anzeiger, XXXV Band, 1910. In 1744 Trembly reported a two-headed polyp, and a little over 100 years later, in 1847, Thomson reported a similar observation. In 1880 Asper found dividing Hydra in Silser See, evidently very similar to one found and figured by Zoja in 1890. Koelitz considers the instance of division reported by Jennings in 1883 to be a case of accidental injury rather than a normal longitudinal division. In 1900 Parke observed four or five dividing specimens; in one instance four to five days being the time occupied in division while in another it was nearly four weeks. *Hydra viridis* required the longer period and a brown Hydra the shorter. In 1908 Annandale described the division in *H. viridis* and *H. grisea,* Leiber one in 1909, and Koelitz several instances as described in 1910.

References; taken from Zool. Anz., XXXV Band, 1910, Ueber Längsteilung und Doppelbildungen bei Hydra; W. Koelitz.

Annandale, Notes on the Freshwater Fauna of India. Journal As. Soc. Bengal. Vol. 2, p. 109, 1906.

Asper, Beitrage zur Kenntnis der Tiefseefauna der Schweizer Seen. Zool. Anz. Bd. 3, S. 204, 1880.

Braur, A., Die Bennennung und Unterscheidung der Hydra-Arten, Zool. Anz., Bd. 33, S. 790, 1908.

Hertwig, R., Ueber Knospung und Geschlechtsentwicklung von Hydra. Biol. Centrallblatt, Bd. XXVI, 1906.

Jennings, T. B., Curious Process of Division of Hydra. Amer. Monthly Microscopical Journal, Vol. 4, p. 64, 1883.

Koelitz, Fortpflanzung durch Querteilung bei Hydra. Zool. Anz., Bd. 33, S. 529 und S. 783, 1908.

Korschelt, E., Zur Längsteilung bei Hydra. Zool. Anz., Bd. 34, S. 284, 1909.

Leiber, A., Ueber einen Fall von spontaner Längsteilung bei *Hydra viridis*. Zool. Anz., Bd. 34, S. 279, 1909.

Parke, H. H., Variation and Regulation of Abnormalities in Hydra. Arch. f. Entwicklsmech. 10 Bd. S. 692-790, 1900.

Thomson, The Edinburgh New Philos. Jour., 42, p. 281, 1847.

Trembly, A., Mémoires pour servir à l'histoire d'un genre de Polypes, 1744.

Zoja, R., Alcune ricerche morfologiche e fisiologiche sull' Hydra. Pavia, 1890.

Department of Zoology,
Drake University, Des Moines.

PLATE XXXVII. Hydra divided through hypostome and into body. (Photomicrograph.)