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Miscellanea.

Terminal Abnormalities in the Pectoral and Pelvic Fins of *Protopterus*.

By B. LEBIED.

On the 27th of September, 1939, in Beira (Mozambique), the native who usually brings me specimens of *Protopterus annectens* from a dried lake near Beira for investigation, brought a parcel consisting of ten specimens, of which three deviated from the normal, in having two "finger"-like growths at the end of the "limbs". This, in the largest specimen of the three, is shown in Fig. 1. This fish, which measures 45 cm. in length, has two "fingers" 4 cm. and 5 cm. in length respectively. In Fig. 2 one of the smaller specimens is shown which measures 27 cm. in length and has two "fingers" 5 mm. and 9 mm. in length, and the third fish, Fig. 3, which is 15.3 cm. in length, has two "fingers", both 5 mm. in length.

The largest specimen has the abnormal deviation of the extremity on the pelvic fin, whereas the two smaller fishes have them on their right pectoral fins. The larger *Protopterus* moves about on damp ground much quicker than other normal fish of its kind, apparently due to the "finger"-like extremities, which enable it to get better purchase. Its movements resemble those of an Amphibian.

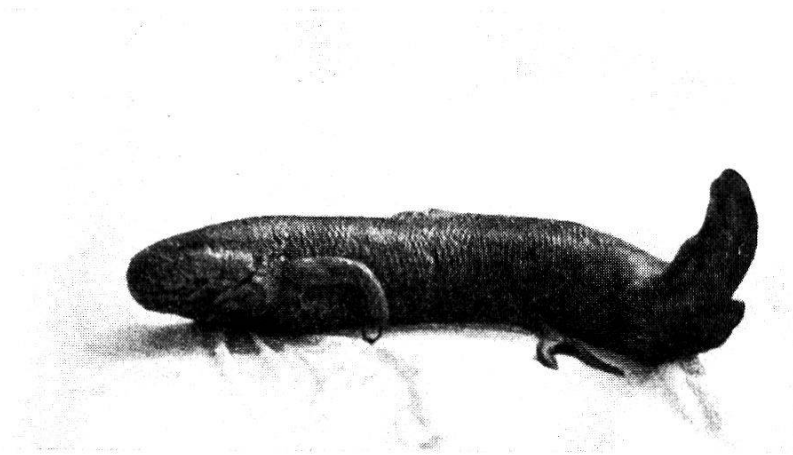


Fig. 1.

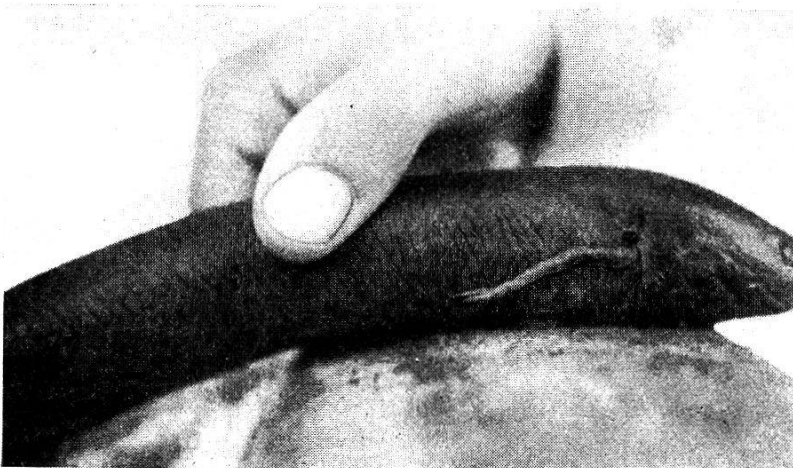


Fig. 2.

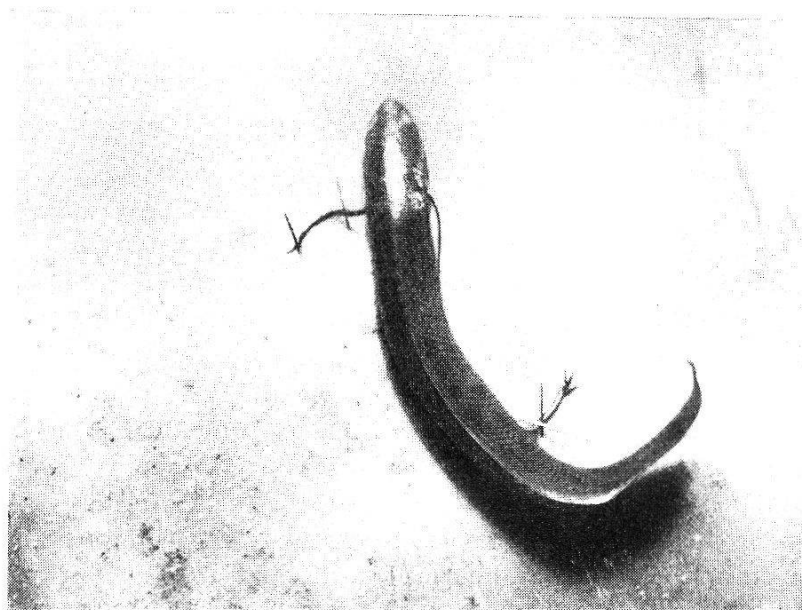


Fig. 3.

This abnormality calls for a more thorough investigation, which it is hoped may shortly be undertaken.

In some 400 specimens of this species I have observed a great variation in these organs, and it appears that this is not a case of common individual differences, for they are too great, but rather accords with the established principle that organs which are in the process of evolution (or in this case in the process of retardation or regression) are outstanding in their variations (*Darwin* 1859). Besides the "long worm-like growths" many specimens have flat or round limbs, and the opposite extremities of the one and the same fish often vary in form and length. I have been informed by Dr *K. H. Barnard* of the South African Museum (to whom I hereby express my gratitude), that abnormal fins in *Protopterus* were described in the following four short communications:

Albrecht, P.: Preuss. Ak. Wiss. Berlin, p. 545-546, 1886, pl. 6.

Blanchard, R.: Bull. Soc. Zool. T. 19, p. 54-57, 1894, 8 figs.

Boulenger, G. A.: Proc. Zool. Soc. London, p. 147-148, 1891.

Hopley, C. C.: Amer. Naturalist, 25, p. 487-489, 1891, 5 figs.

G. A. Boulenger described an abnormal, trifold, fin of a *Protopterus*, about which *Hopley* also sent information. *Hopley* received information about this from the keeper of the reptile house of the Zoological Society of London. This keeper stated that the abnormal fin was a regeneration after the terminal portion of the fin had been bitten off by another fish. Hitherto apparently no experiments to prove this phenomenon have been undertaken, so the matter may still be regarded as open.

These peculiar variations in the formation of the paired limbs in *Protopterus* may perhaps prove to be of general interest. The "finger"-like processes which I have observed, remember very closely the much discussed problem of the evolution of tetrapod limbs from fins of fish. In the same time our observations bring up again the problem of the evolutionary value of teratologic variations, put forward by the work of *Bateson*.