

## Verzeichnis der besprochenen Polydesmiden:

- 1) *Brachydesmus superus* Latz. *genuinus* m.
- 2) - - *portofinensis* Verh.
- 3) - - *mosellanus* Verh.
- 4) - - *laurorum* Verh.
- 5) - *verhoeffi apuanus* Verh.
- 6) - - Silv.
- 7) - *proximus alnorum* Verh.
- 8) *Polydesmus rupicursor* Verh.
- 9) - *savonensis* -
- 10) - *platynotus* Poc.
- 11) - *monticola* Latz. u. Att.
- 12) - *bolivari* Verh.
- 13) - *cruciator* -
- 14) - *plitvicensis* Att. u. Verh.
- 15) - *edentulus* C. K. *genuinus* m.
- 16) - - *bidentatus* Verh.
- 17) - - *vajolettanus* Verh.
- 18) - - *multidentatus* Verh.
- 19) *Strongylosoma hispanicum* Verh.
- 20) - *bertkaui* Verh.

17. August 1907.

## 2. A Curious Instance of Polymely in the Common Frog.

By W. Woodland, King's College, London.

(With 2 figures.)

eingeg. 31. August 1907.

So far as I can discover from a survey of the relevant literature<sup>1</sup> the polymelous frog described below is unique and hence worth describing. In March of the present year I had occasion to fertilise artificially several thousand eggs of the common frog (*Rana temporaria*) for a class in Embryology. Of these some three or four hundred were allowed to attain the fully-formed tadpole stage, and in one of these I observed that four hind legs were present, three being borne on the left side and one on the right (fig. 1). The fact that the vast majority of these tadpoles were normal (no other abnormalities of any

<sup>1</sup> See the papers referred to in Bateson's Materials for the Study of Variation, pp. 554, 555; also F. L. Washburn, A Peculiar Toad, Amer. Nat. Vol. XXXIII. 1899. p. 139; C. H. Eigenmann and U. O. Cox, Some Cases of Saltatory Variation, op. cit. Vol. XXXV. 1901. p. 33; R. H. Johnson, Three Polymelous Frogs, t. c. p. 25.

kind were observed) proves that the single abnormality cannot be attributed to the artificial fertilisation; in other words, the cause of the abnormality, whatever it may have been, was the same as that which produced the similar abnormalities found in frogs living under natural conditions (see literature quoted).

During the tadpole stage the two additional legs were placed one on each side of the normal appendage belonging to the left side of the larva, although they both arose from one spot situated a little above and behind the origin of the normal limb. One of the additional legs (*A*) protruded under and in front of the normal limb, and when elongated it also turned dorsally with the plantar surface of the foot upper-

Fig. 1.

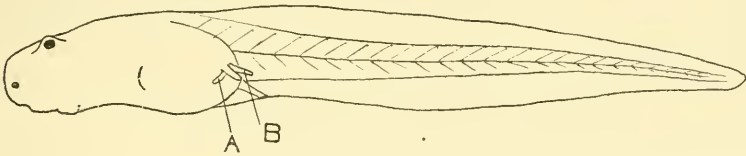


Fig. 2.



Figs. 1 and 2. *A*, the left additional limb; *B*, the right additional limb; *C*, the stalk bearing the two additional limbs in the young frog; *D*, plate representing the aborted fused thighs of the additional pair of legs. *C* and *D* are represented on a larger scale in the right hand sketch.

most. The other additional leg (*B*) extended posteriorly and when elongated lay under the tail just to the left of the median line, also with the plantar surface of the foot uppermost. Both of these additional legs retained until a short time before the metamorphosis some slight power of movement, and were directly connected with the body but before metamorphosis had set in they had become quite useless and were clearly attached to the body by a stalk only. During the metamorphosis too the legs had changed their position, both being posterior to the normal limbs.

The condition of things in the young frog is shown in fig. 2. From this it will be seen that the thin stalk (*C*) arises dorsally on the left

side of the body between the thigh of the normal leg and the trunk. Attached to the distal end of this stalk is a broad undivided definitely-shaped plate (*D*), which represents the fused aborted thighs of the two additional legs. This plate is rounded in front and posteriorly bears the two crura. The greater part of the crura and the remainder of the two additional legs are normal in every respect. Thus it will be seen that during metamorphosis the additional legs have been twisted round from the left side through a considerable angle, having originally been situated one on either side of the normal leg. This change of position was due to the production of the stalk, which not only resulted in the legs assuming the posterior position but also did away with the muscular connection between the legs and the body which at first existed; in other words, the legs, after the formation of the stalk, were merely dragged about by the animal and were indeed rather an incumbrance in its movements. The legs were quite healthy in appearance (though somewhat anaemic just after the metamorphosis), the skin being pigmented and the muscles well formed; also they were quite as sensitive to mechanical stimulation as the normal limbs. In fig. 2 is represented the normal position of the limbs — the position assumed when the frog was swimming e. g. In this position the plantar surface of the feet was uppermost, the post-axial aspect of the limbs being anterior; in other words, the limbs, in their normal position were upside down (see remarks above on the same condition found in the tadpole). However, the stalk being very flexible, the limbs were often rotated into the opposite position and indeed into almost any position, and I have occasionally seen them accidentally thrown over the frog's back when the animal was active.

One other noteworthy fact is that this abnormal frog was further abnormal in that it was quite twice the size of any other young frog of the same age (about five weeks) and much lighter in colour. At the time when it was killed, the trunk (from tip of snout to posterior end) measured 14 mm in length, whereas other frogs of the same age only measured about 10 mm and were markedly smaller in every way.

In transverse section the stalk bearing the legs proved to consist merely of the normal integument, a dense central mass of tissue formed of closely-packed cells, several small blood vessels and a small amount of muscular tissue.

As regards the skeleton of the additional limbs, the distal cartilages were quite normal, but the tibio-fibula of each limb, normal on the whole, disappeared for a certain length in the upper part of the crus, and only reappeared just before its insertion into and fusion with the mass of cartilage which composed the plate *D*. The cartilage of the

tibio-fibula was replaced in this interval by a mass of small round cells, and it is quite possible that the cartilage was being absorbed in this region. The cartilage contained within the plate obviously consisted of two semi-fused pieces, which doubtless represented the otherwise-absent femurs. As implied in the above description there was no connection whatever between the additional legs and the pelvis, this latter being quite normal.

The only previously-recorded case of polymely in the frog which, so far as I know, at all resembles the one just considered, is that described by Tuckerman<sup>2</sup>. In this case there was loosely attached to the posterior end of the trunk what I can only call, judging from the figure, a leg-like elongated mass. Two irregular swellings were present in its length and apparently digits were present at the extremity. So far as I can judge from the figure I should say that this entire mass represented a pair of legs and not one.

### 3. Zur Copepodenfauna von Java und Sumatra.

Von Carl van Douwe, München.

(Mit 8 Figuren.)

eingeg. 1. September 1907.

In der durch v. Daday unlängst publizierte Arbeit<sup>1</sup> liegt zum erstenmal eine auf Grund eines reichhaltigen Materials aufgestellte Liste über die Süßwassercopepoden des in dieser Hinsicht bisher so wenig bekannten tropischen Gebietes vor.

Sehr begrüßenswert ist es daher, daß auch Dr. v. Prowazek gelegentlich seines vorjährigen, längeren Aufenthaltes in Batavia verschiedene Exkursionen in der engeren und weiteren Umgebung seines Wohngebietes — und schließlich auch in Sumatra — dazu benutzte, sowohl Plankton als auch Litoralentomostraken zu sammeln. Das mir in liebenswürdiger Weise zur Bestimmung überlassene Material bestand — soweit es sich um javanische Fänge handelte — fast ausschließlich aus Copepoden, und auch diese waren nicht in der, dem sonstigen Teichplankton entsprechenden Massenhaftigkeit vertreten, sondern zeichneten sich vielmehr durch Species- und Individuenarmut aus. Eine Erscheinung, deren Grund sicherlich in dem mir von Prowazek mitgeteilten Umstände zu suchen sein dürfte, daß die ausgedehnte Reiswirtschaft in

<sup>2</sup> F. Tuckerman, Supernumerary Leg in a Male Frog, Journ. Anat. Phys. Vol. XX. 1886. p. 517.

<sup>1</sup> v. Daday, Untersuchungen über die Copepodenfauna von Hinterindien Sumatra und Java, nebst einem Beitrag zur Copepodenkenntnis der Hawaii-Inseln. In: Zool Jahrb. Vol. 24. Syst. 1906. S. 175—206. Taf. 14—16. Hier auch das einschlägige Literaturverzeichnis.

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