

Greiftasters. Es ist meiner Ansicht nach wirklich recht schwer, beide Arten miteinander zu verwechseln. Nächstens werde ich *Cand. rostrata* Brady and Norm. ergänzend beschreiben und die nöthigen Abbildungen dazu bringen. 7) G. W. Müller identifiziert eine *Candona* unter dem Namen *Candona balatonica* mit Daday's *Candona balatonica*, was nach meiner Ansicht nicht angängig sein dürfte; denn Daday sagt u. A., daß die Greiforgane seiner Species zweigliedrig seien und bildet sie auch so in »Result. Crust.« p. 14 ab. Eine *Candona* aber mit zweigliedrigen Greiftastern giebt es nicht. Es wird Müller's *Candona balatonica* (mit eingliedrigen Greiforganen) also wohl anders zu benennen sein, und scheint mir diese Benennung in der Ostracoden-Litteratur auch schon vorhanden zu sein. 8) Entgegen den Ausführungen G. W. Müller's in seiner »Erwiderung« bin ich allerdings der Ansicht, daß ein Autor, der es unternimmt, eine Monographie zu schreiben, nicht nur die Litteratur ausgiebigst zu benutzen, sondern, und ganz besonders in zweifelhaften Fällen, sich auch möglichst der »Typen« zu bedienen hat. Ich sehe wirklich nicht ein, wie ihn die »Nomenclaturregeln« daran hindern könnten.

### 3. On the Blood Vascular system of *Malacobdella*<sup>1</sup> *grossa*.

By Norman H. W. MacLaren, Glasgow.

(With 5 figs.)

eingeg. 28. Januar 1901.

J. v. Kennel<sup>2</sup> in his paper on *Malacobdella grossa* observes with regard to the Blood-vascular system: »Eine besondere Beachtung verdient noch die Ausbreitung der Gefäße in der Saugscheibe, . . . Das Gewebe des Saugnapfes ist ferner von einer so eigenthümlichen Beschaffenheit, daß man es geradezu als ‚Schwellgewebe‘ auffassen könnte; ein Balkennetz bindegewebiger Natur, das ziemlich große und zahlreiche kleine Lücken zwischen sich frei läßt, setzt den inneren Theil des Organs zusammen. Nimmt man nun an, daß die Blutgefäße sich in diese Lücken öffnen, so daß bei einer Erschlaffung der Musculatur dieselben mit Blut gefüllt werden können etc.« He did not observe these pulsating chambers elsewhere in the animal, nor has Oudemans or Bürger mentioned them.

So many discrepancies exist in descriptions of the bloodvessels of this animal, that one must needs believe that the species varies largely in different localities. Certainly my specimens differ considerably from

<sup>1</sup> All my specimens of *Malacobdella* were taken from *Mya truncata* procured at Skelmorlie on the Clyde.

<sup>2</sup> Arbeiten aus dem Zool. Zoot. Inst. in Würzburg, 4. Bd. p. 340. 1877, 1878.

those described by Oudemans, Bürger and v. Kennel, and the peculiarities were constant in the very large number of specimens examined.

In my specimens<sup>3</sup> the vascular prolongations mentioned by v. Kennel as occurring in the sucker, arise from the entire length of the lateral vessels and also, but to a very much less extent, from the dorsal vessel. They are best developed at the sides of the "pharynx" and gradually diminish towards the sucker.

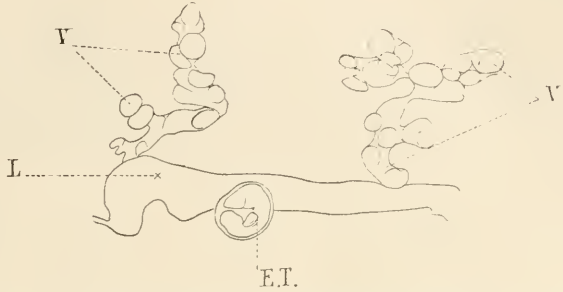


Fig. 1. 2 vascular trees from pharyngeal region *E. T.* = encysted Trematode, diameter 142 mm.

On each side of the "pharynx" there are usually about seven of these "vascular trees" arising from the lateral vessel.

At its origin the trunk of each tree is small and circular, but immediately widens, commences to branch, and leads into numerous blindly ending and more or less circular vesicles. Each tree is distinct, has no communication with its neighbour, and usually curves irregularly upwards. The structure of the walls of the tree and its vesicles does not differ from that of the ordinary blood vessels, which has already been described by v. Kennel.

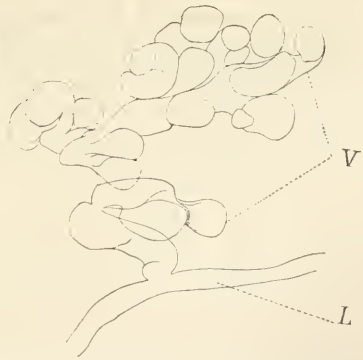


Fig. 2. very large vascular tree from pharyngeal region; length = .440 mm from a specimen length 20 mm.

There is no trace of valves. When the living animal is compressed between slips of glass each tree is seen to pulsate slowly and rhythmically. The whole tree gradually swells, sucking in the blood corpuscles (which can be clearly seen) from the lateral vessel, then it pauses for a moment and as slowly contracts. 12 pulsations per minute were observed in a female of 29 mm. The general course of the blood is backwards in the lateral vessels and for-

<sup>3</sup> These included both sexes from a few mm long up to 30 mm.

wards in the dorsal but the continuous flow, in the compressed animal at least, is feeble and indefinite. The corpuscles after being driven out of one tree are carried along the lateral vessels in the stream caused by the contraction of the tree, then they are either sucked back again by the



Fig. 3. Cephalic loop and anterior ends of lateral vessels with small vascular trees, from a young specimen.

same tree or if carried far enough, sucked in by another. The pulsations of the trees are probably controlled by the dorso-ventral muscle fibres which are present in the pharyngeal region. Posteriorly the trees differ very considerably from those in the pharyngeal region. Their



Fig. 4. Right half of sucker showing anastomosis of vessels, and vascular prolongations.

origins are irregular, they lose to a large extent their tree-like form and may anastomose with one another either with those of the opposite side or with similar prolongations from the dorsal vessel forming a very irregular system of vessel-commissures which varies considerably in different specimens.

Oudemans<sup>4</sup> does not mention these communications "Not only from the 2 lateral vessels but from the Cephalic loop numerous branches arise. In my specimens the median had none."

Bürger<sup>5</sup> states: »Indessen überzeugte ich mich nicht an meinen Schnittbildern davon, daß Rücken und Seitengefäße mittels ihrer Zweige mit einander commissurieren«.

C. K. Hoffman<sup>6</sup> though ignorant of the presence of the dorsal vessel correctly observes: »Medianwärts giebt jedes Seitengefäß zahlreiche Queräste ab, die sich wieder theilen können und so Anastomosen bilden, wodurch die Seitengefäße mit einander in Zusammenhang stehen«.

In *M. japonica* Takakura<sup>7</sup> these metameric commissures and their anastomoses have been described, but the vascular trees of the pharyngeal region seem to have been absent. In nearly all my specimens there were encysted trematodes embedded in the gelatinous tissue, while the intestine was usually occupied by gregarines in such numbers as to completely fill the lumen.

*V* = vascular tree, *L* = lateral vessel, *D* = dorsal vessel, *C* = Cephalic loop, *R* = wall of Rectum immediately anterior to anus, *M. S.* = margin of sucker, *C. L.* = connection between lateral vessels, *C. D.* = connection between dorsal and lateral vessel, *D'* = connection to dorsal vessel, *L'* = connection to lateral vessel.

Figs. 1 and 3 were drawn from living animals compressed between slips of glass. 2 and 4 from preserved specimens (Liquid of Kleinenberg, Borax-Carmine, Xylol-Balsam). Drawings except Fig. 5 were made with Reichert's camera lucida and lenses. 1 and 2 with oc. 4. obj. 3, 3 and 4 with oc. 4. obj. 2.

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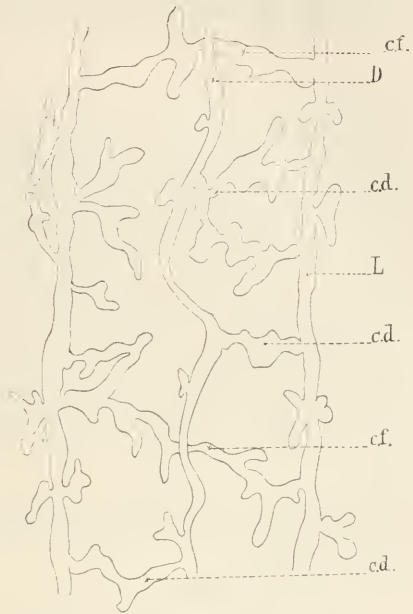


Fig. 5. Diagram of vascular prolongations from vessels and their anastomoses, reconstructed partly from serial sections, partly from observations on living animals (the animal is supposed to be fully extended and only a fraction of the total length of the vessels is diagramatised).

<sup>4</sup> Quart. Journ. Micr. Sc. Vol. XXV. Suppl. p. 68. 1885.

<sup>5</sup> Classen und Ordnungen des Thierreichs. 4. Bd. Nemertini p. 247. 1899.

<sup>6</sup> Niederländisches Arch. f. Zool. Bd. IV. 1. Hft. p. 10. 1877. see also v. Kennel's article p. 339 and E. Blanchard second mémoire sur l'organisation des *Malacobdelles*. Ann. des sc. Nat. T. 12. 1849. p. 268—278.

<sup>7</sup> Annot. Zool. Jap. Vol. I. p. 105—112.

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