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Brachium copulatorium (?) in *Vitrina pellucida* (MÜLLER).

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Summary: An atrial diverticulum found in juvenile *V. pellucida* is supposed to be a brachium copulatorium vestige. *Semilimax* STABILE in which this organ is well developed is therefore regarded as old and primitive. Accordingly *Vitrina* DRAPARNAUD is younger, more specialized and has already lost its brachium copulatorium.

While studying sexual maturity and life cycles of the Vitrinidae from the Tatra Mts, Poland, I had to dissect numbers of specimens widely differing in size and age. For the sake of clarity of description I have established, somewhat arbitrarily, five stages of sexual development. These were three juvenile stages and two mature ones. To the first mature stage I have assigned animals ready to copulate, to the second one animals ready to lay eggs, the borderline being the copulation.

In the genitalia of juvenile specimens one may observe, as a rule, the successive appearance, growth and differentiation of particular organs. It was in *Vitrina pellucida* (MÜLLER) that I have noted an organ, peculiar to juvenile animals, entirely absent in adults. It is a small diverticulum, branching off the genital atrium, opposite to the penis. It appears, barely visible, at the juvenile stage IIa, is readily observable at the juvenile stage IIb, and fairly well developed at the juvenile stage III. The walls are rather thin and the whole diverticulum very short. Of particular interest is, that in some very young animals (juvenile stage IIb) it is of the form of a rounded vesicle, with a globular, heavily staining body inside (fig. 1).

Now in *Semilimax kotulai*[1]) WESTERLUND this very position is occupied by the brachium copulatorium. Moreover, in young specimens (juvenile stages I-II) the brachium copulatorium sheath looks like a rounded vesicle with the brachium copulatorium proper inside. The latter is staining well, rod-shaped, at first rather stocky, in very young individuals almost globular. It is only somewhat later that both the brachium copulatorium as well as its sheath start to elongate.

Both the early bud of brachium copulatorium in *S. kotulai* and the atrial diverticulum in *V. pellucida* are extremely similar in shape, structure and position. The point is, are they homologous or not. Conclusive evidence is lacking, still I think it highly probable that the atrial diverticulum in question is a vestige of brachium copulatorium, persisting in early postembryonic ontogenesis.

[1]) This species was named in honour of BOLESŁAW KOTULA, who was a man. Hence according to the International Code of Zoological Nomenclature (Recomm. 31 A) the species name should end in *-i*.

If this be the case, the posession of brachium copulatorium would have to be regarded as a primitive feature. *Semilimax* STABILE would be an old and primitive genus. *Vitrina* DRAPARNAUD, on the contrary, would be a young and more specialized genus, which has already lost its brachium copulatorium.

A comparison with the closely related Zonitidae may support this view. There the subfamily Gastrodontinae is well known for its strangely entangled and complicated genitalia. All the other zonitids have their genitalia much more simple. Still, data on palaeontological and recent distribution as well as the numbers of fossil and recent species prove Gastrodontinae to be the oldest and the most primitive group (RIEDEL, personal communication). RIEDEL (1966) has placed them accordingly at the very beginning of his system of Zonitidae.

Bibliography.

RIEDEL, A. (1966): Zonitidae (excl. Daudebardiinae) der Kaukasusländer (Gastropoda). — Ann. Zool., **24**: 1-304. Warszawa.

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Specimens from the valley Dolina Kościeliska, Tatra Mts, Poland. Cedax preparations of genitalia. Leg., prep., phot. T. UMIŃSKI.

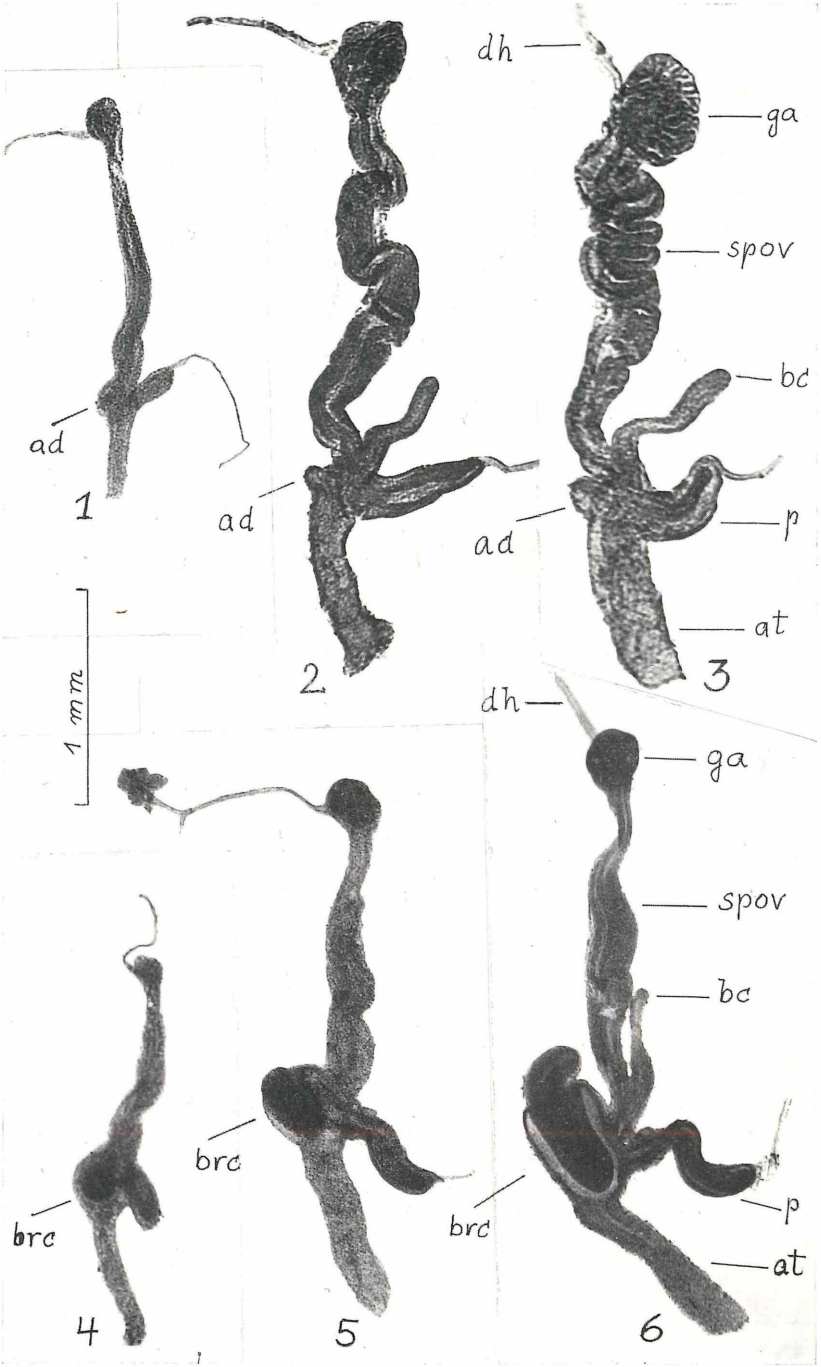
Figs. 1-3. *Vitrina pellucida* (MÜLLER).

1) Preparation 196. Juvenile stage IIb. Shell diameter 2·1 mm. Station at Lodowe Zródło. 16 Oct. 1965.
2) Preparation 162. Juvenile stage IIIa. Shell diameter 3·8 mm. Station at Hala Pyszna. 19 July 1965.
3) Preparation 163. Juvenile stage IIIb. Shell diameter 3·5 mm. Station at Hala Pyszna. 19 July 1965.

Figs. 4-6. *Semilimax kotulai* WESTERLUND.

4) Preparation 223. Juvenile stage I. Shell diameter 2·0 mm. Lodowe Zródło. 13 Sept. 1965.
5) Preparation 207. Juvenile stage II (early). Shell diameter 2·5 mm. Hala Pyszna. 26 Aug. 1964.
6) Preparation 108. Juvenile stage II. Shell diameter 2·9 mm. Siwe Sady. 25. Oct. 1963.

Explanations:
at — genital atrium. *ad* — atrial diverticulum. *bc* — bursa copulatrix. *brc* — brachium copulatorium. *dh* — hermaphroditic duct. *ga* — albumen gland. *p* — penis. *spov* — spermoviduct.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