## RESEARCH NOTES

# ON THE ALLEGED ABSENCE OF FERTILIZATION DUCTS IN THE GENUS *POLENECIA* (ARANEAE, ULOBORIDAE)

When I received the recent paper by Opell (1979, Bull. Mus. Comp. Zool. Harvard, 148:443-549) on american Uloboridae, I was highly astonished by the discovery of the haplogyne nature of some genera. In a paper then still in press (Brignoli, P. M. 1979, Rev. Arachnol., 2:275-282) I had indeed considered a species of one of these genera, *Polenecia producta* (Simon, 1873) as typically entelegyne. Fearing to have misinterpreted the structure of the vulva of this species, I re-examined my material; the results can be seen in Figs. 1-5.

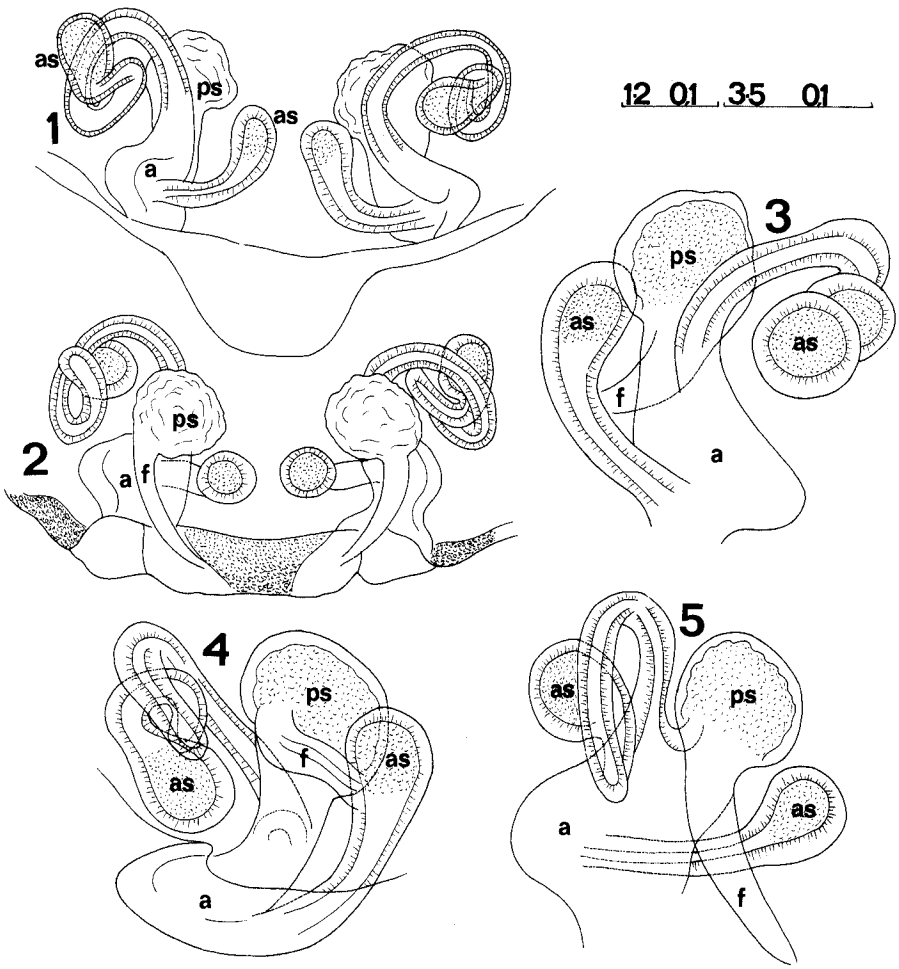
Each half of the vulva of *Polenecia producta* consists, I think, of an atrium (a), weakly sclerotized, which opens on the internal margin of the epigyne and from which depart three ducts of different lengths, leading respectively to a pair of accessory spermathecae (as 1, as 2) with long connecting ducts and to a principal spermatheca (ps), heavily sclerotized and internally relatively complicated, with a very short connecting duct. From this spermatheca departs a long fertilization duct (f).

Opell has interpreted the principal spermatheca as an "accessory gland." In addition to the evident connection to the atrium (Figs. 3-4) the heavy sclerotization of this structure also makes Opell's hypothesis unlikely, for it is a highly unusual feature for a "gland," which suggests an ectodermic origin. In no other spiders are "sclerotized glands" known; on the contrary, sclerotized and internally complicated spermathecae are very common, for example in the Agelenidae.

As a whole, the vulva of *Polenecia* resembles strongly that of some Hahniidae; in many species of that family there is a weakly sclerotized atrium and there are two pairs of spermathecae, connected with the atrium by two separate ducts of different lengths, uniting in a single, less sclerotized, duct shortly beyond the atrial region (for illustrations, see Harm. M. 1966, Senckenberg. biol., 47:345-370 and Brignoli, P. M. 1978, Entom. Basiliensis, 3:31-56). The only relatively unusual feature in the vulva of *Polenecia* is in the marked structural difference between the two types of spermathecae.

My findings throw some doubts also on the interpretations by Opell of the vulvae of *Tangaroa, Waitkera, Ariston, Siratoba* and *Hyptiotes.* (I hope to find the time for examining this last genus in the near future). Opell considers the Uloboridae as an unique example of a family uniting together haplogyne and entelegyne genera. More research is necessary to ascertain if this is truly the case, but at the moment I am not inclined to accept Opell's hypothesis.

The presence of a fertilization duct is a physiologically important character, because it indicates that the process of fertilization is different from that in the true haplogynes. In




Figs. 1-5.–*Polenecia producta* (Simon, 1873): 1, vulva, ventral aspect; 2, vulva, dorsal aspect; 3-5, one half of the vulva magnified, ventrally, latero-dorsally and latero-ventrally (in this order); "as" accessory spermatheca, "a" atrium, "f" fertilization duct. Scales in mm.

the entelegynes the eggs are fertilized in the *uterus externus* (Wiehle, H. 1967, Senckenberg. biol., 48:183-196), which is evidently completely inside the body; in the haplogynes the eggs are fertilized more externally, in the atrium (or *bursa copulatrix*) which is not exactly homologous with the *uterus externus*. A certain confusion has arisen from the use of this term for both groups of spiders. The differences between the two kinds of *uterus externus* are well shown in figs. 8 and 29 of Wiehle (op. cit).

The details of the fertilization are still largely unknown, but the physiological distance between a haplogyne and an entelegyne spider is considerable, and, *mutatis mutandis*, is comparable with that between a placental and a non-placental mammal.

**Paolo M. Brignoli**, Istituto di Zoologia, Piazza Regina Margherita 7, 67100 L'Aquila, Italy.

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