RESEARCH NOTES

AN EXAMPLE OF PARTIAL DUPLICATION OF THE ABDOMEN IN *NEOBISIUM SIMONI* (PSEUDOSCORPIONES, NEOBISIIDAE)

Records of abdominal anomalies in the pseudoscorpion family Neobisiidae are very sparse in the older literature (Kästner 1927; Pedder 1965). Only recently, comparative aspects of teratological variation have been studied in six European species belonging to the genera *Neobisium* Chamberlin and *Roncus* L. Koch (Ćurčić 1980, 1989; Ćurčić and Dimitrijević 1982, 1984, 1985, 1986; Ćurčić et al. 1981, 1983). These studies have revealed the outstanding heterogeneity of segmental anomalies affecting abdominal sclerites in the species analyzed. The sclerite deficiencies in different species of the family Neobisiidae have been found mostly in the adult stage or occasionally in the tritonymph (Ćurčić 1989). No deficiencies have been observed in the preceding instars (deutonymph and protonymph).

In a collection of pseudoscorpions made by one of us (RND) at Passarole, near Moulis (Ariège), France, during July 1987, one anomalous protonymph of *Neobisium simoni* (L. Koch) was collected. This specimen was obtained from the leaf litter and humus in a mixed oak forest. In the protonymph studied, only the dorsal sclerites were aberrant, the ventral sclerites and the appendages were normal in all respects.

The aim of this note is to describe the phenomenon of tergal teratology of the aberrant protonymph. All tergites of this specimen are anomalous (Fig. 1). Thus, tergite I lacks a section on the right; in addition, the number of setae on this sclerite is reduced. Abdominal tergites II-VI are duplicated on either side of the mid-line (thus forming separate "demi-tergites"), and their form and distribution are drastically changed in relation to those in normal protonymphs of *N. simoni*. Tergite VII is fused with the left part of tergite VIII and as well as with the right section of tergite IX. An isolated section of tergite VIII is present on the right. Furthermore, tergites VIII-IX and IX-X have developed a bicyclical sinistral helicomery. An isolated part of tergite X is present on the left. As a consequence of the deficiencies noted, the tergal setation in this specimen is significantly altered in relation to normal setal complement (which is, for tergites I-X, 4-4-4-4-4-4-4-4-4-4). Altogether, five types of teratologies have been found to affect the abdominal tergites in this protonymph: hemimery, atrophy, symphysomery, helicomery and tergite enlargement.

The majority of the abdominal deficiencies in neobisiid species occur during the transformative development of tritonymph into adult (Ćurčić and Dimitrijević 1986). It appears likely that the origin of such anomalies may be induced by some irregularity in the process of molting. Considerably fewer specimens become

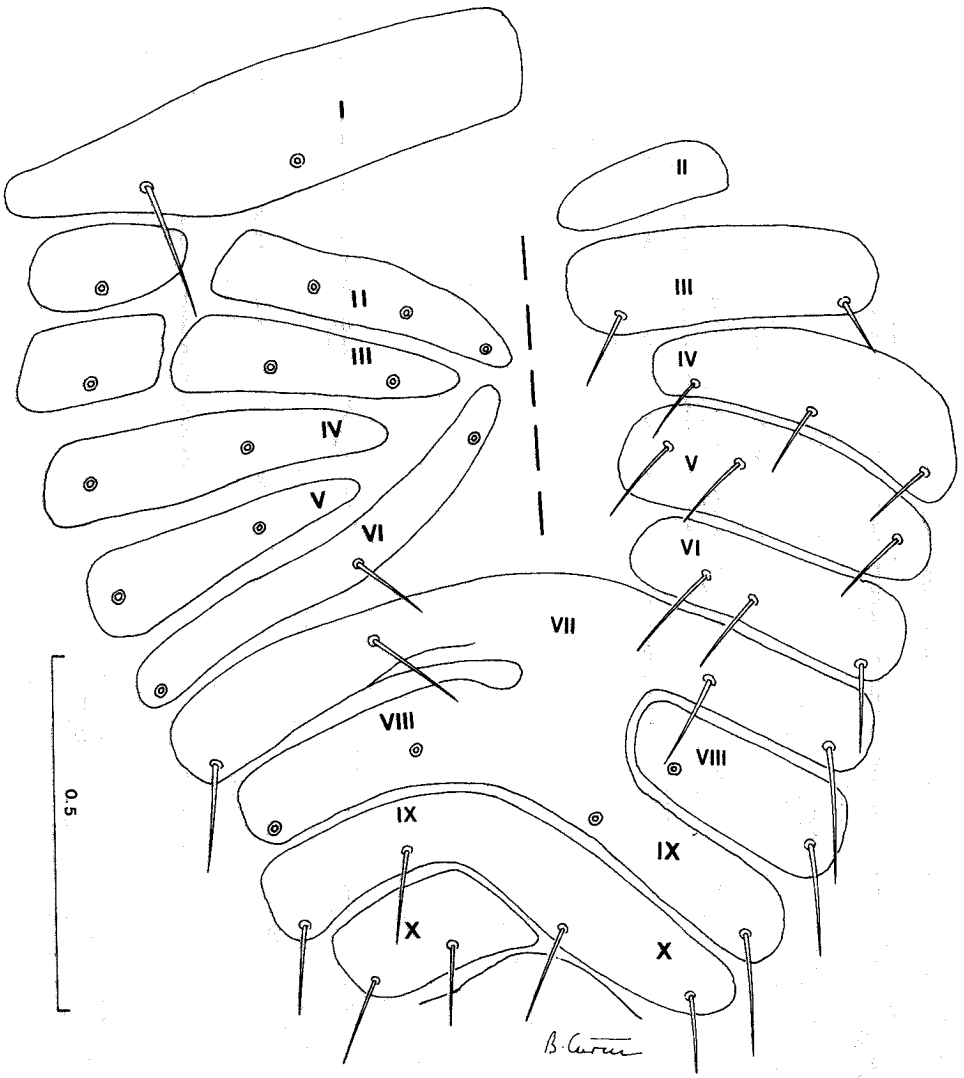

Figure 1.—*Neobisium simoni* (L. Koch). Tergites I-X, protonymph from Passarole. Scale bar in mm.

anomalous when transforming from deutonymph into protonymph (Ćurčić et al. 1983), or even from the protonymph into deutonymph stage, as was shown by Pedder (1965) for representatives of families other than Neobisiidae.

Since the aberrant example of *N. simoni* is a protonymph, the genesis of its deficiencies remains obscure. However, one may assume that the origin of the drastically modified abdominal tergites in this specimen could be found among the genetical (or some morphogenetic) factors, which influence the pre-molting period of the ontogenetic process.

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LITERATURE CITED

Ćurčić, B. P. M. 1980. Accidental and teratological changes in the family Neobisiidae (Pseudoscorpiones, Arachnida). Bull. Brit. Arachnol. Soc., 5:9-15.

Ćurčić, B. P. M. 1989. Segmental anomalies in some European Neobisiidae (Pseudoscorpiones, Arachnida) - Part I. Acta Arachnol., 37:77-87.

Ćurčić, B. P. M. and R. N. Dimitrijević. 1982. On abnormalities of abdominal segmentation in *Neobisium carpaticum* Beier (Neobisiidae, Pseudoscorpiones, Arachnida). Rev. Arachnol., 4:143-150.

Ćurčić, B. P. M. and R. N. Dimitrijević. 1984. An abnormal carapaco-abdominal junction in *Neobisium carpaticum* Beier, 1934 (Neobisiidae, Pseudoscorpiones). Arch. Sci. Biol. Belgrade, 36:9P-10P.

Ćurčić, B. P. M. and R. N. Dimitrijević. 1985. Abdominal deficiencies in four species of the Neobisiidae (Pseudoscorpiones, Arachnida). Rev. Arachnol., 6:91-98.

Ćurčić, B. P. M. and R. N. Dimitrijević. 1986. Abnormalities of carapacal and abdominal segmentation in *Neobisium* Chamberlin (Neobisiidae, Pseudoscorpiones). Actas X Congr. Int. Aracnol. Jaca/Espana 1986, 1:17-23.

Ćurčić, B. P. M., M. D. Krunić and M. M. Brajković. 1981. Further records of teratological changes in the Neobisiidae (Arachnida, Pseudoscorpiones). Bull. Brit. Arachnol. Soc., 5:280-284.

Ćurčić, B. P. M., M. D. Krunić and M. M. Brajković. 1983. Tergal and sternal anomalies in *Neobisium* Chamberlin (Neobisiidae, Pseudoscorpiones, Arachnida). J. Arachnol., 11:243-250.

Kästner, A. 1927. Pseudoscorpiones. Pp 1-66, *In* Biologie der Tiere Deutschlands, (P. Schulze, ed.). Berlin.

Pedder, I. J. 1965. Abnormal segmentation of the abdomen in six species of British pseudoscorpions. Entomologist (London), 98:108-112.

B. P. M. Ćurčić and **R. N. Dimitrijević**, Institute of Zoology, Faculty of Science, University of Belgrade, 16, Studentski Trg, YU-11000 Beograd, Yugoslavia.

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