THE DORSAL SHIELDS OF THE THYASIDAE

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The earliest specialists in watermites, e.g. Koenike, Piersig and Wolcott, noticed the dorsal shields of the Thyasidae, but they were unable to make use of these sclerotized plates for taxonomic purposes. By studying these shields and their associated glands, Lundblad was the first to prove that there are features associated with these plates which distinguish the different genera of the family. In 1927 Lundblad published his famous scheme dealing with both plates and glands and this has been accepted by all workers on Hydracarina. Lundblad found the following organs:

1. Plates
   - frontale (unpaired, pigment present or absent)
   2 frontalis (prae-, postfrontalia)
   2 okularia (prae-, postokularia)
   5 dorsocentralia
   4 dorsolateralia
2. Glands
   7 dorsoglandularia
   4 lateroglandularia

The ciphers 2, 4, 5 and 7 appear in an irregular succession. According to the morphology of the Chelicerata we should expect 2 and 4 only. Lundblad himself realized this, and though later on he tried to make some unessential changes, he was not convinced about it. Motas and coworkers proposed another explanation, although retaining their scepticism.

After studying an immense number of watermites and the abundant literature on the subject, I finally succeeded in erecting a revised scheme with the expected numbers 2 and 4. This scheme for dorsal shields can be applied not only to the Thyasidae, but to other families as well. The Feltriidae, e.g., have the same distribution of plates and glands while the Protziidae and Lebertiidae, lacking the plates (with the exception of the postokularia), also demonstrate a similar arrangement of all their glands.

A detailed study of the genus Thyas convinced me that Lundblad was mistaken about the anterior plates. He found five dorsocentralia but in reality there are only four. Lundblad's dorsocentrale No. 1 is in fact the postfrontale, hence only the expected four dorsocentralia remain. The position of the postokular is important and always decisive. This small plate furnished with a fine hair is in all cases situat-
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...ed between the prae- and the postfrontale. It is liable to fuse with one of these shields or with both. Due to this fact only four dorsocentralia can be observed in all Thyasidae. (Fig. 1.)

Fig. 1. Dorsal Shields and Glands of the Thyasidae.
1. Plates: fr = Frontale (unpaired), ant = Antenniformia (Prae-, Post-Antenniforme), ok = Okularia (Prae, Postokulare), dc 1–4 = Dorsocentralia 1–4, dl 1–4 = Dorsolateralia 1–4, t = Terminale;
2. Glands: dgl 1–4 = Dorsoglandularia 1–4; lgl 1–4 = Lateroglandularia 1–4, tgl = Terminoglandulare.

According to Lundblad there are seven dorsoglandularia. I too have found seven glands, but they should be arranged in a different order. Lundblad designates the first pair as "Antenniforme", thus reducing the number to six. Dorsoglandulare No. 2, however, is the second antenniform, situated in all Thyasidae in the anterior part of the body, close to the frontalia and okularia, both belonging to the "Cephalon" of the Chelicerata body. One should therefore distinguish between the Postantenniforme and the Praeantenniforme, so that there remain apparently only five dorsoglandularia. Dorsoglandulare No. 7 in the rear of the body has not the same structure as the remaining 4 glands and it can be associated with an unpaired shield in the posterior part of the body. For this "abdominal plate", occasionally found in some genera of Thyasidae, e.g., *Panisus*, I propose the new term *Terminale*, and the associated gland *Terminoglandulare*. This results in a revised scheme (see also figure):