

Melanosclerites

SVEN LAUFELD

When studying acid-resistant, “chitinous” microfossils in Ordovician and Silurian erratic limestone boulders from the Baltic area, Eisenack (1932:273–274; Pl. 12:19–23) discovered a kind of problematical microfossils that he described informally as *Schwarze Stäbchen* (=black rodlets), and a few years later he described additional specimens of the same provenance (Eisenack 1934:56–59, Figs. 8–15, Pl. 4:9). In 1942 (pp. 161–174) Eisenack named these problematical fossils “melanoscleritoids” and formalized their taxonomy by applying binominal nomenclature. Sixteen form species were described, and assigned to nine “genera” grouped into two “subfamilies”, together forming the “family” Melanoskleritoitidae. Eisenack (1942:158–161) also discussed in detail the chemical composition and systematic affinity of the melanosclerites and added to his earlier (1934:56) interpretation of them as parts of the axial skeleton of Cnidaria (similar to Alcyonacea and Gorgonacea of the subclass Octocorallia, and Antipatharia of the subclass Ceriantipatharia) by suggesting that some of them might represent sclerodermites in octocorals (1942:157, 161, 176). In another paper on fossils from glacial erratics, Eisenack (1950) described macroscopic remains of what he interpreted as more complete “axial skeletons” of “melanosclerite” animals. The largest of the tree-like “axial skeletons” is more than 25 mm long and consists of a 0.8 mm wide “trunk” that is branched “upwards” (Eisenack 1950, Fig. 1).

The first melanosclerites extracted from rocks *in situ* were from the Silurian of Gotland and were described by Eisenack in 1963, who then established a new order – Melanoskleritoitidea – and vernacularized the name to “melanosclerites”. Further, he described a number of new “genera” and “species” and discussed the systematics, chemical composition, state of preservation, stratigraphical and geographical occurrence of the melanosclerites. He also described the first complete skeleton of a “melanosclerite” animal (1963:126–127, Pl. 2:5) and characterized melanosclerites as having a fairly small, brown to black, “chitinous”, sometimes branched skeleton with axial symmetry and commonly with distal differentiation. The skeleton formed an axial structure of support or sclerite-like elements in benthic animals that probably belong within the Cnidaria. Additional information on melanosclerite morphology was published by Eisenack in 1971 (pp. 349–351). As currently known their stratigraphical range is Middle Ordovician to Middle Devonian (Eisenack 1963:126, 130–132).

According to Eisenack (1963:131), melanosclerites occur more or less

abundantly in all the 13 Silurian topostratigraphical units on Gotland, apart from the Tofta Beds.

Melanosclerites are preserved in sample residues prepared for the study of Chitinozoa. However, due to the fact that my technique for processing rock samples is designed primarily for extracting chitinozoans, the melanosclerites are commonly broken and thus unsuitable for systematic work. Nevertheless, this record of melanosclerites in the Vattenfallet section is included here, partly to give complete coverage of the groups of fossils recorded, and partly since this record can be used as a guide for further collecting. The samples in which melanosclerites have been identified are shown in the log, Fig. 66. For a reference to the samples processed, but barren of melanosclerites, see the range chart of chitinozoans (Fig. 21).

REFERENCES

- EISENACK, A., 1932: Neue Mikrofossilien des baltischen Silurs. II. – *Palaeontol. Z.* 14:257–277.
- 1934: Neue Mikrofossilien des baltischen Silurs. III. Neue Mikrofossilien des böhmischen Silurs. I. – *Ibid.* 16:52–76.
- 1942: Die Melanoskleritoiden, eine neue Gruppe silurischer Mikrofossilien aus dem Unterstamm der Nesseltiere. – *Ibid.* 23:157–180.
- 1950: Nachtrag zum Melanoskleritoiden-Problem. – *Neues Jahrb. Palaeontol. Monatsh.* 1950:371–376.
- 1963: Melanoskleriten aus anstehenden Sedimenten und aus Geschieben. – *Palaeontol. Z.* 37:122–134.
- 1971: Die Mikrofauna der Ostseekalk (Ordovizium). 3. Graptolithen, Melanoskleriten, Spongien, Radiolarien, Problematika nebst 2 Nachträgen über Foraminiferen und Phytoplankton. – *Neues Jahrb. Palaeontol. Abh.* 137:337–357.