A new species of Acanthochaetetes from the Cenomanian beds of Central Slovenia

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Acanthochaetetes sloveniensis n. sp. from the Cenomanian beds of Central Slovenia is described and the question of its classification is discussed.

Aus dem Cenoman von Mittel-Sloweniens wird Acanthochaetetes sloveniensis n. sp. beschrieben und die systematische Zuordnung diskutiert.

A well rounded pebble was picked up from the Sopota alluvium west of Radče at Zidani most. The prevailing constituent of the stone is a fossil remain embedded in a fine-grained conglomeratic mass. From the thin sections made of the pebble it is evident that it consists partly of a biosparitic calcirudite. The rest is particles of a dark sparry and micrite limestones 2–5 millimeters in diameter as well as remains of foraminifers, shell fragments, and echinoderms. Important are redeposited orbitolinas. Although there are no oriented thin sections, an Aptian-Cenomanian age of foraminifers is supposed. The conglomerate itself is derived, however, from an Upper Cretaceous rock, probably Senonian.

The same calcareous conglomerates including redeposited orbitolinas are widespread in Central Slovenia. Their original deposits are also recorded from Krmelj village lying south of the locality in the Sopota Valley and south of Mirna village. Similar calcareous breccio-conglomerates occur in many localities of the Sava folds, for instance in the Ljubljana district. Everywhere they contain redeposited orbitolinas and somewhere rudistid fragments as well. The fossil-bearing clastic rocks occur in a sequence of greenish-gray marl, clayey rock, and platy limestone characterized by globotruncanas.
Systematic part

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Order Chaetetida Hartmann et Goreau 1972
Family Acanthochaetidae Fischer 1970
Genus Acanthochaetetes Fischer 1970

Acanthochaetetes sloveniensis n. sp.
Figs. 2 and 3

Etymology: Named for Slovenia where this species was found.

Diagnosis: Species of the genus Acanthochaetetes showing four tubes/square millimeter. The diameter of the tube is about 0.4 mm. In the measurements given the new species differs from the forms of Acanthochaetetes so far described (see table 1).

Age designation of species: ? Cenomanian beds of Central Slovenia.
Table 1. The measurements of Acanthochaetetes sloveniensis n. sp. compared with those of the other Acanthochaetetes forms and with the genus Tabulospongia

<table>
<thead>
<tr>
<th>Species</th>
<th>Tubes/square millimeter</th>
<th>Spacing of tube centers Abstand Zentrum</th>
<th>Diameter of lumina Lumen</th>
<th>Thickness of walls Wanddicke</th>
<th>Thickness of tabulae BödenDicke</th>
<th>Spacing of tabulae Böden</th>
<th>Age Alter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. sloveniensis n.sp.</td>
<td>4</td>
<td>0.5</td>
<td>variable</td>
<td>0.025-0.1</td>
<td>0.025</td>
<td>0.2-1.5</td>
<td>Cenomanian</td>
</tr>
<tr>
<td>A. foroiulensis (RUFF.-COEN.)</td>
<td>4-9</td>
<td>0.45</td>
<td>variable</td>
<td>0.05-0.16</td>
<td>-</td>
<td>0.1-1.3</td>
<td>Oxfordian</td>
</tr>
<tr>
<td>A. sequiae FISCHER</td>
<td>1-1.5</td>
<td>0.6-1.2</td>
<td>variable</td>
<td>0.04-1.2</td>
<td>0.2</td>
<td>0.2-2.0</td>
<td>Albian, Cenomanian</td>
</tr>
<tr>
<td>A. ranulosus (MICHE.)</td>
<td>2-4</td>
<td>0.35-0.70</td>
<td>variable</td>
<td>0.06-0.07</td>
<td>0.02-0.01</td>
<td>0.05-0.5</td>
<td>Recent</td>
</tr>
<tr>
<td>T. veliei (HART. &amp; GOR.)</td>
<td></td>
<td></td>
<td>0.4-0.6</td>
<td>0.01-0.06</td>
<td>0.02-0.03</td>
<td>0.1-1.5</td>
<td>Recent</td>
</tr>
<tr>
<td>T. horipuncit MORI</td>
<td></td>
<td></td>
<td>0.4-0.6</td>
<td>0.02-0.09</td>
<td>0.02-0.05</td>
<td>0.1-1.2</td>
<td>Recent</td>
</tr>
</tbody>
</table>

Repository: Holotype 3861 stored in the collection of the Katedra za geologijo in paleontologijo, Ljubljana University, 61000 Ljubljana.

Description: From the thin sections made of the pebble, a stock 45 x 26 mm is evident. Its true thickness could not be measured due to the one-sided polishing of the specimen. The present thickness exceeds eight mm. As to the astrophiza, nothing could be supposed since the surface is unknown. No references are given to spicules. The cellular tubes are irregular or nearly polygonal having round or slightly elliptic lumina. The straight tubes are divided by mostly horizontal or slightly inclined tabulae. In a longitudinal section two types of the tabulae are recognized: thin flat tabulae, and thicker tabulae showing an arched top end. From the transversal section the centripetal growth of the tabulae could be supposed. Thereby a small central pore pierces the tabulae. No wall openings were seen, spines, however, are well developed reaching up to 0.075 millimeter in length. The tubes are reproduced by intramural offsets.

The measurements of the new species are compared with those of the other Acanthochaetetes forms known till now, and with the genus Tabulospongia. The latter is characterized by a similar structure of the calcitic skeleton (table 1).

Discussion. In 1970 J.-C. Fischer established the genus of Acanthochaetetes and assigned it to the family Acanthochaetetidae together with Septa-chaetetes Rios et al. and Tiplochaetetes Weisemel, all being referred to Hydrozoa. He believed this genus to be composed of Oxfordian and Cenomanian forms respectively. Their microstructure has been described by J.-C. Fischer & J. Lafuste in 1972. Later astrophiza have been seen in Acanthochaetetes (J. P. Cuij et al., 1973). The question of classification then arose as both stromatoporoids and sclerosponges exhibit such a microstructure. W. D. Hartmann and T. F. Goreau recommended an assignment to the sclerosponges
Fig. 2. *Acanthochaetetes sloveniensis* n. sp., transverse section, 12 ×
Abb. 2. *Acanthochaetetes sloveniensis* n. sp., Querschliff. × 12
Fig. 3. *Acanthochaetetes sloveniensis* n. sp., longitudinal section, 17 ×
Abb. 3. *Acanthochaetetes sloveniensis* n. sp., Längsschliff. × 17
pointing out recent material from the Pacific region characterized by the cal-
citic skeleton corresponding to Acanthochaetetes. In addition siliceous spicules
were observed. Mesozoic forms, however, show no spicules. W. D. Hartmann
and T. F. Goreau placed the family of Acanthochaetetidae in the new ordo
of Tabulospogida.

Additional recent forms, characterized as having a calcitic skeleton like
Acanthochaetetes, led to a rediscussion of the latter. According to K. Mori
(1976, 1977) spicules are a distinctive mark of recent forms in comparison with
Acanthochaetetes. Therefore, they should be assigned to a new genus of Tabu-
lospongia belonging to Sclerospongia. The question of the classification of
Acanthochaetetes without spicules remains, however, completely open.

The spicules occur within the living tissue. That is why they could hardly
be found in fossil forms. Noteworthy are the observations of L. S. Land
(1976) on a species of Sclerospongia named Ceratoporella nicholsoni showing
free siliceous spicules. He believed that the spicules could easily be removed.
Most likely they are taken away by biological processes set in already before
an organism dies out. These observations render the examination of Acantho-
chaetetes difficult, as well as Mori's supposition according to which Acantho-
chaetetes and Tabulospogia are to be regarded as two different genera, even
belonging to different classification groups. In this respect the tabulae attract
attention with their centripetal growth. Such growth occurs, however, in Tabu-
lata (Favosites) too. Therefore this could not be useful for a proper classifi-
cation.

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