

UDK 56.016.3(116.3)(497.12)=20

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

Helmut W. Flügel

Institut für Geologie und Paläontologie
Universität, Heinrichstraße 26. A-8010 Graz

Anton Ramovš

Katedra za geologijo in paleontologijo
Univerza v Ljubljani, 61000 Ljubljana, Aškerčeva 12

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 Radeče 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.

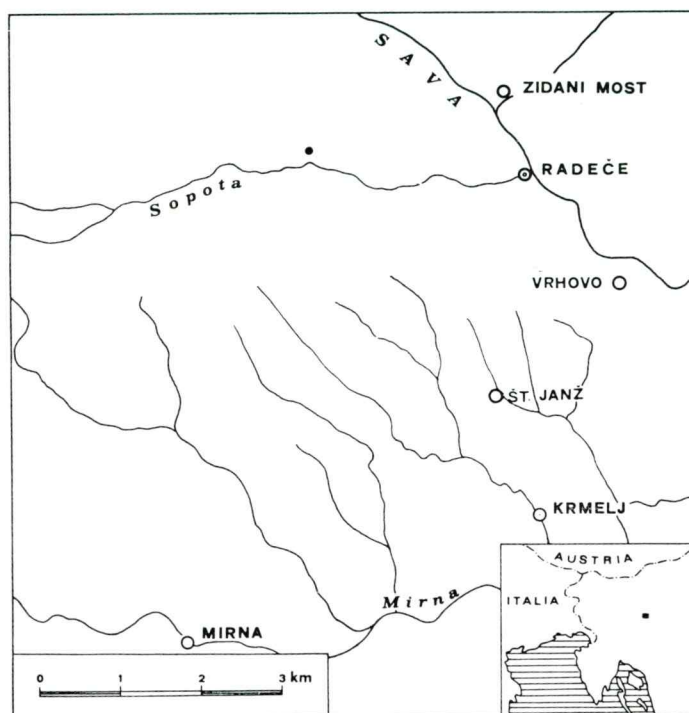


Fig. 1. Location map of the new species of *Acanthochaetetes*
 Abb. 1. Die Lage des Fundortes der neuen *Acanthochaetetes*-
 Art

Systematic part

Helmut W. Flügel

Order **Chaetetida** Hartmann et Goreau 1972
 Family *Acanthochaetetidae* 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*

	Tubes/square millimeter Röhren auf 1 mm ²	Spacing of tube centres Abstand Zentr./ Zentrum	Diameter of lumens Lumen Ø mm	Thickness of walls Wand- Dicke mm	Thickness of tabulae Böden- Dicke mm	Spacing of tabulae Böden Abstand mm	Age Alter
<i>A. sloveniensis</i> n.sp.	4	0,5	variable variabel 0,35-0,45	0,025-0,1	0,025	0,2-1,5	Cenomanian?
<i>A. forotuliensis</i> (ZUFF.-CoM.)	4-9	0,45	0,35	0,1	-	1	Oxfordian Oxford
<i>A. senuesi</i> FISCHER	1-1,5	0,6-1,2	variable variabel	0,05-0,16	-	0,1-1,3	Albian, Cenomanian Alb, Cenoman
<i>A. ramulosus</i> (MICH.)	2-4	0,35-0,70	variable variabel	0,45-1,2	0,2	0,2-2,0	Albian, Cenomanian Alb, Cenoman
<i>T. wellsi</i> (HART. & GOR.)			0,3-0,6	0,06-0,07	0,02-0,1	0,05-0,5	Recent Rezent
<i>T. horiguohii</i> MORI			0,4-0,6	0,05-0,06	0,01-0,03	0,5-1,5	Recent Rezent
<i>T. japonica</i> MORI			0,4-0,6	0,02-0,09	0,02-0,05	0,1-1,2	Recent Rezent

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 45×26 mm is evident. Its true thickness could not be measured due to the one-sided polishing of the specimen. The present thickness exceeds eight mms. As to the astrorhizae, 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 of *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 *Septochaetetes* Rios et al. and *Tiplochaetetes* Weisermel, 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 astrorhizae have been seen in *Acanthochaetetes* (J. P. Cuif 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

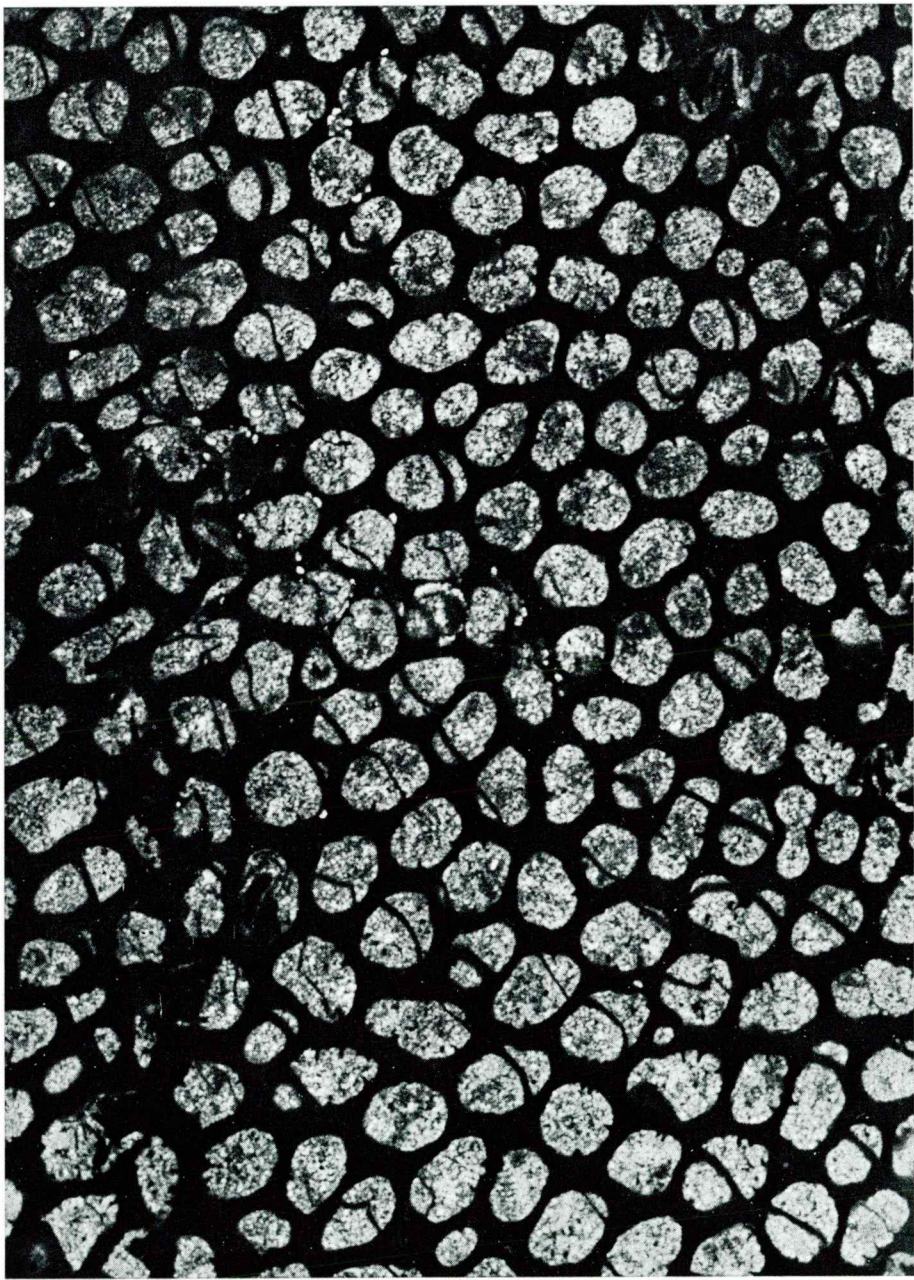


Fig. 2. *Acanthochaetetes sloveniensis* n. sp., transverse section, 12 ×

Abb. 2. *Acanthochaetetes sloveniensis* n. sp., Querschliff. × 12



Fig. 3. *Acanthochaetetes sloveniensis* n. sp., longitudinal section, $17\times$

Abb. 3. *Acanthochaetetes sloveniensis* n. sp., Längsschliff. $\times 17$

pointing out recent material from the Pacific region characterized by the calcitic 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 Tabulospongia.

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 *Tabulospongia* 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 *Acanthochaetetes* difficult, as well as Mori's supposition according to which *Acanthochaetetes* and *Tabulospongia* 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 *Tabulata* (*Favosites*) too. Therefore this could not be useful for a proper classification.

References

- Cuif, J.-P. et al. 1973, Présence d'astrorhizes chez les Chaetetida mésozoïques. C. R. Acad. Sc. Paris, Ser. D, 2473—2476, 1 planche, Paris.
- Fischer, J. C. 1970, Revision et Essai de classification des Chaetetida (Cnidaria) post-paléozoïques. Annales de Paldont., 56, (2), 151—220, 35 figures, 6 planches, Paris.
- Fischer, J.-C. & Lafuste, J. 1972, Nouvelles observations sur la paléohistologie du genre *Acanthochaetetes* (Hydrozoa, Chaetetida). Bull. Soc. Geol. France (7), 14, 320—324, 9 figures.
- Hartmann, W. D. & Goreau, T. F. 1975, A Pacific Tabulata Sponge, Living Representative of a new order of Sclerosponges. Postilla Peabody Mus. Yale Univ., 167, 14 p., 7 plates.
- Land, L. S. 1976, Early Distribution of Sponge Spicules from Reef Sediments, North Jamaica. Journal Sediment. Petrol., 46, 967—969, 3 figs., Lawrence.
- Mori, K. 1976, A New Recent Sclerosponge from Ngargol, Palau Islands and Its Fossil Relatives. Sci. Rep. Tohoku University, 46, 1—9, 6 plates, Sendai.
- Mori, K. 1977, A Calcitic Sclerosponge from the Ishigakishima Coast, Ryukyu Islands, Japan. Sci. Rep. Tohoku University, 47, 1—5, 2 plates, Sendai.