INSTITUTUL DE GEOLOGIE ŞI GEOFIZICĂ

DĂRI DE SEAMĂ

ALE

ŞEDINŢELOR

VOL. LXIV
(1976—1977)

3. PALEONTOLOGIE

BUCUREŞTI
1978

CONTENU

PALÉOZOOLOGIE

Pag.

1. Avram E. Une nouvelle espèce de céphalopode dans le Barrémien supérieur de la Roumanie: Costidiscus tardus n. sp. 5
2. Avram E. Observations sur les espèces d'ammonites de la région de Sviniţa (Banat) décrites par Tietze (1872) et Uhlig (1883) 9
3. Dumitrică P. Family Eptingiidae n. fam., extinct Nasselaria (Radiolaria) with Sagital ring . 27
4. Dumitrică P. Triassic Palaeoscenidiidae and Entactiniidae from the Vicentinian Alps (Italy) and Eastern Carpathians (Romania) . . 39
5. Gheorghian Doina. Inventaire sommaire des débris d'échinodermes contenus par les calcaires triasiques des nappes transylvaines (Carpates Orientales) 55
6. Iordan Magdalena. The Triassic Brachiopods from the Rarău Syncline and the Perşani Mountains Areas . . 69
7. Ion Jana. Zones à foraminifères planctoniques et nouvelles espèces de Rotaliporadans le Crétacé moyen de Ţara Bîrsei (Carpates Orientales) . 85
8. Mirăuţă Elena, Gheorghian Doina. Etude microfaunique des formations triasiques (transylvaines, bucoviniennes et gétiques) des Carpates Orientales 109
9. Moisescu V. Principaux gisements de mollusques du Chattien-Burdigalien de Roumanie. . 163
10. Nicorici E. Contribution à la connaissance de la faune badénienne de Şimleul Silvaniei. Révision de la faune investiguée par L. Mártonfi (1879) 261
11. Papaianopol I. Volume et position stratigraphique de quelques taxons du sous-genre Psilodon Cobălcescu . 265
12. Papaianopol I. Contributions à l'étude des paradacnes pontiens du Bassin Dacique. 277
13. Papaianopol I., Popescu Agapia. Etude de quelques taxons du genre Dacicardium . . . 327
14. Stancu Josefina. Nouvelles espèces d'Heteropoda et de Pteropoda dans le Badénien inférieur (Langhien) en Roumanie 333

PALÉOBOTANIQUE

15. Dragastan O. Munieria grambasti Bystricky du Sénonien de Cornitel (Bassin de Borod) . . 344
16. Givulescu R. Die fossile Flora Rumäniens (dritte Ergänzung) 345
17. Givulescu R. Cyclocarya cyclocarpa (Schlechtendal) Knobloch dans le Pannonien supérieur de la Paratéthys . 382
18. Givulescu R., Olos Elisabeta, Zvunka Maria. Contribution à la connaissance de la flore fossile de Chiuzbaia (Maramureş) (gisement fossilifère G) 387
19. Roman Ştefana. Contribution à la connaissance de la flore pollinique des complexes charbonneux et marneux du Bassin de Baraolt . 396
20. Ţicleanu N., Micu M. Flore sarmatienne de Corni (district de Neamţ) 399

CUPRINS

PALEOZOOLOGIE

Pag.

1. Avram E. Une nouvelle espèce de céphalopode dans le Barrémien supérieur de la Roumanie: Costidiscus tardus n. sp. . 5
2. Avram E. Observations sur les espèces d'ammonites de la région de Svinița (Banat) décrites par Tietze (1872) et Uhlig (1883) . . . 9
3. Dumitrică P. Family Eptingiidae n. fam., extinct Nassellaria (Radiolaria) with Sagital ring . . 27
4. Dumitrică P. Triassic Palaeoscenidiidae and Entactiniidae from the Vicentinian Alps (Italy) and Eastern Carpathians (Romania) 39
5. Gheorghian Doina. Inventaire sommaire des débris d'échinodermes contenus par les calcaires triasiques des nappes transylvaines (Carpates Orientales) 55
6. Iordan Magdalena. The Triassic Brachiopods from the Rarău Syncline and the Perșani Mountains Areas 69
7. Ion Jana. Zones à foraminifères planctoniques et nouvelles espèces de Rotalipora dans le Crétacé moyen de Țara Birsei (Carpates Orientales) 85
8. Mirăuță Elena, Gheorghian Doina. Etude microfaunique des formations triasiques (transylvaines, bucoviniennes et gétiques) des Carpates Orientales 109
9. Moisescu V. Principaux gisements de mollusques du Chattien-Burdigalien de Roumanie. 163
10. Nicorici E. Contribuții la cunoașterea faunei badeniene de la Șimleul Silvaniei. Revizuirea faunei din colecția L. Mártonfi (1879) 251
11. Papaianopol I. Volume et position stratigraphique de quelques taxons du sous-genre Psilodon Cobălcescu . . . 265
12. Papaianopol I. Contributions à l'étude des paradacnes pontiens du Bassin Dacique . . 277
13. Papaianopol I., Popescu Agapia. Studiul unor taxoni ai genului Dacicardium 303
14. Stancu Josefina. Nouvelles espèces d'Héteropoda et de Pteropoda dans le Badénien inférieur (Langhien) en Roumanie 333

PALEOBOTANICA

15. Dragastan O. Munieria grambasti Bystricky în Senonianul de la Corniței (bazinul Borod) . 341
16. Givulescu R. Die fossile Flora Rumäniens (dritte Ergänzung) 345
17. Givulescu R. Cyclocarya cyclocarpa (Schlechtendal) Knobloch în Pannonianul superior al Paratethysului . 379
18. Givulescu R., Olos Elisabeta, Zvunka Maria. O contribuție la cunoașterea florei fosile de la Chiuzbaia (Maramureș) (punctul fosilifer G) 383
19. Roman Ștefana. Contribuții la cunoașterea florei polinice a complexelor cărbunos și marnos din bazinul Baraolt 389
20. Țicleanu N., Micu M. Flore sarmatienne de Corni (district de Neamț) 399

RECENZII 415

Dări de seamă ale şedinţelor vol. LXIV (1976—1977). Pag. 27—38

3. PALEONTOLOGIE

PALEOZOOLOGIE

Project 4: The Triassic of the Tethys Realm

FAMILY EPTINGIIDAE N. FAM., EXTINCT NASSELLARIA (RADIOLARIA) WITH SAGITAL RING [1]

BY

PAULIAN DUMITRICĂ [2]

Sommaire

La famille des Eptingiidae n. fam., Radiolaires Nassellaires fossiles à anneau sagittal. L'auteur décrit une nouvelle famille de Radiolaires Nassellaires développée dans l'intervalle stratigraphique du Trias moyen — Jurassique supérieur. La particularité de cette famille à aspect spumellarien réside en son squelette constitué exclusivement d'un céphalis à anneau sagittal et trois cornes solides représentant le prolongement des épines apicale et latérales primaires et donnant une symétrie triradiale plus ou moins parfaite. La famille comprend les suivants nouveaux genres: *Cryptostephanidium, Triassistephanidium, Spongostephanidium, Eptingium, Pylostephanidium* et *Perispyridium.*

Fifteen years ago, Deflandre (1963) recognized that record on Triassic Radiolaria is extremely poor and that it does not contain valuable information of paleontological or stratigraphical order. Progress achieved during the last few years has changed this situation, so that only nine years later Kozur and Mostler (1972) could prove the high diversity of these radiolarians and their value for biostratigraphy, systematics and phylogeny.

Researches that I have been undertaken since 1975 on the Triassic radiolarians from the Carpathians, and especially on the very rich and well preserved lower Ladinian faunas of the Buchenstein Limestone from the Vicentinian Alps, Italy (Epting et al., 1976) and of limestones and cherts from the Rarău Mountains (Eastern Carpathians, Romania), prove the same high diversity and the considerable value of these radiolarian faunas.

[1] Received May 23 1977, accepted for publication May 26 1977, presented at Meeting of May 31 1977.

[2] Institutul de geologie şi geofizică, str. Caransebeş, nr. 1, Bucureşti, 32.

Compared with the so far known Jurassic faunas, the Triassic radiolarian faunas are extremely different. Apart from the clear numerical predominance of the spumellarians they are characterized by the coexistence of some Paleozoic structural types (entactiniids, palaeoscenidiids, pylentonemids, nassellarians with skeleton of primitive type, etc.) besides primitive representatives of some families whose maximum development took place in Jurassic, Cretaceous or Neozoic (artostrobiids, etc.). Other radiolarians common in Triassic are represented by family or subfamily groups as yet undescribed.

The new family Eptingiidae, that makes the object of this preliminary note, is such a group. An Upper Jurassic, probably the last representative of the family, is also discussed as to give a more comprehensive picture of the morphological diversity within this group.

The study of these nassellarians has not only a systematic and biostratigraphic value. It casts a quite unexpected light on the evolution of some Nassellaria radiolarians during the Early and Middle Mesozoic.

MATERIAL STUDIED

Almost all the new taxa herein described come from the following samples, kindly provided by Dr. Manfred Epting (KSEPL/Shell Research, Rijswijk, The Netherlands) from the Buchenstein Limestone outcropping within the Recoaro area, Vicentinian Alps, Italy:

Rc1, Rc2, Rc4 — about 500 m northeast of Monte Anghebe;

RH 02, RH 03, RH 04 — about 600 m southwest of Monte Falison;

S.M.F. 4, S.M.F. 5 — south of Monte Falison.

The age of these samples is Lower Ladinian (Epting et al., 1976).

The other Triassic samples used for this note come from the Rarău syncline, Eastern Carpathians, Romania, as follows:

R78/1 — limestone with radiolarians, foraminifers and conodonts, Lower Ladinian, base of Piatra Zimbrului, Rarău Mountain;

R25 — a block of yellow, red and grey chert, Lower Ladinian, northeast of Piatra Zimbrului, Rarău Mountain;

R88 — olistolith of red chert in contact with diabase, right side of the Fundul Pojorîtei Valley, Pojorîta locality. On the basis of the radiolarian assemblage, the age of this chert is Carnian, probably uppermost Cordevolian — lower Tuvalian;

R 106 — cherty limestone with *Halobia styriaca* (Mojs.) and *H. praesuperba* Kittl., Tuvalian, northeast of Piatra Zimbrului, Rarău.

R 108 — grey cherty limestone with *Halobia hyatti* Kittl., Norian, east side of Popii Rarăului, Rarău Mountain.

The following Upper Jurassic samples were also used:

SV 1635, — red cherty limestone with *Emiluvia sedecimporata* (Rüst), Sviniţa, Banat, Romania. The age of this limestone, named by Răileanu (1960) "horizon with jaspers", is Upper Oxfordian and

probably also Lower Kimmeridgian, being underlain by the horizon with *Rhacophillites tortisulcatum* and overlain by the red nodulous limestone with *Aspidoceras cyclotus*.

DR 77 — grey chert with *Emiluvia sedecimporata* (R ü s t), Săturani Valley, Drocea Mountain, Romania; the radiolarian assemblage suggests an Upper Oxfordian — Lower Tithonian age.

DR 180 — red chert with *Emiluvia sedecimporata* (R ü s t), Stirconia Valley, Drocea Mountains, Romania; probably the same age as above.

Family **Eptingiidae** n. fam.

Type genus. **Eptingium** D u m i t r i c ă, n. gen.

Diagnosis. Nassellaria the skeleton of which consists of a subglobular or discoidal cephalis with sagital ring and with the spines A, L_r and L_1 extended into three stout horns lying in the same plane; no thorax or other postcephalic apophysis.

Discussion. The eptingiids represent a very homogeneous group of Nassellaria. Their initial skeleton is characterized particularly by a sagital ring formed of the median bar MB, the proximal part of the apical spine A, the vertical spine V, and a connecting arch aj. By this element they might be considered as related to the spyrids, the large group of Cenozoic Nassellaria bearing a sagital ring. There are, however, as it will be shown below, many structural elements that do not allow such a relationship.

The secondary lateral spines l and the dorsal spine D, when it exists, are short and do not extend beyond the cephalic wall. On the contrary, the spines A and L are the best developed. They form the three characteristic horns and are all situated within the same plane — the frontal plane. Due to the three horns and to the form of the cephalic shell the eptingiids have an extraordinary resemblance with some three-spined spumellarians, with which they could be easily confused.

The main arches of the skeleton are aj, included in the sagital ring, al uniting the spine A with l, lp between the spines l and L, and pj between L and V (see Plate 3, Figure 3). There is no arch between A and L or between D and l.

All this scaffolding formed of spines and arches may be either free inside the cephalic cavity or partly or completely inserted within the cephalic wall. There is a large variety in this respect. Therefore the relationship between these elements and the cephalic wall is considered as one of the main generic characters. In *Eptingium*, for example, all these elements are free inside the cephalic cavity, in *Cryptostephanidium* only the sagital ring is free, whereas in *Perispyridium* the whole basal skeleton is inserted within the cephalic wall.

The wall of the Eptingiidae is very varied. It may be simple, *(Cryptostephanidium, Triassistephanidium)*, double (in some *Eptingium)*, spongy *(Spongostephanidium)* or surrounded by a peripheral lattice-shell *(Perispyridium)*.

Commonly, the skeleton is asymmetric. The asymmetry is missing only in *Perispyridium*, where the cephalis *sensu strictu* is very small in comparison with the whole skeleton. In the other taxa the asymmetry is more or less expressed in the inequality of the two spines L and of the angles they make with the apical spine. As a rule, the degree of asymmetry is very variable, even within the same species, the angle between A and the two L being able to vary from 90° to 180°. Moreover, in *Eptingium* the asymmetry is emphasized by the presence of an aperture. This aperture of unknown function is situated on the more inflated part of the cephalis and quite lateral as against the basal skeleton. It is not connected, therefore, with the vertical spine as in many nassellarians or with other spines (A, D, or L) as in some cannobotryoids. A very strange position of the aperture may be remarked in *Pylostephanidium*, where it is at the end of a pylom that takes the place of the apical horn. This position cannot be primary. It appears to be the result of a migration that altered the symmetry of the basal skeleton. Thus, inside the cephalis the apical and vertical spines are displaced from the plane of bilateral symmetry passing through the pylom.

From these cases we might conclude that the aperture has played an important physiological role in the life of the Eptingiidae. We may wonder then why is it missing in the other genera. I suppose that in the latter its role was played by one or more pores on the more inflated part of the cephalis. This supposition would explain the asymmetry of the eptingiids.

The origin of the Eptingiidae remains unknown for the moment. The few Upper Paleozoic radiolarians so far described do not allow to suggest any connection with a certain type of Nassellaria.

Stratigraphic range. Triassic — Upper Jurassic. The large diversity of this group in the Lower Ladinian proves that its range must extend on a longer period. The first eptingiids appeared probably in the Lower Triassic or even in the Upper Paleozoic. At any rate, they were not mentioned among the Visean radiolarian fauna partly described by D e f l a n d r e. In the Carnian and Norian the eptingiids are less frequent and less diverse than in the Ladinian. In the Lower and Middle Jurassic they are not yet known, but the family appears to become extinct at the end of the Jurassic, the youngest representative, *Perispyridium ordinarium* (P e s s a g n o), being recorded in the Oxfordian — Lower Tithonian.

Genus **Cryptostephanidium** n. gen.

Type species. Cryptostephanidium cornigerum D u m i t r i c ă n. sp.

Diagnosis. Sagital ring triangular and free within the cephalic cavity; arches al, lp and pj inserted in the latticed cephalic wall; dorsal spine very short; aperture missing.

Remarks. Cryptostephanidium includes some of the most simple eptingiids. Known range: Middle Anisian — Carnian.

Cryptostephanidium cornigerum n. sp.

Pl. I, Fig. 1—4; Pl. IV, Fig. 4

Description. Cephalis globular, smooth-surfaced, thick-walled, commonly with large triangular, quadrangular or irregular meshes divided into meshes of different size by a thinner irregular secondary network. The three horns are three-bladed, usually unequal, one of the horns L being commonly shorter and making with the apical horn an angle smaller than the other horn L. Generally, the horns taper gradually toward the distal end, but in some specimens all the horns or only the longest ones are very stout, with parallel sides on the proximal half or even become thicker toward their middle. The sagital ring is small, with the corner between the spine V and arch aj prolonged into a button that makes connection with the latticed shell.

Dimensions. Height of cephalis without horns 70—100 μ, length of horns 50—95 μ.

Holotype. Plate I, Figures 1—4, Lower Ladinian, Buchenstein Limestone, Recoaro, sample Rc4.

Remarks. C. cornigerum is common in the Lower Ladinian of the Buchenstein Limestone and in the Lower Ladinian from Rarău, sample R78/1.

Cryptostephanidium verrucosum n. sp.

Pl. I, Fig. 7, 8; Pl. IV, Fig. 8

Description. Cephalis subspherical with subcircular to irregular pores of unequal size and nodes at the points of junction of the intervening bars. The nodes have thin tangential outgrowths that tend to unite with the outgrowths of the adjoining nodes to form an external shell never completely achieved. Horns long, three-bladed with needle-like ends. Usually the horns are equal and situated at 120° in the frontal plane, but specimens with unequal horns and angles can be rather frequent.

Dimensions. Diameter of cephalis 100—125 μ, length of horns 75—200 μ.

Holotype. Plate I, Figure 7, Lower Ladinian, Buchenstein Limestone Recoaro, sample Rc4.

Remarks. This species is distinguished from *C. cornigerum* by its much longer horns with needle-shaped ends, and especially by its verrucose surface. Rare to few in the Lower Ladinian of the Buchenstein Limestone, Recoaro.

Genus **Triassistephanidium** n. gen.

Type species. Triassistephanidium laticornis Dumitrică, n. sp.

Diagnosis. Arch aj of the sagital ring attached to the cephalic wall; the other arches of the basal skeleton also inserted in the wall; dorsal spine short; no aperture or pylom.

Remarks. *Triassistephanidium* is close related to *Cryptostephanidium* from which it is distinguished only by the insertion of the arch aj within the shell. Lower Ladinian.

Triassistephanidium laticornis n. sp.

Pl. I, Fig. 5, 6; Pl. II, Fig. 1; Pl. IV, Fig. 3

Description. Cephalis subtriangular, with smooth surface, commonly with triangular or quadrangular large pores divided by a network of thin ingrowths. Horns about as long as the height of cephalis, usually situated in the frontal plane at 120°. They are three-bladed, very stout and with blunt ends, reaching maximum diameter around their middle. The three ridges are separated by rounded grooves, and have strong lateral expansions that tend to be divided into secondary ridges by slight longitudinal narrows.

Dimensions. Height of cephalis 90—115 μ, length of horns 80—110 μ, diameter of horns 38—50 μ.

Holotype. Plate II, Figure 1; Plate IV, Figure 3, Lower Ladinian, Rarău Mountain, sample R78/1.

Remarks. The species is rare or very rare in the Lower Ladinian from Rarău and in the Buchenstein Limestone from Recoaro. It is well distinguished by its stout horns.

Genus **Spongostephanidium** n. gen.

Type species. *Spongostephanidium spongiosum* D u m i t r i c ă n. sp.

Diagnosis. All the arches of the basal skeleton included within the inner part of the spongy-like shell; dorsal spine missing; no aperture or pylom.

Remarks. *Spongostephanidium* is distinguished from the other genera of the family by its spongy shell and absence of the dorsal spine. At least two species have been distinguished within the interval Middle Anisian — Carnian.

Spongostephanidium spongiosum n. sp.

Pl. II, fig. 2—5

Description. Cephalis subspherical with the spongy mesh arranged in two layers. Horns rod-like with pointed ends. They are usually unequal and shorter than the diameter of cephalis, and asymmetrically lain in the frontal plane. The sagital ring with the arch aj sometimes deformed by some bars of the spongy network.

Dimensions. Diameter of shell 105—150 μ, length of spines 50—200 μ.

Holotype. Plate II, Figure 3, 5, Lower Ladinian, Buchenstein Limestone, sample Rc4.

Remarks. The species is rather rare in the Lower Ladinian from Recoaro and the Rarău Mountain. A few poorly preserved specimens, probably belonging to the same species, have been recorded in the Carnian (sample R88).

Genus **Eptingium** n. gen.

Type species. Eptingium manfredi Dumitrică n. sp.

Diagnosis. Basal skeleton with spines and arches included within the cephalic cavity and connected to the cephalic wall by several bars; aperture present, situated in lateral position, in the interval between the apical horn and one of the horns corresponding to the primary lateral spines.

Remarks. Eptingium n. gen. is distinguished from all the other genera of the family in that the whole basal skeleton is included within the cephalic cavity. The well emphasized aperture is also an important distinctive character. Lower Ladinian — Norian.

The genus is named for Dr. Manfred Epting (KSEPL/Shell Research, Rijswijk, Netherlands), who kindly provided the Lower Ladinian radiolarian-bearing samples from the Vicentinian Alps, in honor of his contributions to the knowledge of the Triassic of the Southern Alps.

Eptingium manfredi n. sp.

Pl. III, Fig. 3, 4; Pl. IV, Fig. 1, 2, 5—7

Description. Cephalis subtriangular, usually asymmetrical, with three stout horns lying under unequal angles in the frontal plane. Horns are three-bladed and very variable in shape, size and twisting degree. Commonly they are slightly twisted and taper more or less gently to a point where the blades disappear and from where the horns continue with a needle-like spine of variable length; it is very short when the horn ends abruptly (Pl. IV, Fig. 1, 5), and rather long when it tapers gently (Pl. III, Fig. 4; Pl. IV, Fig. 7). Ridges are rarely simple. Usually, they are divided into two secondary ridges by longitudinal grooves of variable length and depth; sometimes the secondary grooves are short and shallow, being visible only within the proximal part of the horns (Pl. IV, Fig. 7); other times they are, on the contrary, almost as deep and long as the primary grooves, so that the horns become six-bladed (Pl. IV, Fig. 5, 6). Ridges are mostly connected to one another by transverse bridges. Cephalic wall is two-layered. The inner layer is latticed, with elliptical or circular pores of unequal size. The outer layer, intimately connected with the inner one and of spongy aspect, is tuberculated. Aperture simple, circular, situated on the most inflated side. In most cases it is on the left side of the cephalis, never on the antapical side.

Basal skeleton completely free inside the cephalis. It is connected to the inner layer of the cortical shell by several branched apophyses of the basal arches and by the inner proximal parts of the radial horns.

The latter are three-bladed and rather stout. Each blade of the horns correspond to an element of the basal skeleton. The blades of the apical horn correspond to the arch aj and to the two arches al; the three blades of the horns L correspond to the spines L of the basal skeleton and to the arches pj and lp (see Plate III, Fig. 3). As to the apophyses of the basal arches, it is to be noted that each arch has one or two such connecting elements and that their number is larger toward the apertural region.

Dimensions. Diameter of cephalis 130—210 μ, length of horns 100—270 μ.

Holotype. Plate III, Fig. 4, Lower Ladinian, Buchenstein Limestone, sample Rc 4.

Remarks. The species is named for Dr. Manfred Epting in honor of his contributions to the study of the Triassic. *E. manfredi* is common in the Lower Ladinian of the Buchenstein Limestone at Recoaro and in the synchronous deposits from the Rarău Mountain.

Genus **Pylostephanidium** n. gen.

Type species. Pylostephanidium clavator Dumitrică, n. sp.

Diagnosis. Cephalis with a pylom along or instead of the apical horn; sagital ring oblique within the cephalic cavity and connected to the cephalic wall in several points; all the other arches inserted in the shell; dorsal spine very short.

Remarks. As the genus is monospecific it is difficult for the moment to specify all its generic characters. The pylom is probably one of the most distinctive. An aperture is also in *Eptingium*, but has a lateral position and no pylom. It differs also from *Eptingium* by the relation between the basal skeleton and the cephalic wall.

It is to be noted that in this genus, or at least in its type species, the apical spine does not extend into an apical horn but stops in the cephalic wall. The horn that accompanies the pylom seems to be just a homologous of the apical horn and is developed only to maintain the triradial symmetry.

It is also to be noted the oblique position of the vertical spine and, as a result, the complete asymmetry of the basal skeleton. The latter has all the spines and arches characteristic of the family but, due to the deviation of the vertical spine, the sagital ring is not situated in a plane. It is torsioned and, consequently, the arches al and pj are unequal.

Pylostephanidium clavator n. sp.

Pl. II, Fig. 6, 7

Description. Cephalis globular, one-shelled, with irregular surface and small pores of irregular size, shape and arrangement. The two horns corresponding to the spines L are triradiate. They have long pointed ends and bear several verticils of nodes commonly connected to one another by narrow bridges. Pylom in axial position. It has nodes around its rim and

is armed with a long pointed spine, exceptionally two. The pylom is perforated by rare elliptical pores of irregular size and disposition. Basal skeleton as in genus. It is to be noted that, due to the disposition of the basal skeleton, the two horns L, corresponding to the primary lateral spines, appear to arise from the arches lp and not from the spines L.

Dimensions. Diameter of cephalis 100—120 μ, length of horns 100—120 μ, length of pylom 50—80 μ, diameter of pylom 37—50 μ.

Holotype. Plate 2, Fig. 6, Lower Ladinian, Buchenstein Limestone, Recoaro, sample RC 2.

Remarks. The species was encountered only in the Lower Ladinian, and especially in sample Rc2, where it is very rare.

Genus **Perispyridium** n. gen.

Type species. Trilonche (?) ordinaria Pessagno.

Diagnosis. Flat eptingiids with cephalis small, surrounded in frontal plane by a triangular or subcircular peripheral latticed shell; sagital ring inserted in the cephalic wall; arches more or less distinct.

Remarks. Perispyridium seems to be the last survivor of the family. It bears the most advanced spumellarian morphology among the eptingiids, the cephalis being able to be easily confused with the microsphere and the peripheral latticed shell with the cortical shell. Upper Jurassic.

Perispyridium ordinarium (Pessagno)

Pl. III, Fig. 1, 2, 5; Pl. IV, Fig. 9

Trilonche(?) ordinaria Pessagno, 1977, p. 79, pl. 6, fig. 14.

Description. Shell flat of triaradial symmetry. Cephalis small, subglobular or ellipsoidal with a slight constriction corresponding to the sagital ring. Pores small, subcircular of rather regular size. Collar plate with well distinct MB, l and L. Apical spine A and the two primary lateral spines L straight and rod-like inside the peripheral shell, triradiate and with one or two verticils of nodes outside. Distal ends of the three spines pointed or nodulous. The spines are equal and disposed at 120° in the frontal plane. They bear, inside the peripheral shell, a verticil o two spines perpendicular to the frontal plane and connected to the peripheral shell. The latter is triangular in shape, with convex or straight sides. It envelops the cephalis only in frontal plane and is connected to it by commonly six bars on each side, forming six large pores; three of them have as diameter the radial spines A and L, the other three are intermediate. Frequently this arrangement is disturbed by appearance of additional connecting bars. Wall of the cortical shell has large unequal pores which are pentagonally framed and have nodes at corners.

Dimensions. Diameter of cephalis 50—60 μ, distance between the distal ends of two spines 290—300 μ.

Remarks. Pessagno encountered this species in the Emiluvia hopsoni Zone (Upper Kimmeridgian / Lower Tithonian — Lower Titho-

nian) of the California Coast Range. In Romania its occurrences have been recorded in the Upper Oxfordian — possibly Lower Kimmeridgian from Sviniţa (sample SV 1635) and in the Oxfordian — Kimmeridgian — possibly Lower Tithonian cherts from the Drocea Mountains (samples DR 77 and DR 180), in all three samples associated with *Emiluvia sedecimporata* (R ü s t).

REFERENCES

D e f l a n d r e G. (1963) État actuel de nos connaissances sur la représentation, au Trias de quelques groupes de microfossiles. Protistes, autres que foraminifères, in: Le Trias de la France et des régions limitrophes. *Mem. B.R.G.M.*, no. 15, pp. 541—542, Paris.

E p t i n g M., U n l a n d W., S c h m i d t K., C h r i s t o d o u l i d e s A. (1976) Middle Triassic sediments of selected regions in the Southern Alps (Italy) and their significance for paleogeographic and paleostructural evolution. *N. Jb. Paläont. Abh.*, vol. 151, no. 1, pp. 1—30, Stuttgart.

K o z u r H., M o s t l e r H. (1972) Beiträge zur Erforschung der mesozoischen Radiolarien. Teil I: Revision der Oberfamilie Coccodiscacea Haeckel 1862 emend. und Beschreibung ihrer triassischen Veftreter. *Geol. Paläont. Mitt. Innsbruck*, vol. 1, no. 8/9, pp. 1—60, Innsbruck.

P e s s a g n o E., Jr. (1977) Upper Jurassic Radiolaria and radiolarian biostratigraphy of the California Coast Ranges. *Micropaleontology*, vol. 23, no. 2, pp. 56—113, pls. 1—12, New York.

R ă i l e a n u Gr. (1960) Recherches géologiques dans la région Sviniţa-Faţa Mare. *An. Com. Géol.*, vol. XXVI—XXVIII, pp. 347—383, Bucureşti.

EXPLANATION OF PLATES

Plate I

Fig. 1—4. — *Cryptostephanidium cornigerum* D u m i t r i c ă, n.g., n. sp., holotype, sample Rc4; 1, back view showing vertical spine and arches aj and pj; 2, front view showing apical, dorsal and primary and secondary lateral spines, and arches al and lp; 3, basal view showing vertical, dorsal and primary and secondary lateral spines; 4, lateral view showing sagital ring.

Fig. 5.—6. — *Triassistephanidium laticornis* D u m i t r i c ă, n.g., n.sp., paratypes, sample R 78/1; 5, back view showing arches aj and pj; 6, sectioned specimen showing sagital ring and other elements of the basal skeleton.

Fig. 7—8. — *Cryptostephanidium verrucosum* D u m i t r i c ă, n.g., n.sp., sample Rc4; 7, holotype, front view showing apical spine, primary and secondary lateral spines and arches al and lp; 8, sectioned specimen showing sagital ring and other elements of the basal skeleton.

Plate II

Fig. 1. — *Triassistephanidium laticornis* Dumitrică, n.g., n.sp., holotype, sample R 78/1, front view showing apical, dorsal, primary and secondary lateral spines and arches al and lp.

Fig. 2—5. — *Spongostephanidium spongiosum* Dumitrică, n.g., n.sp., sample Rc4; 2, paratype, back view; 3, 5, holotype, front and lateral view, respectively; 4, paratype, front view.

Fig. 6—7. — *Pylostephanidium clavator* Dumitrică, n.g., n.sp., sample Rc2; 6, holotype, back view; 7, sectioned specimen showing torsioned sagital ring and other elements of the basal skeleton.

Plate III

Fig. 1—2, 5. — *Perispyridium ordinarium* (Pessagno); 1, sectioned broken specimen in apical view showing collar plate, sample DR 77; 2, sectioned specimen in lateral view showing sagital ring and apical spine with inner verticil of two connecting rods, sample SV 1635; 5, entire skeleton showing the six pericephalic pores one of them divided by an additional bar, sample SV 1635.

Fig. 3—4. — *Eptingium manfredi* Dumitrică, n.g., n.sp., sample Rc4; 3, basal skeleton of a paratype at double magnification: A apical spine, L primary lateral spine, l secondary lateral spine, V vertical spine, sr sagital ring, aj arch uniting A with V and forming with them the sagital ring, al arch uniting A with l, lp arch uniting l with L, pj arch uniting V with L; 4, holotype showing basal skeleton hidden within cephalic cavity and its connection with cortical shell, a aperture.

Plate IV

Fig. 1—2, 5—7. — *Eptingium manfredi* Dumitrică, n.g., n.sp., sample Rc4; 1, sectioned specimen showing basal skeleton, a aperture; 2, detail of aperture of the specimen illustrated in fig. 5; 5—6, two specimens in lateral view to see the aperture; 7, optical section of another specimen, a aperture.

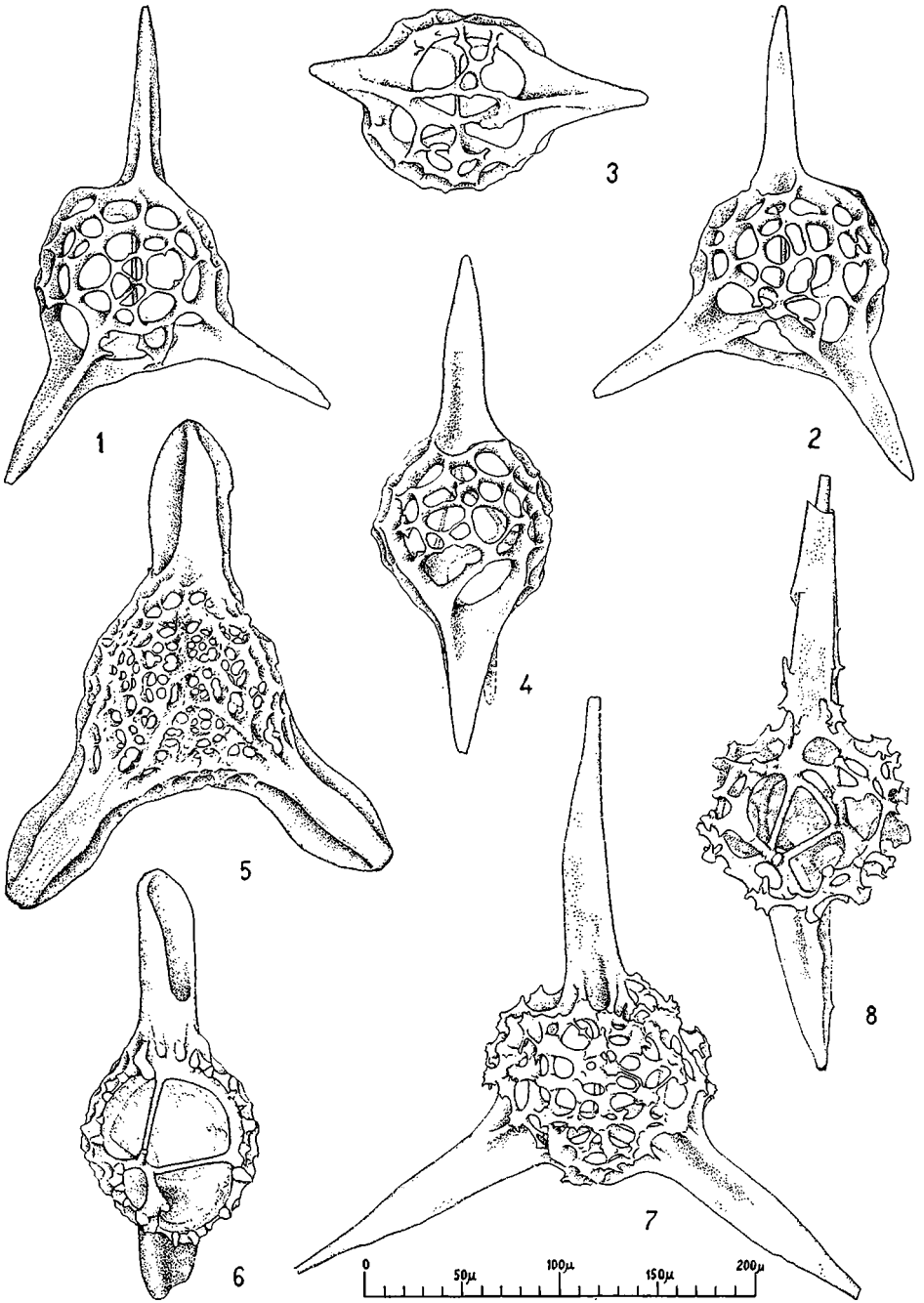
Fig. 3. — *Triassistephanidium laticornis* Dumitrică, n.g., n.sp., surface detail of holotype, front view.

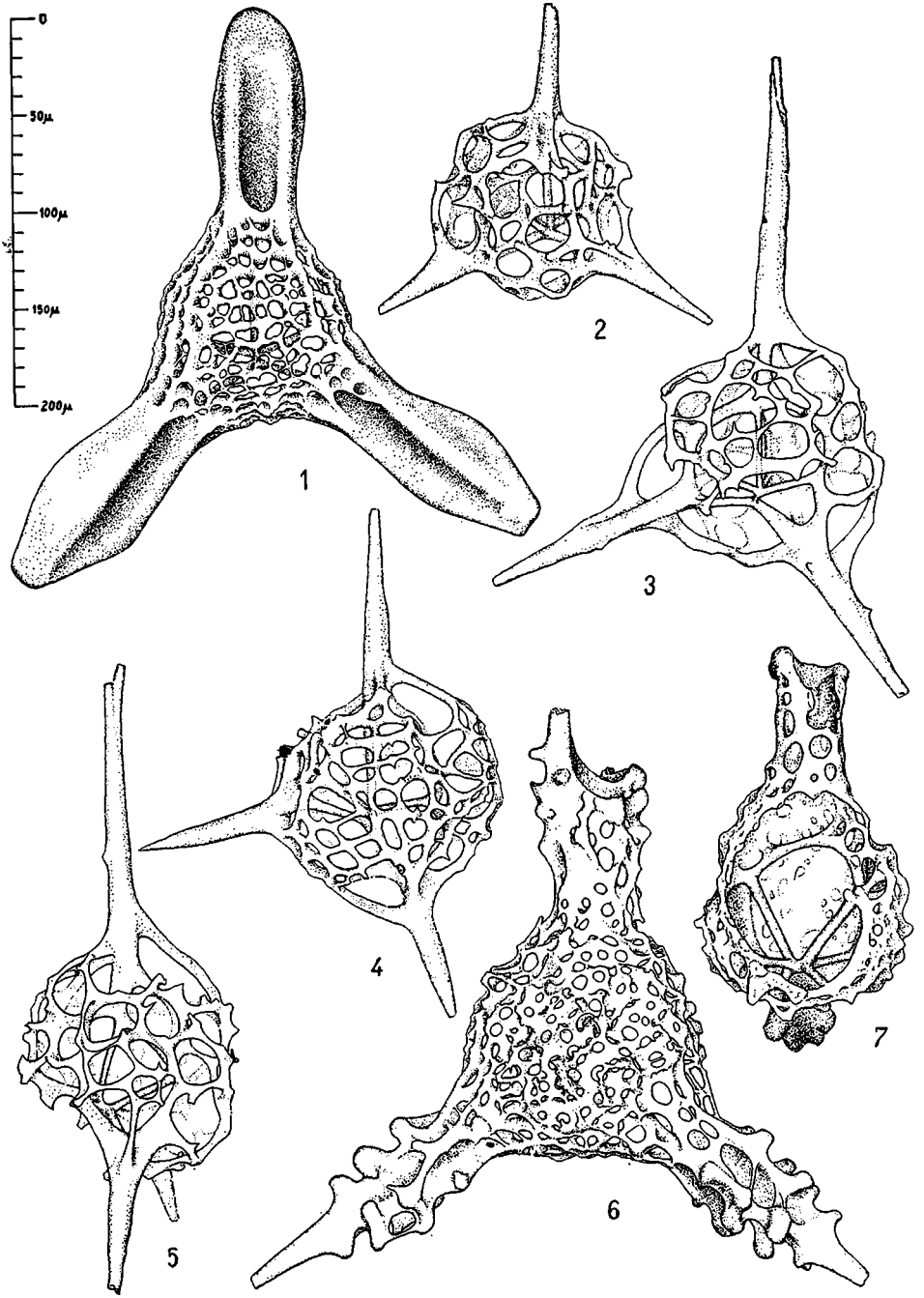
Fig. 4. — *Cryptostephanidium cornigerum* Dumitrică, n.g., n.sp., sample Rc4, back view.

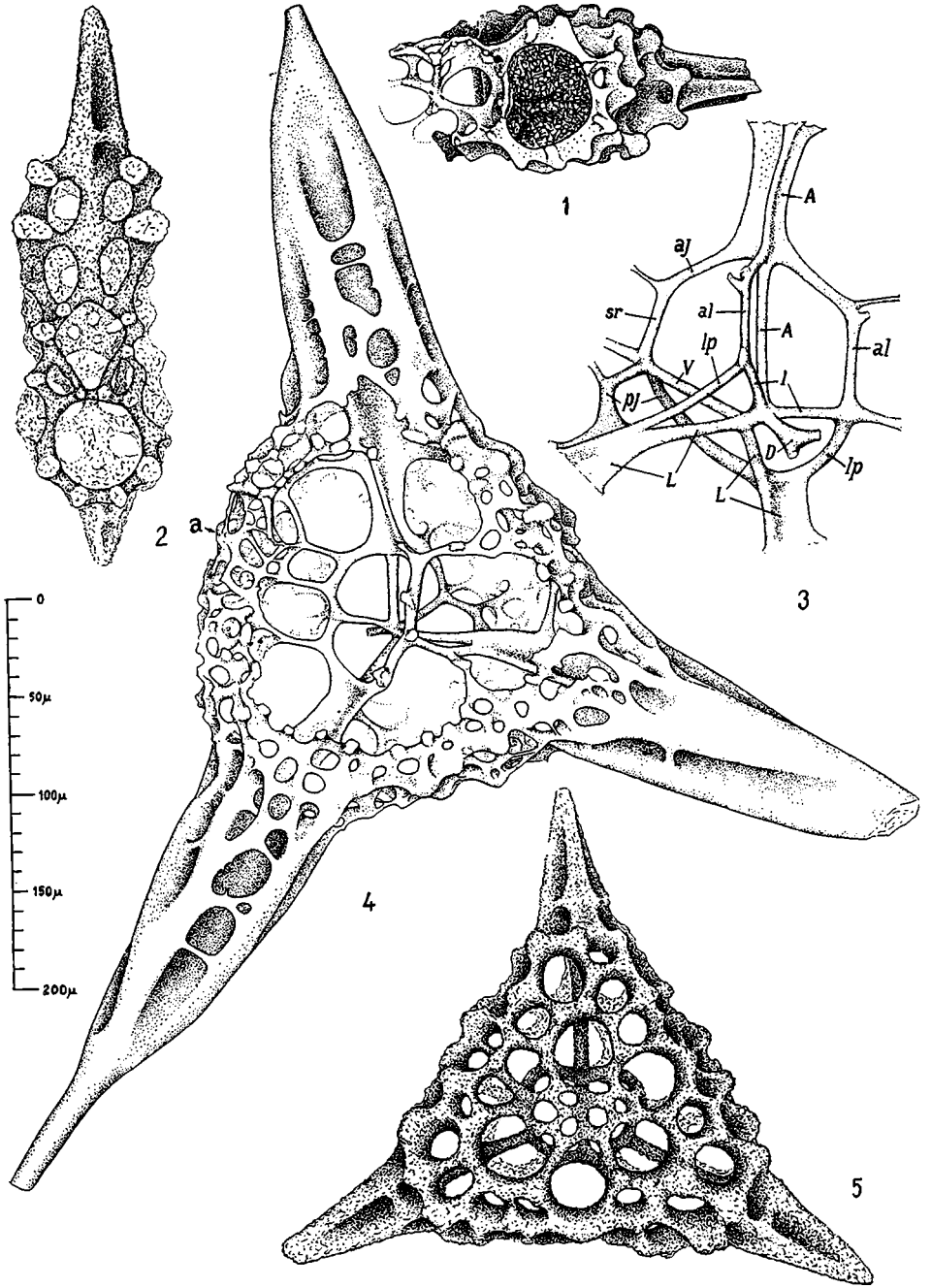
Fig. 8. — *Cryptostephanidium verrucosum* Dumitrică, n.g., n.sp., sample Rc4.

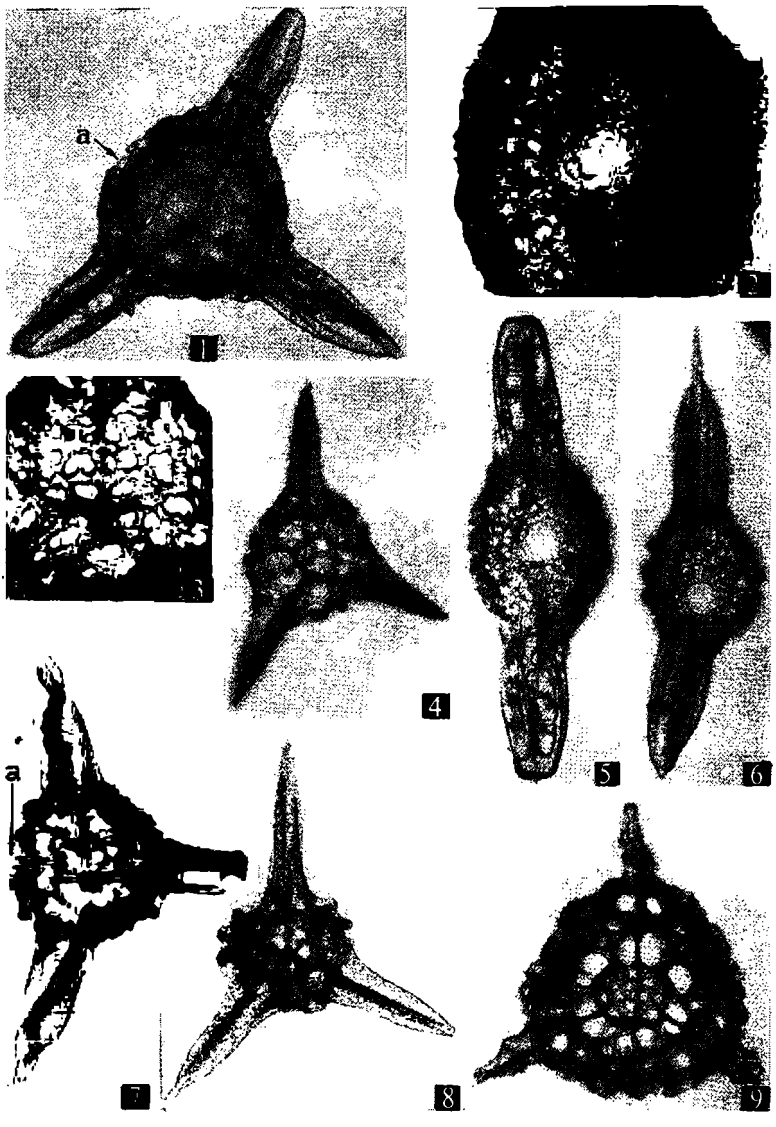
Fig. 9. — *Perispyridium ordinarium* (Pessagno), sample SV 1635.

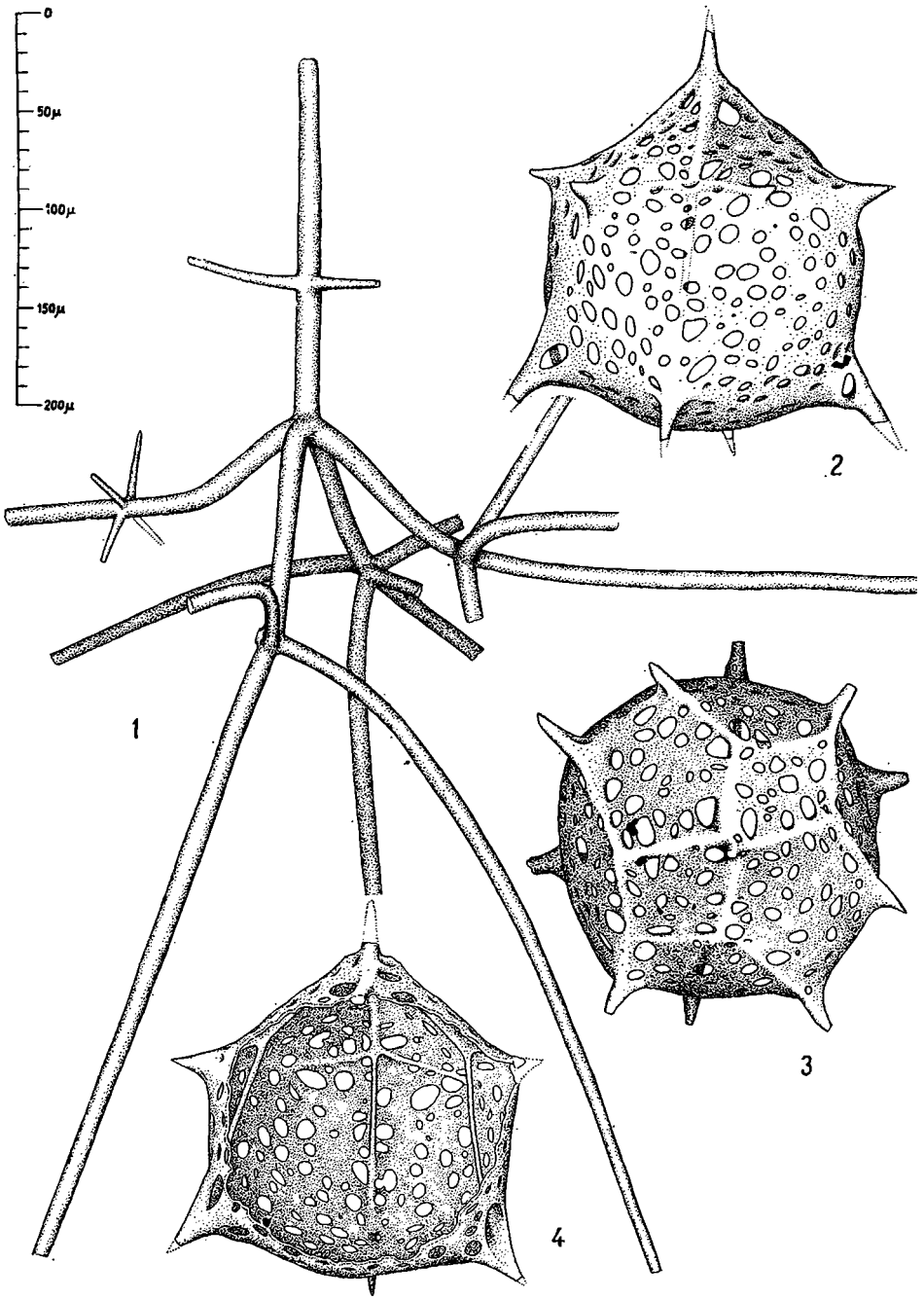
Magnification: Fig. 1, 4—8, × 220; Fig. 2—3, × 430; Fig. 9, × 165.

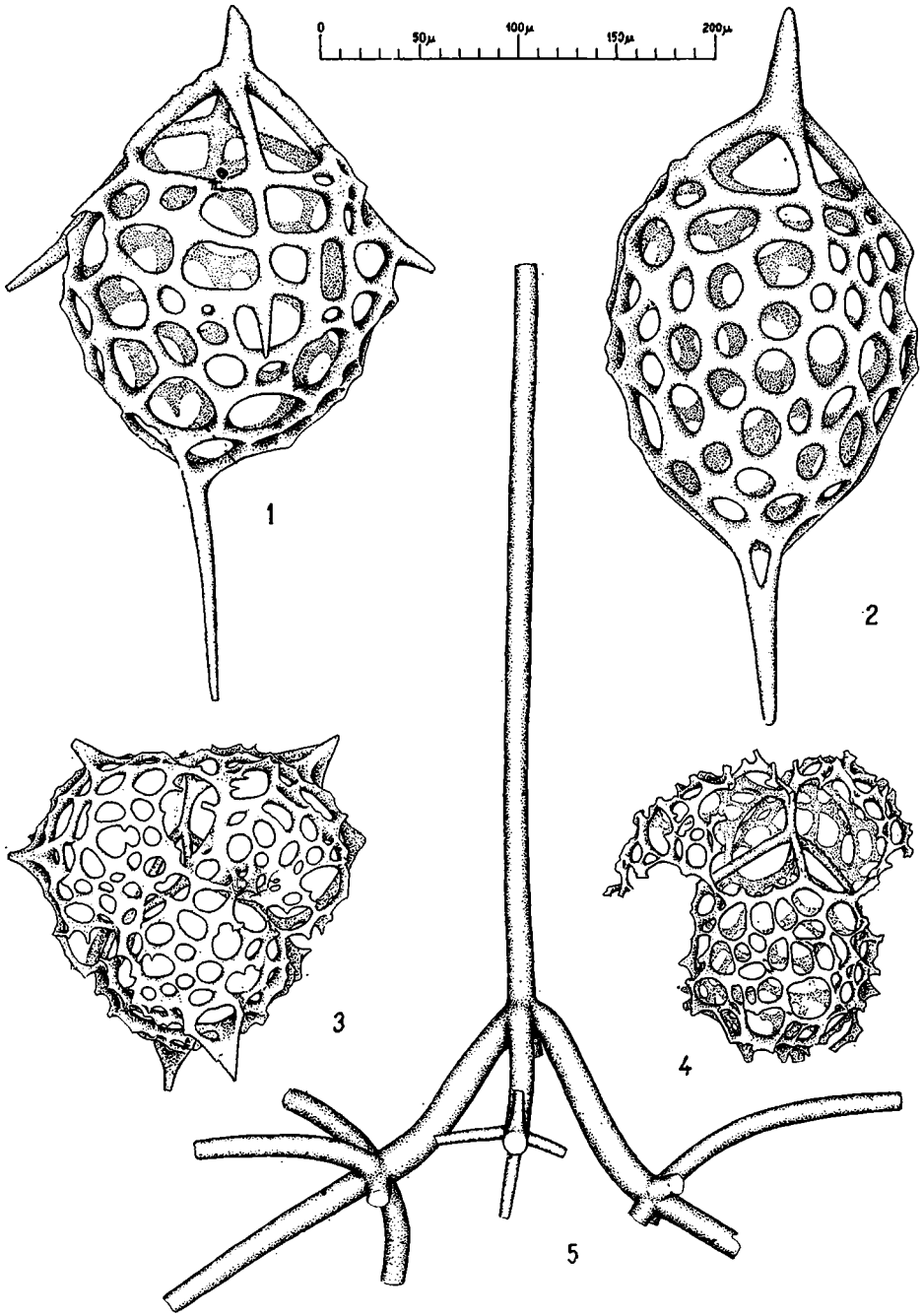

1
2
3
4
5
6
7
8
0
50μ
100μ
150μ
200μ

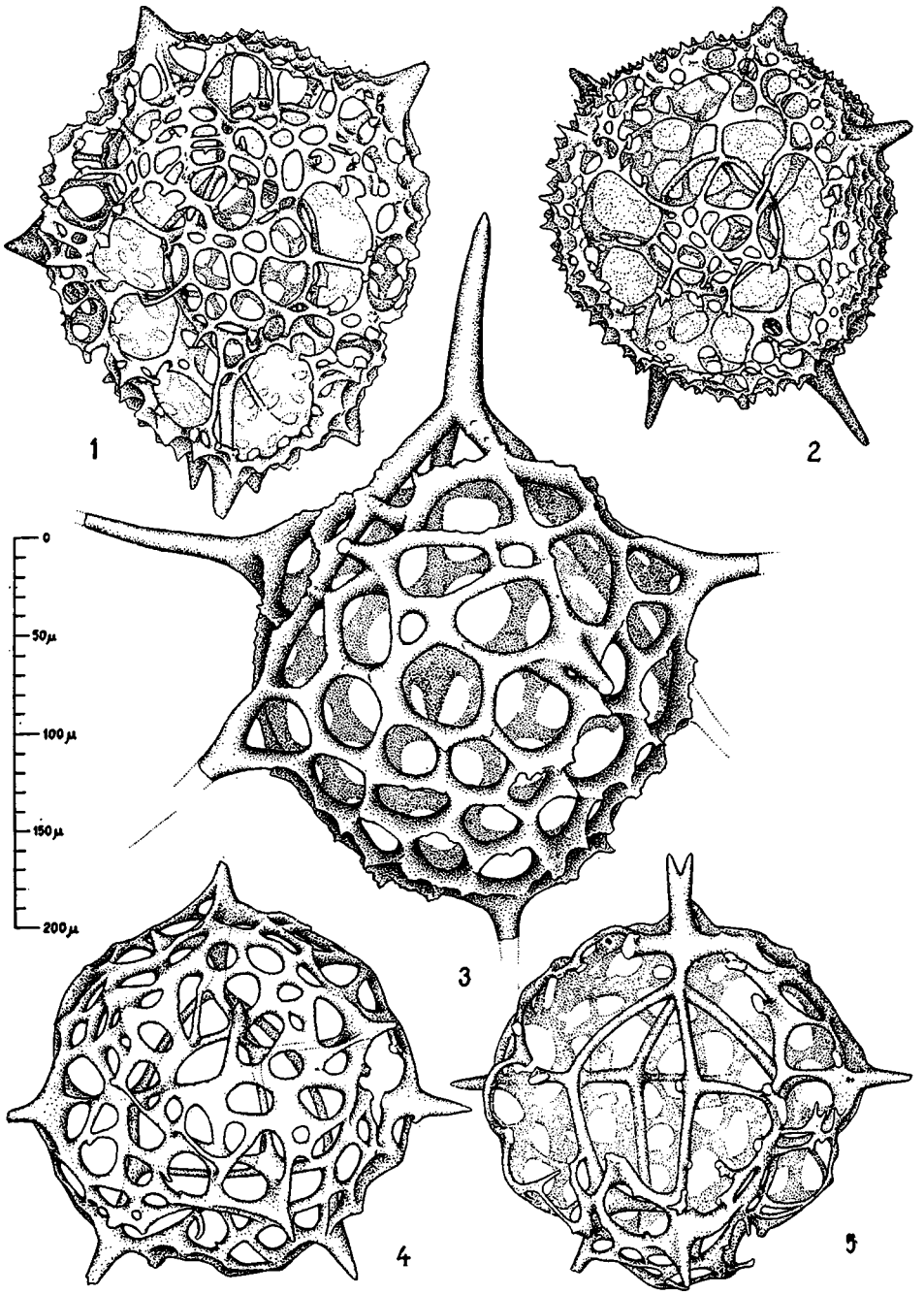

0
50µ
100µ
150µ
200µ
1
2
3
4
5
6
7

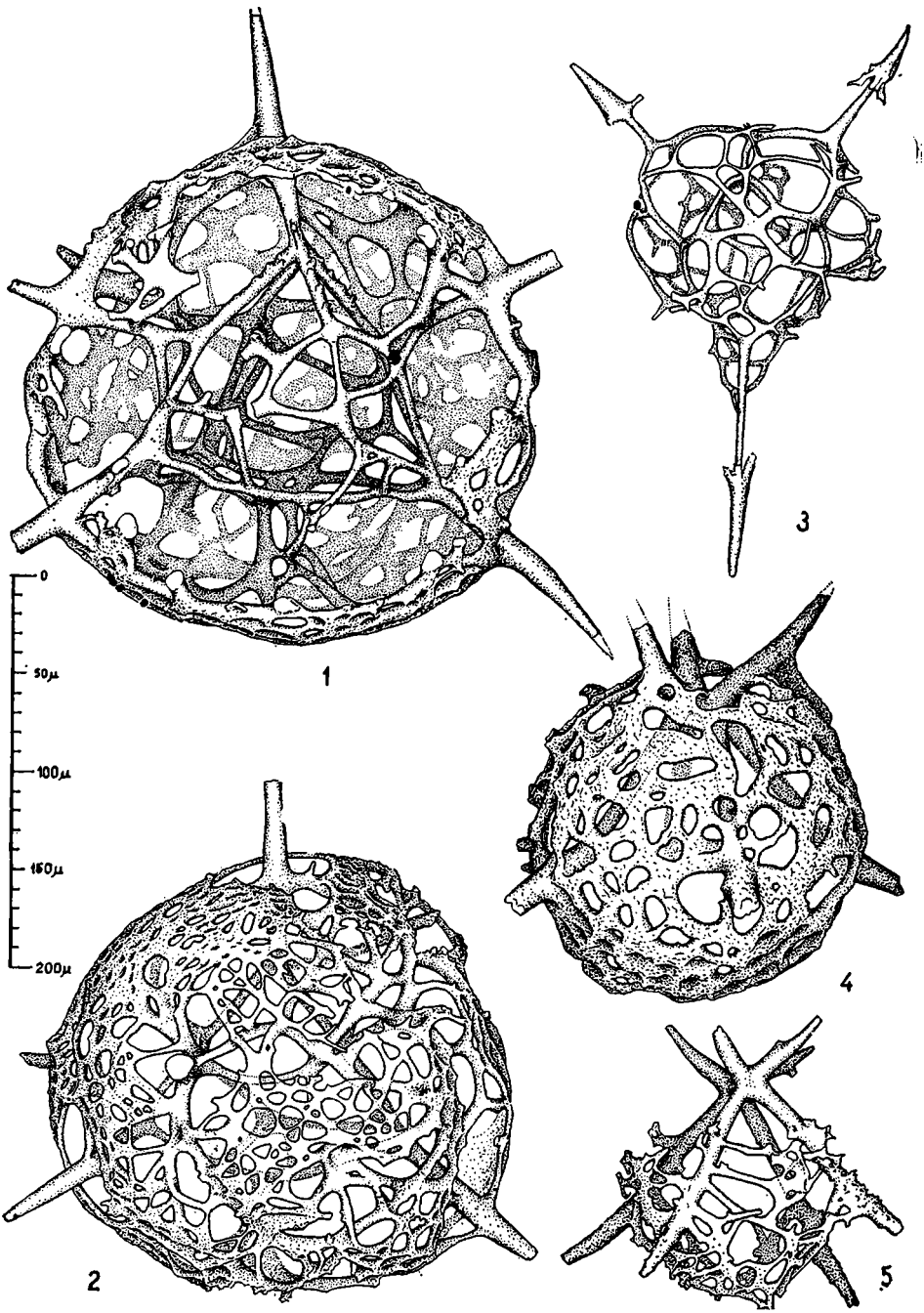

1
2
a
3
A
aj
sr
al
A
al
lp
V
l
pj
D
lp
L
L
0
50μ
100μ
150μ
200μ
4
5

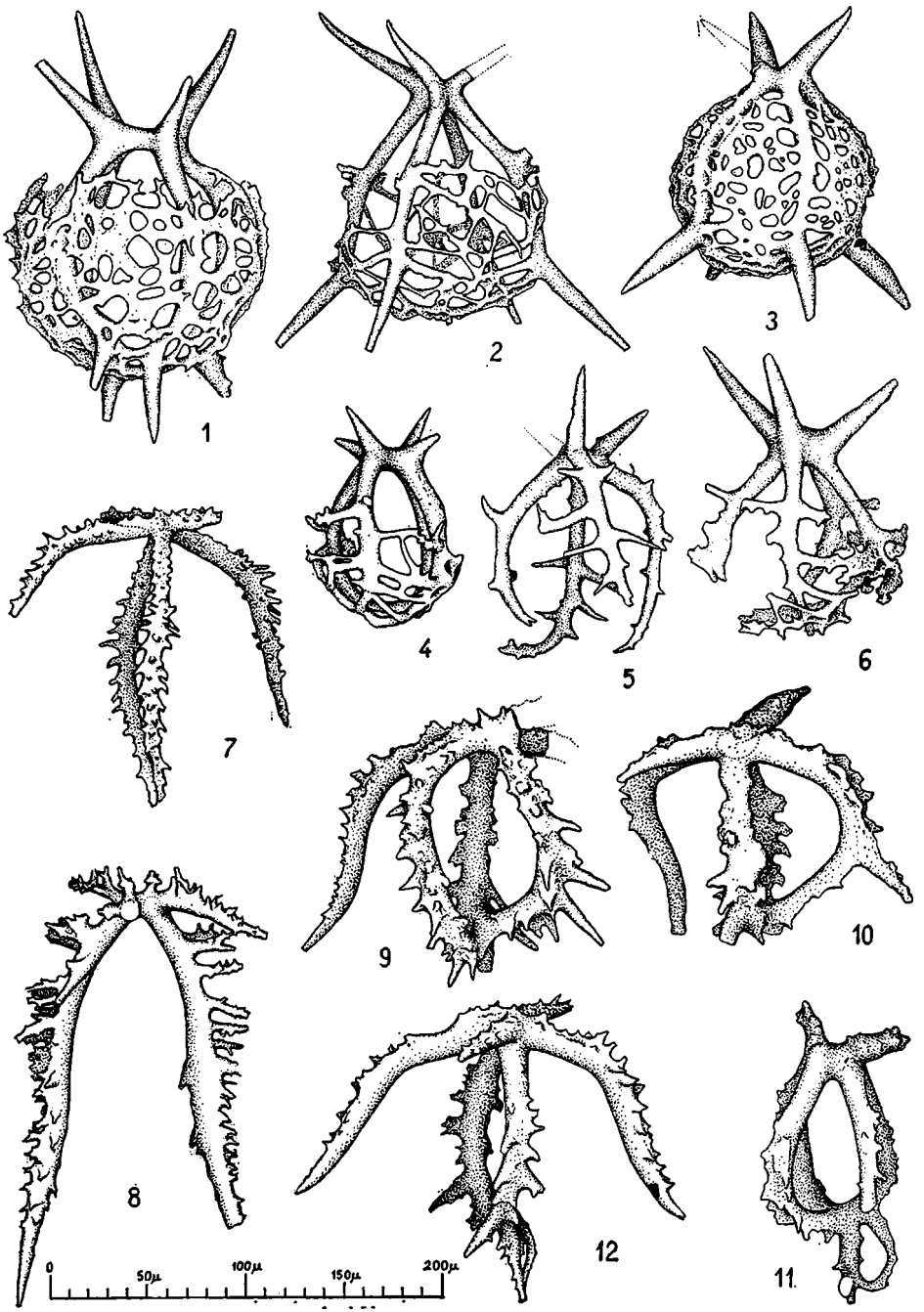

a
1
2
3
4
5
6
a
7
8
9


0
50μ
100μ
150μ
200μ
1
2
3
4


0
50μ
100μ
150μ
200μ
1
2
3
4
5


1
2
3
4
5
0
50μ
100μ
150μ
200μ


0
50μ
100μ
150μ
200μ
1
2
3
4
5


1
2
3
4
5
6
7
8
9
10
11
12
0
50μ
100μ
150μ
200μ