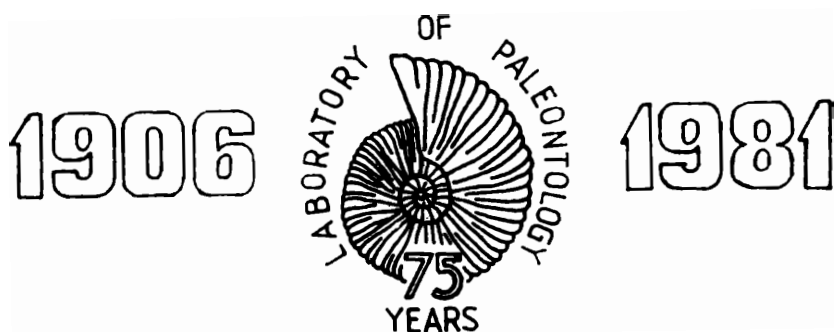


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**E X T R A S**

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## CORRESPONDENT SPECIES OF THE GENERA MACROSCAPHITES MEEK AND COSTIDISCUS UHLIG

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Two new Barremian species of *Macroscaphites* are proposed. Thus new arguments are added to consider all *Macroscaphites* and *Costidiscus* species as dimorphic pairs, five of them being discussed in this paper: *Macroscaphites yvani* (Puzos) — *Costidiscus recticostatus* (d'Orbigny); *Macroscaphites perforatus* n.sp. — *Costidiscus nodosostriatus* Uhlig; *Macroscaphites* ? *nodosocostatus* Karakasch — *Costidiscus rakusi* Uhlig; *Macroscaphites binodosus* Uhlig — *Costidiscus tardus* Avram; *Macroscaphites ectotuberculatus* n.sp. — *Costidiscus* ? cf. *binodosus* Vašiček (non Uhlig).

### I. Introduction

Since the end of the last century, when Munier Chalmers (1892) considered *Macroscaphites* and *Costidiscus* as possible sexual partners, only few data on this subject have been added. Now, it seems possible to resume this discussion, allowing for the recent finding of some new species of these genera in the Upper Barremian deposits in Romania (Avram, 1978 and here below).

Of course, this is only an attempt to prove the real possibility of considering all the *Macroscaphites* and *Costidiscus* species as dimorphic partners of the same biological species; for a complete solution of the problem more data would be necessary about the shape, the ornamentation and the mature stage of many incomplete, already described morphotypes, about their accurate intervals of occurrence and even about the criteria used for the delimitation of the species.

I hope that the here proposed picture of the connected species will be completed in the future, as new complementary partners of the now uncoupled monosexual species of *Macroscaphites* and *Costidiscus* will be

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found and described. Consequently, no proposition for the dimorphic pairs nomenclature (fide Westermann, 1969) was followed in the paper. The term "species" is generally used here with its common paleontological meaning — of a morphological monosexual type.

## II. Brief characterisation of the Barremian *Macroscaphites* and *Costidiscus* species

Among the Barremian species of *Macroscaphites* and *Costidiscus* a few constitute surely dimorphic pairs, controlled by the accurate recording (bed by bed) of the paleontological material in the Romanian fossiliferous sites. Some other species were grouped in pairs with question or were related with the described pairs as probable allopatric or (more or less) allochronous mutatinos. Finally, some species have not presumable partners till now.

1. *Macroscaphites yvani* (Puzos) — *Costidiscus recticostatus* (d'Orb.) and *C. olcostephanoides* Uhlig

Despite the fact that the types of *Macroscaphites yvani* and *Costidiscus recticostatus* have only a simple, equal ribbing (fig. 1), almost all the specimens figured in the literature under these names have constrictions. Accepted in this larger interpretation they occur within the same stratigraphical interval (Upper Barremian-Lower Aptian) and have an identical ontogenetic development. These were and are reasons for considering them as partners of a dimorphic pair.

On the other hand, *Costidiscus olcostephanoides* (with simple ribs in the first stage of growth ; with ribs alternatively long, bullate and shor-

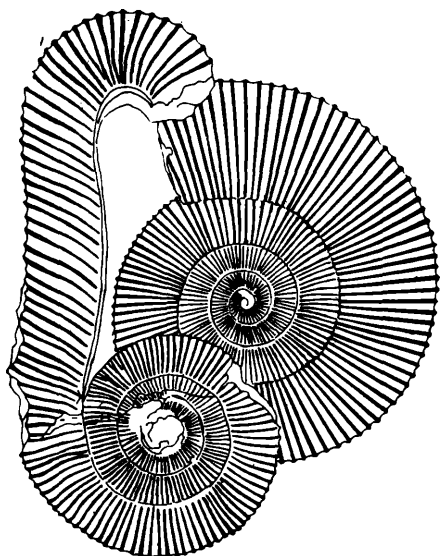
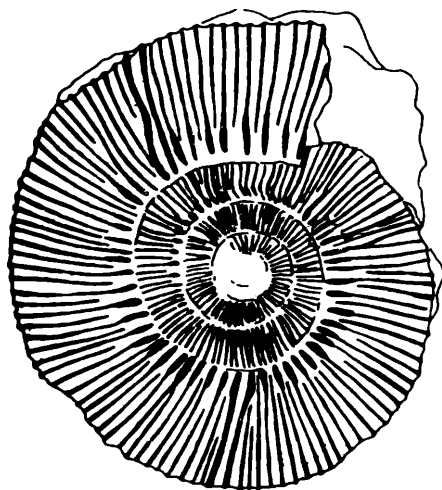


Fig. 1. — a, *Macroscaphites yvani* (Puzos); b, *Costidiscus recticostatus* (d'Orb.), holotypes. x 0,5

ter, simple or branching from the umbilical bullae and with constrictions, in the second stage (fig. 2) is also related to the above described pair: there are intermediate types (fide Uhlig, 1883) between it and *Costidiscus recticostatus*. Thus, *Costidiscus olcostephanoides* seems to be only an extreme variation of the *Macroscaphites yvani*-*Costidiscus recticostatus* biological species, ranging within the middle part of the Upper Barremian

Fig. 2. — *Costidiscus olcostephanoides* Uhlig, holotype, x 0.75



(*Imerites giraudi* and *Eristavia dichotoma* subzone), at least in the Svinitza region; unfortunately, no correspondent *Macroscaphites* for the *Costidiscus olcostephanoides* type of ornamentation was found till now. *Costidiscus microcostatus* (Sim., Bacew., Sor.) (= *C. recticostatus* d'Orb. in Douvillé, 1916) and *Macroscaphites yvani* Puzos in d'Orbigny (1840—41) and also *M. fischeuri* Sayn, characterised by the presence of some bifurcate ribs, are intermediate types to the next pair.

2. *Macroscaphites perforatus* n. sp. — *Costidiscus nodosostratus* Uhlig

These two species (fig. 3) have a first stage with a simple, fine ribbing, followed by a stage with fasciculate ribs arising in bunches of two or three from the umbilical tubercles, and simple intercalatories in a very inconstant number (2—5); in the last stage, their ornamentation consists of pairs of tuberculate ribs, fewer intercalatories and a few secondary ribs, free or branching from the primary ribbing on the external half of the flanks.

The former species of the pair occurs in the whole Upper Barremian in the Svinitza region; the second was found in the lowermost Upper Barremian (the beds with *Heinzia provincialis*, in the Dimbovicioara Couloir — Patrulius, Avram, 1976) up to the middle part of the Upper Barremian ("*Crioceratites*" ex gr. *barremense-orbigny* subzone, from Svinitza—Avram, 1976).

*Costidiscus latus* Rouchadze, with a very fine, bifurcate or even trifurcate ribbing, braching from small umbilical tubercles, seems to be a Caucasian mutation of the same group.

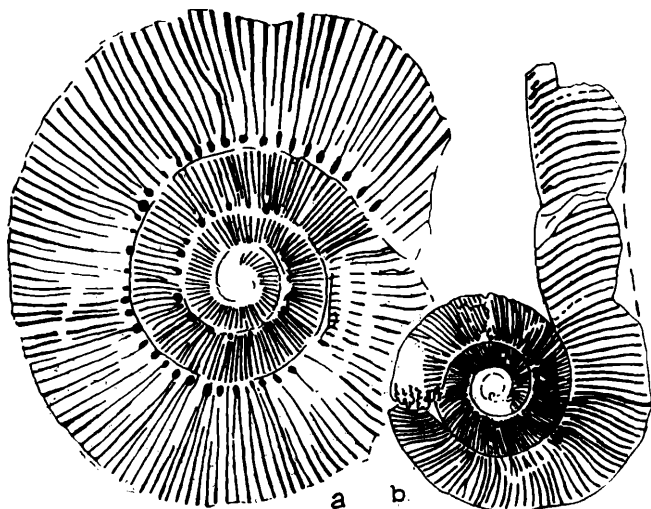


Fig. 3. — a, *Costidiscus nodosostriatus* Uhlig, lectotype; b, *Macroscaphites perforatus* n. sp. (synthetotype drawn after its holotype and a paratype).  
x 1.

3. *Macroscaphites?* *nodosocostatus* Karakasch — *Costidiscus rakusi* Uhlig.

*Costidiscus rakusi* presents a very characteristic ornamentation (fig 4) simple on the innermost whorls, then in bunches of 3—4 ribs starting from umbilical tubercles and 4—7 intercalatories, and, on the last whorl, primary tuberculate ribs (here and there accompanied by 1—2 secondaries) and also 1—5 intercalatories. In Romania this species was found in the Upper Barremian deposits of the Dimbovicioara Couloir (fide Simionescu, 1898) and in the „*Crioceratites*“ ex gr. *barremense-orbigny* subzone at Svinitsa, where none of *Macroscaphites* species has the same ontogenetic development. Of all specimens of *Macroscaphites* (or presumable *Macroscaphites*) figured in the paleontological literature there is only one comparable with Uhlig's species: „*Costidiscus*“ *nodosocostatus* Karakasch (1907, p. 53, pl. XXII, fig. 28; pl. XXIV, fig. 6). The type specimen of this species presents an ontogenetic development almost identical with that of *Costidiscus rakusi* (simple ribbing, then bunches of 2 ribs starting from umbilical tubercles and, between them, 4—5 intercalatories), but its tuberculate stage is followed by another one, with simple ribbing, on the end of the last whorl. This last stage seems to be a *Macroscaphitid* character, despite the lack of an uncoiled shaft. Karakasch's species was found also in the Upper Barremian (fide Drushchits, 1960), unfortunately without any indication concerning the ammonite assemblage or the precise level of prelevation.

4. *Macroscaphites binodosus* Uhlig — *Costidiscus tardus* Avram

The presence of the both species in the same strata of the Upper Barremian („*Crioceratites*“ ex gr. *barremense-orbigny* subzone) was



Fig. 4. — a, *Costidiscus rakusi* Uhlig, holotype; b, *Macroscaphites* ? *nodosocostatus* (Kar.), holotype. x 1.

clearly established in the Svinitsa region. Their ontogenetic development( fig. 5) is also very similar up to a diameter of 30 mm. After that diameter they are different, especially by the persistence of latero-ex-

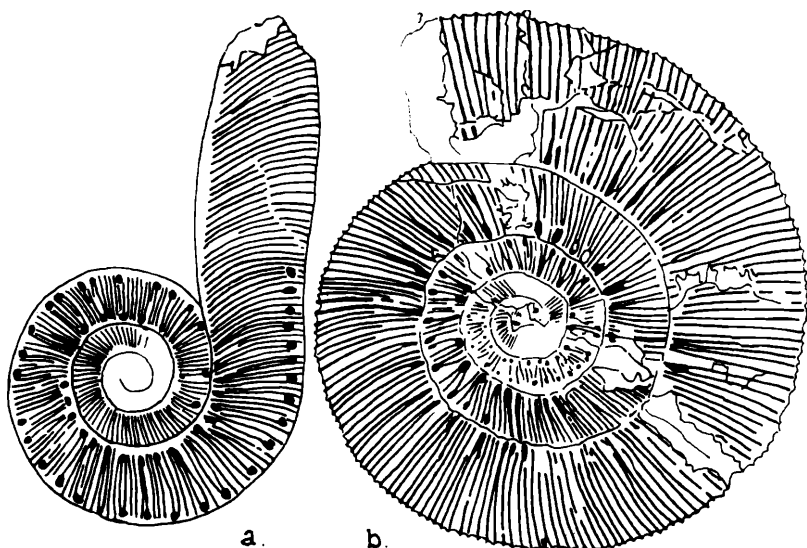


Fig. 5. — a, *Macroscaphites binodosus* Uhlig, holotype; b, *Costidiscus tardus* Avram, holotype. x 1.

ternal tubercles (in *Macroscaphites binodosus*) or of periumbilical tubercles (in *Costidiscus tardus*) and by the shape of the last whorl.

5. *Macroscaphites ectotuberculatus* n. sp. — *Costidiscus*? cf. *binodosus* Vašíček (non Uhlig).

This presumed pair (fig. 6) is based only on a few specimens the type material of *Macroscaphites ectotuberculatus*, described here below

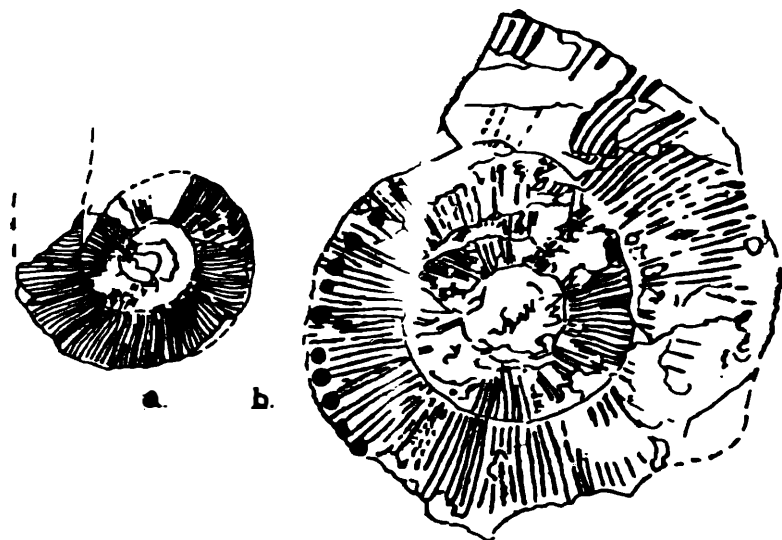


Fig. 6. — a, *Macroscaphites ectotuberculatus* n. sp., holotype; b, *Costidiscus*? cf. *binodosus* Vašíček (non Uhlig). x 1.

and Vašíček's specimen presented as *Macroscaphites* cf. *binodosus* Uhlig (1972, p. 48, pl. IV, fig. 4). The latter is large, very compressed and, taking into consideration its size, its assignment to the genus *Macroscaphites* is not clear. Its ornamentation is clearly different from that of typical *Macroscaphites binodosus* by lack of the inner row of tubercles (there are only "vague visible" umbilical thickenings of some ribs). This character as well as the large development of the latero-external tubercles is in common with the new species *Macroscaphites ectotuberculatus*. Both these presumed partners were found in the Upper Barremian, the Romanian one in the "*Crioceratites*" ex gr. *barremense-orbigny* subzone at Svinitsa.

Besides the species grouped in the pairs above presented, there are at least three others the partners of which we cannot specify yet *Costidiscus grebenianus* (Tietze), *Macroscaphites fallauxi* Uhlig and *M. tirolensis* Uhlig. The first one (fig. 7) is a rare species which occurs, in the Svinitsa region, in the middle part of the Upper Barremian; it seems to belong to a distinct biological species, placed near the *Macroscaphites yvani* — *Costidiscus recticostatus* group. The second species is very close to *Macroscaphites binodosus*, from which it is distinguished

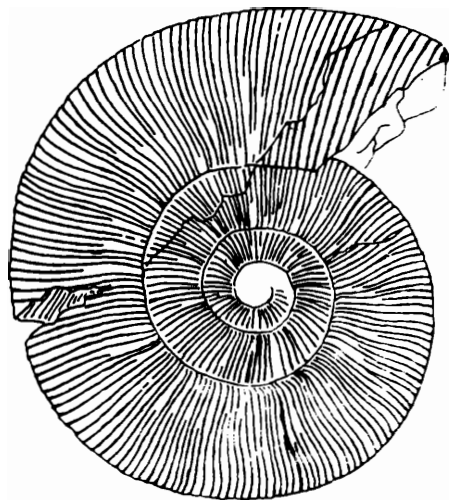


Fig. 7. — *Costidiscus grebenianus* (Tietze), the large specimen figured by Uhlig (1883) in pl. IX, fig. 1. x 1.

only by its stronger tuberculate ribs, persisting on the shaft (fig. 8 a). At last, *Macroscaphites tirolensis* is clearly different from all the species of *Macroscaphites* by its three rows of tubercles developed on the plan spiral whorls (fig. 8 b).

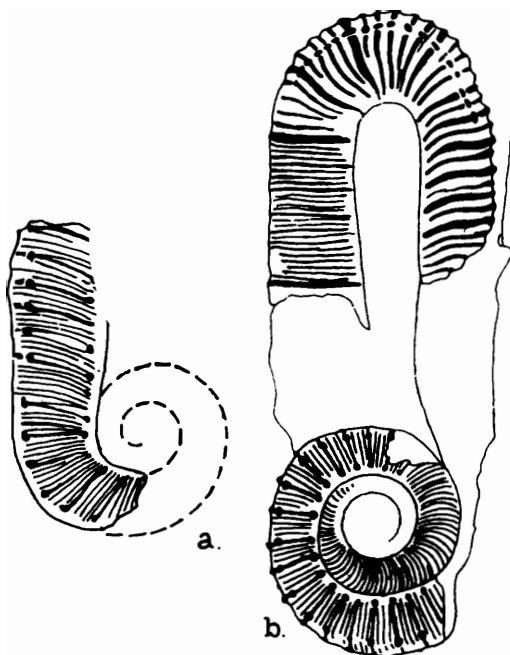


Fig. 8. — a, *Macroscaphites fallauxi* Uhlig, the specimen figured by Uhlig (1883) in pl. X, fig. 5; b, *Macroscaphites tirolensis* Uhlig, holotype. x 1.



### III. Description of the new species

#### **Macroscaphites perforatus n.sp.**

text—fig. 9 a—d ; pl. I, fig. 1—6

*References* : *Hamites* (*Macroscaphites*) *yvani* Puzos, ? Uhlig, 1883, p. 205 pl. V, fig. 18, pl. IX, fig. 5, 6

*Holotypus* : the pyritised specimen shown in the text-fig. 9 and in the pl. I, fig. 1, preserved in the Institute of Geology and Geophysics collection, no P 14189).

*Derivatio nominis* : from the initial shape — with uncoiled first whorl, conducing to a "perforate" umbilicus.

*Locus typicus* : *Svinitsa* (Banat, SW Romania)

*Stratum typicum* : Upper Barremian ; *Svinitsa* formation, *Temeneacia* member.

*Material* : 5 specimens preserved as impressions in marls, partly with pyritised nuclei ; 19 pyritised nuclei of various size. All of them were collected from the *Temeneacia* member deposits, at the old church of the *Svinitsa* village, on the *Tsiganški* Valley (a specimen from G. Popescu's collection), in the actual area of the same village (pl. I, fig. 5), on the *Morilor* valley and its right slope (pl. I, fig. 4, 6) and also in the cutting of the route *Orshova-Svinitsa*, 150—200 m south of the bridge over the *Morilor* valley (the holotype and the paratypes on the plate I, fig. 1, 2, 3).

*Description of the holotype*. Pyritised nucleus with first whorl almost circular in section, then depressed. On the first whorl preserved to a diameter of 11 mm) the ornamentation consists of equal, simple ribs, progressively denser to the aperture. Then typical ribbing appear 2 or, rarely, 3 ribs starting from the umbilical tubercles ; rare secondary ribs branching from the primary ones near the external edge of the flanks ; 1—2 intercalatories on each interval between the tuberculate or between the bifurcate untuberculate ribs. Here and there, this ornamentation is assymmetrical the tuberculate ribs from one whorl side correspond to intercalatory ribs from the opposite whorl side, so that the right flank of the shell presents a more regular alternance between tuberculate and intercalatory ribs.

*Variability*. Some of the nuclei preserve the complete first whorl, with protoconch and circular whorl section, surrounding a hole of 2 mm ; first ribs, relatively rare and equal appear at the diameter of 4 mm and the transition to the mature ornamentation is realised by a short stage with simple tuberculate ribs and 1—3 intercalatories. The characteristic ornamentation continues on the last coiled whorl, to a diameter of 35 mm ;

here are also 2—3 superficial constrictions. The uncoiled stage (text — fig. 9 and pl. I, fig. 2) is covered with simple, gentle flexuous ribbing, like in *Macroscaphites yvani*. The suture is figured in the text — fig. 9 d.

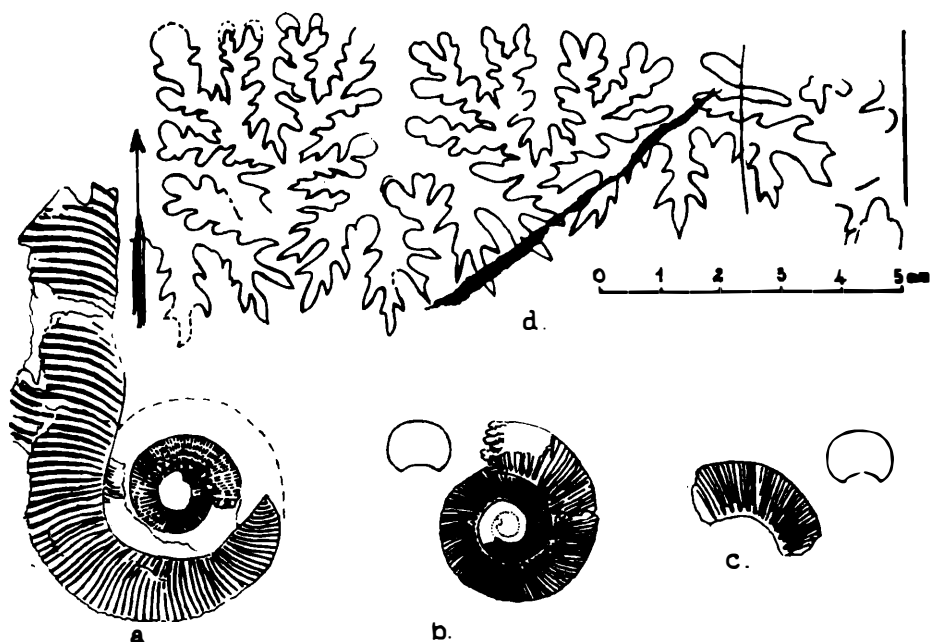


Fig. 9. — *Macroscaphites perforatus* n. sp. a, Paratype (the nucleus ornamentation is partly drawn after its left side — marked by interrupted lines) (P 14190); b, holotype (P 14189); c, d, paratype showing the suture at a diameter of 20 mm, x 1.

#### Measurements

Ø	O	H	G	
25,2 mm	11 9(0,47)	7,6(0,30)	9,8(0,37)	— holotypus
23,2	11 (0,47)	7 (0,30)	8,6(0,38)	— pl. I, fig. 6
23	11,2(0,48)	7 (0,30)	8,8(0,38)	
21,5	10,2(0,47)	6,6(0,30)	9 (0,42)	
20,5	9,4(0,46)	6,5(0,31)	8,5(0,41)	
18,7	8 (0,42)	6,2(0,33)	—	
16,5	7,5(0,44)	5,7(0,34)	7,2(0,43)	— pl. I, fig. 4
15,2	6,5(0,42)	5,2(0,34)	6,8(0,44)	— fig. 9 a = pl. I, fig. 2
13,6	5,7(0,42)	4,8(0,35)	6,4(0,47)	— pl. I, fig. 5

**Remarks.** *Macroscaphites perforatus* is clearly different from *Macroscaphites yvani* by the ribbing from the inner whorls, which is always simple and nontuberculate at the latter. It seems that the specimens figured by Uhlig (1883) as *Macroscaphites yvani* Puzos belong to

*M. perforatus*, because their inner whorls are covered by biplicate ribs and 1—2 intercalatories in a regular alternance, some of the first ones bearing umbilical tubercles.

Occurrence. The specimens here described are collected from the whole Upper Barremian at Svinitsa; they are more frequent in the "*Crioceratites*" ex gr. *barremense-orbigny*i subzone and the *Imerites giraudi* and *Eristavia dichotoma* subzone.

### **Macroscaphites ectotuberculatus n.sp.**

text—fig. 10 a—c; pl. I, fig. 7, 8

References: *Macroscaphites binodosus* Uhlig, Baccelle & Garavello, 1967, p. 134, pl. II, fig. 3; *Macroscaphites* cf. *binodosus* Uhlig, Vašíček, 1972, p. 48, pl. 4, fig. 4; *Macroscaphites* ? sp., Thomson, 1974, p. 12, pl. II, fig. g.

*Holotypus*: the specimen shown in fig. 10 a, deposited in the Institute of Geology and Geophysics collection, no P 14188.

*Derivatio nominis*: from its well developed latero-external tubercles.

*Locus typicus*: Svinitsa (Banat, SW Romania), Tsiganki Valley.

*Stratum typicum*: Upper Barremian ("*Crioceratites*" ex gr. *barremense-orbigny*i subzone); Svinitsa formation, Temeneacia member.

*Material*. Three incomplete and compressed specimens, preserved in marls, only one (the holotypus) having the first part of the uncoiled stage; all of them were collected on the Tsiganski Valley (P 14188, P 14499). Besides them, a fragment of a pyritised nucleus (a part of last coiled whorl), collected on the Romanian site of the Danube, 200 m south of the Morilor Valley (P 16 500).

*Description of the holotype*. Shell evolute, bearing thin and dense ribs, on the ventral margin gathered in bunches of 2 or 3 in a round prominent tubercle. On the last coiled whorl there are 15 such tubercled bunches of ribs and, between them, 7—11 intercalatory ribs. On a short part of the last whorl (at a diameter of 25 mm), 1—2 ribs bearing latero-external tubercles present also slight umbilical thickenings. The uncoiled part of the shell is preserved only as a short fragment of the proversum, bearing equal simple and gentle flexuous ribs.

*Variability*. The only pyritised specimen (text — fig. 10 a, b, pl. I fig. 8) is high oval in section, with slight convergent whorl sides, with umbilical shoulder and convex ventral area. Its ribbing bears tubercles denser than the holotype. Its suture resembles that of *Macroscaphites binodosus* and *M. perforatus*.

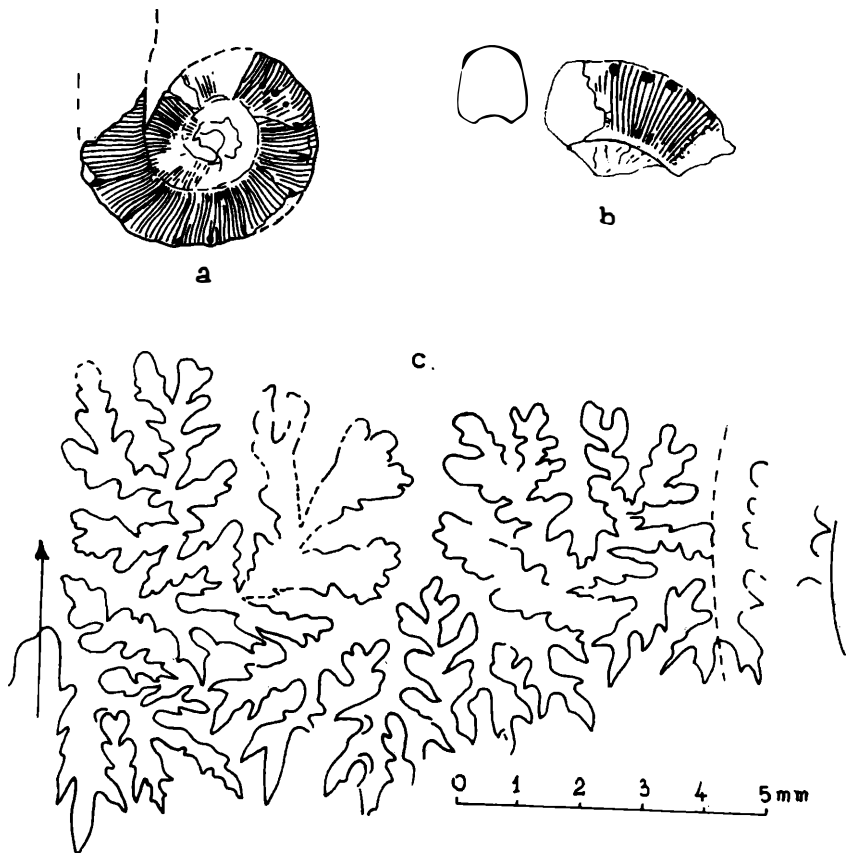


Fig. 10. — *Macroscaphites ectotuberculatus* n. sp. a, holotype (P 14188), x 1; b, paratype showing the section and the suture (P 16500), x 1; c, its suture at a diameter of almost 30 mm.

**Remarks.** The specimens here described are comparable only with three others, figured by Baccelle, Garavello (1967) and by Vašíček (1972) as *Macroscaphites binodosus* Uhlig and, respectively, by Thomson (1974) as *Macroscaphites*? sp. All of them are different from Uhlig's specimen in having strong latero-external tubercles, but only accidental umbilical thickenings of some ribs. On the other hand, Vašíček's specimen is of a significant larger size than the others and the presence of its uncoiled part is uncertain; it seems sooner to be a specimen of *Costidiscus*, here above presumed to be the dimorphic pair of *Macroscaphites ectotuberculatus*.

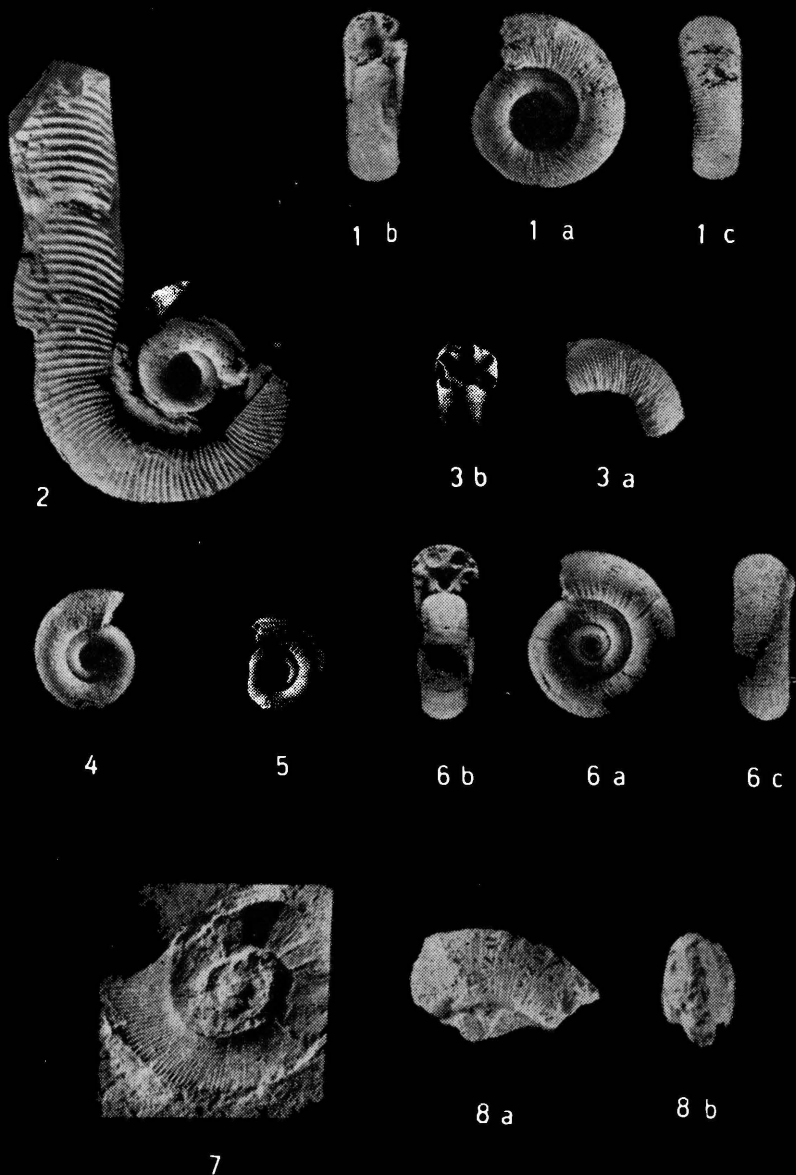


Fig. 1—6. — *Macroscaphites perforatus* n. sp. 1 a—c, holotype (P 14189); 2, paratype with a portion of the shaft (= text fig. 9 a, P 14190); 6 a—c, paratype with proloculus (lighted by a photographic procedure) (P 14198); 1, 2, 3, gathered from the left side of the Danube, Upper Barremian below the beds with *Imerites* and *Eristavia*; 5, — from the village Svinitsa area, the beds with *Imerites* and *Eristavia*; 4, 6, — from the right slope of the Morilor Valley, immediately under the beds with *Imerites* and *Eristavia*.

Fig. 7 — 8. — *Macroscaphites ectotuberculatus* n. sp. 7, holotype (P 14188), gathered from the beds with „*Crioceratites*“ ex gr. *barremense-orbigny* on the Tsiganski Valley; 8, — from the same level as 7, on the left side of the Danube, 250 m south of the Morilor Valley (P 16500).

## REFERENCES

- AVRAM E. (1976), *La succession des dépôts tithonique supérieurs et crétacés inférieurs de la région de Svinița (Banat)*. D.S. In-t. Geol. Geof. LXII/4, 53—73, București.
- (1978), *Une nouvelle espèce de céphalopode dans le Barrémien supérieur de la Roumanie: Condidiscus tardus n. sp.* D.S. Inst. Geol. Geof. LXIV/3, 5—8, București.
- BACCELLE L., GARAVELLO A. L. (1967), *Ammoniti dei livelli di la Stua (Cortina d'Ampezzo)*. An. Univ. Ferrara (NS), S IX — Sc. Geol. Paleont., IV, 9, 117—153, Ferrara.
- DRUSCHCHITS V. V. (1960), *Ammonity (Chast'I)*, in V. V. Menner (ed.): *Atlas nizhnelovoj fauny severnogo Kavkaza i Kryma*, 249—308, Moskva.
- KARAKASCH N. I. (1907), *Nizhnelovaya otlozheniya Kryma i ikh fauna*. 482 p., St. Petersburg.
- ORBIGNY A. d' (1840—1841), *Paléontologie française. terrains crétacés. I. Céphalopodes*. 662 p., Paris.
- PATRULIUS D., AVRAM E. (1976), *Stratigraphie et corrélation des terrains néocomiens et barrémo-bédouliens du Couloir de Dimbovicioara (Carpates Orientales)*. D.S. Inst. Geol. Geof. LXII/4, 135—160, București.
- SIMIONESCU I. (1898), *Studii geologice și paleontologice din Carpații Sudici. II. Fauna neocomiană din Bazinul Dimbovicioarei*. Publ. fondului V. Adamachi II/1898, 5—111, București.
- THOMSON M. R. A. (1974), *Ammonite faunas of the Lower Cretaceous of south-eastern Alexander Island*. British Antarctic Survey, Sc. Reports 80. 44 p., London.
- UHLIG V. (1883), *Die Cephalopodenfauna der Wernsdorferschichten*. Denkschr. k. Akad. Wissensch. math.-naturw. Kl., LXVI, 2, 127—290, Wien.
- VASIČEK Z. (1972), *Ammonoidea of the Těšín-Hradiště Formation (Lower Cretaceous) in the Moravskoslezské Beskydy Mts*. Rozpravi ústředního ústavu geologického, 38, 103 p., Praha.
- WESTERMANN G. E. G., ed. (1969), *Sexual dimorphism in fossil metazoa and taxonomic implications*. Int. Union of Geol. Sci., A, 1. Stuttgart.