Rivista Italiana di Paleontologia e Stratigrafia	volume 114	no. 3	2 pls.	pp. 349-361	November 2008

GLOMOMIDIELLA GEN. N. (FORAMINIFERA, MILIOLATA, NEODISCIDAE): A NEW GENUS FROM THE LATE GUADALUPIAN-LOPINGIAN OF HYDRA ISLAND (GREECE)

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Received: January 17, 2008, accepted: September 10, 2008

Key words: Middle Permian, Late Permian, foraminifers, new taxa, biostratigraphy, W Tethys.

Abstract. A new genus of Foraminifera (Miliolata, Cornuspiroidea, Neodiscidae) is erected from the late Guadalupian (Capitanian = Midian) to Lopingian sedimentary succession of the island of Hydra (Greece). It represents an important phylogenetic form, probably at the origin of several genera (or subfamilies of the authors) that became relatively widespread during the Lopingian (Late Permian). *Glomomidiella* n. gen. is characterized by an entirely glomospiral coiling and rudimentary pseudoseptation.

Riassunto. Nel presente lavoro è descritto un nuovo genere di foraminifero (Miliolata, Cornuspiroidea, Neodiscidae) rinvenuto nella parte alta del Permiano Medio e nel Permiano Superiore dell'Isola di Hydra (Grecia). *Glomomidiella* n. gen. rappresenta una forma molto significativa dal punto di vista filogenetico e si pone, probabilmente, all'origine di molti generi (o sottofamiglie) sviluppatisi durante il Permiano superiore (Lopingiano). Dal punto di vista morfologico *Glomomidiella* n. gen. è caratterizzato da un avvolgimento glomospirale e da pseudosetti.

Introduction

During the Middle/Late Permian many genera of large porcelaneous foraminifers appeared in the Tethys. The aim of this paper is to describe a new genus that seems to be ancestral to a number of different lineages: e.g., *Kamurana, Glomomidiellopsis, Septagathammina,* and *Baisalina* (all recently revised in Gaillot & Vachard 2007).

This genus is described under the name *Glomomidiella* gen. n. It corresponds to many "*Glomospira*" of the literature. *Glomotrocholina*, never re-found since its description, is too poorly known to be compared with the new genus. Nevertheless, it has probably some affinities.

Geological setting

Glomomidiella gen. n. occurs in the Marmari and Episkopi formations on the island of Hydra (Argolis Peninsula, Peloponnesos, Greece) (Fig. 1), at the Episkopi and Cap Rigas sections (Fig. 2).

The geology of Hydra is well known since the pioneering work of Renz during the first half of last century (Renz 1925; see also the synthesis of Renz & Reichel 1945) and it has been recently shown in the geological map published by Römermann et al. (1981) and Angiolini et al. (1992). Many papers were devoted to the analyses of both Permian and Triassic fossil assemblages (e.g. Renz & Reichel 1945; Nestell & Wardlaw 1987; Rettori et al. 1994; Grant 1995; Crasquin-Soleau & Baud 1998). Permian stratigraphy was the object of syntheses by Grant et al. (1991) and Baud et al. (1991).

According to Grant et al. (1991) the Permian rocks of Hydra can be subdivided into three groups: the Thikia Group, comprising from the base the Nisitsa, Ormos, Lehusis/Mamantos and Cap Rigas formations; the Klimaki Group, including the Riga, Cap Bisti and Marmari formations; and the Barmari Group, comprising the Episkopi and Miras formations.

In the original description of Grant et al. (1991), the main facies of the Marmari Formation comprises

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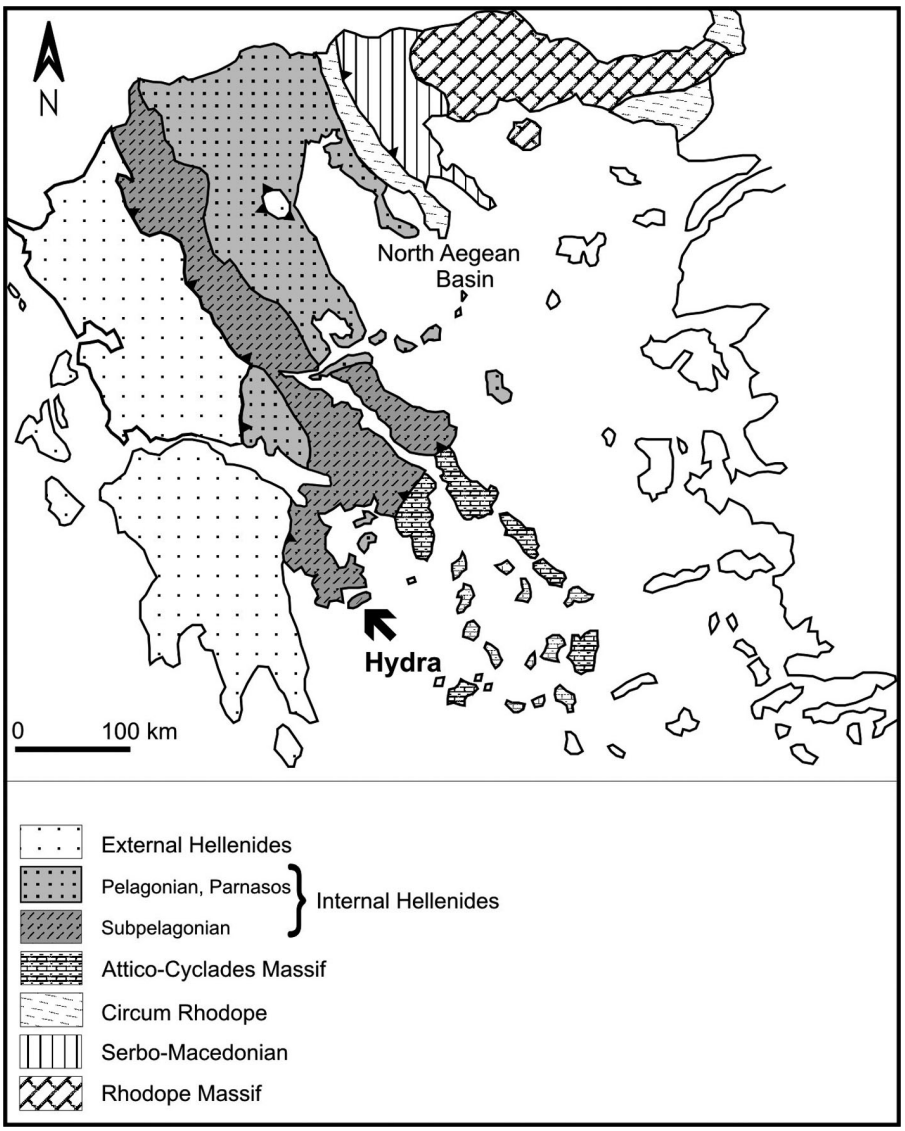


Fig. 1 - Location map of Hydra Island (Greece).

"dolomitic bioclastic wackestone and packstone with subordinate foraminiferal lime packstone-grainstone" of late Murgabian (= Wordian) age, based on the occurrence of *Neoschwagerina margaritae* Deprat (Grant et al. 1991, fig. 5 C; Vachard et al. 1995). According to our observations, the Marmari Formation chiefly consists of bioclastic wackestones with rare ostracods and gastropods, microbialitic dolomicrosparites and micrites with gypsum pseudomorphs at the base. This facies is succeeded by bioclastic wackestones and packstones with oncoids (Rivulariaceae), dasyclad algae, gastropods (including *Bellerophon*), ostracods, bivalves, *Earlandia* sp., *Globivalvulina* sp., *Pseudovermiporella*? sp., *Hemigordiellina* sp. (= *"Glomospira"* sp. of the authors), *Neodiscus*? sp., *Nodosinelloides*? sp.

The upper part of the formation comprises bioclastic floatstones and packstones with common codiacean thalli, crushed algae (*Permocalculus*-dominated), Miliolata (*Glomomidiella*-dominated), ostracods, gastropods and crinoids. Undetermined dasyclad algae are also present. Smaller foraminifers include *Globivalvulina* sp., *G.*? sp., *Louisettita*? sp., *Palaeonubecularia*? sp., *Hemigordiellina* Deleau & Marie, 1961 emend. Vachard & Beckary, 1991, (="*Glomospira*" sp. auct.), *Hemigordius harltoni* Cushman & Waters, 1928, sparitized *Hemigordius*? (resembling some involutinids), *Glomomidiella nestellorum* gen. n. n. sp. (= *Kamurana*? sensu Nguyen Duc Tien, 1978), *Glomotrocholina*? sp., *Pseudomidiella* sp., *Geinitzina postcarbonica* Spandel, 1901, *Frondina permica* Sellier De Civrieux & Dessauvagie, 1965, and *Robuloides gibbus* Reichel, 1945. Fusulinids are rarer with *Pisolina* sp.

The top of the Marmari Formation is characterized by lower biodiversity and a different facies. It is made of bioclastic, intraclastic, peloidal neosparitized wackestone with fragments of crinoids, ostracods, algae (*Diplopora* sp.), smaller foraminifers such as *Globivalvulina* sp. and fusulinids such as *Nankinella* sp. This is reflected at outcrop by the occurrence of white-weathering dolostones. The age of the Marmari Formation is Wordian-Capitanian.

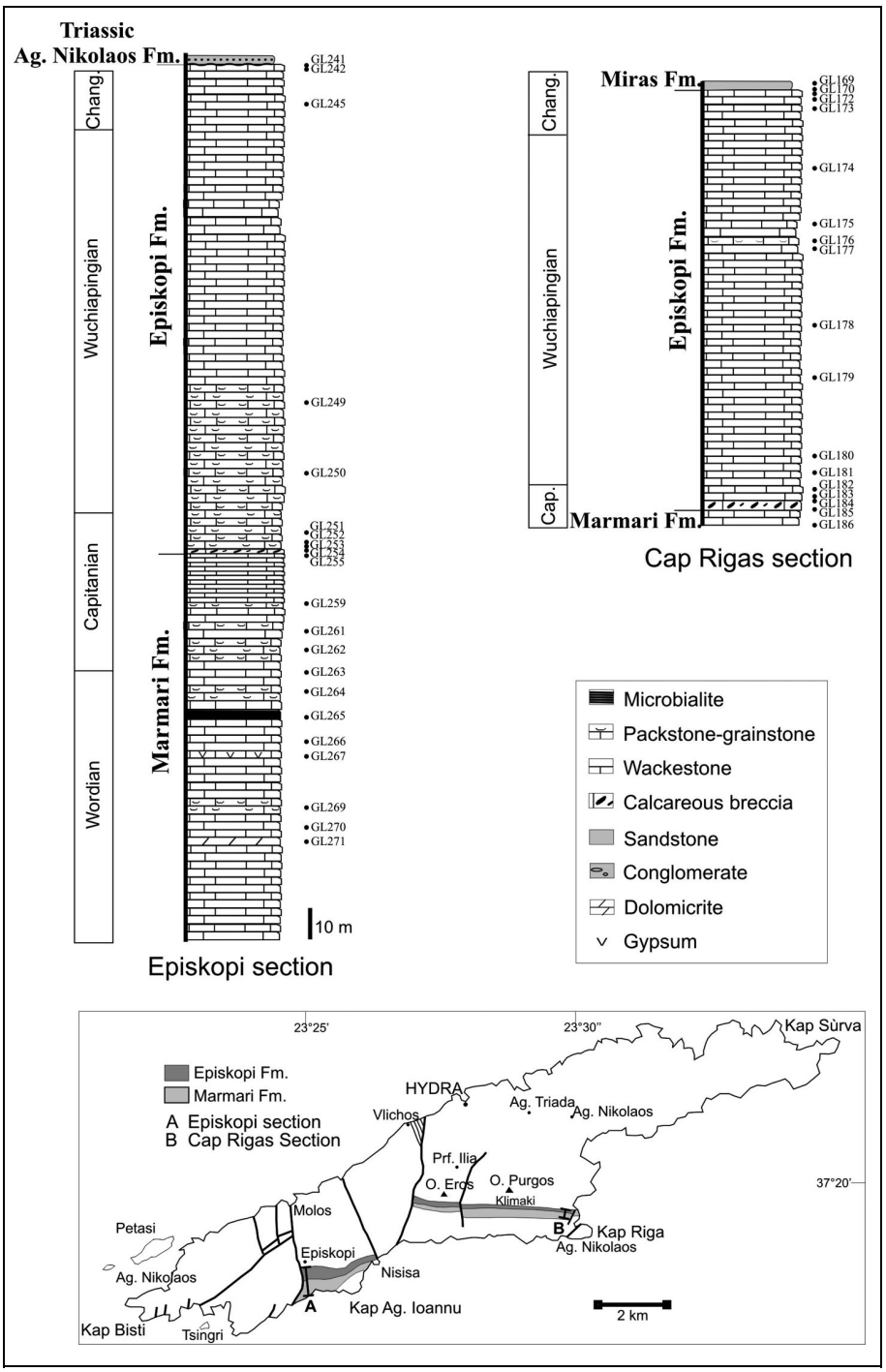


Fig. 2 - Stratigraphic sections in the Permian succession of Hydra. The Episkopi section is located south of the village of Episkopi and corresponds to the type section (Episkopi B section VI) of Grant et al. (1991); the Cap Rigas section has been measured along the northern slope of Cap Rigas.

The Episkopi Formation has been described by Grant et al. (1991) as consisting of basal conglomeratic lenses followed by algal limestones and then high energy bioclastic packstones and grainstones with chert. Very rich fossil assemblages of brachiopods, conodonts and fusulinids indicate a late Capitanian to Changhsingian age.

At the Episkopi section, the base of the Episkopi Formation truncates the underlying Marmari Formation and consists of a 20 cm-thick conglomerate with smooth carbonate clasts up to 2 cm in width (sample GL254) lying above a stylolitic surface. Above the basal conglomerate, the Episkopi Formation is characterized by bioclastic wackestones to grainstones, locally peloidal, with fragments of gastropods, bivalves, brachiopods, corals, crinoids, ostracods, paleoechinids, pseudoalgae, algae (*Sparaphralysia*, Solenoporaceae, *Permocalculus*, *Gymnocodium, Epimastopora*, *Mizzia*, *Diplopora*), and the smaller foraminifers (see list in Tab. 1).

The uppermost part of the formation, Changhsingian in age, consists of bioclastic packstones with gastropods, ostracods, bryozoans, corals, brachiopods, algae (*Permocalculus* sp.), smaller foraminifers (see list in Tab. 2)

Agathammina pusilla (Geinitz in Geinitz & Gutbier, 1848)
Agathammina sp. 1
Agathammina sp. 2
Climacammina sp.
Dagmarita shahresaensis Mohtat-Aghai & Vachard, 2003
Dagmarita sp.
Deckerella sp.
Diplosphaerina inaequalis (Derville, 1931)
Frondina permica Sellier De Civrieux & Dessauvagie, 1965
Frondinodosaria (?) sp.
Geinitzina sp.
Globivalvulina cyprica Reichel, 1945
Globivalvulina sp. 1
Globivalvulina sp. 2
Glomomidiella nestellorum n. gen., n. sp. (= *Kamurana*? sp. Nguyen Duc Tien, 1989)
"Glomospira" sp.
Hemigordius harltoni Cushman & Waters, 1928
Ichtyofrondina sp.
Multidiscus obesus Lin et al., 1990
Multidiscus padangensis Lange, 1925
Nankinella sp.
Neoendothyra sp.
Neohemigordius cf. *zaninettiae* (Altiner, 1978)
Neohemigordius sp.
Pachyphloia sp.
Paraglobivalvulina (?) sp.
Pseudodunbarula mimima (Sheng & Chang, 1958)
Pseudolangella fragilis Sellier De Civrieux & Dessauvagie, 1965
Pseudolangella sp.
Pseudomidiella cf. *labensis* Pronina-Nestell & Nestell, 2001
Pseudomidiella sp.
Pseudotristix sp.
Pseudovermiporella nipponica (Endo in Endo & Kanuma, 1954)
Rectostipulina quadrata Jenny-Deshusses, 1985
Reichelina media Miklukho-Maclay, 1954
Reichelina sp.
Robuloides gibbus Reichel, 1945a
Sengoerina sp.
Tetrataxis sp.

Tab. 1 - Foraminifers from the lower part of the Episkopi Fm.

Abadehella sp.,
Agathammina sp.
Climacammina sp.
Codonofusiella cf. *kwangsiana* Sheng, 1956
Codonofusiella cf. *laxa* Douglass, 1970
Codonofusiella cf. *paradoxica* Dunbar & Skinner, 1937
Codonofusiella sp.
Colaniella ex gr. *minima* Wang, 1966
Colaniella ex gr. *parva* (Colani, 1924)
Dagmarita sp.
Frondina permica Sellier De Civrieux & Dessauvagie, 1965,
Globivalvulina vonderschmidti Reichel, 1945
Hemigordiellina sp. (="*Glomospira*" sp.)
Multidiscus padangensis Lange 1925
Multidiscus sp.
Nankinella sp.
Nanlingella sp.
Neoendothyra reicheli Reitlinger, 1965
Neoendothyra sp.
Pachyphloia sp.
Paleofusulina cf. *sinensis* Sheng, 1955
Paradoxiella pratti Skinner & Wilde, 1955
Paraglobivalvulina gracilis Zaninetti & Altiner, 1981,
Pseudovermiporella nipponica (Endo in Endo & Kanuma, 1954)
Pseudovermiporella sp.
Rectostipulina quadrata Jenny-Deshusses, 1985
Reichelina minuta Erk, 1942
Reichelina sp.
Robuloides gibbus Reichel, 1945

Tab. 2 - Foraminifers from the upper part of the Episkopi Fm.

Systematic descriptions

Phylum **Foraminifera** d'Orbigny, 1826

Class **Miliolata** Lankester, 1885

Order **Miliolida** Delage & Hérouard, 1896

Suborder **Hemigordiopsina** Mikhalevich, 1988

Superfamily Cornuspiroidea Schulze, 1854 (nomen translat. Jirovec, 1953 acc. to Mikhalevich, 1988)

Family Neodiscidae Lin, 1984 (nomen translat. Gaillot & Vachard, 2007, pro subfamily).

Synonyms. Kamuraninae Trifonova, 1984; Shanitidae Loeblich & Tappan, 1986; Baisalinidae *sensu* Loeblich & Tappan, 1986; Hemigordiopsidae Nikitina, 1969; Septagathammininae Mikhalevich, 1988 (see discussion in Gaillot & Vachard, 2007).

Diagnosis. Large Miliolida, test composed of a spherical proloculus followed by a tubular chamber, with a thick wall, variably coiled, but generally composed of an early glomospiroid stage followed by a planispiral stage, evolute or semi-evolute. The tube is generally undivided, but pseudosepta can exist. The chamber is semicircular in section (some flosculinisations are observable in advanced forms of *Neodiscopsis*, *Glomomidiellopsis* and *Hemigordiopsis*), the thick wall is reinforced by buttresses at the contact with the preceding whorl. Aperture terminal, simple.

Remarks. The oldest genera of the family Neodiscidae as emendated by Gaillot & Vachard (2007), are *Uralogordius* Gaillot & Vachard, 2007 (the late Early Permian ancestor) and *Neodiscus* Miklukho-Maklay, 1953 emend. Gaillot & Vachard, 2007; then, *Multidiscus* and *Hemigordiopsis*. Nevertheless, the representatives of the latter in Kubergandian-Murgabian are not well known and *Hemigordiopsis* is typically Midian in age (Termier et al. 1977 updated; Pronina 1988a). Herein we suggest that *Glomomidiella* gave rise to *Glomomidiellopsis tieni* (late Midian in age in Cambodia, Nguyen Duc Tien 1979, 1986), which then in the early Wuchiapingian gave rise to the two following lineages: (1) *Neodiscopsis-Kamurana*, and (2) *Glomomidiellopsis uenoi-G. lysitiformis*. The first lineage is morphologically very different from *Neodiscus* and the second could be considered homeomorphic with *Hemigordiopsis*. On the basis of septation *Glomomidiella* probably also gave rise to true *Baisalina, Pseudobaisalina, Pseudomidiella* and *Septagathammina*. False *Baisalina* in rock older than Midian, corresponds in fact to *Septigordius* Gaillot & Vachard, 2007 (Fig. 3), i.e. the homeomorph of *Baisali-*

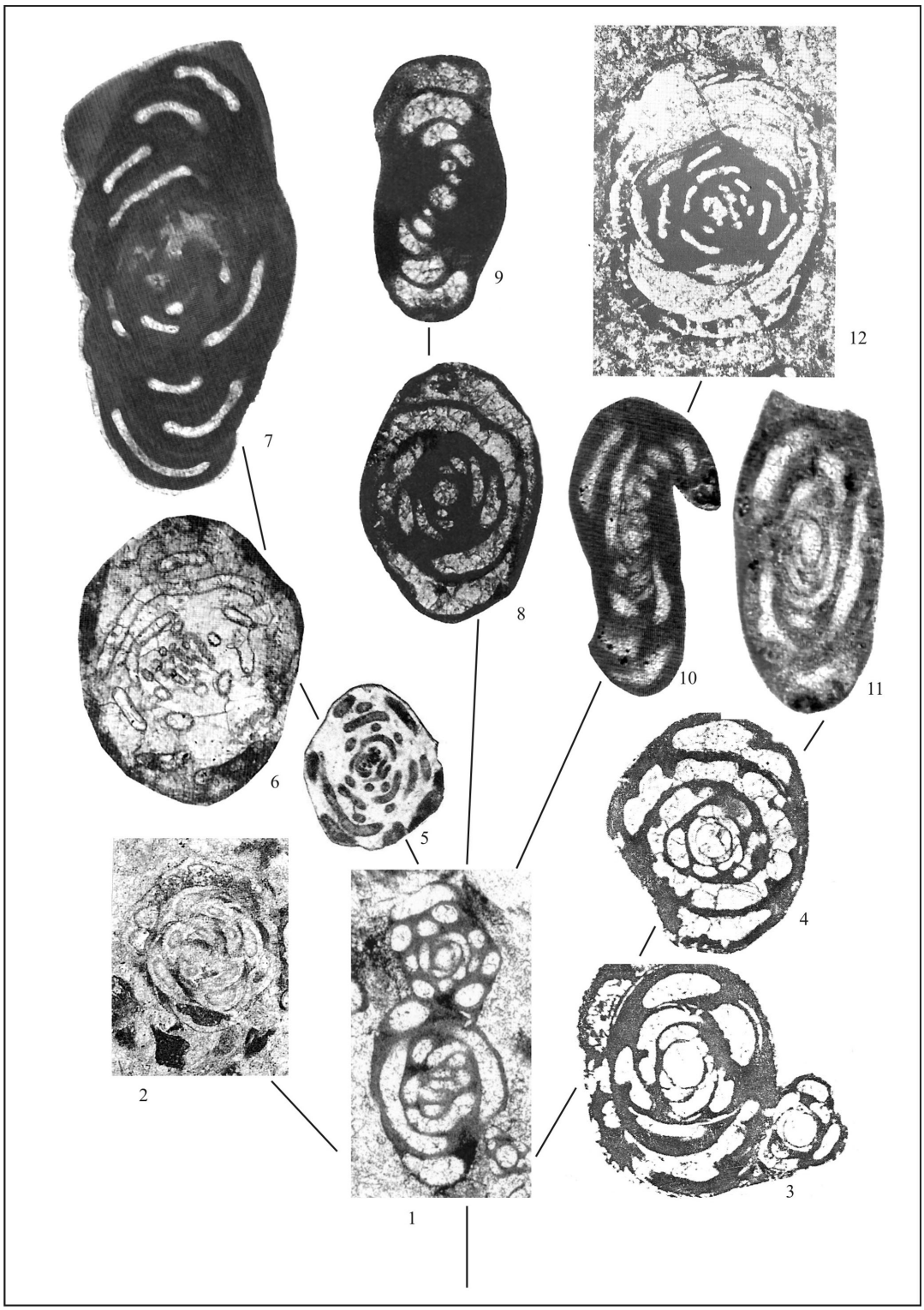


Fig. 3 - Comparison of related genera of Neodiscidae. 1) *Glomomidiella nestellorum* gen. n. n. sp., pl. 1, fig. 7 (this study). Holotype and paratype, Midian (= Capitanian), Hydra Island, Greece, x 48. 2) *Crassiglomella guangxiensis* (Lin, 1978). Plesiotype (Vachard et al., 2002: pl. 6, fig. 1), Midian, Batain Plain, Oman, x 60. 3-4) *Baisalina pulchra* Reitlinger, 1965. Two paratypes (3 = pl. 1, fig. 16; 4 = pl. 1, fig. 17), upper Gnishik Horizon, Transcaucasia (Armenia), x 48. 5) *Glomomidiellopsis tieni* Gaillot & Vachard, 2007. Holotype (Gaillot, 2006, pl. I.21, fig. 11; Gaillot & Vachard, 2007, pl. 65, fig. 11), Late Permian, Kuh-e Surmeh section, Zagros, Iran, x 64. 6) *Glomomidiellopsis uenoi* Gaillot & Vachard, 2007. Paratype (Gaillot, 2006, pl. III.19, fig. 15; Gaillot & Vachard, pl. 55, fig. 15), Changhsingian, Persian Gulf, Iran, x 54. 4. 7) *Glomomidiellopsis lysitiformis* Gaillot & Vachard, 2007. Holotype (Gaillot, 2006, pl. II.31, fig. 16; Gaillot & Vachard, pl. 27, fig. 16), Lopingian, Persian Gulf, Iran, x 68. 8-9) *Pseudomidiella lasbensis* Pronina-Nestell in Nestell and Pronina-Nestell, 2001 (8 = pl. 1, fig. 21; paratype; 9 = pl. 1, fig. 20: holotype). Late Changhsingian. NW Caucasus (Russia), both x 72. 10) *Neodiscopsis spectabilis* (Lin, Li & Sun, 1990). Plesiotype (Gaillot, 2006, pl. II.20, fig. 9), Lopingian, Persian Gulf, Iran, x 64. 11) *Septagathammina splendens* Gaillot & Vachard, 2007. Paratype (pl. II.20, fig. 13). Lopingian, Persian Gulf, Iran, x 64. 12) *Kamurana broennimanni* Altiner and Zaninetti, 1977 (orth. mut.). Paratype (pl. 1, fig. 6), Late Permian, eastern Taurus (Turkey), x 28.

na, among the more primitive family Hemigordiidae (see discussion in Gaillot & Vachard 2007).

Occurrence. ?Sakmarian, ?Artinskian-Lopingian with a late Changhsingian acme. Palaeotethys from Greece to South China; Neo-Tethys: Taurides (Turkey), Zagros (southern Iran), Oman (Batain Plain). Rare to absent in North-America. Trifonova's (1992) Triassic representatives of *Hemigordiopsis irregularis* (Wang & Sun, 1973) and *H. renzi* Reichel, 1945 seem to be correctly identified at least at the family level; hence the latter could be present within the Early Triassic of Bulgaria. *Kamurana* is also indicated as "Late Permian-Early Triassic" in range by Pronina (1988b, p. 59).

Glomomidiella gen. n.

Synonyms *Glomospira* (pars), *Baisalina* (pars), *Hemigordius* (pars), *Agathammina* (pars),? *Glomotrocholina* (pars).

Type species. *Glomomidiella nestellorum* gen. n. n. sp.

Etymology. From *Glomospira* by the rudimentary septation and the largest size, and from *Pseudomidiella* by the type of coiling (entirely streptospiral).

Diagnosis. Test free, large, bichambered roughly spherical, and involute. Coiling is streptospiral (= i.e., glomospiroid). Faint pseudoseptation present in the last whorls. Wall porcelaneous. Aperture terminal, simple.

Composition. *Glomomidiella nestellorum* gen. n. n. sp., *Baisalina pulchra magna* Lys in Lys et al., 1980; *Baisalina gigantea* Lin, 1984; *Glomospira problema* Lin, 1978; *Glomospira helicina* Lin et al, 1990; Foram. indet. sp. Berczi-Makk et al., 1995, pl. 15, figs. 1-3; *Glomomidiella* n. sp. (Mohtat-Aghai et al., submitted, pl. 1, fig. 16); ? *Hemigordius* sp. + *Baisalina pulchra*, both *sensu* Noé, 1987 (pl. 31, figs. 2+3) (or *Pseudomidiella*).

Characters of the species:

1. *Glomomidiella nestellorum* n. sp.: spherical to ovoid, large, greater height of the whorls, pseudo-septa rare in small asymmetric triangles.

2. *Glomomidiella magna* (Lys): ovoid, large, greater height of the whorls, pseudo-septa, isolated in acute triangle, or continuous and forming an inner rugose periphery.

3. *Glomomidiella gigantea* (Lin): similar to *G. magna*, but with a medium sized chamber (*G. magna* and *G. gigantea* might be synonyms).

4. *Glomomidiella problema* (Lin) differs from *G. nestellorum*, by a less tight juvenarium.

5. *Glomomidiella helicina* (Lin, Li & Sun) is similar in size to *G. nestellorum* (D = 1.07-1.59 mm), with fewer whorls (2-3). Pseudo-septa are also similar.

Comparisons. *Glomomidiella* gen. n. differs from *Glomospira* Rzehak, 1888, and *Pseudospira* Reitlinger in Vdovenko et al., 1993, by the type of the wall and the pseudoseptation; from *Hemigordiellina* Marie in Deleau & Marie, 1961, emend. Vachard & Beckary, 1991 (= porcelaneous false *Glomospira* of the authors), *Hoyenella* Rettori, 1994, *Pseudoagathammina* Lin et al., 1990, and *Pilammina* Pantic, 1965, by the size and the presence of pseudoseptation. The new genus can be distinguished from *Pseudomidiella* Pronina-Nestell in Pronina-Nestell & Nestell, 2001, by the entirely glomospiroid coiling (the last whorls in *Pseudomidiella* are aligned); from *Baisalina* Reitlinger, 1965, and *Pseudobaisalina* Sosnina, 1983, by the juvenarium (sigmoidal and not quinqueloculine) and by a more reduced pseudoseptation. *Glomomidiella* gen. n. differs from *Hemigordius* Schubert, 1908, *Neodiscus* Miklukho-Maklay, 1953, *Graecodiscus* Vachard in Vachard et al., 1993, *Hemigordiopsis* Reichel, 1945 and *Kamurana* Altiner & Zaninetti, 1977, by the type of coiling and the pseudoseptation; from *Crassiglomella* Gaillot & Vachard, 2007 by the pseudoseptation, less marked buttresses and absence of evolute or semi-evolute outer whorls; from *Neodiscopsis* Gaillot & Vachard, 2007 by the type of coiling and the absence of flosculinisation and from *Glomomidiellopsis* Gaillot & Vachard, 2007 by the smaller size and the larger lumen of the tube (Fig. 3). *Glomotrocholina* Nikitina in Sosnina & Nikitina, 1977, needs to be revised because it could be interpreted as a different genus or an oblique cross section of *Glomomidiella* gen. n. However, pseudoseptation has never been mentioned in *Glomotrocholina*. Some oblique cross sections of *Glomomidiella* gen. n. can be confused with transverse cross sections of *Agathammina* Neumayr, 1887.

Remarks. Many large glomospiroids figured in the literature belong to this genus, which is abundant on Hydra Island (Baud et al. 1991, pl. 1, fig. 1; Jenny et al. 2004, pl. 7, fig. 6).

Geographic and stratigraphic range. Capitanian to Changsinghian. The ancestor in the early Permian can be found in specimens assigned to *"Glomospira" duplicata* Lipina, 1949, or to some representatives of the genus *Pseudoagathammina* Lin et al., 1990.

Glomomidiella nestellorum gen. n. n. sp.

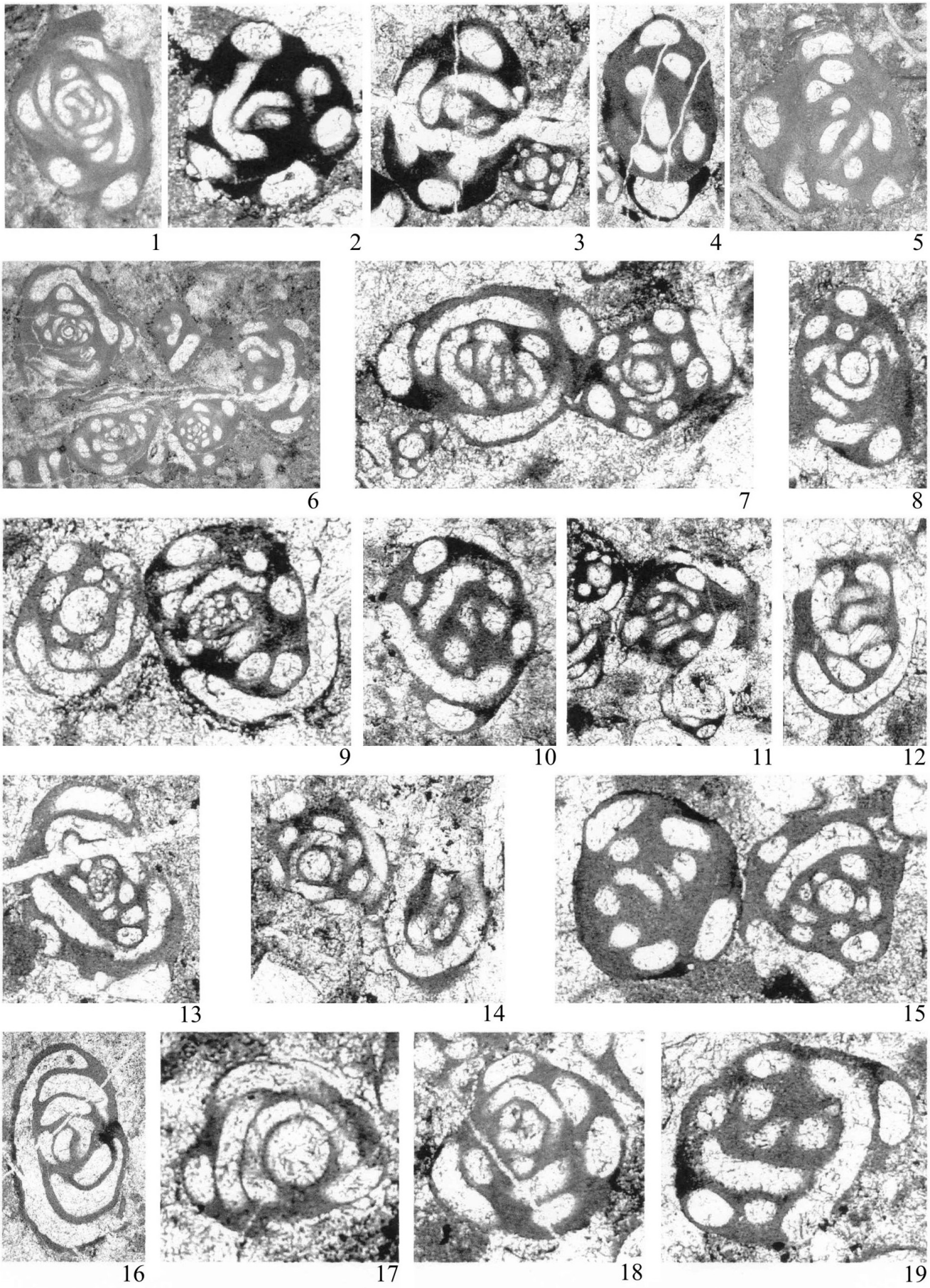
Pl. 1, figs 1-19, Pl. 2, figs 1-20

1964 Ammodiscidae - Glintzboeckel & Rabaté, pl. 102, fig. 2 (bottom, centre and right).

1965 *Glomospira* sp. - Kochansky-Devidé, pl. 13, fig. 7-8.

PLATE 1

Figs. 1-19 - *Glomomidiella nestellorum* gen. n. n. sp. Fig. 7 (left) - holotype, sample GL 262; Figs. 1, 5, 6 - paratypes, sample GL 176; figs. 2-4, 7 (right), 8-19 - paratypes, sample GL 262. Magnifications: Figs. 1-5, 7-10, 12-13; 15-19: x 60; figs. 6, 11, 14: x 40.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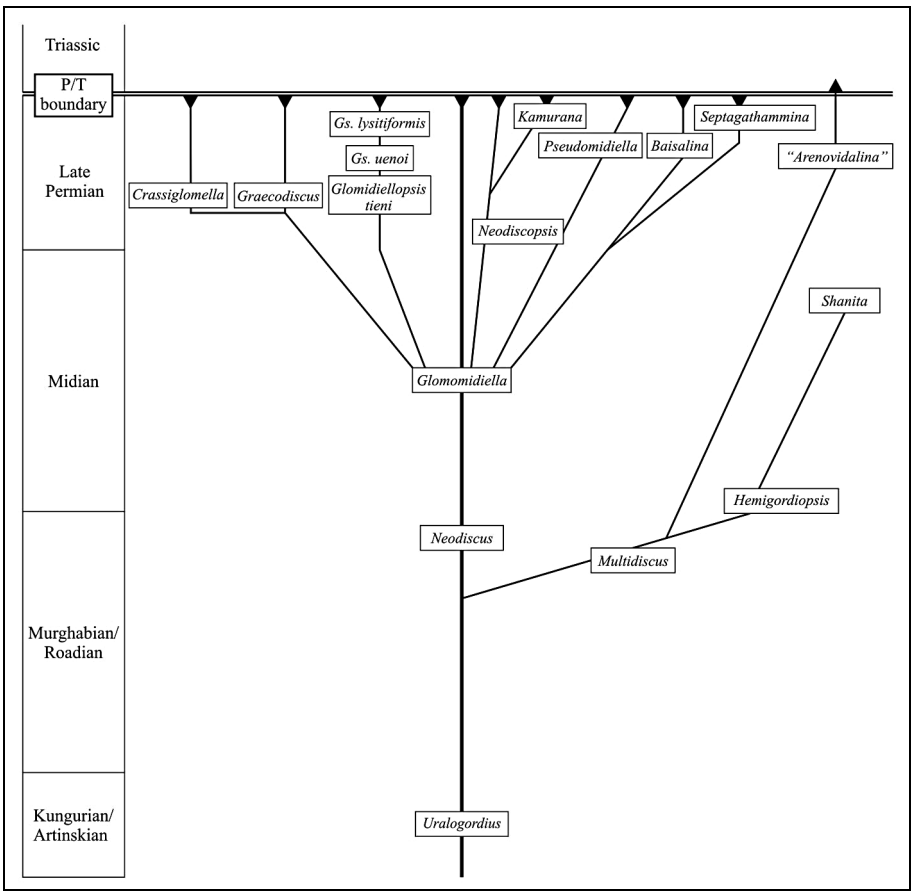


Fig. 4 - Hypothetical phylogeny of some Permian and Triassic Miliolata.

1970 *Glomospira* spp. - Pantic, pl. 1, fig. 6.

1978 *Agathammina pusilla* (Geinitz) - Berczi-Makk, pl. 1, fig. 1.

1980 *Baisalina pulchra magna* n. subsp. Lys in Lys et al., p. 83, pl. 2, figs. 5-8.

1980 *Kamurana broennimanni* Altiner & Zaninetti - Lys in Lys et al., p. 85 pl. 2, fig. 21.

1981 *Hemigordius* sp., forme en pelote - Zaninetti, Altiner & Çatal, pl. 6, fig. 6, 8?.

1986 *Agathammina* sp. A - Kobayashi, pl. 3, fig. 7-9, 11?.

1987 *Kamurana*? or *Baisalina* sp. - Panzanelli-Fratoni et al., pl. 10, fig. 17.

1988 *Baisalina* n. sp. aff. *B. pulchra* - Gargouri & Vachard, pl. 2, fig. 9, non fig. 1-3, 7-8, 11 (other Miliolida).

1989 *Kamurana* (?) sp. - Nguyen Duc Tien, pl. 27, fig. 11-12.

1990 *Agathammina asymmetrica* (Han) - Lin et al., pl. 26, fig. 14, non fig. 13, 15-16 (= *Agathammina*).

1991 *Hemigordius* - Baud et al., pl. 1, fig. 1, non pl. 2, fig. 1 (= *Neohemigordius*).

1994 *Kamurana* (?) sp. - Fontaine et al., pl. 5, fig. 8.

1995 *Baisalina pulchra* Reitlinger- Berczi-Makk et al., pl. 13, fig. 3-4, 6-7, pl. 14, fig. 4-5, non pl.15, fig. 6 (= *Pseudomidiella*).

? 1995 Foram. indet. sp.- Berczi-Makk et al., pl. 15, fig. 1-3.

1995 *Baisalina pulchra magna* n. subsp. - Partoazar, pl. 3, fig. 3-7 (nomen nudum, no described and preoccupied).

1998 *Kamurana* or *Neodiscus* sp. - Altiner & Özkan-Altiner, pl. 4, fig. 19.

2004 *Hemigordius* ssp. (sic) - Jenny et al., 2004, pl. 7, fig. 6.

Etymology. Dedicated to G. Pronina-Nestell and M. Nestell (University of Texas), eminent specialists of the Permian.

Type locality. Hydra Island (Greece).

Type level. Sample GL 262.

Holotype. Pl. 1, fig. 7 (left), MPUM 9852.

Paratypes. Pl. 1 figs. 1-6, 7 (right) 8-19; Pl. 2 figs. 1-20.

Repository of the types. Museum of Palaeontology, Dipartimento di Scienze della Terra "A. Desio", University of Milano (Italy), MPUM 9852.

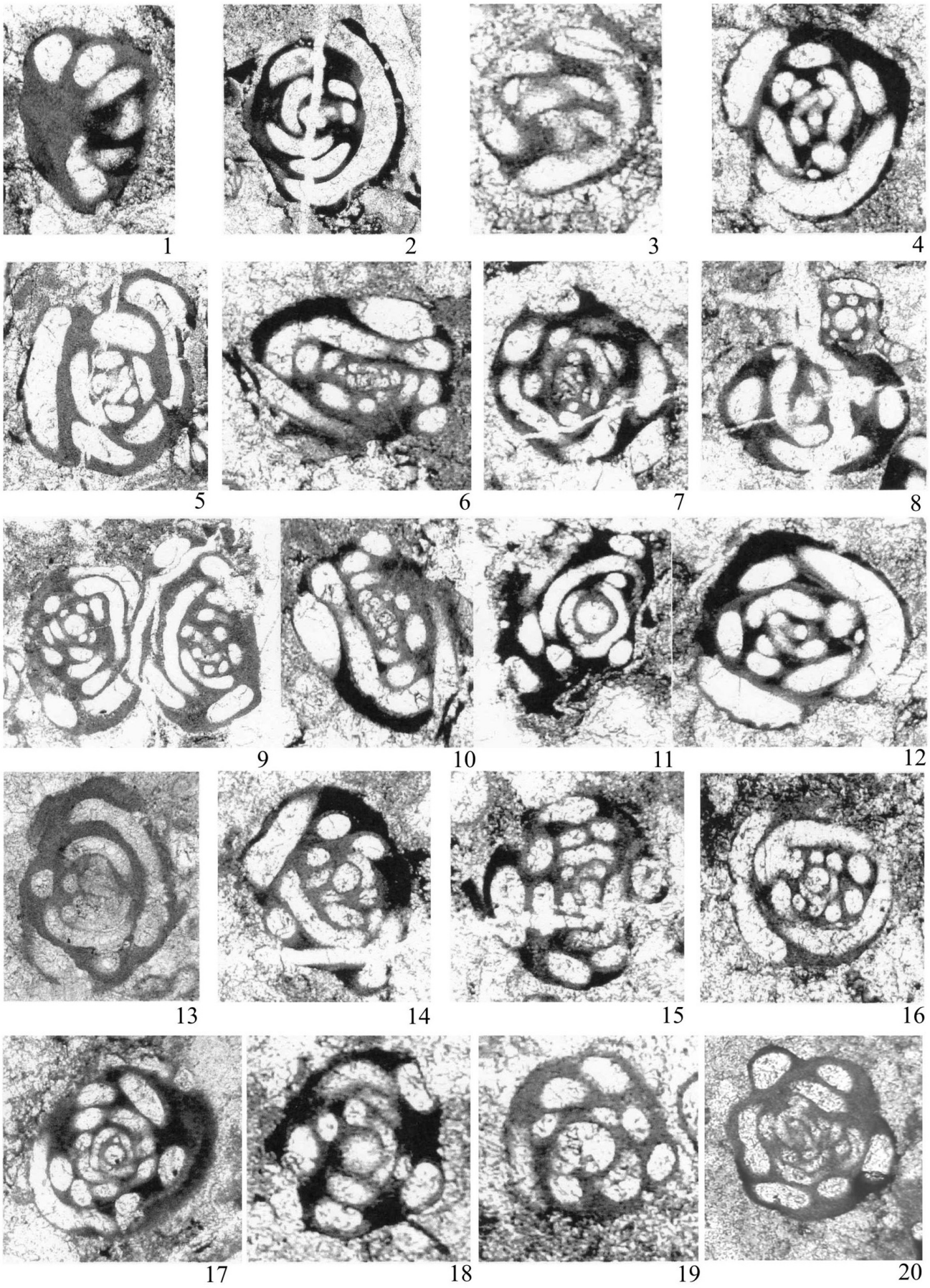
Diagnosis. Large *Glomomidiella* gen. n. having a relatively wide tubular chamber and poorly developed pseudoseptation.

Description. Test spherical, rarely ovoid, involute, with rounded periphery and without umbilicus. Streptospirally coiled with the last few volutions rarely aligned. Spherical proloculus followed by an enrolled pseudoseptate second chamber gradually and proportionally increasing in size. Peripheral margin broadly-rounded. Two groups of specimens considered as megalo- and microspheric generations. Wall calcareous, por-

PLATE 2

Figs. 1-12 - *Glomomidiella nestellorum* gen. n. n. sp. Figs. 1-12 - paratypes (megalospheric generation), sample GL 262;

Figs. 13-20 - *Glomomidiella nestellorum* gen. n. n. sp. paratypes (microspheric generation), fig. 13 - sample GL 252; figs. 14-20 - sample GL262. Magnifications: Figs. 1-12: x 60; figs. 13-20: x 80.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celaneous, well preserved. The pseudoseptation produces a rugose inner periphery. Aperture simple at end of the tubular chamber.

The macrospheric generation has a proloculus diameter of 0.090-0.160 mm (generally 0.100 mm). Juvenarium consisting of 5-6 volutions, more or less sigmoidally coiled and limited by a glomus exhibiting a longitudinal section of the tube. Mature specimens having 7-9 volutions and measuring: diameter = 0.520-0.770 mm; width = 0.600-0.735 mm; L/D ratio = 0.75-1.10.

The microspheric generation exhibits an involute test, roughly spherical to slightly ovoid in shape, with rounded periphery and protruding flanks. The coiling is entirely streptospiral. Spherical proloculus, being 0.040-0.060 mm in outside diameter, followed by an enrolled pseudo-septate second chamber slowly and proportionally enlarging. Peripheral margin broadly rounded. Juvenarium consisting of 5-7 volutions, almost spherical, thin-walled, tightly coiled. In the mature part (4-6 whorls) the height of the chamber rapidly increases and attains 0.06 mm. Mature specimens dimensions: diameter = 0.310-0.550 mm; width = 0.120-0.400 mm; L/D ratio = 0.80-1.00.

Comparison. It differs from *Glomomidiella magna* by the general shape and the morphology of the pseudosepta; from *G. gigantea* by an higher chamber; from *G. problema* by the tight juvenarium; from *G. helicina* by less whorls.

Remarks. The specimens are very abundant in the microfacies, with almost sixty specimens each thin-section (see Jenny et al. 2004, pl. 7, fig. 6).

Geographic and stratigraphic distribution. Capitanian to Changhsingian. Southern border of the Palaeotethys and Neotethys: Tunisia, Croatia, Serbia, Hungary, Greece, Italy (Southern Apennines), Turkey (Taurides), Himalaya, Sumatra, Malaysia.

Conclusions

1. In the Capitanian-Wuchiapingian (late Middle Permian) of the island of Hydra, a locally abundant foraminifer is described as *Glomidiella nestellorum,* gen. n. n. sp.

2. This taxon can be characterized as a large, glomospiroid, pseudoseptate, porcelaneous genus.

3. It exhibits both micro- and megalospheric generations.

4. It is a key genus in the history of the Miliolata Neodiscidae because it is located at the origin of five important lineages: *Baisalina, Septagathammina, Pseudomidiella, Neodiscopsis* and *Glomomidiellopsis* (Fig. 4).

5. *Glomomidiella* gen. n. is the ancestor of the Lopingian large glomospiroid forms: *Crassiglomella* by loss of the pseudoseptation.

6. *Glomomidiella* gen. n. is the ancestor of *Pseudomidiella* by weak modification of coiling and increase of the pseudoseptation.

7. *Glomomidiella* gen. n. is the ancestor of *Baisalina* by strong modification of coiling and increase of the pseudoseptation. *Glomomidiella* gen. n. is the ancestor of important large forms of the Lopingian: *Kamurana, Neodiscopsis* and *Glomomidiellopsis*.

8. *Glomomidiella nestellorum* gen. n. n. sp. is the direct ancestor of *Glomomidiellopsis tieni* by a flosculinisation of the tube.

Acknowledgements. The reviewers, J. Groves and D. Altiner, are thanked for their very constructive reviews.

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