POLSKA AKADEMIA NAUK • KOMITET NAUK GEOLOGICZNYCH

WYDAWNICTWO **INVIT** • WARSZAWA

acta geologica polonica

Vol. 47, No. 1-2, pp. 1-75 Warszawa 1997

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Middle Miocene (Badenian) gastropods from Korytnica, Poland; Part III

ABSTRACT: The presented report is the third part of the monograph of the rich assemblage of gastropods occurring in the so-called *Pleurotoma Clays* of Middle Miocene (Badenian) age, exposed in the environs of Korytnica in the Holy Cross Mountains, Central Poland. It contains characteristics of 90 prosobranch species of the nine families: Nassariidae, Olividae, Mitridae, Vasidae, Volutidae, Cancellariidae, Marginellidae, Conidae, and Terebridae. Within this assemblage, 3 species are new for the science (including one, formerly reported from Korytnica, but determined erroneously), and five require to be labelled as a *nomen novum*; of the recognized species as many as 60 have not hitherto been reported from Korytnica, and 50 from the Miocene of Poland. The new species established are: *Hinia* (*Hinia*) *korytnicensis* sp.n., *Hinia* (*Uzita*) *exspectata* sp.n., and *Dorsanum cibori* sp.n. For five taxa at the species level the newly introduced names are: *Mitraria* (*Mitraria*) *rudolfi* nom.n., *Mitraria* (*Mitraria*) *mathiasi* nom.n., *Vexillum* (*Uromitra*) *pseudocupressinum* nom.n., *Cancellaria* (*Merica*) *jansseni* nom.n., and *Narona* (*Aneurystoma*) *austropolonica* nom.n. The Indo-Pacific genus *Tritonoharpa* DALL, 1904, is for the first time credibly recorded in Europe.

Contents

INTRODUCTION

The present paper is the third part of a monographic description of the Middle Miocene (Badenian) gastropods from Korytnica, occurring within the so-called *Pleurotoma Clays*, the fame of which is known in the European literature since over two centuries. The whole gastropod assemblage from Korytnica is surprisingly rich and represented usually by very well preserved specimens. In former parts of this monographic description, 187 species were presented in Part *I* (BAŁUK 1975), and 135 in Part *II* (BAŁUK 1995). Together with those presented herein, a total of 412 species has hitherto been shown; this total number makes up merely a half of the recognized species taking a share of the gastropod assemblage.

The studied gastropod assemblage of Korytnica throve in a small bay, developed along the dismembered shore of the Middle Miocene (Badenian) sea that transgressed upon the southern slopes of the Holy Cross Mountains in Central Poland. The basic data on the origin of this bay, the Korytnica Basin, and its depositional sequence were given by RADWAŃSKI (1969) and BAŁUK & RADWAŃSKI (1977), whereas the stratigraphic age of the deposits was recognized by MARTINI (1977), and recently commented by RÖGL & BRANDTSTÄTTER (1993).

The gastropod assemblage of the Korytnica Basin is associated with a unique and overwhelmingly diversified assemblage of other fossils, both invertebrates and vertebrates, a review of which was offered in former publications (BAŁUK & RADWAŃSKI 1977, pp. 96-99; BAŁUK 1995, pp. 160-161). Since that time, still one group of animals has enriched the spectrum of the Korytnica biota: this are the stomatopod crustaceans, commonly known as the mantis shrimps, to the predatory activity of which various damages of gastropod shells have recently been ascribed (BAŁUK & RADWAŃSKI 1996).

REMARKS ON STOMATOPOD PREDATION UPON KORYTNICA GASTROPODS

The stomatopod crustaceans, to whose activity the damages in shells of the Korytnica gastropods have been ascribed in a separate paper (BAŁUK & RADWAŃSKI 1996), are typical carnivores preying upon diverse invertebrates and small fish. Of their recognized diet (*see* BAŁUK & RADWAŃSKI 1996, p. 279) the gastropod are the most important item. It may be commented herein, that presumably such relationship existed also in the Korytnica Basin in which many gastropod species suffered seriously the predatory pressure of stomatopods (*see* BAŁUK & RADWAŃSKI 1996, Tables 1-3 and Pls 1-9). Various damages in the form of either holes (punctures) or breakage are commonly found in many specimens. Of the gastropods illustrated in the present paper such damages are acquired by the shells i.a. of *Cancellaria* (*Merica*) *fenestrata* EICHWALD (*see herein*, Pl. 14, Fig. 2), *Narona* (*Aneurystoma*) *austropolonica* nom.n. (*see herein*, Pl. 17, Fig. 4), and *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER (*see herein*, Pl. 22, Fig. 8), and of those presented in the second part of the monograph, by the shells i.a. of *Charonia* (*Sassia*) *tarbelliana* (GRATELOUP) (*see* BAŁUK 1995, Pl. 20, Fig. 2) and *Murex* (*Tubicauda*) *spinicosta* BRONN (*see* BAŁUK 1995, Pl. 22, Fig. 1).

It is also to note, that of the species described in the present paper, particularly preferred by the preying stomatopods were the two species of *Sphaeronassa*, namely *Sphaeronassa dujardini* (DESHAYES) – attacked were 54.4% of the collected specimens, and *Sphaeronassa schoenni* (HOERNES & AUINGER) – 51.0% of the collected specimens, as well as *Ancilla* (*Baryspira*) *glandiformis* (LAMARCK) – 13.8% of the collected specimens, although for illustration the undamaged specimens have been selected.

SYSTEMATIC ACCOUNT

Superfamily **Buccinacea** (continued, *see* BAŁUK 1995)
Family **Nassariidae** IREDALE, 1916

Genus *Sphaeronassa* LOCKARD, 1886

Sphaeronassa dujardini (DESHAYES, 1844)
(Pl. 1, Figs 4-6)

partim 1856. *Buccinum mutabile* LINN.; M. HÖRNES, pp. 154-155 (= *Buccinum Dujardini* DESH.; M. HÖRNES, pp. 668-669), Pl. 13, Fig. 2; *non* Figs 1 and 3-4.

1870. *Buccinum Dujardini* DESH.; F. ROEMER, p. 380, Pl. 47, Fig. 18.

1882. *Buccinum* (*Niotha*) *Dujardini* DESH.; R. HOERNES & M. AUINGER, pp. 124-125, Pl. 15, Fig. 12.

1911. *Nassa Dujardini* DESH.; W. FRIEDBERG, pp. 76-77, Pl. 4, Fig. 13.
1911. *Nassa Dujardini* DESH. var. *maior* mihi; W. FRIEDBERG, pp. 77-78, Pl. 4, Figs 14-15, and Text-fig. 22.
1952a. *Nassa (Nassa) dujardini* DESHAYES; M. GLIBERT, pp. 333-335, Pl. 9, Fig. 9.
1958. *Hinia (Hinia) dujardini longitesta* nov.nom.; E. BEER-BISTRICKY, p. 57.
1959. *Nassa dujardini* DESH.; P.M. STEVANOVIĆ & V.M. MILOŠEVIĆ, p. 93, Pl. 2, Figs 5a-5b.
1960. *Nassa (Phrontis) dujardini* (DESHAYES); E. KOJUMDGIEVA, p. 181, Pl. 44, Fig. 21.
1964. *Nassa dujardini* DESH.; J. ŠVAGROVSKY, Pl. 17, Fig. 2.
1966. *Nassa (Phrontis) dujardini* DESHAYES; L. STRAUSZ, p. 328, Pl. 40, Figs 1-4.
1970. *Nassa schoenni dujardini* (DESHAYES); W. BAŁUK, p. 118, Pl. 12, Fig. 12.

MATERIAL: Ninety specimens.
DIMENSIONS: The largest specimen (Pl. 1, Fig. 4) is 21 mm high and 11.5 mm wide.

REMARKS: The studied specimens from Korytnica characterize by their size larger than that of other conspecifics coming from many Miocene localities in Europe. Almost a half of the specimens collected at Korytnica have their height over 15 mm. This feature was first noted by FRIEDBERG (1911), who proposed such specimens to be distinguished as a separate variety *maior* FRIEDBERG. In the present author's opinion such distinction is not justifiable, similarly as that brought by BEER-BISTRICKY (1958, p. 57) who introduced the subspecies *dujardini longitesta* BEER-BISTRICKY for the longest specimens from the Vienna Basin [the latter name, in any case, is a younger synonym to the above-discussed *maior* of FRIEDBERG].

The species *Sphaeronassa dujardini* (DESHAYES) was reported from Korytnica by all former authors. In the Miocene of Poland it is also known from Biskupiec (ROEMER 1870), Niskowa (FRIEDBERG 1911, SKOCZYLASÓWNA 1930, BAŁUK 1970) as well as from Błonie, Zgłobice, and Szczepanowice (FRIEDBERG 1911, URBANIAK 1974).

Sphaeronassa schoenni (HOERNES & AUINGER, 1882) (Pl. 1, Figs 1-3)

1837. *Nassa laevigata* m.; G. PUSCH, pp. 122-123, Pl. 11, Fig. 8.
partim 1856. *Buccinum mutabile* LINN.; M. HÖRNES, pp. 154-155 (= *Buccinum Dujardini* DESH.; M. HÖRNES, pp. 668-669), Pl. 13, Fig. 1; *non* Figs 2-4.
1882. *Buccinum (Niotha) Schoenni* nov.form.; R. HOERNES & M. AUINGER, p. 125, Pl. 15, Figs 18-20.
1911. *Nassa Schönni* R. HOERN. i AUINGER; W. FRIEDBERG, pp. 78-79, Pl. 4, Figs 16-18.
1954. *Nassa (Arcularia) schönni*; L. STRAUSZ, p. 29 (and 108), Pl. 6, Fig. 125.
1964. *Nassa schönni* R. HOERN. et AUING.; J. ŠVAGROVSKY, Pl. 17, Fig. 1.
1966. *Nassa (Phrontis) dujardini schönni* HOERNES & AUINGER; L. STRAUSZ, pp. 328-329, Pl. 39, Figs 26-33.
1966. *Nassa (Phrontis) dujardini edlaueri* BEER-BISTRICKY; L. STRAUSZ, pp. 329-330, Pl. 39, Figs 18-25.
1970. *Nassa schoenni schoenni* (R. HOERNES & AUINGER); W. BAŁUK, p. 118, Pl. 12, Fig. 13.
1973. *Nassa (Arcularia) schönni* (HOERNES et AUINGER); M. BOHN-HAVAS, p. 1054, Pl. 5, Figs 7-8.

MATERIAL: One hundred and fifty specimens.
DIMENSIONS: The largest specimen is 18.5 mm high and 14 mm wide.

REMARKS: Similarly as the preceding species also the specimens of *Sphaeronassa schoenni* (HOERNES & AUINGER) from Korytnica are featured by a relatively larger size. They are evidently conspecific with those coming from the Vienna Basin and Transylvania, as well as from Hungary, the locality Várpalota including. The conspecifics from the latter locality STRAUSZ (1966, pp. 329-330) refers to as *Nassa dujardini edlaueri* BEER-BISTRICKY,

although it is to note that he determines an almost identical (likely, the same!) specimen (*comp.* STRAUSZ 1954, Pl. 6, Fig. 125*b*, and STRAUSZ 1966, Pl. 39, Fig. 25) either to (STRAUSZ 1966, p. 328) *Nassa* (*Phrontis*) *dujardini schönni* HOERNES & AUINGER, or to (STRAUSZ 1966, p. 329) *Nassa* (*Phrontis*) *dujardini edlaueri* BEER-BISTRICKY.

Within the collected specimens over 20 bear their outer lip smooth innerly, that is toothless. Such specimens correspond exactly to those described from Korytnica by PUSCH (1837) as *Nassa laevigata* PUSCH. In the studied material such very specimens are usually of a smaller size. The larger specimens bear the teeth developed to a very variable extent; it is thus inferred that any taxonomic distinction of the toothless specimens is not justified.

The species *Sphaeronassa schoenni* (HOERNES & AUINGER) was reported from Korytnica by all former authors. In the Miocene of Poland it is also known from Małoszów (FRIEDBERG 1938, KRACH 1947), Benczyn (KRACH 1950a), Iwkowa (FRIEDBERG 1911), Niskowa (FRIEDBERG 1911, SKOCZYLASÓWNA 1930, BAŁUK 1970), and Zgłobice (FRIEDBERG 1911, URBANIAK 1974).

Genus *Hinia* LEACH *in* GRAY, 1847
Subgenus *Hinia* LEACH *in* GRAY, 1847
Hinia (*Hinia*) *adae* (BOETTGER, 1901)
(Pl. 4, Fig. 6)

1901. *Nassa* (*Hima*) *adae* n.sp.; O. BOETTGER, pp. 22-23.
1934. *Nassa* (*Hima*) *adae* BOETTGER; A. ZILCH, p. 256, Pl. 16, Fig. 5.
?1960. *Nassa* (*Hinia*) *adae* BOETTGER; E. KOJUMDGIEVA, p. 179, Pl. 44, Fig. 18.
1964. *Nassa adae* B.; J. ŠVAGROVSKY, Pl. 17, Fig. 3.

MATERIAL: One specimen.
DIMENSIONS: The collected specimen is 7.0 mm high and 4.2 mm wide.

REMARKS: The studied specimen seems to be concordant with those described by BOETTGER (1901) from Kostej in Transylvania, although it is remarkably almost twice larger at the same number of whorls (7), and width/height ratio (0.6). Other features are identical, particularly the shape of the last whorl and of the aperture, which were regarded by BOETTGER (1901) as diagnostic for the species.

The species *Hinia adae* (BOETTGER) is slightly similar to *Hinia styriaca* (AUINGER *in* HILBER) what was evident to BOETTGER himself. A difference in the shape of the shell, especially of its last whorl, and of the outer lip indicate evidently a separateness of these two species.

The species *Hinia* (*Hinia*) *adae* (BOETTGER) was also reported from the Miocene of Bulgaria (KOJUMDGIEVA 1960) and Slovakia (ŠVAGROVSKY 1964). The Bulgarian specimens are distinctly more slender (width/height ratio 0.42-0.44), whereas those from Slovakia bear their axial ribs less densely spaced.

The species *Hinia* (*Hinia*) *adae* (BOETTGER) has not hitherto been known from the Miocene of Poland.

Hinia (*Hinia*) *daciae* (HOERNES & AUINGER, 1882)
(Pl. 3, Figs 4-6)

1882. *Buccinum* (*Hima*) *Daciae* nov.form.; R. HOERNES & M. AUINGER, p. 138, Pl. 13, Fig. 42.

1906. *Nassa (Hima) daciae* Ho. Au. typ. und var. *rejecta* n.; O. BOETTGER, pp. 27-28.
1934. *Nassa (Hima) daciae rejecta* BOETTGER; A. ZILCH, p. 256, Pl. 16, Fig. 3.

MATERIAL: More than two hundred specimens.
DIMENSIONS: Two largest specimens are 7.9 or 7.6 mm high, and 3.8 or 4.1 mm wide, respectively.

REMARKS: A diagnosis of this species given by HOERNES & AUINGER (1882) is very laconic indeed, and thus recognition of the studied specimens may bear some doubts. Nevertheless, it seems that the specimens from Korytnica are conspecific with whose coming from Kostej and Lapugy in Transylvania. Within the specimens from Kostej, BOETTGER (1906) distinguished, besides the typical form, also the variety *rejecta* BOETTGER, described as being of a smaller size and more dumpy shape ("*prismatico-ovata*" of BOETTGER). The numerous specimens from Korytnica and their variability show this taxon as not well established. To note, it was already BOETTGER himself (1906, p. 28) who reported the forms transitional between typical and of that variety as being not uncommon.

To supplement a laconic diagnosis given by HOERNES & AUINGER (1882) it is to inform that the Korytnica specimens bear their last but one whorl adorned with 12-16 axial ribs and 8 (exceptionally 9) delicate spiral ribs, whereas the last whorl is featured by 10-15 axial ribs plus a broad varix.

FRIEDBERG (1911) ascribed to this species a specimen from Hluboczek Wielki, at present in the Ukraine; subsequently, he recognized (FRIEDBERG 1938) that assignation as uncertain. This specimen, slightly worn, has its spiral ornamentation expressed by furrows, and not by delicate ribs, so typical of the specimens coming from Korytnica, and also those from Kostej (*comp.* ZILCH 1934, Pl. 16, Fig. 3).

The species *Hinia (Hinia) daciae* (HOERNES & AUINGER) has not hitherto been known from Miocene of Poland.

Hinia (Hinia) notterbecki (HOERNES & AUINGER, 1882) (Pl. 3, Fig. 8)

1882. *Buccinum (Hima) Notterbecki* nov.form.; R. HOERNES & M. AUINGER, pp. 137-138, Pl. 13, Figs 37-38.
?1882. *Nassa verrucosa* (BROCCH.); L. BELLARDI, pp. 115-116, Pl. 7, Fig. 17.
1911. *Nassa Notterbecki* R. HOERN. i AUING.; W. FRIEDBERG, pp. 92-93, Pl. 5, Figs 14-15.

MATERIAL: Eighty specimens.
DIMENSIONS: The largest specimen is 9.3 mm high and 5.1 mm wide.

REMARKS: The studied specimens are fully concordant with those coming from Grund in the Vienna Basin, and presented by HOERNES & AUINGER (1882, Pl. 13, Fig. 38). Even such a morphologic detail as a more pronounced one of the teeth on the outer lip is quite distinct in all the Korytnica specimens. As the original diagnosis of the species is also laconic, it is to note that in the studied specimens the axial ribs on the last but one whorl are numbering 15 (sporadically 14 or 16), and on the last one 12 or 13 (rarely 14) plus a broad varix.

A relation of *Hinia (Hinia) notterbecki* (HOERNES & AUINGER) to some similar forms has long been under discussion. HOERNES & AUINGER (1882) were of the opinion that their specimens differ from those described by HÖRNES (1856) as *Buccinum incrassatum* MÜLLER. On the contrary, BEER-BISTRICKY (1958) regarded *Buccinum incrassatum* of HÖRNES (1856) [=*Buccinum granulare* of HOERNES & AUINGER (1882)] as identical with *Hinia (Hinia) not-*

terbecki (HOERNES & AUINGER). If one assumes that BEER-BISTRICKY (1958, p. 74) is right in her opinion, thus should be postulated that a figure given by HÖRNES (1856, Pl. 12, Fig. 16) is erroneous as concerns the inner side of the outer lip.

The species *Hinia* (*Hinia*) *notterbecki* has sometimes been compared, or identified (*see* FRIEDBERG 1938), with *Buccinum verrucosum* BROCCHI. Such a statement is very vague indeed, since BROCCHI has never illustrated the so-named species, and within the recently re-illustrated holotypes of BROCCHI there is lack of any information on that species (*comp.* PINNA & SPEZIA 1978). Not illustrated originally was also *Nassa granularis* BORSON. To note, BELLARDI (1878) regarded these species introduced by BROCCHI and by BORSON as identical, and thus his description and illustration (*see* BELLARDI 1882, p. 115, Pl. 7, Figs 17 and 18) may be used for comparison. The studied specimens are slightly similar to those of BELLARDI, although they differ by their more slender shape.

The species *Hinia* (*Hinia*) *notterbecki* (HOERNES & AUINGER) has not hitherto been known from Korytnica. In the Miocene of Poland it was formerly mentioned from Gliwice Stare, by HOERNES & AUINGER (1882), and as *cf.* from Błonie by URBANIAK (1974).

Hinia (*Hinia*) *serraticosta* (BRONN, 1831)
(Pl. 3, Figs 1-2)

1856. *Buccinum serraticosta* BRONN; M. HÖRNES, pp. 147-148, Pl. 12, Fig. 15.
1879. *Nassa serraticosta* BRONN; F. FONTANNES, pp. 65-66, Pl. 5, Fig. 8.
?1882. *Nassa serraticosta* BRONN; L. BELLARDI, pp. 111-112, Pl. 7, Fig. 11.
1928. *Nassa serraticosta* BRONN; W. FRIEDBERG, p. 584, Pl. 38, Fig. 1.
1966. *Nassa* (*Tritia*) *serraticosta* BRONN; L. STRAUSZ, p. 313, Pl. 37, Figs 14-17.
1982. *Nassarius serraticosta* (BRONN); J. MARTINELL, pp. 86-87, Pl. 2, Figs 9-10.

MATERIAL: Twelve specimens.
DIMENSIONS: The largest specimen is 7.7 mm high and 3.8 mm wide.

REMARKS: An attribution of the studied specimens from Korytnica to the species *Hinia* (*Hinia*) *serraticosta* (BRONN) is discussible. As a matter of fact, a controversy about identity of the specimens from the Vienna Basin, and of other Paratethys basins, with those coming from the northern Italy has a long history. It was BELLARDI (1882) who first doubted whether his specimens were identical with those presented by HÖRNES (1856, Pl. 12, Fig. 15); he regarded the Viennese specimens as related to his *Nassa catulli* BELLARDI. At present, when the lectotype of the latter species (correctly called *Nassa catulloi* BELLARDI) has been re-illustrated in the form of a photo (*see* FERRERO MORTARA & *al.* 1981, Pl. 27, Fig. 7), it is clear that BELLARDI's view must be rejected. Contrary to the original opinion of BELLARDI, FRIEDBERG (1911, p. 94) stated an identity of the possessed specimens from many localities in the Ukraine with those coming from Asti in Italy.

The studied specimens from Korytnica differ, from those presented by the referenced authors, by a greater density of their spiral ribs: their number on the last but one whorl equals 9-11 (exceptionally 12), whereas BELLARDI (1882) noted 8 or 9, FRIEDBERG (1911) 8-10, and STRAUSZ (1966) 7-10. Slightly advanced differences concern also more numerous axial ribs than in the specimen illustrated by BELLARDI, and less numerous teeth innerly of the outer lip when compared to the HÖRNES' specimen.

The species *Hinia* (*Hinia*) *serraticosta* (BRONN) has not hitherto been reported from Korytnica. In the Miocene of Poland it is known from Łychów and Węglinek (KRACH 1981), Benczyn (KRACH 1950a), Bogucice (FRIEDBERG 1938, KRACH 1981), and Błonie (URBANIAK 1974).

Hinia (*Hinia*) *striaticosta* (BOETTGER, 1906) (Pl. 4, Fig. 1)

1906. *Nassa* (*Hima*) *striaticosta* n.sp.; O. BOETTGER, p. 27.
1934. *Nassa* (*Hima*) *striaticosta* BOETTGER; A. ZILCH, p. 256, Pl. 16, Fig. 2.
1938. *Nassa* an *striaticosta* BOETTG.; W. FRIEDBERG, p. 127, Text-fig. 39.

MATERIAL: More than two hundred specimens.
DIMENSIONS: Two largest specimens are 6.0 or 5.7 mm high, and 2.9 mm wide both.

REMARKS: The studied specimens are compatible with those described by BOETTGER (1906) from Kostej in Transylvania, as well as with the only specimen presented by FRIEDBERG (1938) from Dryszczów, at present in the Ukraine. The Korytnica specimens are slightly larger than those from Kostej where, however, the species is not so common, and thus a chance to recover more fully grown specimens is certainly lesser. A variability of the Korytnica specimens pronounces by their smaller or greater slenderness, and by the number of axial ribs amounting 13-16 on the last but one whorl.

BOETTGER (1906, p. 27) when establishing this species, paid a special attention to the number of spiral ribs which, according to him, should be "*..8 (nec 5-6) in anfr. penultimo*". This statement, given during the comparison with the species *Nassa serraticosta* BRONN, seems to be quite unclear because the latter species bears even twice that number, as discussed in the remarks to *Hinia* (*Hinia*) *serraticosta* (BRONN).

The species *Hinia* (*Hinia*) *striaticosta* (BOETTGER) has not hitherto been known from the Miocene of Poland.

Hinia (*Hinia*) *styriaca* (AUINGER *in* HILBER, 1879) (Pl. 4, Figs 2-5)

1882. *Buccinum* (*Hima*) *styriacum* AUING.; R. HOERNES & M. AUINGER, p. 139, Pl. 13, Figs 34-35.
1882. *Buccinum* (*Hima*) *intersulcatum* HILB.; R. HOERNES & M. AUINGER, p. 137, Pl. 15, Fig. 22.
1938. *Nassa styriaca* AUING.; W. FRIEDBERG, p. 126, Text-fig. 38.
1947. *Nassa styriaca* AUING.; W. KRACH, pp. 61-62, Pl. 1, Fig. 18; Pl. 2, Fig. 11.
1966. *Nassa* (*Tritia*) *styriaca* AUINGER *in* HILBER; L. STRAUSZ, pp. 314-315, Pl. 37, Figs 38-43.
1966. *Hinia* (*Uzita*) *styriaca* (AUINGER); J. KÓKAY, pp. 60-61, Pl. 8, Figs 21-22.
1966. *Hinia* (*Uzita*) *intersulcata* (HILB.); J. KÓKAY, p. 61, Pl. 8, Fig. 23.

MATERIAL: More than three hundred specimens.
DIMENSIONS: The largest specimen is 7.5 mm high and 3.9 mm wide.

REMARKS: The studied specimens are evidently conspecific with those presented by HOERNES & AUINGER (1882) from Pöls in Austria and Bujtur in Rumania. The numerous specimens from Korytnica display a reasonable range of variability of both of the size, slenderness, as well as of the number of axial ribs (13-19 plus varix on the last, and 13-21 on the last but one whorl). The smaller and more slender specimens (*c.* 5 mm high and *c.* 3 mm wide) seem to be identical also with another species, namely *Hinia intersulcata* (HILBER), although any distinct boundary cannot be recognized; a separateness of the species *Hinia styriaca* and *Hinia intersulcata* is thus more than questionable. To note, these two species

were established upon the specimens coming from the same locality, St. Florian in Steiermark (*see* HILBER 1879).

The species *Hinia* (*Hinia*) *styriaca* (AUINGER *in* HILBER) was reported from Korytnica only by FRIEDBERG (1938). In the Miocene of Poland it is also known from Małoszów (KRACH 1947).

Hinia (*Hinia*) *vulgatissima* (MAYER, 1860) (Pl. 3, Fig. 3)

1860. *Buccinum vulgatissimum* MAYER; C. MAYER, pp. 215-216, Pl. 5, Fig. 6.
1882. *Buccinum* (*Caesia*) *vulgatissimum* MAYER; R. HOERNES & M. AUINGER, p. 132, Pl. 14, Figs 29-30.
1966. *Nassa* (*Tritia*) *vulgatissima* MAYER; L. STRAUSZ, pp. 316-317, Pl. 38, Figs 1-2.

MATERIAL: Fifty specimens.
DIMENSIONS: Two largest specimens are 11.5 or 11.0 mm high, and 5.3 or 5.5 mm wide, respectively.

REMARKS: The studied specimens seem to be concordant with those coming from the Vienna Basin, and presented by HOERNES & AUINGER (1882), although they are slightly smaller, but more slender. The largest of the Korytnica specimens fall well into the height range of the Viennese forms (10-17 mm). The studied specimens from Korytnica certainly owe their smaller size to having 1 or 2 whorls less in their shells.

The specimen, described under the name of *Buccinum vulgatissimum* MAYER, from the Miocene of Glina in Croatia (*see* EREMIJA 1959, Pl. 1, Figs 9-9*a*) is quite different, both as concerns its size and ornamentation.

The species *Hinia* (*Hinia*) *vulgatissima* (MAYER) has not hitherto been known from the Miocene of Poland.

Hinia (*Hinia*) *korytnicensis* sp.n. (Pl. 2, Figs 5-6)

partim 1882. *Buccinum* (*Tritia*?) *Toulai* AUING.; R. HOERNES & M. AUINGER, pp. 143-144, Pl. 13, Figs 20-21; *non* Fig. 19.
1911. *Nassa Toulai* AUING.; W. FRIEDBERG, pp. 89-90, Pl. 5, Figs 9-11.

HOLOTYPE: The specimen (Z.PAL.U.W., No. BkK–G688) presented in Pl. 2, Fig. 6.
TYPE HORIZON: Middle Miocene (Badenian).
TYPE LOCALITY: Korytnica, 24 km SSW of Kielce, southern slopes of the Holy Cross Mountains.
DERIVATION OF THE NAME: *korytnicensis* – Latinized name of Korytnica.
DIAGNOSIS: Shell conical, of width/height ratio ranging 0.5-0.7, of whorls slightly convex, furnished with spiral furrows of variable width (numbering 13-15 in the last whorl), and with axial ribs (numbering 25-30 in the last whorl).

MATERIAL: Several thousand specimens.
DIMENSIONS: Two largest specimens are 15.5 or 15.0 mm high, and 8.7 or 9.0 mm wide, respectively.

DESCRIPTION: Shell conical, more or less slender (*see* Pl. 2, Figs 5-6) attaining up to 9

whorls. Protoconch smooth, composed of about 2½ whorls; its boundary with the teleoconch hardly discernible. The teleoconch whorls, moderately convex at the beginning, become gradually strongly convex. Ornamentation pattern consists of thin spiral furrows and axial ribs. These furrows appear just at the protoconch, in the number of 3 or 4; on successive whorls there additionally develop still more delicate and more shallower secondary furrows between the primary ones and above the uppermost one. On the last whorl furrows are numbering 11-14. Axial ribs are slightly arched, densely spaced and numbering 25-30 on the last but one whorl. Spiral furrows run both over the ribs, and in the rib interspaces. Aperture oval, schizostomous, with a deep siphonal notch. Outer lip furnished with thin, lath-shaped teeth, numbering 10-13 innerly, and swollen varix-like outerly. Inner lip thin, with hardly discernible 2 or 3 teeth anteriorly, and a so-indistinct lath posteriorly.

REMARKS: The newly established species *Hinia* (*Hinia*) *korytnicensis* sp.n. characterizes by a wide range of the overall shell shape. The width/height ratio varies 0.50-0.65 (for the holotype it is 0.56); to note, the majority of the specimens are more slender.

The specimens from Korytnica, conspecific with the newly established species, have formerly been presented twice in the referenced papers. Firstly, the two specimens were presented by HOERNES & AUINGER (1882), who regarded them as an unnamed variety of the species *Buccinum toulai* AUINGER, described from Pöls in Steiermark, and noted such differences as a more weakly developed inner lip and its elements, a more slender overall shape, and a larger size in the Korytnica specimens. All these differences are well displayed in the studied, quite rich material, in which present are also specimens larger and more slender than the Korytnica specimens figured by HOERNES & AUINGER (1882).

Secondly, the conspecifics from Korytnica were described by FRIEDBERG (1911), who assigned them just to the species *Nassa toulai* AUINGER, regardless the differences noted by HOERNES & AUINGER (1882). On the specimen illustrated by FRIEDBERG (1911, Pl. 5, Fig. 9), the draftsman evidently underlined too much the lath in the inner lip posterior. Of the 20 studied specimens, FRIEDBERG (1911, Pl. 5, Fig. 11) has had one of a larger size, more slender shell, and bearing a more delicate ornamentation; surprisingly, he determined it as "*Nassa toulai* + *restitutensis*" [sic!].

The species *Nassa toulai* AUINGER, described from Várpalota in Hungary by STRAUSZ (1966, pp. 318-319, Pl. 38, Figs 8-9), differs distinctly from the studied specimens from Korytnica, and it closes to those above-discussed from Pöls.

The specimens conspecific with these distinguished herein as *Hinia* (*Hinia*) *korytnicensis* sp.n. were known to all former authors reporting on the Korytnica gastropods. In the Miocene of Poland the species *Hinia toulai* (AUINGER) was moreover noted from Małoszów (KOWALEWSKI 1930, KRACH 1947), Benczyn (KRACH 1950a), and Zgłobice (URBANIAK 1974).

Hinia (*Hinia*) sp.
(Pl. 3, Fig. 7)

MATERIAL: One specimen.
DIMENSIONS: Height 7.3 mm, width 4.2 mm.

REMARKS: A specific designation of the only, but very well preserved specimen bears serious problems, as no comparable specimens may be found in the recognized literature. This specimen acquires about 7½ whorls, of which 5 make up the teleoconch. Its characteristic spiral ornamentation consists of 4 narrow furrows at the beginning, and of 12 on the

last whorl (the base including); associated are axial ribs numbering 17 on the last but one whorl, and 12 plus a broad varix on the last whorl.

To the present author's knowledge, no *Hinia* species of such small size, and ornamentation has been reported from the Miocene of the Vienna Basin and other Paratethys basins. A slightly similar ornamentation is displayed by *Hinia colorata* (EICHWALD), but it is not so delicate, and the shells of that species are much larger and thicker-walled. The presence of a typical varix on the Korytnica specimen indicates that it is an adult, not a juvenile. Other slightly similar specimens from the Neogene of northern Italy were described as *Nassa exsculpta* BELLARDI, which bear their spiral furrows broader, and axial ribs distinctly narrower and laterally flattened, thus being sharper. It is consequently thought that the studied specimen may represent a separate species, new to the science; the disposal of one specimen only does not allow the present author to distinguish it taxonomically.

Subgenus *Telasco* H.&A. ADAMS, 1853

Hinia (Telasco) restitutiana (FONTANNES, 1879)
(Pl. 2, Figs 7-11)

1856. *Buccinum semistriatum* BROCC.; M. HÖRNES, pp. 144-145, Pl. 12, Figs 9-10.
1856. *Buccinum costulatum* BROCC.; M. HÖRNES, pp. 145-146, Pl. 12, Figs 11-12.
1879. *Nassa costulata* BROCCHI var. *Restitutiana* FONT.; F. FONTANNES, p. 66, Pl. 5, Fig. 9.
1882. *Buccinum (Zeuxis) restitutianum* FONT.; R. HOERNES & M. AUINGER, pp. 127-128, Pl. 14, Figs 6-15 and 17.
1882. *Buccinum (Zeuxis) Hoernesi* MAYER; R. HOERNES & M. AUINGER, pp. 128-129, Pl. 14, Figs 16 and 18.
1911. *Nassa Hoernesi* MAYER var.; W. FRIEDBERG, pp. 84-86, Pl. 5, Fig. 5.
1911. *Nassa restitutiana* FONT.; W. FRIEDBERG, pp. 86-87, Pl. 5, Fig. 6.
1960. *Nassa (Hinia) restitutiana* var. *hoernesi* (MAYER); E. KOJUMDGIEVA, pp. 175-176, Pl. 44, Figs 6-7.
1960. *Nassa (Hinia) hörnesi* (MAY.); T. BÁLDI, pp. 69-71, Pl. 2, Fig. 8.
1966. *Nassa (Tritia) restitutiana* FONTANNES, et var.; L. STRAUSZ, p. 321, Pl. 38, Figs 10-13.
1971. *Nassa (Hima) hörnesi* (MAY.); I. CSEPREGHY-MEZNERICS, p. 29, Pl. 12, Fig. 12.

MATERIAL: Several thousand specimens.
DIMENSIONS: Two largest specimens are 17.2 or 17.0 mm high, and 7.5 or 7.7 mm wide, respectively.

REMARKS: The studied species belongs to the commonest gastropods of the Korytnica Clays. To collect even a million specimens should have been no problem, except of time needed. The studied specimens are much variable as concerns their overall, more or less slender shape, as well as development and pronounceness of the ornamentation elements. Axial ribs are always present on the initial whorls of the teleoconch, but they gradually, earlier (*comp.* Pl. 2, Fig. 9) or later, disappear and only exceptionally reach the last whorl (*comp.* Pl. 2, Fig. 10). In some specimens they vanish, but re-appear subsequently (*comp.* Pl. 2, Fig. 8). Such variability, known also from other representative localities (*e.g.* Baden, Steinabrunn, and Grund in the Vienna Basin, Szokolya in Hungary, Kostej and Lapugy in Transylvania), has long been a matter of taxonomic discussions. HÖRNES (1856) had distinguished voluntarily two species, the both named uncorrectly, what was indicated soonafter by MAYER (1864) and FONTANNES (1879), and subsequent authors (HOERNES & AUINGER 1882, pp. 127-128; BÁLDI 1960, p. 70). To note, HOERNES & AUINGER (1882) although recognized many forms transitional between the species introduced by HÖRNES (1856), never gave up a distinction

between specimens heavily ornamented by axial ribs continuing to the shell end, and those weakly ornamented, with axial ribs gradually faded.

As concerns the Korytnica specimens, FRIEDBERG (1911) followed the above indicated Viennese authors, but he also noted (FRIEDBERG 1911, p. 87), that any separation of these two species is very arbitrary, as all the Korytnica specimens are to be classified as the forms transitional between these very species. Later on, FRIEDBERG (1928, pp. 583-584) regarded a separateness of these two species as soundless. The latter statement is fully accepted by the present author. If so, another problem arises, namely of an adequate name of the species. According to BÁLDI (1960, p. 71) the suitable name is *Hinia hoernesi* (MAYER 1864). This name, however, is to be rejected since, as already stated by STRAUSZ (1966, p. 321), it was formerly used by ZITTEL for quite a different species. Consequently, the present author uses the name *restitutiana* introduced by FONTANNES (1879).

The species *Hinia (Telasco) restitutiana* (FONTANNES) was reported from Korytnica by all former authors. In the Miocene of Poland this species is also known from Małoszów (KRACH 1947) and Zgłobice (URBANIAK 1974).

Subgenus *Uzita* H.&A. ADAMS, 1853

Hinia (Uzita) limata (CHEMNITZ, 1786)
(Pl. 2, Figs 1-2)

1856. *Buccinum prismaticum* BROCC.; M. HÖRNES, pp. 146-147, Pl. 12, Fig. 14, ?Fig 13.
1882. *Buccinum (Caesia) limatum* CHEMN.; R. HOERNES & M. AUINGER, pp. 130-131, Pl. 13, Figs 2-7.
1911. *Nassa limata* CHEMN.; W. FRIEDBERG, pp. 88-89, Pl. 5, Figs 7-8.
1958. *Hinia (Uzita) limata* (CHEMNITZ); E. BEER-BISTRICKY, pp. 60-61, Pl. 2, Fig. 13.
1966. *Nassa (Tritia) limata* CHEMNITZ; L. STRAUSZ, pp. 312-313, Pl. 37, Figs 22-23.

MATERIAL: More than two hundred specimens.
DIMENSIONS: The largest specimen is 24.5 mm high and 12.0 mm wide.

REMARKS: Within the studied specimens the variability is displayed only by a shell slenderness, the width/height ratio being ranged 0.46-0.58. The specific identity of the Korytnica specimens with those coming from the Vienna Basin and Transylvania seems to be doubtless. Although illustrations presented by HÖRNES (1856) are not very adequate, the description by HOERNES & AUINGER (1882) and their re-illustration of the specimens from Enzesfeld offer a sufficient insight into the content of this species. Exceptional may be only the size of a specimen from Gainfahren (*see* HÖRNES 1856, Pl. 12, Fig. 13) which is distinctly larger (35 mm high, 18 mm wide).

GLIBERT (1952a, p. 344) regarded the Korytnica specimens, when referencing to FRIEDBERG (1938), as conspecific with the species studied by himself, *Nassa (Hima) prismatica* (BROCCHI), what evidently is incorrect.

Under the name of *Nassa limata* (CHEMNITZ) described were also specimens from the Miocene of Hungary, both by CSEPREGHY-MEZNERICS (1971, Pl. 12, Fig. 6), and by BOHN-HAVAS (1973, Pl. 5, Figs 5-6); these, however, are not only different from those of Korytnica, but they also differ each other.

The species *Hinia (Uzita) limata* (CHEMNITZ) was reported from Korytnica by all former authors. In the Miocene of Poland this species is also known from Małoszów (KOWALEWSKI 1930, KRACH 1947).

Hinia (*Uzita*) *subprismatica* (HOERNES & AUINGER, 1882) (Pl. 2, Fig. 3)

1882. *Buccinum* (*Caesia*) *subprismaticum* nov.form.; R. HOERNES & M. AUINGER, pp. 131-132, Pl. 13, Fig. 1.
1882. *Nassa Brugnonis* BELL.; L. BELLARDI, pp. 73-74, Pl. 5, Figs 2a-2b.
1927. *Nassa* (*Uzita*) *Brugnonis* BELLARDI; A. PEYROT, pp. 57-59, Pl. 2, Figs 37-39.
1952a. *Nassa* (*Hima*) *prysmatica* BROCCHI; M. GLIBERT, p. 344, Pl. 10, Fig. 9.
1960. *Nassa* (*Hinia*) *subprismatica* (HOERN. & AUING.); T. BÁLDI, pp. 68-69, Pl. 2, Fig. 6.

MATERIAL: One specimen.
DIMENSIONS: The collected specimen is 22.5 mm high and 13.5 mm wide.

REMARKS: The only possessed specimen seems to be concordant with those presented both from the Vienna Basin by HOERNES & AUINGER (1882), as well as from Szokolya in Hungary by BÁLDI (1960). Of all the hitherto illustrated specimens (*see* synonymy) the studied one is the most slender, with width/height ratio 0.60; in the holotype from Forchtenau it is 0.64, and in a specimen from Szokolya 0.68. Although some similarity to *Hinia* (*Uzita*) *limata* (CHEMNITZ), the studied specimen does not belong to that species; a separation of the species *Hinia* (*Uzita*) *subprismatica* (HOERNES & AUINGER) from *Hinia* (*Uzita*) *limata* (CHEMNITZ) was already evident both for HOERNES & AUINGER (1882, p. 131), and for BÁLDI (1960, p. 69).

The species from the Miocene of northern Italy, described as *Hinia brugnonis* (BELLARDI), in the present author's opinion does not differ evidently from *Hinia* (*Uzita*) *subprismatica* (HOERNES & AUINGER), and should not be treated as separate. The same opinion was formerly expressed by BÁLDI (1960). To the truth, BELLARDI (1882, p. 74) listed as many as eight morphologic details featuring his species, but all these are of so low importance, that should be trated as of an intraspecific variability. This is also evident when looking at the photo of a syntype of *Hinia brugnonis* (BELLARDI) presented recently by FERRERO MORTARA & *al.* (1981, Pl. 24, Fig. 4).

The species *Hinia* (*Uzita*) *subprismatica* (HOERNES & AUINGER) has not hitherto been known from the Miocene of Poland.

Hinia (*Uzita*) *exspectata* sp.n. (Pl. 2, Fig. 4)

HOLOTYPE: The specimen (Z.PAL.U.W., No. BkK–G704) presented in Pl. 2, Fig. 4.
TYPE HORIZON: Middle Miocene (Badenian).
TYPE LOCALITY: Korytnica, 24 km SSW of Kielce, southern slopes of the Holy Cross Mts.
DERIVATION OF THE NAME: *exspectata* – from Latin *exspectatus* – expected; in reference to the present author's expectation to find more than one specimen, to establish the new taxon.
DIAGNOSIS: Shell low-conical, of strongly convex whorls, furnished with thin, densely spaced spiral ribs (numbering 21 in the last whorl) and sharp, distinctly spaced axial ribs (numbering 9-11 plus a broad varix on the last whorl).

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen is 20 mm high and 14.5 mm wide.

DESCRIPTION: Shell of a low-conical shape. Protoconch not preserved; teleoconch consists of 5½ whorls. All whorls furnished with narrow axial ribs separated by much wider

rib interspaces. The number of axial ribs amounts: in the holotype 11 on the last but one whorl, and 9 plus varix on the last whorl; in the second specimen (paratype) 11 and 11 plus varix, respectively. Additionaly, there run thin, spiral ribs, that become more pronounced within the rib interspaces. They are much thinner, and more sparsely distributed at the base of the last whorl. The number of spiral ribs on the last whorl the base including amounts 21. Aperture is broad, semicircular, slightly four-sided, with a pronounced, and strongly sinistral siphonal notch. Outer lip, thin at the margin with a well developed varix. Inner lip pronounced, distinctly turned off the shell surface outerly, and bearing one prominent long and lath-like tooth innerly at the posterior, as well as 2 or 4 very short and much weaker teeth at the anterior.

REMARKS: The two possessed specimens differ slightly one from the other, primarily by a number of axial ribs on the last whorl, and by a various advance of teeth on the lips. In the present author's opinion they cannot be assigned to any of the known species. The holotype of *Hinia exspectata* sp.n., as compared with the holotype of *Hinia subprismatica* (HOERNES & AUINGER) coming from Forchtenau in the Vienna Basin (*see* HOERNES & AUINGER, 1882, p. 131, Pl. 13, Fig. 1), is shorter, of a more stout shape, and it bears a more circular aperture and more numerous spiral ribs. The two studied specimens are slightly similar to one coming from the topmost Miocene of the Republic San Marino, described by MORONI (1956, pp. 112-113, Pl. 5, Figs 28-28*a*) under the name of *Nassa* (*Hima*) *brugnonis acquaevivae* MORONI; that specimen is distinctly more slender, and its axial ribs are much wider but less sharp. The width/height ratio in the holotype of *Hinia* (*Uzita*) *exspectata* sp.n. amounts 0.72, whereas in the above-indicated specimen from Forchtenau 0.64, and 0.60 in that one from San Marino.

Hinia (*?Uzita*) *grateloupi* (HÖRNES, 1856)
(Pl. 1, Figs 7-8)

1856. *Buccinum grateloupi* HÖRNES; M. HÖRNES, pp. 141-142, Pl. 12, Fig. 6.
1882. *Buccinum* (*Zeuxis?*) *grateloupi* M. HOERNES; R. HOERNES & M. AUINGER, p. 130.
1971. *Nassa rosthorni* PARTSCH; I. CSEPREGHY-MEZNERICS, p. 29, Pl. 11, Figs 29-30.

MATERIAL: Sixteen specimens.
DIMENSIONS: The largest specimen (Pl. 1, Fig. 8) is 18 mm high and 10 mm wide.

REMARKS: The studied specimens are fully concordant with those described by HÖRNES (1856), and commented by HOERNES & AUINGER (1882), as concerns an overall shape and ornamentation.

The specimens identical with those from Korytnica were presented by CSEPREGHY-MEZNERICS (1971) from the Miocene of Bota in Hungary, but under the name *Nassa rosthorni* PARTSCH, what is evidently erroneous.

The species *Hinia* (*?Uzita*) *grateloupi* (HÖRNES) has not hitherto been known from the Miocene of Poland.

Hinia (*?Uzita*) *rosthorni* (PARTSCH *in* HÖRNES, 1856)
(Pl. 1, Figs 9-12)

1856. *Buccinum Rosthorni* PARTSCH; M. HÖRNES, pp. 140-141, Pl. 12, Figs 4-5.
1882. *Buccinum* (*Tritia*) *Rosthorni* PARTSCH; R. HOERNES & M. AUINGER, p. 140.

1882. *Buccinum supernecostatum* nov.form.; R. HOERNES & M. AUINGER, pp. 142-143, Pl. 13, Figs 12-15.
1911. *Nassa Rosthorni* PARTSCH; W. FRIEDBERG, pp. 64-66, Pl. 4, Figs 1-2.
1927. *Nassa subventricosa* mut. *bifida* nov. mut.; A. PEYROT, p. 41, Pl. 2, Figs 4-6.
1960. *Nassa* (*Uzita*) *rosthorni* (PARTSCH *in* HOERNES); E. KOJUMDGIEVA, p. 180, Pl. 44, Fig. 19.
1966. *Nassa* (*Tritia*) *rosthorni* PARTSCH; L. STRAUSZ, pp. 321-322, Pl. 38, Figs 28-30.

MATERIAL: Thirty-eight specimens.
DIMENSIONS: Two largest specimens (Pl. 1, Figs 11 and 12) are 29 or 27.7 mm high, and 17.5 or 15.5 mm wide, respectively.

REMARKS: The studied specimens are much variable, particularly in the shell slenderness, convexity of whorls, and ornamentation. Some specimens are ornamented solely by spiral furrows (*see* Pl. 1, Fig. 12), that sometimes are associated with thin, densely spaced axial ribs on the initial whorls of the teleoconch (*see* Pl. 1, Fig. 11); the others are furnished with axial ribs on almost all whorls, although they may disappear totally in some whorl sectors (*see* Pl. 1, Fig. 10). In the latter case, the specimens of such ornamentation correspond well to those from the Vienna Basin and Transylvania, and distinguished by HOERNES & AUINGER (1882) as a separate species, *Hinia supernecostata* (HOERNES & AUINGER). In the present author's opinion, any distinct, well defined boundary between *Hinia rosthorni* and *Hinia supernecostata* cannot be postulated. BEER-BISTRICKY (1958) regarded *Hinia supernecostata* as a subspecies of *Hinia rosthorni*, what obviously does not solve the problem. On the other hand, a statement of BEER-BISTRICKY (1958, p. 62) that *Hinia* (*Uzita*) *rosthorni supernecostata* is a transitional unit ("*Übergang*") between *Hinia* (*Uzita*) *limata* and *Hinia* (*Uzita*) *rosthorni* is quite soundless. These two species are dissimilar, and no transitional forms may be indicated.

The specimens of *Hinia* (*Uzita*) *rosthorni* from Korytnica were taken by PEYROT (1927) for comparison when he established a separate species *Nassa subventricosa* PEYROT from the Aquitaine Basin. This separateness (PEYROT 1927, p. 40) seems to be acceptable, but the specimens distinguished by PEYROT (1927) as *Nassa subventricosa* mut. *bifida* PEYROT do not differ from, and consequently are herein recognized as, conspecific with the studied specimens from Korytnica.

The species *Hinia* (?*Uzita*) *rosthorni* (PARTSCH *in* HÖRNES) was reported from Korytnica by all former authors. In the Miocene of Poland it is also known from Benczyn (KRACH 1950a), Bogucice (LISZKA 1933), Grabowice (FRIEDBERG 1938), Błonie (FRIEDBERG 1911, URBANIAK 1974), as well as Zgłobice and Szczepanowice (URBANIAK 1974).

Genus *Amyclina* IREDALE, 1918

Amyclina auingeri (HÖRNES *in* HOERNES & AUINGER, 1882) (Pl. 5, Figs 7-8)

1882. *Buccinum* (*Nassa*) *Auingeri* M. HOERN.; R. HOERNES & M. AUINGER, pp. 122-123, Pl. 14, Figs 23-24.
1882. *Nassa Auingeri* (M. HOERN.); L. BELLARDI, p. 90, Pl. 6, Fig. 3.
1960. *Nassa* (*Hinia*) *auingeri* (HOERNES *in* HOERNES und AUINGER); E. KOJUMDGIEVA, p. 178, Pl. 44, Fig. 14.

MATERIAL: Six specimens.
DIMENSIONS: The largest specimen (Pl. 5, Fig. 8) is 6.7 mm high and 4.2 mm wide.

REMARKS: The studied specimens are almost concordant with those presented by HOERNES & AUINGER (1882) from the Vienna Basin. They are slightly smaller, and very indistinctly more stumpy: their width/height ratio ranges 0.60-0.63, whereas it is 0.53-0.59 for the illustrated specimens from Drnowitz. The largest specimens (10 mm) of this species were reported from the Miocene of northern Italy by BELLARDI (1882); they differ from those of Korytnica by more pronounced axial ribs on the first teleoconch whorl.

The species *Amyclina auingeri* (HÖRNES *in* HOERNES & AUINGER) has not hitherto been known from the Miocene of Poland.

Amyclina kostejana (BOETTGER, 1901)
(Pl. 5, Fig. 6)

1856. *Buccinum corniculum* OLIVI; M. HÖRNES, p. 156, Pl. 13, Fig. 5.
1877. *Nassa laevissima* BRONN?; S. BRUSINA, p. 375.
1882. *Buccinum (Nassa) laevissimum* BRUS.; R. HOERNES & M. AUINGER, pp. 123-124, Pl. 15, Fig. 21.
1901. *Nassa laevissima* BRUS. et var. *kostejana*; O. BOETTGER, p. 19.
1934. *Nassa laevissima kostejana* BOETTGER; A. ZILCH, pp. 225-256, Pl. 16, Fig. 1.
1960. *Nassa (Hinia) laevissima* BRUSINA; E. KOJUMDGIEVA, p. 178, Pl. 44, Fig. 15.

MATERIAL: Three specimens.
DIMENSIONS: The largest specimen (Pl. 5, Fig. 6) is 6.1 mm high and 3.3 mm wide.

REMARKS: The studied specimens are fully concordant with those presented from the Vienna Basin (HÖRNES 1856, HOERNES & AUINGER 1882) and from Transylvania (BOETTGER 1901, ZILCH 1934). Within the forms from Kostej, BOETTGER (1901) distinguished the smaller ones as the variety *kostejana* BOETTGER, characterized by their greater slenderness and having a weaker edge at the base of the last whorl. These two differences seem to be very problematic, and thus a taxonomic separateness of the so-featured forms is rather groundless.

BRUSINA (*fide* HOERNES & AUINGER 1882, pp. 123-124) stated that the determination of the specimens from Baden in the Vienna Basin by HÖRNES (1856) was erroneous, and thus he introduced for them the name "*Nassa laevissima* BRUSINA (*non* BRONN)". Apparently, because the name *Nassa laevissima* was already used earlier, it is a younger homonym, and cannot be retained. The present author is therefore to use the name introduced by BOETTGER (1901), and recognizes its validity not only for the smaller (5.5 mm high, as given by BOETTGER), but for all specimens of the discussed species.

The species *Amyclina kostejana* (BOETTGER) has not hitherto been known from the Miocene of Poland.

Genus *Cyllene* GRAY, 1833
Subgenus *Cyllene* GRAY, 1833
Cyllene (*Cyllene*) *desnoyersi* (BASTEROT, 1825)
(Pl. 5, Figs 1-3)

1837. *Nassa Desnoyeri* BAST.; G. PUSCH, p. 124.
1856. *Buccinum lyratum* LAM.; M. HÖRNES, pp. 152-153, Pl. 12, Fig. 19.

partim 1875. *Cyllene Desnoyersi* BASTEROT; R. TOURNOUËR, p. 329, Pl. 5, Figs 1-2 and 4; *non* Fig. 3.
1904. *Cyllene Desnoyersi* BAST. et var.; F. SACCO, p. 57, Pl. 14, Figs 50-52.
1911. *Cyllene ancillariaeformis* GRAT.; W. FRIEDBERG, pp. 106-107, Text-fig. 28.
1927. *Cyllene Desnoyersi* (BASTEROT); A. PEYROT, pp. 166-168, Pl. 4, Figs 9-14.
1952a. *Cyllene (Cyllene) desnoyersi turonica* PEYROT; M. GLIBERT, p. 347, Fig. 10, Fig. 12.
1959. *Buccinum lyratum* OLIVI; P.M. STEVANOVIĆ & V.M. MILOŠEVIĆ, p. 93, Pl. 2, Figs 8a-8b.

MATERIAL: Nineteen specimens.
DIMENSIONS: The largest specimen is 19 mm high and 11.2 mm wide.

REMARKS: The studied specimens are undoubtedly conspecific with those described by HÖRNES (1856) under the name of *Buccinum lyratum* LAMARCK. However, both the Viennese and the Korytnica specimens distinctly differ (*comp.* WENZ 1943, p. 1239) from those belonging to that Recent species. The present author thus accepts an older view, offered by PEYROT (1927), that the Miocene forms should be assigned to the separate species *Cyllene desnoyersi* (BASTEROT). The specimens from Korytnica are also concordant with those presented by STEVANOVIĆ & MILOŠEVIĆ (1959, Pl. 2, Figs 8*a*-8*b*) from the Miocene of Serbia; the reported dimension (height 27 mm) is evidently a mistake, as may easily be ascertained from the referenced illustration.

FRIEDBERG (1911) described from Korytnica one, slightly damaged specimen under the name of *Cyllene ancillariaeformis* (GRATELOUP), but this determination is evidently erroneous. The two indicated species, *Cyllene desnoyersi* and *Cyllene ancillariaeformis*, differ by their shell shape, ornamentation, and development of the aperture; these differences, partly at least, were already discussed by FRIEDBERG (1911, p. 107).

The species *Cyllene (Cyllene) desnoyersi* (BASTEROT) was reported from Korytnica by PUSCH (1837) and FRIEDBERG (1911).

Genus *Hebra* H.&A. ADAMS, 1853

Hebra cf. *echinata* (HÖRNES, 1856)
(Pl. 5, Figs 4-5)

1856. *Buccinum echinatum* HÖRNES; M. HÖRNES, pp. 159-160, Pl. 13, Figs 12-13.
1882. *Buccinum (Hebra) echinatum* M. HOERN.; R. HOERNES & M. AUINGER, p. 136.

MATERIAL: One juvenile, and three other, incompletely preserved specimens.

REMARKS: The studied specimens seem to be concordant with those reported by HÖRNES (1856) from Ebersdorf in the Vienna Basin. Their poor preservation state does not allow to recognize the species unequivocally. The presence of either 4 rows of sharp, spiny nodes on the last whorl, or teeth on the outer lip innerly could not be stated.

The species *Hebra echinata* (HÖRNES) has hitherto been known from the Vienna Basin, primarily from the sandy deposits. Within the facies comparable to the Korytnica Clays, only one specimen was insofar reported from Grund (HOERNES & AUINGER 1882, p. 136). A slightly similar species *Hebra ternodosa* (HILBER) bears the nodes not prickly-shaped.

The species *Hebra echinata* (HÖRNES) has not hitherto been known from the Miocene of Poland.

Genus *Dorsanum* GRAY, 1847

Dorsanum cerithiforme (AUINGER *in* HILBER, 1879) (Pl. 5, Fig. 9)

1879. *Buccinum cerithiforme* AUING.; V. HILBER, p. 15, Pl. 2, Fig. 8.
1882. *Buccinum (Leiodomus) cerithiforme* AUINGER; R. HOERNES & M. AUINGER, p. 119, Pl. 15, Figs 14-17.
1928. *Dorsanum cerithiforme* AUING.; W. FRIEDBERG, pp. 580-581, Pl. 37, Figs 32-34.
1971. *Bullia (Dorsanum) cerithiforme* HOERNES & AUINGER; I. CSEPREGHY-MEZNERICS, p. 29, Pl. 11, Fig. 20.

MATERIAL: Ten specimens.
DIMENSIONS: The largest specimen (Pl. 5, Fig. 9) is 17 mm high and 6.5 mm wide.

REMARKS: The studied specimens are concordant with those known from the Miocene of Austria. Within the collected material from Korytnica, however, there appeared two specimens more fully grown; the teleoconch of the figured specimen (Pl. 5, Fig. 9) is composed of about 7 whorls, whereas HILBER (1879) reported only on 5 whorls.

The species *Dorsanum cerithiforme* (AUINGER *in* HILBER) has not hitherto been known from the Miocene of Poland. The specimens described by FRIEDBERG (1928) were coming from Zborów, at present in the Ukraine.

Dorsanum exageratum PEYROT, 1927 (Pl. 5, Fig. 10)

1927. *Dorsanum gradatum* nov. sp., var. *exagerata*; A. PEYROT, pp. 160-161, Pl. 1, Figs 40-42.

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen (Pl. 5, Fig. 10) is 8 mm high and about 4.5 mm wide.

REMARKS: The studied specimens seem to be concordant with a unique specimen from Léognan (Thibaudeau) in the Aquitaine Basin, presented by PEYROT (1927). A slight difference is displayed by the Korytnica specimens in a less slender spire. The studied specimens are devoid of their outer lips; the presence of the teeth innerly, typical of the specimen from Aquitaine, cannot therefore be stated. PEYROT (1927) regarded tentatively that specimen as a variety, *exagerata*, within the then established species *Dorsanum gradatum* PEYROT. The present author is of the opinion that the latter two taxa so differ each other that should be treated as two separate species.

The species *Dorsanum exageratum* PEYROT has not hitherto been known from the Miocene of Poland.

Dorsanum cibori sp.n. (Pl. 5, Fig. 7)

HOLOTYPE: The specimen (Z.PAL.U.W., No. BkK–G715) presented in Pl. 5, Fig. 7.
TYPE HORIZON: Middle Miocene (Badenian).
TYPE LOCALITY: Korytnica, 24 km SSW of Kielce, southern slopes of the Holy Cross Mountains.

DERIVATION OF THE NAME: *cibori* – in memory of JACEK CIBOR (1957-1988), a technician at the Paleontology Department of the University of Warsaw, an eminent collector of the Korytnica fossils.

DIAGNOSIS: Shell turriform, relatively thin-walled, of whorls furnished with a crest vanishing distally, and ornamented by spiral ribs (numbering 18 on the last whorl) and axial ribs (numbering 19 on last by one whorl, and vanishing on the last whorl).

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 5, Fig. 7) is 7.0 mm high and 3.8 mm wide.

DESCRIPTION: Shell small, rather thin-walled, turret-shaped. Protoconch composed of about 3 smooth, convex whorls. The teleoconch attains 3¾ whorls, having a distinct boundary with the protoconch, marked by a change in the profile and development of ornamentation. Within the teleoconch whorls, in their posterior, there runs a distinct edge above which the whorl is flat, and set up perpendicularly or slightly obliquely to the axis of the shell; in result the shell profile is steplike. Thin and rather densely spaced spiral ribs feature the teleoconch; their number is initially 4 or 5, further increasing intercalatories, and thus the last whorl (the base including) bears 18, almost equisized spiral ribs (two of which are placed above the edge). The associated axial ribs number 19 on the last but one whorl. Aperture is oval, schizostomous. Outer lip is slightly swollen outerly, and furnished with thin, relatively long teeth, numbering 14. Inner lip bears one, merely discernible fold anteriorly, and a weak tooth posteriorly.

REMARKS: To the present author knowledge, no comparable species may be found in the referenced papers. Possibly, a superficial resemblance is displayed by *Dorsanum dubium* PEYROT and *Dorsanum gradatum* PEYROT, but it is very far from an identity.

Superfamily **Volutacea**
Family **Olividae** LATREILLE, 1825
Genus *Oliva* BRUGUIÈRE, 1789
Subgenus *Neocylindrus* FISCHER, 1883
Oliva (*Neocylindrus*) *dufresnei* BASTEROT, 1825
(Pl. 7, Figs 1-2)

1882. *Porphyria Dufresnei* (BAST.), et var. B; L. BELLARDI, pp. 207-209, Pl. 12, Figs 23 and 26.
1904. *Neocylindrus Dufresnei* (BAST.), et var.; F. SACCO, p. 76, Pl. 7, Figs 34-35.
1928. *Oliva* (*Neocylindrus*) *Dufresnei* BASTEROT; A. PEYROT, pp. 376-378, Pl. 11, Figs 45-48.
1952a. *Oliva* (*Neocylindrus*) *dufresnei* BASTEROT; M. GLIBERT, p. 358, Pl. 11, Fig. 8.
1952b. *Oliva* (*Neocylindrus*) *dufresnei* BASTEROT; M. GLIBERT, pp. 114-115, Pl. 8, Figs 15a-b.
1969. *Oliva* (*Neocylindrus*) *dufresnei* BAST.; I. CSEPREGHY-MEZNERICS, p. 91, Pl. 5, Figs 22 and 28.
1984a. *Oliva* (*Strephona*) *dufresnei* DE BASTEROT; A.W. JANSSEN, pp. 247-248, Pl. 10, Fig. 5; Pl. 64, Fig. 10.
?1988. *Oliva* (*Strephona*) *dufresnei* BASTEROT; F. DAVOLI, p. 22, Text-fig. 1.
1989. *Oliva* (*Strephona*) *dufresnei* BASTEROT; F. DAVOLI, pp. 128-129, Pl. 5, Figs 8-11, 15, 17 and 19-21.

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 7, Fig. 2) is 25.5 mm high and about 11 mm wide.

REMARKS: The two collected specimens are very close to those coming from the Aquitaine Basin, and presented by PEYROT (1928, Pl. 11, Figs 48-49) and DAVOLI (1989, Pl. 5, Fig. 20), as well as to that one from northern Italy illustrated by BELLARDI (1882, Pl. 12, Fig. 26). A common feature of all these specimens and the two from Korytnica is a relatively low spire, and a similar overall shape. The other specimens assigned by various authors to this species differ either by their more stumpy shape (*see* JANSSEN 1984a, Pl. 64, Fig. 10) or, contrary, more slender outline (*see* DAVOLI 1989, Pl. 5, Figs 8 and 11), or by a distinctly higher spire (*see* PEYROT 1928, Pl. 11, Figs 45-46; DAVOLI 1989, Pl. 5, Figs 8 and 11). Such differences are not rarely observed in the present-day species of the *Oliva* BRUGUIÈRE, 1789, and are interpreted as a case of intraspecific variability (*see* GREIFENEDER & *al.* 1981). It may therefore be doubted whether reasonable is separation of the species *Oliva* (*Strephona*) *dufresnei* BASTEROT from *Oliva* (*Strephona*) *cylindracea* BORSON. Slight differences, noted both by BELLARDI (1882, p. 206) and by DAVOLI (1989, Tab. 3), are not important, and may fall into such a variability, although the outer lip is regarded as elongated ("*allungato*") in the first of the species, but short ("*corto*") in the second.

DAVOLI (1989) combines *Oliva* (*Strephona*) *dufresnei* BASTEROT with the species *Porphyria malthata* BELLARDI. These two species, however, differ by the shape of the spire, as evidently shown by the illustration of the lectotype of the latter species, and presented by FERRERO MORTARA & *al.* (1981, Pl. 34, Fig. 8).

One of the studied specimens from Korytnica (Pl. 7, Fig. 2) displays traces of its primary coloration, patterned as numerous, spiral, narrow, continuous stripes of variable width. The same coloration pattern is recognizable on a specimen from the Miocene of the Beech Mountains in Hungary, presented by CSEPREGHY-MEZNERICS (1969, Pl. 5, Fig. 22). To the present author's knowledge such pattern is unknown in the present-day *Oliva* species (*see* GREIFENEDER & *al.* 1981, ABBOTTT & DANCE 1990).

The species *Oliva* (*Neocylindrus*) *dufresnei* BASTEROT has not hitherto been known from the Miocene of Poland.

Genus *Agaronia* GRAY, 1839

Agaronia? vindobonensis (CSEPREGHY-MEZNERICS, 1954) (Pl. 7, Figs 3-4)

1856. *Oliva clavula* LAM.; M. HÖRNES, pp. 49-50, Pl. 7, Fig. 1.

1954. *Olivella* (*Lamprodoma*) *clavula vindobonensis* n.subsp.; I. CSEPREGHY-MEZNERICS, pp. 44-45, Pl. 6, Figs 3 and 9.

1966. *Olivella* (*Lamprodoma*) *clavula vindobonensis* MEZN.; J. KÓKAY, Pl. 9, Fig. 3.

1971. *Oliva* (*Lamprodoma*) *clavula vindobonensis* CSEPR.-MEZN.; I. CSEPREGHY-MEZNERICS, p. 30, Pl. 14, Fig. 4.

?1973. *Olivella* (*Lamprodoma*) *clavula vindobonensis* MEZNERICS; M. BOHN-HAVAS, p. 1058, Figs 14-15; Pl. 9, Fig. 4.

1973. *Olivella* (*Lamprodoma*) *clavula vindobonensis* CSEPREGHY-MEZNERICS; T. BÁLDI, pp. 301-302, Pl. 44, Figs 7-8.

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 7, Fig. 3) is 10 mm high and 3.6 mm wide, the smaller one is 8.2 and 3.4 mm, respectively.

REMARKS: The two collected specimens slightly differ one from the other by their overall shape; the larger specimen is evidently more slender. They do not differ, however, by

the structure of the protoconch, the development of folds on the inner lip, and by the pattern of bands ("fasciolar bands") on the last whorl outerly. Consequently, it is thought that their taxonomic separateness should not be taken into account.

An assignment of the studied specimens is uncertain, both as concerns their species and genus level. They, and especially that more slender one, seem to be concordant in their overall shape, morphologic details, and size with the specimen from Bota in the Beech Mountains in Hungary, presented by CSEPREGHY-MEZNERICS (1971) as *Olivella* (*Lamprodoma*) *clavula vindobonensis* CSEPREGHY-MEZNERICS. This authoress established that subspecies earlier (CSEPREGHY-MEZNERICS 1954, p. 44) upon the specimens from the Cserhát Mountains in Hungary, and for the specimens from Grund in the Vienna Basin illustrated by HÖRNES (1856); she therefore confirmed an opinion of PEYROT (1928) on uncertain identity of the Vienna specimens labelled as *Oliva clavula* LAMARCK with those from the Aquitaine Basin. However, the specimens from the Cserhát Mountains, as well those illustrated by KÓKAY (1966) and BOHN-HAVAS (1973) from other Hungarian localities, are about two and half times larger (as judged from photos; dimensions not being reported by these authors). A specimen illustrated by HÖRNES (1856), from Grund, is the largest of all the discussed, and it measures as much as 35 mm in height. If a conspecifity of all these specimens is regarded, a very great variability of size at the same number of whorls must be taken into consideration. DAVOLI (1989, p. 126) combine, under the name of *Oliva* (*Anazola*) *clavula* LAMARCK, Hungarian specimens with those from the Miocene of northern Italy, but he does not comment a small specimen from Bota in the Beech Mountains (*comp.* CSEPREGHY-MEZNERICS 1971).

As concerns the less slender specimen from Korytnica, its overall shape and size are concordant with those of the specimens (8-14 mm high) from Urovene in Bulgaria, presented by KOJUMDGIEVA (1960) as *Oliva* (*Strephona*) *flammulata* LAMARCK; however, in their description no fasciolar bands on the last whorl are mentioned, and they are also not discernible on the enclosed photo (KOJUMDGIEVA 1960, p. 166 and Pl. 43, Fig. 1). The same is also stated in the specimens from the Aquitaine Basin, presented under the name of *Olivella* (*Lamprodoma*) *grateloupi* (D'ORBIGNY) by PEYROT (1928, p. 382, Pl. 11, Figs 25-26) and DAVOLI (1989, pp. 129-130, Pl. 5, Figs 4 and 18).

CSEPREGHY-MEZNERICS (1954) assigned the newly established subspecies to the subgenus *Olivella* (*Lamprodoma*) SWAINSON, 1840. Such an assessment does not seem to be justifiable, since the discussed specimens are much deviated (*see* WENZ 1943, p. 1283, Fig. 3654) from the type species, *Olivella* (*Lamprodoma*) *volutella* (LAMARCK). Except of their very small size, they should be rather assigned to the genus *Agaronia* GRAY, 1839, to the type species of which, *Agaronia acuminata* (LAMARCK), they are more similar (*see* WENZ 1943, p. 1278, Fig. 3641; ABBOTT & DANCE 1990, p. 196). Tentatively, the present author places the collected specimens, although with a query, to the genus *Agaronia*.

The species *Agaronia*? *vindobonensis* (CSEPREGHY-MEZNERICS) has not hitherto been known from the Miocene of Poland.

Genus *Ancilla* LAMARCK, 1799
Subgenus *Baryspira* FISCHER, 1883
Ancilla (*Baryspira*) *glandiformis* (LAMARCK, 1810)
(Pl. 6, Figs 1-11)

1833. *Ancillaria Conus* nobis; A. ANDRZEJOWSKI, pp. 437-438, Pl. 11, Fig. 1.

1837. *Ancillaria inflata* BAST.; G. PUSCH, p. 116.

1837. *Ancillaria coniformis* m.; G. PUSCH, pp. 116-117, Pl. 11, Figs 1a-b.

1856. *Ancillaria glandiformis* LAM.; M. HÖRNES, pp. 57-58, Pl. 6, Figs 6-13; Pl. 7, Fig. 2.

1880. *Ancillaria glandiformis* LAMK.; R. HOERNES & M. AUINGER, pp. 55-56, Pl. 7, Figs 1-2.

1882. *Ancillaria glandiformis* LAMCK., et var. *A-G*; L. BELLARDI, pp. 227-228, Pl. 12, Figs 41-42.

?1882. *Ancilaria patula* DODERL.; L. BELLARDI, p. 224, Pl. 12, Fig. 43.

1904. *Baryspira glandiformis* (LK.), et var.; F. SACCO, p. 79, Pl. 17, Figs 65-76.

1911-1912. *Ancilla glandiformis* LAM.; W. FRIEDBERG, pp. 108-110, Pl. 6, Fig. 1, Text-fig. 30.

1928. *Ancilla (Baryspira) glandiformis* LAMARCK; A. PEYROT, pp. 389-391, Pl. 12, Figs 21-25.

1928. *Ancilla (Baryspira) glandiformis* LAMARCK, var. *conoidea* DESHAYES; A. PEYROT, pp. 391-392, Pl. 12, Figs 11-12.

1952a. *Ancilla (Baryspira) glandiformis* LAMARCK; M. GLIBERT, pp. 351-354, Pl. 11, Figs 4a-h.

1959. *Ancilla glandiformis* LAM.; M. EREMIJA, Pl. 1, Figs 12-12a.

1959. *Ancilla glandiformis* LAM.; P.M. STEVANOVIĆ & V.M. MILOŠEVIĆ, p. 93, Pl. 3, Fig. 1.

1960. *Ancilla (Baryspira) glandiformis* LAMARCK; E. KOJUMDGIEVA, p. 168, Pl. 43, Figs 3-4.

1960. *Ancilla (Baryspira) glandiformis* var. *conoidea* (DESHAYES); E. KOJUMDGIEVA, p. 168, Pl. 43, Fig. 5.

1960. *Ancilla (Baryspira) glandiformis* var. *elongata* (DESHAYES); E. KOJUMDGIEVA, p. 168, Pl. 43, Fig. 7.

1966. *Ancilla (Baryspira) glandiformis* LAMARCK; L. STRAUSZ, pp. 357-358, Pl. 40, Figs 16-23; Pl. 41, Figs 1-2; Pl. 73, Figs 13-14; Pl. 74, Figs 1-2.

1966. *Ancilla (Baryspira) glandiformis conoidea* DESHAYES; L. STRAUSZ, p. 358, Pl. 73, Figs 6-12.

1971. *Ancilla (Ancilla) glandiformis conoideus* BR.; I. CSEPREGHY-MEZNERICS, p. 30, Pl. 13, Figs 21 and 24.

non 1971. *Ancilla (Baryspira) glandiformis* LAMARCK; I. CSEPREGHY-MEZNERICS, p. 30, Pl. 13, Fig. 22.

1971. *Ancilla glandiformis elongata* (DESHAYES); M. EREMIJA, p. 75, Pl. 5, Fig. 2.

1973. *Ancilla glandiformis* (LAMARCK); M. BOHN-HAVAS, p. 1058, Pl. 5, Fig. 17.

1989. *Ancilla (Baryspira) glandiformis* (LAMARCK); F. DAVOLI, pp. 114-116, Pl. 1, Figs 8-9 and 11-12; Pl. 2, Figs 1-10; Pl. 3, Fig. 11; Pl. 6, Figs 1, 3, 8 and 11.

?1989. *Ancilla (Baryspira) patula* (DODERLEIN *in* BELLARDI); F. DAVOLI, pp. 120-122, Pl. 1, Figs 2-4.

1990. *Ancilla (Baryspira) glandiformis* (LAMARCK); F. DAVOLI, pp. 74-75, Pl. 10, Fig. 3.

MATERIAL: More than 2000 specimens.

DIMENSIONS: The largest specimen is 54 mm high and 31 mm wide.

REMARKS: All specimens of this very common species are characterized by a much variable overall shape. The juvenile specimens, less than 10 mm, are slender, fusiform (*see* Pl. 6, Figs 1-4). During further growth the shells become more or less stumpy, contingently upon the pronouncess of the parietal callus, and the apical extent of the spire callus (*see* Pl. 6, Figs 5-11). The apex is either relatively sharp and well outlined, or it may be more or less concealed, to form even an almost hemispherical portion of the shell (*see* Pl. 6, Fig. 11). Between these morphologic extremes there appears a full range of transitional forms. Consequently, all the studied specimens from Korytnica are regarded to represent one species, typifying a great intraspecific variability. There is no reason to distinguish the shells with its apical part conical as a separate species, as it was done, upon the Korytnica material, by PUSCH (1837) who introduced the species *Ancilla coniformis* (PUSCH); the latter was objected formerly by FRIEDBERG (1911-1912).

The Korytnica specimens are evidently conspecific with those coming from Vienna Basin presented by HÖRNES (1856) and HOERNES & AUINGER (1880). The Viennese forms display a similar range of variability: the young specimens are of the same shape as the juvenile part of the shell exposed from under the callus in a specimen illustrated by HÖRNES (1856, Pl. 7, Fig. 2). To note, at Korytnica no specimens have as yet been found so large as these from Grund (up to 76 mm in height), a locality famous anyway for much overgrown shells of many gastropod species. The referenced Austrian authors were aware of a great intraspecific variability of *Ancilla glandiformis* (LAMARCK), and they were far from creation of separate species or varieties. However, the others (*e.g.* BELLARDI 1882; BEYRICH *fide*

FRIEDBERG 1911) criticized that statement with a belief that HÖRNES (1856) treatement of the species was too broad. The first of these authors, BELLARDI, thus distinguished the typical form and 7 varieties, and classified HÖRNES' specimens as of the typical form and of 4 such varieties. The second, BEYRICH, was of the opinion, instead, that most of the specimens illustrated by HÖRNES (1856) should be referred to as *Ancilla coniformis* of PUSCH; this opinion was objected already by FRIEDBERG (1911, p. 110). Moreover, many authors (*see* synonymy) were often ready to separate stumpy specimens as a subspecies (formerly, a variety) *Ancilla glandiformis conoidea* (DESHAYES), what also remains unjustifiable when the Korytnica collection is considered.

The problem of the specific variability in the genus *Ancilla* LAMARCK is understood very variably outside Europe. To exemplify, several specimens very similar to, or simply identical with, *Ancilla glandiformis* (LAMARCK) of the above-discussed European Miocene were described from the Miocene of New Zealand by OLSON (1956) not only as separate species, but also as representatives of diverse subgenera of the genus *Baryspira* regarded as a synonym of *Ancilla*. If follow OLSON (1956) , the Korytnica specimens should be assigned to three subgenera, at least: the illustrated juveniles (Pl. 6, Figs 1-4) do not differ from New Zealandese *Baryspira* (*Gracilispira*) *brevicula* MARWICK (*see* OLSON 1956, Pl. 6, Figs 9-12), the adult (Pl. 6, Fig. 10) from *Baryspira* (*Spinospira*) *stortha* OLSON (*see* OLSON 1956, Pl. 4, Figs 1-2), and the most fully grown (Pl. 6, Fig. 11) from *Baryspira* (*Gemaspira*) *platycephala* POWELL & BARTRUM (*see* OLSON 1956, Pl. 3, Figs 5-8). In the light of the above presented arguments on the morphologic variability displayed by the Korytnica specimens, a taxonomic treatement offered by OLSON (1956) is to be rejected.

The present author is also of the opinion that the morphologic differences upon which BELLARDI (1882) and DAVOLI (1989) distinguished as separate the species *Ancilla* (*Baryspira*) *patula* (DODERLEIN *in* BELLARDI) are not sufficient to justify such a treatment.

Within the Korytnica Basin the species *Ancilla glandiformis* (LAMARCK) occurs abundantly in the higher part of the Korytnica Clays sequence, developed during a gradual shallowing of the bay (that is, within the organic communities *II* and *III* of BAŁUK & RADWAŃSKI 1977, Pl. 5). This confirms an older opinion of HOERNES & AUINGER (1880, p. 56) that the species appears more commonly in the more shallow-marine facies. Thus, an opinion expressed by FRIEDBERG (1911, p. 110), when describing this species, that the Korytnica Clays were deposited under deeper marine conditions, remains of a historical meaning only (*see* discussion *in* RADWAŃSKI 1969, BAŁUK & RADWAŃSKI 1977).

The species *Ancilla* (*Baryspira*) *glandiformis* (LAMARCK) was reported from Korytnica by PUSCH (1837), HÖRNES (1856), KONTKIEWICZ (1882), FRIEDBERG (1911-1912, 1938) and KOWALEWSKI (1930). In the Miocene of Poland it is also known from Małoszów (FRIEDBERG 1911, KOWALEWSKI 1930), Zgłobice (FRIEDBERG 1911, URBANIAK 1974), Grudna Dolna (UHLIG, *fide* FRIEDBERG 1911), and Pobitno (FRIEDBERG 1911).

Ancilla (*Baryspira*) *obsoleta* (BROCCHI, 1814) (Pl. 7, Figs 7-8)

1856. *Ancillaria obsoleta* BROCC.; M. HÖRNES, pp. 55-56, Pl. 6, Figs 4-5.

1880. *Ancillaria* (*Anaulax*) *obsoleta* BROCC.; R. HOERNES & M. AUINGER, p. 56, Pl. 7, Fig. 3.

1882. *Ancillaria obsoleta* BROCCH.; L. BELLARDI, pp. 222-223, Pl. 12, Fig. 44.

1904. *Sparella Sowerbyi* (MICHT.); F. SACCO, p. 79, Pl. 17, Figs 61-62.

1911-1912. *Ancilla obsoleta* BROCC.; W. FRIEDBERG, pp. 110-111, Pl. 6, Fig. 2.

1928. *Ancilla* (*Sparella*) *obsoleta* BROCCHI; A. PEYROT, pp. 386-387, Pl. 12, Figs 9-10.

1952b. *Ancilla* (*Ancilla*) *obsoleta* BROCCHI; M. GLIBERT, p. 113, Pl. 8, Fig. 14.

1966. *Ancilla obsoleta* BROCCHI; L. STRAUSZ, p. 356, Pl. 40, Figs 12-15.
1971. *Ancilla (Ancilla) obsoleta* (BROCCHI); I. CSEPREGHY-MEZNERICS, p. 30, Pl. 13, Figs 19-20.
1984. *Ancilla (Ancilla) obsoleta* (BROCCHI); G. RUGGIERI & F. DAVOLI, pp. 61-62, Pl. 2, Figs 16-18.
1984a. *Ancilla (Baryspira) obsoleta* (BROCCHI); A.W. JANSSEN, p. 247, Pl. 10, Fig. 6; Pl. 64, Fig. 9.
1988. *Ancilla (Baryspira) obsoleta* (BROCCHI); F. DAVOLI, p. 23, Text-fig. 2.
1989. *Ancilla (Baryspira) obsoleta* (BROCCHI); F. DAVOLI, pp. 116-118, Pl. 3, Figs 5-6, 8-10 and 12-14; Pl. 6, Fig. 2.
1990. *Ancilla (Baryspira) obsoleta* (BROCCHI); F. DAVOLI, pp. 75-76, Pl. 10, Figs 1-2.

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen (Pl. 7, Fig. 8) is 53 mm high and about 21 mm wide.

REMARKS: The two collected specimens, although rather poorly preserved, evidently belong to the indicated species, and are fully concordant with the holotype, coming from northern Italy (*see* PINNA & SPEZIA 1978, Pl. 9, Fig. 2). In both specimens from Korytnica, the depressed "ancillid" band settled anteriorly to the colored, or lustreless, broad band, is relatively broad, and the width ratio of these two bands amounts about 0.2. In the relative, very common species *Ancilla glandiformis* (LAMARCK) this ratio ranges 0.12-0.14; and this value is regarded by GLIBERT (1952b) as distinctive *Ancilla obsoleta* (BROCCHI) from slender specimens of *Ancilla glandiformis* (LAMARCK).

The species *Ancilla obsoleta* (BROCCHI) has not hitherto been known from the Miocene of Poland. FRIEDBERG (1911, 1938) recorded two specimens from Dżurów, at present in the Ukraine.

Genus *Ancillarina* BELLARDI, 1882

Ancillarina subcanalifera (D'ORBIGNY, 1852) (Pl. 7, Figs 5-6)

partim 1856. *Ancillaria canalifera* LAM.; M. HÖRNES, pp. 53-55; *non* Pl. 6, Fig. 3 (=*Ancillaria subcanalifera* D'ORB.; M. HÖRNES, pp. 665-666).
1882. *Ancillarina suturalis* (BON.); L. BELLARDI, pp. 217-218, Pl. 12, Fig. 38.
1882. *Ancillarina apenninica* BELL.; L. BELLARDI, p. 219, Pl. 12, Fig. 39.
1904. *Tortoliva suturalis* (BON.) et var.; F. SACCO, p. 78, Pl. 17, Figs 47-52.
1928. *Tortoliva subcanalifera* (D'ORBIGNY); A. PEYROT, pp. 392-394, Pl. 12, Figs 13-14.
1959. *Oliva clava* LAM.; M. EREMIJA, Pl. 2, Figs 9-9a.
1960. *Tortoliva subcanalifera* (ORBIGNY); E. KOJUMDGIEVA, pp. 168-169, Pl. 43, Fig. 6.
1964. *Ancilla canalifera* (LAMARCK); T. BÁLDI, p. 148, Pl. 1, Figs 9a-9b.
1966. *Tortoliva subcanalifera* ORBIGNY; L. STRAUSZ, pp. 359-360, Pl. 72, Figs 1-5.
1973. *Tortoliva subcanalifera* (D'ORBIGNY); T. BÁLDI; pp. 302-303, Pl. 44, Figs 5-6; Pl. 51, Fig. 6.
1984a. *Ancilla (Ancillarina) subcanalifera* (D'ORBIGNY); A.W. JANSSEN, p. 246, Pl. 64, Fig. 8.
1989. *Ancilla (Ancillarina) subcanalifera* (D'ORBIGNY); F. DAVOLI, pp. 125-126, Pl. 4, Figs 1-2, 15 and 19.

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen (Pl. 7, Fig. 6) is 36 mm high and about 12.5 mm wide.

REMARKS: The two studied specimens seem to be fully concordant with those presented by BELLARDI (1882, Pl. 12, Figs 38-39) from northern Italy, and by PEYROT (1928, Pl. 12, Figs 13-14) from the Aquitaine Basin, regardless of the specific names these authors used (*see* synonymy). Conspecific with the Korytnica specimens are also those presented from

various localities within the Paratethys basins (*see* EREMIJA 1959, KOJUMDGIEVA 1960, STRAUSZ 1966, BALDI 1973), the Vienna Basin including. However, the only Viennese specimen illustrated by HÖRNES (1856, Pl. 6, Fig. 3; labelled as from Steinabrunn) is evidently different. It was already BELLARDI (1882, p. 219), who indicated this specimen to correspond well with those from the Eocene, and to be much deviated from any Miocene forms. STRAUSZ (1966, p. 359) noted discrepancies between the description given by HÖRNES (1856) and the feature displayed by that specimen. It may tentatively be thought that a doubtful specimen was taken for the illustration by HÖRNES.

According to COSSMANN (*fide* PEYROT 1928, p. 392), the discussed species should be assigned to the genus *Tortoliva* CONRAD, 1865, the nature of which is, however, discussible (*see* PEYROT 1928, p. 376). It was WENZ (1943, p. 1276) who even put a query, and commented that the genus was established upon a damaged specimen (*"ein Bruchstuck"*), and it is really very poorly recognized. The present author is thus of the opinion that a treat offered once by BELLARDI (1882) should be reminded to include the species into the genus *Ancillarina* BELLARDI, 1882, similarly, as it was done earlier by JANSSEN (1984a, p. 246).

The species *Ancillarina subcanalifera* (D'ORBIGNY) has not hitherto been known from the Miocene of Poland.

Family **Mitridae** SWAINSON, 1831

Genus *Mitra* MARTYN, 1784

Subgenus *Tiara* SWAINSON, 1831

Mitra (Tiara) bonellii BELLARDI, 1850

(Pl. 11, Fig. 9)

1887. *Mitra Bonellii* BELLARDI; L. BELLARDI, p. 76, Pl. 4, Fig. 19.

1981. *Mitra bonellii* BELLARDI; E. FERRERO MORTARA & *al.*, p. 160, Pl. 49, Fig. 4 [= the syntype of the species].

MATERIAL: One specimen.

DIMENSIONS: Height about 31 mm, width 10.5 mm.

REMARKS: The collected specimen seems to be compatible with those reported from the Pliocene of Villalvernia in Italy (BELLARDI 1887, FERRERO MORTARA & *al.* 1981).

The species *Mitra (Tiara) bonellii* BELLARDI has not hitherto been known from the Miocene of Poland.

Mitra (Tiara) scrobiculata (BROCCHI, 1814)

(Pl. 7, Fig. 9)

partim 1856. *Mitra scrobiculata* BROCC.; M. HÖRNES, pp. 100-101, Pl. 10, Fig. 15, ?Fig. 14; *non* Figs 16-18.

1880. *Mitra (Nebularia) scrobiculata* BROCC.; R. HOERNES & M. AUINGER, pp. 80-81, Pl. 9, Fig. 17, ?Figs 18-19.

1928. *Mitra (Cancilla) Grateloupi* D'ORBIGNY; A. PEYROT, pp. 315-316, Pl. 9, Figs 48-49.

1959. *Mitra scrobiculata* BROCC.; M. EREMIJA, Pl. 1, Fig. 4.

1960. *Mitra (Tiara) substriatula* D'ORBIGNY; E. KOJUMDGIEVA, p. 157, Pl. 42, Fig. 2.

1973. *Mitra (Mitra) scrobiculata* (BROCCHI); E. CAPROTTI & M. VESCOVI, pp. 170-171, Pl. 2, Fig. 16.

1978. *Voluta scrobiculata* BROCCHI; G. PINNA & L. SPEZIA, p. 170, Pl. 66, Fig. 2 [= the holotype of the species].
1979. *Mitra (Tiara) scrobiculata* (BROCCHI); J. MARTINELL, pp. 61-62, Pl. 1, Figs 1-2.

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen (Pl. 7, Fig. 9) is 70 mm high and 17 mm wide.

REMARKS: The illustrated specimen from Korytnica is fully concordant, both in size and an overall shape, with the holotype of the species, from which it slightly differs in a less pronounced ornamentation (*see* PINNA & SPEZIA 1978, Pl. 66, Fig. 2). The latter, however, is in this specimen identical with that shown by the specimens from the Pliocene of Castell'Arquato in Italy, presented by CAPROTTI & VESCOVI (1973), and of Empordà in Spain, presented by MARTINELL (1979). Ornamentation in this species is, however, variable as already stated by HOERNES & AUINGER (1880, p. 80).

The species *Mitra (Tiara) scrobiculata* (BROCCHI) was reported from Korytnica by PUSCH (1837) and HÖRNES (1856) only. In the Miocene of Poland it was also noted from Benczyn (KRACH 1950a).

Mitra (Tiara) sp.
(Pl. 11, Fig. 8)

MATERIAL: One specimen.
DIMENSIONS: Height 7.2 mm, width 3.4 mm.

REMARKS: The collected specimen is a juvenile, a specific attribution of which is unrealizable, although its state of preservation is outstanding (*see* Pl. 11, Fig. 8). It may be judged that it is a juvenile specimen of *Mitra (Tiara) exarata* BELLARDI, the species described from the Miocene of Pino Torinese in Italy (*see* FERRERO MORTARA *& al.* 1981, Pl. 50, Fig. 1) and known also from Kostej in Transylvania (*see* BOETTGER 1906, p. 8). For a certainty, it is to note that none of the Korytnica species of genera of the family Mitridae bears such an ornamentation in its juvenile shell.

Such specimens remain as yet unknown from the Miocene of Poland.

Genus *Mitraria* RAFINESQUE, 1815
Subgenus *Mitraria* RAFINESQUE, 1815
Mitraria (Mitraria) bouei (HOERNES & AUINGER, 1880)
(Pl. 8, Figs 7-8)

1880. *Mitra Bouei* nov.form.; R. HOERNES & M. AUINGER, p. 79, Pl. 9, Figs 6-7.

MATERIAL: Twenty-five specimens.
DIMENSIONS: The largest specimen (Pl. 8, Fig. 7) is 25 mm high and 8.8 mm wide.

REMARKS: The studied specimens seem to be concordant with those described by HOERNES & AUINGER (1880), particularly with a specimen from Lapugy (*see* HOERNES & AUINGER 1880, Pl. 9, Fig. 6). The latter specimen differs from another one illustrated from Lisice in Moravia, at present the Czech Republik, by a more fusiform shape and a slightly higher last whorl.

The three of the collected Korytnica specimens display their spiral ornamentation more pronounced; they remind thereby the species *Mitra incognita* BASTEROT (*see* HOERNES & AUINGER 1880, Pl. 9, Figs 3-5). A spiral ornamentation at the base of the last whorl in these specimens is similar to that known in *Mitra bouei* of HOERNES & AUINGER (1880); it is featured by thin, oblique striae (not furrows).

The species *Mitraria* (*Mitraria*) *bouei* (HOERNES & AUINGER) has not hitherto been known from Korytnica. In the Miocene of Poland it was reported from Rybnica (KOWALEWSKI 1950). The species was also described by FRIEDBERG (1911) from Dryszczów, at present in the Ukraine, although his description indicates the collected specimens being not conspecific with the Viennese ones, and which were included afterwards (FRIEDBERG 1938, p. 130) to *Mitraria* (*Mitraria*) *friedbergi* (COSSMANN), what as yet remains still uncertain.

Mitraria (*Mitraria*) *friedbergi* (COSSMANN, 1912)
(Pl. 8, Figs 1-2)

?1837. *Mitra incognita* BAST., var. ; G. PUSCH, p. 119.

partim 1856. *Mitra fusiformis* BROCC.; M. HÖRNES, pp. 98-99, Pl. 10, Fig. 6; *non* Figs 4-5 and 7.

partim 1856. *Mitra aperta* BELL.; M. HÖRNES, pp. 97-98, Pl. 10, Fig. 1; *non* Figs 2-3.

partim 1880. *Mitra fusiformis* BROCC.; R. HOERNES & M. AUINGER, pp. 75-76, Pl. 8, Figs 27-29; *non* Figs 25-26.

1911. *Mitra ambigua* FRIEDB.; W. FRIEDBERG, pp. 10-12, Text-fig. 2 and Pl. 1, Fig. 6.

1928. *Mitra friedbergi* COSSM.; W. FRIEDBERG, pp. 577-578.

1960. *Mitraria* (*Mitraria*) *friedbergi* (COSSMANN); E. KOJUMDGIEVA, p. 158, Pl. 42, Fig. 6.

MATERIAL: Eighteen specimens.

DIMENSIONS: The largest specimen is 35.5 mm high and 11.3 mm wide.

REMARKS: The studied specimens are fully concordant with these presented by HOERNES & AUINGER (1880, Pl. 8, Figs 27-29) from Lapugy in Transylvania, and with those shown earlier by HÖRNES (1856, Pl. 10, Fig. 6) from Steinabrunn in the Vienna Basin. The above-referenced authors have combined these specimens with the species *Mitra fusiformis* BROCCHI. However, it was already FRIEDBERG (1911) who postulated, rather correctly, that such a treatment is not justifiable. The lectotype of that species, coming from northern Italy, is much larger (67.5 mm high) and bears much more convex whorls, separated by deeper sutures, and delicate furrows on its surface that are distributed sparsely (*see* PINNA & SPEZIA 1978, Pl. 63, Fig. 3). Therefore, FRIEDBERG proposed for the Viennese and Transylvanian specimens the name *Mitra ambigua* FRIEDBERG, which soon appeared to be preoccupied (COSSMANN, *fide* FRIEDBERG 1928) and substituted by the name *Mitra friedbergi* COSSMANN.

The species *Mitraria* (*Mitraria*) *friedbergi* (COSSMANN) from Korytnica was reported by KOWALEWSKI (1930) and FRIEDBERG (1938), probably also by PUSCH (1837). In the Miocene of Poland this species was also recorded from Małoszów (KRACH 1947), Rybnica (KOWALEWSKI 1950), Trzydnik (KRACH 1950b), Łychów and Węglinek (KRACH 1981), Benczyn (KRACH 1950a), and Błonie (FRIEDBERG 1911, URBANIAK 1974).

Mitraria (*Mitraria*) *goniophora* (BELLARDI, 1850)
(Pl. 8, Figs 3-4)

partim 1880. *Mitra goniophora* BELL., *Var. a*; R. HOERNES & M. AUINGER, pp. 77-78, Pl. 9, Fig. 12; *non* Pl. 7, Fig. 9 and Pl. 9, Fig. 13.

1887. *Mitra goniophora* BELLARDI; L. BELLARDI, p. 68, Pl. 4, Fig. 8.

1928. *Mitra goniophora* BELLARDI; A. PEYROT, pp. 308-309, Pl. 9, Figs 9 and 24.

1954. *Mitra goniophora austriaca* CSEPREGHY-MEZNERICS; I. CSEPREGHY-MEZNERICS, p. 47, Pl. 6, Figs 4-5, 8 and 10.

1960. *Mitraria (Mitraria) goniophora* var. *austriaca* (MEZNERICS); E. KOJUMDGIEVA, p. 159, Pl. 42, Fig. 8.

1966. *Mitra goniophora* BELLARDI; L. STRAUSZ, pp. 364-365, Pl. 41, Figs 20-25.

1981. *Mitra goniophora* BELLARDI; E. FERRERO MORTARA & *al.*, p. 158, Pl. 48, Fig. 11 [=the syntype of the species].

MATERIAL: Six specimens.

DIMENSIONS: The largest specimen (Pl. 8, Fig. 4) is 21 mm high and 7.8 mm wide.

REMARKS: Under the name *Mitraria (Mitraria) goniophora* (BELLARDI) many diverse specimens have been described from the Miocene of the Paratethys basins; they all share a common feature of more or less pronounced edge on the posterior (upper) part of the whorls, that has not been regarded as important by the creator of the species himself, who described the two other species (*see* FERRERO MORTARA & *al.* 1981, Pl. 48) bearing such an edge on the whorls, *Mitra protracta* and *Mitra subcarinata*.

The morphologically diversified specimens were presented by HOERNES & AUINGER (1880, pp. 77-78, Pl. 7, Fig. 9 and Pl. 9, Figs 11-14), who believed that they are conspecific, although with a distinction of the type form and the two varieties. However, these specimens differ in the size and its ratios, slenderness of the spire, and the presence or absence of the delicate spiral ornamentation, especially on the earlier whorls. As apparent from the study of the Korytnica material it seems evident that the four, separate species are herein accounted, but devoid of any transitional forms, what was already postulated by the creator of the species *Mitra goniophora*, that is BELLARDI (1887, p. 68). Of the specimens presented as *Mitra goniophora* by HOERNES & AUINGER (1880), conspecific with the Korytnica specimens is herein regarded only one (from Lapugy) of the two items labelled as *Var. a* by these authors (*see* HOERNES & AUINGER 1880, Pl. 9, Fig. 12), what is clear when looking at the syntype of the species re-illustrated recently by FERRERO MORTARA & *al.* (1981, Pl. 48, Fig. 11).

A perplexity of the species *Mitraria (Mitraria) goniophora* (BELLARDI) and its varieties distinguished by HOERNES & AUINGER (1880) has been reinforced by CSEPREGHY-MEZNERICS (1950, 1954) who introduced, instead of the letter-named *Varieties*, the names suggesting their subspecies levels; namely, she invented (CSEPREGHY-MEZNERICS 1950) a name of *Mitra goniophora austriaca* for the specimens of *Var. b*, thus these presented by HÖRNES (1856), and subsequently (CSEPREGHY-MEZNERICS 1954) *Mitra goniophora transsylvanica* for these of *Var. c*, thus such as those presented by HOERNES & AUINGER (1880, Pl. 9, Fig. 14); this authoress distinguished also the typical form, to which she included (*see* her synonymy) the just-indicated specimen of HOERNES & AUINGER (1880, Pl. 9, Fig. 14; *see* CSEPREGHY-MEZNERICS 1954, p. 47) [*sic*!]. The present author regards the "*Var. b*" and "*Var. c*" as undistinguishable, and thus treats them as the synonymies.

The studied specimens from Korytnica are concordant with those coming from northern Italy, and with the above mentioned specimen from Lapugy (*see* HOERNES & AUINGER 1880, Pl. 9. Fig. 12).

The species *Mitraria (Mitraria) goniophora* (BELLARDI) was reported from Korytnica only by such prominent authors as HÖRNES (1856) and FRIEDBERG (1938). An information supplied by KOWALEWSKI (1930) refers to the species described below as *Mitraria (Mitraria) rudolfi* nom.n. The species is unknown as yet from other Miocene localities in Poland.

Mitraria (*Mitraria*) *repleta* (BELLARDI, 1887) (Pl. 8, Fig. 9)

partim 1856. *Mitra fusiformis* BROCC.; M. HÖRNES, pp. 98-99, Pl. 10, Fig. 5; *non* Figs 4 and 6-7.
partim 1880. *Mitra Brusinae* nov.form.; R. HOERNES & M. AUINGER, pp. 76-77, Pl. 9, Fig. 2; *non* Fig. 1.
1887. *Mitra repleta* BELLARDI; L. BELLARDI, p. 26, Pl. 3, Fig. 8.
1959. *Mitra brusinae* R. HOERN. & AUING.; M. EREMIJA, Pl. 1, Fig. 3.
1981. *Mitra repleta* BELLARDI; M. FERRERO MORTARA & *al.*, p. 149, Pl. 42, Fig. 12 [= the holotype of the species].

MATERIAL: Seven specimens.
DIMENSIONS: The largest specimen (Pl. 8, Fig. 9) is 38 mm high and 13 mm wide.

REMARKS: A specific assignment of the studied specimens is slightly troublesome; they seem to be compatible with the holotype of *Mitraria repleta* BELLARDI, the species from the Pliocene of Colli Astesi in Italy (*see* FERRERO MORTARA & *al.* 1981, Pl. 42, Fig. 12), although the illustrated holotype is about half a whorl shorter. The collected specimens are certainly conspecific with a specimen from Steinabrunn in the Vienna Basin and assigned by HOERNES & AUINGER (1880), with a query, to the then-established species *Mitra brusinai* HOERNES & AUINGER. In the present author's opinion these specimens do not belong to *Mitraria* (*Mitraria*) *brusinai* (HOERNES & AUINGER), and should be assigned to the above-indicated species of BELLARDI. Possibly conspecific with those from Korytnica is also a specimen presented by EREMIJA (1959) from the Miocene of Croatia, although it seems to be slightly more slender.

The species *Mitraria* (*Mitraria*) *repleta* (BELLARDI) has not hitherto been known from the Miocene of Poland.

Mitraria (*Mitraria*) *mathiasi* nom.n. (Pl. 8, Fig. 6)

partim 1880. *Mitra goniophora* BELL., *Var. a*; R. HOERNES & M. AUINGER, pp. 77-78, Pl. 9, Fig. 13; ?Pl. 7, Fig. 9; *non* Fig. 12.
?1981. *Mitra goniophora* BELLARDI; W. KRACH, pp. 71-72, Pl. 19, Figs 3-5.

HOLOTYPE: The specimen from Lapugy in Transylvania presented by HOERNES & AUINGER (1880, Pl. 9, Fig. 13).
DERIVATION OF THE NAME: *mathiasi* – to honor MATHIAS AUINGER (1810-1890), the co-author of a classic monograph of the Miocene gastropods, in which the first account of this species was presented.
MATERIAL: Three specimens.
DIMENSIONS: The largest specimen (Pl. 8, Fig. 6) is 30.2 mm high and 11.2 mm wide.

REMARKS: The collected specimens are fully concordant with that one presented by HOERNES & AUINGER (1880, Pl. 9, Fig. 13) from Lapugy in Transylvania and regarded as representative of the "*Var. a*" of *Mitraria* (*Mitraria*) *goniophora* (BELLARDI). Such an assignment was already objected by the creator of the species (BELLARDI 1887; *see also* STRAUSZ 1966, p. 365), and this very view is accepted by the present author, who postulates the specimens from Lapugy in Transylvania, described by HOERNES & AUINGER (1880), as well as these from Korytnica, should be treated as a separate species, the name of which is herein proposed as *Mitraria* (*Mitraria*) *mathiasi* nom.n.

KRACH (1981, p. 72) presented, from the vicinity of Łychów (Lublin Upland), the specimens regarded as conspecific with the holotype of the species. According to the present author, this assignment is rather doubtful, and the referenced specimens differ by their more pronounced edge of the shell.

The species *Mitraria* (*Mitraria*) *mathiasi* nom.n. has not hitherto been known from Korytnica; it also remains unknown from other Miocene localities in Poland.

Mitraria (*Mitraria*) *rudolfi* nom.n.
(Pl. 8, Fig. 5)

1880. *Mitra goniophora*, *Type*; R. HOERNES & M. AUINGER, pp. 77-78, Pl. 9. Fig. 11.
?1930. *Mitra goniophora* BELL.; K. KOWALEWSKI, p. 112.

HOLOTYPE: The specimen from Pöls in Austria, presented by HOERNES & AUINGER (1880, Pl. 9, Fig. 11).
DERIVATION OF THE NAME: *rudolfi* – to honor RUDOLF HOERNES (1850-1912), the co-author of a classic monograph of the Miocene gastropods, in which the first account of this species was presented.
MATERIAL: One specimen.
DIMENSIONS: Height 17.7 mm, width 7.8 mm.

REMARKS: The studied specimen from Korytnica is fully concordant with that coming from Pöls in Austria, and treated by HOERNES & AUINGER (1880) as the typical form of the species *Mitraria* (*Mitraria*) *goniophora* (BELLARDI). This treatement has already been objected by the creator of the species himself, that is BELLARDI (1887; *see also* STRAUSZ 1966, p. 365), and the present author fully agrees with that, and regards both the specimens (in number of 9, from 5 localities) described by HOERNES & AUINGER (1880), as well as those from Korytnica, as a separate species to which the name *Mitraria* (*Mitraria*) *rudolfi* nom.n. is herein offered.

Possibly another specimen from Korytnica was mentioned by KOWALEWSKI (1930). The species is unknown as yet from other Miocene localities in Poland.

Mitraria (*Mitraria*) cf. *austriaca* (CSEPREGHY-MEZNERICS, 1950)
(Pl. 11, Fig. 7)

1856. *Mitra goniophora* BELL.; M. HÖRNES, p. 100, Pl. 10, Figs 8-10.
1880. *Mitra goniophora* BELL. *Var. b*; R. HOERNES & M. AUINGER, p. 78.
1880. *Mitra goniophora* BELL. *Var. c*; R. HOERNES & M. AUINGER, pp. 77-78, Pl. 9, Fig. 14.
1928. *Mitra goniophora* BELL.; W. FRIEDBERG, p. 592, Pl. 37, Fig. 24.
1950. *Mitra goniophora austriaca* n.sp.; I. CSEPREGHY-MEZNERICS, p. 56.
1954. *Mitra goniophora transsylvanica* n.ssp.; I. CSEPREGHY-MEZNERICS, pp. 47 and 140-141, Pl. 6, Figs 1-2 and 15-16.
1970. *Mitra goniophora transsylvanica* (CSEPREGHY-MEZNERICS); W. BAŁUK, p. 119, Pl. 12, Fig. 5.
1971. *Mitra goniophora transylvanica* CSEPR.-MEZN.; I. CSEPREGHY-MEZNERICS, p. 31, Pl. 14, Figs 8-9.

MATERIAL: Four specimens.
DIMENSIONS: The largest specimen (Pl. 11, Fig. 7) is 8.7 mm high and 3.5 mm wide.

REMARKS: The studied specimens have tentatively been assigned to the indicated species, because all of them are juvenile, lacking the features typical of the adult forms. They are concordant with those presented formerly (BAŁUK 1970) from Niskowa in the Carpathians. Evidently, they do not belong to any of the representatives of the family Mitridae, known insofar from Korytnica. The present author now regards the two names introduced by CSEPREGHY-MEZNERICS (1950, 1954) to be the synonyms, and thus uses for taxonomy an older one, in spite of his earlier treatment (BAŁUK 1970).

In the Miocene of Poland the species was reported only from Niskowa (BAŁUK 1970). The specimens described by FRIEDBERG (1928) were coming from Tarnoruda and several other localities, at present in the Ukraine.

Genus *Vexillum* BOLTEN *in* RÖDING, 1798
Subgenus *Vexillum* BOLTEN *in* RÖDING, 1798
Vexillum (*Vexillum*) *cognatum* (BELLARDI, 1887)
(Pl. 9, Figs 3-5)

?1853. *Mitra striata* m.; E. EICHWALD, pp. 202-203, Pl. 8, Fig. 16.

partim 1880. *Mitra* (*Volutomitra*) *ebenus* LAMK; R. HOERNES & M. AUINGER, pp. 82-83, Pl. 9, Figs 22-25; *non* Pl. 7, Figs 10-13.

1887. *Uromitra cognata* BELLARDI; L. BELLARDI, p. 59, Pl. 6, Fig. 23.

1911. *Turricula ebenus* var. *striata* EICHW.; W. FRIEDBERG, pp. 22-23, Pl. 1, Figs 14-15.

1981. *Uromitra cognata* BELLARDI; E. FERRERO MORTARA & *al.*, p. 169, Pl. 51, Fig. 7 [=the holotype of the species].

MATERIAL: Fifty-six specimens.

DIMENSIONS: The largest specimen (Pl. 9, Fig. 4) is about 13-14 mm high and 5 mm wide.

REMARKS: The studied specimens are distinctly different from those of the species *Vexillum* (*Vexillum*) *leucozona* (ANDRZEJOWSKI), although some authors do not separate these species regardless of a lack of transitional forms, *i.a.* HOERNES & AUINGER (1880). Evidently, the specimens from Korytnica are conspecific with a part of those presented by HOERNES & AUINGER (1880) as *Vexillum ebenus* (LAMARCK). It is also thought that they are concordant with the species coming from the Miocene of Stazzano in northern Italy, *Vexillum cognatum* (BELLARDI), the holotype of which was re-illustrated by FERRERO MORTARA & *al.* (1981).

The collected specimens are characterized by a great variability of their shape: some are more slender (*see* Pl. 9, Fig. 4) than the others (*see* Pl. 9, Fig. 5). They also vary in ornamentation, in which the ribbing occurs either on all the whorls, or only on some of them, primarily at their lower parts. In any case, however, the ribs are thin and sharp enough, to differ distinctly from those of the species *Vexillum leucozona* (ANDRZEJOWSKI). It is possible that the studied specimens are concordant, as already suggested by FRIEDBERG (1911), with those described by EICHWALD (1853) as "*Mitra striata* EICHWALD"; a very imperfect drawing offered by EICHWALD does not allow to recognize it with a certainty.

The species *Vexillum* (*Vexillum*) *cognatum* (BELLARDI) has not hitherto been known from the Miocene of Poland. The specimens described by FRIEDBERG (1911) as "*Turricula ebenus* var. *striata*" were coming from the localities situated at present in the Ukraine.

Vexillum (*Vexillum*) *leucozona* (ANDRZEJOWSKI, 1830) (Pl. 9, Figs 1-2)

1837. *Mitra leucozona* ANDRZEJOWSKI; G. PUSCH, pp. 119-120, Pl. 11, Fig. 6.

1856. *Mitra ebenus* LAM.; M. HÖRNES, pp. 109-110, Pl. 10, Figs 11-13.

partim 1880. *Mitra* (*Volutomitra*) *ebenus* LAMK; R. HOERNES & M. AUINGER, pp. 82-83, Pl. 7, Figs 11-12 and 14, ?Fig. 10; *non* Pl. 7, Fig. 13 and Pl. 9, Figs 22-25.

1911. *Turricula ebenus* LAM. et var. *leucozona* ANDRZ.; W. FRIEDBERG, pp. 18-22, Pl. 1, Figs 10-13.

1952a. *Vexillum* (*Vexillum*) *leucozona* ANDRZEJOWSKI; M. GLIBERT, pp. 360-361, Pl. 12, Figs 2a-b, ?Fig. 2c.

1960. *Vexillum* (*Vexillum*) *ebenus* var. *leucozona* (ANDRZEJOWSKI); E. KOJUMDGIEVA, p. 160, Pl. 42, Fig. 9.

1966. *Mitra* (*Pusia*) *ebenus* LAMARCK; L. STRAUSZ, pp. 366-367, Pl. 26, Fig. 5, ?Figs 3-4.

1970. *Vexillum ebenus leucozona* (ANDRZEJOWSKI); W. BAŁUK, p. 119, Pl. 12, Fig. 7.

?1981. *Mitra* (*Vexillum*) *ebenus leucozona* (ANDRZEJOWSKI); W. KRACH, pp. 72-73, Pl. 20, Figs 1-5.

MATERIAL: Six specimens.

DIMENSIONS: The specimen completely preserved (Pl. 9, Fig. 1) is 11.3 mm high and 5.3 mm wide; the largest specimen is about 20 mm high and 7.5 mm wide.

REMARKS: The collected specimens from Korytnica are fully concordant with those described and illustrated by PUSCH (1837), who studied the topotypic material from Żukowce, at present in the Ukraine, and kindly supplied by the creator of the species, ANDRZEJOWSKI. PUSCH (1837) jugded that the original illustration of the species *Mitra leucozona* is not adequate, and he estimated this species to be separate from the then commonly known *Mitra plicatula* BROCCHI. Nowadays, a similar opinion was expressed by GLIBERT (1952a), contrary to that accepted by the others who regarded the species as a fossil equivalent of the present-day *Vexillum ebenus* (LAMARCK), or as one of its subspecies. To the truth, the species *Vexillum ebenus* (LAMARCK) is often regarded as much variable. In its diagnosis, however, LAMARCK (*fide* FRIEDBERG 1911, p. 19) stated that the shell is "*laevigata, basi subrugosa*", and it bears the "*columella quadriplicata*"; on the other hand, in the diagnosis of the species *Vexillum leucozona* (ANDRZEJOWSKI) revised by PUSCH (1837, p. 119) the statements are "*longitudinaliter costata*" and "*columella triplicata*", respectively. When such essential differences are recognized, it is reasonable to treat these two species as separate taxa, which supposedly may be closely related.

The specimens conspecific with those studied from Korytnica are known from a number of localities in the Vienna Basin; some of them were presented by HÖRNES (1856) who identified them with the above-indicated present-day species (*see* synonymy).

The species *Vexillum* (*Vexillum*) *leucozona* (ANDRZEJOWSKI) has not hitherto been recorded from Korytnica. In the Miocene of Poland it is known from Łychów and Węglinek (KRACH 1981), and Niskowa (BAŁUK 1970).The specimens described by FRIEDBERG (1911) as "*Turricula ebenus* LAM." and "*Turricula ebenus* var. *leucozona* ANDRZ." were coming from many localities situated at present in the Ukraine.

Vexillum (*Vexillum*) *paraleucozona* (BOETTGER, 1906) (Pl. 9, Fig. 6)

1906. *Mitra* (*Uromitra*) *ebenus* LMK, var. *paraleucozona* n.var.; O. BOETTGER, p. 8.

1934. *Vexillum* (*Uromitra*) *ebenus paraleucozona* (BOETTGER); A. ZILCH, p. 259, Pl. 17, Fig. 18.

MATERIAL: Eight specimens.
DIMENSIONS: The largest specimen is 9.7 mm high and 4.2 mm wide.

REMARKS: The studied specimens seem to be fully concordant with those described by BOETTGER (1906) from Kostej in Transylvania.

The species *Vexillum* (*Vexillum*) *paraleucozona* (BOETTGER) has not hitherto been known from the Miocene of Poland.

Vexillum (*Vexillum*) *pseudavellana* (BOETTGER, 1906) (Pl. 9, Fig. 7)

1906. *Mitra* (*Uromitra*) *avellana* BELL. var. *pseudavellana* n.var.; O. BOETTGER, pp. 9-10.
1934. *Vexillum* (*Uromitra*) *avellana pseudavellana* (BOETTGER); A. ZILCH, p. 259, Pl. 17, Fig. 20.

MATERIAL: Thirty specimens.
DIMENSIONS: The largest specimen is 7.7 mm high and 3.2 mm wide.

REMARKS: The studied specimens seem also to be identical with those coming from Kostej in Transylvania and described by BOETTGER (1906). At Korytnica, their occurrence is confined to the oyster shellbed off the shore exposed at Mt. Lysa.

The species *Vexillum* (*Vexillum*) *pseudavellana* (BOETTGER) has not hitherto been known from the Miocene of Poland.

Subgenus *Costellaria* SWAINSON, 1840

Vexillum (*Costellaria*) *pseudorecticosta* (BOETTGER, 1901) (Pl. 10, Figs 3-7)

1880. *Mitra* (*Costellaria*) *recticosta* BELL.; R. HOERNES & M. AUINGER, pp. 85-86, Pl. 10, Figs 5-8.
1901. *Mitra* (*Costellaria*) *recticosta* BELL.; O. BOETTGER, p. 13.
1906. *Mitra* (*Costellaria*) *pseudorecticosta* n.nom.; O. BOETTGER, p. 10.
1911. *Turricula vindobonensis* FRIEDB.; W. FRIEDBERG, pp. 26-27, Pl. 1, Fig. 18.

MATERIAL: Three hundred and fifty specimens.
DIMENSIONS: The largest specimen is 8.8 mm high and 3 mm wide.

REMARKS: The studied specimens are thought to be conspecific with those coming from Steinabrunn in the Vienna Basin, and presented by HOERNES & AUINGER (1880) under the name of *Mitra* (*Costellaria*) *recticosta* BELLARDI. The latter identification has soonafter been objected by the creator of the species, that is BELLARDI himself (1887). In consequence, both BOETTGER (1906), and FRIEDBERG (1911), independently postulated a necessity of the new name to be given. It was BOETTGER (1906) who introduced such a name earlier, and thus his name has a priority.

The specimens described by BOETTGER (1901, 1906) from Kostej are featured by the presence of axial ribs, numbering 25-27 on the last whorl. Within the Korytnica material, the

majority of shells bear such very number, but the specimens with either 24, or 28-29 ribs are also met.

To this species are herein included tentatively also some specimens differing from others (*see* Pl. 10, Figs 6-7) by their larger size (height 9.1-9.6, width 3.5-3.7 mm), slighter slenderness, and their axial ribs more densely spaced (25-32 on the last but one whorl) and fading on the last whorl. Such specimens are, moreover, known amongst those coming from Steinabrunn in the Vienna Basin, and presented by HOERNES & AUINGER (1880).

HÖRNES (1856, pp. 106-107, Pl. 10, Fig. 31) described erroneously, under the name "*Mitra recticosta* BELLARDI", a specimen coming also from Steinabrunn, but differing from the recognized representatives of that species. This specimen reminds rather *Vexillum borsoni* (BELLARDI). The true *Vexillum recticosta* (BELLARDI) is known primarily from the Miocene of northern Italy; it is well presented by ROBBA (1968, pp. 557-558, Pl. 48, Fig. 9).

The species *Vexillum* (*Vexillum*) *pseudorecticosta* (BOETTGER) has not hitherto been known from Korytnica. In the Miocene of Poland it was mentioned from Benczyn (KRACH 1950a) and Bogucice (LISZKA 1933). The specimens described as "*Turricula vindobonensis*" by FRIEDBERG (1911) were coming from Dryszczów and Zborów, at present in the Ukraine.

Vexillum (*Costellaria*) *vexans* (BOETTGER, 1901)
(Pl. 10, Figs 1-2)

1901. *Mitra* (*Costellaria*) *recticosta* BELL. var. *vexans* n.; O. BOETTGER, pp. 13-14.
1906. *Mitra* (*Costellaria*) *pseudorecticosta* n.nom. var. *vexans* BTTGR.; O. BOETTGER, pp. 10-11.
1934. *Vexillum* (*Costellaria*) *pseudorecticosta vexans* (BOETTGER); A. ZILCH, p. 259, Pl. 17, Fig. 16.

MATERIAL: Sixteen specimens.
DIMENSIONS: The largest specimen (Pl. 10, Fig. 1) is 6.7 mm high and 2.2 mm wide.

REMARKS: The studied specimens are fully concordant with those described by BOETTGER (1901, 1906) from Kostej in Transylvania. As compared to the preceding species, *Vexillum* (*Costellaria*) *pseudorecticosta*, the collected shells are less slender, slightly smaller, and they bear the sutures more depressed, and the axial ribs less numerous (only 13-17 on the last whorl).

The species *Vexillum* (*Costellaria*) *vexans* (BOETTGER) has not hitherto been known from the Miocene of Poland.

Subgenus *Uromitra* BELLARDI, 1887
Vexillum (*Uromitra*) *pseudocupressinum* nom.n.
(Pl. 11, Fig. 3)

1856. *Mitra cupressina* BROCC.; M. HÖRNES, pp. 104-105, Pl. 10, Figs 25-27.
1880. *Mitra* (*Callithea*) *cupressina* BROCC.; R. HOERNES & M. AUINGER, pp. 86-87, Pl. 10, Fig. 10.
1928. *Turricula cupressina* BROCC.; W. FRIEDBERG, p. 580, Pl. 37, Fig. 29.
1960. *Vexillum* (*Uromitra*) *cupressinum* (BROCCHI); E. KOJUMDGIEVA, p. 161, Pl. 42, Fig. 12.

HOLOTYPE: The specimen from Baden, presented by HÖRNES (1856, Pl. 10, Fig. 25).

DERIVATION OF THE NAME: *pseudocupressinum* – in reference to its similarity to the species *Vexillum cupressinum* (BROCCHI).

MATERIAL: One specimen.

DIMENSIONS: Height 12.6 mm, width 3.6 mm.

REMARKS: The only, not fully grown specimen from Korytnica is undoubtedly concordant with those described, under the name of *Mitra cupressina* BROCCHI, by HÖRNES (1856) from Baden, and by HOERNES & AUINGER (1880) from Möllersdorf. All these specimens are slightly similar to that species "*cupressina*" but they cannot be regarded as conspecific, what was already stressed by BELLARDI (1887) who suggested their affinity to *Mitra borsoni* BELLARDI. The latter view does not seem to be justifiable, what is apparent when the specimens from Korytnica and from the Vienna Basin are compared with the holotype of *Mitra cupressina*, presented by PINNA & SPEZIA (1978, Pl. 61, Fig. 4), or with the syntype of *Mitra borsoni*, illustrated by FERRERO MORTARA & *al.* (1981, Pl. 52, Fig. 14). The Korytnica specimen differs from the indicated holotype by its axial ribs more densely spaced (numbering 18 on the last but one, and 23 on the last whorl), and the spiral furrows (9 on the last but one whorl), developed only between the axial ribs. Moreover, some other Italian specimens of *Vexillum cupressinum* bear the spiral furrows distinctly deeper and wider in the uppermost (posterior) parts of the whorls (*see* CAPROTTI 1974, Pl. 3, Fig. 10); a feature not observed either in the studied specimen from Korytnica, or in those from the Vienna Basin.

Specimens conspecific with that one from Korytnica were also presented by FRIEDBERG (1928), who followed the Viennese authors to use the name introduced by BROCCHI; he noted, however, that they differ distinctly from those of the species *Vexillum borsoni* (BELLARDI) by the less convex whorls and the longer siphonal canal (FRIEDBERG 1928, p. 580). Afterwards, FRIEDBERG (1938, p. 134) changed his opinion and classified these specimens as *Vexillum borsoni* (BELLARDI).

In the present author's opinion, the discussed specimens from the Vienna Basin, as well as those from other Paratethys localities are not compatible with any species from the Neogene of northern Italy, and thus they should be distinguished as the separate species, *Vexillum* (*Uromitra*) *pseudocupressinum* nom.n.

The species *Vexillum* (*Uromitra*) *pseudocupressinum* nom.n. has not hitherto been known from the Miocene of Poland. The specimens described by FRIEDBERG (1928, 1938) were coming from Dryszczów, at present in the Ukraine.

Genus *Thala* H.&A. ADAMS, 1853

Thala lapugyensis (HOERNES & AUINGER, 1880) (Pl. 11, Fig. 1)

1880. *Mitra Lapugyensis* nov.form.; R. HOERNES & M. AUINGER, p. 89, Pl. 10, Figs 21-22.
1928. *Turricula lapugyensis* R. H. i AUING.; W. FRIEDBERG, p. 579, Pl. 37, Fig. 28.

MATERIAL: Four specimens.

DIMENSIONS: The largest specimen, displaying only four last whorls preserved, is 6.5 mm high and 2.2 mm wide.

REMARKS: The studied specimens bear their last whorl distinctly higher than half a total height (ratio equals about 0.65), and thereby they are concordant with those

described by HOERNES & AUINGER (1880), and having the same ratio value. In specimens of the similar species, *Thala partschi* (HÖRNES), the last whorl embraces half a height, and in those of *Thala laubei* (HOERNES & AUINGER) the shells are much more slender.

The species *Thala lapugyensis* (HOERNES & AUINGER) has not hitherto been known from the Miocene of Poland. The specimens described by FRIEDBERG (1928) were coming from Zborów, at present in the Ukraine.

Thala obsoleta (BROCCHI, 1814)
(Pl. 11, Fig. 2)

1856. *Mitra obsoleta* BRONN; M. HÖRNES, pp. 110-111, Pl. 10, Fig. 32.
1880. *Mitra obsoleta* BROCC.; R. HOERNES & M. AUINGER, p. 88.

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen (Pl. 11, Fig. 2) is 4.2 mm high and 2.2 mm wide.

REMARKS: The two collected specimens are not fully grown and their assignment must thereby be taken with a caution. It seems that they are concordant with one presented by HÖRNES (1856) from Steinabrunn in the Vienna Basin, although the latter is rather more slender. As compared with the holotype of the species (*see* PINNA & SPEZIA 1978, Pl. 68, Fig. 2), the Korytnica specimens bear their axial ribs slightly thinner, and thus more numerous.

The species *Thala obsoleta* (BROCCHI) has not hitherto been known from the Miocene of Poland.

Thala sturi (HOERNES & AUINGER, 1880)
(Pl. 11, Figs 4-6)

1880. *Mitra Sturi* nov.form.; R. HOERNES & M. AUINGER, p. 90, Pl. 10, Figs 25-31.
1911. *Thala Sturi* R. HOERN. i AUING.; W. FRIEDBERG, p. 31, Pl. 1, Fig. 24.

MATERIAL: One hundred and thirty specimens.
DIMENSIONS: The largest specimen is 6.3 mm high and 2.5 mm wide.

REMARKS: The studied specimens are fully concordant with these which HOERNES & AUINGER (1880) regarded as typical, as well as with those which they treated as an unnamed variety, featured by the more squabby shape and thicker axial ribs. The indicated differences are so inessential that they should be ascribed to the species variability.

At Korytnica, this species occurs exclusively in the oyster shellbed off the shore exposed at Mt. Lysa.

The species *Thala sturi* (HOERNES & AUINGER) has not hitherto been known from the Miocene of Poland. The specimens described by FRIEDBERG (1928) were coming from Zborów, at present in the Ukraine.

Family **Vasidae**

Genus *Tudicla* BOLTEN *in* RÖDING, 1798

Subgenus *Tudicla* BOLTEN *in* RÖDING, 1798

Tudicla (*Tudicla*) *rusticula* (BASTEROT, 1825)

(Pl. 12, Figs 1-5)

1837. *Melongena rusticula* BAST.; G. PUSCH, p. 147, Pl. 12, Fig. 10.
partim 1856. *Pyrula rusticula* BAST.; M. HÖRNES, pp. 266-268, Pl. 27, Figs 1-7; *non* Figs 8-10.
1912. *Tudicla rusticula* BAST.; W. FRIEDBERG, pp. 151-152, Pl. 8, Fig. 11.
partim 1928. *Tudicula rusticula* (BASTEROT); A. PEYROT, pp. 235-237, Pl. 5, Figs 17-19; *non* Fig. 20.
1964. *Tudicla rusticula* BASTEROT; T. BÁLDI, p. 149, Pl. 3, Fig. 6.
1966. *Tudicla rusticula* BASTEROT; L. STRAUSZ, pp. 370-371, Pl. 54, Figs 2-4.
1971. *Tudicla rusticula* (BASTEROT); I. CSEPREGHY-MEZNERICS, p. 31, Pl. 14, Fig. 15.

MATERIAL: A hundred and eighty specimens.

DIMENSIONS: The largest, completely preserved specimen (Pl. 12, Fig 5) is 75 mm high and 37 mm wide.

REMARKS: The collected specimens of this showy species are fully concordant with those presented by HÖRNES (1856) from various localities of the Vienna Basin, although the specimens from Vöslau (*see* HÖRNES 1856, Pl. 27, Figs 8-10) should be excepted. Amongst the Korytnica specimens the variability range is very insignificant: almost all adult specimens are featured with two rows of prickly nodes (*see* Pl. 12, Figs 2 and 4-5) and only one (*see* Pl. 12, Fig. 3) is devoid of the lower row.

The species *Tudicla rusticula* (BASTEROT) was reported from Korytnica by all former authors. In the Miocene of Poland it is also known from the vicinity of Miechów (KRACH 1947).

Family **Volutidae**

Genus *Athleta* CONRAD, 1853

Subgenus *Athleta* CONRAD, 1853

Athleta (*Athleta*) *haueri* (HÖRNES, 1856)

(Pl. 13, Figs 6-9)

1856. *Voluta Haueri* HÖRNES; M. HÖRNES, p. 94, Pl. 9, Fig. 13.
1880. *Voluta Haueri* M. HOERNES; R. HOERNES & M. AUINGER; p. 71, Pl. 8, Fig. 23.
1960. *Athleta* (*Athleta*) *ficulina* var. *haueri* (HOERNES); E. KOJUMDGIEVA, pp. 154-155, Pl. 41, Figs 7-8.
1966. *Voluta* (*Athleta*) *ficulina haueri* HÖRNES; L. STRAUSZ, pp. 373-374, Pl. 66, Figs 3-5.
1970. *Volutilithes ficulina haueri* (HÖRNES); W. BAŁUK, p. 119, Pl. 13, Figs 13-14.

MATERIAL: Ten juveniles, two more adult specimens, and two fragments of the adult specimens.

DIMENSIONS: The larger specimen (Pl. 13, Fig. 7) is 32 mm high and 19 mm wide; one of the collected fragments (Pl. 13, Fig 9) is estimated as of a specimen about 70 mm high (*see* BAŁUK & RADWAŃSKI 1977, Pl. 7, Fig. 3).

REMARKS: The collected material, more or less fragmentary, cannot be classified precisely. The present author is aware of uncertainty of the above given assignation until a fully grown specimen is found. The only specimen almost complete, but not fully grown (*see* Pl. 13, Fig. 7) is more comparable, also in its size, to the specimen of *Athleta haueri* (HÖRNES) from Gainfahren (*see* HÖRNES 1856, Pl. 9, Fig. 13) than to the specimen of *Athleta ficulina* (LAMARCK) from Grund (*see* HÖRNES 1856, Pl. 9, Fig. 12).

The species *Athleta* (*Athleta*) *haueri* (HÖRNES) was reported from Korytnica by BAŁUK & RADWAŃSKI (1977) only. In the Miocene of Poland it is also known from Niskowa (BAŁUK 1970).

Athleta (*Athleta*) *rarispina* (LAMARCK, 1811)
(Pl. 13, Figs 10-11)

1856. *Voluta rarispina* LAM.; M. HÖRNES, pp. 91-92, Pl. 9, Figs 6-10.

1912. *Volutilithes* (*Athleta*) *rarispina* LAM.; W. FRIEDBERG, pp.122-123.

1928. *Volutilithes* (*Athleta*) *ficulina* LAMARCK, var. *rarispina* LAMARCK; A. PEYROT, pp. 357-358, Pl. 11, Figs 18-22.

1958. *Athleta rarispina* (LAM.); J. SENES, p. 160, Pl. 22, Figs 294-303.

1960. *Athleta* (*Athleta*) *ficulina* var. *rarispina* (LAMARCK); E. KOJUMDGIEVA, p. 154, Pl. 41, Figs 4-6.

partim 1966. *Voluta* (*Athleta*) *ficulina rarispina* LAMARCK; L. STRAUSZ, pp. 372-373, Pl. 64, Fig. 12; Pl. 65, Figs 5-7; *non* Pl. 64, Figs 13-14; Pl. 65, Figs 1, 4 and 8-9; Pl. 66, Figs 1-2.

1971. *Athleta ficulina rarispina* (LAMARCK); M. EREMIJA, p. 75, Pl. 6, Fig. 11.

partim 1971. *Voluthilites* (*Athleta*) *ficulina rarispina* LAM.; L CSEPREGHY-MEZNERICS, p. 31, Pl. 14, Fig. 18; *non* Figs 16 and 20.

1973. *Athleta* (*A.*) *rarispina* (LAMARCK); M. BOHN-HAVAS, p. 1061, Pl. 6, Figs 3-4.

1973. *Athleta rarispina* (LAMARCK); T. BÁLDI, pp. 306-307, Pl. 42, Figs 6-7.

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 13, Fig. 11) is 45.5 mm high and 31.5 mm wide.

REMARKS: The collected specimens, although not fully grown (lacking the final aperture) are evidently conspecific with those known from numerous localities of the European Miocene (*see* synonymy).

The species *Athleta* (*Athleta*) *rarispina* (LAMARCK) was reported from Korytnica by FRIEDBERG (1912) and KOWALEWSKI (1930).

Genus *Lyria* GRAY, 1847
Subgenus *Lyria* GRAY, 1847
Lyria (*Lyria*) *picturata* (GRATELOUP, 1834)
(Pl. 13, Figs 1-5)

1837. *Voluta magorum* BROCCHI var. *costis obsoletis* m.; G. PUSCH, pp. 117-118, Pl. 11, Fig. 2.

1856. *Voluta taurinia* BON.; M. HÖRNES, pp. 95-96, Pl. 9, Figs 14-16.

1912. *Lyria taurinia* BON.; W. FRIEDBERG, pp. 123-124, Pl. 6, Fig. 8.

1928. *Lyria picturata* GRATELOUP; A. PEYROT, pp. 347-349, Pl. 11, Figs 38-44.

1928. *Lyria picturata* (GRATELOUP) mut. *primitiva* nov. mut.; A. PEYROT, p. 349, Pl. 11, Figs 9-10.
1928. *Lyria oliva* (GRATELOUP); A. PEYROT, pp. 349-350, Pl. 11, Figs 4-6.
1956. *Lyria taurinia* (BONELLI); I. CSEPREGHY-MEZNERICS, p. 415, Pl. 9, Figs 9-10.
1960. *Lyria* (*Lyria*) *taurinia* (BONELLI); E. KOJUMDGIEVA, pp. 155-156, Pl. 41, Fig. 9.
1966. *Lyria taurinia* BONELLI; L. STRAUSZ, pp. 374-375, Pl. 61, Figs 11-14.
1973. *Lyria taurinia* (BONELLI); M. BOHN-HAVAS, p. 1061, Pl. 6, Fig. 17.
1990. *Lyria* (*Lyria*) *picturata* (DE GRATELOUP) forma *oliva* (DE GRATELOUP); A.W. JANSSEN, pp. 117-123, Pl. 1, Fig. 9.

MATERIAL: Forty-six specimens.
DIMENSIONS: The largest specimen is 56 mm high and 26 mm wide.

REMARKS: The studied specimens display a variability expressed by the more or less stretched spire (*see* Pl. 13, Figs 2 and 5), and a diversified development, or simply a lack, of additional columellar folds above the main ones. Quite stable instead are ornamentation of primary whorls of the teleoconch (*see* Pl. 13, Fig. 1), and traces of the color pattern (*see* Pl. 13, Fig. 4). Insofar, the Korytnica specimens, as well as the conspecifics from the Vienna Basin, have been classified as *Lyria* (*Lyria*) *taurinia* (MICHELOTTI), the species the authorship of which has usually been ascribed to BONELLI. A different view, accepted herein by the present author, has recently been offered by JANSSEN (1990), who stated that the specimens of the latter species from the Neogene of northern Italy, as well as those from the Paratethys basins and the North Sea Basin, were conspecific with *Lyria* (*Lyria*) *picturata* (GRATELOUP) known from the Aquitaine Basin. To note, it was already HOERNES (1856, p. 95) who was of a similar opinion in this matter, although he treated differently the priority law. A slight ghost of doubt is however thrown by the difference in the color pattern, the subject of which was omitted wittingly by JANSSEN (1990, p. 122, explanation to Pl. 1: "colour pattern omitted !").The specimens of *Lyria picturata* from Saubrigues (*see* PEYROT 1928, Pl. 11, Figs 39, 41 and 43-44) display 3 broad, dark ochreous bands, separated by similarly broad light ones, superimposed by numerous thin lines, numbering about 30. Meanwhile, the specimens from the Vienna Basin display only thin lines (numbering about 15), similarly as do the studied specimens from Korytnica (6-13 lines). JANSSEN (1990) noted 14 such lines in the specimen from the Miocene of Winterswijk-Miste in the Netherlands. In the Aquitaine Basin such color pattern is known only in specimens of *Lyria* (*Lyria*) *picturata primitiva* PEYROT from Saint-Paul-lès-Dax (*see* PEYROT 1928, Pl. 11, Fig. 10). It is also striking, that specimens of *Lyria* (*Lyria*) *picturata* from the Aquitaine Basin attain, according to PEYROT (1928), a height 36-43 mm, whereas the discussed specimens from the Vienna Basin are up to 65 mm, Hungarian ones up to 60, and those from Korytnica up to 56 mm.

A unique specimen of *Lyria oliva* (GRATELOUP) coming also from Saubrigues, and illustrated by PEYROT (1928), is regarded by the present author to be concordant with the studied specimens from Korytnica, amongst which there occur specimens almost identically slender (*see* Pl. 13, Fig. 5), or lacking additional folds on the columella.

The species *Lyria* (*Lyria*) *picturata* (GRATELOUP) was reported from Korytnica by all former authors.

Family **Cancellariidae** GRAY, 1853

Genus *Cancellaria* LAMARCK, 1799

Subgenus *Bivetiella* WENZ, 1943

Cancellaria (*Bivetiella*) *neuvillei* PEYROT, 1928

(Pl. 14, Fig. 7)

1856. *Cancellaria cancellata* LAM.; M. HÖRNES, pp. 316-318, Pl. 34, Figs 20-22.
1928. *Bivetia Neuvillei* nov.sp.; A. PEYROT, p. 405, Pl. 12, Figs 35-36.

MATERIAL: One specimen.
DIMENSIONS: Height 32 mm, width 21.5 mm.

REMARKS: The collected specimen is supposedly conspecific with those presented by HÖRNES (1856) from Enzesfeld in the Vienna Basin. It slightly differs from the latter ones by the presence of an indistinct edge on the whorls, and by the more pronounced spiral rib running along that edge. On the other hand, it is fully concordant with the holotype of the species *Cancellaria* (*Bivetiella*) *neuvillei* (PEYROT) described, from the Miocene of Saucats (Pelona) in the Aquitaine Basin, by PEYROT (1928, pp. 401-404, Pl. 12, Figs 26-29) who also presented the species *Cancellaria subcancellata* D'ORBIGNY. These two species are evidently different, as displayed by their overall shape and ornamentation, *e.g.* the shape of spiral ribs, and by an almost complete lack of secondary and tertiary ribs in the latter species. Thus, it is hardly understood why PEYROT (1928) put the Viennese specimens into the synonymy list of D'ORBIGNY's species. According to VERA-PELÁEZ & *al.* (1995), the Viennese specimens described by HÖRNES (1856) really belong to the present-day species *Cancellaria* (*Bivetiella*) *cancellata* (LINNAEUS).

FRIEDBERG (1914, p. 244, Pl. 15, Fig. 7) described from Korytnica, under the name of *Bivetia subcancellata* (D'ORBIGNY), an incomplete specimen that was lacking the above mentioned edge, a more pronounced rib on that edge, and any secondary spiral ribs; this specimen cannot be unequivocally interpreted.

The species *Cancellaria* (*Bivetiella*) *neuvillei* (PEYROT) has not hitherto been known from the Miocene of Poland.

Subgenus *Merica* H.&A. ADAMS, 1854

Cancellaria (*Merica*) *fenestrata* EICHWALD, 1853
(Pl. 14, Figs 2-6)

1837. *Cancellaria buccinula* BAST.; G. PUSCH, p. 129, Pl. 11, Fig. 18.
1853. *Cancell. fenestrata* m.; E. EICHWALD, pp. 198-199, Pl. 8, Fig. 15.
1856. *Cancellaria contorta* BAST.; M. HÖRNES, pp. 311-312, Pl. 34, Figs 7-8.
1914. *Merica fenestrata* EICHW. var. *rotundata* FRIEDB.; W. FRIEDBERG, pp. 242-243, Pl. 15, Fig. 4.

MATERIAL: One hundred and twenty specimens.
DIMENSIONS: The largest specimen is 25 mm high and 14.4 mm wide; another one is 22 and 15.2 mm; the most slender shell is 18 and 9.5 mm, respectively.

REMARKS: A species assignment of the studied specimens bears serious doubts. They are evidently conspecific with those described by HÖRNES (1856) from Enzesfeld in the Vienna Basin. However, when the plesiotype of the species *Cancellaria* (*Merica*) *contorta* BASTEROT from Saint-Paul-lès-Dax in the Aquitaine Basin, illustrated by PEYROT (1928, pp. 408-411, Pl. 12, Figs 30-34), is taken for comparison, their identity becomes very questionable. This plesiotype is markedly larger, featured by the much more sparse axial ribs. Neither SACCO (1896), nor PEYROT (1928), identified the Viennese specimens with those from Aquitaine. On the other hand, it is evident that the Viennese specimens, as well

as these from Korytnica, are not juvenile forms of *Cancellaria* (*Merica*) *contorta* BASTEROT. They cannot be, therefore, combined with the latter species, in a way comparable to that presented by PEYROT (1928, p. 410) who regarded *Cancellaria* (*Merica*) *basteroti* DESHAYES as the juveniles of *contorta*, and joined these two species. As concerns the studied material, two possibilities may consequently be taken into account. First, to postulate that in the Paratethys basins the species *Cancellaria* (*Merica*) *contorta* BASTEROT was able to attain distinctly a lesser size of their shells, featured by axial ribs densely spaced. Second, to recognize in these basins the presence of a relative, but separate species. The present author regards the latter possibility to be adequate, and close to that considered by FRIEDBERG (1914), who identified the Korytnica specimens with the species *Cancellaria fenestrata* described by EICHWALD (1853) from Podolia, at present in the Ukraine. To note, both the concept and understanding of the latter species has a long history. It was certainly caused by that EICHWALD (1830; *see* PUSCH 1837, p. 129) in his earlier paper offered a very unprecise description, which was subsequently interpreted in various way (*see also* PEYROT 1928, p. 460). It was doubted already by PUSCH (1837, pp. 128-129) whose objections were taken into consideration by EICHWALD himself, who in a later paper (EICHWALD 1853, pp. 198-199) corrected the diagnosis and description of the species. Unfortunately, he supplied quite a wrong drawing (EICHWALD 1853, Pl. 8, Fig. 15), although in the description he indicated an accordance of his specimens with that given by PUSCH (1837, Pl. 11, Fig. 18) to illustrate a specimen just from Korytnica, and classified as *Cancellaria buccinula* BASTEROT. Under such circumstances FRIEDBERG (1914) could only state an identity of the Korytnica specimens with the species established by EICHWALD, and remark on not being able to see its originals.

Within the studied material from Korytnica one specimen (*see* Pl. 14, Fig. 2) differs by its more slender shape and less distinct ornamentation, particularly by much thinner axial ribs. Possibly, it may represent a separate taxon; having only one such a specimen hinders the present author from its formal separation.

The forms referred to as the studied species, and coming from the Miocene of Hungary, either from Bota, presented by CSEPREGHY-MEZNERICS (1971, Pl. 14, Figs 17 and 19), or from Devecser, presented by STRAUSZ (1966, Pl. 45, Fig. 7), are evidently quite different and cannot be regarded as conspecific with those from Korytnica.

The species *Cancellaria* (*Merica*) *fenestrata* EICHWALD was reported from Korytnica by PUSCH (1837), EICHWALD (1853), HÖRNES (1856), FRIEDBERG (1914, 1938), and KOWALEWSKI (1930). In the Miocene of Poland it is also known from Rybnica (KOWALEWSKI 1930, 1950) and Zgłobice (URBANIAK 1974).

Cancellaria (*Merica*) *jansseni* nom.n.
(Pl. 14, Fig. 1)

partim 1856. *Cancellaria Bellardii* MICHT.; M. HÖRNES, pp. 314-315, Pl. 34, Fig. 18; *non* Fig. 17.
partim 1890. *Cancellaria Saccoi* nob.; R. HOERNES & M. AUINGER, p. 274.
1972. *Cancellaria* (*Merica*) *contorta* aff. *gelriana* subsp.nov.; A.W. JANSSEN, p. 39, Pl. 8, Fig. 4.

HOLOTYPE: The specimen from Baden, presented by HÖRNES (1856, Pl. 34, Fig. 18).
DERIVATION OF THE NAME: *jansseni* – to honor Dr. A.W. JANSSEN, the author who first recognized a separateness of this taxon.
MATERIAL: One specimen.
DIMENSIONS: Height 24 mm, width 15 mm.

REMARKS: The collected specimen, unique for Korytnica, seems to be fully concordant with that one presented by HÖRNES (1856), from Baden in the Vienna Basin, as *Cancellaria bellardii* MICHELOTTI; that assignment was questioned by HOERNES & AUINGER (1890) who classified it as *Cancellaria saccoi* HOERNES & AUINGER. To the truth, HÖRNES (1856, Pl. 34, Figs 17-18) illustrated two different specimens: one from Gainfahren (Fig. 17) and one from Baden (Fig. 18). This fact was recognized over a century later by JANSSEN (1972, p. 38), who indicated that only the specimen of HÖRNES' Fig. 17, and others concordant, belong to the species labelled by HÖRNES; in his own interpretation it was the subspecies *Cancellaria* (*Merica*) *contorta saccoi* HOERNES & AUINGER. To the differences between these two Viennese specimens indicated by JANSSEN (1972), also a different development of the teeth along the aperture should herein be added. Although he assumed a possibility of the discovery of transitional forms, this suggestion does not seem realistic to the present author. As concerns the specimens concordant with that one from HÖRNES' Fig. 18, JANSSEN (1972) was of the opinion of their resemblance to the then-established subspecies *Cancellaria* (*Merica*) *contorta gelriana* JANSSEN, but he did not state their conspecifity and suggested a taxonomic decision to be left to the subsequent authors. The present author fully accepts a view of the separateness of JANSSEN's specimens, as well as those from Korytnica and from Baden, from *Cancellaria* (*Merica*) *saccoi* HOERNES & AUINGER, and proposes to separate them by the labelling with a new name at the species rank, *Cancellaria* (*Merica*) *jansseni* nom.n.

The species *Cancellaria* (*Merica*) *jansseni* nom.n., as well as *Cancellaria* (*Merica*) *saccoi* HOERNES & AUINGER, has not hitherto been known from the Miocene of Poland.

Genus *Trigonostoma* BLAINVILLE, 1827

Trigonostoma exgeslini SACCO, 1894
(Pl. 15, Figs 6-7)

1856. *Cancellaria Geslini* BAST.; M. HÖRNES, p. 320, Pl. 35, Fig. 3.
1914. *Trigonostoma ampullaceum* BROCC.; W. FRIEDBERG, pp. 250-251, Pl. 15, Fig. 13.
1936. *Cancellaria* (*Trigonostoma*) *exgeslini* SACCO; R. SIEBER, pp. 85-86.

MATERIAL: Seven specimens.

DIMENSIONS: The largest specimen (Pl. 15, Fig. 6) is 27 mm high and 21 mm wide.

REMARKS: The studied specimens are evidently conspecific with those presented by HÖRNES (1856) from Grund in the Vienna Basin. It was, however, SACCO (1894) who objected HÖRNES' assignation, and introduced a new name for those Viennese specimens.

The species *Trigonostoma exgeslini* SACCO was reported from Korytnica, but under the name of *Trigonostoma ampullaceum* (BROCCHI), by FRIEDBERG (1914) and KOWALEWSKI (1930). It is unknown from other Miocene localities in Poland.

Trigonostoma puschi (HOERNES & AUINGER, 1890)
(Pl. 15, Figs 4-5)

1837. *Cancellaria acutangula* FAUJ. var. *polonica* m.; G. PUSCH, pp. 128-129, Pl. 11, Fig. 17.
1856. *Cancellaria Michelini* BELL.; M. HÖRNES, p. 326, Pl. 35, Figs 14-15.
1890. *Cancellaria* (*Trigonostoma*) *Puschi* nob.; R. HOERNES & M. AUINGER, p. 276.

1914. *Trigonostoma Puschi* R. HOERN. i AUING.; W. FRIEDBERG, pp. 248-250, Pl. 15, Fig. 12.
1936. *Cancellaria (Trigonostoma) puschi* R. HÖRNES und AUINGER; R. SIEBER, pp. 82-83, Pl. 3, Fig. 11.
1960. *Trigonostoma (Ventrilia) puschi* HOERNES et AUINGER; E. KOJUMDGIEVA, p. 163, Pl. 42, Fig. 14.
1984. *Trigonostoma imbricatum* var. *dertocosticillata* SACCO; E. FERRERO MORTARA & *al.*, p. 161, Pl. 29, Fig. 3.

MATERIAL: Seventy-five specimens.

DIMENSIONS: The largest specimen (in the collection of *Museum of the Earth*, Warsaw) is 29.3 mm high and 19.0 mm wide; from author's own collection (Pl. 15, Fig. 4) it is 29 mm high and 17.5 mm wide; another one is 21.5 and 16 mm, respectively.

REMARKS: For the first time, a specimen conspecific with the studied ones, and coming also from Korytnica, was presented by PUSCH (1837) under the name of *Cancellaria acutangula* FAUJ. var. *polonica* PUSCH. Half a century later HOERNES & AUINGER (1890) for identical specimens from the Vienna Basin and Transylvania introduced the name *Cancellaria puschi*, although the name introduced by PUSCH (1837) should have a priority.

According to SIEBER (1936, p. 83), conspecific with the discussed are specimens described by SACCO (1894) under the name of *Trigonostoma fenestratum* EICHWALD. This view is, however, incorrect as it is apparent when comparing the Italian specimens re-illustrated by FERRERO MORTARA & *al.* (1984, Pl. 29, Fig. 2). A different from the Korytnica specimens is also one unique from Tetti Borelli near Turin, determined by DAVOLI (1995) as *Trigonostoma* cf. *puschi* HOERNES & AUINGER. On the other hand, it seems that really conspecific with these from Korytnica are those specimens from Italy which were distinguished by SACCO (1894) under the name of *Trigonostoma imbricatum* var. *dertocosticillata* SACCO (*see* FERRERO MORTARA & *al.* 1984, Pl. 29, Fig. 3).

The species *Trigonostoma puschi* (HOERNES & AUINGER) was reported from Korytnica by all former authors. In the Miocene of Poland it is also known from Pińczów (PUSCH 1837) and Zgłobice (URBANIAK 1974).

Trigonostoma scrobiculatum (HÖRNES, 1856) (Pl. 15, Figs 2-3 and Pl. 17, Fig. 8)

1856. *Cancellaria scrobiculata* HÖRN.; M. HÖRNES, p. 318, Pl. 35, Fig. 1.

MATERIAL: Four specimens.

DIMENSIONS: The largest specimen completely preserved (Pl. 15, Fig. 2) is 21 mm high and 13.5 mm wide; another one, with preserved two last whorls (Pl. 15, Fig. 3) is 23 and 14.5 mm, respectively.

REMARKS: The studied specimens are fully concordant with those presented by HÖRNES (1856) from Steinabrunn in the Vienna Basin.

The species *Trigonostoma scrobiculatum* (HÖRNES) has not hitherto been known from the Miocene of Poland.

Trigonostoma spiniferum (GRATELOUP, 1845) (Pl. 15, Fig. 1)

1856. *Cancellaria spinifera* GRAT.; M. HÖRNES, pp. 323-324, Pl. 35, Figs 6-8.
?1914. *Trigonostoma* cf. *Michelini* BELL.; W. FRIEDBERG, p. 250, Text-fig. 55.

1928. *Trigonostoma spiniferum* (GRATELOUP); A. PEYROT, pp. 445-447, Pl. 13, Figs 32-33.
1950. *Cancellaria* (*Trigonostoma*) *spinifera* GRAT.; I. CSEPREGHY-MEZNERICS, p. 58, Pl. 3, Fig. 13.
1966. *Cancellaria* (*Trigonostoma*) *spinifera* GRATELOUP; L. STRAUSZ, p. 377, Pl. 45, Fig. 14.
1971. *Cancellaria* (*Trigonostoma*) *spinifera* GRAT.; I. CSEPREGHY-MEZNERICS, p. 31, Pl. 14, Fig. 28.
1982. *Trigonostoma* (*Trigonostoma*) *spiniferum* (GRATELOUP); F. DAVOLI, pp. 33-34, Pl. 1, Figs 10, 13-14, and 20.

MATERIAL: Three specimens.
DIMENSIONS: The largest specimen (in the collection of *Museum of the Earth*, Warsaw) is 31.5 mm high and 22.0 mm wide; from author's own collection it is 29.5 mm high and 21.5 mm wide; another one is 26.5 and 21.5 mm, respectively.

REMARKS: The studied specimens are fully concordant with that one coming from Steinabrunn in the Vienna Basin, and presented by HÖRNES (1856). The Korytnica specimens practically do not differ from those reported from the Aquitaine Basin and from northern Italy (*see* synonymy).

According to the present author, to this species should also be assigned a specimen with its aperture damaged, and reported from Korytnica, by FRIEDBERG (1914), under the name "*Trigonostoma* cf. *Michelini* BELL."

The species *Trigonostoma spiniferum* (GRATELOUP) has not hitherto been known from the Miocene of Poland.

Genus *Narona* H.&A. ADAMS, 1854
Subgenus *Sveltia* JOUSSEAUME, 1887
Narona (*Sveltia*) *inermis* (PUSCH, 1837)
(Pl. 16, Figs 3-5)

1837. *Cancellaria inermis* m.; G. PUSCH, pp. 129-130, Pl. 11, Fig. 22.
1856. *Cancellaria inermis* PUSCH; M. HÖRNES, p. 313, Pl. 34, Figs 10-13.
1914. *Sveltia inermis* PUSCH; W. FRIEDBERG, pp. 244-246, Pl. 15, Fig. 8, and Text-fig. 54.
1928. *Merica callosa* PARTSCH; W. FRIEDBERG, p. 577, Pl. 37, Fig. 21.
1966. *Cancellaria* (*Sveltia*) *inermis* PUSCH; L. STRAUSZ, pp. 380-381, Pl. 43, Figs 6-9.

MATERIAL: Fifty-six specimens.
DIMENSIONS: The largest specimen is 64 mm high and 31 mm wide; another one is 61 and 27 mm, respectively.

REMARKS: PUSCH (1837) established this species upon the specimens coming just from Korytnica. Both there, as well as in other Miocene localities in Europe, this species is much variable in respect of its slenderness, outline of whorls, rounded or edge-bearing, and pronounceness of axial ribs or their fading. Such variability range was expressively illustrated by FRIEDBERG (1914, Text-fig. 54), who subsequently presented (FRIEDBERG 1928) from Korytnica still another specimen, labelled as *Merica callosa* (PARTSCH). In the present author's opinion, it is not fully grown specimen of *Narona* (*Sveltia*) *inermis* (PUSCH), featured by a less expanded coiling, and an almost lack of the edge on whorls; this interpretation explains FRIEDBERG's (1928, p. 577) doubts concerning the development of columellar folds. Several such juvenile specimens are also within the material collected by the present author.

Conspecific with the studied specimens from Korytnica are also those described earlier from Podolia, at present in the Ukraine, by ANDRZEJOWSKI (*fide* PUSCH 1837), and called *Buccinum mitraeforme*. This name appeared to be a secondary homonym and thus it was rejected by HÖRNES (1856, p. 313).

Referred to as *mutatia gallica* of *Narona* (*Sveltia*) *inermis* (PUSCH) the specimens from Salles in the Aquitaine Basin (*see* PEYROT 1928, pp. 431-433, Pl. 14, Figs 11-14), and from Lisbon in Portugal (*see* ZBYSZEWSKI 1957, p. 178, Pl. 17, Figs 181 and 187), differ from those of Korytnica so distinctly, that they cannot be regarded as conspecific; they obviously represent a separate taxon.

The species *Narona*(*Sveltia*) *inermis* (PUSCH) was reported from Korytnica by all former authors. It is unknown from other Miocene localities in Poland.

Narona (*Sveltia*) *varricosa* (BROCCHI, 1814) (Pl. 16, Figs 6-8)

1856. *Cancellaria varicosa* BROCC.; M. HÖRNES, pp. 309-310, Pl. 34, Fig. 6.
1914. *Sveltia dertovaricosa* SACCO et var. *subasuturata* SACCO; W. FRIEDBERG, pp. 247-248, Pl. 15, Figs 10-11.
1928. *Sveltia varicosa* (BROCCHI) var. *simplicior* SACCO; A. PEYROT, pp. 419-420, Pl. 14, Figs 5-6.
1928. *Sveltia varicosa* (BROCC.) mut. *paucicostata* nov. mut.; A. PEYROT, pp. 420-421, Pl. 14, Fig. 7.
1936. *Cancellaria* (*Sveltia*) *dertovaricosa* SACCO; R. SIEBER, pp. 93-94, Pl. 3, Figs 1 and 8.
1936. *Cancellaria* (*Sveltia*) *varicosa* BROCCHI var. *miocaenica* SACCO; R. SIEBER, pp. 94-96.
1950. *Cancellaria uniangulata* DESHAYES; I. CSEPREGHY-MEZNERICS, p. 58, Pl. 3, Fig. 17.
1950. *Cancellaria dertovaricosa* SACCO; I. CSEPREGHY-MEZNERICS, p. 59, Pl. 3, Fig. 14.
1952b. *Cancellaria* (*Sveltia*) *varicosa* BROCCHI; M. GLIBERT, pp. 127-129, Pl. 10, Figs 1a-d.
1966. *Cancellaria* (*Sveltia*) *varicosa dertovaricosa* SACCO; L. STRAUSZ, p. 380, Pl. 43, Figs 10-12.
1973. *Narona* (*Sveltia*) *varicosa* (BROCCHI); E. CAPROTTI & M. VESCOVI, p. 175, Pl. 1, Fig. 11.
1978. *Voluta varricosa* BROCCHI; G. PINNA & L. SPEZIA, p. 171, Pl. 64, Fig. 3.
1979. *Narona* (*Sveltia*) *varicosa* (BROCCHI); J. MARTINELL, pp. 63-65, Pl. 1, Figs 5-6.
1982. *Narona* (*Sveltia*) *dertovaricosa* (SACCO); F. DAVOLI, pp. 39-42, Pl. 4, Figs 1-7 and 10-12.
1984. *Narona* (*Sveltia*) *varicosa* (BROCCHI); G. RUGGIERI & F. DAVOLI, pp. 63-64, Pl. 3, Figs 3 and 7.
1990. *Narona* (*Sveltia*) *varicosa* (BROCCHI); F. DAVOLI, p. 81, Pl. 7, Fig. 9.
1995. *Narona* (*Sveltia*) *varicosa* (BROCCHI); F. DAVOLI, pp. 243-245, Pl. 5, Figs 1-5 and 18.
1995. *Sveltia varricosa* (BROCCHI); J.L. VERA-PELÁEZ & *al.*, pp. 148-150, Fig. 3, A and B.

MATERIAL: Two hundred specimens.

DIMENSIONS: Three largest specimens are measured as follows: the first is 34.5 mm high and 16.0 mm wide; the second is 32.5 and 14.5 mm; the third is 30.5 and 16.5 mm, respectively.

REMARKS: A specific determination of this gastropod, quite common in the Korytnica Clays, bears some troubles. It was reported therefrom by all the former authors, although the names they used were much diversified, as follows: PUSCH (1837) labelled it as *Cancellaria uniangulata* DESHAYES; EICHWALD (1853), HÖRNES (1856), and KONTKIEWICZ (1882) as *Cancellaria varicosa* BROCCHI; FRIEDBERG (1914, 1938) and KOWALEWSKI (1930) as *Sveltia dertovaricosa* SACCO. Apart from the first assignation that is erroneous, and the genus assignment by all these authors, under discussion remains the problem to which species these Korytnica specimens should be referred: either to that of BROCCHI, or of SACCO.

When compared the Korytnica specimens with the holotype of *Narona* (*Sveltia*) *varricosa* (BROCCHI), re-illustrated by PINNA & SPEZIA (1978, Pl. 64, Fig. 3), the only essential difference appears in the size; the holotype is larger, being 45.6 mm high. The other characters, such as the

whorl section (presence or lack of the edge) and a density and shape of the axial ribs, are not substancial to suggest any distinction. Moreover, the feature of size does also seem not to be of greater importance, because the specimens so large as those collected by BROCCHI are exceptional; according to DAVOLI (1982, Text-fig. 10), of 50 specimens from the Pliocene of northern Italy, only one has a height something between 40-41 mm, and 6 others 35-40 mm, the average values being as: height 28.64 mm, width 13.98 mm, and h:w ratio 2.043 (*see* DAVOLI 1982, Table 12). The same parameters for 50 specimens of *Narona* (*Sveltia*) *dertovaricosa* (SACCO) are 20.30 and 9.85, and 2.052 (*see* DAVOLI 1982, Table 11). The measurements for the studied specimens from Korytnica, when also 50 were taken, appeared to be 26.52 and 12.30, and 2.140, respectively; these values are nearer to those yielded by the species of BROCCHI. The Korytnica specimens are generally more slender, although the extreme values of h:w ratio range from 1.864 to 2.458.

The studied specimens from Korytnica are conspecific with those commonly occurring in the Vienna Basin, and referred both by HÖRNES (1856) and HOERNES & AUINGER (1890) to as *Cancellaria varicosa* (BROCCHI). The Viennese specimens were subsequently subdivided by SIEBER (1936) into two separate taxa, *Cancellaria* (*Sveltia*) *dertovaricosa* SACCO and *Cancellaria* (*Sveltia*) *varicosa* BROCCHI var. *miocenica* SACCO, as probably based on a different section of the whorls (edge-bearing in the former, and rounded in the second taxon) described in the text. Meanwhile, nothing of that kind may be recognized on the enclosed illustrations (*see* SIEBER 1936, Pl. 3, Figs 1 and 8; *see also* "Erklarung zu Tafel 3"). Similarly the data on the number of axial ribs on the whorl (5-6 in the first, and 6-8 in the second taxon) are discordant with those recognizable on the illustration which, unfortunately, are not compatible with the description (*see* SIEBER 1936, p. 93): the two illustrated specimens are of the first taxon [sic!]. The illustrations indicate that the number of ribs (described either as "*Langsleisten*" or "*Langsrippen*") is really 4-5, but on the half (exposed) of a whorl! Moreover, SIEBER (1936, p. 93) included into the synonymy of *Cancellaria* (*Sveltia*) *dertovaricosa* the specimens described by FRIEDBERG (1914) from Korytnica, and which number of axial ribs is usually 8, and rarely 7 or 9. All these arguments indicate that any subdivision of the Viennese specimens into two groups is quite unreasonable. In the description supplied by SIEBER (1936) there is, however, one important note, that the Viennese specimens in particular localities display a various size and diverse distinctness of their ornamentation. The same relation is easily recognizable within the Korytnica Basin: in regions of more clayey sediment (and the gastropod assemblage similar to that from Baden) the specimens are smaller, and in regions of more silty/sandy (and gastropods such as known from Grund) they become larger. Consequently, it is thought that both the size, overall shape, and ornamentation of Miocene and Pliocene representatives of the species *Narona* (*Sveltia*) *varricosa* (BROCCHI) were dependant primarily upon the environmental conditions under which they lived, and particularly upon the lithology of the sea bottom. Therefore, any distinction in particular Neogene basins of Europe, and in successive stratigraphic units, of separate ("diverse") species, varieties, forms or mutations (*see* a review by DAVOLI 1982, p. 41) remains soundless.

The species *Narona* (*Sveltia*) *varricosa* (BROCCHI) was reported from Korytnica by all former authors. In the Miocene of Poland it is also known from Zgłobice (FRIEDBERG 1914).

Subgenus *Tribia* JOUSSEAUME, 1887

Narona (*Tribia*) *uniangulata* (DESHAYES, 1830)
(Pl. 16, Fig. 2)

1856. *Cancellaria uniangulata* DESH.; M. HÖRNES, pp. 306-307, Pl. 34, Fig. 2.

1912-14. *Cancellaria uniangulata* DESH.; W. FRIEDBERG, p. 240, Pl. 15, Fig. 1.

1995. *Narona* (*Tribia*) *uniangulata* (DESHAYES); F. DAVOLI, p. 246, Pl. 3, Figs 8-11.

MATERIAL: Seven specimens.

DIMENSIONS: The largest specimen is 15.5 mm high and about 8 mm wide; another one (Pl. 16, Fig. 2) is 9.5 and 5.2 mm, respectively.

REMARKS: The studied specimens from Korytnica are fully concordant with those presented by HÖRNES (1856) from Steinabrunn in the Vienna Basin.

The species *Narona* (*Tribia*) *uniangulata* (DESHAYES) was recorded from Korytnica by EICHWALD (1853) and HÖRNES (1856). FRIEDBERG (1914, p. 241) probably believed, and supposedly he was right, that these two former reports concerned the preceding species, that is *Narona* (*Sveltia*) *varricosa* (BROCCHI). The only specimen described by FRIEDBERG himself (1912-1914) was coming from Zborów, at present in the Ukraine.

Subgenus *Calcarata* JOUSSEAUME, 1887

Narona (*Calcarata*) *calcarata* (BROCCHI, 1814)

(Pl. 16, Fig. 1 and Pl. 17, Fig. 7)

1856. *Cancellaria calcarata* BROCC. var.; M. HÖRNES, pp. 322-323, Pl. 35, Fig. 5.
1890. *Cancellaria* (*Trigonostoma*) *calcarata* BROCC.; R. HOERNES & M. AUINGER, p. 278.
1894. *Calcarata calcarata* BR. et var.; F. SACCO, pp. 32-34, Pl. 2, Figs 41-47.
1960. *Sveltia* (*Calcarata*) *calcarata* (BROCCHI); E. KOJUMDGIEVA, p. 164, Pl. 42, Fig. 17.
1966. *Cancellaria* (*Calcarata*) *calcarata* BROCCHI; L. STRAUSZ, pp. 381-382, Pl. 43, Figs 16-18.
1973. *Narona* (*Calcarata*) *calcarata* (BROCCHI); E. CAPROTTI & M. VESCOVI, p. 174, Pl. 1, Fig. 17.
1979. *Narona* (*Calcarata*) *calcarata* (BROCCHI); J. MARTINELL, p. 66, Pl. 1, Figs 11-12.
1995. *Narona* (*Calcarata*) *calcarata* (BROCCHI); F. DAVOLI, pp. 239-242, Pl. 3, Figs 5-6.
1995. *Calcarata calcarata* (BROCCHI); J.L. VERA-PELÁEZ & *al.*, pp. 152-155, Fig. 3, E and F.

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 16, Fig. 1) is 21 mm high and 14 mm wide.

REMARKS: The studied specimens are fully concordant with the holotype of the species coming from the Pliocene of northern Italy (*see* PINNA & SPEZIA 1978, Pl. 68, Fig. 3). They are also compatible with those from the Vienna Basin, although the only specimen illustrated by HÖRNES (1856) bears its spines poorly developed, and the lower edge on the last whorl not well pronounced; these differences, very slight indeed, implied HÖRNES that they should be referred to as a separate variety. To note, this specimen seems to be the most fully grown of all presented in the recognized literature. HOERNES & AUINGER (1890, p. 278) noted that other Viennese specimens (without any exception) bear their spines pronounced, and both edges sharp.

The discussed species characterizes by a rather great variability, particularly in the development of spines. Any distinction of diverse varieties does not thus seem reasonable (*see* FERRERO MORTARA & *al.* 1984, Pl. 32, Figs 1 and 2). Of the varieties distinguished by SACCO (1894), only var. *trapezium* BORSON may be considered to be valid.

FRIEDBERG (1914, pp. 246-247, Pl. 15, Fig. 9) described from Korytnica one poorly preserved specimen, rather similar to these herein presented, and classified it as *Sveltia lyrata* (BROCCHI). The specimen is much deviated from the holotype of this species (*see* PINNA & SPEZIA 1978, Pl. 64, Fig. 2). It was STRAUSZ (1966) who mentioned that FRIEDBERG's specimen belong to *Narona* (*Calcarata*) *calcarata* (BROCCHI); this opinion does not seem to be

improbable but, nevertheless, the discussed specimen is not included into the synonymy given above.

The species *Narona* (*Calcarata*) *calcarata* (BROCCHI) has not hitherto been known from the Miocene of Poland.

Subgenus *Aneurystoma* COSSMANN, 1899

Narona (*Aneurystoma*) *laurensi* (GRATELOUP, 1840) (Pl. 17, Figs 5-6)

1890. *Cancellaria* (*Merica*) *Laurensii* GRATELOUP ; R. HOERNES & M. AUINGER, p. 281, Pl. 33, Figs 1-3.
1928. *Sveltia* (*Aneurystoma*) *Laurensi* (GRATELOUP); A. PEYROT, pp. 434-436, Pl. 13, Figs 48-49.
1960. *Masslya laurensii* (GRATELOUP); E. KOJUMDGIEVA, p. 166, Pl. 42, Fig. 20.
1984a. *Aneurystoma laurensi* (GRATELOUP); A.W. JANSSEN, p. 251, Pl. 65, Fig. 6.
1984b. *Aneurystoma laurensi* (GRATELOUP); A.W. JANSSEN, pp. 6-7, Pl. 1, Fig. 1; Pl. 5, Fig. 1.

MATERIAL: Two specimens.
DIMENSIONS: Both specimens are 7.0 mm high, but either 3.8 or 3.5 mm wide.

REMARKS: The two collected specimens are not fully grown, and slightly differing in their slenderness. They are thought to be conspecific with those presented by HOERNES & AUINGER (1890) from the Vienna Basin and Transylvania. The species was established upon the Miocene material from the Aquitaine Basin; according to PEYROT (1928), the specimens therefrom do not deviate from those of the Vienna Basin. Of a contrary opinion was SACCO (1894), who regarded the Viennese specimens as a separate species to which he proposed the name of *Merica mioquadrata* SACCO.

The species *Narona* (*Aneurystoma*) *laurensi* (GRATELOUP) has not hitherto been known from the Miocene of Poland.

Narona (*Aneurystoma*) *austropolonica* nom.n. (Pl. 17, Figs 3-4)

1856. *Cancellaria Dufouri* GRAT.; M. HÖRNES, p. 312, Pl. 34, Fig. 9.
1890. *Cancellaria* (*Merica*) *Dufouri* GRAT.; R. HOERNES & M. AUINGER, p. 281.
1936. *Cancellaria* (*Aphera*) *bronni* BELL.; R. SIEBER, p. 100.

HOLOTYPE: The specimen from Grund in the Vienna Basin, presented by HÖRNES (1856, Pl. 34, Fig. 9).
DERIVATION OF THE NAME: *austropolonica* – in reference to its insofar-reported occurrence from Grund in Austria and Korytnica in Poland, and to highlight the greatest resemblance of the gastropod assemblages from these two localities.
MATERIAL: Three specimens.
DIMENSIONS: The largest specimen (Pl. 17, Fig. 4) is 28 mm high and 15.5 mm wide.

REMARKS: The studied specimens are fully concordant with those from Grund in the Vienna Basin, described by HÖRNES (1856) and proclaimed by HOERNES & AUINGER (1890) to

be of the greatest rarities within the Miocene gastropods of the Vienna Basin. SIEBER (1936, p. 100) was of the opinion that all these should be classified as *Cancellaria* (*Aphera*) *bronni* BELLARDI, what is evidently a mistake because that latter species differs distinctly by the shape and ornamentation of the shells (*see* FERRERO MORTARA & *al.* 1984, Pl. 34, Fig. 1); a difference in the latter feature, ornamentation, was already noted by (SIEBER 1936, p. 100). As a matter of fact, the Viennese (thus, also these studied from Korytnica) specimens differ distinctly from those of *Cancellaria dufouri* GRATELOUP from the Aquitaine Basin, wherefrom the species was established. The differences appear in the size, slenderness, section of whorls, and the aperture (*see* PEYROT 1928, Pl. 13, Figs 52-54). Consequently, the present author is of the opinion that the discussed specimens from Korytnica and Grund belong neither to the first, nor to the second of the above-indicated species; they should be classified as a separate taxon at the species level to which the name *Narona* (*Aneurystoma*) *austropolonica* nom.n. is herein proposed.

This newly created species has not hitherto been known from the Miocene of Poland.

Genus *Tritonoharpa* DALL, 1904

Tritonoharpa sp.
(Pl. 17, Figs 1-2)

MATERIAL: Two, very incompletely preserved specimens.

DIMENSIONS: The larger fragment (Pl. 17, Fig. 2) is 5.5 mm high and 3.0 mm wide.

REMARKS: The two collected specimens, being the apical parts of the shell only, belong undoubtedly to the genus *Tritonoharpa* DALL. To the truth, there is a reason to establish a new taxon at the species level for these specimens, but their incompleteness hinders the present author from such formal treatment. The both specimens belong to the same species, and they are the best comparable to those described by BEU & MAXWELL (1987), particularly to "*Tritonoharpa* n.sp.? G, aff. *Tritonoharpa pseudangasi* BEU & MAXWELL" from the Philippines and Indonesia (*see* BEU & MAXWELL 1987, Pl. 20, Figs *d* and *e*; Pl. 21, Figs *g*, *i* and *l*). The Korytnica specimens bear their protoconch with about 2½ strongly convex whorls, and the teleoconch signed by the ornamentation composed of two systems of ribs: on the first teleoconch whorl there appear 14, and on the second 15 axial ribs. Counting at the beginning, the 6th, 17th, and 25th rib make up a varix; a larger specimen may thus bear as many as 6 varices which are distributed irregularly. In the smaller specimen the varix appears at every 180-270°, and in the larger one at every 180-240°. At the teleoconch boundary there also develop thin, spiral ribs, numbering 5 at the origin, and 9 at the third varix; the interspace of spiral ribs is delicately furrowed in a spiral pattern.

BEU & MAXWELL (1987) presumed that from the Miocene of Europe the only representatives of the genus *Tritonoharpa* DALL were the two gastropods described by BELLARDI (1873), from the Turin Hills (Colli Torinesi) in northern Italy, as *Triton praetextum* BELLARDI and *Triton speciosum* BELLARDI. These two gastropods are quite unique indeed and, to the truth, very incomplete: the first is devoid of the apex and aperture (*see* BELLARDI 1873, Pl. 14, Fig. 13), and the second is represented solely by its last whorl (*see* BELLARDI 1873, Pl. 14, Fig. 12).

The genus *Tritonoharpa* DALL has not hitherto been known from the Miocene of Europe. The two herein presented specimens were collected in a restricted locality in the Korytnica Basin, namely that one called "*Plebania*" (for location *see* BAŁUK & PISERA 1984). If this generic assignment is correct, it should indicate a further evidence of the Indo-Pacific biogeographic affinities within diverse organic comunities of the Korytnica Basin (*cf.* BAŁUK & RADWAŃSKI 1977).

Family **Marginellidae** FLEMING, 1828

Genus *Gibberulina* MONTEROSATO, 1884

Gibberulina philippii (MONTEROSATO, 1878)

(Pl. 18, Figs 1-3)

partim 1856. *Marginella miliacea* LAM.; M. HÖRNES, pp. 84-85, Pl. 9, Fig. 2; *non* Fig. 1.
1880. *Marginella (Gibberula) minuta* PFEIF. et var.; R. HOERNES & M. AUINGER, pp. 68-69, Pl. 8, Figs 12-14.
1928. *Cryptospira Philippii* MONT.; W. FRIEDBERG, p. 576, Pl. 37, Figs 12-14.
1963. *Gibberulina (Gibberulina) philippii* (MONTEROSATO); S. VENZO & G. PELOSIO, p. 115, Pl. 39, Fig. 5.
1966. *Marginella (Gibberula) minuta* (auctorum an PFEIFFER); L. STRAUSZ, pp. 387-388, Pl. 74, Figs 3-7.
1970. *Cryptospira philippii* (MONTEROSATO); W. BAŁUK, p. 119, Pl. 13, Figs 11-12.
1981. *Marginella minuta* PFEIF.; W. KRACH, p. 74, Pl. 23, Fig. 20.

MATERIAL: Ninety specimens.
DIMENSIONS: The largest specimen (Pl. 18, Fig. 2) is 2.9 mm high and 1.8 mm wide.

REMARKS: The studied specimens are fully concordant with those presented by HOERNES & AUINGER (1880) from Steinabrunn in the Vienna Basin. In some other localities of the Vienna Basin, *e.g.* Niederleis, the specimens are slightly more squabby, but the differences are too indistinct to speak about any taxonomic separateness. It seems therefore reasonable to regard the variety distinguished by HOERNES & AUINGER (1880) as invalid.

The species *Gibberulina philippii* (MONTEROSATO) has not hitherto been known from Korytnica. In the Miocene of Poland it was reported from Łychów (KRACH 1981), Wieliczka (FRIEDBERG 1938), Brzeźnica (KRACH 1960), and Niskowa (BAŁUK 1970). The specimens described by FRIEDBERG (1928) were coming from Tarnoruda, at present in the Ukraine.

Genus *Persicula* SCHUMACHER, 1817

Persicula sabatica BELLARDI, 1890

(Pl. 18, Fig. 4)

1880. *Marginella (Gibberula) miliaria* LINN.; R. HOERNES & M. AUINGER, p. 69, Pl. 8, Fig. 11.
1981. *Marginella (Persicula) sabatica* BELLARDI; E. FERRERO MORTARA & *al.*, p. 178, Pl. 54, Fig. 10.

MATERIAL: Three specimens.
DIMENSIONS: The middle specimen (Pl. 18, Fig. 4) is 3.6 mm high and 2.5 mm wide; the largest one, of the last whorl only preserved, is 4.5 and 3.0 mm, respectively.

REMARKS: The studied specimens seem to be identical with those described by BELLARDI (1890) from the Neogene of northern Italy (*see* FERRERO MORTARA & *al.* 1981). Certainly conspecific are also the specimens from Steinabrunn in the Vienna Basin, illustrated by HOERNES & AUINGER (1880), as *Marginella (Gibberula) miliaria* LINNAEUS, although an illustration they supplied is very inadequate. On the other hand, a specimen of *Persicula miliaria* (LINNAEUS), as described from the Miocene of Pontlevoy in the Loire Basin by GLIBERT (1952a, Pl. 12, Fig. 8), presents presumably another taxon, featured by specimens more or less similar, but much larger and evidently thicker-walled.

The species *Persicula sabatica* BELLARDI has not hitherto been known from the Miocene of Poland.

Genus *Marginella* LAMARCK, 1799
Subgenus *Eratoidea* WEINKAUFF, 1879
Marginella (Eratoidea) eratoformis HOERNES & AUINGER, 1880
(Pl. 18, Figs 5-8)

1880. *Marginella eratoformis* nov.form.; R. HOERNES & M. AUINGER, p. 66, Pl. 8. Figs 15-16.

MATERIAL: Thirty-five specimens.

DIMENSIONS: The largest specimen is 3.5 mm high and 2.2 mm wide.

REMARKS: The studied specimens are fully concordant with those described by HOERNES & AUINGER (1880) from the locality Lisice in Moravia, at present the Czech Republic.

The species *Marginella (Eratoidea) eratoformis* HOERNES & AUINGER has not hitherto been known from the Miocene of Poland.

Superfamily **Conacea**
Family **Conidae** RAFINESQUE, 1815
Genus *Hemiconus* COSSMANN, 1889
Hemiconus granularis (BORSON, 1820)
(Pl. 20, Figs 1-4)

1879. *Conus (Stephanoconus) Stachei* nov.form.; R. HOERNES & M. AUINGER, pp. 16-17, Pl. 6, Figs 14-16.
1893. *Hemiconus granularis* (BORS.) et var.; F. SACCO, pp. 121-123, Pl. 11, Figs 31-38.
1911. *Hemiconus granularis* BORSON; W. FRIEDBERG, pp. 45-46, Pl. 2, Fig. 10.
1931. *Hemiconus granulifer* (GRATELOUP) *emend.*; A. PEYROT, pp. 10-12, Pl. 1, Figs 11-12.
1960. *Conus (Hemiconus) granularis* BORSON; E. KOJUMDGIEVA, p. 208, Pl. 49, Fig. 2.
1964. *Conus granularis* BORSON; C.A. HALL Jr., p. 148, Pl. 22, Figs 6 and 11, ?Fig. 12.
1966. *Conus (Hemiconus) granularis stachei* HOERNES & AUINGER; L. STRAUSZ, pp. 450-451, Pl. 66, Fig. 9.
1972. *Conus granularis* BORSON; F. DAVOLI, pp. 115-119, Pl. 5, Figs 27-28, 30-34, 37-38, ?Fig. 29; Pl. 9, Fig. 11.
1976. *Conus granularis* BORSON; G. PAVIA, p. 157, Pl. 2, Fig. 12 [= holotype of the species].

MATERIAL: Thirty-two specimens.

DIMENSIONS: The largest specimen (Pl. 20, Fig. 4) is 9.2 mm high and 5.0 mm wide.

REMARKS: The studied specimens are characterized by a great variability of their ornamentation (*see* Pl. 20, Figs 2 and 4), whereas their overall shape remains more or less stable. All of them are to be, however, regarded as conspecific with the holotype of the species *Hemiconus granularis* (BORSON), described from the Neogene of Italy (*see* PAVIA 1976).

Identical specimens occurring in the Vienna Basin have been classified as *Conus (Stephanoconus) stachei*, the species established by HOERNES & AUINGER, who did not report on its relation to other ancient species. It is herein thought that HALL (1964) was right to postulate an identity of the Viennese specimens with the BORSON's species.

DAVOLI (1972) included into the species *Hemiconus granularis* (BORSON) also the specimens from the Aquitaine Basin, determined by PEYROT (1931) as *Hemiconus granulifer* (GRATELOUP) and as *Conus (Chelyconus) substromboides* D'ORBIGNY. If the first assignment may fully be accepted, the second one (*see* PEYROT 1931, Pl. 1, Figs 16 and 18) seems seriously doubtful.

The species *Hemiconus granularis* (BORSON) has not hitherto been known from Korytnica. In the Miocene of Poland it was recorded from Małoszów (FRIEDBERG 1938). The specimens described by FRIEDBERG (1911) were coming from Dryszczów and Zborów, at present in the Ukraine.

Genus *Conus* LINNAEUS, 1758
Subgenus *Conolithus* HERRMANNSEN, 1847
Conus (Conolithus) dujardini DESHAYES, 1845
(Pl. 19, Figs 1-4)

1831. *Conus antidiluvianus* BRUGUIÈRES; F. DUBOIS DEMONTPÉREUX, pp. 23-24, Pl. 1, Fig. 1.

1853. *Con. Dujardini* DESH.; E. EICHWALD, p. 207.

partim 1856. *Conus Dujardini* DESH.; M. HÖRNES, pp. 40-41, Pl. 5, Figs 8a-8o; *non* Figs 3 and 5-7.

1879. *Conus (Leptoconus) Brezinae* nov.form.; R. HOERNES & M. AUINGER, pp. 36-37.

1911. *Conus Dujardini* DESH.; W. FRIEDBERG, pp. 47-50, Pl. 2, Fig. 11; Text-fig. 9.

1931. *Conus (Conospira) Dujardini* DESHAYES; A. PEYROT, pp. 17-19, Pl. 1, Figs 46-47 and 49.

1931. *Conus (Conospira) Dujardini* var. *salomacensis* ; A. PEYROT, p. 19, Pl. 1, Figs 45 and 50-51.

1952b. *Conus (Conospira) dujardini* DESHAYES; M. GLIBERT, pp. 132-133, Pl. 10, Figs 3a and 3b; ?Figs 3c and 3d.

1960. *Conus (Conolithus) dujardini* var. *brezinae* (HOERNES & AUINGER); E. KOJUMDGIEVA, pp. 209-210, Pl. 49, Fig. 7.

1966. *Conus (Conolithus) dujardini brezinae* HOERNES & AUINGER; L. STRAUSZ, p. 452, Pl. 22, Fig. 16; Pl. 43, Figs 3-5; Pl. 67, Figs 8-10.

1970. *Conus (Conolithus) dujardini* DESHAYES; W. BAŁUK, p. 119, Pl. 13, Figs 15-16.

1971. *Conus dujardini* DESHAYES; M. EREMIJA, p. 79, Pl. 5, Fig. 9.

partim 1972. *Conus dujardini* DESHAYES; F. DAVOLI, pp. 101-105, Pl. 5, Figs 5-7, 10, 12-13, 17-18, 22, ?Fig. 10; *non* Figs 23a-b.

1973. *Conus (Conospira) dujardini* DESHAYES; M. BOHN-HAVAS, p. 1066, Pl. 8, Figs 1-2.

1973. *Conus (Conospira) dujardini brezinae* HOERNES & AUINGER; M. BOHN-HAVAS, p. 1067, Pl. 8, Fig. 6.

1981. *Conus (Conolithus) dujardini* (DESHAYES); W. KRACH, pp. 75-76, Pl. 21, Figs 10, 14, 16-17, 22-25, ?Figs 18 and 26.

MATERIAL: One hundred and thirty specimens.

DIMENSIONS: The largest specimen is 34.5 mm high and 14.5 mm wide.

REMARKS: The studied specimens are fully concordant with those coming from the Vienna Basin, and presented by HÖRNES (1856) in the series of illustrations (*see* HÖRNES 1856, Pl. 5, Figs 8*a*-8*o*). A variability of the Korytnica specimens is indistinct, expressed by the slenderness of the spire, and not so great as ascribed by FRIEDBERG (1911) to the specimens from Hołubica in the Ukraine (*see* FRIEDBERG 1911, Text-fig. 9).

The species *Conus (Conolithus) dujardini* DESHAYES is much variously treated by the referenced authors. Its creator, DESHAYES (*fide* PEYROT 1931, p. 18; GLIBERT 1952b, p. 133)

indicated as the type the specimen coming from the Miocene of Volhynia in the Ukraine and presented originally by DUBOIS DEMONTPÉREUX (1831, pp. 23-24, Pl. 1, Fig. 1). Unfortunately, as judged by the present author, neither a laconic description, nor the drawing gives a sufficient insight into the nature of that species; particularly, quite unclear is the statement, that the shell is transversally striated, furrowed at the base ["*testa...transverim striata, basi sulcata*"] on the last whorl.

HÖRNES (1856), under the name the *Conus dujardini* DESHAYES, presented specimens from the Vienna Basin much differing in their shape; he certainly was aware of the differences, as he distinguished four, unnamed varieties. Subsequently HOERNES & AUINGER (1879), when revising this material, recognized the presence of two species: the three first varieties of HÖRNES (1856, Pl. 5, Figs 3 and 5-7) were accepted as *Conus dujardini* DESHAYES, but 14 specimens illustrated as Pl. 5, Figs 8*a*-8*o* were designated as the separate species, *Conus brezinae* HOERNES & AUINGER, arguing for the differences in ornamentation of the last whorl. HOERNES & AUINGER (1879) did not inform whether they followed an earlier view of DUBOIS DEMONTPÉREUX (1831), or recognized the differentiating feature independently. Anyway, a treatment offered by HOERNES & AUINGER (1879) has subsequently been followed by the majority of authors dealing with the gastropods of the Paratethys basins, that is, *i.a.* by KOJUMDGIEVA (1960) and STRAUSZ (1966). If a distinction of the two species is fully reasonable, the nomenclature used by HOERNES & AUINGER (1879) may remain disputable.

A quite different point of view on the discussed Viennese specimens was presented by HALL (1964) when revising the cone shells from the Neogene of Italy. He included to the species *Conus dujardini* DESHAYES the series of 14 specimens illustrated by HÖRNES (1856, Pl. 5, Figs 8*a*-8*o*) but, moreover, the specimen shown by HÖRNES (1856) on his Fig. 5; the latter assignment is not understandable, as that specimen much deviates from the others, and even by HÖRNES himself it was classified as a separate variety described as "*tota sulcata*".

The specimens of *Conus dujardini* DESHAYES presented by DAVOLI (1972) from the Tortonian of Montegibbio in Italy are concordant with the Korytnica specimens, although they are usually slightly more slender. To note, DAVOLI (1972) illustrated for comparison the specimen from the Vienna Basin, from the collection of HÖRNES (*see* DAVOLI (1972, Pl. 5, Figs 23*a*-23*b*), and fully concordant with that one shown in HÖRNES' Fig. 5; it is quite evident that the specimens from Montegibbio differ from the latter, and thus cannot belong to one species.

When describing the gastropods from the Miocene of Aquitaine, PEYROT (1931) assigned to *Conus dujardini* DESHAYES (the variety *salomacensis* PEYROT including) the specimens concordant with those, herein studied, from Korytnica; his understanding of the Viennese specimens is, however, quite unclear. Namely, he accepted, on one way a treatment of the species *Conus dujardini* DESHAYES used by HOERNES & AUINGER (1879) but, on the other, he put into the synonymy the specimens of the discussed series of HÖRNES' Figs 8*a*-8*o*, but not mentioning the species *Conus brezinae* HOERNES & AUINGER anywhere.

The species *Conus* (*Conolithus*) *dujardini* DESHAYES was reported from Korytnica by EICHWALD (1853), HÖRNES (1856), KONTKIEWICZ (1882), FRIEDBERG (1911, 1938), and KOWALEWSKI (1930); although none of these authors have ever illustrated any specimen therefrom. In the present author's treatment, in the Miocene of Poland this species occurs also at Łychów (KRACH 1981) and Niskowa (BAŁUK 1970). It was also noted from Małoszów and Słaboszowice (KOWALEWSKI 1930), Benczyn (KRACH 1950a), Błonie (FRIEDBERG 1911, URBANIAK 1974), Zgłobice and Szczepanowice (URBANIAK 1974), and Grudna Dolna (UHLIG, *fide* FRIEDBERG 1911); a lack of any illustration does not allow any assessment of their real connotation.

Conus (*Conolithus*) *exaltatus* EICHWALD, 1853
(Pl. 19, Figs 5-8)

1853. *Con. exaltatus* m.; E. EICHWALD, p. 208, Pl. 9, Fig. 3.
partim 1856. *Conus Dujardini* DESH.; M. HÖRNES, pp. 40-41, Pl. 5, Figs 3, 5-7; *non* Figs 8a-8o.
1879. *Conus* (*Leptoconus*) *Dujardini* DESH.; R. HOERNES & M. AUINGER, pp. 35-36.
1911. *Conus Dujardini Desh.* var. *exaltatus* EICH.; W. FRIEDBERG, p. 51, Pl. 2, Fig. 12.
?1911. *Conus Brezinae* R. HOERN. i AUING.; W. FRIEDBERG, pp. 51-52, Pl. 2, Figs 13-14.
partim 1931. *Conus* (*Conospira*) *subturritus* D'ORBIGNY; A. PEYROT, pp. 19-20, Pl. 1, Figs 8, 17, 20, 28, and 44; *non* Figs 35-36.
1960. *Conus* (*Conolithus*) *dujardini* DESHAYES; E. KOJUMDGIEVA, p. 209, Pl. 49, Fig. 4.
1964. *Conus dujardini* DESHAYES; C.A. HALL Jr., pp. 143-144, Pl. 24, Fig. 3; excl. synonymy.
1966. *Conus* (*Conolithus*) *dujardini* DESHAYES; L. STRAUSZ, pp. 451-452, Pl. 67, Figs 2-5.
1971. *Conus* (*Conospira*) *dujardini astensis* SACCO; I. CSEPREGHY-MEZNERICS, p. 34, Pl. 17, Figs 12-13.
1971. *Conus* (*Conospira*) *dujardini brezinae* HOERNES & AUINGER; I. CSEPREGHY-MEZNERICS, p. 34, Pl. 17, Figs 16-17, ?Fig. 15.
partim 1972. *Conus dujardini* DESHAYES; F. DAVOLI, pp. 101-105, Pl. 5, Figs 23a-b; *non* Figs 5-7, 10-13, 17-18, and 22.

MATERIAL: Forty-eight specimens.
DIMENSIONS: The largest specimen is 28.5 mm high and 12.0 mm wide, another one is 26.5 and 12.5 mm, respectively.

REMARKS: The studied specimens are concordant with those Viennese ones that were assigned by HÖRNES (1856) to his three first varieties of *Conus dujardini* DESHAYES (*see* HÖRNES 1856, Pl. 5, Figs 3 and 5-7) and regarded by HOERNES & AUINGER (1879) as typical *Conus dujardini*. A characteristic feature of these specimens is ornamentation of the last whorl, and expressed by numerous, thin spiral furrows, everyone of which is composed of a series of very delicate, minute pits resembling punctures by a needle ("*Nadelstich*" of HOERNES & AUINGER 1879). These spiral furrows cover the whorl surface either whole, from the base to the edge (variety *tota sulcata* of HÖRNES 1856) or partly, just at the base, or beneath the edge. This variability, as well as that of the edge distinctness, and of the shell slenderness, does not allow to recognize any morphologic groups within the studied material. It seems evidently that such very specimens were possessed by EICHWALD (1853) when describing the species *Conus exaltatus* EICHWALD. Some of the studied specimens from Korytnica (*see* Pl. 19, Fig. 8) practically do not differ from the holotype (*see* EICHWALD 1853, Pl. 9, Fig. 3).

HALL (1964) included the EICHWALD's species to *Conus canaliculatus* BROCCHI. The present author does not regard this name to be valid; firstly, because it is unclear what that species of BROCCHI represents as its holotype was lost, and the neotype established by HALL (1964, Pl. 24, Figs 6-7) is an incomplete, poorly preserved individual differing from any of Korytnica specimens and, secondly, because the name *Conus canaliculatus* was earlier used by RÖDING (*fide* HALL 1964) whose names are not treated to-day as *nomina nuda*.

The species *Conus* (*Conolithus*) *exaltatus* EICHWALD was reported from Korytnica by EICHWALD himself (1853), and by FRIEDBERG (1938).

Conus (*Conolithus*) sp.
(Pl. 20, Fig. 5)

MATERIAL: One specimen.
DIMENSIONS: Height 5.5 mm, width 2.5 mm.

REMARKS: The only collected specimen is a juvenile shell attributable to the subgenus *Conolithus*, but to neither of the above described species. Its ornamentation on the edge of whorls is different; the nodes on that edge are very similar to those in specimens of *Conus* (*Conolithus*) *antidiluvianus* BRUGUIÈRE coming from the Vienna Basin (*see* HÖRNES 1856, Pl. 5, Figs 2*a*-2*e*), but the shells of the latter species are featured apparently by a different width/height ratio.

Subgenus *Lautoconus* MONTEROSATO, 1923

Conus (*Lautoconus*) *posticestriatus* KOJUMDGIEVA, 1960
(Pl. 23, Figs 7-8)

partim 1879. *Conus* (*Chelyconus*) *Suessi* nov.form; R. HOERNES & M. AUINGER, pp. 43-44, Pl. 6, Figs 3-4; *non* Pl. 1, Figs 1 and 15; Pl. 6, Figs 1-2.

1911. *Conus* an *Suessi* R. H. i A.; W. FRIEDBERG, pp. 61-62, Text-fig. 15.

?1960. *Conus* (*Chelyconus*) *suessi* var. *posticestriatus* n.var.; E. KOJUMDGIEVA, p. 212 (and 246), Pl. 50, Fig. 3.

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 23, Fig. 8) is 31.0 mm high and 16.2 mm wide.

REMARKS: The two collected specimens, and certainly also that one presented by FRIEDBERG (1911, pp. 61-62, Text-fig. 15), are conspecific with those ascribed by HOERNES & AUINGER (1879) to the third variety of the then-established species *Conus suessi* HOERNES & AUINGER. This variety (*see* HOERNES & AUINGER 1879, Pl. 6, Figs 3-4) differs distinctly in its shape from both the type forms and from the varieties *I* and *II* of that species (*see* HOERNES & AUINGER 1879, Pl. 1, Figs 1 and 15; Pl. 6, Figs 1-2). In the present author's opinion the discussed variety *III* is a separate species, the name of which should be that one *posticestriatus* as used by KOJUMDGIEVA (1960, p. 212), to distinguish this variety. KOJUMDGIEVA (1960) indicated as the holotype of the variety the specimen from Lapugy in Transylvania, illustrated by HOERNES & AUINGER (1879, Pl. 6, Fig. 3). It may however be doubted whether the specimen from Radomirci in Bulgaria shown by KOJUMDGIEVA (1960, Pl. 50, Fig. 3) herself, really belongs to the variety *III* of *Conus suessi* HOERNES & AUINGER, as it shape corresponds rather to that of the variety *II* (*see* HOERNES & AUINGER 1879, Pl. 1, Fig. 15).

The species *Conus* (*Lautoconus*) *posticestriatus* KOJUMDGIEVA was reported from Korytnica, under the name "*Conus* an *Suesii*", only by FRIEDBERG (1911). Unknown from other Miocene localities in Poland.

Subgenus *Lithoconus* MÖRCH, 1852

Conus (*Lithoconus*) *berghausi* MICHELOTTI, 1847
(Pl. 21, Figs 1-4)

1856. *Conus Berghausi* MICHT.; M. HÖRNES, p. 19, Pl. 1, Fig. 3.

partim 1856. *Conus fusco-cingulatus* BRONN; M. HÖRNES, p. 21, Pl. 1, Fig. 4; *non* Fig. 5.

1879. *Conus* (*Dendroconus*) *Daciae* nov.form.; R. HOERNES & M. AUINGER, p. 21, Pl. 3, Fig. 1.

1879. *Conus* (*Dendroconus*) *Loroisi* KIENER; R. HOERNES & M. AUINGER, pp. 21-22, Pl. 3, Fig. 5.

1879. *Conus* (*Dendroconus*) *Vaceki* nov.form.; R. HOERNES & M. AUINGER, p. 22.

1879. *Conus* (*Dendroconus*) *Voeslauensis* nov.form.; R. HOERNES & M. AUINGER, pp. 22-23, Pl. 1, Fig. 8; ?Pl. 3, Fig. 4.

1879. *Conus* (*Lithoconus*) *hungaricus* nov.form.; R. HOERNES & M. AUINGER, p. 29, Pl. 2, Fig. 6; Pl. 4, Fig. 1.

partim 1879. *Conus* (*Dendroconus*) *subraristriatus* DA COSTA; R. HOERNES & M. AUINGER, pp. 23-24, Pl. 1, Fig. 22; *non* Figs 20-21.

1879. *Conus* (*Dendroconus*) *Moravicus* nov.form.; R. HOERNES & M. AUINGER, pp. 29-31.

1879. *Conus* (*Lithoconus*) *Neumayri* nov.form.; R. HOERNES & M. AUINGER, p. 27, Pl. 1, Figs 17-18.

1893. *Dendroconus berghausi* (MICHELOTTI) et var.; F. SACCO, pp. 7-11, Pl. 1, Figs 9-11 and 13-21.

1911. *Conus Berghausi* MICHT. var. *Vaceki* R. HOERN. i AUING.; W. FRIEDBERG, pp. 62-63, Pl. 3, Fig. 5.

1911. *Conus ventricosus* BROCC.; W. FRIEDBERG, pp. 60-61, Text-fig. 14.

1928. *Conus Berghausi* MICHT.; W. FRIEDBERG, p. 566, Text-fig. 80.

1931. *Conus* (*Dendroconus*) *maculosus* GRATELOUP, et var.; A. PEYROT, pp. 28-29, Pl. 4, Figs 2, 6, 8-9, 13, and 15.

1952a. *Conus* (*Lithoconus*) *mercati daciae* (HOERNES et AUINGER); M. GLIBERT, pp. 374-375, Pl. 12, Figs 12a-b.

1952a. *Conus* (*Dendroconus*) *berghausi* MICHELOTTI; M. GLIBERT, pp. 375-376, Pl. 13, Figs 3a-b.

1960. *Conus* (*Dendroconus*) *berghausi* MICHELOTTI; E. KOJUMDGIEVA, p. 215, Pl. 50, Fig. 3.

1964. *Conus berghausi* MICHELOTTI; C.A. HALL Jr., pp. 134-136, Pl. 23, Figs 11, 18, 22-23, and 28.

1966. *Conus* (*Cleobula*) *berghausi vaceki* HOERNES & AUINGER; L. STRAUSZ, pp. 464-465, Pl. 71, Figs 10-14.

1966. *Conus* (*Lithoconus*) *hungaricus* HOERNES & AUINGER; L. STRAUSZ, pp. 455-456, Pl. 67, Fig. 14.

1971. *Conus mercati daciae* (HOERNES et AUINGER); M. EREMIJA, p. 78, Pl. 5, Fig. 10.

1972. *Conus berghausi* MICHELOTTI; F. DAVOLI, pp. 78-83, Pl. 2, Figs 5 and 9; Pl. 3, Figs 11, 17-18, and 23-27; ?Figs 12-13, 19-22.

1973. *Conus* (*Dendroconus*) *berghausi* MICHELOTTI; M. BOHN-HAVAS, p. 1124, Pl. 7, Fig. 11.

1973. *Conus* (*Dendroconus*) *voeslauensis* HOERNES et AUINGER; M. BOHN-HAVAS, p. 1070, Pl. 7, Fig. 13; ?Fig. 12.

1984. *Conus berghausi* MICHELOTTI; G. RUGGIERI & F. DAVOLI, p. 75, Pl. 5, Fig. 18.

1984. *Dendroconus berghausi* var. *percommunis* SACCO; E. FERRERO MORTARA & *al.*, p. 101, Pl. 15, Figs 7a-b [=neotype of the species].

1990. *Conus berghausi* MICHELOTTI; F. DAVOLI, p. 100, Pl. 9, Figs 16-17; Pl. 10, Figs 10-11.

MATERIAL: Ten specimens.

DIMENSIONS: The largest specimen is 57 mm high and 37 mm wide; another one (Pl. 21, Fig. 4) is *c.* 53 and 36 mm, respectively.

REMARKS: The studied specimens display a rather indistinct variability of the overall shape, resulted from differences in the slenderness and section of the spire, and in the height of the last whorl. Such very differences have been reported by almost all the referenced authors to characterize the species, the shell of which may attain a relatively large size. Under these circumstances, some authors subdivided it into numerous categories. In the present author's opinion the top splitters were HOERNES & AUINGER (1879) who within the cone shells of the Vienna Basin and Transylvania distinguished as many as 8 species instead of one (!). The present author is not alone in this matter; HALL (1964) into the synonymy of *Conus berghausi* MICHELOTTI put 7 species of those established by HOERNES & AUINGER (6 of these are the same as in the above-given synonymy).

All the studied specimens from Korytnica are featured by the whorl surface almost smooth above the edge. In this respect, they resemble one specimen from the Miocene of Sogliano in Italy (*see* DAVOLI 1990, Pl. 9, Fig. 16*c*), although the others therefrom are sculptured by a spiral furrowing (*see* DAVOLI 1990, Pl. 9, Fig. 17*b*; Pl. 10, Figs 10*c* and 11*b*). An importance of this feature may be discussed, as revealed by the insofar given descriptions; for instance, HALL (1964, p. 135) noted "Spire low, rarely striate...", whereas HOERNES & AUINGER (1879, p. 21) reported earlier the furrowing in specimens of *Conus daciae* coming from Lapugy in Transylvania but absent in those from Ritzing in the Vienna Basin.

FRIEDBERG (1911) described from Korytnica, under the name of *Conus ventricosus* BROCCHI, four specimens, of which one was figured (*see* FRIEDBERG 1911, Text-fig. 14), but

all were measured. That specimen has a relatively high spire, with the width/height ratio 0.69, identical to that of one the herein presented specimens (Pl. 21, Fig. 3). To note, in a later paper, FRIEDBERG (1928, p. 565) classified these specimens as *Conus bitorosus* FONTANNES var. *exventricosa* SACCO. The species *Conus* (*Lithoconus*) *berghausi* MICHELOTTI is thus recognized to be reported from Korytnica by FRIEDBERG (1928) and KOWALEWSKI (1930); presumably, it was also recorded herefrom by HÖRNES (1856), under the name of *Conus fuscocingulatus* BRONN. It is also suggested, that a large fragment of the last whorl, presented by BAŁUK & RADWAŃSKI (1977, Pl. 8, Fig. 2) belongs to the species *Conus berghausi* MICHELOTTI; this would be the largest (*c.* 80 mm high) specimen ever found at Korytnica; of the complete specimens, the largest size hitherto noted was that in a specimen 65 mm high, figured by FRIEDBERG (1928, Text-fig. 80).

Conus (*Lithoconus*) *betulinoides* LAMARCK, 1810
(Pl. 20, Fig. 9)

1856. *Conus betulinoides* LAM.; M. HÖRNES, pp. 16-17, Pl. 1, Fig. 1.

1879. *Conus* (*Dendroconus*) *betulinoides* LAMK.; R. HOERNES & M. AUINGER, pp. 17-18.

1893. *Dendroconus betulinoides* (LAMARCK); F. SACCO, p. 4, Pl. 1, Figs 1-3 and 5-8.

1972. *Conus betulinoides* LAMARCK; F. DAVOLI, pp. 84-86, Pl. 2, Figs 1-4 and 6-8.

1978. *Conus betulinoides* LAMARCK; G. PINNA & L. SPEZIA, p. 135, Pl. 17, Fig. 3 [= neotype of the species].

MATERIAL: One specimen.

DIMENSIONS: Height 88 mm, width *c.* 52 mm.

REMARKS: The collected specimen is incomplete, represented by a half shell broken along the axis plane. Nevertheless, its specific recognition seems to be undoubted. It is almost identical with the specimen of *Conus* (*Lithoconus*) *betulinoides* LAMARCK coming from Steinabrunn in the Vienna Basin, and presented by HÖRNES as the first figure in his classic monograph (1856, Pl. 1, Fig. 1); it is also concordant with the specimens from the Miocene of Montegibbio in Italy, reported by DAVOLI (1972) who treated the species *Conus betulinoides* LAMARCK more widely, to include the Viennese forms labelled formerly as *Conus aldrovandi* BROCCHI (*see* HÖRNES 1856, Pl. 1, Fig. 2) and *Conus hungaricus* HOERNES & AUINGER (*see* HOERNES & AUINGER 1879, Pl. 2, Fig. 6).

The specimens from the Miocene of Aquitaine presented by PEYROT (1931) as either "*Conus* (*Dendroconus*) *betulinoides* LAMARCK mut. *girondicus*" (*see* PEYROT 1931, Pl. 3, Figs 4-6), or "*Conus* (*Dendroconus*) *pseudotextilis* GRATELOUP" (*see* PEYROT 1931, Pl. 3, Figs 1, 8-10, and 12) regarded by DAVOLI (1972, p. 84) to be conspecific with *Conus betulinoides* LAMARCK, are evidently different from the studied specimen from Korytnica and can hardly be classified within the frames of one species.

The species *Conus* (*Lithoconus*) *betulinoides* LAMARCK has not hitherto been known from the Miocene of Poland.

Conus (*Lithoconus*) cf. *austriacus* HOERNES & AUINGER, 1879
(Pl. 20, Figs 6-8)

1879. *Conus* (*Dendroconus*) *austriacus* nov.form.; R. HOERNES & M. AUINGER, pp. 19-20, Pl. 2, Figs 2-3.

1879. *Conus* (*Dendroconus*) *Reussi* nov.form.; R. HOERNES & M. AUINGER, pp. 20-21, Pl. 2, Fig. 1.

1952a. *Conus* (*Lithoconus*) *mercati austriacus* HOERNES et AUINGER; M. GLIBERT, p. 374, Pl. 13, Fig. 2.
?1960. *Conus* (*Lithoconus*) *mercati daciae* HOERNES und AUINGER; E. KOJUMDGIEVA, p. 211, Pl. 50, Fig. 1.

MATERIAL: Six specimens, all incomplete.
DIMENSIONS: The largest specimen (Pl. 20, Fig. 8) is a part of the specimen attaining the width of about 60 mm.

REMARKS: All collected specimens are more or less incomplete, what impedes their precise determination. They seem to belong to the species *Conus* (*Lithoconus*) *austriacus* HOERNES & AUINGER which, however, in the present author's opinion does not differ from *Conus* (*Lithoconus*) *reussi* HOERNES & AUINGER and should not be treated as separate.

The species *Conus* (*Lithoconus*) *austriacus* HOERNES & AUINGER has not hitherto been known from the Miocene of Poland.

Subgenus *Rhizoconus* MÖRCH, 1852

Conus (*Rhizoconus*) *steinabrunnensis* (SACCO, 1893) (Pl. 22, Figs 1-3)

1879. *Conus* (*Rhizoconus*) *ponderosus* BROCC., var. *I* and var. *III*; R. HOERNES & M. AUINGER, p. 39, Pl. 5, Figs 4 and 6.
1893. *Chelyconus steinabrunnensis* SACC.; F. SACCO, p. 75.
1893. *Chelyconus ponderoaustriacus* SACC.; F. SACCO, p. 75.
non 1911. *Conus ponderosus* BROCC. var. *Steinabrunnensis* SACCO; W. FRIEDBERG, pp. 58-59, Pl. 3, Fig. 3; Text-fig. 12.
1956. *Conus* (*Rhizoconus*) *ponderosus steinabrunnensis* SACCO; I. CSEPREGHY-MEZNERICS, Pl. 11, Figs 11-12.
1960. *Conus* (*Chelyconus*) *ponderosus* var. *steinabrunnensis* (SACCO); E. KOJUMDGIEVA, p. 213, Pl. 50, Fig. 8.
1960. *Conus* (*Chelyconus*) *ponderosus* var. *ponderoaustriaca* (SACCO); E. KOJUMDGIEVA, p. 214, Pl. 51, Fig. 1.

MATERIAL: Seven specimens.
DIMENSIONS: The largest specimen (Pl. 22, Fig. 3) is about 50 mm high and 29 mm wide.

REMARKS: The studied specimens seem to be concordant with those described by HOERNES & AUINGER (1879, Pl. 5, Figs 4 and 6) from Steinabrunn in the Vienna Basin and from Lapugy in Transylvania, as *I* and *III* varieties of the species *Conus ponderosus* BROCCHI, for which SACCO (1893) established the two separate species, *Conus steinabrunnensis* (SACCO) and *Conus ponderoaustriacus* (SACCO). The present author partly accepts that treatement of SACCO (1893), namely as it concerns a separateness of these taxa from *Conus ponderosus* BROCCHI, but on the other hand, he regards the differences between them (that is, between the above varieties *I* and *III*) as inessential, and proposes to combine them into one, the priority name of which is *Conus* (*Rhizoconus*) *steinabrunnensis* (SACCO).

FRIEDBERG (1911) included to *Conus steinabrunnensis* (SACCO), regarded to be only a variety of *Conus ponderosus* BROCCHI, one specimen from Korytnica. It differs, however, reasonable by its lower spire, and a lack of distinct edge on the last whorl, from all seven specimens presented in this paper. Consequently, it is thought that it represents another species, and the assignation given by FRIEDBERG is not appropriate.

The species *Conus* (*Rhizoconus*) *steinabrunnensis* (SACCO) has never been, except of above-discussed case of FRIEDBERG, reported from the Miocene of Poland.

Subgenus *Chelyconus* MÖRCH, 1852

Conus (Chelyconus) lineatus DECRISTOFORI & JAN, 1832
(Pl. 21, Figs 7-8)

1911. *Conus* sp. ign. aff. *ponderosus* BROCC.; W. FRIEDBERG, pp. 59-60, Text-fig. 13.

1978. *Conus lineatus* DECRISTOFORI e JAN; G. PINNA & L. SPEZIA, p. 136, Pl. 24, Fig. 2 [= lectotype of the species].

MATERIAL: Two specimens.

DIMENSIONS: The larger specimen (Pl. 21, Fig. 7) is about 33 mm high and 17.2 mm wide; the smaller one (Pl. 21, Fig. 8) is 25.3 and 13.0 mm, respectively.

REMARKS: FRIEDBERG (1911, Text-fig. 13) presented from Korytnica one, well preserved specimen, classified very vaguely as "*Conus* sp. ign. aff. *ponderosus* BROCC." (that is, the species "unknown, related to"). Within the present author's collection there occur two specimens (*see* Pl. 21, Figs 7-8) which are almost identical with the FRIEDBERG's specimen. They differ slightly by their outer lip adherent to the spire at its edge, whereas FRIEDBERG (1911, p. 59) noted this as placed above that edge [to the truth, rather very little, as may be judged from the illustration]. All these specimens are not easily recognizable at their species level. The most adequate assignation of theirs is certainly to the species *Conus lineatus* DECRISTOFORI & JAN, known from the Neogene of Italy. The lectotype of this species was re-illustrated, in the form of a photo, by PINNA & SPEZIA (1978, Pl 24, Fig. 2); its dimensions (height 32.2, width *c.* 16.2 mm) are very close to those of the Korytnica specimens.

Within the specimens from the Miocene of northern Italy, presented by HALL (1964), similar is one of the specimens determined as *Conus pelagicus* BROCCHI (*see* HALL 1964, Pl. 27, Fig. 16); the other specimens assigned to this species, however, do not display a similarity. To note, in the holotype of *Conus pelagicus* BROCCHI, re-illustrated by PINNA & SPEZIA (1978, Pl. 18, Fig. 4), the last whorl is not relatively wider than the last but one, what is typical of the Korytnica specimens, as already stated by FRIEDBERG (1911, p. 59).

In the remarkable rich collection of the cone shells from the Vienna Basin and Transylvania, described by HOERNES & AUINGER (1879), there is no specimen which could be indicated as similar to the studied forms from the Korytnica Basin.

The species *Conus (Chelyconus) lineatus* DECRISTOFORI & JAN has not hitherto been reported from other Miocene localities in Poland.

Conus (Chelyconus) ponderosus BROCCHI, 1814
(Pl. 22, Fig. 9)

1856. *Conus ponderosus* BROCC.; M. HÖRNES, p. 26, Pl. 2, Fig. 6.

partim 1856. *Conus clavatus* LAM.; M. HÖRNES, p. 25, Pl. 2, Fig. 5; *non* Fig. 4.

1879. *Conus (Chelyconus) enzesfeldensis* nov.form.; R. HOERNES & M. AUINGER, pp. 46-47.

partim 1931. *Conus (Chelyconus) clavatus* LAMARCK; A. PEYROT, pp. 37-39, Pl. 3, Figs 7; *non* Figs 16-18.

1964. *Conus ponderosus* BROCCHI; C.A. HALL Jr., pp. 156-158, Pl. 28, Figs 1-21.

1966. *Conus (Chelyconus) enzesfeldensis* HOERNES & AUINGER; L. STRAUSZ, p. 460, Pl. 70, Figs 7-9.

1972. *Conus ponderosus* BROCCHI; F. DAVOLI, pp. 124-128, Pl. 7, Figs 1-2, 6 and 9-11.

1978. *Conus ponderosus* BROCCHI; G. PINNA & L. SPEZIA, p. 137, Pl. 18, Fig. 1 [= holotype of the species].

1981. *Conus ponderosus* BROCCHI; W. KRACH, p. 77, Pl. 20, Figs 17-21; Pl. 21, Figs 6-9.

MATERIAL: One fragment of a large specimen.

DIMENSIONS: The presented fragment (Pl. 22, Fig. 9) is estimated as belonging to a specimen about 90 mm high and about 45 mm wide.

REMARKS: Although only one fragment is possessed, its specific assignation to *Conus ponderosus* BROCCHI should not be doubted. This fragment can easily be mounted in the comparable parts either of the holotype of this species (*see* PINNA & SPEZIA 1978, Pl. 18, Fig. 1), or of the specimen from Steinabrunn in the Vienna Basin, presented by HÖRNES (1856, Pl. 2, Fig. 6), or of that one coming from Saint-Paul-lès-Dax in the Aquitaine Basin, and classified earlier as *Conus clavatus* LAMARCK *in* GRATELOUP, but assigned by HALL (1964) to *Conus ponderosus* BROCCHI (*see* HALL 1964, Pl. 28, Fig. 20). A very similar to, or even identical with, *Conus ponderosus* BROCCHI is the species *Conus* (*Chelyconus*) *enzesfeldensis* HOERNES & AUINGER reported from the Paratethys basins. Some of the specimens, for instance those from Szob in Hungary (*see* STRAUSZ 1966, Pl. 70, Figs 7-9), practically do not differ from the studied Korytnica specimen.

The cone shells named as *Conus* (*Chelyconus*) *ponderosus* BROCCHI have formerly been reported from Korytnica, but any of them does not refer to a specimen so large as that one herein presented; moreover, the former conotations, both by KOWALEWSKI (1930) and by FRIEDBERG (1938), refer presumably to another species, namely to *Conus rotundus* HOERNES & AUINGER. In the Miocene of Poland the species *Conus* (*Chelyconus*) *ponderosus* BROCCHI was presented credibly only from Łychów and Węglinek (KRACH 1981).

Conus (*Chelyconus*) *pyrula* BROCCHI, 1814
(Pl. 21, Figs 5-6)

1853. *Con. argillicola* m.; E. EICHWALD, pp. 206-207, Pl. 9, Fig. 2.

1856. *Conus avellana* LAM.; M. HÖRNES, pp. 29-30, Pl. 3, Fig. 3d, ?Figs 3a-c.

1879. *Conus* (*Chelyconus*) *avellana* LAMK.; R. HOERNES & M. AUINGER, p. 40.

?1879. *Conus* (*Chelyconus*) *Sturi* nov.form.; R. HOERNES & M. AUINGER, pp. 41-42, Pl. 5, Figs 9-10.

?1879. *Conus* (*Chelyconus*) *Ottiliae* nov.form.; R. HOERNES & M. AUINGER, p. 42, Pl. 6, Figs 12-13.

1911. *Conus* c.f. *Sturi* R. HOERN. i AUINGER; W. FRIEDBERG, p. 53, Pl. 2, Fig. 15.

1911. *Conus argillicolla* EICHW.; W. FRIEDBERG, pp. 53-54, Pl. 2, Fig. 16.

?1928. *Conus laeviponderosus* SACCO var. *gracilicauda* SACCO; W. FRIEDBERG, p. 564, Pl. 37, Fig. 2.

partim 1960. *Conus* (*Chelyconus*) *vindobonensis* (PARTSCH *in* HOERNES und AUINGER); E. KOJUMDGIEVA, p. 213, Pl. 50, Fig. 4; *non* Pl. 50, Fig. 5.

partim 1964. *Conus pyrula* BROCCHI; C.A. HALL Jr., p. 152, Pl. 24, Figs 14-15; *non* Pl. 27, Figs 5-6.

1972. *Conus avellana* LAMARCK; F. DAVOLI, Pl. 5, Fig. 39.

?1973. *Conus* (*Chelyconus*) *olivaeformis* HOERNES et AUINGER; M. BOHN-HAVAS, p. 1068, Pl. 7, Figs 5-6.

1978. *Conus pyrula* BROCCHI; G. PINNA & L. SPEZIA, p. 137, Pl. 24, Fig. 1 [= holotype of the species].

1984. *Chelyconus mucronatolaevis* SACCO; E. FERRERO MORTARA *& al.*, p. 116, Pl. 18, Fig. 8 [= holotype of the species].

MATERIAL: Four specimens.

DIMENSIONS: The largest completely preserved specimen (Pl. 21, Fig. 6) is 29.5 mm high and 15.0 mm wide; another one, preserved incompletely, is *c.* 21 mm wide.

REMARKS: A specific determination of the collected specimens involves some doubts. All four specimens vary in the height of their spire, and the convexity of the whorls. Specimens of the lower spire and more flat whorls (*see* Pl. 21, Fig. 5) resemble *Conus pyru-*

la BROCCHI, but these of the higher spire and more convex whorls are better comparable to *Conus mucronatolaevis* (SACCO). A very scanty material possessed does not allow to recognize whether such morphologic differences should be referred to as intraspecific variability, or should indicate the occurrence of two separate species at Korytnica. The present author inclines tentatively to the first of the above possibilities.

The species *Conus* (*Chelyconus*) *pyrula* BROCCHI has not hitherto been known from the Miocene of Poland. It may however be inferred that this very species was reported from Korytnica by EICHWALD (1853) under the name *Conus argillicola* EICHWALD, and by FRIEDBERG (1928) as *Conus laeviponderosus* SACCO var. *gracilicauda* SACCO.

Conus (*Chelyconus*) *rotundus* HOERNES & AUINGER, 1879 (Pl. 22, Figs 4-8)

partim 1856. *Conus ventricosus* BRONN; M. HÖRNES, pp. 32-33, Pl. 3, Fig. 8; *non* Figs 5-7.
1879. *Conus* (*Chelyconus*) *rotundus* nov.form.; R. HOERNES & AUINGER, p. 50, Pl. 6, Fig. 8.
1879. *Conus* (*Rhizoconus*) *ponderosus* BROCC., Var. *II*; R. HOERNES & M. AUINGER, p. 39, Pl. 5, Fig. 5.
1928. *Conus laeviponderosus* SACCO var. *mucronatina* SACCO; W. FRIEDBERG, p. 565, Pl. 37, Fig. 3.
1930. *Conus ponderosus* BROCC.; K. KOWALEWSKI, p. 104.
1956. *Conus* (*Rhizoconus*) *ponderosus grinzingenzis* SACCO; I. CSEPREGHY-MEZNERICS, Pl. 10, Figs 1-2.
1956. *Conus* (*Chelyconus*) *rotundus* HOERNES et AUINGER; I. CSEPREGHY-MEZNERICS, p. 419, Pl. 10, Figs 5-6.
partim 1964. *Conus mucronatolaevis* (SACCO); C.A. HALL Jr., pp. 149-151, Pl. 26, Fig. 14; *non* Figs 9-11 and 20.
1966. *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER; L. STRAUSZ, pp. 458-459, Pl. 69, Figs 9-10.
1984. *Chelyconus ponderoglans* SACCO; E. FERRERO MORTARA & *al.*, p. 120, Pl. 18, Fig. 6.
1984. *Chelyconus ponderosulcatus* SACCO; E. FERRERO MORTARA & *al.*, p. 122, Pl. 19, Fig. 2.

MATERIAL: Seventeen specimens.
DIMENSIONS: The largest specimen (Pl. 22, Fig. 6) is 47 mm high and 26 mm wide.

REMARKS: The studied specimens are evidently concordant with those from the Vienna Basin described as *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER by HOERNES & AUINGER (1879) who illustrated a specimen from Steinabrunn as the holotype of this species (*see* HOERNES & AUINGER 1879, Pl. 6, Fig. 8). The Korytnica specimens display a slight variability expressed by the spire section. Besides the specimens of typical dome-like shape (*see* Pl. 22, Fig. 6) there also appear these of a more conical shape (*see* Pl. 22, Fig. 8); such indistinct differences should not be treated as distinctive for any taxonomic subdivisions. In the Vienna Basin, the specimens of more conical shape were classified by HOERNES & AUINGER (1879) as an unnamed variety, Var. *II*, of the species *Conus ponderosus* BROCCHI (*see* HOERNES & AUINGER 1879, p. 39, Pl. 5, Fig. 5). Although the discussed specimens of *Conus rotundus* HOERNES & AUINGER are slightly similar to *Conus ponderosus* BROCCHI, they differ rather distinctly, as the former ones display their teleoconch coiled very tightly, particularly in the earlier parts. The herein presented adult specimens from Korytnica (Pl. 22, Figs 6-8) bear their teleoconch composed of slightly more than 10 whorls, whereas a juvenile (Pl. 22, Fig. 4), 22 mm high, has it teleoconch of 8 whorls. It is known that the shells of *Conus ponderosus* BROCCHI may typically have a very similar, or identical number of whorls in specimens differing in their size twice. Neither Korytnica specimens, nor those put in the above synonymy, of *Conus rotundus* attain the height of 50 mm; the holotype is noted as 42.5 mm high. Instead, the specimens of *Conus ponderosus* BROCCHI may grow twice larger, and the

holotype of the species (*see* PINNA & SPEZIA 1978, Pl. 18, Fig. 1) is 92.3 mm high. The specimens *Conus rotundus* differ from the latter one also by their spire outline, dense spiral striation of the whorls, and a characteristic apex projected in a spine-like form; the latter feature is well visible both in the holotype and in the majority of the Korytnica specimens. Although the Miocene specimens from Hungary are supposedly conspecific with those from Korytnica, there is no reason to accept an opinion presented by STRAUSZ (1966, p. 459) that *Conus rotundus* in certain cases is very close to *Conus* (*Chelyconus*) *vindobonensis* PARTSCH.

The species *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER has not hitherto been reported from the Miocene of Poland. It is however inferred, that to this species should certainly be ascribed *Conus ponderosus* noted from Korytnica both by KOWALEWSKI (1930, p. 104), as apparent from his description, and by FRIEDBERG (1938, p. 155) who recognized his specimens as smaller than typical forms.

Conus (*Chelyconus*) *vindobonensis* PARTSCH *in* HÖRNES, 1856 (Pl. 23, Figs 1-6)

partim 1856. *Conus ventricosus* BRONN; M. HÖRNES, pp. 32-33, Pl. 3, Figs 5 and 7; *non* Figs 6 and 8.
1879. *Conus* (*Chelyconus*) *Vindobonensis* PARTSCH; R. HOERNES & M. AUINGER, pp. 48-49.
?1959. *Conus fuscocingulatus* BRONN; P.M. STEVANOVIĆ & V.M. MILOŠEVIĆ, p. 92, Pl. 2, Fig. 4.
partim 1964. *Conus bitorosus* FONTANNES; C.A. HALL Jr., pp. 136-139, Pl. 23, Fig. 19; *non* Figs 1-2, 7-9, 13-17, and 20-25.
1966. *Conus* (*Chelyconus*) *vindobonensis* PARTSCH; L. STRAUSZ, p. 458, Pl. 69, Figs 3-4.

MATERIAL: Nine specimens.
DIMENSIONS: The largest specimen (Pl. 23, Fig. 1) is 45.5 mm high and 24 mm wide.

REMARKS: The studied specimens are fully concordant with the two of four specimens from the Vienna Basin, presented by HÖRNES (1856, Pl. 3, Figs 5 and 7) under the name of "*Conus ventricosus* BRONN", and commented by HOERNES & AUINGER (1879) to had been called earlier *Conus vindobonensis* by PARTSCH (*see* HÖRNES 1856, pp. 32-33).

DAVOLI (1972, p. 87) included these two Viennese specimens into the synonymy of *Conus bitorosus* FONTANNES. To note, DAVOLI put into this synonymy all HÖRNES' (1856) specimens, and omitted recognitions presented by HOERNES & AUINGER (1879). The species *Conus bitorosus* FONTANNES is quite separate, of a distinctly dissimilar morphology (*see* HALL 1964, Pl. 23; DAVOLI 1972, Pl. 3).

The studied specimens from Korytnica seem to be concordant also with one of the specimens presented by HALL (1964, p. 138, Pl. 23, Fig. 19) under the name of *Conus bitorosus* FONTANNES; this very specimen comes from the Aquitaine Basin and it was earlier designated as the holotype of the species *Conus saucatsensis* MAYER-EYMAR (*fide* HALL 1964). To note, another specimen from the collection of C. MAYER-EYMAR, designated by HALL (1964, Pl. 23, Fig. 16) as the paratype of *Conus saucatsensis* MAYER-EYMAR, does not bear a resemblance to any of the Korytnica specimens.

One of the studied specimens from Korytnica (*see* Pl. 23, Fig. 4) displays its spire slightly higher. This difference is too small to substantiate a taxonomic separateness, to more so as HOERNES & AUINGER (1879, p. 48) reported the variability in *Conus vindobonensis* to concern also the spire height.

The species *Conus* (*Chelyconus*) *vindobonensis* PARTSCH has not hitherto been known from the Miocene of Poland.

Family **Terebridae** R.&H. ADAMS, 1853

Genus *Hastula* H.&A. ADAMS, 1853

Hastula cinereides (HOERNES & AUINGER, 1880)

(Pl. 25, Figs 8-9)

1880. *Terebra (Hastula) cinereides* nov.form.; R. HOERNES & M. AUINGER, p. 109, Pl. 12, Fig. 20.
1880. *Terebra (Hastula) striata* BAST.; R. HOERNES & M. AUINGER, p. 110, Pl. 12, Fig. 21.
1906. *Terebra (Hastula)* aff. *striatae* BAST.; O. BOETTGER, p. 21.
1971. *Terebra (Hastula) cinereides* HOERNES et AUINGER; I. CSEPREGHY-MEZNERICS, p. 34, Pl. 18, Fig. 12.

MATERIAL: Two specimens.
DIMENSIONS: The larger specimen (Pl. 25, Fig. 9) is 13.7 mm high and 3.4 mm wide.

REMARKS: The present author's material of this species, the smallest of all auger shells collected at Korytnica, is identical with that presented by BOETTGER (1906) from Kostej in Transylvania; that is, one juvenile specimen with the protoconch, and one adult, worn at the surface. The protoconch in this juvenile is composed of five, almost smooth whorls, identically as in that specimen from Kostej. According to BOETTGER (1906, p. 21), the structure of the protoconch is the basic feature differing his specimens from those coming from the Aquitaine Basin and classified as *Terebra (Hastula) striata* BASTEROT. When comparing the Korytnica specimens with that one described by PEYROT (1931, Pl. 10, Figs 49-50) from Saucats in the Aquitaine Basin, one distinctive feature more may be indicated, namely the density of ribs, the number of which in the studied specimens is 20 on a whorl, against 15 in that one from Saucats.

In the present author's opinion, specimens conspecific with those coming from Kostej and Korytnica were earlier presented from the Vienna Basin by HÖRNES (1856), firstly (1856, p. 129) under the name "*Terebra plicatula* LAMK.", and secondly (1856, p. 667) as "*Terebra cinerea* BAST.". HOERNES & AUINGER (1880, p. 109) objected that latter name and proposed "*Terebra (Hastula) cinereides*"; neverteless, they perplexed the matter by the including to this species also the forms featured by ribs developed in the upper, and fading in the lower, part of every whorl. The specimes bearing ribs running through the whole whorl they classified as "*Terebra (Hastula) striata* BAST.", although they noted an existence of the transitional forms. Consequently, it is thought that the most reasonable is to state, as suggested already by BOETTGER (1906), that both the specimens from Kostej and from Korytnica should be classified as *Hastula cinereides* (HOERNES & AUINGER), whereas the species *Hastula striata* (BASTEROT) is absent from the Miocene of the Paratethys basins.

The species *Hastula cinereides* (HOERNES & AUINGER) has not hitherto been known from the Miocene of Poland.

Genus *Strioterebrum* SACCO, 1891

Subgenus *Strioterebrum* SACCO, 1891

Strioterebrum (Strioterebrum) basteroti (NYST, 1843)

(Pl. 25, Figs 1-3)

1831. *Terebra duplicata*. BRONN; DUBOIS DEMONTPÉREUX, p. 24, Pl. 1, Figs 41-42.
1856. *Terebra Basteroti* NYST; M. HÖRNES, pp. 132-133, Pl. 11, Figs 27-28.

1880. *Terebra Basteroti* NYST; R. HOERNES & M. AUINGER, p. 111, Pl. 12, Figs 15-16.
1928. *Terebra basteroti* NYST; W. FRIEDBERG, p. 563, Pl. 36, Fig. 31.
partim 1931. *Terebra (Myurella) Basteroti* NYST et var.; A. PEYROT, pp. 275-277, Pl. 10, Figs 3-8; *non* Fig. 9.
1952a. *Terebra basteroti* NYST; M. GLIBERT, p. 383, Pl. 14, Fig. 10.
1952b. *Terebra basteroti* NYST; M. GLIBERT, pp. 138-139, Pl. 10, Fig. 9.
1954. *Terebra (Myurella) basteroti* NYST; I. CSEPREGHY-MEZNERICS, pp. 57-58, Pl. 7, Figs 24 and 32.
1960. *Terebra (Strioterebrum) basteroti* NYST; E. KOJUMDGIEVA, p. 217, Pl. 51, Fig. 9.
1966. *Terebra basteroti* NYST; L. STRAUSZ, pp. 389-390, Pl. 4, Figs 32-33.
1971. *Terebra (Myurella) basteroti* (NYST); I. CSEPREGHY-MEZNERICS, p. 34, Pl. 18, Figs 7 and 14.
1984a. *Strioterebrum (Strioterebrum) basteroti* (NYST); A.W. JANSSEN, p. 337, Pl. 13, Fig. 8; Pl. 77, Figs 1-2.

MATERIAL: Twenty specimens.
DIMENSIONS: The largest specimen (Pl. 25, Fig. 3) is 23.5 mm high and 5.2 mm wide.

REMARKS: The studied specimens are undoubtedly conspecific with these coming from Nikolsburg (at present, Mikulov in the Czech Republic) and Potzleinsdorf in the Vienna Basin, and presented by HÖRNES (1856), as well as with those from Kostej in Transylvania, presented by HOERNES & AUINGER (1880). The species *Strioterebrum (Strioterebrum) basteroti* (NYST) is quite common in the Miocene deposits of various regions in Europe, and its characteristic sculpture facilitates its recognition.

The species *Strioterebrum (Strioterebrum) basteroti* (NYST) has not hitherto been known from Korytnica. In the Miocene of Poland it was reported from Rybnica (KOWALEWSKI 1950) and Benczyn (KRACH 1950a). The specimens presented by FRIEDBERG (1928) were coming from Zborów and Tarnoruda, at present in the Ukraine.

Strioterebrum (Strioterebrum) bistriatum (GRATELOUP, 1833) (Pl. 25, Figs 4-5)

1856. *Terebra bistriata* GRAT.; M. HÖRNES, p. 134, Pl. 11, Fig. 29.
1880. *Terebra bistriata* GRAT.; R. HOERNES & M. AUINGER, p. 111, Pl. 12, Fig. 24.
1931. *Terebra (Myurella) bistriata* GRATELOUP; A. PEYROT, pp. 282-283, Pl. 10, Figs 13-15.
1956. *Terebra (Myurella) exbistriata* SACCO; I. CSEPREGHY-MEZNERICS, p. 423, Pl. 12, Figs 7-11.
1960. *Terebra (Myurella) exbistriata* SACCO; E. KOJUMDGIEVA, p. 217, Pl. 51, Figs 10-11.
1966. *Terebra bistriata exbistriata* SACCO; L. STRAUSZ, pp. 390-391, Pl. 4, Figs 38-39.

MATERIAL: Fifteen specimens.
DIMENSIONS: The largest specimen (Pl. 25, Fig. 5) is 30.5 mm high and 5.6 mm wide.

REMARKS: The studied specimens are undoubtedly conspecific with that one coming from Baden in the Vienna Basin, and presented by HÖRNES (1856), as well as with another one, from Lapugy in Transylvania, presented by HOERNES & AUINGER (1880). An opinion of SACCO (1891) about a separateness of the Viennese and Transylvanian specimens from those coming from the Aquitaine Basin does not seem to be reasonable. A similar statement is apparent from remarks notified by STRAUSZ (1966), although he treated Hungarian specimens from Szob as separate, precisely at the subspecies level. Some differences, noted *e.g.* by PEYROT (1931, p. 283) certainly result from a comparison of the not well grown specimens (22.5 mm high) with those grown fully. The largest specimen reported in the recognized references is that one coming from Lapugy and measuring 43 mm in height (*see* HOERNES & AUINGER 1880, p. 111, Pl. 12, Fig. 24).

The species *Strioterebrum* (*Strioterebrum*) *bistriatum* (GRATELOUP) has not hitherto been known from the Miocene of Poland.

Genus *Subula* SCHUMACHER, 1817
Subgenus *Oxymeris* DALL, 1903
Subula (*Oxymeris*) *plicaria* (BASTEROT, 1825)
(Pl. 24, Figs 6-12)

1856. *Terebra fuscata* BROCC.; M. HÖRNES, pp. 128-129, Pl. 11, Figs 15-18 and 26.
1880. *Terebra* (*Acus*) *fuscata* BROCC.; R. HOERNES & M. AUINGER, pp. 106-107, Pl. 12, Fig. 17.
1880. *Terebra* (*Acus*) *Hochstetteri* nov.form.; R. HOERNES & M. AUINGER, p. 107, Pl. 12, Figs 18-19.
1911. *Terebra* (*Subula*) *fuscata* BROCC.; W. FRIEDBERG, pp. 1-3, Pl. 1, Fig. 1.
1931. *Terebra* (*Subula*) *plicaria* BAST. et var. *sublaevigata* PEYR.; A. PEYROT, pp. 283-285, Pl. 10, Figs 21-24 and 34-35.
1931. *Terebra* (*Subula*) *salomacensis* nov.sp.; A. PEYROT, pp. 285-286, Pl. 10, Figs 25-26.
1931. *Terebra* (*Subula*) *modesta* TRIST.; A. PEYROT, p. 287, Pl. 10, Fig. 20.
1938. *Terebra modesta* TRIST.; W. FRIEDBERG, p. 158.
1952a. *Terebra* (*Oxymeris*) *modesta* TRISTAN *in* DEFRANCE; M. GLIBERT, pp. 380-381, Pl. 14, Figs 5a-5b.
1956. *Terebra* (*Subula*) *plicaria* BAST.; I. CSEPREGHY-MEZNERICS, Pl. 12, Figs 5-6.
1963. *Subula* (*Oxymeris*) *modesta* (TRISTAN in DEFR.); S. VENZO & G. PELOSIO, p. 133, Pl. 41, Figs 36-37.
1966. *Terebra* (*Subula*) *fuscata plicaria* BASTEROT; L. STRAUSZ, pp. 394-395, Pl. 5, Figs 8-10.
1966. *Terebra* (*Subula*) *fuscata modesta* TRISTAN (*in* DEFRANCE); L. STRAUSZ, p. 395, Pl. 5, Figs 12-15.
1971. *Terebra* (*Subula*) *plicaria* BASTEROT; I. CSEPREGHY-MEZNERICS, p. 34, Pl. 18, Figs 4-5.
1973. *Terebra* (*Oxymeria*) *modesta* (TRISTAN *in* DEFRANCE); M. BOHN-HAVAS, p. 1126, Pl. 8, Fig. 7.
1977. *Subula* (*Subula*) *plicaria* (BASTEROT); F. DAVOLI, pp. 156-158, Pl. 3, Figs 1-5, 9,and 19.
1977. *Subula* (*Oxymeris*) *modesta* (TRISTAN *in* DEFRANCE); F. DAVOLI, pp. 158-160, Pl. 3, Figs 6-8, 10, 13, 17, and 25.
1990. *Subula* (*Subula*) *plicaria* (BASTEROT); F. DAVOLI, p. 104, Pl. 10, Figs 7-8.

MATERIAL: Eighteen specimens.
DIMENSIONS: The largest specimen (Pl. 24, Fig. 11) is 78 mm high and 19 mm wide; another one (Pl. 24, Fig. 10) is 65 and 15.5 mm, respetively.

REMARKS: Although the material collected at Korytnica is scanty and not well preserved, it allows to recognize its variability, rather great indeed, and expressed by the diverse size and shape (either convex or concave in section) of the shell, and of the last whorl, as well as by the variable ratio in the height of the last whorl to the whole shell, and pronouncess of ornamentation and the place of its fading. Consequently, it is thought that any taxonomic subdivision of the collected material cannot be regarded as reasonable, and the whole collection should be treated as representing one species.

This taxonomic problem has already been met by HÖRNES (1856), who had the distinctly more numerous material that was coming from various localities. The subsequent authors, however, usually inclined to distinguish separate species (*see* synonymy) based, *e.g.* on the differences in ornamentation (primarily, a spiral furrow running parallelly to the suture) occurring either along a greater part of the spire (even to the aperture), or vanishing very early. The so-distinguished "species" were commonly assigned even to different subgenera(!), and the same concerns the taxa established upon an overall shape of the shell, or other details of morphology. In all these cases, even if the extremes differ distinctly, many transitional forms call against any taxonomic separateness. Insofar, nobody studied the pro-

toconch, to ascertain its validity for the taxonomy. The present author has only two juvenile specimens at his disposal; they both bear their protoconch identical (*see* Pl. 24, Fig. 6).

A not less important problem is the name of the discussed species. HÖRNES (1856) labelled the Viennese specimens, and those coming from Transylvania, as *Terebra fuscata* (BROCCHI), but he argued the adaptation of this name by its being in a common use at that time. The type specimen of this species had never been illustrated, and it happened almost recently that a lectotype was illustrated in the form of a photo (PINNA & SPEZIA 1978, Pl. 11, Fig. 2). This photo, however, shows a specimen distinctly different from all those presented by HÖRNES (1856), and from all the Korytnica specimens studied (*comp.* VENZO & PELOSIO 1963, Pl. 41, Fig. 38; CAPROTTI & VESCOVI 1973, Pl. 3, Fig. 1; JANSSEN 1984, Pl. 78, Fig. 1). The two other concurrent names, namely *Terebra plicaria* BASTEROT, 1825, and *Terebra modesta* TRISTAN *in* DEFRANCE, 1829, are treated by the present author as the synonyms, of which the first one has a priority.

The species *Subula* (*Oxymeris*) *plicaria* (BASTEROT) was reported from Korytnica by KOWALEWSKI (1930) and FRIEDBERG (1911, 1938). In the Miocene of Poland it is also known from Gaszowice (KRACH 1939) and Zgłobice (URBANIAK 1974).

Genus *Terebra* BRUGUIÈRE, 1789
Subgenus *Terebra* BRUGUIÈRE, 1789
Terebra (*Terebra*) *sophiae* HALAVATS, 1884
(Pl. 25, Figs 6-7)

1966. *Terebra sophiae* HALAVATS; L. STRAUSZ, pp. 390-391, Pl. 4, Fig. 7.

MATERIAL: Five specimens.

DIMENSIONS: The largest specimen (Pl. 25, Fig. 7) is 20 mm high and 4.5 mm wide.

REMARKS: A specific assignation of the collected specimens bears serious doubts. They seem to be conspecific with a specimen presented by STRAUSZ (1966), from Várpalota in Hungary, as *Terebra sophiae* HALAVATS, the species established upon a unique specimen from Lapugy in Transylvania, and hitherto unknown from other Neogene localities in Europe.

The species *Terebra* (*Terebra*) *sophiae* HALAVATS has therefore been unknown also from the Miocene of Poland.

Subgenus *Myurella* HINDS *in* SOWERBY, 1845
Terebra (*Myurella*) *acuminata* BORSON, 1820
(Pl. 24, Figs 1-5)

1856. *Terebra pertusa* BAST.; M. HÖRNES, pp. 131-132, Pl. 11, Figs 19-21.

1880. *Terebra* (*Acus*) *pertusa* BAST.; R. HOERNES & M. AUINGER, p. 108.

1880. *Terebra acuminata* BORSON; R. HOERNES & M. AUINGER, p. 110, Pl. 12, Fig. 13.

1891. *Terebrum acuminatum* (BORS.); F. SACCO, p. 18, Pl. 1, Figs 29-33.

1891. *Terebrum postneglectum* SAC.; F. SACCO, p. 29, Pl. 1, Figs 66-68.

1911. *Terebra acuminata* BORS.; W. FRIEDBERG, pp. 4-5, Pl. 1, Figs 2-3.

?1931. *Terebra pseudopertusa* nom. mut., et var.; A. PEYROT, pp. 271-274, Pl. 10, Figs 27-28, 30, 32, 36, 40, and 43.

1952a. *Terebra acuminata* BORSON; M. GLIBERT, pp. 381-382, Pl. 14, Figs 6a-6b.

1952b. *Terebra acuminata* BORSON forme *acuminata* s.s.; M. GLIBERT, p. 137, Pl. 10, Fig. 7b.

1952b. *Terebra neglecta* MICHELOTTI; M. GLIBERT, p. 138, Pl. 10, Fig. 8.

1954. *Terebra neglecta* MICHT.; I. CSEPREGHY-MEZNERICS, p. 57, Pl. 7, Figs 23 and 33.

1956. *Terebra acuminata* BORSON; I. CSEPREGHY-MEZNERICS, Pl. 12, Fig. 12.

1960. *Terebra (Terebra) acuminata* BORSON et var.; E. KOJUMDGIEVA, p. 216, Pl. 51, Figs 5-7.

1960. *Terebra (Terebra) neglecta* (MICHELOTTI); E. KOJUMDGIEVA, p. 217, Pl. 51, Fig. 8.

1971. *Terebra neglecta* MICHT.; I. CSEPREGHY-MEZNERICS, p. 34, Pl. 18, Fig. 8.

1973. *Terebra (Terebra) acuminata* BORSON; E. CAPROTTI & M. VESCOVI, p. 185, Pl. 3, Fig. 2.

1973. *Terebra (Terebra) postneglecta* (SACCO); E. CAPROTTI & M. VESCOVI, p. 185, Pl. 3, Fig. 3.

1976. *Terebra (Terebra) acuminata* BORSON; G. PAVIA, p. 157, Pl. 2, Figs 15-16 [= lectotype and paralectotype of the species].

1977. *Terebra (Myurellina) neglecta* MICHELOTTI; F. DAVOLI, pp. 165-167, Pl. 4, Figs 1 and 4-7.

1984a. *Terebra (Myurellina) acuminata neglecta* MICHELOTTI; A.W. JANSSEN, p. 340, Pl. 13, Fig. 11; Pl. 77, Figs 9-10.

MATERIAL: Seven juvenile and six adult specimens.

DIMENSIONS: The largest specimen, displaying 17 whorls (Pl. 24, Fig. 4), is 53 mm high and 8.5 mm wide; another one is 9.3 mm wide.

REMARKS: The specimens from Korytnica classified in this taxon display a variable pronounceness of their ornamentation, particularly as concerns the slightly crescent axial ribs and, to a lesser extent, the spiral furrow running parallelly to the suture and separating a narrow band (in German: *Nahtbinde*) from the rest of the whorl. Extremely, the axial ribs, except of the juvenile part of the shell, fade completely, and then this band becomes smooth (*see* Pl. 24, Fig. 2). When the ribs are more or less pronouncedly developod, the band acquires a shape of the spiral row of bead-like nodes (*see* Pl. 24, Fig. 4). To note, all the studied specimens do not vary in their shell slenderness and, thus, in the height of their particular whorls. The latter recognition is amazing to some extent, because the specimen formerly described from Korytnica by FRIEDBERG (1911) had 17 whorls,and measured only 41 mm in height by 8.5 mm in width. The largest of the herein presented specimens (*see* above) displays also 17 whorls at the similar width, but it is 53 mm high. Apparently thus, the FRIEDBERG's specimen possessed lower whorls, possibly such ones as did the specimen from Bujtur in Transylvania, presented by HOERNES & AUINGER (1880, Pl. 12, Fig. 13). All adult specimens in the present author's collection bear on their columellas two folds (the anterior one of which is sharper at the margin); all juveniles display the protoconch identical to that of the illustrated specimen (Pl. 24, Fig. 1).

A taxonomic assignation of the studied specimens involves some problems. Undoubtedly, these of less pronounced ornamentation are concordant with the lectotype and paralectotype of the species *Terebra acuminata* BORSON, presented in photographs by PAVIA (1976, Pl. 2, Figs 15-16). Specimens of more pronounced ribs, and especially those with a distinct row of bead-like nodes, are usually classified as *Terebra neglecta* MICHELOTTI. The presence of numerous transitional forms (*see also* GLIBERT 1952b, p. 137) call against any separateness of these two, and of some relative species (*see* synonymy). The present author regards the differences in ornamentation, overall shape, and whorl parameters to result from intraspecific variability; to note, JANSSEN (1984a) treats *Terebra neglecta* as a subspecies of *Terebra acuminata*. Moreover, various changes in ornamentation of the shell may also appear during the ontogeny (*see* Pl. 24, Fig. 3). In younger parts of the shell, the ornamentation is more pronounced and the band more distinctly beaded, whereas in distal parts the ribs become thinner, and rather more densely spaced, as it is well exemplified by the specimens coming from Winterswijk in the Netherlands, presented by JANSSEN (1984a, Pl. 77, Figs 9-10).

According to DAVOLI (1977) and JANSSEN (1984a), the discussed species should be ascribed to the subgenus *Myurellina* BARTSCH. In the present author's opinion, this view is not the best suited, since these species are much more similar to the present-day species living in the Moluccas, *Terebra* (*Myurella*) *myura* LAMARCK, that is the type species of the subgenus *Myurella*, than to the species coming from the Galapagos Archipelago, *Terebra* (*Myurellina*) *ornata* GRAY, that is the type species of the subgenus *Myurellina* BARTSCH. An overall shape of the shell differs distinctly these two type species (*see* WENZ 1943, pp.1485 and 1488).

The species *Terebra* (*Myurella*) *acuminata* BORSON was reported from Korytnica by KONTKIEWICZ (1882) and FRIEDBERG (1911). In the Miocene of Poland it is also known from Gliwice Stare (KRACH 1954), Gaszowice (KRACH 1939), Rybnica (KOWALEWSKI 1950), and Łychów (KRACH 1981).

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PLATES 1 – 25

PLATE 1

Family **Nassariidae**

Page

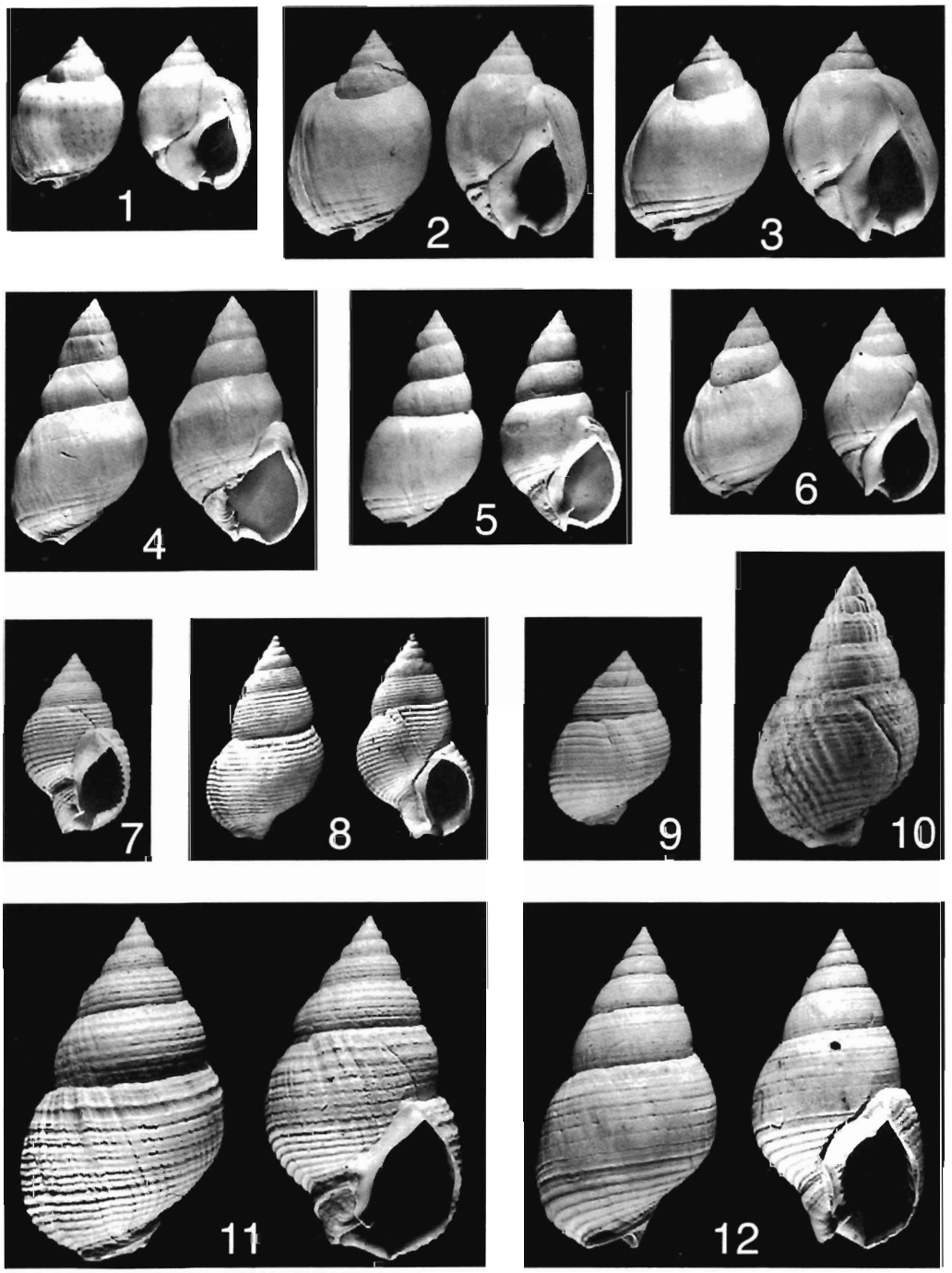
Figs **1–3** — *Sphaeronassa schoenni* (HOERNES & AUINGER), × 1.7; Specimens No. U.W., BkK–G671-673 7

Figs **4–6** — *Sphaeronassa dujardini* (DESHAYES), × 1.7; Specimens No. U.W., BkK–G668-670 6

Figs **7–8** — *Hinia* (*?Uzita*) *grateloupi* (HÖRNES), × 1.7; Specimens No. U.W., BkK–G702-703 17

Figs **9–12** — *Hinia* (*?Uzita*) *rosthorni* (PARTSCH *in* HÖRNES), × 1.7; Specimens No. U.W., BkK–G698-701 17

All photos taken by B. DROZD, M.Sc.



Family **Nassariidae**

PLATE 2

Family **Nassariidae**

Page

Figs **1–2** — *Hinia* (*Uzita*) *limata* (CHEMNITZ), × 1.7; Specimens No. U.W., BkK–G695-696 15

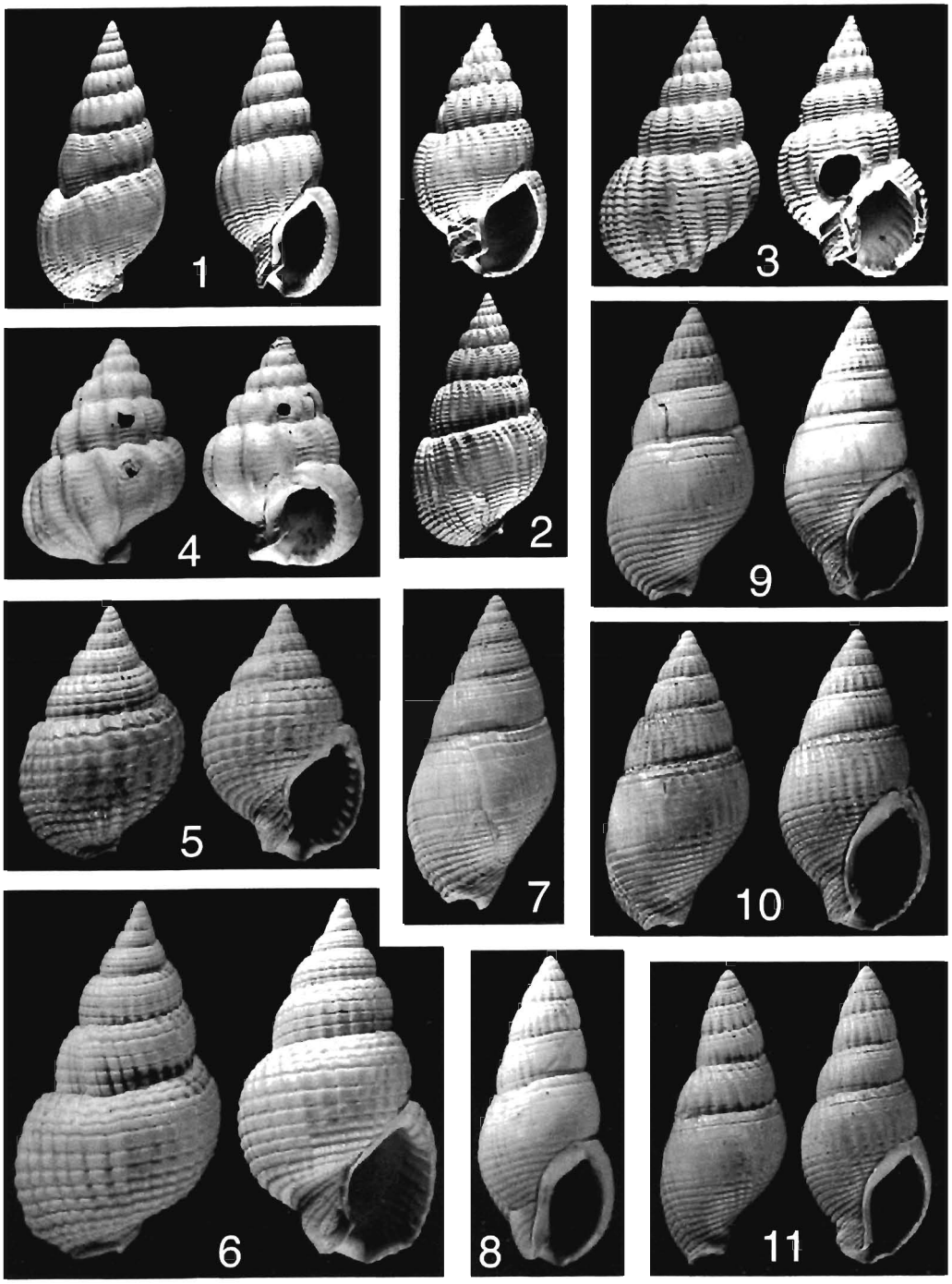
Fig. **3** — *Hinia* (*Uzita*) *subprismatica* (HOERNES & AUINGER), × 1.7; Specimen No. U.W., BkK–G697 16

Fig. **4** — *Hinia* (*Uzita*) *exspectata* sp.n., × 1.7; **holotype**; Specimen No. U.W., BkK–G704 16

Figs **5–6** — *Hinia* (*Hinia*) *korytnicensis* sp.n., × 3.5; Fig. 6 presents the **holotype**; Specimens No. U.W., BkK–G687-688 12

Figs **7–11** — *Hinia* (*Telesco*) *restitutiana* (FONTANNES), × 3.5; Specimens No. U.W., BkK–G690-694 14

All photos taken by B. DROZD, M.Sc.



Family **Nassariidae**

PLATE 3

Family **Nassariidae**

Page

Figs **1–2** — *Hinia* (*Hinia*) *serraticosta* (BRONN), × 6.8; Specimens No. U.W., BkK–G674-675 10

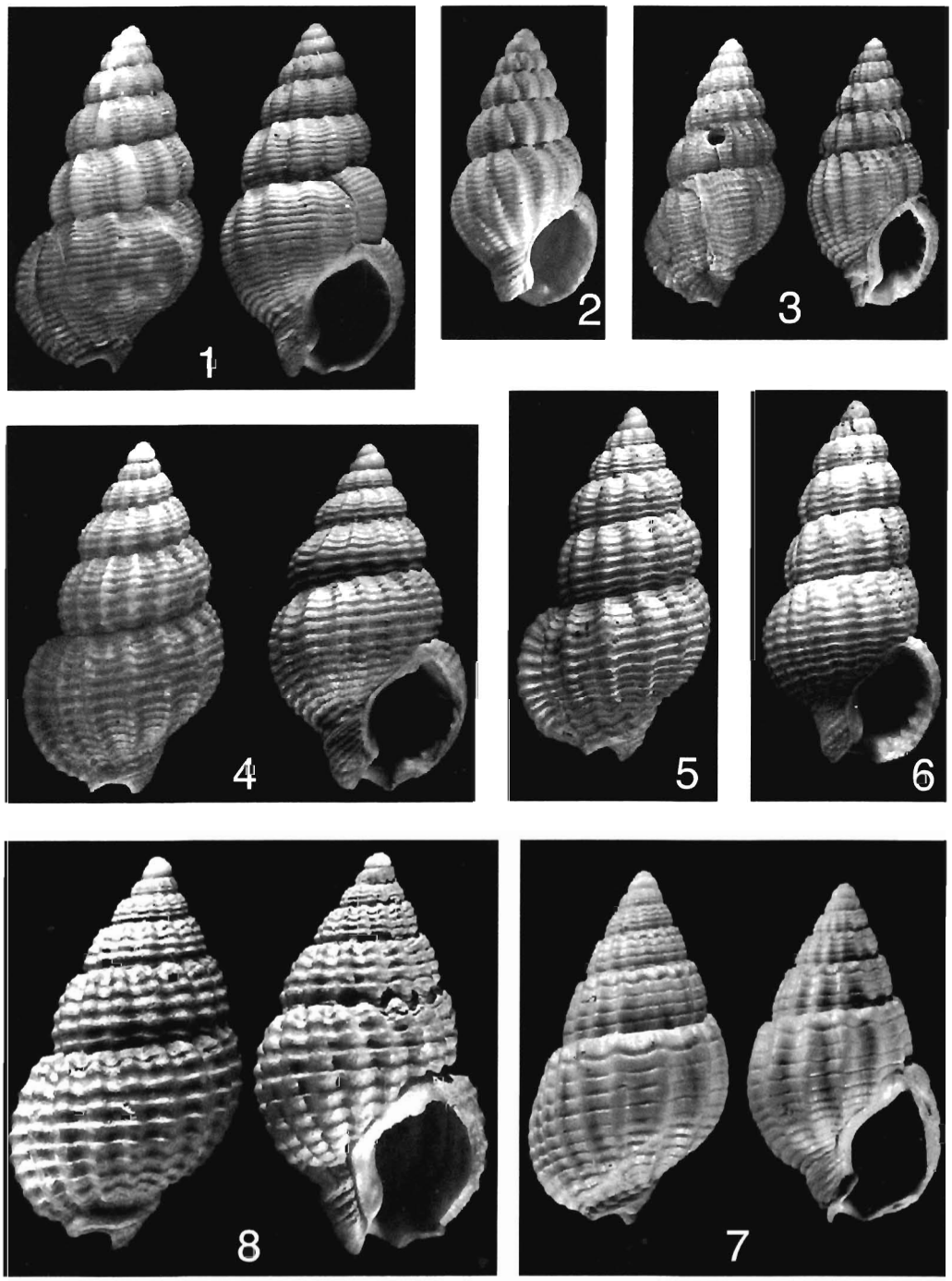
Fig. **3** — *Hinia* (*Hinia*) *vulgatissima* (MAYER), × 3.5; Specimen No. U.W., BkK–G682 12

Figs **4–6** — *Hinia* (*Hinia*) *daciae* (HOERNES & AUINGER), × 6.8; Specimens No. U.W., BkK–G683-685 .....

Fig. **7** — *Hinia* (*Hinia*) sp., × 6.8; Specimen No. U.W., BkK–G689 . 8

Fig. **8** — *Hinia* (*Hinia*) *notterbecki* (HOERNES & AUINGER), × 6.8; Specimen No. U.W., BkK–G686 9

All photos taken by B. DROZD, M.Sc.



Family **Nassariidae**

PLATE 4

Family **Nassariidae**

Page

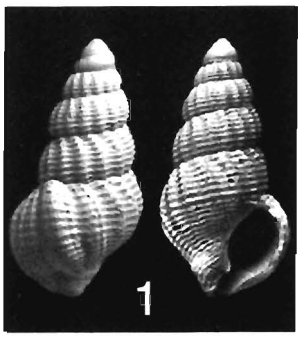
Fig. **1** — *Hinia* (*Hinia*) *striaticosta* (BOETTGER), × 6.8; Specimen No. U.W., BkK–G676 11

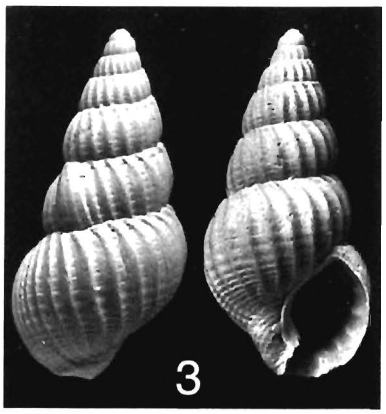
Figs **2–5** — *Hinia* (*Hinia*) *styriaca* (AUINGER *in* HILBER), × 6.8; Specimens No. U.W., BkK–G677-680 11

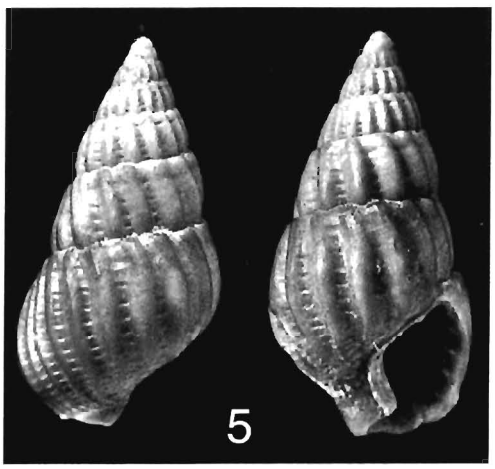
Fig. **6** — *Hinia* (*Hinia*) *adae* (BOETTGER), × 6.8; Specimen No. U.W., BkK–G681 8

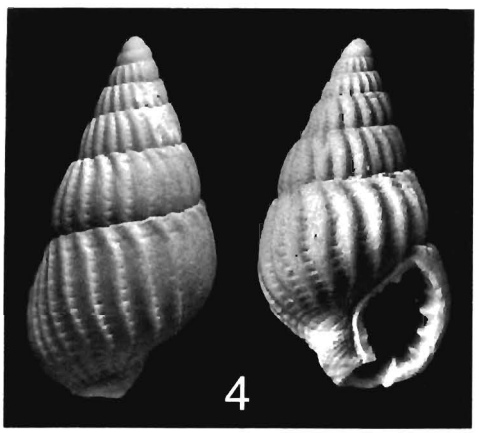
Fig. **7** — *Dorsanum cibori* sp.n., × 6.8; **holotype**; Specimen No. U.W., BkK–G715 21

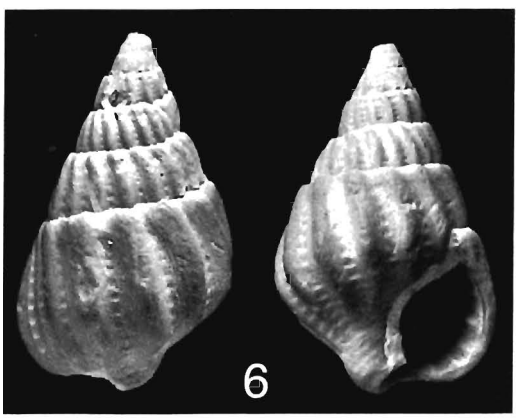
All photos taken by B. DROZD, M.Sc.

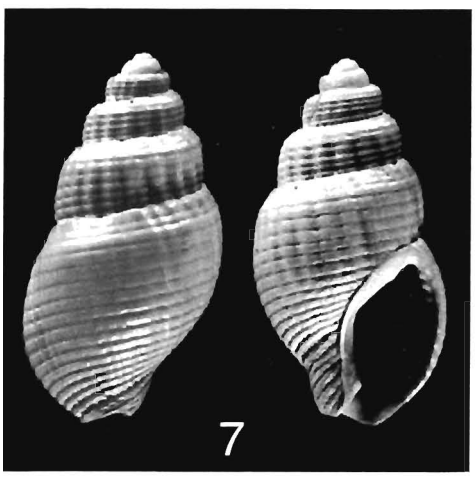












Family **Nassariidae**

PLATE 5

Family **Nassariidae**

Page

Figs **1–3** — *Cyllene* (*Cyllene*) *desnoyersi* (BASTEROT), × 1.7; Specimens No. U.W., BkK–G708-710 19

Figs **4–5** — *Hebra* cf. *echinata* (HÖRNES), × 3.5; Specimens No. U.W., BkK–G711-712 20

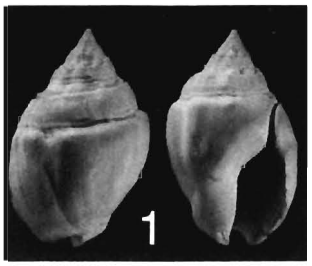
Fig. **6** — *Amyclina kostejana* (BOETTGER), × 6.8; Specimen No. U.W., BkK–G705 19

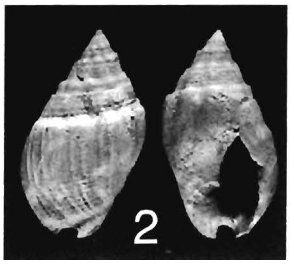
Figs **7–8** — *Amyclina auingeri* (HÖRNES *in* HOERNES & AUINGER), × 6.8; Specimens No. U.W., BkK–G706-707 18

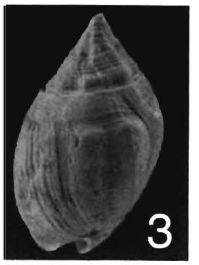
Fig. **9** — *Dorsanum cerithiforme* (HILBER), × 3.5; Specimen No. U.W., BkK–G713 21

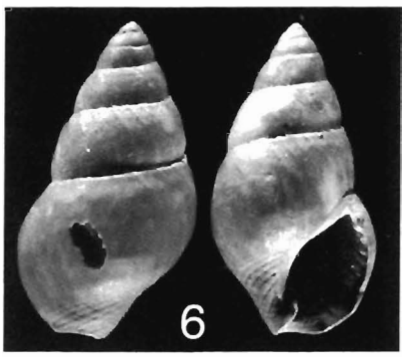
Fig. **10** — *Dorsanum exageratum* PEYROT, × 6.8; Specimen No. U.W., BkK–G714 21

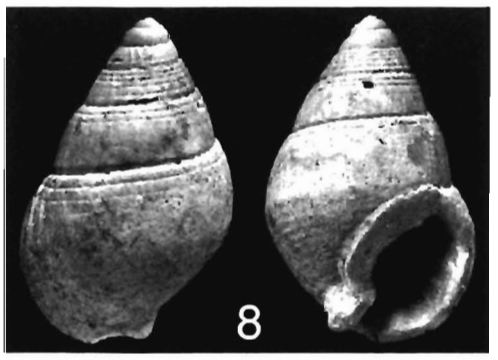
All photos taken by B. DROZD, M.Sc.

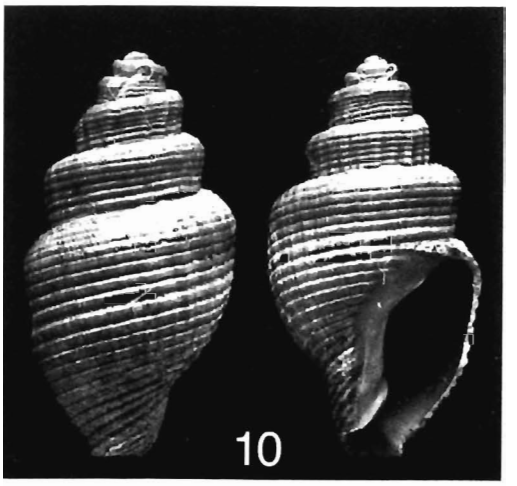












Family **Nassariidae**

PLATE 6

Family **Olividae**

Page

Figs **1–11** — *Ancilla* (*Baryspira*) *glandiformis* (LAMARCK); Fig. 1 × 6.8, Figs 2–4 × 3.5, Fig. 5 × 1.7, Figs 6–11 × 0.85; Specimens No. U.W., BkK–G723-733 24

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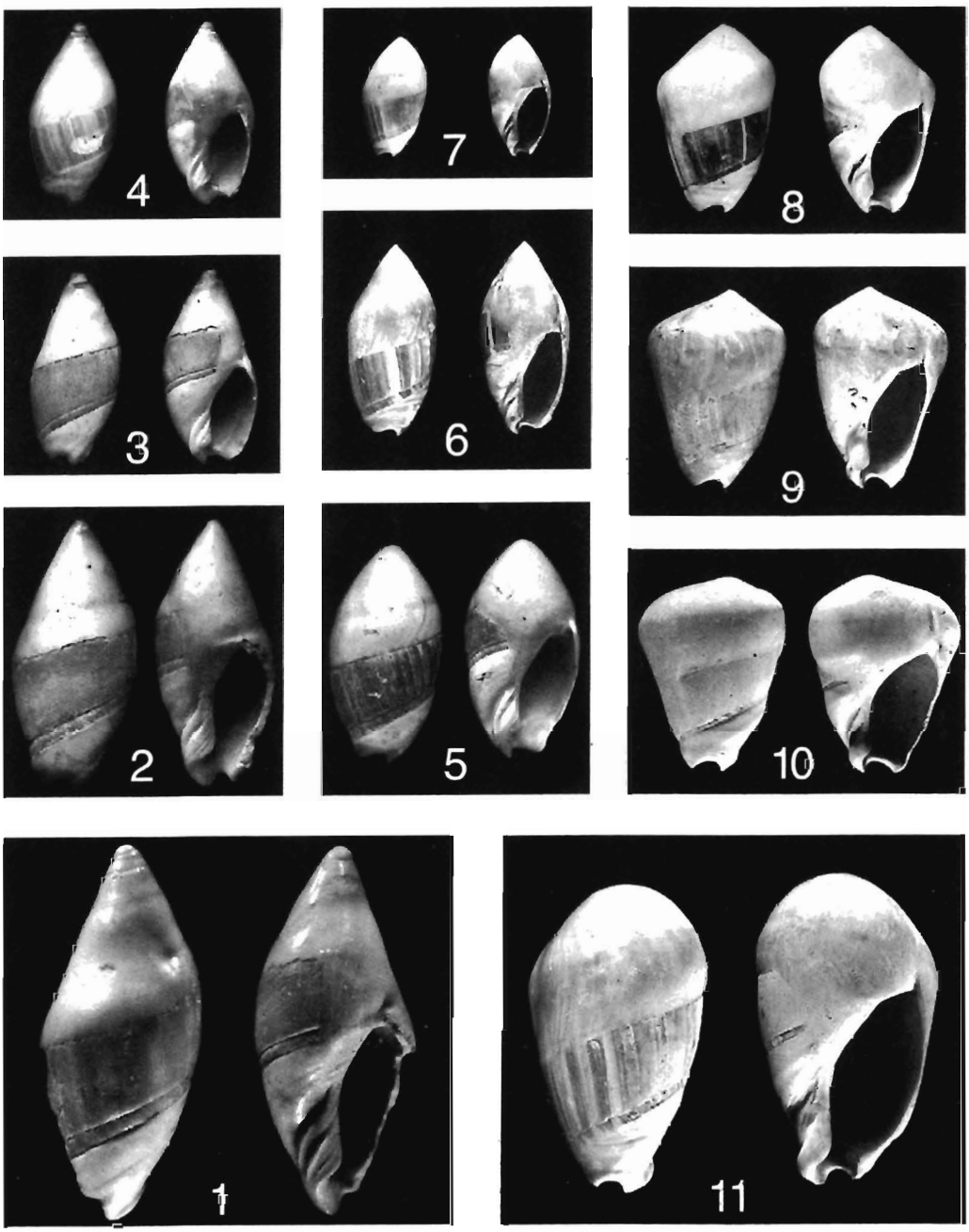

Family **Olividae**

PLATE 7

Families **Olividae** and **Mitridae**

Page

Figs **1–2** — *Oliva* (*Neocylindrus*) *dufresnei* BASTEROT, × 1.7; Specimens No. U.W., BkK–G717-718 22

Figs **3–4** — *Agaronia*? *vindobonensis* (CSEPREGHY-MEZNERICS), × 3.5; Specimens No. U.W., BkK–G719-720 23

Figs **5–6** — *Ancillarina subcanalifera* (D'ORBIGNY), × 1.7; Specimens No. U.W., BkK–G734-735 27

Figs **7–8** — *Ancilla* (*Baryspira*) *obsoleta* (BROCCHI), × 0.85; Specimens No. U.W., BkK–G721-722 26

Fig. **9** — *Mitra* (*Tiara*) *scrobiculata* (BROCCHI), × 0.85; Specimen No. U.W., BkK–G723 28

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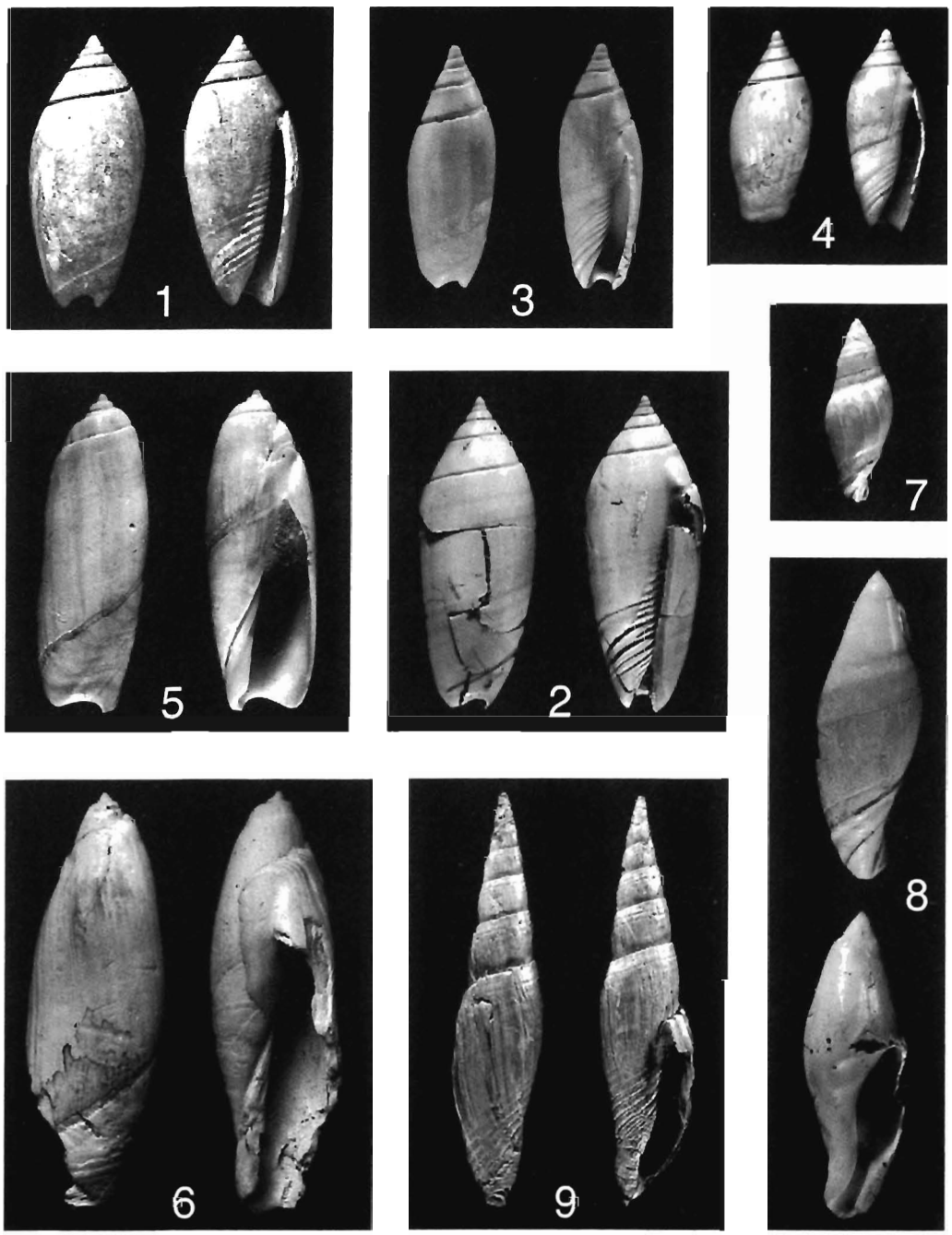


Families **Olividae** and **Mitridae**

PLATE 8

Family **Mitridae**

Page

Figs **1–2** — *Mitraria* (*Mitraria*) *friedbergi* (COSSMANN), × 1.7; Specimens No. U.W., BkK–G727-728 30

Figs **3–4** — *Mitraria* (*Mitraria*) *goniophora* (BELLARDI), × 1.7; Specimens No. U.W., BkK–G731-732 30

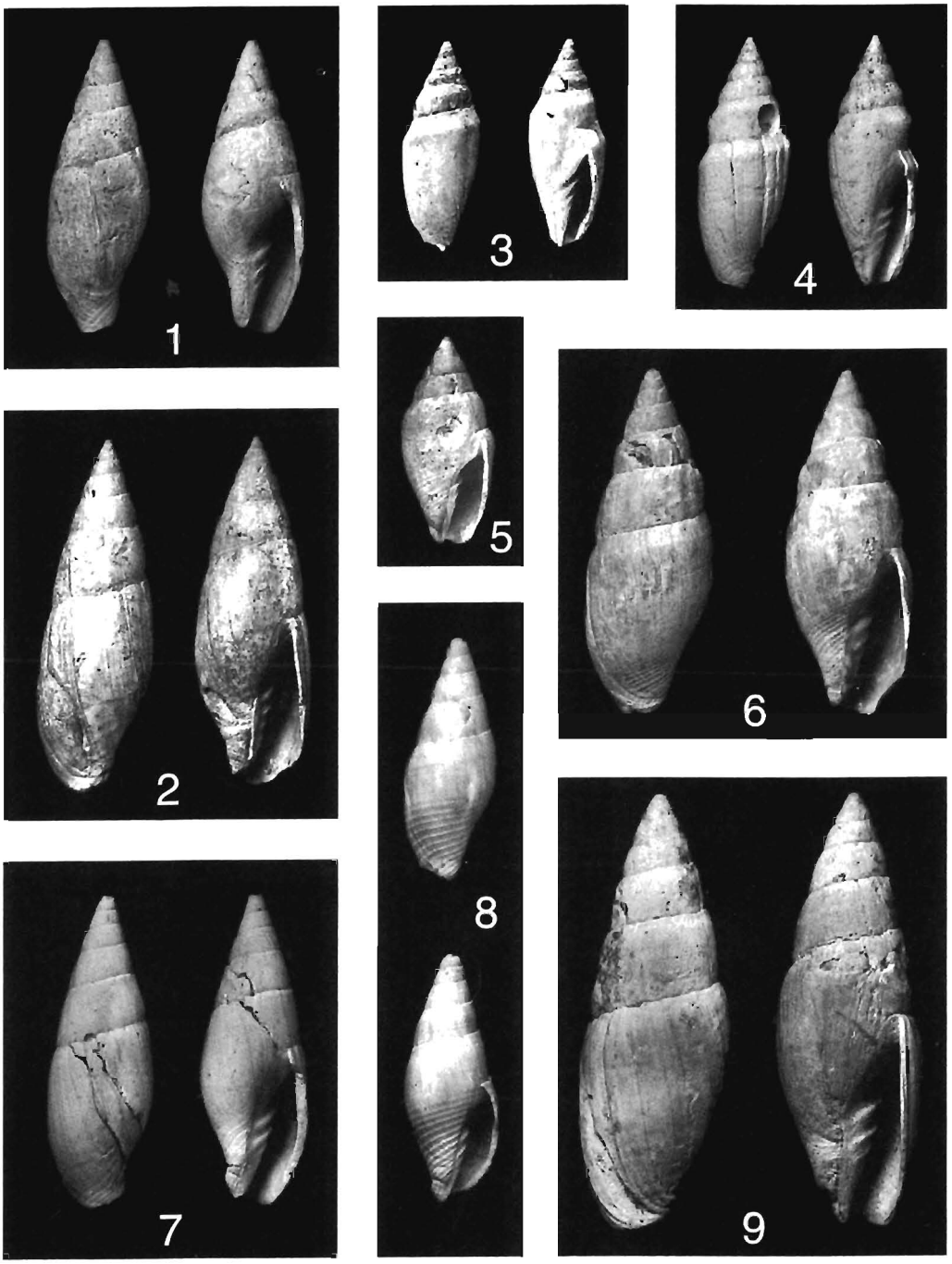
Fig. **5** — *Mitraria* (*Mitraria*) *rudolfi* nom.n., × 1.7; Specimen No. U.W., BkK–G733 33

Fig. **6** — *Mitraria* (*Mitraria*) *mathiasi* nom.n., × 1.7; Specimen No. U.W., BkK–G734 32

Figs **7–8** — *Mitraria* (*Mitraria*) *bouei* (HOERNES & AUINGER); Fig. 7 × 1.7, Fig. 8 × 3.5; Specimens No. U.W., BkK–G729-730 29

Fig. **9** — *Mitraria* (*Mitraria*) *repleta* (BELLARDI), × 1.7; Specimen No. U.W., BkK–G726 32

Photos *1-4* and *6-9* taken by B. DROZD, M.Sc.
Photo *5* taken by S. KOLANOWSKI



Family **Mitridae**

PLATE 9

Family **Mitridae**

Page

Figs **1–2** — *Vexillum* (*Vexillum*) *leucozona* (ANDRZEJOWSKI), × 3.5; Specimens No. U.W., BkK–G736-737 35

Figs **3–5** — *Vexillum* (*Vexillum*) *cognatum* (BELLARDI); Figs 3–4 × 3.5, Fig. 5 × 6.8; Specimens No. U.W., BkK–G738-740 34

Fig. **6** — *Vexillum* (*Vexillum*) *paraleucozona* (BOETTGER), × 6.8; Specimen No. U.W., BkK–G741 35

Fig. **7** — *Vexillum* (*Vexillum*) *pseudavellana* (BOETTGER), × 6.8; Specimen No. U.W., BkK–G742 36

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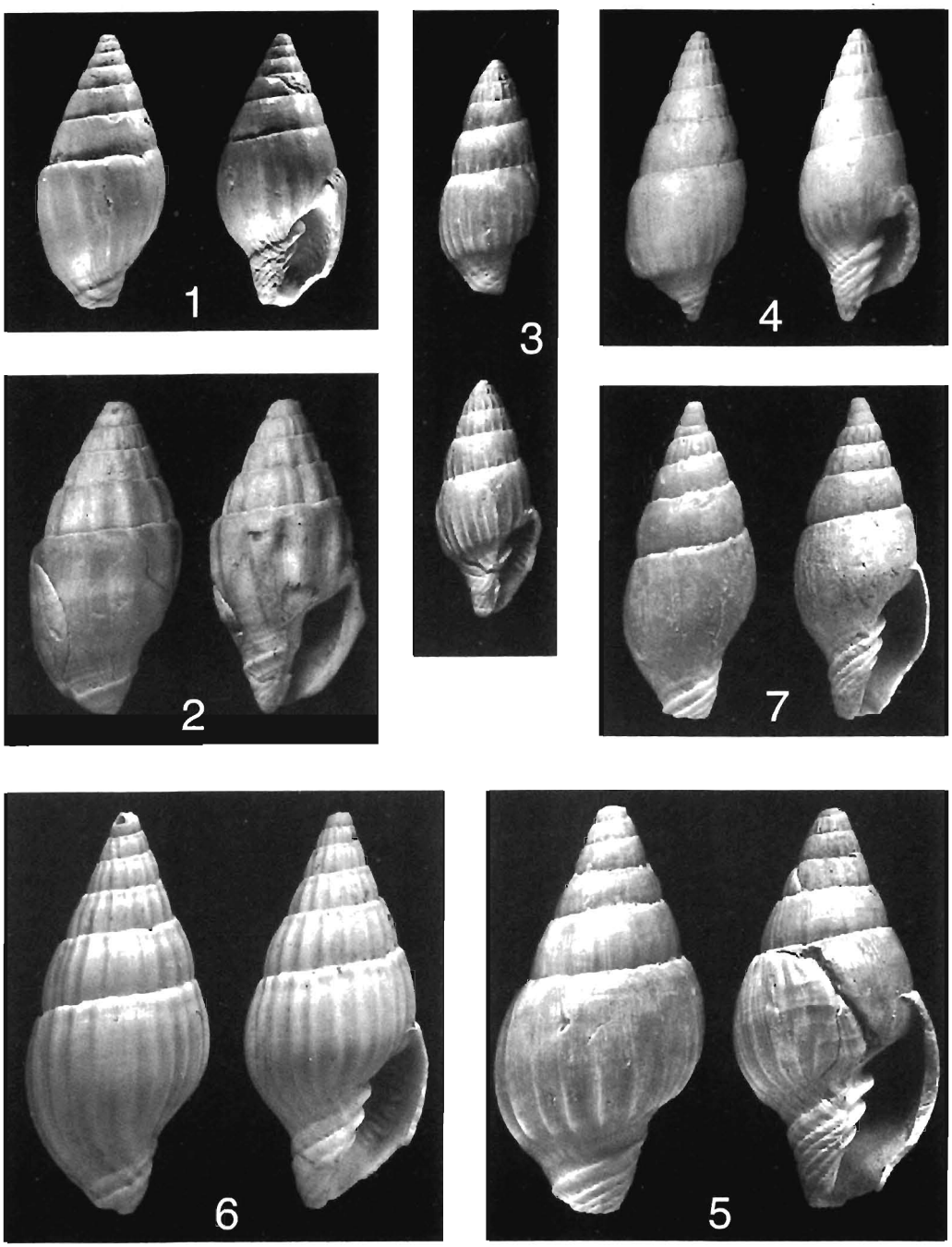

Family **Mitridae**

PLATE 10

Family **Mitridae**

Page

Figs **1–2** — *Vexillum* (*Costellaria*) *vexans* BOETTGER, × 6.8; Specimens No. U.W., BkK–G748-749 37

Figs **3–7** — *Vexillum* (*Costellaria*) *pseudorecticosta* (BOETTGER), × 6.8; Specimens No. U.W., BkK–G743-747 36

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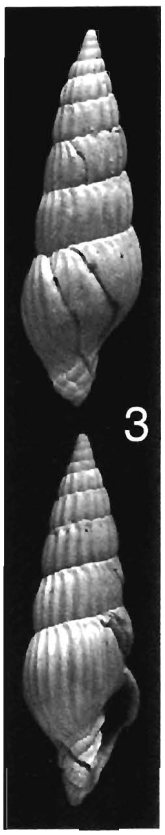

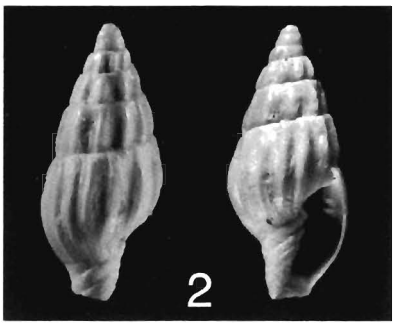

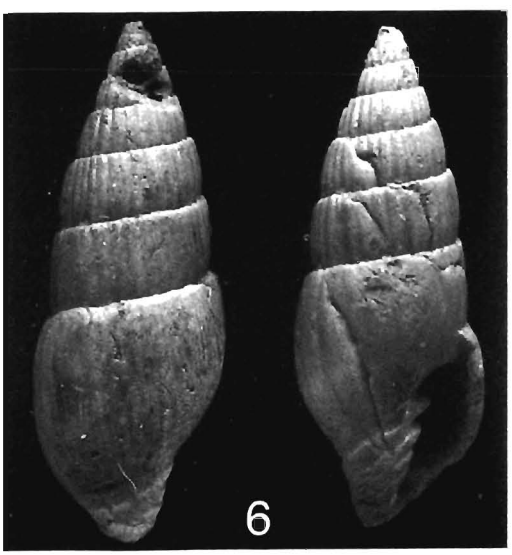

Family **Mitridae**

PLATE 11

Family **Mitridae**

Page

Fig. **1** — *Thala lapugyensis* (HOERNES & AUINGER), × 6.8; Specimen No. U.W., BkK–G751 38

Fig. **2** — *Thala obsoleta* (BROCCHI), × 6.8; Specimen No. U.W., BkK–G755 39

Fig. **3** — *Vexillum* (*Uromitra*) *pseudocupressinum* nom.n., × 3.5; Specimen No. U.W., BkK–G750 37

Figs **4–6** — *Thala sturi* (HOERNES & AUINGER), × 6.8; Specimens No. U.W., BkK–G752-754 39

Fig. **7** — *Mitraria* (*Mitraria*) cf. *austriaca* (CSEPREGHY-MEZNERICS), × 6.8; Specimen No. U.W., BkK–G735 33

Fig. **8** — *Mitra* (*Tiara*) sp., × 3.5; Specimen No. U.W., BkK–G725 29

Fig. **9** — *Mitra* (*Tiara*) *bonellii* BELLARDI, × 1.7; Specimen No. U.W., BkK–G724 28

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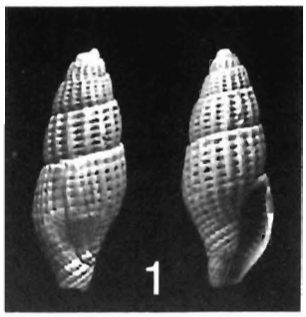

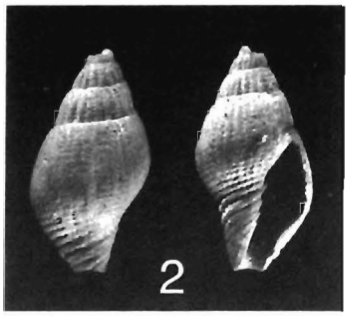

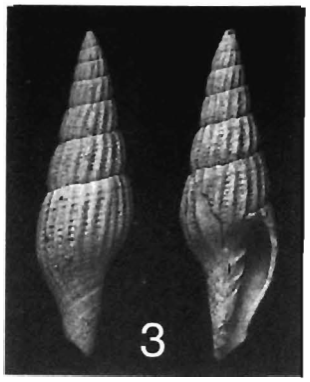

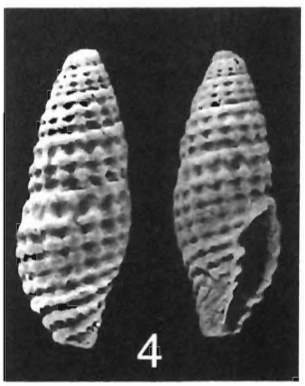

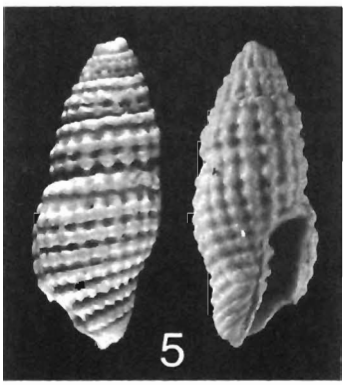

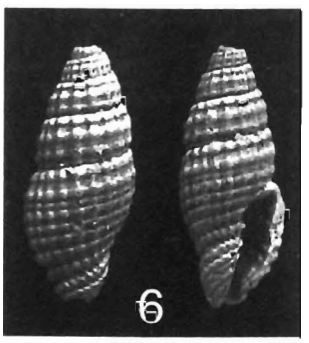

Family **Mitridae**

PLATE 12

Family **Vasidae**

Page

Figs **1–5** — *Tudicla* (*Tudicla*) *rusticula* (BASTEROT); Fig. 1 × 6.8, Figs 2-5 × 0.85; Specimens No. U.W., BkK–G756-760 . . 40

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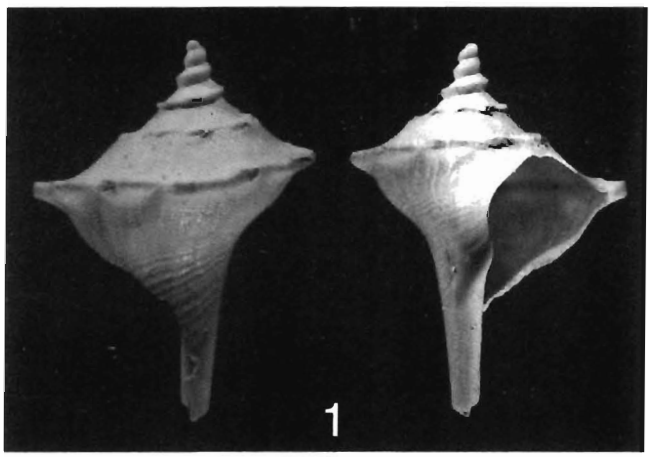

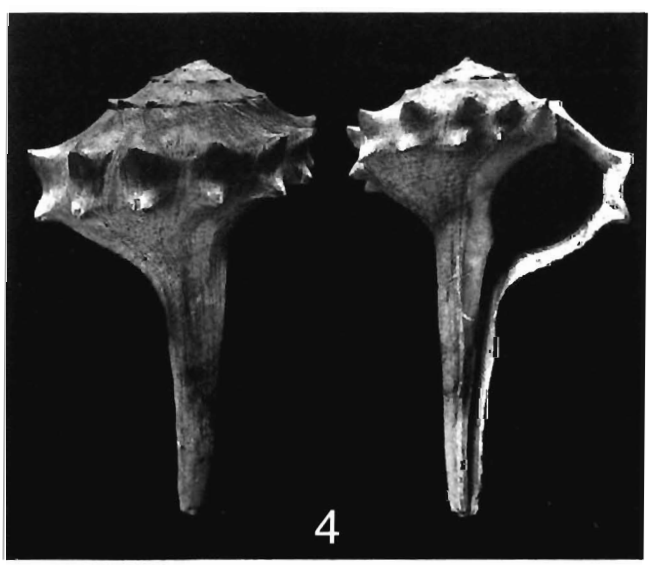

Family **Vasidae**

PLATE 13

Family **Volutidae**

Page

Figs **1–5** — *Lyria* (*Lyria*) *picturata* (GRATELOUP); Fig. 1 × 3.5, Figs 2 and 5 × 0.85, Fig. 3 × 0.68, Fig. 4 × 1.05; Specimens No. U.W., BkK–G767-771 41

Figs **6–9** — *Athleta* (*Athleta*) *haueri* (HÖRNES); Fig. 6 × 6.8, Figs 7–9 × 0.85; Specimens No. U.W., BkK–G763-766 40

Figs **10–11** — *Athleta* (*Athleta*) *rarispina* (LAMARCK), × 0.85; Specimens No. U.W., BkK–G761-762 41

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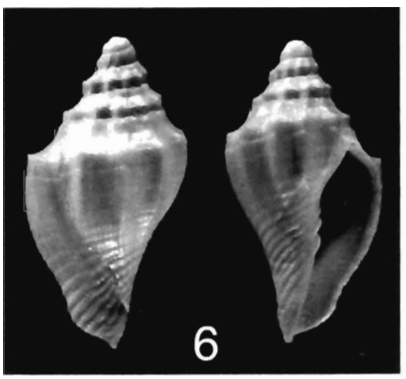

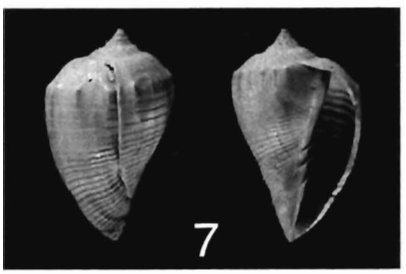

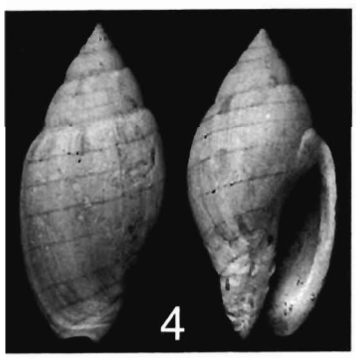

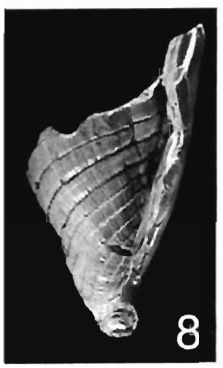

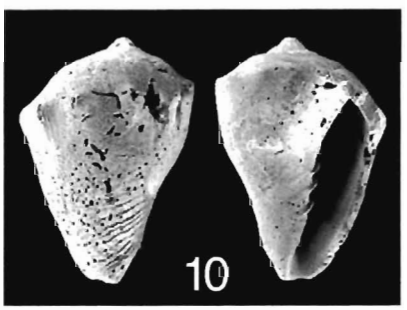

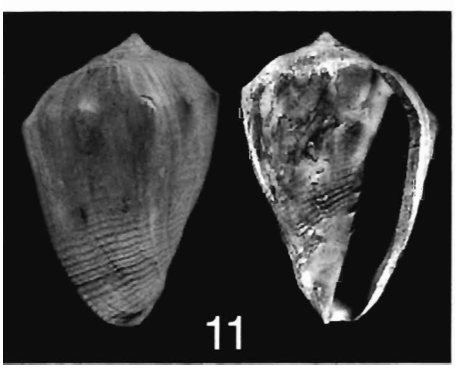

Family **Volutidae**

PLATE 14

Family **Cancellariidae**

Page

Fig. **1** — *Cancellaria* (*Merica*) *jansseni* nom.n., × 1.7; Specimen No. U.W., BkK–G778 44

Figs **2–6** — *Cancellaria fenestrata* EICHWALD; Figs 2–5 × 1.7, Fig. 6 × 6.8; Specimens No. U.W., BkK–G773-777 43

Fig. **7** — *Cancellaria* (*Bivetiella*) *neuvillei* PEYROT, × 1.7; Specimen No. U.W., BkK–G772 42

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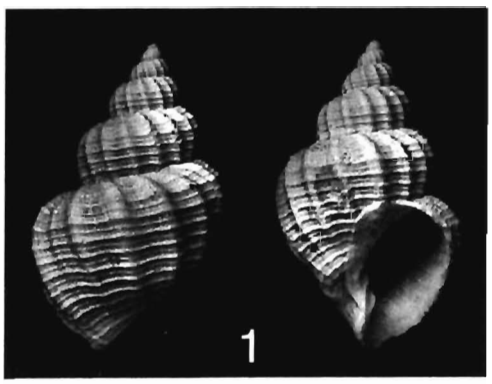

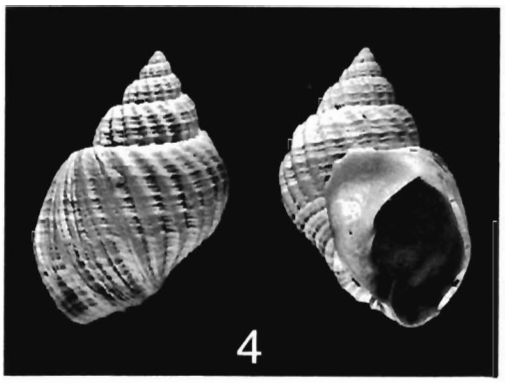

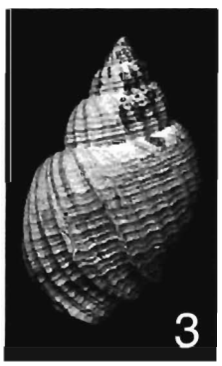

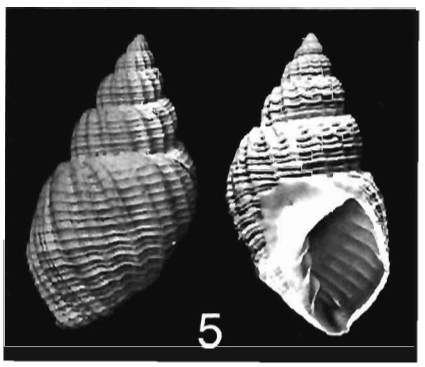

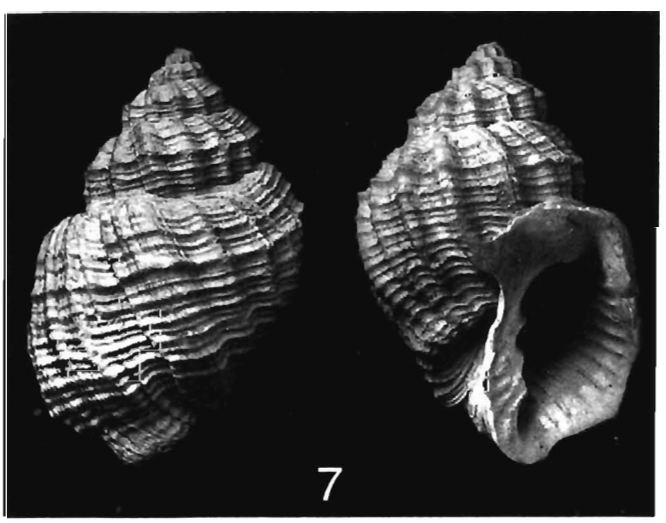

Family **Cancellariidae**

PLATE 15

Family **Cancellariidae**

Page

Fig. 1 — *Trigonostoma spiniferum* (GRATELOUP), × 1.7; Specimen No. U.W., BkK–G785 46

Figs **2–3** — *Trigonostoma scrobiculatum* (HÖRNES), × 1.7; Specimens No. U.W., BkK–G781-782 46

Figs **4–5** — *Trigonostoma puschi* (HOERNES & AUINGER), × 1.7; Specimens No. U.W., BkK–G779-780 45

Figs **6–7** — *Trigonostoma exgeslini* SACCO, × 1.7; Specimens No. U.W., BkK–G783-784 45

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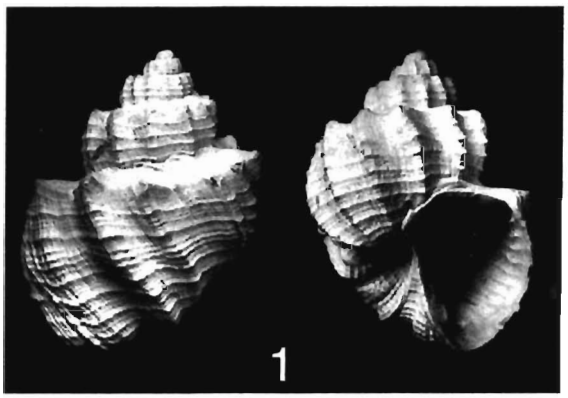

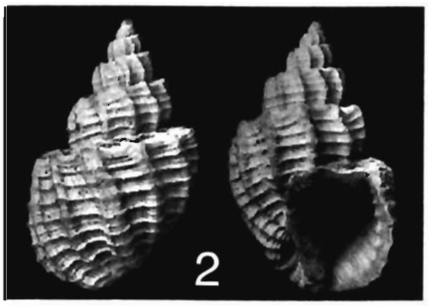

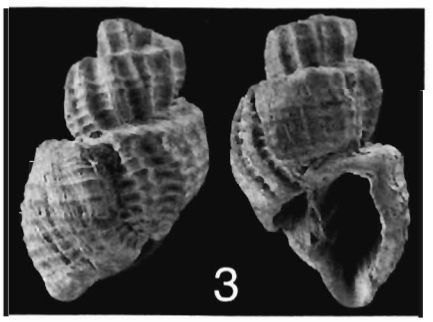

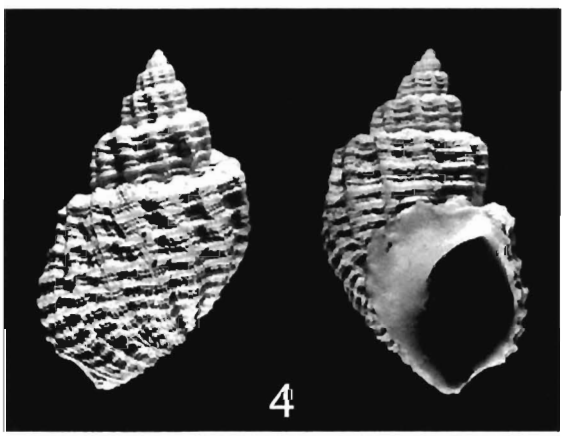

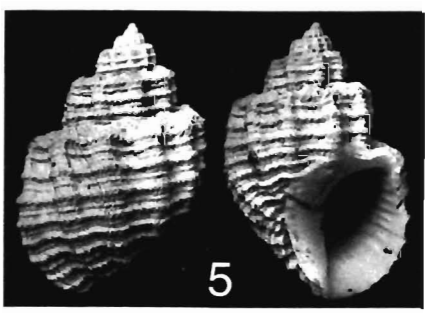

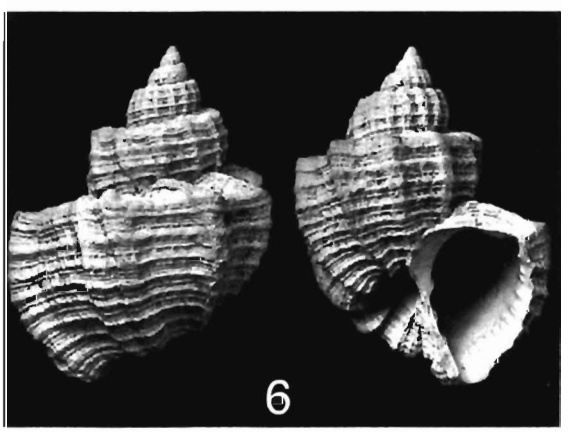

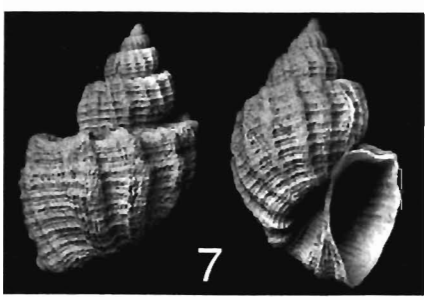

Family **Cancellariidae**

PLATE 16

Family **Cancellariidae**

Page

Fig. **1** — *Narona* (*Calcarata*) *calcarata* (BROCCHI), × 1.7; Specimen No. U.W., BkK–G793 50

Fig. **2** — *Narona* (*Tribia*) *uniangulata* (DESHAYES), × 3.5; Specimen No. U.W., BkK–G792 49

Figs **3–5** — *Narona* (*Sveltia*) *inermis* (PUSCH); Fig. 3 × 1.7, Figs 4–5 × 0.85; Specimens No. U.W., BkK–G786-788 .. 47

Figs **6–8** — *Narona* (*Sveltia*) *varricosa* (BROCCHI); Fig. 6 × 6.8, Figs 7–8 × 1.7; Specimens No. U.W., BkK–G789-791 ... 48

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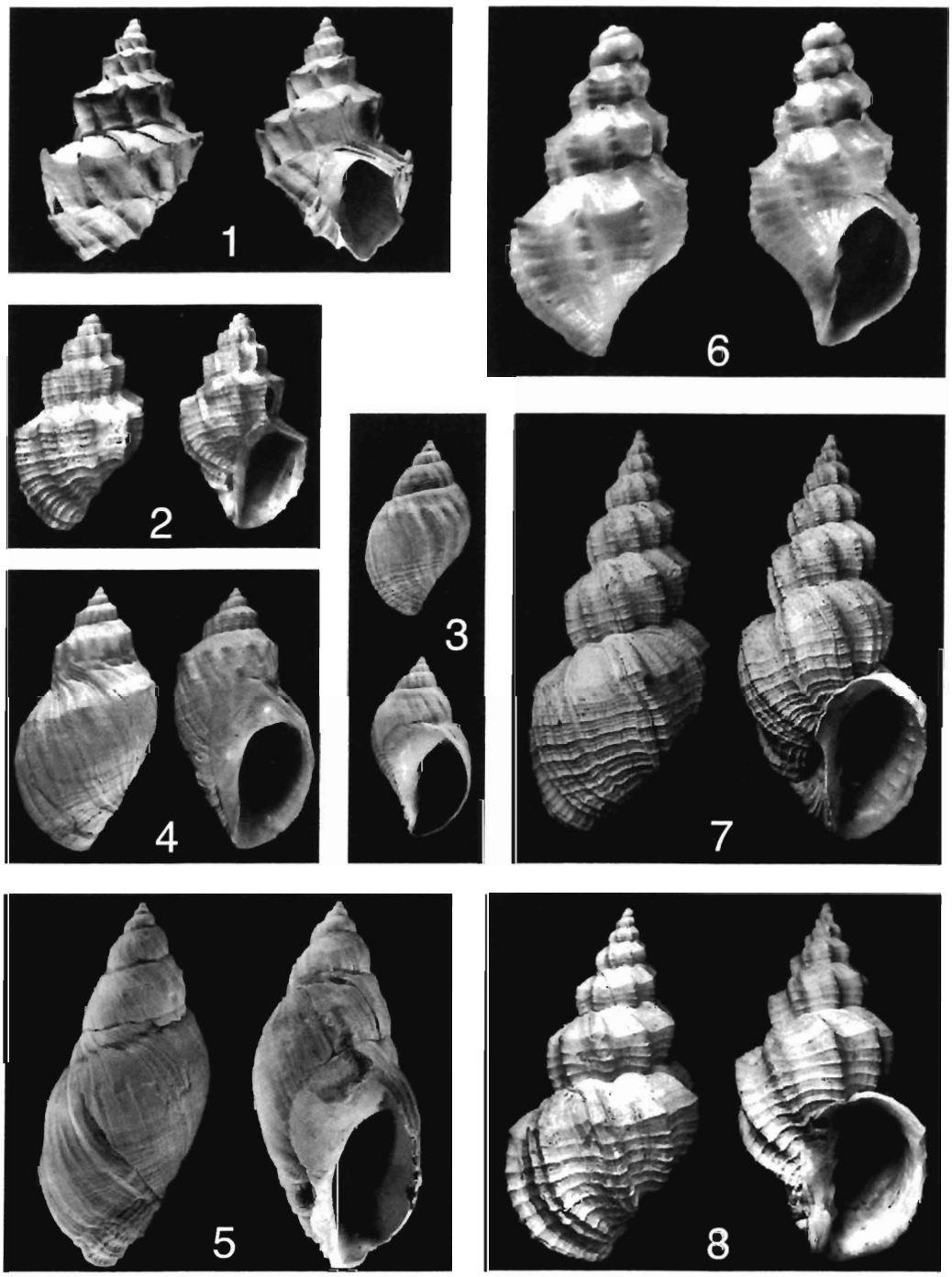


Family **Cancellariidae**

PLATE 17

Family **Cancellariidae**

Page

Figs **1–2** — *Tritonoharpa* sp., × 6.8; Specimens No. U.W., BkK–G798-799 52

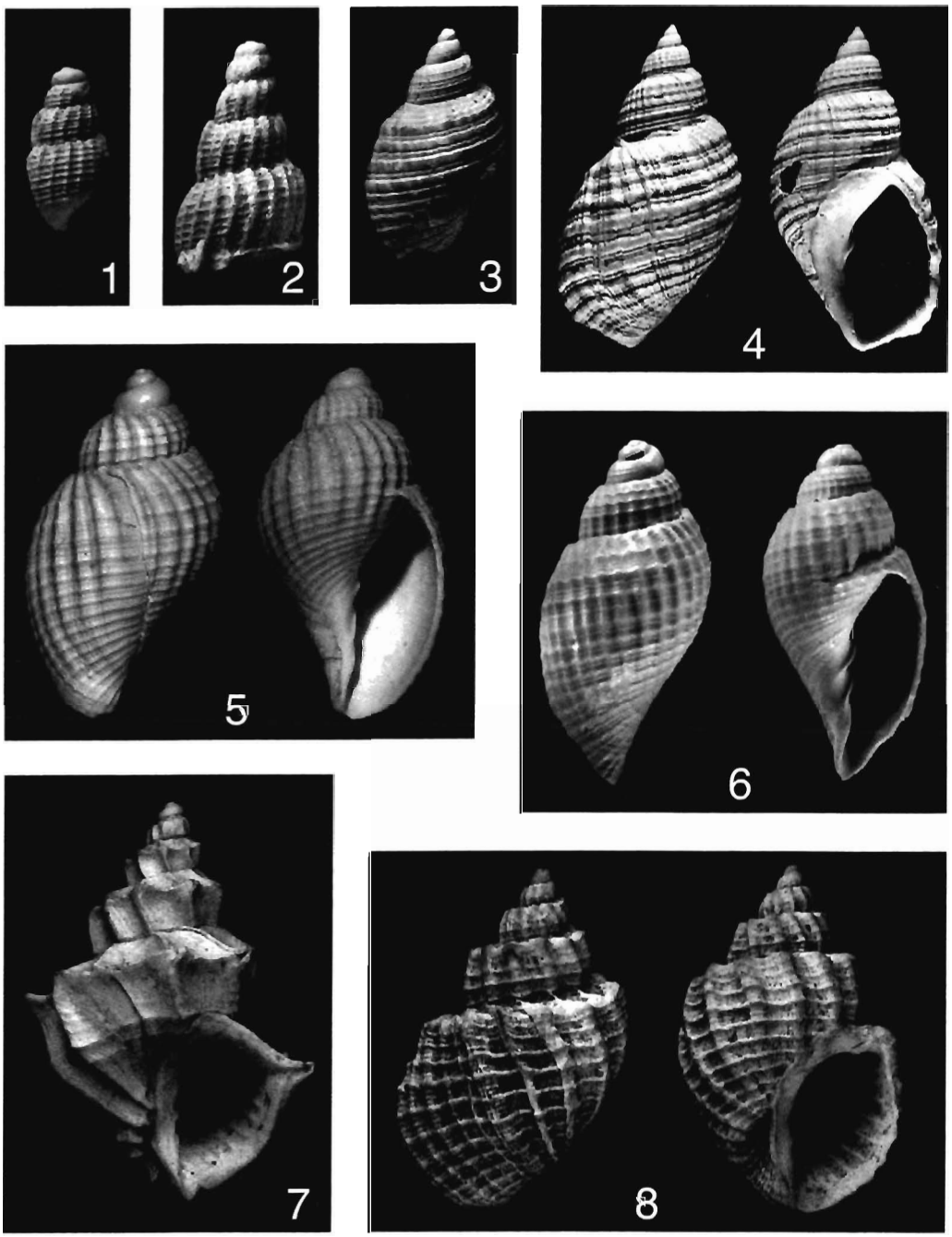
Figs **3–4** — *Narona* (*Aneurystoma*) *austropolonica* nom.n.; Fig. 3 × 3.5, Fig. 4 × 1.7; Specimens No. U.W., BkK–G796-797 51

Figs **5–6** — *Narona* (*Aneurystoma*) *laurensi* (GRATELOUP), × 6.8; Specimens No. U.W., BkK–G794-795 51

Fig. **7** — *Narona* (*Calcarata*) *calcarata* (BROCCHI), × 3.5; Specimen No. U.W., BkK–G793*a* 50

Fig. **8** — *Trigonostoma scrobiculatum* (HÖRNES), × 3.5; Specimen No. U.W., BkK–G782*a* 46

Photos *1-5* and *7-8* taken by B. DROZD, M.Sc.
Photo *6* taken by B. MALINOWSKA



Family **Cancellariidae**

PLATE 18

Family **Marginellidae**

Page

Figs **1–3** — *Gibberulina philippii* (MONTEROSATO), × 13.5; Specimens No. U.W., BkK–G800-802 53

Fig. **4** — *Persicula sabatica* BELLARDI, × 13.5; Specimen No. U.W., BkK–G803 53

Figs **5–7** — *Marginella* (*Eratoidea*) *eratoformis* HOERNES & AUINGER, × 13.5; Specimens No. U.W., BkK–G804-806 54

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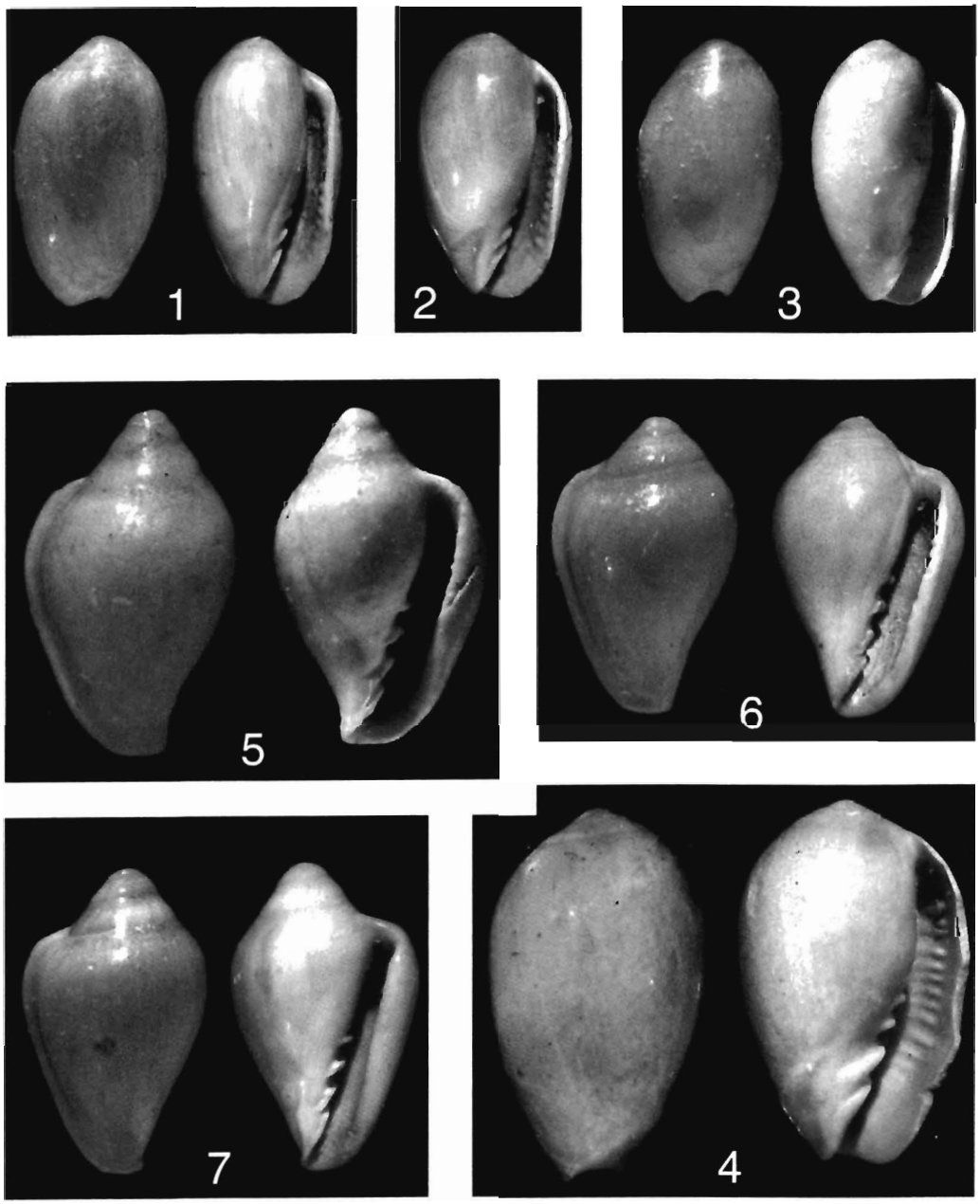

Family **Marginellidae**

PLATE 19

Family **Conidae**

Page

Figs **1–4** — *Conus* (*Conolithus*) *dujardini* DESHAYES; Fig. 1 × 6.8, Fig. 2 × 3.5, Figs 3–4 × 1.7; Specimens No. U.W., BkK–G811-814 55

Figs **5–8** — *Conus* (*Conolithus*) *exaltatus* EICHWALD; Figs 5–6 × 3.5, Figs 7–8 × 1.7; Specimens No.U.W., BkK–G816-819 ... 57

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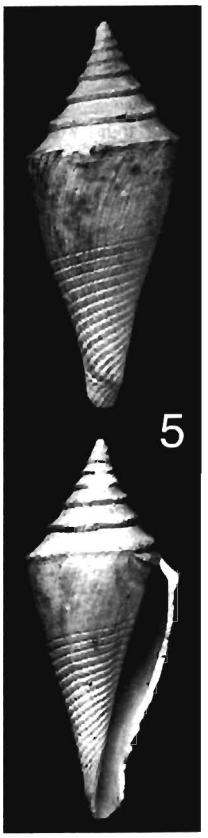

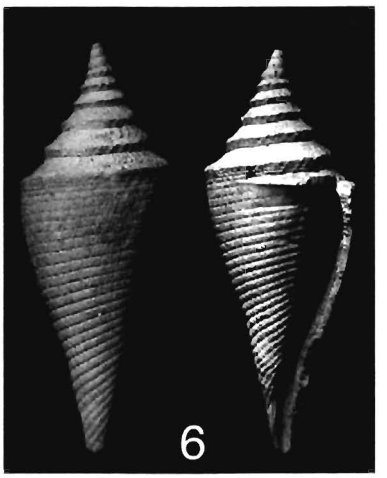

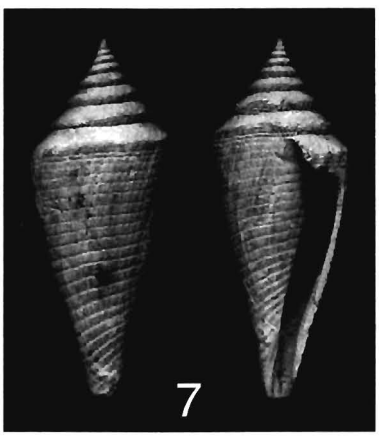

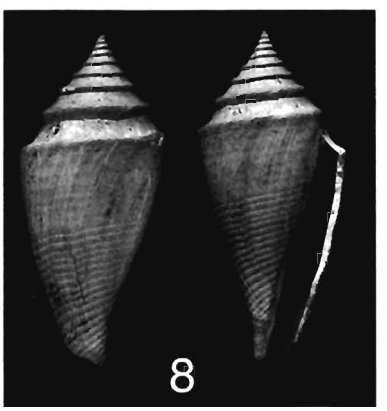

Family **Conidae**

PLATE 20

Family **Conidae**

Page

Figs **1–4** — *Hemiconus granularis* BORSON; Fig. 1 × 6.8, Figs 2–3 × 3.5; Specimens No. U.W., BkK–G807-810 54

Fig. **5** — *Conus* (*Conolithus*) sp., × 6.8; Specimen No. U.W., BkK–G815 57

Figs **6–8** — *Conus* (*Lithoconus*) cf. *austriacus* HOERNES & AUINGER, × 0.85; Specimens No. U.W., BkK–G822-824 60

Fig. **9** — *Conus* (*Lithoconus*) *betulinoides* LAMARCK, × 0.85; Specimen No. U.W., BkK–G825 60

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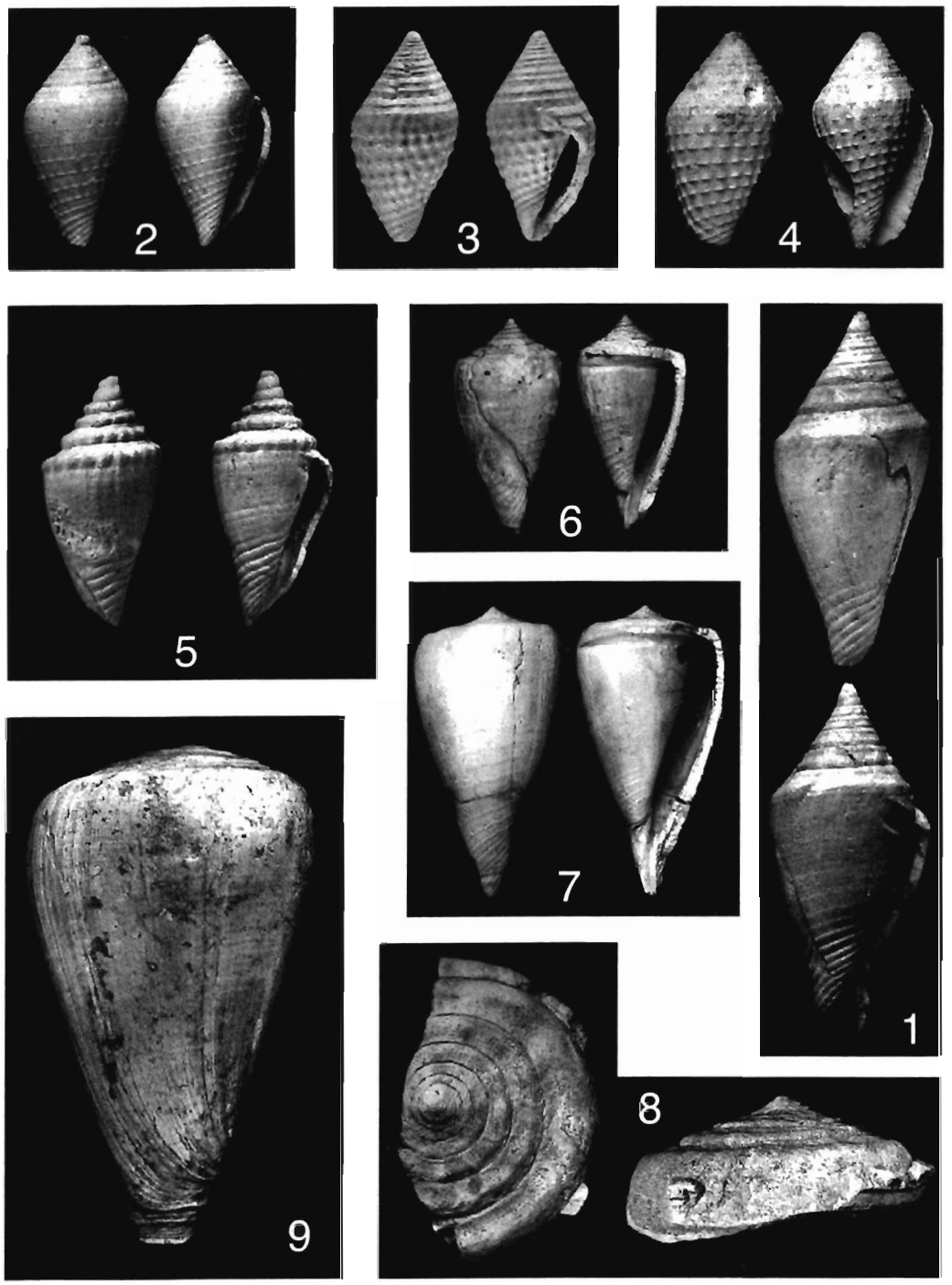
Photo *9* taken by S. KOLANOWSKI



Family **Conidae**

PLATE 21

Family **Conidae**

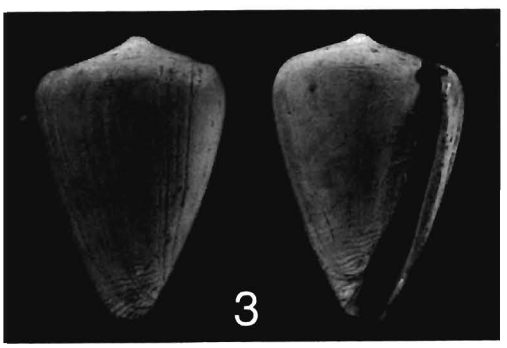
Page

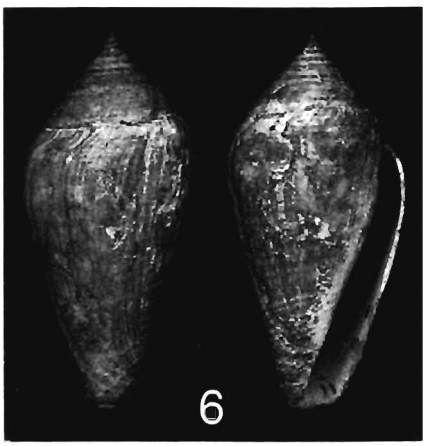
Figs **1–4** — Conus (*Lithoconus*) *berghausi* MICHELOTTI, × 0.85; Specimens No. U.W., BkK–G826-829 58

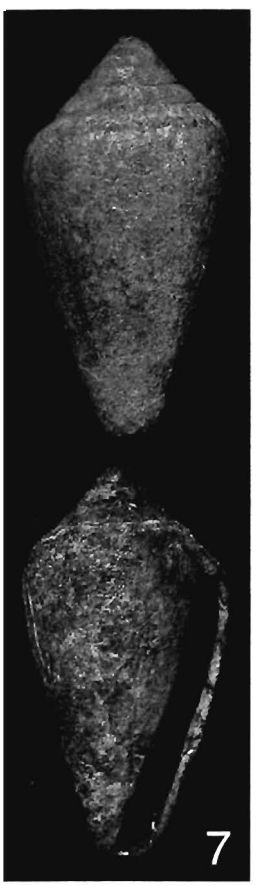
Figs **5–6** — *Conus* (*Chelyconus*) *pyrula* BROCCHI, × 1.7; Specimens No. U.W., BkK–G839-840 63

Figs **7–8** — *Conus* (*Chelyconus*) *lineatus* DECRISTOFORI & JAN, × 1.7; Specimens No. U.W., BkK–G833-834 62

Photos *2-5* taken by B. DROZD, M.Sc.
Photos *1* and *6-8* taken by S. KOLANOWSKI







Family **Conidae**

PLATE 22

Family **Conidae**

Page

Figs **1–3** — *Conus* (*Rhizoconus*) *steinabrunnensis* (SACCO), × 0.85; Specimens No. U.W., BkK–G830-832 61

Figs **4–6** — *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER, Fig. 4 × 1.7, Figs 5–6 × 0.85; Specimens No.U.W., BkK–G835-837 64

Fig. **7** — *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER, × 0.85; Private collectiom of Mr. J. GUBAŁA 64

Fig. **8** — *Conus* (*Chelyconus*) *rotundus* HOERNES & AUINGER, × 0.85; Collection Museum of the Earth, Warsaw 64

Fig. **9** — *Conus* (*Chelyconus*) *ponderosus* BROCCHI, × 0.85; Specimen No. U.W., BkK–G838 62

Photos *1-3*, *5-6*, and *9* taken by B. DROZD, M.Sc.
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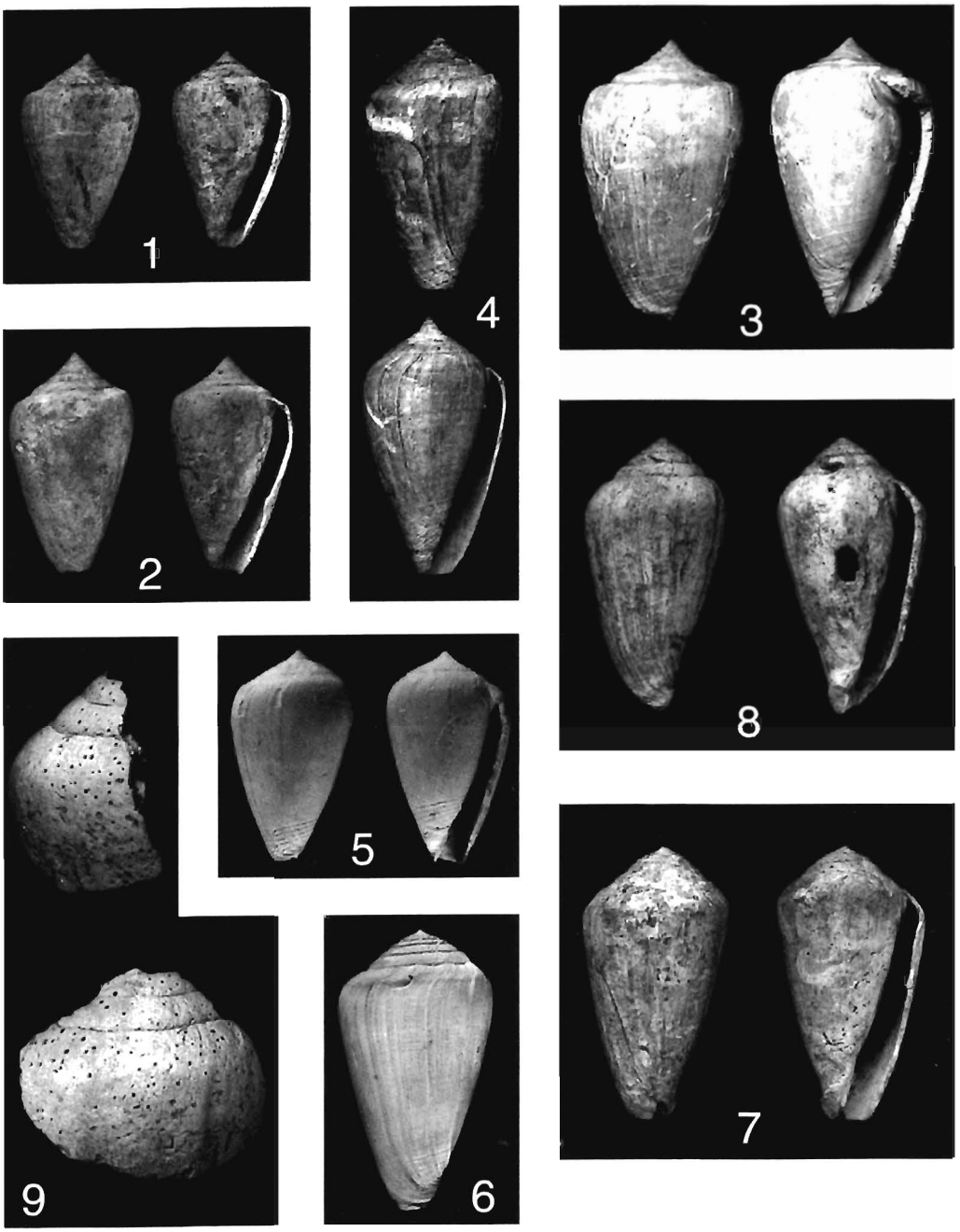

Family **Conidae**

PLATE 23

Family **Conidae**

Page

Figs **1–6** — *Conus* (*Chelyconus*) *vindobonensis* PARTSCH *in* HÖRNES; Figs 1–4 × 0.85, Figs 5–6 × 1.7; Specimens No. U.W., BkK–G841-846 65

Figs **7–8** — *Conus* (*Lautoconus*) *posticestriatus* KOJUMDGIEVA, × 1.7; Specimens No. U.W., BkK–G820-821 58

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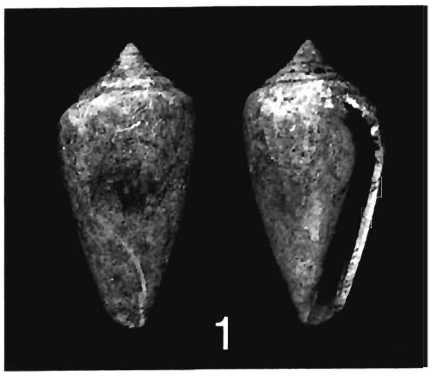

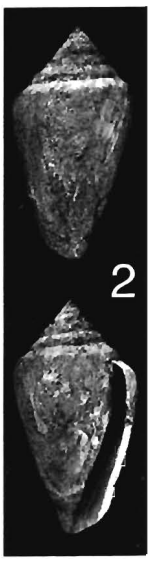

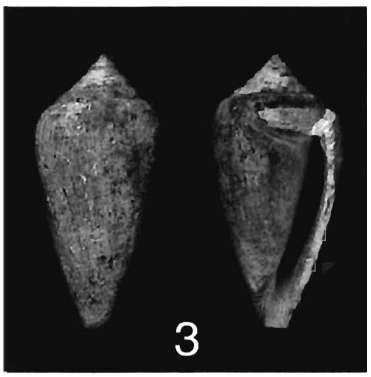

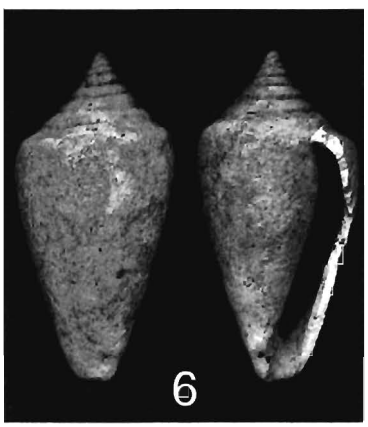

Family **Conidae**

PLATE 24

Family **Terebridae**

Page

Figs **1–5** — *Terebra* (*Myurella*) *acuminata* BORSON; Fig. 1 × 6.8, Figs 2–4 × 1.7, Fig. 5 × 0.85; Specimens No. U.W., BkK–G862-866 69

Figs **6–11** — *Subula* (*Oxymeris*) *plicaria* (BASTEROT); Fig. 6 × 6.8, Figs 7–11 × 0.85; Specimens No. U.W., BkK–G854-859 . 68

Fig. **12** — *Subula* (*Oxymeris*) *plicaria* (BASTEROT), × 0.85; Private collection of Mr. J. GUBAŁA 68

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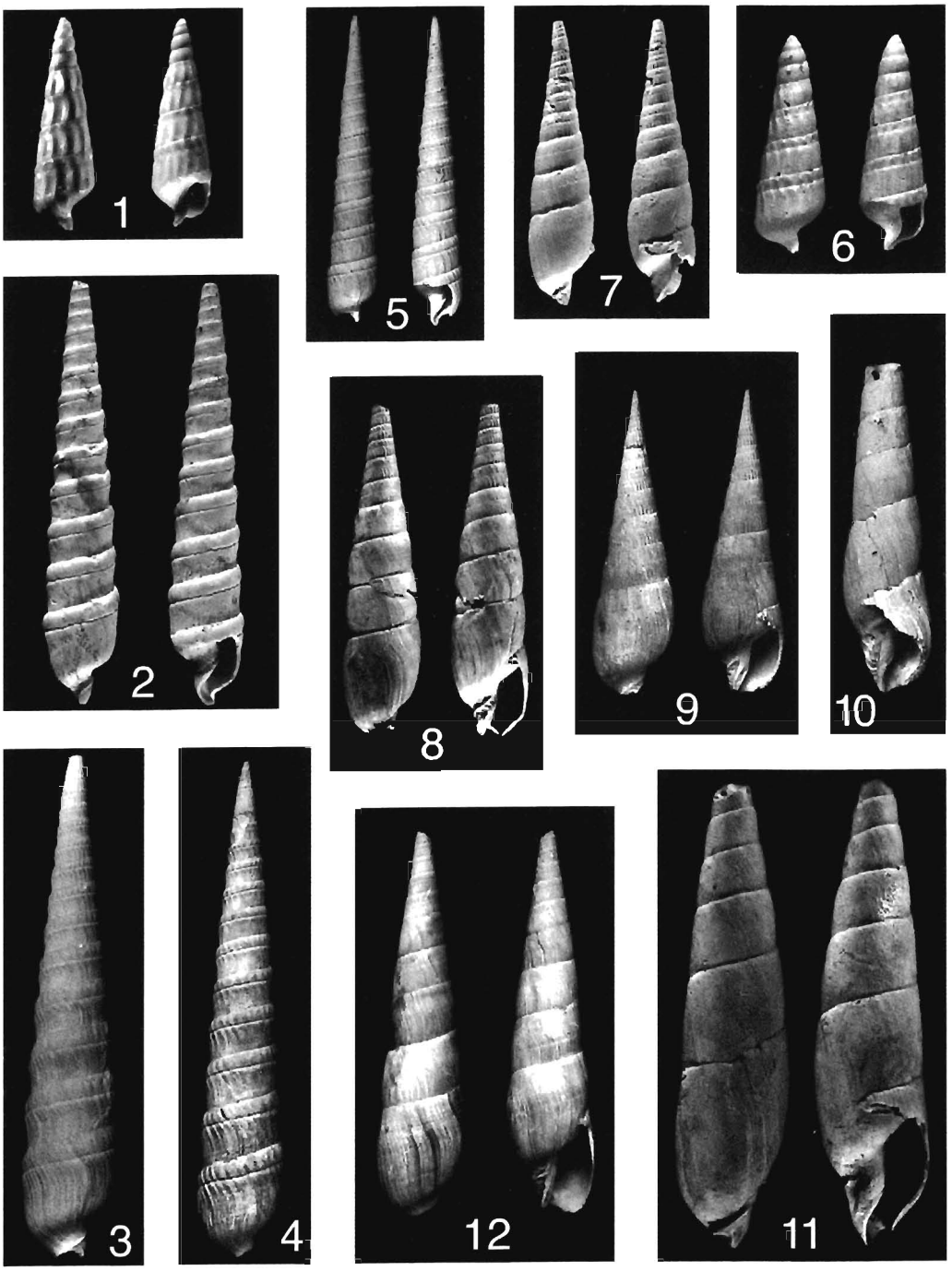

Family **Terebridae**

PLATE 25

Family **Terebridae**

Page

Figs **1–3** — *Strioterebrum* (*Strioterebrum*) *basteroti* (NYST); Fig. 1 × 6.8, Fig. 2 × 3.5, Fig. 3 × 1.7; Specimens No. U.W., BkK–G849-851 66

Figs **4–5** — *Strioterebrum* (*Strioterebrum*) *bistriatum* (GRATELOUP); Fig. 4 × 6.8, Fig. 5 × 1.7; Specimens No. U.W., BkK–G852-853 67

Figs **6–7** — *Terebra* (*Terebra*) *sophiae* HALAVATS; Fig. 6 × 6.8, Fig. 7 × 1.7; Specimens No. U.W., BkK–G860-861 69

Figs **8–9** — *Hastula cinereides* (HOERNES & AUINGER); Fig. 8 × 6.8, Fig. 9 × 3.5; Specimens No. U.W., BkK–G847-848 66

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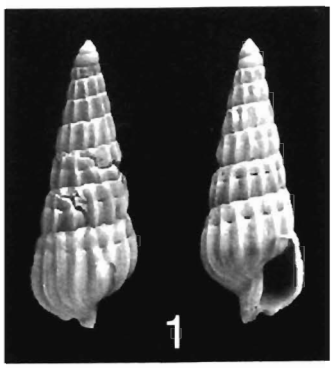

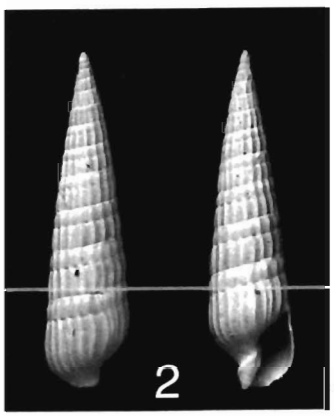

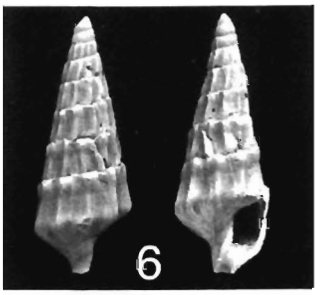

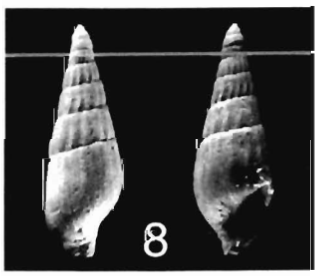

Family **Terebridae**