Contr. Tert. Quatern. Geol. 37(3-4) | 67-71 1 pl. Leiden, December 2000

TECTONATICA MEVSI, A NEW MIOCENE NATICID GASTROPOD FROM NORTHWEST GERMANY

KARL GÜRS
Landesamt für Natur und Umwelt
des Landes Schleswig-Holstein (LANU)
Flintbek, Germany

and

GÜNTER WIENRICH
Goch, Germany

Gürs, Karl & Günter Wienrich. *Tectonatica mevsi*, a new Miocene naticid gastropod from northwest Germany. — Contr. Tert. Quatern. Geol., 37(3-4): 67-71, 1 pl., Leiden, December 2000.

A new naticid of Miocene (Langhian) age, *Tectonatica mevsi*, is described on the basis of material collected from two boreholes more than 500 km apart, one in Schleswig-Holstein, the other in the Lower Rhine area (NW Germany). Interestingly, the samples which have yielded *T. mevsi* are both dated at *c.* 16 Ma (*Uvigerina acuminata* Zone). The new species may be closely related to the Late Oligocene *T. globulariaeformis* R. Janssen, 1978.

Key words — Gastropoda, Naticidae, Miocene, Germany, new species.

K. Gürs, Landesamt für Natur und Umwelt des Landes Schleswig-Holstein (LANU), Hamburger Chaussee 25, D-24220 Flintbek, Germany; G. Wienrich, Vornicker Straße 28, D-47574 Goch, Germany.

CONTENTS

INTRODUCTION

During recent years, increased drilling activities in NW Germany related to groundwater exploration have yielded enormous amounts of fossil material from strata of Miocene age. Predominant amongst marine taxa in these samples are molluscs, some of which constitute new records and/or are new to science (see *e.g.* Spiegler & Gürs, 1996; Gürs & Spiegler, 1999; Wienrich, 1999, work under way). One of these, *Tectonatica mevsi* n. sp., is the subject of the present note. It has been observed in two wells, one in Schleswig-Holstein, the other in the Lower Rhine Embayment. All samples which have yielded the new species are assigned to the *Uvigerina acuminata* Zone of the NW German 'Uvigerinen-Stratigraphie' *sensu* von Daniels & Spiegler (1977). According to Spiegler (pers. comm.), the age of this zone is between 16.4 and 16 Ma.

SYSTEMATIC DESCRIPTION

Family Naticidae Forbes, 1838
Genus *Tectonatica* Sacco, 1890

Type species — *Natica tectula* Bonelli, 1826.

Tectonatica mevsi n. sp.
Pl. 1, Fig. 1A-E

Derivatio nominis — Named after Werner Mevs, a LANU technian, who collected the type specimen.
Diagnosis — A small species of *Tectonatica* with globular shell, slightly taller than wide; small protoconch with slightly convex nucleus, younger whorls attached high on previous whorls, no angular suture, and with umbilicus invariably closed by large, smooth callus.
Locus typicus and stratum typicum — Borehole

Stadtwerke Büchen III [co-ordinates, r: 4407113, h: 5930932], depth 46-49 m, Miocene, Reinbek Formation, *Uvigerina acuminata* Zone (*Bolboforma reticulata* Zone).

Description — Minute subspherical shell (diameter 3.2 mm in holotype, mean 3.0 mm), slightly taller than wide, consisting of 4 to 5 whorls. Protoconch very small, composed of 1¾ near-flat whorls, nucleus slightly convex, transition to teleoconch smooth. Teleoconch consisting of about 3 smooth whorls, semi-circular in transect, attached high on previous whorls; suture visible only as narrow fissure. Growth lines prosocline, straight to faintly opisthocyrt. Aperture drop shaped, angular above, slightly concave interiorly, convex exteriorly. Umbilicus completely closed by semicircular callus, transition to base of ultimate whorl smooth, with very weak concave siphonal depression leading into small, nearly invisible edge, where growth lines are better visible than on remainder of shell. Edge spirally coiled, running into umbilicus, there disappearing under callus. Parallel to edge are up to 8 spiral furrows, hardly discernible. In the aperture, callus continues upwards to suture.

Material — Holotype is SMF 320969 (Senckenberg Museum Frankfurt collections, *ex* Landesamt für Natur und Umwelt [LANU] Colln, leg. Mevs); paratypes are SMF 320970 (leg. Wienrich) from the Thermalsole borehole Kevelaer [co-ordinates, r: 2516516, h: 5715952], depth 50 m; and four specimens (two of them fragmentary) from borehole Stadtwerke Büchen III, at depths of 46-48 m, 48-51 m and 51-54 m (all in LANU collections, Flintbek).

Discussion — As far as dimensions and overall shape are concerned, *Tectonatica mevsi* is a highly unusual naticid. With the exception of the Late Oligocene *T. globulariaeformis* (see Pl. 1, Fig. 3), we know of no similar forms either in the fossil record or amongst extant species. Although we have not yet found any opercula in the samples which have yielded *T. mevsi*, the structure of the umbilical region and shell habit allow it to be assigned to the genus *Tectonatica* without doubt. In post-Rupelian strata of the North Sea Basin, only three species of this genus are known to date, *viz. T. globulariaeformis* (Late Oligocene), *T. miopusilla* (Kautsky, 1925) (late Early Miocene; see Pl. 1, Fig. 2), and *T. affinis* (Gmelin, 1792) (Pliocene-Recent). Apparently, the new species is most closely related to *T. globulariaeformis*, which not only has the diminutive shell in common, but also the high whorl attachment on previous whorls, a glossy shell, and a smooth callus covering the umbilicus. However, *T. globulariaeformis* may be distinguished on account of its comparatively larger protoconch of *T. globulariaeformis* (2¼ *vs* 1¾ whorls), a more globular shell with lower spire, and a callus extending less far onto the shell base, leaving a small fissure. In addition, *T. globulariaeformis* appears to invariably lack basal spiral furrows. All in all, this species might well be the precursor of *T. mevsi*.

The new species may be distinguished from *T. miopusilla* by its markedly smaller shell, a different form, a smaller protoconch and an invariably closed umbilicus, from *T. tectula* by a smaller spiral opening, a smaller protoconch as well as a different habit, and from *T. affinis* (Gmelin, 1792), type species of *Cryptonatica* Dall, 1892 (see below) by a different shell habit.

'Naticina' fissurata von Koenen, 1891 (Late Eocene [Priabonian], Germany) was also placed in the genus *Tectonatica* by many authors (*e.g.*, Anderson, 1960). A.W. Janssen (1972) subsequently correctly reassigned this species to the genus *Euspira* Agassiz, 1838.

So far, we have only seven specimens of *T. mevsi* before us. However, these records are far apart geographically, which suggests that the new species had a wide distribution within the North Sea Basin. Interestingly, strata which have yielded the material in Schleswig-Holstein and the Niederrhein area are of equivalent age. If we are correct in assuming *T. globulariaeformis* to be the ancestor of *T. mevsi*, we may also postulate that the latter evolved from the former within the North Sea Basin but has so far remained unobserved in intermediate strata, or alternatively, that it evolved outside the basin (probably in the Atlantic) and subsequently migrated into it. The second interpretation is favoured here, since faunas of the appropriate age are well documented in the time interval between the ranges of *T. globulariaeformis* and *T. mevsi*, and no form comparable to either of them is known from these faunas.

Of the type species of the genus *Tectonatica*, from the Pliocene of Italy, a calcareous operculum is known, which is simpler than the one of the genus *Natica* Scopoli, 1777, and resembles those of *Polinices* de Montfort, 1810 and *Euspira*. Consequently, *Tectonatica* has been interpreted as a small genus of naticid with simple calcareous operculum and strong callus more or less completely covering the umbilicus. Bouchet & Warén (1993) assigned all extant species with these features to the genus *Cryptonatica* Dall, 1892 (type species *Nerita affinis* Gmelin, 1792). As distinguishing features between this genus and *Tectonatica*, those authors noted a calcareous mass softer than the rest of the shell filling the slit or gap between the callus and the base of the shell, leaving the umbilicus completely closed. In our opinion, this feature is not a strong enough basis for separation of these genera, especially so since *T. mevsi* appears to display this feature, while *T. globulariaeformis* does not. We consider this trait to be a secondary importance, and *Cryptonatica* to be a junior synonym of *Tectonatica*. Although opercula of *T. globulariaeformis* and *T. mevsi* are still unknown, we see no reason for not referring these species to *Tectonatica*, since both do have the typical umbilical region and shell shape. The absence of opercula is probably a function of their small overall shell size and the rarity of these species.

ACKNOWLEDGEMENTS

For commenting on an earlier typescript we wish to thank F. Wesselingh (Nationaal Natuurhistorisch Museum, Leiden) and A.W. Janssen (Gozo, Malta).

REFERENCES

Anderson, H.-J., 1960. Die Gastropoden des jüngeren Tertiärs in Nordwestdeutschland, Teil 2. Prosobranchia Mesogastropoda: 2. Revision der Naticacea. — Meyniana, 9: 80-97, 4 pls.

Bouchet, P. & A. Warén, 1993. Revision of the northeast Atlantic bathyal and abyssal Mesogastropoda. — Boll. Malacol., Suppl. 3: 577-840.

Daniels, C.H. von & D. Spiegler, 1977. *Uvigerinen* [*sic*] (Foram.) im Neogen Nordwestdeutschlands (Das Nordwestdeutsche Tertiärbecken, Beitrag Nr. 23). — Geol. Jb., A40: 3-59, 9 pls.

Gürs, K. & D. Spiegler, 1999. Das Mittelmiozän der Bohrung Schwarzenbek 1/96, Schleswig-Holstein (Mollusken, Foraminiferen und Bolboformen). — Greifsw. geowiss. Beitr., 6: 405-417, 2 pls.

Janssen, A.W., 1972. Bemerkungen zu *"Naticina" fissurata* von Koenen, 1891 (Mollusca, Gastropoda) aus dem Oligocän des Nordseebeckens. — Meded. Werkgr. Tert. Kwart. Geol., 9(3/4): 89-93.

Janssen, R., 1978. Die Mollusken des Oberoligozäns (Chattium) im Nordsee-Becken, 1. Scaphopoda, Archaeogastropoda, Mesogastropoda. — Arch. Moll., 109: 137-227, pls 9-14.

Kautsky, F., 1925. Das Miocän von Hemmoor und Basbeck-Osten. — Abh. preuß. geol. Landesanst., n.s., 97: 1-255, 12 pls.

Spiegler, D. & K. Gürs, 1996. Der miozäne Glimmerton von Groß Pampau, Schleswig Holstein (Mollusken, Foraminiferen und Bolboformen). — Meyniana, 48: 135-164, 6 pls.

Wienrich, G., 1999. Die Fauna des marinen Miozäns von Kevelaer (Niederrhein). Band 2. Bivalvia, Scaphopoda, Cephalopoda, Bryozoa, Annelida, Brachiopoda, v + 190-384, pls 25-62. Leiden (Backhuys Publishers).

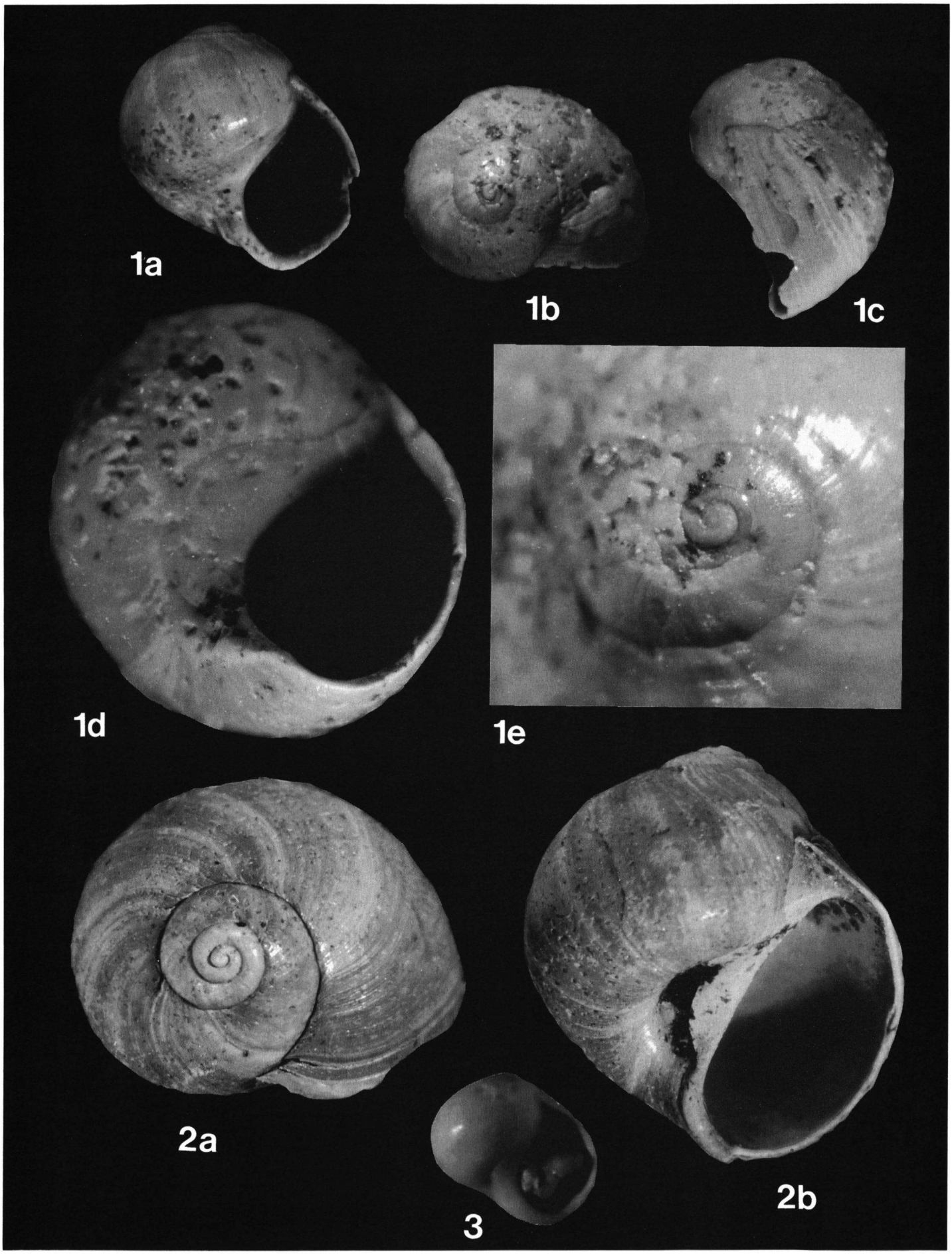
Manuscript received 17 September 2000, revised version accepted 13 October 2000.

PLATE 1

Fig. 1. *Tectonatica mevsi* n. sp., SMF 320969 (**holotype**), borehole Stadtwerke Büchen III, depth 46-49 m, Reinbekian, *Uvigerina acuminata* Zone; A-C - x 16; D - callus, x 30, E - protoconch, x 80.

Fig. 2. *Tectonatica miopusilla* (Kautsky, 1925), borehole Bokelrehm, depth 153.5 m, Reinbekian (Landesamt für Natur und Umwelt collections, Flintbek), x 16.

Fig. 3. *Tectonatica globulariaeformis* R. Janssen, 1978, SMF 250603 (**paratype**), Glimmerode, Chattian (Late Oligocene), x 12.


1a
1b
1c
1d
1e
2a
2b
3