



Two new archaeogastropod genera from the Tethyan Liassic

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Abstract — One of the new genera described below is based on two known species; the type of *Asterohelix* gen. n. (Euomphalidae) is "*Discohelix*" *spinicosta* STOLICZKA, 1861, but *Urkutitoma* gen. n. (Trochotomidae) is represented by a new, only known species: *U. bartkoi* sp. n. With 3 figures.

Locality

The two specimens belonging to the type species of the new genera were collected by Dr. Lajos Bartkó at Úrkút, a village in the Bakony Mountains near to Ajka (Hungary), in 1936 together with other 31 species. The number of specimens of the whole fauna is altogether 103; the diversity shows the highest value in the Jurassic of the Bakony Mountains.

The fauna was enclosed by a massive, rather micritic variety of "Hierlatzkalk"-type limestone with oxidic manganese ore as its cover, mined on the surface of Csárda-hegy (Csárda Hill) at the southeastern edge of Úrkút. The mining was carried out manually at the beginning, so the fossil morphology of the Hierlatz Limestone did not suffer any significant damage. The scenic surface seems to be karstic, the origin of which has not yet been clarified satisfactorily (submarine genesis is also possible). Today the pits of the early mining belong to a geological conservation area and this state of protection renders a new collecting even less possible.

BÖCKH (1874) recognised the main lithologic types of the Úrkút area and his dating for the Hierlatz Limestone (Lower Liassic) did not become much more precise up to the present. The last publication (CSIMA & MÉSZÁROS 1979) regarded this lithologic type as Sinemurian-Pliensbachian on the base of brachiopods, identified by G. Vigh.

Among the gastropods of Úrkút, there are no species characteristic for the Pliensbachian stage. In well-dated localities only a quarter of the species of Úrkút occurred in the Upper Sinemurian and Carixian, respectively, and only one of them was observed in the Domerian, too. These facts suggest an age older than the Upper Sinemurian for the gastropod fauna containing the new taxa. The co-occurring few ammonites are less useful for dating owing to their embryonal or early juvenile stage.

The systematic significance of this small museum material is obvious and the designation of the two genera is worth a preliminary paper. The types are deposited in the Museum of the Hungarian Geological Institute.

SYSTEMATICS

order Archaeogastropoda THIELE, 1925 — ? suborder Pleurotomariina COX et KNIGHT, 1960 — superfamily Euomphalacea de KONINCK, 1881 — family Euomphalidae DE KONINCK, 1881

In a recent paper MORRIS & CLEEVELY (1981) have proposed a thoroughly reformed classification for Euomphalacea, quite acceptable in many points, but insufficiently substantiated in the omission of some genera. Euomphalacea is characterised partly by outer calcitic and inner aragonitic shell layers (sensu MORRIS & CLEEVELY) and does not contain the Cretaceous, the Jurassic and two of the Triassic genera from the system of KNIGHT & al. (1960); one of them is *Discohelix*, including the below described *Asterohelix* and certainly *Pentagonodiscus* too. The reason for exclusion is the nacreo-prismatic shell of typical aragonitic structure, observed on an Albian "*Discohelix*", the proposed new systematic position is in a group within the *Trochina*. The objections to this opinion are that

- a) in accordance to WENDT (1968) I have not found any *Discohelix* in the literature after the Oxfordian therefore the Albian "*Discohelix*" is certainly misidentified so it cannot serve as basis for the removal of the true *Discohelix* and closely related genera (*Pentagonodiscus*, *Asterohelix* and ?*Colpomphalus*),
- b) the calcitic-aragonitic shell is recognised only in the minor of the (Palaeozoic) genera, it is not a common case,

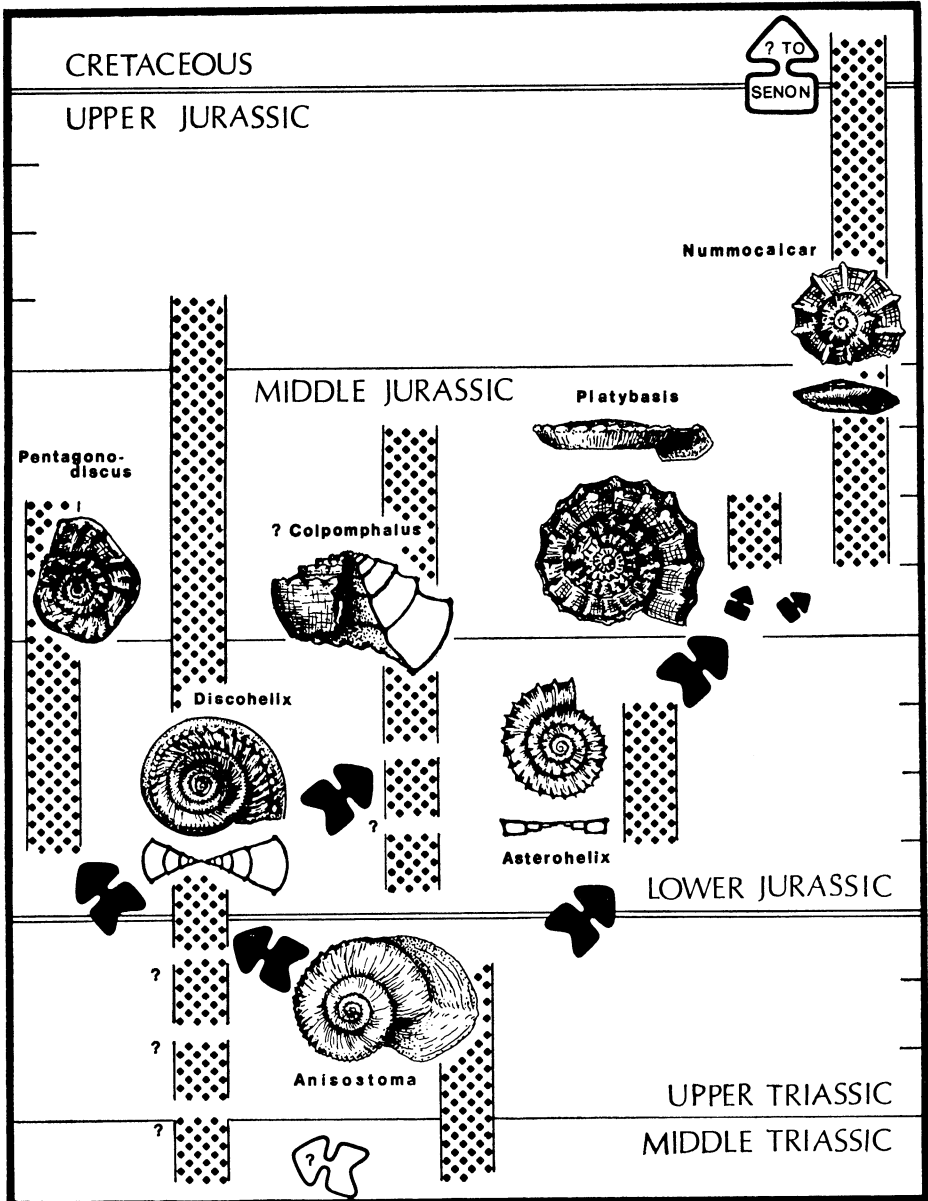


Fig. 1. Relationship of *Asterohelix* gen. n.

- c) we must not remove genera with entirely aragonitic shell without morphological confirmation even if the calcitic shell layer had been more common in the superfamily than is actually experienced; interpretation of the shell-structure differences seems to be more acceptable as manifestation of mosaic evolution than to force these genera in a foreign milieu. Incidentally, the proposed new position, Trochina, is also a group of different shell-structures similarly to "certain buccinaceans and muricaceans", where the calcitic shell is not a widely accepted character for ranging them in another suborder.

In this paper, *Discohelix* and related genera (Fig. 1.) are regarded as euomphalids. The studied shells did not preserve the original structures owing to recrystallization or replacement. The Mesozoic helicotomids (sensu KNIGHT & al. 1960) would be interpreted as a heteromorph euomphalid group.

Origin of *Asterohelix* gen. n. — The almost totally symmetrical spiral and umbilical sides of *Discohelix*, *Pentagonodiscus* (*Discohelix* group) and juvenile *Anisostoma* suggest a horizontal shell axis (vertical shell) in life position, while the peristome building of adult *Anisostoma* and the asymmetry in the shape and ornament of *Asterohelix*, *Nummocalar* and *Platybasis* (*Asterohelix* group) seems to be caused by the horizontal shell (vertical axis). Both mode of shell carrying are observable in *Anisostoma* above the comparable form, so this genus is certainly the common ancestor of the two group. The horizontal shell position became permanent in the *Asterohelix* group and the bilateral symmetry disappeared gradually. In the *Discohelix* group vertical carriage was characteristic, but the trochiform horizontal shell was also frequent. For the latter forms, COSSMANN (1916) established the genus *Colpomphalus*, which was a synonym of *Discohelix* as shown by WENDT (1968). The relationships of *Asterohelix* are envisaged as shown in Fig. 1.

Asterohelix gen. n.

Type species: *Asterohelix spinicosta* (STOLICZKA, 1861), see below — Derivatio nominis: asteriscus (Lat.) = star, helix/(Lat.) = snail; referring to running of suture on spiral side — Diagnosis: dextral, small discoidal shell with slightly concave spire* and rather deep umbilicus; depressed quadrangular whorl sections with somewhat convex spiral and umbilical sides, outer face flat or slightly concave; carinae sometimes present on outer angulations, a stronger one on spiral and a weaker one on umbilical side; spiral suture showing a peculiar, star-like line; gradate wall of broad umbilicus; growth-lines opisthocline, rather prosocyrct on spiral and umbilical sides and opisthocyrct on outer face; both outer angulation may be crenulated mostly by parabolic spines, their number greater on umbilical side; peristome unknown; protoconch smooth, somewhat raised on spiral side.

Distribution — Sinemurian: Northern Alps, Bakony Mountains; Pliensbachian: Sicily.

Remarks — The forms belonging to this new genus were described originally as *Discohelix*, which is rather similar to *Asterohelix* gen. n. The differences are as follows (see also Fig. 1.): *Asterohelix* has depressed whorls, while in *Discohelix* the height of the whorls is usually larger than the width, sometimes the two measurements are equal; *Asterohelix* has an umbilicus with gradate wall, which in *Discohelix* is conical; *Asterohelix* bears different ornament on the spiral and umbilical sides, moreover the number of comparable elements are greater on the basal part (e.g. spines). In *Discohelix*, the sculpture of the two sides are symmetric or almost so. The trochiform or plano-concave forms (*Colpomphalus*) also have conical umbilicus, being less ornamented than the spiral side both in the types and the number of comparable elements; the ratio of whorl height to width is similar to that of typical *Discohelix*.

* After the MS had gone to the printer It could examine the originals of the type species. The spire of *Asterohelix* may also be slightly convex.

Whorl-section measurements in *Platybasis* are close to those of *Asterohelix*, but the shape is not quadrangular. The most conspicuous distinctive feature is the running of basal growth-lines: they are opisthocyr in *Platybasis* and prosocyr in *Asterohelix*.

The diameter of *Nummocallar* grows usually much more rapidly than in *Asterohelix*, and all the above mentioned differences of *Platybasis* apply in this case as well.

Two species certainly belong to *Asterohelix* gen. n.: *A. spinicosta* (STOLICZKA, 1861) and *A. mariae* (M. GEMMELLARO, 1911).

Asterohelix spinicosta (STOLICZKA, 1861)

(Fig. 2)

1861: *Discohelix spinicosta* STOLICZKA, p. 185., Taf. III., Fig. 15.

Material: a well-preserved specimen.

Measurements:

diameter	height	width of whorl (max.)	spiral angle	umbilical angle
11.5 mm	2.7 mm	3.3 mm	195°	127°

Description — Shape as in the definition of the genus. Carinae of outer angulations persist along full length of shell, both bearing periodically repeating parabolic spines, connecting to short riblets, 26 in number on spiral and 31 on umbilical part of last whorl. A regular row of small, collabrally elongated tubercles rendering adaxial edge of whorls in umbilicus undulating. Outward from each tubercle low ridges start but disappear before reaching lower carina. A spiral ornament, consisting of fine lines (2–4), present only in interspaces of riblets on two whorls following protoconch.

Initial chamber with first and a half whorl can be regarded as an embryonal shell, its end is marked by the appearance of the ornament, the carina and the first spinula on the spiral side. The umbilical side of the protoconch is not observable.

Distribution — Northern Alps: Hierlatz Limestone; Bakony Mountains, Úrkút: Lower? Sinemurian.

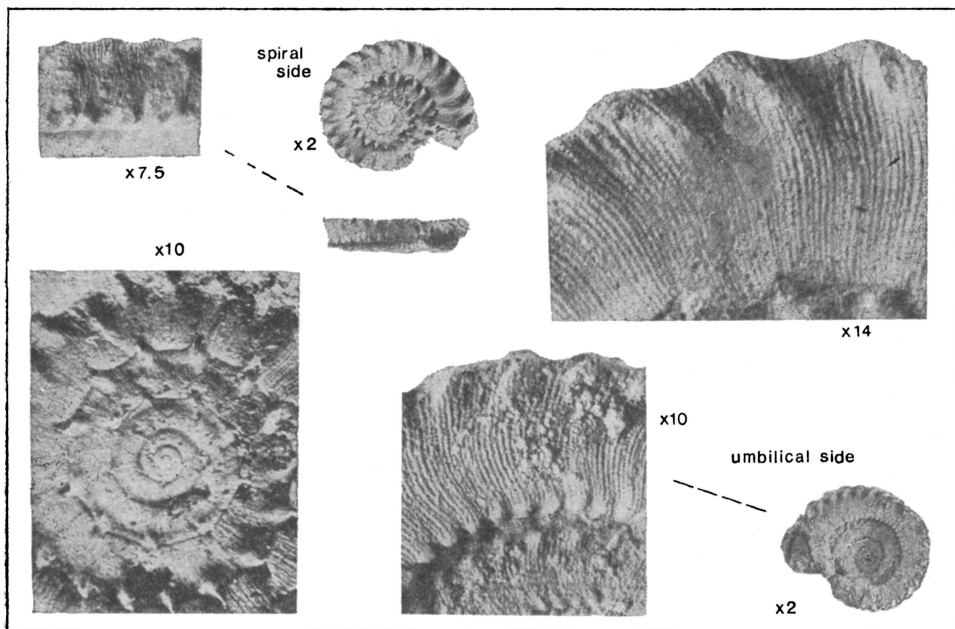


Fig. 2. Type species of *Asterohelix* gen. n., *A. spinicosta* (STOLICZKA, 1861), J 10 142

Remarks — The available specimen corresponds to Stoliczka's description, even in the detail of the ornament (e.g. parabolic spines) are observable in his figures.* — The other known species of the genus, *Asterohelix mariae* (M. GEMMELLARO, 1911), is easily separable by its last whorl, having neither carinae nor spines and by the inner whorls, where the spines are fewer than in *A. spinicosta*.

* * *

suborder Pleurotomariina COX et KNIGHT, 1960 — superfamily Pleurotomariacea
SWAINSON, 1840 — family Trochotomidae COX, 1960

Trochotomidae, one of the smallest families of Pleurotomariacea, so far had been comprised of only two genera: *Trochotoma* (with another subgenus, *Discotoma*) and *Valfinia* (by KNIGHT & al. 1960), which are in close morphological relationship with each other. The below described new genus differs in a few characters, but the inferable existence of anal trema(ta), the most important feature of the family, ranges *Urkutitoma* gen. n. into the Trochotomidae. The differences may have originated from an early deviation from the other trochotomids during the evolution certainly in the Triassic. The origin of the family is rather uncertain. Pleurotomariacean genera with trema or tremata are known since the Middle Devonian, their first representative is *Catantostoma*, the only member of a family. Other genera, such as *Echinocirrus* (Luciellidae, Lower Carb.) and *Polytremaria* (Polytremariidae, Lower Carb.) have a row of tremata. Each are ranged into different families by KNIGHT & al. (1960), indicating no close relationship between these genera, and similar arrangement is reflected by the system of WENZ (1938). The latter author regarded *Plocostoma*, a pleurotomariacean with peristomial slit, as belonging to Trochotomidae, which suggests a nontremate ancestor and palaeozoic origin for the family.

The development of a trema or row of tremata was a more or less random occurrence in the past (see also Bellerophonitidae, Haliotidae, Fissurellacea), mainly in the course of the adaptation to strongly agitated waters. An uninterrupted peristome is more resistant to the mechanic effects than one with a slit. In accordance with this evidence, trochotomids are present in reefs, platform-carbonates, where the other pleurotomariaceans are missing or extremely rare.

Urkutitoma gen. n.

Type species: *Urkutitoma bartkoi* sp. n. (see below) — **Derivatio nominis:** úrkúti (Hung.) = derived from Úrkút, τρύχη (Greek.) = hole, fissure — **Diagnosis:** dextral, turbiniform shell with slightly convex whorls; selenizone rather broad (a quarter of distance of nearest sutures); peristome without slit, but position and characters of anal opening unknown; aperture nearly quadrangular, outer lip somewhat thickened and prosocline, but its basal part somewhat opisthoclyt, columellar lip vertical, certainly with a callus covering umbilicus; convex, narrowly phaneromphalous base; ornament of spiral and collabral threads.

Distribution — Bakony Mountains, Úrkút: Lower? Sinemurian.

Remarks — The other genera of Trochotomidae have rather different shapes: a characteristic, funnel-like, broad basal deepening, which does not penetrate the juvenile whorls, while the umbilicus of *Urkutitoma* is narrow, tube-like and probably reaches the protoconch. *Trochotoma*, *Discotoma* and *Valfinia* bear a much more prosocline outer lip and an inner lip not vertical such as in *Urkutitoma*. The whorl-section of the here described new genus is rounded quadrangular, but strongly elongated from the top of the basal funnel to the periphery in other trochotomids.

* STOLICZKA did not mention the gently convex spire of the originals differing in 25–30° from the Bakony specimen.

Without a peristome, *Urkutitoma* shows few characters which separate it from some pleurotomariids with certainty. The course of the growth-lines and other collabral elements between the selenizone and periphery or lower suture present a basis for distinction; in *Urkutitoma*, they are just as much or even more prosocline than above the selenizone, but opisthocline or prosoclyt, sometimes orthocline in the pleurotomariids.

The similarly shaped forms, described as *Sisenna* species by SZABÓ (1980), have concave selenizone bordered by two prominent spiral cords and by whorl-surface angulation below. The selenizone of *Urkutitoma* is slightly convex and dissected by a spiral thread.

***Urkutitoma bartkoi* sp. n.**

(Fig. 3)

Holotype: Fig. 3. — **Locus typicus:** Úrkút, Csárda-hegy — **Stratum typicum:** Lower? Sinemurian Hierlatz Limestone — **Derivatio nominis:** after the collector's name — **Diagnosis:** shape as in diagnosis of genus (see above); retiform sculpture on whorls with granulae in crossing points; only spiral lineation on base.

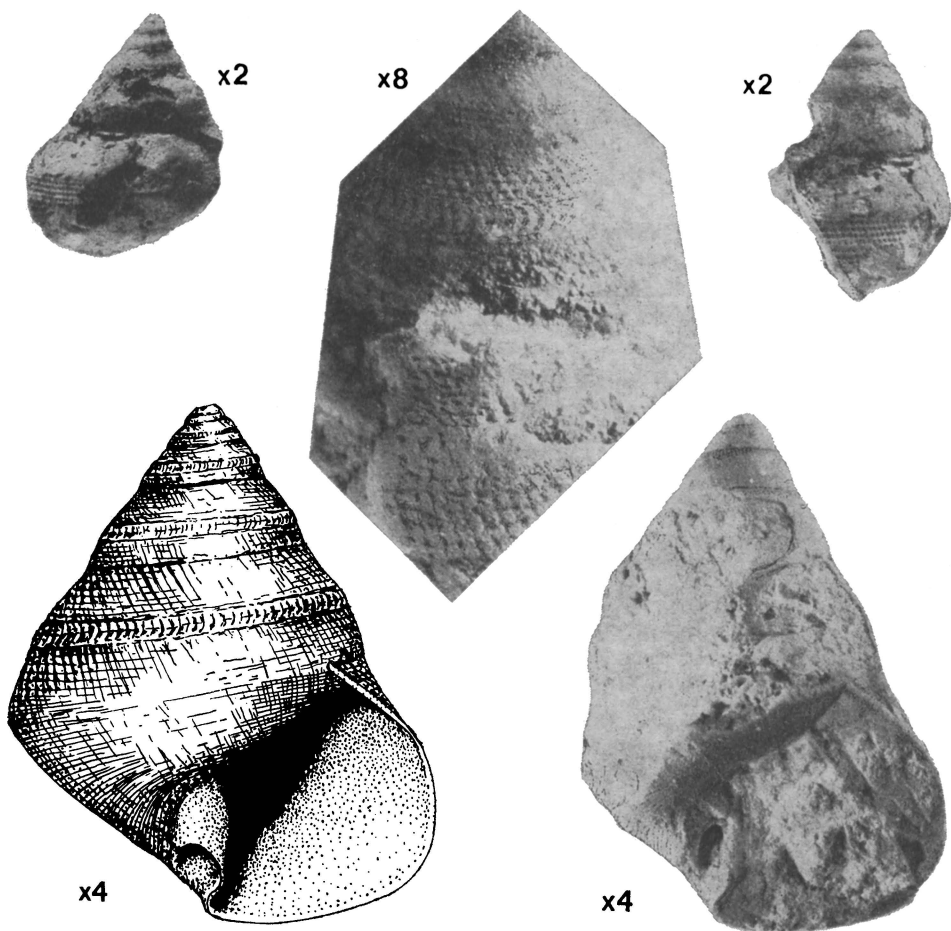


Fig. 3. *Urkutitoma bartkoi* gen. et sp. n., holotype J 10 143, and its reconstruction

Material — Only one rather poorly preserved specimen.

Measurements:

height	height of last whorl	height of aperture	diameter	width of aperture	apical angle
16.8 mm	11.3 mm	8.5 mm	—	7.4 mm	64°

Description — Top of convexity of a whorl coinciding with selenizone, running below midwhorl. Only small shelly parts of last whorl preserved so position of anal fissure unknown. Its existence may be inferred from the joint presence of an uninterrupted outer lip and a selenizone on the earlier whorls. Aperture nearly quadrangular with slightly arched sides, concave at parietal and columellar (umbilical) parts, convex at both outer lip parts. Below opening of umbilicus, a characteristic angulation, similar to a rudimentary siphonal outlet. Inner lip callosity, bending over umbilicus lacking on available specimen, but its shape seemingly as in the reconstruction (Fig. 3), based on the break-surface of the shell.

Ornament consisting of collabral and spiral threads, resulting a network on whorls with small granulae at crossing points. On last whorl, spiral elements strengthened as cords.

Distribution — Bakony Mountains, Úrkút, Csárda-hegy: Lower? Sinemurian.

Remarks — In spite of the poor state of preservation, the specimen shows a number of features, necessary for the definition of the new genus and species. Among the trochotomids, I know of no species which would not be separated by the method discussed in the remarks of the genus. Without outer lip, the new species is somewhat similar to *Sisenna pinguis* (DESLONGSCHAMPS 1849) in its granulate ornament, but the characters of selenizones and the collabral ornament, moreover the measurements support the distinction.

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