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Ladinian ammonoids from the Balaton Highland (Hungary). II. Veszprémfajsz

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Ladin ammoniteszek a Balaton-felvidékről. II. Veszprémfajsz

Összefoglalás

A Balaton-felvidék ÉK-i részén, Veszprémfajsztól nyugatra húzódik az a középső triász képződményekből felépülő, NyDNy–KÉK-i csapású vonulat, amelynek egyik tagja a Király-hegy. A vonulat szerkezetét alpi gyűrődések jellemzik, középső triász rétegsorát a Katrabócán mélyült Nemesvámos Nos–2 fúrás harántolta. A terület felszínre bukkanó legidősebb triász képződménye a veszprémfajszi Kálvária-hegyet alkotó, alsó anisusi Iszkahegyi Mészkő és a fedőjében települő Megyehegyi Dolomit karbonátrámpa kifejlődése. A Király-hegyet felépítő, medence kifejlődésű rétegsor jól rétegzett, bitumenes, középső–felső anisusi Felsőörsi Mészkővel kezdődik, amelyet kisebb fejtőgödrök tárnak fel a hegy déli részén. A fölötte települő felső anisusi, mészkő-betelepülésekkel tagolt vulkáni tufa (Vászolyi Formáció) alig feltárt, míg a ladin Buchensteini Formáció a hegy gerincén szálban nyomozható. A formáció alsó szakaszát gumós, kovás, tűzköves pados mészkő alkotja, amelyet vörös, ammoniteszes mészkő vált fel a rétegsorban felfelé.

A veszprémfajszi Király-hegy a Balaton-felvidék régóta ismert ladin ősmaradvány-lelőhelyének, a nemesvámosi Katrabócának a közvetlen szomszédságában van. Rétegtani felépítésükben ugyanazok a középső triász képződmények vesznek részt, így a Király-hegyen is megtalálható az a felső ladin vörös mészkő („vámosi márvány”), amely a Katrabóca felhagyott kőfejtőiben a klasszikus ladin ammoniteszegyüttest szolgáltatta. Ennek ellenére a Király-hegy (régi nevén Hegyesgyűr) ammoniteszeiről eddig nem történt említés a szakirodalomban. Az általunk végzett gyűjtések során igen gazdag felső ladin ammoniteszfauna került elő a Király-hegy vörös mészkövéből, amelyben a Katrabócán ismeretlen taxonok is előfordulnak, sőt új genuszokat és fajokat is sikerült kimutatni. A több száz ammoniteszpéldány közül 230 minősült jó megtartásúnak és gyűjteményi megőrzésre méltónak. Részletesebb vizsgálatuk során a faunából 33 taxont tudtunk azonosítani. A korábban vizsgált lelőhelyekről is ismert ladin ammonoidea-genuszok (*Megaphyllites, Epigymnites, Proarcestes, Monophyllites*) előfordulása mellett jellemző a *Protrachyceras* és az *Arpadites* számos fajának tömeges megjelenése. Az *Arpadites* genusz két új faját ismertük fel. Jellemző és feltűnő az *Argolites*-példányok tömeges jelenléte, míg ez a nemzetség a közeli Katrabóca II. szelvényben mindössze szórványosan jelent meg. Három új genuszt (*Pinterites, Paranolcites, Katrabocaites*) ismertünk fel és írtunk le, melyek közül a *Katrabocaites* új fajokat is tartalmaz. Az *Argolites*-fajok és -példányok tömeges fellépése figyelemre méltó, mert a nemzetség leggazdagabb előfordulását a lombardiai Esino Mészkőből jelezték a klasszikus és újabb tanulmányok. A karbonátplatform (intra-platform vagy peri-platform) környezetet kedvelő *Argolites*ek megjelenése a Király-hegy pelágikus jellegű, vörös mikrites mészkőösszletében tehát egy aktív, sekélytengeri karbonátplatform közelségére utalhat a késő ladinban, amit a földtani térképezési tapasztalatok is alátámasztanak.

A Király-hegyen létesített árkolás (6. gyűjtési pont) szelvényében két ammonoidea-zónát különítettünk el. Az Archelaus Zónát (4. réteg) a zóna indexfajának jelenléte igazolja. A szelvény alsóbb rétegeit (5–12) a Margaritosum Zónába soroltuk, részben az *Argolites*-fajok és az *Arpadites dichotomus* megjelenése, részben a Katrabóca II. szelvénnyel felismert analógiák alapján.

Tárgyszavak: felső ladin, ammonitesz, taxonómia, biosztratigráfia, üledékképződési környezet

Abstract

Recent collecting of the Király Hill at Veszprémfajsz yielded a well-preserved Longobardian (upper Ladinian) fossil assemblage from the red nodular limestone of the Buchenstein Formation in the northeastern part of the Balaton Highland. At the previously unknown fossil site about 230 well-preserved ammonite specimens were collected and 33 taxa

were identified. Besides the well-known upper Ladinian genera (*Megaphyllites, Epigymnites, Proarcestes, Monophyllites*), several *Arpadites* and *Protrachyceras* species appeared in large numbers. The presence of *Argolites* species is also characteristic, although this genus is barely found at the nearby Katrabóca II site. We recognized and described three new genera (*Pinterites, Paranolcites, Katrabocaites*), one of which, the *Katrabocaites*, contains new species, as well. These new data significantly expand our knowledge on the upper Ladinian ammonites of the Mediterranean region. The taxonomic studies of the ammonite assemblage and its comparison with faunas of Alpine and Dinaric sites provides a more detailed picture of the relationship between the different habitats of the western Neotethys as well as an opportunity to refine the biostratigraphic division of the Ladinian stage.

Keywords: upper Ladinian, ammonite, taxonomy, biostratigraphy, sedimentary environment

Introduction

The first comprehensive geological study of the Triassic system of the Southern Bakony Mts. was performed by János BÖCKH (1872, 1873). Near Veszprémfajsz, he mentioned thin-bedded bituminous calcareous marl (= Felsőörs Fm) west of the village (= Király Hill), overlain by red cherty "tridentinus" limestone (= Buchenstein Fm). LACZKÓ (1911) published a very detailed description of the Triassic stratigraphy and the structure of the Nemesvámos area; however, the nearby "Hegyesgyűr" (= Király Hill) at Veszprémfajsz was outside of his research area. LÓCZY (1913) only briefly mentioned "Hegyesgyűr" in his monograph; however, his geological map (LÓCZY 1920) shows the structure of the area with great accuracy.

In the framework of the last mapping programme of the Balaton Highland, the area of Nemesvámos and Veszprémfajsz was also re-surveyed (BUDAI et al. 1999a, b). The Ladinian ammonoid fauna of Katrabóca (Nemesvámos) was collected bed by bed and the results were published by VÖRÖS (1998). However, the Ladinian sucession of the Király Hill (Veszprémfajsz) remained outside of research efforts.

During the last years, new explorations were performed at several localities in the area by amateur collectors (co-authors of this paper). The upper Ladinian cephalopod assemblage of the classic site of Katrabóca was recently re-evaluated by VÖRÖS et al. (2024). In the present paper, we continue to publish the newest results of the upper Ladinian ammonite studies of the Balaton Highland that were performed on the Király Hill. Taxonomic evaluation of the assemblage was performed and new species and new genera were also established. Comparison with published fauna of Alpine and Dinaridic localities may help in clarifying the Ladinian biostratigraphy of the Western Tethys province.

In this publication, the taxonomy chapter is the independent work of Attila VÖRÖS who is the author of the newly introduced taxa.

Geological setting

The oldest exposed rock units of the study area at Veszprémfajsz belong to the lower Anisian carbonate ramp succession of the Balaton Highland (*Fig. 1a*). The dark grey, evenly bedded, laminated bituminous limestone of the 300-m-thick Iszkahegy Formation is overlain by some tens of metres of bituminous, bedded dolomite of the Megyehegy Formation.

The upper part of the Middle Triassic succession of the Veszprémfajsz–Nemesvámos area was penetrated by the Nemesvámos Nos–2 drill core close to the Katrabóca fossil site (*Fig. 1b*). The middle to upper Anisian hemipelagic basin succession of the Felsőörs Formation is made up of limestone and calcareous marl that consist of bituminous laminated clayey limestone/dolomite in the lowermost and siliceous laminite in the uppermost part of the succession. The overlying volcanic tuff with siliceous limestone lenses of the uppermost Anisian Vászoly Formation is poorly exposed on the surface. The Ladinian Buchenstein Formation comprises bedded, nodular, siliceous limestones with chert lenses. In the upper part of the formation, the red nodular limestone alternates with dark red thin marl layers, and some greenish tuff intercalations also occur. This part of the succession contains the classic ammonite assemblage of the Katrabóca section at Nemesvámos and also the new finds at the Király Hill section at Veszprémfajsz. At Katrabóca, the overlying lower Carnian sequence is made up of light grey, microcrystalline dolomitized limestone (Füred Fm), and light grey dolomite with some cm-thick tuff layers (Gémhegy Formation, Kádárta Member). These two formations are missing on the Király Hill due to subsequent erosion.

Near Nemesvámos (*Fig. 1a*), the younger part of the Carnian stage is made up of basinal marls (Veszprém Fm) and shallow marine limestones (Sándorhegy Fm). To the northeast, on the Veszprém Plateau, dolomite beds of the heteropic platform carbonate units (Budaörs Dolomite and Gémhegy Dolomite Formations) intercalate into the Ladinian–Carnian basin sequence (BUDAI & HAAS 1997, HAAS & BUDAI 1999, BUDAI & VÖRÖS 2006, KARÁDI et al. 2022).

Materials

The fossiliferous red limestone in the upper part of the Buchenstein Formation is exposed by small pits (collecting sites 1–7, *Table I*) on the northern hillside, overlying the cherty nodular limestone of the formation that forms the top of the Király Hill (*Fig. 1a*). Dipping of strata is about 30 degrees to the northwest and all of the collecting sites are positioned along strike, some tens of metres apart from each other.

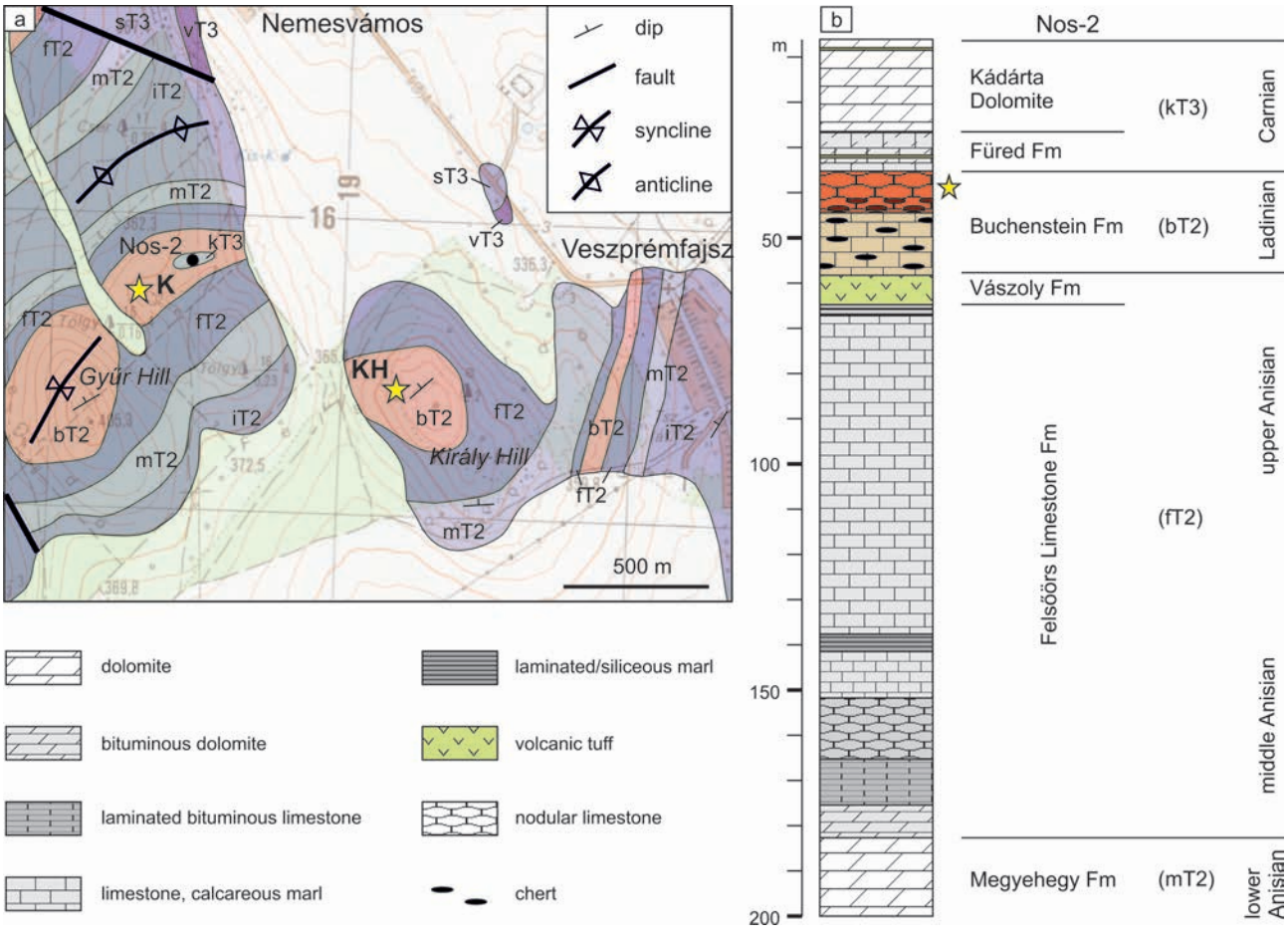


Figure 1a. Geological map of the Veszprémfajsz–Nemesvámos area (after Budai et al. 1999a) showing the locations (yellow stars) of Katrabóca (K) fossil site (Vörös 1998, Vörös et al. 2024) and of Király Hill (KH) fossil site (this paper, *Fig. 2*) and of Nemesvámos Nos-2 drill core (*Fig. 1b*). Uncoloured part of the map area is covered by Quaternary sediments. Codes of the Triassic formations: lower Anisian: iT2 – Iszkahegy Limestone Fm; mT2 – Megyhegy Dolomite Fm; middle–upper Anisian: fT2 – Felsőörs and Vászoly Fm; Ladinian: bT2 – Buchenstein Fm; Carnian: kT3 – Füred Limestone Fm and Kádárta Dolomite Mb (Gémhegy Fm); vT3 – Veszprém Fm; sT3 – Sándorhegy Fm.

Figure 1b. Stratigraphic column of the Anisian–lower Carnian formations of the study area in the Nemesvámos Nos-2 drill core (after Vörös et al. 2024). The star shows the stratigraphic position of the upper Ladinian ammonite bearing limestone of the Katrabóca and the Király Hill

1a ábra. *Veszprémfajsz–Nemesvámos környékének földtani térképe (Budai et al. 1999a nyomán) a Nemesvámos Nos-2 fúrás helyének feltüntetésével. Ammonitesz-lelőhelyek (sárga csillag): K –Katrabóca (Vörös 1998, Vörös et al. 2024), KH – Király-hegy (2. ábra). A térképen színezetlen területet kvarter borítja. Alsó anisusi: iT2 – Iszkahegyi Mészkő F.; mT2 – Megyhegyi Dolomit F.; középső–felső anisusi: fT2 – Felsőörsi és Vászolyi F.; ladin: bT2 – Buchensteini F.; karni: kT3 – Füredi Mészkő F. és Kádártai Dolomit T. (Gémhegyi F.); vT3 – Veszprémi F.; sT3 – Sándorhegyi F.*

1b ábra. *A Nemesvámos Nos-2 fúrás rétegoszopa (Vörös et al. 2024 nyomán). A csillag a Katrabóca és a Király-hegy felső ladin ammoniteszes mészkövének rétegtani helyzetét mutatja*

The Király Hill section

For bed-by-bed collections a trench was excavated and sampled in 2024–2025 near the top of the Király Hill (at collecting site 6). The trench exposed the upper part of the Buchenstein Limestone in a total thickness of about 1.8 m (*Fig. 2*).

The red limestone in the lower part of the succession is well-bedded (beds 12–8), and is overlain by some thicker beds in the middle part (beds 7–6). The upper part of the succession is made up by thin bedded micritic limestone (beds 4–1) with thin marly intercalations. The most abundant ammonite assemblage of the succession was collected in the coquina of bed 5. Bed 4 and bed 10 also contain well preserved ammonoids in a relatively large number.

Table I. Coordinates of the collection sites of the Király Hill at Veszprémfajsz

I. táblázat *A veszprémfajszi Király-hegy gyűjtési pontjainak koordinátái*

collecting site 1	47°02’6.77”	17°52’59.69”
collecting site 2	47°02’6.91”	17°53’0.31”
collecting site 3	47°02’7.01”	17°53’01.25”
collecting site 4	47°02’7.0”	17°53’01.5”
collecting site 5	47°02’8.17”	17°53’02.22”
collecting site 6 (trench)	47°02’8.23”	17°53’02.32”
collecting site 7	47°02’9.60”	17°53’03.52”

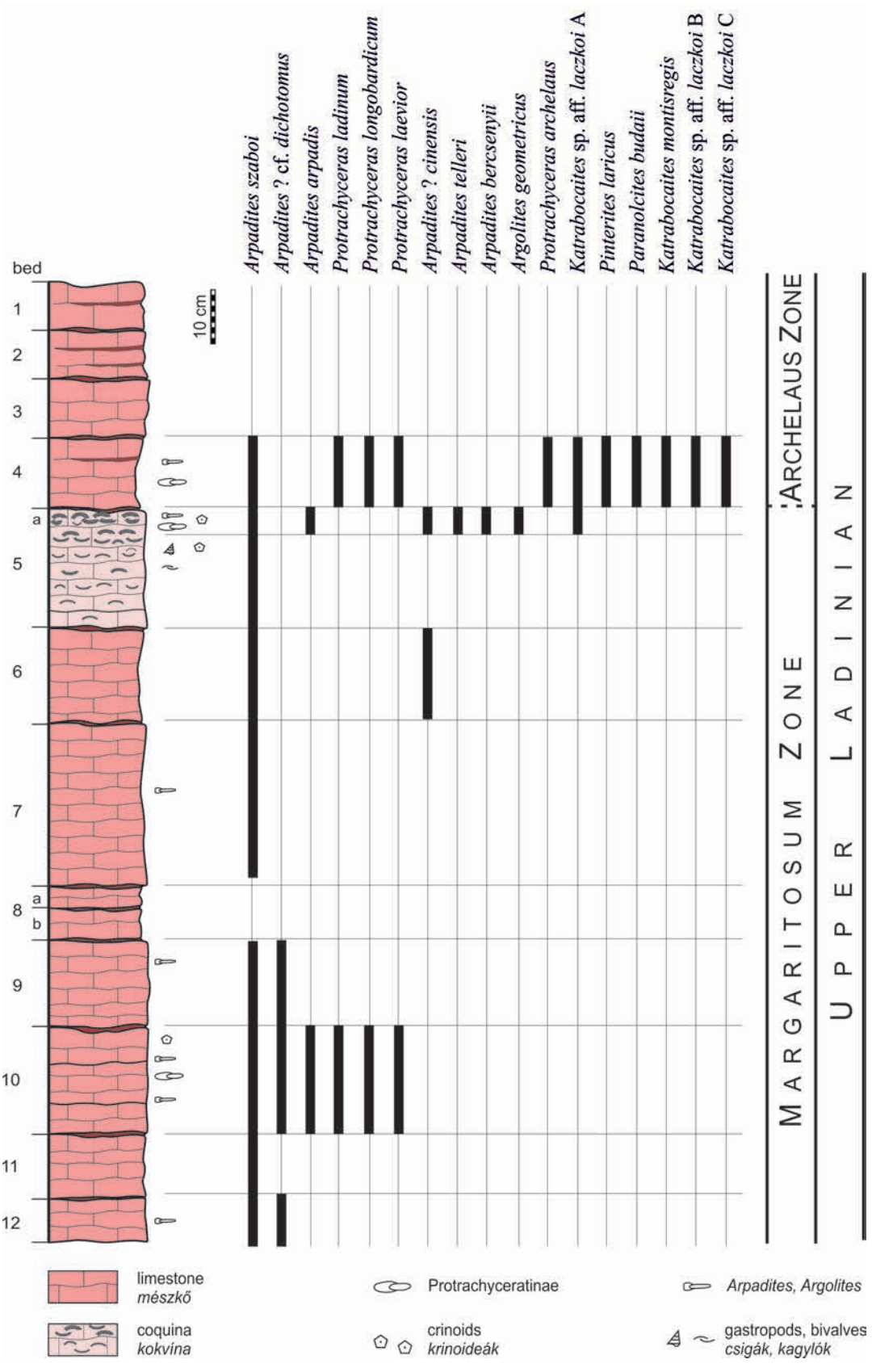


Figure 2. Stratigraphic column of the upper part of the Buchenstein Limestone exposed in the trench at Király Hill (collecting site 6) indicating the ranges of the ammonoid taxa

2. ábra. *A Buchensteini Mészkő felső szakaszának rétegoszlopa a Király-hegyen létesített kutatóárokban (6. gyűjtési helyszín), az ammonitesz-fajok rétegtani elterjedésével*

The collected fossil assemblage

In the course of the extensive and voluminous collecting work, besides the dominant ammonoids, various groups of fossils were encountered, e.g. crinoids, bivalves, gastropods, nautilids and orthoconic cephalopods, mainly in the coquina bed. Instead of an account of the whole invertebrate fauna, the present paper is aimed at the detailed description and illustration of the large and well-preserved ammonoid material. The collecting work resulted in several hundreds of fragmentary, and 230 well-preserved ammonoid specimens from which 33 taxa were separated and identified; 88 specimens of these are illustrated by photographs (*Plates I–XI*). The stratigraphic position of the ammonoids that were collected at the various sites (1–5 and 7) can be correlated by the presence of the marker coquina bed (bed 5) of the trench (collecting site 6), which contains rich *Arpadites* and *Argolites* assemblages. However, in these cases, we included the bed numbers in parentheses to indicate the inferred correlation with the corresponding layers in the trench.

With 33 taxa, this fauna is significantly more diverse than that found by us in the famous nearby Katrabóca locality (23 taxa: Vörös et al. 2024). In order to avoid repetitions, in the systematic chapter only those taxa will be described that were not recorded in the Ladinian (Longobardian) layers at the Katrabóca locality.

The following list enumerates all ammonoid taxa identified from the outcrops of the Király Hill. For those taxa that are not described in detail, only the corresponding plate and figure numbers are indicated. Other taxa that are marked with boldface are described briefly, or in case of the new taxa, they described in more detail in the systematic chapter.

The illustrated ammonoid specimens are mostly kept in the private collections of M. Bercsényi and Zs. Pintér under various identification codes. The type specimens of the new species are haused in the collections of the Department of Geology and Palaeontology of the Hungarian Natural History Museum (HNHM) under inventory numbers prefixed by M or PAL, and in the collections of the Supervisory Authority for Regulatory Affairs (SARA, former Geological Institute of Hungary) under inventory numbers prefixed by T.

Megaphyllites obolus Mojsisovics, 1882 (Plate I, 1)
***Epigymnites* cf. *credneri* (Mojsisovics, 1882) (Plate I, 2, 3)**
Proarcestes subtridentinus (Mojsisovics, 1875) (Plate I, 4)
Proarcestes boeckhi (Mojsisovics, 1875) (Plate I, 5)
Arpadites arpadis (Mojsisovics, 1870) (Plate I, 6–10)
Arpadites szaboi (Böckh, 1872) (Plate II, 1–3, 4)
***Arpadites toldyi* Mojsisovics, 1882 (Plate II, 5)**
Arpadites telleri Mojsisovics, 1882 (Plate II, 6–8, 10, 11)
Arpadites cf. *bracki* Fantini Sestini, 1994 (Plate II, 9)
***Arpadites bercsenyii* n. sp. (Plate II, 12; Plate III, 1–3)**
***Arpadites* ? *manzonii* (Benecke, 1876) (Plate III, 4–6)**
Arpadites ? *cinensis* Mojsisovics, 1882 (Plate III, 7–9)
Arpadites ? cf. *dichotomus* Fantini Sestini, 1994 (Plate III, 10–12)
***Arpadites* ? sp. aff. *manzonii* (Benecke, 1876) (Plate III, 13–17)**
***Argolites arpaditoides* (Mojsisovics, 1882) (Plate IV, 1–3)**
***Argolites geometricus* (Frech, 1903) (Plate IV, 4–9, 12)**
***Argolites nodosus* n. sp. (Plate IV, 10, 11, 13–15)**
***Pinterites laricus* (Mojsisovics, 1882) (Plate V, 1, 2)**
***Paranolcites budaii* n. sp. (Plate V, 3)**
Eoprotrachyceras cf. *pseudoarchelaus* (Böckh, 1872) (Plate V, 4)
Protrachyceras archelaus (Laube, 1869) (Plate V, 5, 6; Plate VI, 1; Plate VII, 1; Plate IX, 1, 3)
Protrachyceras sp. aff. *archelaus* (Laube, 1869) (Plate VIII, 1)
Protrachyceras sp. aff. *gredleri* (Mojsisovics, 1882) (Plate VII, 2, 3)
Protrachyceras ladinum (Mojsisovics, 1882) (Plate VI, 4; Plate VIII, 2, 5, Plate X, 2)
Protrachyceras longobardicum (Mojsisovics, 1882) (Plate VI, 2, 3; Plate IX, 2)
Protrachyceras steinmanni (Mojsisovics, 1882) (Plate VIII, 3)
Protrachyceras cf. *margaritosum* (Mojsisovics, 1882) (Plate VI, 5)
***Protrachyceras* cf. *laevior* (Frech, 1903) (Plate VI, 6)**
***Protrachyceras irregulare* Fantini Sestini, 1994 (Plate VIII, 4)**
***Katrabocaites montisregis* n. sp. (Plate XI, 1–3)**
***Katrabocaites* sp. aff. *laczkoi* (Diener, 1899) A (Plate IX, 5, 7)**
***Katrabocaites* sp. aff. *laczkoi* (Diener, 1899) B (Plate IX, 4; Plate X, 1)**
***Katrabocaites* sp. aff. *laczkoi* (Diener, 1899) C (Plate IX, 6)**
Monophyllites wengensis (Klipstein, 1843) (Plate XI, 4, 5)

Systematic descriptions of the ammonoid taxa by Attila Vörös

The classification in this chapter follows mostly that of Tozer (1981) except that the subfamily Arpaditinae is moved to the family Danubitidae, which is adopted from Mietto et al. (2018). The new subfamily Katrabocaitinae is inserted into the family Trachyceratidae. Short notes are given for the species not yet reported from the locality of Katrabóca in our previous article (Vörös et al. 2024), whereas the newly introduced taxa are described in more detail.

Order Ceratitida Hyatt, 1884
Superfamily Pinacoceratoidea Mojsisovics, 1879
Family Gymnitidae Waagen, 1895
Genus *Epigymnites* Diener, 1916

Epigymnites cf. *credneri* (Mojsisovics, 1882)
(Plate I, 2, 3)

1882 *Gymnites Credneri* E. v. Mojsisovics – Mojsisovics, Mediterr. Triasprovinz, p. 238, pl. LIX, figs 1, 3.
v 1903 *Gymnites Credneri* Mojs. – Frech, Neue Cephalopoden, p. 35, pl. VII, fig. 1.

v 1998 *Epigymnites* sp. – VÖRÖS, Balaton-felvidék, p. 98; pl. XIII, fig. 8.
2018 *Epigymnites credneri* (MOJSISOVICS, 1882) – MIETTO et al., Recoaro and Tretto, p. 241, pl. 2, fig. 8.

In its ornamentation, this species shares the longitudinal row of blunt nodes in the mid-flank of the body chamber with *E. ecki* (MOJSISOVICS, 1882), but its umbilicus is significantly narrower. Both our specimens are rather small, juvenile; therefore it does not show the row of blunt nodes which, according to the illustrations by MOJSISOVICS (l.c. fig. 3), appears only on the adult body chamber. The specimen figured by VÖRÖS (1998, l.c.) as *Epigymnites* sp. from the Katrabóca locality, apparently belongs to *E. credneri*.

Superfamily Ceratitoidea MOJSISOVICS, 1879
Family Danubitidae SPATH, 1951
Subfamily Arpaditinae HYATT, 1900
Genus *Arpadites* MOJSISOVICS, 1879

Arpadites toldyi MOJSISOVICS, 1882
(Plate II, 5)

v 1882 *Arpadites Toldyi* E. v. MOJSISOVICS – MOJSISOVICS, Mediterr. Triasprovinz, p. 56, pl. XXVI, fig. 1.
v 1903 *Arpadites Toldyi* MOJS. – FRECH, Neue Cephalopoden, p. 32., text-fig. 11.
v non 1998 *Arpadites toldyi* sp. – VÖRÖS, Balaton-felvidék, p. 45; pl. XI, figs 4, 5.

This species was described by MOJSISOVICS (l.c.) from Szentantalfa (this locality today belongs to Balatoncsicsó). The type specimen was checked in the collection of the SARA (formerly Geological Institute of Hungary) under inventory number T.188. *A. toldyi* belongs to the group of the more evolute-type *Arpadites* species, and stands the closest to *A. szaboi* (BÖCKH, 1872). It differs from the latter by much narrower bicarinate venter, denser ribbing and faint but marked umbilical nodes. The poorly preserved fragments figured by VÖRÖS (1998, l.c.) probably belong to *A. szaboi*. We have a single well-preserved specimen from the Király Hill.

Arpadites bercsenyii n. sp.
(Plate II, 12; Plate III, 1–3)

v 1882 *Arpadites Telleri* E. v. MOJSISOVICS – MOJSISOVICS, Mediterr. Triasprovinz, p. 59 (partim), pl. XXVII, fig. 14 (only).

Holotype: Hungarian Natural History Museum (Budapest), inventory number: PAL 2025.6.1.

Locus typicus: Veszprémfajsz, Király Hill, 6. section, Bed 5.

Stratum typicum: Coquina limestone, Buchenstein Formation, Ladinian, Longobardian.

Derivatio nominis: After the name of Miklós BERCSÉNYI, who collected the holotype.

Diagnosis: Medium-sized, evolute *Arpadites* with high quadratic whorls. Venter bicarinate. Ribs prorsiradiate, slightly projected. Primaries and sparse secondaries become stronger ventrally. Two rows of lateral nodes on the outer half of the flanks; strong, projected ventrolateral nodes.

Material: Four, partly fragmentary specimens from Veszprémfajsz, Király Hill.

Measurements (in mm):

Inventory No.	D	Wh	Ww	U
PAL 2025.6.1.	48.8	15.9	9.4	21.3
ArkapBMKh-6	42.4	14.4	8.6	18.2
ArkapBMKh-2	51	17.2	?	24.5
ArkapPZsKh	45.8	15.1	?	?

Description: Medium to large *Arpadites*, with rather evolute conch. The whorl section is high quadratic. The umbilical edge is subrounded. The flanks are almost flat and attach with obtuse angle to the gently arched venter. The venter is bicarinate with rather closely spaced, keel-like elevations. The flanks are ornamented with moderately strong ribs and nodes. The number of the slightly prorsiradiate ribs is 20 to 28 on the half whorl of the body chamber. The strength of the ribs increases toward the venter. Secondary ribs irregularly appear by intercalation. Bifurcation was not observed. The umbilical nodes are very fine. Two, closely spaced rows of lateral nodes develop in the outer half of the ribs. The strong and projected ventrolateral nodes appear at the ventrolateral ends of the primary and the secondary ribs. Suture lines are not visible.

Remarks: *A. bercsenyii* differs from other species of the genus *Arpadites* by its characteristic ornamentation, i.e. by the two rows of lateral nodes on the outer half of the flanks. MOJSISOVICS (l.c.) illustrated an *Arpadites* specimen with two rows of lateral nodes under the name *A. telleri*. In the text he stated that this specimen had an additional spiral row of nodes between the laterals and ventrolaterals. This specimen should rightly be considered to belong to *A. bercsenyii*.

Distribution: Up to now *A. bercsenyii* has been known from the Esino Limestone (Lombardy) and from the type locality, from the Longobardian Archelaus Zone.

Arpadites ? *manzonii* (BENECKE, 1876)
(Plate III, 4–6)

1876 *Ammonites Manzonii* n. sp. – BENECKE, Esino, p. 314, pl. XXIV, figs 5–9.
v 1882 *Arpadites Manzonii* (BENECKE) E. v. M. – MOJSISOVICS, Mediterr. Triasprovinz, p. 57, pl. XXVI, figs 16–19; pl. XXVII, figs 1–6.

A. manzonii belongs to the group of the less evolute-type *Arpadites* species, where the U/D ratio is well below the value of 0.42. This species was described by BENECKE (l.c.) and MOJSISOVICS (l.c.) from the Esino Limestone (Lombardy). The specimens figured by MOJSISOVICS (l.c.) were checked by the author in the collection of the Geologische Bundesanstalt (Vienna). The flanks of *A. manzonii* show very dense, weak ribbing with fine rows of nodes at the umbilical margin and in the mid-flank; the ventrolateral endings of the riblets show no perceptible nodes. The bicarinate venter is completely smooth. Two nearly complete specimens of *A. manzonii* were found at the Király Hill.

Arpadites ? sp. aff. *manzonii* (Benecke, 1876)
(Plate III, 13–17)

This species shares almost all morphological features of *A. manzonii*, and belongs to the group of the less evolute-type *Arpadites* species. The mean U/D value is 0.39; the fine riblets are prorsiradiate and weakly falcoid near the ventral margin. The narrow venter is bicarinate. The diagnostic difference from *A. manzonii* is that our species has two rows of lateral nodes in the outer half of the flanks, instead of one in *A. manzonii*. We have five, variously preserved specimens from the Király Hill.

Genus *Argolites* Renz, 1939

The name *Argolites* was coined by Renz (1939, p. 243) in a faunal list as a subgenus of *Arpadites*. Further on (p. 244) he outlined the taxon in some details, as including "*Protrachyceras arpaditoides* Mojs.", "*Arpadites celtitoides* Airaghi" and a closely similar, but not described new species. *Argolites* was raised to the rank of genus by Tozer (1981) without diagnosis. Fantini Sestini (1994, p. 264) was the first to properly define the genus, with designation of the type species *A. mojsisovicsi* (De Lorenzo, 1897). The most diagnostic features separating *Argolites* from *Arpadites* are the more evolute shell, the ribs becoming stronger ventrally, the prominent, mostly acute ventrolateral nodes and the rounded venter. Our present material mostly endorses and corresponds to these differences. Our studies demonstrate that the degree of evolution, in itself, seems enough to distinguish these two genera. The mean D/U ratio is 0.46 in *Arpadites* (measured on 52 specimens) whereas this mean value is 0.57 in *Argolites* (measured on 17 specimens).

Argolites arpaditoides (Mojsisovics, 1882)
(Plate IV, 1–3)

1882 *Trachyceras arpatitoides* E. v. Mojsisovics – Mojsisovics, Mediterr. Triasprovinz, p. 101, pl. XXVII, fig. 16.

The name of this species was written in Mojsisovics (l.c.) consistently as *arpatitoides* in the text, but as *arpaditoides* in the plate explanation. Renz (1939) in the introduction of *Argolites* used the second form, as did Fantini Sestini (1994: 264) later; therefore, the name is applied here as *arpaditoides*.

The most important diagnostic features of *A. arpaditoides* are the coarse prorsiradiate ribs, the thorn-like ventrolateral nodes set irregularly on every second or third rib, and the very faintly bicarinate, almost smooth venter. According to Fantini Sestini (1994: 264) the type specimen of *A. arpaditoides* (originally deposited in Strasbourg) seems to be lost. Nevertheless, the figures by Mojsisovics (1882, pl. XXVII, figs 16a, b) clearly show the above important features. Note that the drawing of the lateral view (fig. 16a) of the small and incomplete specimen (a one-third conch) suggests a wrong impression as if the ribbing would be rursiradiate. On the other hand, the ventral view (fig. 16b) shows that the ventrolateral endings of the ribs are projected forwards.

Argolites mojsisovicsi (De Lorenzo, 1897) as figured, and designated as type species of *Argolites* by Fantini Sestini (1994, pl. 11, figs 16, 17) is similar to *A. arpaditoides* but more involute and its ventrolateral nodes/spines are much higher. All these features are hardly seen in the original figures of *A. mojsisovicsi* by De Lorenzo (1897, pl. XX, figs 7–14) portraying badly crushed and fragmentary specimens. "*Arpadites arietiformis*" (De Toni 1914, p. 131. pl. X, fig. 7) is even more similar to *A. arpaditoides* in prorsiradiate ribbing but its ribs are regularly bifurcate and bears simple, weak ventrolateral nodes.

Argolites geometricus (Frech, 1903)
(Plate IV, 4–9, 12)

v 1903 *Celtites geometricus* n. sp. – Frech, Neue Cephalopoden, p. 32., pl. X, fig. 9.
v 1998 *Arpadites* sp., aff. *arpadis* (Mojsisovics, 1870) – Vörös, Balaton-felvidék, p. 45, pl. X, fig. 8.

This is the most frequent and the largest species of *Argolites* at the Király Hill localities. The whorls of the serpenticone conchs bear typically simple, strong, rectiradiate ribbing; the ribs may be gently projected. Rarely intercalations occur. The venter is slightly bicarinate but, in adults, it is completely smooth or is crossed by growth rugae (Pl. IV, figs 6b, 8b). The original specimen of *A. geometricus* (kept in the collections of the SARA (formerly Geological Institute of Hungary) under the inventory number T.886.) was described by Frech (l.c.) from a nearby locality at Katrabóca.

A. celtitoides (Airaghi, 1902) as figured by Airaghi (1902, pl. IV, fig. 10) and by Jadoul et al. (1992, pl. 23, fig. 1) is rather similar to *A. geometricus* but differs in having coarser and less numerous ribs (the number of ribs is 12-14 in *A. celtitoides* and 20-30 in *A. geometricus*).

The very evolute specimen (U/D ratio 0.59) illustrated by Vörös (1998, l.c.) as *Arpadites* sp. aff. *arpadis*, is now attributed to *A. geometricus.*

Argolites nodosus n. sp.
(Plate IV, 10, 11, 13–15)

? 1967 *Arpadites* (*Argolites*) *celtitoides* Airaghi, 1902 – Jacobshagen, Asklepieion, p. 25, pl. 1, fig. 2.

Holotype: Hungarian Natural History Museum (Budapest), inventory number: PAL 2025.7.1.

Locus typicus: Veszprémfajsz, Király Hill, 6. section, Bed 5a.

Stratum typicum: Coquina limestone, Buchenstein Formation, Ladinian, Longobardian.

Derivatio nominis: Referring to the lateral row of nodes.

Diagnosis: Small to medium-sized, moderately evolute *Argolites* with high quadratic whorls. Venter slightly bicarinate. Ribs prorsiradiate, slightly projected, become stronger ventrally. Weak umbilical and stronger lateral nodes at the middle of the flanks; strong, projected, irregularly spaced ventrolateral nodes.

Material: Five, mostly well-preserved specimens from Veszprémfajsz, Király Hill.

Measurements (in mm):

Inventory No.	D	Wh	Ww	U
PAL 2025.7.1.	51.2	11.6	10	29
ArargonodBM6-5a	49.2	11.2	?	28.3
ArteBMKh-3	52.4	13.1	?	29
Argo_nodBM6_5a	32.8	9	?	22
ArgonodSlab-2	30.8	7.9	?	17.8

Description: Medium-sized *Argolites*, with very evolute conch. The whorl section is high quadratic. The umbilical edge is subrounded. The flanks are nearly flat and join the gently arched venter with obtuse angle. The venter is very slightly bicarinate on the phragmocone, but becomes smooth on the body chamber, with anteriorly arched growth rugae.

The flanks are ornamented with moderately strong ribs and nodes. The number of the slightly prorsiradiate ribs is 18 to 24 on the half whorl of the body chamber. The strength of the ribs increases toward the venter. Secondary ribs irregularly appear by intercalation. The umbilical nodes are very fine. The moderately strong row of lateral nodes develops in the middle portion of the ribs. The strong and projected ventrolateral nodes appear at the ventrolateral ends of the primary ribs; their strength is sometimes irregular. Suture lines are not visible.

Remarks: *A. nodosus* differs from other species of the genus *Argolites* by its ornamentation, i.e., by the row of lateral nodes on the middle of the flanks. JACOBSHAGEN (1967, l.c.) illustrated an *Argolites* specimen with a row of lateral nodes under the name *Arpadites* (*Argolites*) *celtitoides*. This was an erroneous attribution, as FANTINI SESTINI (1994: 264) pointed out, because the species *A. celtitoides* (AIRAGHI, 1902) has no lateral nodes. Although Jacobshagen's illustrated specimen shows lateral nodes, but its ornamentation is much coarse; therefore, it is only tentatively included to *A. nodosus*.

Distribution: Up to now *A. nodosus* has been known from the Hallstatt-type Limestone of Epidaurus and from the type locality, from the Longobardian Archelaus Zone.

Superfamily Clydonitoidea HYATT, 1877
Family Trachyceratidae HYATT, 1877
Subfamily Anolcitinae MIETTO & MANFRIN, 2008

Genus *Pinterites* n. gen.

Type species: *Pinterites laricus* (MOJSISOVICS, 1882)

Diagnosis: Strongly involute and compressed conch. The lateral flank bears neither nodes nor true ribbing. Rare broad flares start from umbilical nodes. Around mid-flank sinuous and projected riblets intercalate, bearing two rows of numerous, closely spaced, fine ventrolateral nodes. Narrow and shallow ventral furrow between alternating ventral nodes. Suture ceratitic.

Derivatio nominis: After the family name of Zs. PINTÉR, renowned fossil hunter.

Nominal species belonging to *Pinterites*: the type species only: *Pinterites laricus* (MOJSISOVICS, 1882, p. 96, pl. XIII, fig. 13; pl. XXIV, figs 4–5.)

Discussion: By its very narrow umbilicus and compressed conch, *Pinterites* n. gen. stands rather alone within the subfamily Anolcitinae. MIETTO et al. (2008: 401), when very thoroughly discussing the Anolcitinae closely associated with their new species *Zestoceras lorigae*, also expressed that, considering the morphological features of "*Trachyceras laricum*", it was rather alien to this taxonomic group. One of the somewhat similar forms, "*Trachyceras rutoranum*" MOJSISOVICS, 1882, having coarse lateral ribbing, numerous intercalatories with projected ventral nodes, was tentatively attributed to *Liardites* TOZER, 1963 by MIETTO & MANFRIN (2008: 401). Moreover, *rutoranum* is much more evolute than *laricum*.

Distribution: *P. laricus* was described from the Ladinian Esino Limestone. Our specimens came from the Ladinian Buchenstein Limestone.

Pinterites laricus (MOJSISOVICS, 1882)
(Plate V, 1, 2)

v 1882 *Trachyceras laricum* E. v. MOJSISOVICS – MOJSISOVICS, Mediterr. Triasprovinz, p. 96, pl. XXIII, fig. 13; pl. XXIV, figs 4(?), 5, non fig. 3.

non 1977 *Tracbyceras laricum* (MOJSISOVICS) – URLICHS, Pachycardientuffe, p. 24, pl. 1, fig. 2.

non 1995b "*Anolcites*" ex gr. *laricum* (MOJSISOVICS, 1882) – MIETTO & MANFRIN, Limite ladinico-carnico, p. 32 (partim), pl. 2, figs 4–6.

v non 1998 *Anolcites ? laricus* (MOJSISOVICS, 1882) – VÖRÖS, Balaton-felvidék, p. 44

2008 *Trachyceras laricum* E.v. MOJSISOVICS – MIETTO et al., Ladinian/Carnian boundary, p. 398, pl. 1, fig. 11.

This is the type species of *Pinterites* n. gen., and seems markedly different from any other taxa of the subfamily Anolcitinae as indicated by having strongly involute and compressed conch. The ornamentation of the lateral flank is also peculiar: bears neither nodes nor true ribbing. Eight to ten broad flares start from the bulbous umbilical nodes of same number. Around the mid-flank gently sinuous and projected riblets intercalate, which bear two rows of closely spaced, finely pointed ventrolateral nodes, 26 to 28 in number on a half whorl. There is a narrow and shallow furrow between the alternating ventral nodes. The suture line is ceratitic with weakly crenulated lobes.

The present author examined the original specimens of MOJSISOVICS in the collections of the Geologische Bundesanstalt Wien, and found that the illustrations of the four specimens were mostly embellished, particularly the specimens in the seemingly best-looking figure (pl. XXIV, fig. 4), where the ventral part was greatly idealized. On the other hand, the illustration of the specimen on pl. XXIV, fig. 5, was proper. MIETTO & MANFRIN (2008: 398) apparently arrived at the same conclusion, and designated the specimen illustrated by MOJSISOVICS (1882, pl. XXIV, fig. 5) as the lectotype of "*Trachyceras laricum*" and refigured it (MIETTO & MANFRIN 2008, pl. 1, fig. 11). After all, the identification of *P. laricus*, by its unmistakeable morphology, is considered correct.

Genus *Paranolcites* n. gen.

Type species: *Paranolcites budaii* n. sp.

Diagnosis: Conch involute; whorl section high oval. Umbilical wall steep with subrounded edge. Gently convex flanks; slightly arched, nearly tabulate venter. Numerous, strong, prorsiradiate, sinuous primary and intercalatory ribs on flanks. Only umbilical nodes. Ventrolateral margins and venter uninterruptedly crossed by strong, blunt ribs; no ventrolateral nodes. Suture unknown.

Derivatio nominis: Referring to the similarity to *Anolcites* (para- <greek> = next to).

Nominal species belonging to *Paranolcites*: *Paranolcites budaii* n. sp.

Discussion: In lateral ornamentation the new genus is similar to *Anolcites*, particularly the species *A. arminiae* (Mojsisovics, 1893, p. 694, pl. CC, figs. 3, 4.) and *A. impolitus* (Tozer, 1994, p. 158, pl. 78, figs. 10, 11) but differs by its much narrower umbilicus and the total absence of ventrolateral nodes. The characteristic ventral ornamentation of *Paranolcites*, the ribbing without nodes, appear in some species of *Zestoceras* (e.g., *Z. enode*: Tozer, 1994, p. 180, pl. 82, figs 2, 5; *Z. cerastes*, l.c., pl. 82, fig. 4. and Z. *nitidum*, l.c., pl. 80, fig. 9) but these are significantly more evolute than *Paranolcites*.

Distribution: Up to now *Paranolcites* has been known only from the type locality, from the Longobardian Archelaus Zone.

Paranolcites budaii n. sp.
(Plate V, 3)

Holotype: Hungarian Natural History Museum (Budapest), inventory number: PAL 2025.8.1.

Locus typicus: Veszprémfajsz, Király Hill, 6. section, Bed 4.

Stratum typicum: Red ammonitic limestone, Buchenstein Formation, Ladinian, Longobardian.

Derivatio nominis: After the name of Tamás Budai, renowned Triassic geologist.

Diagnosis: As of the genus.

Material: A single, mostly well-preserved specimen from Veszprémfajsz, Király Hill.

Measurements (in mm):

Inventory No.	D	Wh	Ww	U
PAL 2025.8.1.	55	26.9	20.3	13.3

Description: *Paranolcites* with rather involute conch. The whorl section is high oval. The umbilical wall is steep; the umbilical edge is subrounded. The flanks are gently convex and join the gently arched, almost tabulate venter with obtuse angle. The venter is crossed by strong but blunt ribs. The flanks are ornamented with strong ribs. The number of the slightly sinuous prorsiradiate ribs increases by intercalations up to 22 on the half whorl of the body chamber. The strength of the ribs increases toward the venter. The umbilical nodes are moderately strong. The lateral flanks bear no discernible nodes. At the ventrolateral margins the ribs simply pass through the venter with only a slight indication of nodes. Suture lines are not visible.

Remarks: *P. budaii*, together with its host genus, seems to stand alone within the Ladinian ammonoids. In general ornamentation (the style of ribbing and the ribs crossing the venter) certain degree of similarity can be observed in *Anolcites arminiae* (Mojsisovics, 1893, p. 694, pl. CC, figs 3, 4.), and in *A. impolitus* (Tozer, 1994, p. 158, pl. 78, figs 10, 11), but these latter two species have definite ventrolateral rows of nodes and rather wide umbilicus, as usual in true *Anolcites*. In *Zestoceras enode* (Tozer, 1994, p. 180, pl. 82, figs 2, 5.) and some other species of *Zestoceras* the ribs cross the venter without nodes, but these species are very evolute in contrast to the involute *P. budaii*.

Distribution: Up to now *P. budaii* has been known only from the type locality, Király Hill, from the Longobardian Archelaus Zone.

Subfamily Protrachyceratinae Tozer, 1980
Genus *Protrachyceras* Mojsisovics, 1893

Protrachyceras cf. *laevior* (Frech, 1903)
(Plate VI, 6)

v 1903 *Trachyceras Archelaus* Lbe. var. nov. *laevior* (*Protrachyceras*). – Frech, Neue Cephalopoden, p. 24, pl. V, fig. 1, textfig. 10b.

This taxon was introduced as a variant of *P. archelaus* by Frech (l.c.) and was compared to the specimens figured by Mojsisovics (1882, pl. XVIII, fig. 2 and pl. XXXI, fig. 1) and by Tommasi (1900, pl. 4, fig. 1). None of these comparisons are fully convincing. The new taxon has six rows of nodes (spines), just as *P. archelaus*, but differs by the significantly weaker ornamentation, particularly in the strength of the nodes. At the same time, in "var. *laevior*" the strength of ribbing dominates over the strength of nodes, what resembles the similar feature characterizing the species *Eoprotrachyceras pseudoarchelaus* (Böckh, 1872). Furthermore, the ribs of *P. laevior* are more projected, almost falcoid in the ventro-lateral part. These characters seem to support that the taxon "var. *laevior*" deserves to be raised to the species level. It has to be mentioned that our specimen is considerably smaller than the original specimen figured by Frech (l.c.).

Protrachyceras irregulare Fantini Sestini, 1994
(Plate VIII, 4)

1994 *Protrachyceras irregulare* sp. n. – Fantini Sestini, Esino, p. 259, pl. 12, figs 1–4.

2007 *Protrachyceras* cf. *irregulare* Fantini Sestini, 1994 – Brack et al., Cernera, p. 334, fig. 5/2.

Fantini Sestini (1994: 259) defined this species as having prorsiradiate strong ribs and six, mostly irregularly spaced rows of strong, rounded nodes. Brack et al. (l.c.) illustrated a specimen with similar ornamentation. On these grounds the identification of our specimen seems to be justified. From *Pr. archelaus* (Laube, 1869), which occurs fre-

quently in our material and has also six rows of nodes, *Pr. irregulare* differs by its less pointed, bulky nodes.

Subfamily Katrabocaitinae n. subfam.

This new subfamily shares the subammonitic suture and the furrowed venter bordered with alternating nodes of the subfamily Protrachyceratinae TOZER, 1980 but differs in the lateral ornamentation where the strength of falcoid prorsiradiate ribbing significantly predominates over nodes.

Genus *Katrabocaites* n. gen.

Type species: *Anolcites laczkoi* DIENER, 1899, p. 13, pl. I, fig. 7.

Diagnosis: Conch strongly to moderately involute; whorl section high oval. Steep umbilical wall; subrounded umbilical edge. Flanks gently convex to almost flat; venter widely to narrowly arched. Twenty-two to 40, weak to moderately strong, slightly falcoid prorsiradiate ribs on the flanks. Numerous intercalations, inserted mostly near the venter. Definite umbilical nodes. One to five rows of weak nodes on the lateral flanks. Sulcate venter with alternating rows of ventral nodes. Suture subammonitic with wide and deeply incised lateral lobe; second lateral saddle slightly crenulated.

Derivatio nominis: After the type locality Katrabóca Hill near Nemesvámos.

Nominal species belonging to *Katrabocaites*:
Anolcites laczkoi DIENER, 1899, p. 13, pl. I, fig. 7.
Katrabocaites montisregis n. sp.
Katrabocaites sp. aff. *laczkoi* DIENER, 1899 A
Katrabocaites sp. aff. *laczkoi* DIENER, 1899 B

Discussion: *Katrabocaites* has similarities to *Protrachyceras* in its ventral furrow accompanied by alternating nodes and in its subammonitic suture, but differs by its much weaker nodes and its lateral ornamentation with ribbing with absent or weakly developed nodes. The attribution of the type species *laczkoi* to *Protrachyceras* by VÖRÖS (1998, p. 44) is now refuted for the above reasons. VIDAKOVIĆ et al. (2023: 525) in a thorough analysis of this taxonomic problem reached the same conclusion and implicitly suggested the introduction of a new genus for the species *laczkoi*. The large and diverse material from the localities of Katrabóca and Király Hill enabled us to introduce a few additional new species of *Katrabocaites.* This broadens the morphological range in variation of the genus.

Distribution: Up to now *Katrabocaites* has been known from the type locality and possibly from the Samobor Mts. (Croatia), from the Longobardian Archelaus Zone.

Katrabocaites laczkoi (DIENER, 1899)
(Figures 3, 4)

v 1899 *Anolcites Laczkói* nov. sp. – DIENER, Neue Cephalopoden, p. 13, pl. I, fig. 7.
v 1903 *Trachyceras* (*Anolcites*) *Laczkói* DIEN. – FRECH, Neue Cephalopoden, p. 29, pl. VI, figs 4a, 4b.
? 1914 *Anolcites laczkói* DIEN. – DE TONI, p. 144, pl. XI, fig. 4.
? 1936 *Anolcites laczkói* DIEN. var. *falcoidea* n. – SALOPEK, Gregurić brijeg, p. 216, text-fig. 9.
v 1998 *Protrachyceras* ? *laczkoi* (DIENER, 1899) – VÖRÖS, Balatonfelvidék, p. 44, pl. XIII, fig. 6; pl. XV, fig. 4.
v 1998 *Anolcites ? laricus* (MOJSISOVICS, 1882) – VÖRÖS, Balatonfelvidék, p. 44.
2023 *"Anolcites"* cf. *laczkoi* (DIENER, 1899) – VIDAKOVIĆ et al., Samobor and Žumberak, p. 525, pl. 6, fig. 2.
v non 2024 *Anolcites laczkoi* DIENER, 1899 – VÖRÖS et al., Nemesvámos, p. 404, pl. IX, figs 8, 9.

The holotype of "*A*." *laczkoi* is re-figured here and, for comparison, a representative specimen from Katrabóca, showing partial sutures lines is also illustrated (*Figures 3, 4*).

Moderately involute conch (U/D ratio 0.29), with high oval whorl section. The umbilical wall is steep; the umbilical edge is subrounded. The flanks are gently convex and join the gently arched venter with continuous curve. The flanks are ornamented with strong, slightly falcoid prorsiradiate ribs. Their number increases by intercalations up to 24 on the half whorl of the body chamber. A few intercalations appear in the inner third of the flank; most of them are inserted near the venter. The umbilical nodes are moderately strong. On the outer whorl the lateral flanks bear no discernible nodes. The venter has a rather deep and narrow furrow between the alternating rows of the ventral nodes. The suture is subammonitic with wide and deeply incised lateral lobe; the second lateral saddle is slightly crenulated.

This taxon was originally described as a species of *Anolcites* by DIENER (1899, l.c.), and this attribution was maintained by many later authors. VÖRÖS (1998, l.c.), despite the obvious difference in the external morphology, apparently concerned by the subammonitic suture, tentatively used the combination *Protrachyceras laczkoi*. Recently VIDAKOVIĆ et al. (2023, l.c.) gave a very thorough analysis of this taxonomic problem and implicitly advised introducing a new genus for the species *laczkoi*. This is accomplished in the present paper; the genus *Katrabocaites* is defined above, on the basis of a large and diverse material from the localities Katrabóca and Király Hill.

In the list of synonymies, the item by DE TONI (1914, l.c.) is queried because RIEBER & BRACK (2004: 170) definitely ranked it to the genus *Falsanolcites*. However, this seems contradicted by DE TONI's figures where the venter has a deep furrow and the ventrolateral nodes appear in alternating positions.

The item "*Anolcites laczkói* DIEN. var. *falcoidea* n." by SALOPEK (1936, l.c.) is queried because the figured specimen seems more evolute than *A. laczkoi*. VIDAKOVIĆ et al. (2023, l.c.) investigated the type specimen of SALOPEK's taxon and also expressed some doubts about the identity of the two taxa.

The item "*Anolcites* ? *laricus* by VÖRÖS (1998, l.c.) is now considered a juvenile specimen of *Katrabocaites laczkoi*. On the other hand, the other items, two specimens of *Anolcites laczkoi* by VÖRÖS et al. (2024, l.c.), definitely belong to a different, probably new species of *Katrabocaites*, implied by their narrower umbilicus.

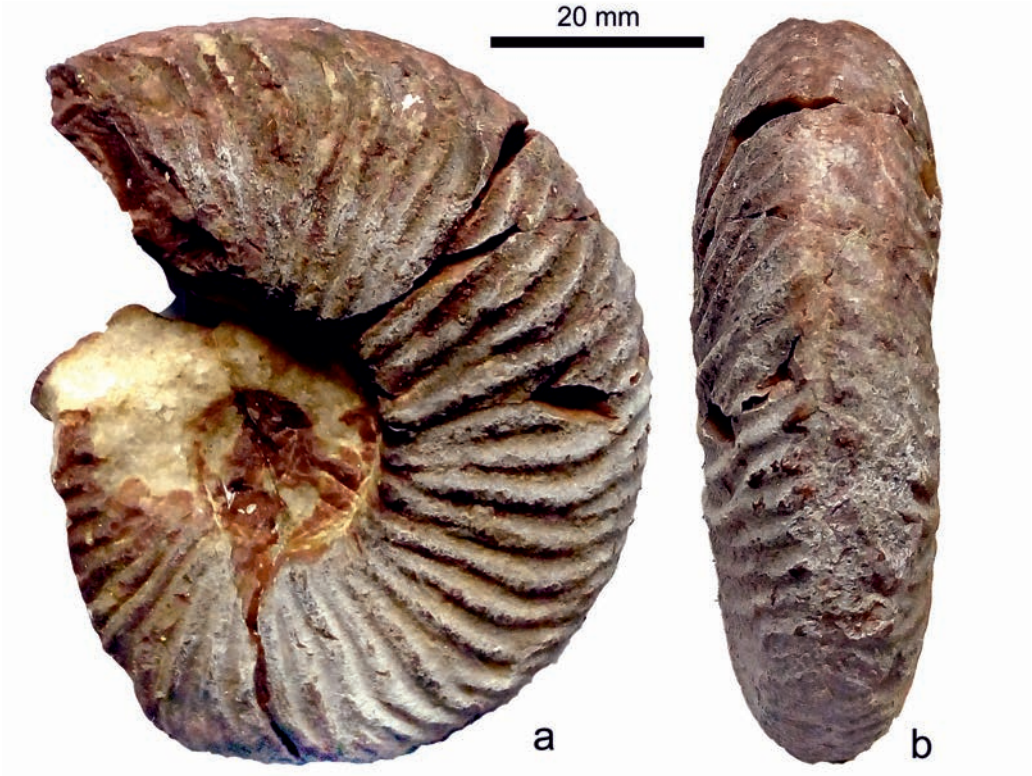


Figure 3. Holotype of *Katrabocaites laczkoi* (Diener, 1899) in lateral (a) and ventral (b) views. Collections of the SARA (formerly Geological Institute of Hungary, inventory number T.883).

3. ábra. *A* Katrabocaites laczkoi *(Diener, 1899) holotípus példánya, oldalsó (a) és ventrális nézetben (b). SzTFH (korábban MÁFI) gyűjtemény (leltári szám: T.883)*

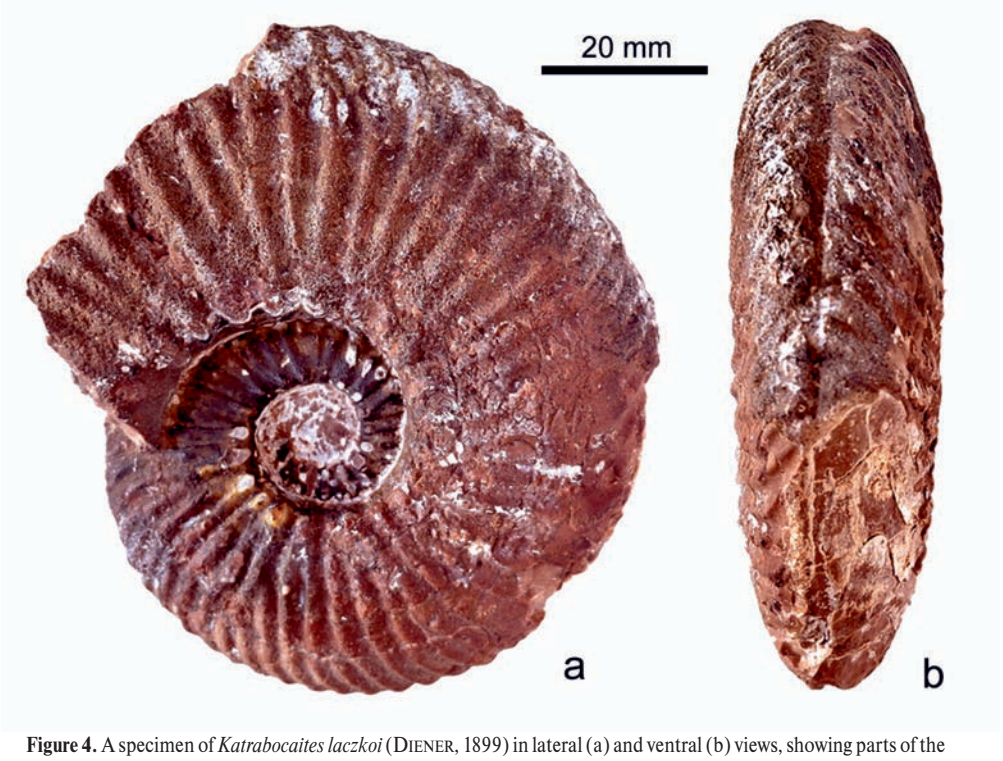


Figure 4. A specimen of *Katrabocaites laczkoi* (Diener, 1899) in lateral (a) and ventral (b) views, showing parts of the subammonitic sutures, found at Katrabóca II section, Bed 9. Collections of the HNHM (inventory number M.98.139.)

4. ábra. Katrabocaites laczkoi *(Diener, 1899) a Katrabóca II szelvény 9. rétegéből, oldalsó (a) és ventrális (b) nézetben. MTTM gyűjtemény (leltári szám: M.98.139.)*

Katrabocaites montisregis n. sp.
(Plate XI, 1–3)

Holotype: Hungarian Natural History Museum (Budapest), inventory number: PAL 2025.9.1.

Locus typicus: Veszprémfajsz, Király Hill, 6. section, Bed 4.

Stratum typicum: Red ammonitic limestone, Buchenstein Formation, Ladinian, Longobardian.

Derivatio nominis: After the name of the locality: *mons, montis* <Latin> = hill; *rex, regis* <Latin> = king = király <Hungarian>.

Diagnosis: Conch strongly involute; whorl section compressed high oval. Umbilical wall steep with subrounded edge. Flanks almost flat; venter tabulate. Numerous, weak, prorsiradiate, sinuous primary and intercalatory ribs on flanks. Umbilical nodes distinct. Five to six rows of lateral nodes; ventrolateral nodes along marked ventral furrow. Suture poorly known, apparently subammonitic.

Material: Three, partly incomplete specimens from Veszprémfajsz, Király Hill.

Measurements (in mm):

Inventory No.	D	Wh	Ww	U
PAL 2025.9.1.	73.1	36.5	15.1	13.1
AnspBMKh	70	32.2	18.1	?
Kat_regioPZs6_4	61.4	?	?	?

Description: *Katrabocaites* with very involute conch (U/D ratio 0.18), with high oval, compressed whorl section. The umbilical wall is steep, subrounded. The flanks are almost flat and join the nearly tabulate venter with a sharp ventrolateral margin. The flanks are ornamented with numerous, weak, slightly falcoid prorsiradiate ribs. Their number increases by rare bifurcations and more frequently by intercalations up to 44 on the half whorl of the body chamber. The intercalations are inserted variously all along the flanks. There are distinct umbilical nodes, five to six rows of weak lateral nodes and somewhat stronger ventrolateral nodes. The venter is narrow and excavated; the relatively wide furrow is bordered by alternating nodes at the end of the ribs. The suture is partly visible; appears to be subammonitic.

Katrabocaites sp. aff. *laczkoi* DIENER, 1899 A
(Plate IX, 5, 7)

v 2024 *Anolcites* sp. aff. *laczkoi* DIENER, 1899 – VÖRÖS et al., Katrabóca, p. 404, pl. IX, fig. 11; pl. X, figs 1, 2; pl. XI, fig. 1.

An almost complete specimen and a fragmentary one from Király Hill are very similar to those profusely illustrated by VÖRÖS et al. (l.c.) from Katrabóca. This taxon is close to *K. laczkoi* but its bifurcating and intercalating falcoid ribs bear distinct nodes at the lateral flanks. It differs from *K. montisregis* by its more convex lateral flanks and stronger ribbing. The arched venter exhibits a narrow but distinct furrow, bordered by alternating rows of bulbous endings of the ribs. The suture is subammonitic.

Katrabocaites sp. aff. *laczkoi* DIENER, 1899 B
(Plate IX, 4; Plate X, 1)

v 2024 *Anolcites laczkoi* DIENER, 1899 – VÖRÖS et al., Nemesvámos, p. 404, pl. IX, figs 8, 9.

It is a *Katrabocaites* with moderately involute conch (U/D ratio 0.23), with high oval, rather expanded whorl section. The umbilical wall is steep, well-marked. The flanks are ornamented with numerous, strong, falcoid, prorsiradiate ribs. Their number increases by intercalations up to 30 on the half whorl of the body chamber. The intercalations are inserted mostly around the mid-flank. There are strong umbilical nodes, but no discernible lateral and ventrolateral nodes. The venter is arched and bears a narrow but distinct furrow, bordered by alternating endings of the ribs. The suture is unknown.

Two specimens of this taxon were illustrated from Katrabóca by VÖRÖS et al. (l.c.) under the name "*Anolcites laczkoi*". Now, on the basis of the more complete material from Király Hill, they are considered to belong to this, probably new, more involute species of *Katrabocaites*.

Katrabocaites sp. aff. *laczkoi* DIENER, 1899 C
(Plate IX, 6)

A rather well-preserved and complete specimen from Király Hill shows similarities to the other species of *Katrabocaites*. It is moderately involute (U/D ratio 0.28), just like *K. laczkoi* and *K.* sp. aff. *laczkoi* B, but differs by its much coarser ribbing and the presence of pointed nodes. The compressed subquadrate whorl section also differentiates this taxon from the other species of the genus, except *K. montisregis*, which, however, is very finely ornamented. The venter is almost tabulate, with furrow bordered by alternating rows of the endings of the ribs. The suture is unknown.

Discussion

The Király Hill localities and the trench (collection site 6) exposed red Buchenstein Limestone ("vámos marble") intercalated by a characteristic, white sparry calcite cemented coquina layer. The general features of this sequence are very similar to that reported by VÖRÖS et al. (2024) from the Katrabóca section, two kilometres to the WNW. Despite the convincing stratigraphic correlation between the two mentioned sections, there are some differences in the details, particularly in the composition of the fossil communities.

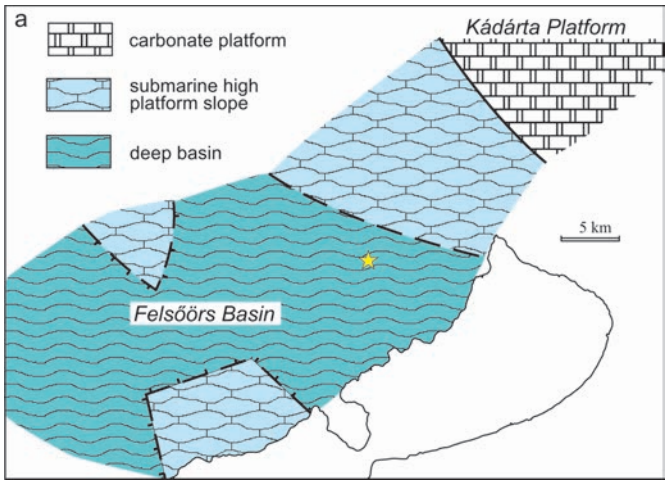
The coquina layer at Király Hill contains mainly small and fragmented ammonoids and rare gastropods, while at Katrabóca the coquina lenses are composed mostly of bivalves and gastropods; ammonoids are apparently missing.

The ammonite assemblages of the Király Hill at Veszprémfajsz and of the Katrabóca section at Nemesvámos also show some differences from each other despite the proximity of the two locations. A spectacular difference between the ammonite assemblages of the two sites is that *Argolites*

species are abundant at the Király Hill whereas they occur only sporadically at Katrabóca. The diversity of other ammonoid taxa (arpaditids, anolcitids, protrachyceratids) is also higher at the Király Hill than at Katrabóca.

The causes of these differences can be interpreted in terms of the palaeogeography and palaeoenvironment of the wider surrounding area (*Fig. 5a*). The red Buchenstein Limestone of the Katrabóca and of the Király Hill represents a basin environment at the Balaton Highland during the late Ladinian. A black Mn-oxide envelope on the ammonoids is frequent and indicates a slow depositional rate (Vörös et al. 2024). However, the generally fragmented preservation of the ammonoids and their chaotic position in the coquina layers, together with the co-occurence of epibenthic bivalve and gastropod shells, indicate redeposition from shallow marine environments. Based on observations of Laczkó (1911) and on field data of the last mapping project, the Buchenstein Formation is overlain by dolomite in the Nemesvámos–Veszprémfajsz area (Budai et al. 1999a). Toe-of-slope dolomite breccia was exposed below and above the lowermost Carnian Füred Formation by the Nemesvámos Nos–1 well between the two villages (Budai et al. 1999b). Dolomite bodies of similar facies interfingers with the Ladinian basin succession further to the NE, on the Veszprém Plateau (Budai et al. 2001). This lateral facies connection indicates that the Felsőörs Basin of the Balaton Highland was in close connection to the NE with the coeval Kádárta Platform (*Fig. 5a*; Szentkirályszabadja Platform in earlier publications) that prograded several times against the basin during the Ladinian and early Carnian (Budai & Haas 1997, Budai & Vörös 2006, Karádi et al. 2022).

Although ammonoids have not yet been found in the Budaörs Dolomite of the Transdanubian Range, their appearance in the successions of late Anisian–Ladinian platforms of the western Neotethys (*Fig. 5b*) are not unique at all. Ammonoid assemblages were published from the Esino Platform of Lombardy (Jadoul et al. 1992; Fantini Sestini 1994, 1996) and also from several platforms of the Dolomites made up by the Sciliar Formation and by its equivalents (Brack & Rieber 1993, De Zanche et al. 1995, Manfrin et al. 2005). Ammonoid lenses were mentioned from the Wetterstein Platform of the Northern Calcareous Alps, as well



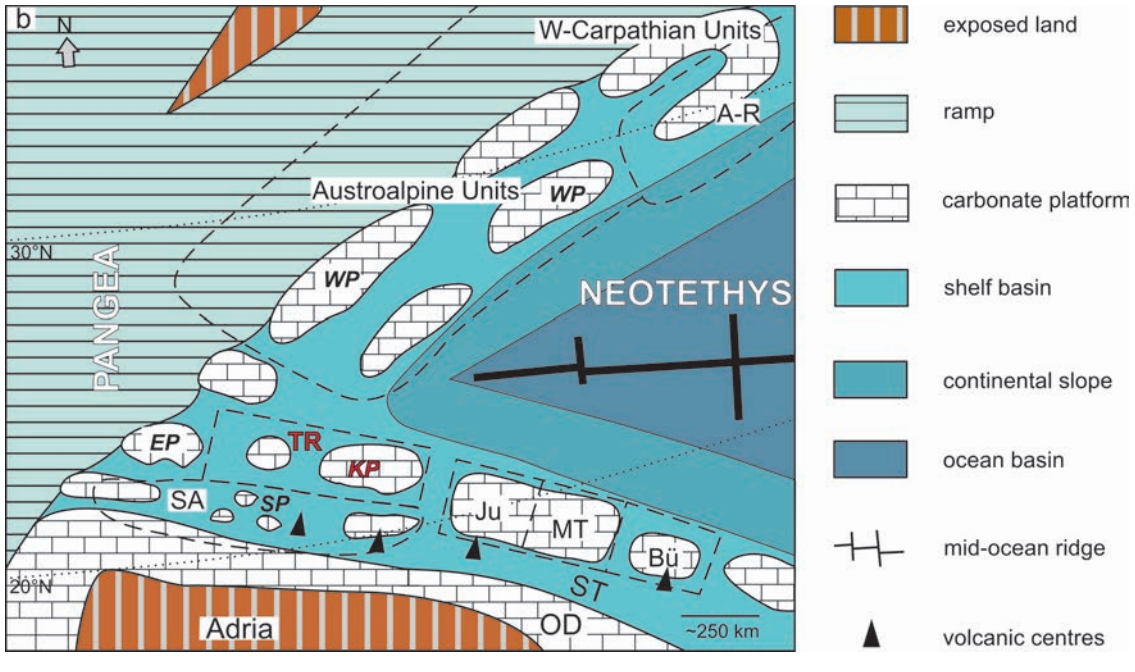


Figure 5a. Palaeogeographic map of the Balaton Highland during the mid Ladinian (after Budai & Vörös 2006). The star indicates the position of the Király Hill section.

Figure 5b. Palaeogeography of the western Neotethys during the Middle Triassic with the position of the Transdanubian Range Unit (TR), after Karádi et al. (2022).

Abbreviations: A-R – Aggtelek–Rudabánya Units; Bü – Bükk Unit; DR – Drau Range; EP – Esino Platform; Ju – Julian Unit; KP – Kádárta Platform (TR); MT – Mid-Transdanubian Unit; OD – Outer Dinarids; SA – South-Alpine Units; SP – Sciliar Platforms; ST – Slovenian Trough

5a ábra. *A Balaton-felvidék ősföldrajzi modellje a ladin közepén (Budai & Vörös 2006 nyomán). A csillag a Király-hegy helyzetét mutatja.*

5b ábra. *A nyugati Neotethys ősföldrajza a középső triászban (Karádi et al. 2022 nyomán).*

(BUDAI et al. 2006). These cephalopod rich coquina beds, which occasionally also contain gastropods and bivalves, are generally interpreted as storm deposits inside the platform lagoon or as a drape on tectonically controlled platform slopes (BRACK & RIEBER 1993, BRACK et al. 2007), as in the cases of the Sciliar Platforms in the central Dolomites (e.g., Mt. Cernera) and in Cadore (e.g., Mt. Bivera–Clapsavon).

The great abundance and diversity of the *Arpadites* and *Argolites* assemblages in the Király Hill succession may have paleoecological relevance, as these two genera are characteristic for the platform carbonate of the Esino Limestone in Lombardy (FANTINI SESTINI 1994). Their episodic mass occurrence can be explained with a proximal position of the Király Hill area within the Felsőörs Basin to the coeval Kádárta Platform of the Veszprém Plateau.

The ammonoid material, collected bed-by-bed from the trench at Király Hill (collecting site 6) was evaluated in terms of biostratigraphy to provide information on the Longobardian ammonoid zonation. In the first step, we applied the currently revised zonal subdivision of the upper Ladinian (Longobardian) (MIETTO et al. 2018, VIDAKOVIĆ et al. 2023) where the former Gredleri Zone was replaced by the Margaritosum Zone and the Archelaus Zone was divided into a lower, Longobardicum and an upper, Neumayri Subzone.

On the basis of our recently collected ammonoid material, the bed series of the trench can be divided into two zones (*Fig. 2*): Bed 4 is attributed to the Archelaus Zone, whereas the underlying part of the section (Beds 5 to 12) may belong to the Margaritosum Zone. This zonal subdivision is in apparent correlation with that of the nearby Katrabóca section (VÖRÖS et al. 2024). Particularly, our Bed 4 corresponds well to Bed 9 at Katrabóca, and the directly underlying coquina with plenty of *Arpadites* (Bed 5) can also be correlated with the layers (Beds 11 to 13) of similar lithology and fauna at Katrabóca.

In fact, the attribution of our Bed 4 to the Archelaus Zone is properly proven by the first appearance of the zonal index species *Protrachyceras archelaus* in this layer (*Fig. 2*). This bed yielded several specimens and taxa of *Katrabocaites* just like Bed 9 at Katrabóca where "*Anolcites laczkoi*" (now the type species of *Katrabocaites* n. gen.) was frequent. Similarly, the zonal position of our Bed 5 (particularly Bed 5a) in the Margaritosum Zone, even in the absence of the zonal index, is well supported by the diverse *Arpadites* taxa, and further endorsed by the presence of the genus *Argolites,* which was recorded by FANTINI SESTINI (1994, table 1) exclusively from the Gredleri Zone (now Margaritosum Zone) of the Esino Limestone of Val Parina. *Arpadites dichotomus* in Beds 9 to 12 also seems to point to the Margaritosum Zone since FANTINI SESTINI (1994, table 1) recorded it from that zone in Val Parina.

On the other hand, the ammonoid record of the deeper part of the trench (collecting site 6) poses some problems. It is not really surprising that *Arpadites szaboi* ranges through the whole section, including Bed 4. However, the occurrence of *Protrachyceras ladinum* and *P. longobardicum* in Bed 10 is somewhat contradictory. The long-ranging nature of *P. ladinum* was recognized by MIETTO & MANFRIN (1995) and also by VIDAKOVIĆ et al. (2023). On the other hand, *P. longobardicum* was designated as the subzonal index in the lower subzone of the Archelaus Zone (MIETTO et al. 2018, VIDAKOVIĆ et al. 2023). The present record of this species in Bed 10 of the trench (collecting site 6) can be interpreted in at least two different ways: (1) The whole bed series of section 6 at Király Hill belongs to the Longobardicum Subzone of the Archelaus Zone (contradicted by the occurrence of *Arpadites* and *Argolites* species characterizing the Margaritosum Subzone); (2) The species *P. longobardicum* is not appropriate for being a subzonal index. Further possibilities may exist; detailed collecting works in well-exposed sections may solve this problem.

Conclusions

The ammonite assemblage of the upper Ladinian red limestone of the Király Hill is more diverse than that of the nearby Katrabóca succession. It contains several forms that previously were poorly known from the Balaton Highland (e.g., *Argolites*) and a few new genera were identified and described, as well *(Katrabocaites*, *Paranolcites*, *Pinterites)*. Based on the stratigraphic range of the various ammonite species, the lower part of the succession exposed in a trench (collecting site 6) belongs to the Margaritosum Zone, whereas its uppermost part represents the Archelaus Zone. Crinoids, gastropods and bivalves in the fossil assemblage, together with the taxonomical composition and the preservation of the ammonoids of the coquina interlayer, indicate the presence of an active shallow marine carbonate platform (Kádárta Platform) close to the late Ladinian basin (Felsőörs Basin).

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Plate I – I. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Megaphyllites obolus* MOJSISOVICS, 1882; BMMeobKH; Király Hill, collecting site 1, (bed 5a), Margaritosum Zone(?); a: lateral view, b: ventral view.
2. *Epigymnites* cf. *credneri* (MOJSISOVICS, 1882); BMEpcredKh-2; Király Hill, collecting site 7, (bed ?). Margaritosum Zone(?); lateral view.
3. *Epigymnites* cf. *credneri* (MOJSISOVICS, 1882); BMEpcredKh; Király Hill, collecting site 6, bed ?. Margaritosum Zone(?); a: lateral view, b: ventral view.
4. *Proarcestes subtridentinus* (MOJSISOVICS, 1875); PZsProasuKh; Király Hill, collecting site 1, (bed 5a), Margaritosum Zone(?); a: lateral view, b: ventral view.
5. *Proarcestes boeckhi* (MOJSISOVICS, 1875); PZsProaboKh; Király Hill, collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
6. *Arpadites arpadis* (MOJSISOVICS, 1870); BMArarKh-3; Király Hill, collecting site 6, bed 10, Margaritosum Zone(?); a: lateral view, b: ventral view.
7. *Arpadites arpadis* (MOJSISOVICS, 1870); BMArarKh; Király Hill, collecting site 6, bed 10, Margaritosum Zone(?); a: lateral view, b: ventral view.
8. *Arpadites arpadis* (MOJSISOVICS, 1870); PZsArar6/5a; Király Hill, collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
9. *Arpadites arpadis* (MOJSISOVICS, 1870); PZsArarKh; Király Hill, collecting site 4, (bed ?), Margaritosum Zone(?); lateral view.
10. *Arpadites arpadis* (MOJSISOVICS, 1870); BMArarcropKh; Király Hill, collecting site 6, bed 5a, Margaritosum Zone; lateral view.

Plate I – I. tábla

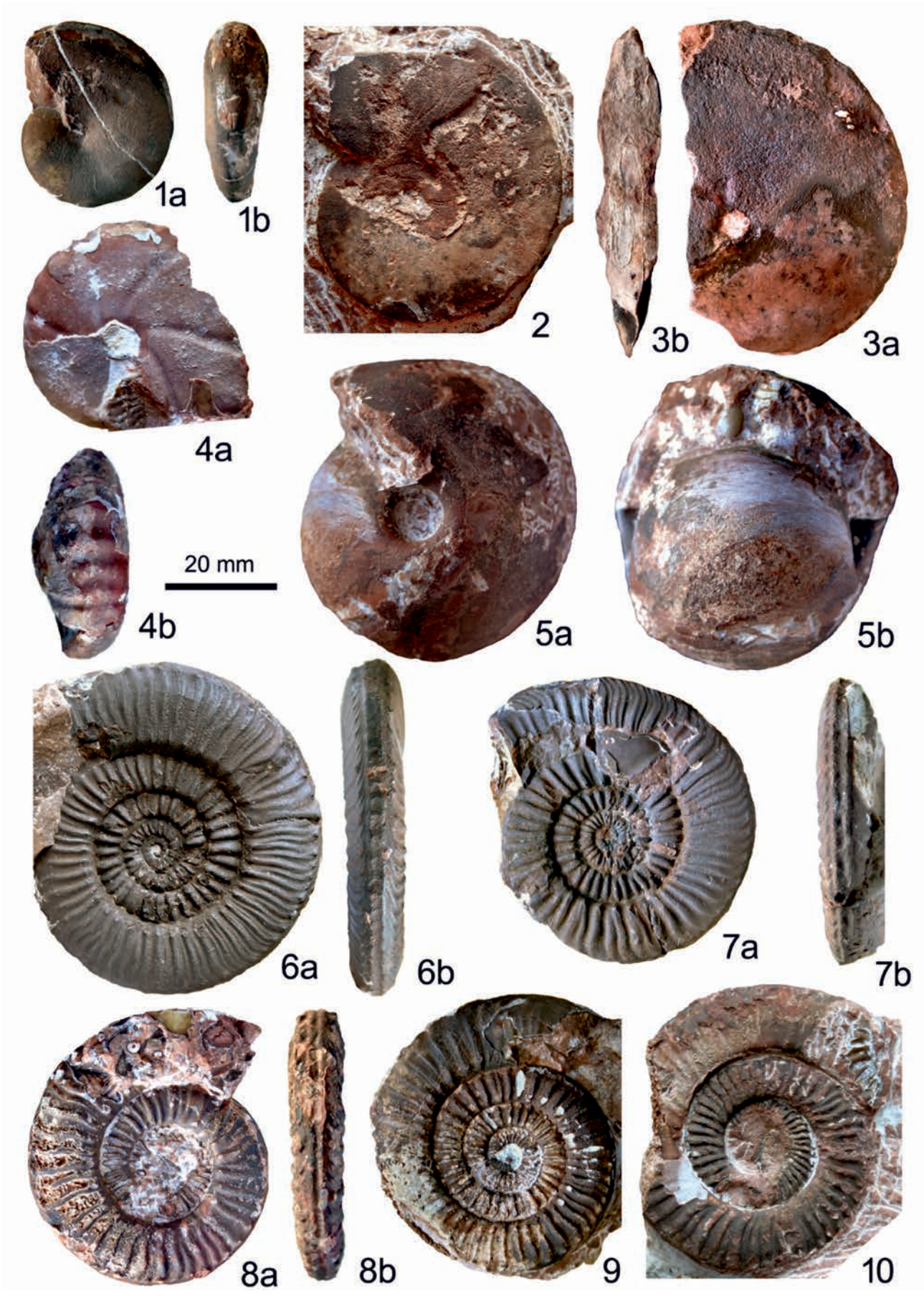

Plate II – II. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs), or in the Department of Geology and Palaeontology of the Hungarian Natural History Museum (HNHM, Budapest) under the inventory number prefixed by PAL.

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye, vagy a Magyar Természettudományi Múzeum Őslénytani és Földtani Tára, Budapest (PAL jelzettel) őrzi.

1. *Arpadites szaboi* (BÖCKH, 1872); BMArszaKh-2; Király Hill, collecting site 7, (bed ?), Margaritosum Zone(?); a: lateral view, b: ventral view.
2. *Arpadites szaboi* (BÖCKH, 1872); PZsArszaKh; Király Hill, collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.
3. *Arpadites szaboi* (BÖCKH, 1872); BMArszaKh; Király Hill, collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.
4. *Arpadites szaboi* (BÖCKH, 1872); BMArspKh; Király Hill, collecting site 6, bed 4, Archelaus Zone; lateral view.
5. *Arpadites toldyi* MOJSISOVICS, 1882; BMArtoKH; loose, Margaritosum Zone(?); a: lateral view, b: ventral view.
6. *Arpadites telleri* MOJSISOVICS, 1882; PZsArte6_5; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
7. *Arpadites telleri* MOJSISOVICS, 1882; PZsArteKh; collecting site 1, (bed 5a), Margaritosum Zone(?); a: lateral view, b: ventral view.
8. *Arpadites telleri* MOJSISOVICS, 1882; BMArgogeKh; collecting site 1, (bed 5a), Margaritosum Zone(?); a: lateral view, b: ventral view.
9. *Arpadites* cf. *bracki* FANTINI SESTINI, 1994; PZsArbrKh; collecting site 6, bed 5a, Margaritosum Zone; a: left lateral view, b: ventral view, c: right lateral view.
10. *Arpadites telleri* MOJSISOVICS, 1882; BMArteKh-2; collecting site 6, bed 5a, Margaritosum Zone; a: left lateral view, b: right lateral view.
11. *Arpadites telleri* MOJSISOVICS, 1882; BMArteKh; collecting site 2, (bed 5a), Margaritosum Zone(?); lateral view.
12. *Arpadites bercsenyii* n. sp.; holotype, PAL 2025.6.1. collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.

Plate II – II. tábla

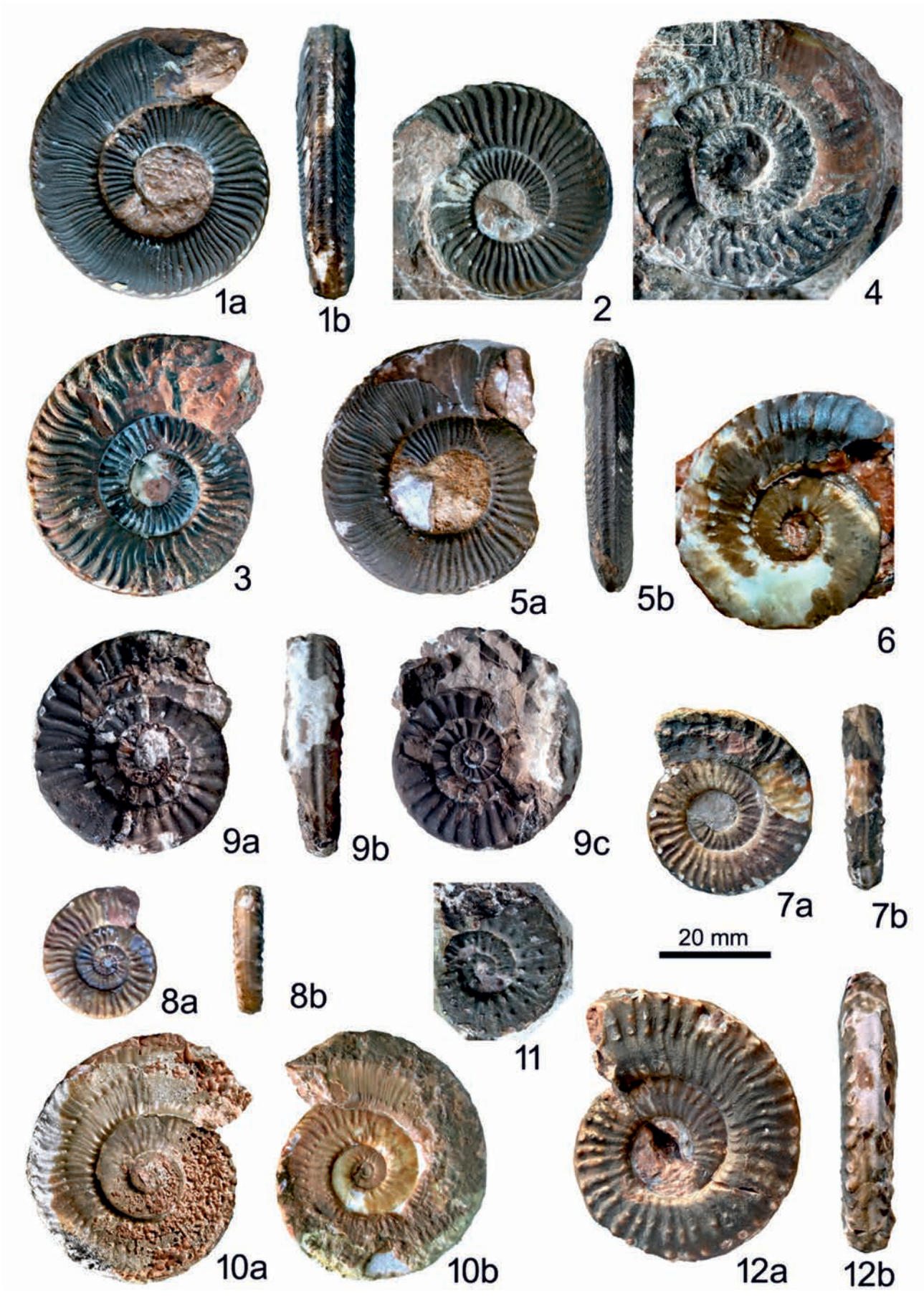

Plate III – III. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Arpadites bercsenyii* n. sp.; BMArkapKh-2; collecting site 3, (bed 5a), Margaritosum Zone(?); lateral view.
2. *Arpadites bercsenyii* n. sp.; BMArkapKh-6; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
3. *Arpadites bercsenyii* n. sp.; PZsArkapKh; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
4. *Arpadites* ? *manzonii* (BENECKE, 1876); BMArteKh-2; collecting site 7, (bed ?), Margaritosum Zone(?); a: lateral view, b: ventral view.
5. *Arpadites* ? *manzonii* (BENECKE, 1876); BMArmanzKh-3; collecting site 7, (bed ?), Margaritosum Zone(?); lateral view.
6. *Arpadites* ? *manzonii* (BENECKE, 1876); BMArmanz6_5a; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
7. *Arpadites* ? *cinensis* MOJSISOVICS, 1882; BMArciKh-2; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
8. *Arpadites* ? *cinensis* MOJSISOVICS, 1882; BMArciKh; collecting site 2, (bed 5a), Margaritosum Zone(?); lateral view.
9. *Arpadites* ? *cinensis* MOJSISOVICS, 1882; PZsArciKh-2; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
10. *Arpadites* ? cf. *dichotomus* FANTINI SESTINI, 1994; BMArdiKh-2; collecting site 7, (bed ?), Margaritosum Zone(?); lateral view.
11. *Arpadites* ? cf. *dichotomus* FANTINI SESTINI, 1994; PZsArdiKh; collecting site 7, (bed ?), Margaritosum Zone(?); lateral view.
12. *Arpadites* ? cf. *dichotomus* FANTINI SESTINI, 1994; BMArdiKh-3; collecting site 7, (bed ?), Margaritosum Zone(?); lateral view.
13. *Arpadites* ? sp. aff. *manzonii* (BENECKE, 1876); BMArkapKh-1; collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.
14. *Arpadites* ? sp. aff. *manzonii* (BENECKE, 1876); BMArkapKh-3; collecting site 7, (bed ?), Margaritosum Zone(?); a: lateral view, b: ventral view.
15. *Arpadites* ? sp. aff. *manzonii* (BENECKE, 1876); BMArkapcrop; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
16. *Arpadites* ? sp. aff. *manzonii* (BENECKE, 1876); BMArkapKh-4; collecting site 7, (bed ?), Margaritosum Zone(?); lateral view.
17. *Arpadites* ? sp. aff. *manzonii* (BENECKE, 1876); PZsAraffmanz6_5a; collecting site 6, bed 5a, Margaritosum Zone; lateral view.

Plate III – III. tábla

Plate IV – IV. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs), or in the Department of Geology and Palaeontology of the Hungarian Natural History Museum (HNHM, Budapest) under the inventory number prefixed by PAL.

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye, vagy a Magyar Természettudományi Múzeum Őslénytani és Földtani Tára, Budapest (PAL jelzettel) őrzi.

1. *Argolites arpaditoides* (MOJSISOVICS, 1882); BMArgoarpKh; collecting site 1, (bed 5a), Margaritosum Zone; lateral view.
2. *Argolites arpaditoides* (MOJSISOVICS, 1882); BMArgoarpSlab-3; collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.
3. *Argolites arpaditoides* (MOJSISOVICS, 1882); PZsArgoceKh; collecting site 1, (bed 5a), Margaritosum Zone; a: left lateral view, b: ventral view, c: right lateral view.
4. *Argolites geometricus* (FRECH, 1903); PZsArgogeKh; collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.
5. *Argolites geometricus* (FRECH, 1903); BMArarArgKh-1; collecting site 6, bed 5a, Margaritosum Zone(?); lateral view.
6. *Argolites geometricus* (FRECH, 1903); BMArArgoce6_5a; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
7. *Argolites geometricus* (FRECH, 1903); BMArgospKh; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
8. *Argolites geometricus* (FRECH, 1903); PZsArgospKh; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
9. *Argolites geometricus* (FRECH, 1903); BMArgoceSlab-1; collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.
10. *Argolites nodosus* n. sp.; BMArteKh-3; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
11. *Argolites nodosus* n. sp.; BMArgnod6_5a; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
12. *Argolites geometricus* (FRECH, 1903); BMArgoce6_5a; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
13. *Argolites nodosus* n. sp.; holotype, PAL 2025.7.1.; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.
14. *Argolites nodosus* n. sp.; BMArArgonod6_5a; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
15. *Argolites nodosus* n. sp.; BMArgonodSlab-2; collecting site 1, (bed 5a), Margaritosum Zone(?); lateral view.

Plate IV – IV. tábla

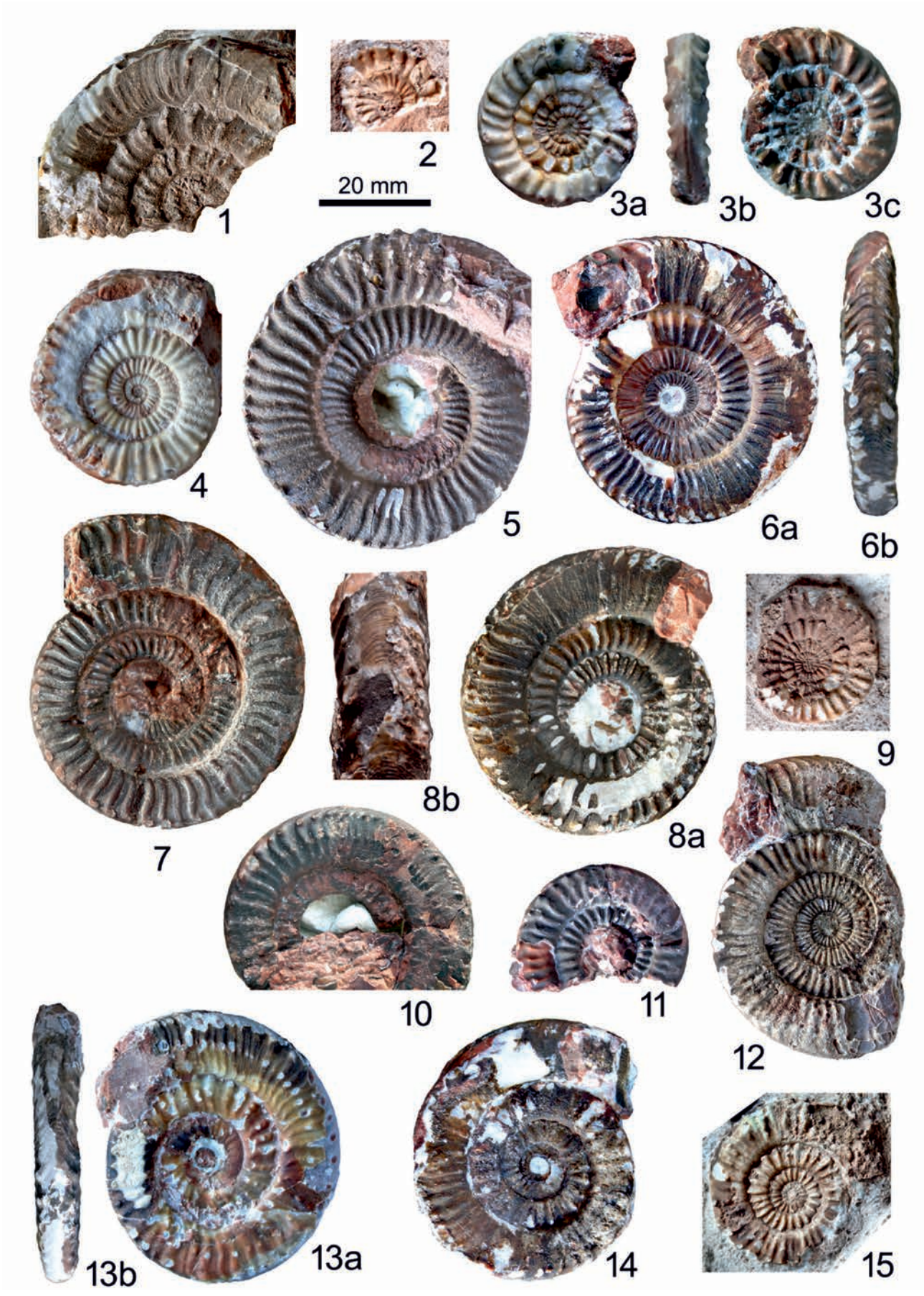

Plate V – V. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs), or in the Department of Geology and Palaeontology of the Hungarian Natural History Museum (HNHM, Budapest) under the inventory number prefixed by PAL.

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye, vagy a Magyar Természettudományi Múzeum Őslénytani és Földtani Tára, Budapest (PAL jelzettel) őrzi.

1. *Pinterites laricus* (MOJSISOVICS, 1882); PZsAnlarKh; collecting site 5, (bed 4), Archelaus Zone(?); a: left lateral view, b: ventral view, c: right lateral view.
2. *Pinterites laricus* (MOJSISOVICS, 1882); BMAnsplarKh; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.
3. *Paranolcites budaii* n. sp.; holotype, PAL 2025.8.1.; collecting site 6, bed 4, Archelaus Zone; a: left lateral view, b: ventral view, c: other ventral view, d: right lateral view.
4. *Eoprotrachyceras* cf. *pseudoarchelaus* (BÖCKH, 1872); BMEopropsKh; collecting site 2, (bed 4?); Margaritosum Zone(?); lateral view.
5. *Protrachyceras archelaus* (LAUBE, 1869); PZsPrar6_4; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.
6. *Protrachyceras archelaus* (LAUBE, 1869); PZsPrarKh-2; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.

Plate V – V. tábla

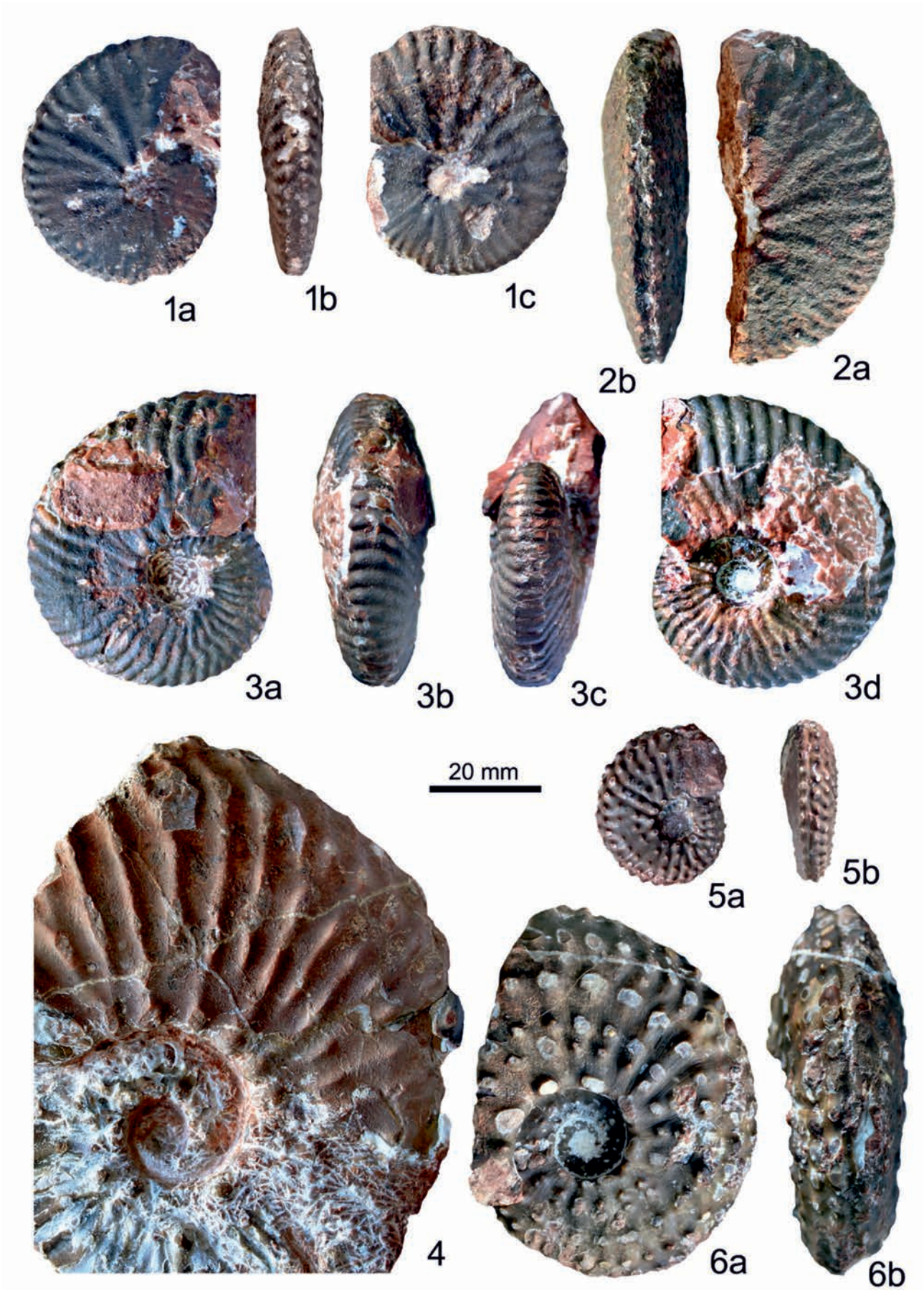

Plate VI – VI. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Protrachyceras archelaus* (LAUBE, 1869); PZsPrarKh; collecting site 6, bed 4, Margaritosum Zone; lateral view.
2. *Protrachyceras longobardicum* (MOJSISOVICS, 1882); PZsPrloKh-2; collecting site 5, (bed 4), Margaritosum Zone(?); lateral view.
3. *Protrachyceras longobardicum* (MOJSISOVICS, 1882); BMPrloKh; collecting site 6, bed 4, Archelaus Zone; lateral view.
4. *Protrachyceras ladinum* (MOJSISOVICS, 1882); BMPrlaKh; collecting site 6, bed 4, Archelaus Zone; lateral view.
5. *Protrachyceras* cf. *margaritosum* (MOJSISOVICS, 1882); BMPrmaKh; collecting site 5, (bed 4), Margaritosum Zone(?); lateral view.
6. *Protrachyceras* cf. *laevior* (FRECH, 1903); PZsPrlaevKh; collecting site 6, bed 4, Archelaus Zone; lateral view.

Plate VI – VI. tábla

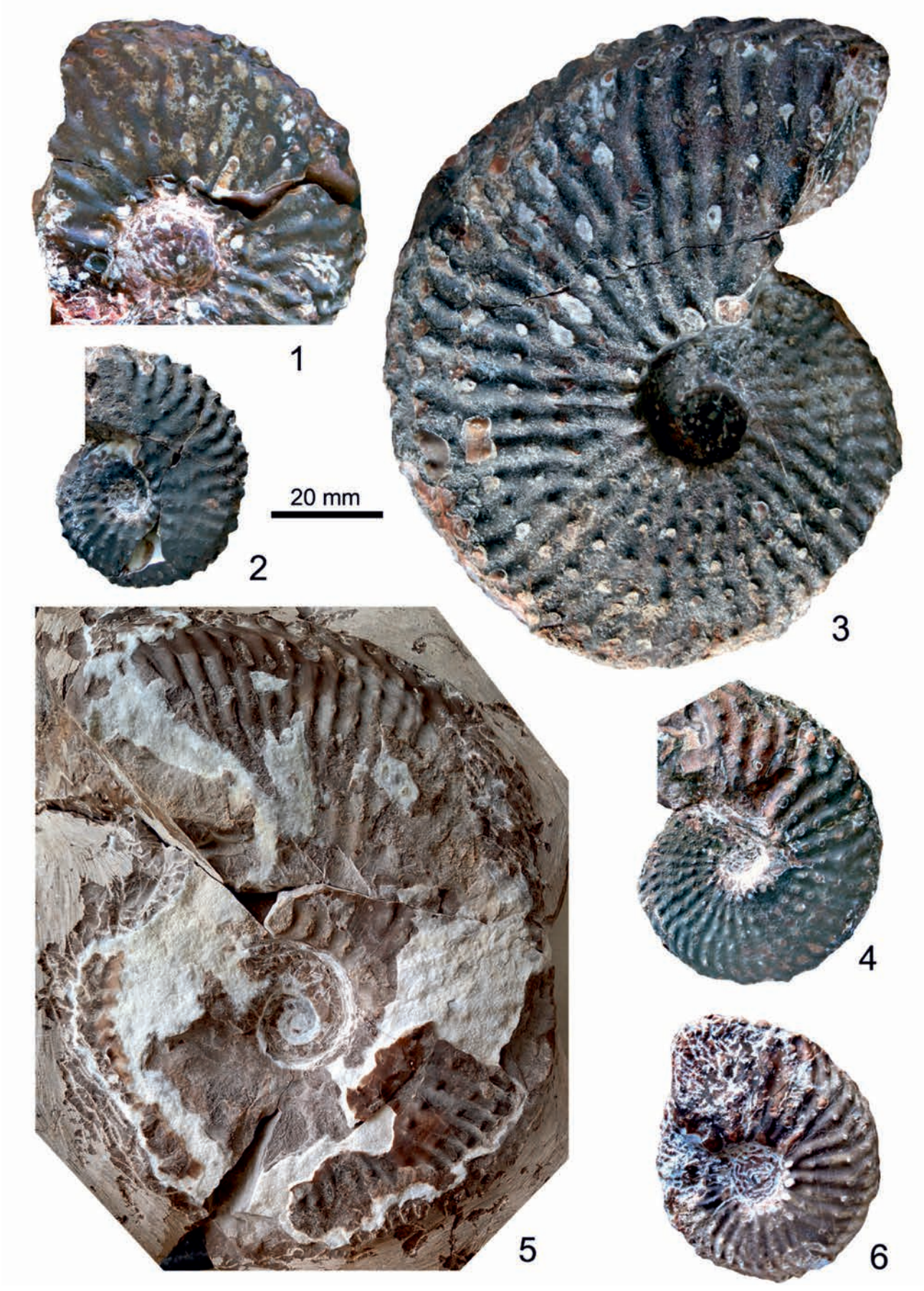

Plate VII – VII. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Protrachyceras archelaus* (LAUBE, 1869); BMPrar6_4; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.
2. *Protrachyceras* sp. aff. *gredleri* (MOJSISOVICS, 1882); BMPrgrKh; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view, c: cross section.
3. *Protrachyceras* sp. aff. *gredleri* (MOJSISOVICS, 1882); BMPraffgr6_4; collecting site 6, bed 5a, Margaritosum Zone; a: lateral view, b: ventral view.

Plate VII – VII. tábla

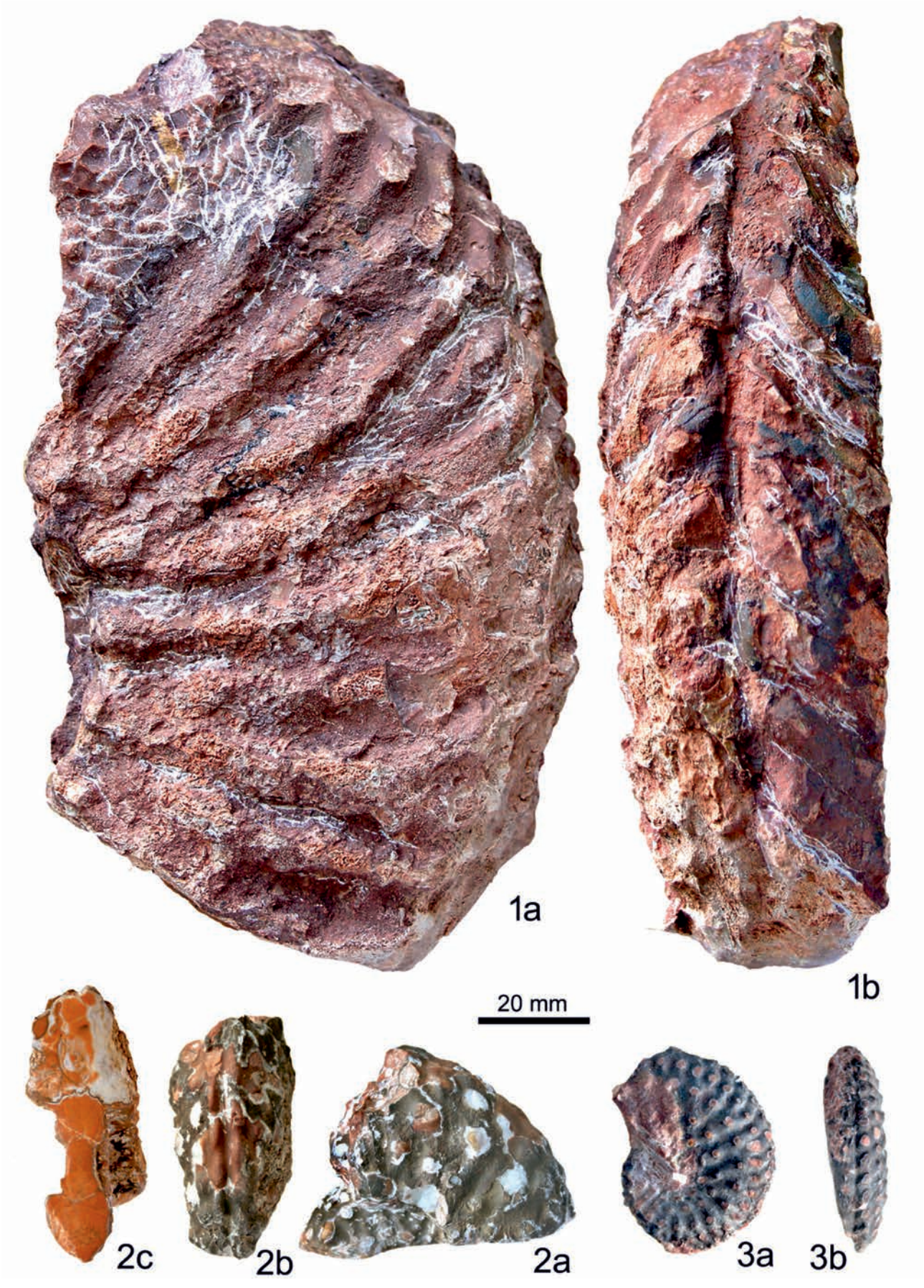

Plate VIII – VIII. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Protrachyceras* sp. aff. *archelaus* (LAUBE, 1869); BMPracar6_4; collecting site 6, bed 4, Archelaus Zone; a: left lateral view, b: ventral view, c: right lateral view.
2. *Protrachyceras ladinum* (MOJSISOVICS, 1882); PZsPrla6_4; collecting site 6, bed 4, Archelaus Zone; lateral view.
3. *Protrachyceras steinmanni* (MOJSISOVICS, 1882); BMPrst6_4; collecting site 6, bed 4, Archelaus Zone; lateral view.
4. *Protrachyceras irregulare* FANTINI SESTINI, 1994; PZsPrirKh; collecting site 2, (bed 4), Margaritosum Zone(?); lateral view.
5. *Protrachyceras ladinum* (MOJSISOVICS, 1882); BMPrla6_4; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.

Plate VIII – VIII. tábla

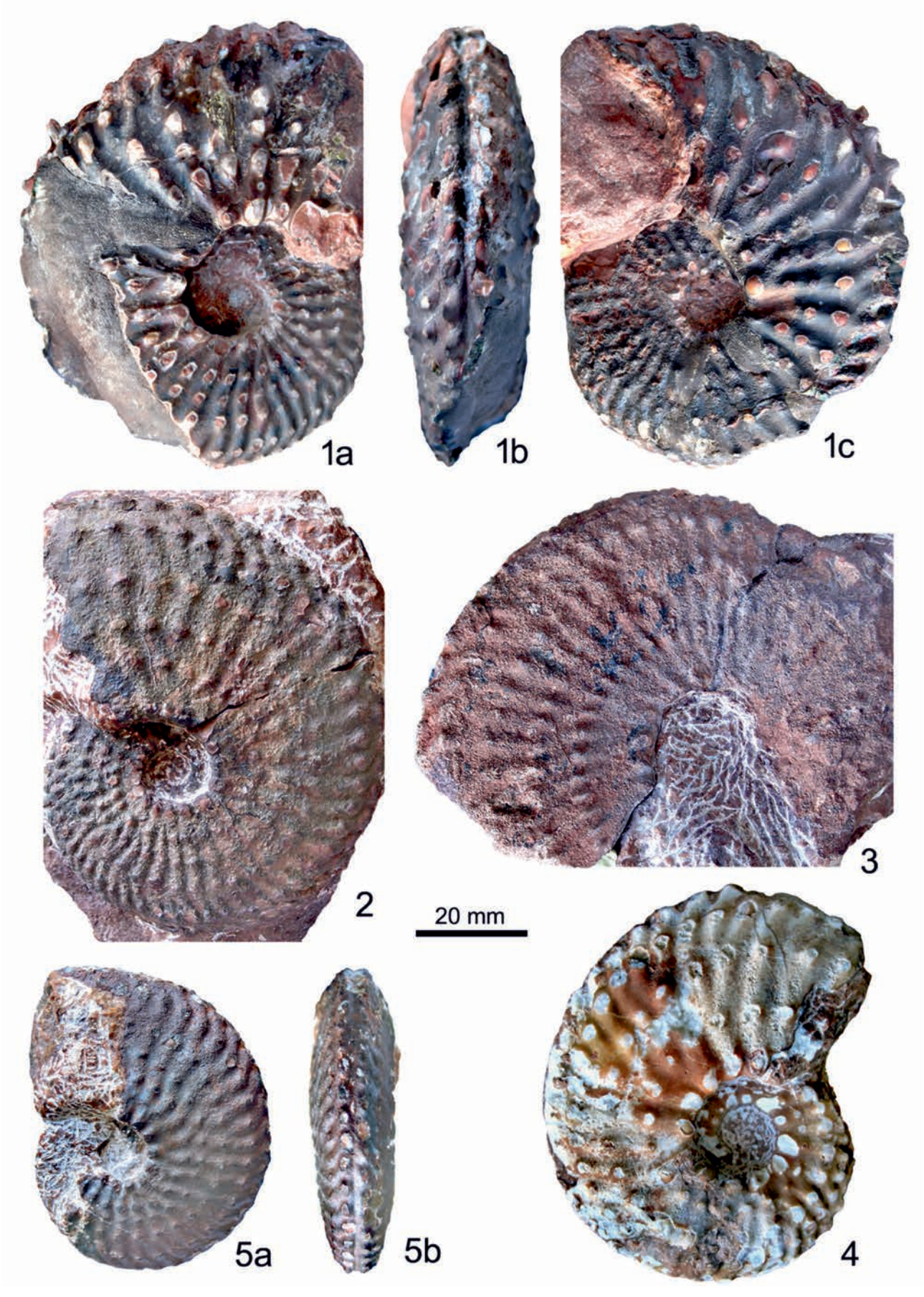

Plate IX – IX. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Protrachyceras archelaus* (LAUBE, 1869); BMPrarKh; collecting site 6, bed 4, Margaritosum Zone(?); a: lateral view, b: ventral view.
2. *Protrachyceras longobardicum* (MOJSISOVICS, 1882); PZsPrloKh; collecting site 2, (bed 4), Archelaus Zone(?); lateral view.
3. *Protrachyceras* cf. *archelaus* (LAUBE, 1869); PZsPrar7; collecting site 7, (bed 10), Margaritosum Zone(?); lateral view.
4. *Katrabocaites* sp. aff. *laczkoi* (DIENER, 1899) B; PZsTranspKh-2; collecting site 6, bed 5a, Margaritosum Zone(?); ventral view.
5. *Katrabocaites* sp. aff. *laczkoi* (DIENER, 1899) A; PZsTranspKh; collecting site 6, bed 5a, Margaritosum Zone; lateral view.
6. *Katrabocaites* sp. aff. *laczkoi* (DIENER, 1899) C; PZsKatrafflaCKh; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.
7. *Katrabocaites* sp. aff. *laczkoi* (DIENER, 1899) A; BMKatrafflaA6_4; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.

Plate IX – IX. tábla

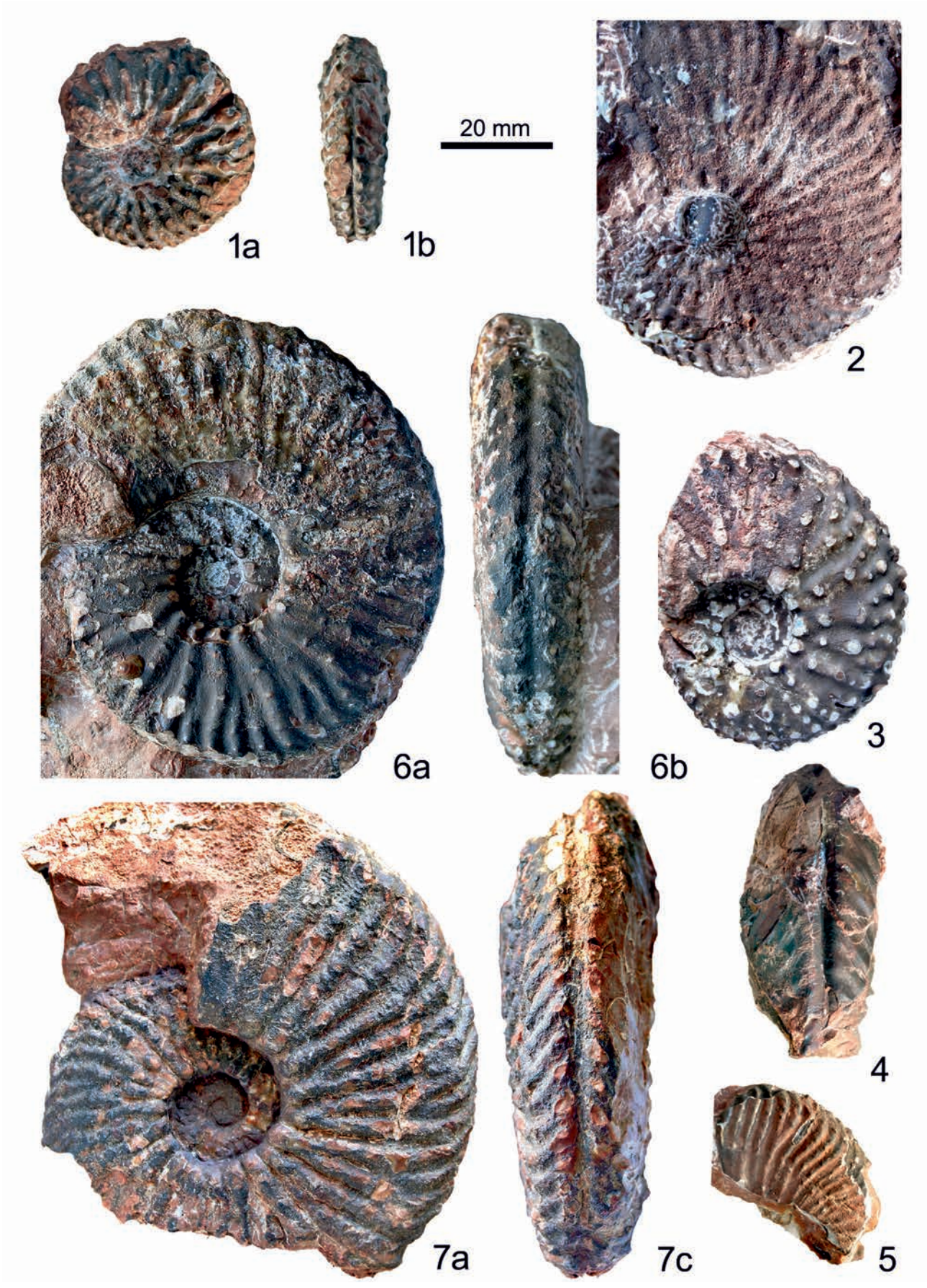

Plate X – X. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI and Zs. PINTÉR. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs).

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye őrzi.

1. *Katrabocaites* sp. aff. *laczkoi* (DIENER, 1899) B; PZsKatrafflaczKh; collecting site 6, bed 4, Archelaus Zone; a: left lateral view, b: ventral view, c: other ventral view, d: right lateral view.
2. *Protrachyceras ladinum* (MOJSISOVICS, 1882); PZsPrla6_4-2; collecting site 6, bed 4, Archelaus Zone; lateral view.

Plate X – X. tábla

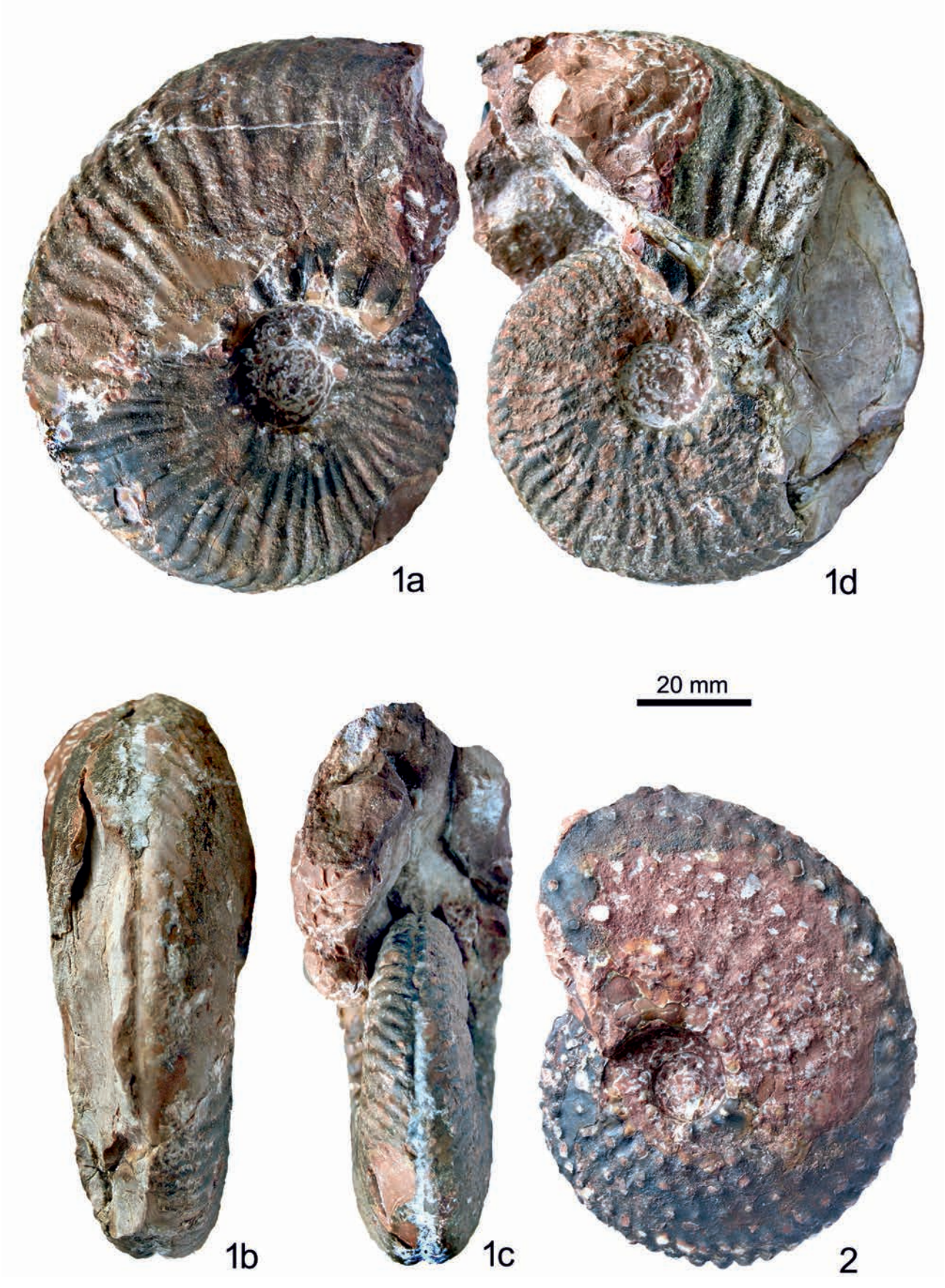

Plate XI – XI. tábla

Late Ladinian ammonoids from the Király Hill (Veszprémfajsz, Balaton Highland), collected by M. BERCSÉNYI, Zs. PINTÉR and A. VÖRÖS. All figures are in natural size. The specimens are kept in the private collections of M. BERCSÉNYI (Nyúl, prefixed by BM) and Zs. PINTÉR (Győr, prefixed by PZs), or in the Department of Geology and Palaeontology of the Hungarian Natural History Museum (HNHM, Budapest) under the inventory number prefixed by PAL.

Késő ladin ammonoideák a Király-hegyről (Veszprémfajsz, Balaton-felvidék), BERCSÉNYI M. és PINTÉR Zs. gyűjtése. Az ábrák természetes nagyságúak. A példányokat BERCSÉNYI M. (Nyúl, BM jelzettel) és PINTÉR Zs. (Győr, PZs jelzettel) magángyűjteménye, vagy a Magyar Természettudományi Múzeum Őslénytani és Földtani Tára, Budapest (PAL jelzettel) őrzi.

1. *Katrabocaites montisregis* n. sp.; holotype, PAL 2025.9.1.; collecting site 2, (bed 4), Archelaus Zone(?); a: left lateral view, b: ventral view, c: right lateral view.
2. *Katrabocaites montisregis* n. sp.; BMAnspKh; collecting site 6 bed 4, Archelaus Zone; a: lateral view, b: ventral view.
3. *Katrabocaites montisregis* n. sp.; PZsKatregio6_4; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.
4. *Monophyllites wengensis* (KLIPSTEIN, 1843); PZsMowe6_4; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: cross section.
5. *Monophyllites wengensis* (KLIPSTEIN, 1843); BMMoweKh-2; collecting site 6, bed 4, Archelaus Zone; a: lateral view, b: ventral view.

Plate XI – XI. tábla