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LIASSIC BRACHIOPODA FROM THE MOUNTAINS ČAČTICKÉ POHORIE WEST SLOVAKIA

(Pl. XI—XII, Text-figs. 1—3)

Abstract: In this paper is described the rich fauna of Liassic Brachiopoda (Genus *Cirpa*, *Cuneirhynchia*, *Gibbirhynchia*, *Tetrarhynchia*, *Homoeorhynchia*, *Piarorhynchia*, *Rhynchonella*, *Lobothyris* and *Zeilleria*) in the Mountains Čachtické pohorie.

Introduction

In the mountains Čachtické pohorie, the northernmost part of Little Carpathians an interesting and manifold brachiopod fauna is found in Liassic red and pink or yellowish crinoid limestones. The crinoid limestones form small lenses, situated between Rhaetic and Lower Cretaceous of the Choč unit on the slopes of the mountain Drienovica. The rock having Liassic brachiopoda in these lenses underlying crinoid limestones with Upper Doggerian and Malmian ammonites ascribed J. Lóczy (1915) to Bathonian, because V. Uhlig had found Bathonian fauna in limestones of similar type in other regions of the Carpathians. The Liassic brachiopoda and also some ammonites were sampled in 1963. The ammonites point to Lotharingian [*Oxynoticeras oxynotum* (Quenstedt)] and Pliensbachian [*Uptonia jamesoni* (Sow.), *Coenoceras striatum* (Sow.)]. There are three localities, one north and two south from the mountain Drienovica. The fauna is rich in species but except of few species it is poor in specimens of the particular species.

The Fauna of the Localities

A. Locality north from the mountain Drienovica.

Lotharingian to Pliensbachian: *Zeilleria ewaldi* (Oppel), *Cuneirhynchia retusifrons* (Oppel), *Cirpa fronto* (Quenstedt).

Pliensbachian to Domerian: *Homoeorhynchia acuta* (Sow.), „*Rhynchonella*“ *stachei* Böse.

B. Locality south from the mountain Drienovica, small quarries on the way between Krajné and Podolie.

a) Small quarry under the way

Lotharingian to Pliensbachian: *Oxynoticeras oxynotum* (Quenstedt), *Coenoceras striatum* (Sow.), *Harpophylloceras* cf. *eximium* (Hauer), *Uptonia jamesoni* (Sow.), *Cuneirhynchia retusifrons* (Oppel), *Cirpa fronto* (Quenstedt), *Piarorhynchia deffneri* (Oppel), „*Rhynchonella*“ *gümbeli* Oppel, *Lobothyris andleri* (Oppel), *Zeilleria mutabilis* (Oppel).

Pliensbachian to Domerian: *Tetrarhynchia* aff. *tetrahedra* (Sow.), „*Rhynchonella*“ *parvirostris* Römer, *Zeilleria waterhousi lunaris* (Schubler-Zieten).

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b) Small quarry above the way

Lotharingian to Pliensbachian: *Uptonia jamesoni* (Sow.), *Cirpa fronto* (Quenstedt), *Cuneirhynchia retusifrons* (Oppel), „*Rhynchonella*“ *gumbeli* Oppel.

Pliensbachian to Domerian: *Cuneirhynchia dalmasi* (Dumortier), *Tetrarhynchia* aff. *tetrahedra* (Sow.), *Tetrarhynchia austriaca* (Quenstedt), *Gibbirhynchia curviceps* (Quenstedt), „*Rhynchonella*“ *parvirostris* Römer, *Lobothyris punctata* (Sow.), *Zeilleria alpina* (Geyer), *Zeilleria mutabilis* (Oppel), *Zeilleria esvaldi* (Oppel).

Description of Species

Rhynchonellidae Gray, 1848

Cirpa di Gregorio, 1930

Cirpa fronto (Quenstedt, 1871)

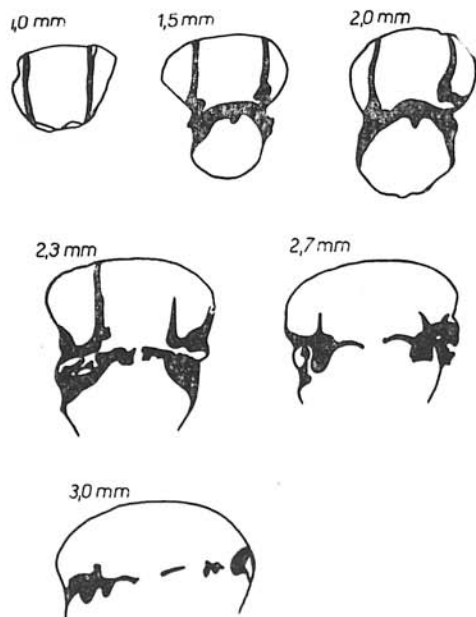
(Pl. XI, fig. 1a-d)

1868—1871 *Terebratula triplicata fronto* n. sp. — F. A. Quenstedt: *Petrefactenkunde Deutschlands*, p. 71, pl. 37, figs. 177—183.

1905 *Rhynchonella variabilis* Schl. var. *fronto* Qu. — K. Rau: *Die Brachiopoden etc.*, p. 41, pl. 24, figs. 92—97.

1918 *Piarorhynchia triplicata fronto* Quenstedt — S. S. Buckman: *The Brachiopoda etc.*, p. 34.

1958 *Cirpa fronto* Quenstedt — D. V. Ager: *A Monograph etc.*, p. 53, pl. 5, figs. 1—3, text. figs. 29—30 (cum syn.).



Text-fig. 1. Series of transversal sections through posterior part of *Cirpa fronto* (Quenstedt).

Dimensions in mm:	length 14.5;	width 16;	thickness 10.4
	13	15	10
	16	16	11
	11.5	12	9

Material: 21 well-preserved and 4 partly preserved specimens.

Description: Subtrigonal in outline, length as great as the width or the width is greater than the length, sharp, flattened fold is rising on dorsal valve, flat, distinct sinus on ventral valve. There are 7 to 10 strong, sharp ribs, 3 to 4 of which are in central fold. The anterior end is truncated. The beak is massive, incurved, with unsharp but distinct beak-ridges. On sides there are flat or slightly deepened planareas.

Internal characters: The delthyrial cavity is quadrate in cross-section, the dental lamellae diverge slightly in anterior and dorsal direction, the lateral umbonal cavities are semicircular in outline, the socket-ridges are strongly developed, the median septum is very short. The internal characters agree well with those of *Cirpa fronto* (Q u e n s t.) in D. V. A g e r (1958).

Occurrence: Lotharingian and Pliensbachian.

Distribution: ČSSR — Velká Fatra (Belá-valley), Žiar (Rudno), Strážovská hornatina (Čierna Lehota); Roumania; England; Germany; Italy.

Cuneirhynchia B u c k m a n, 1914

Cuneirhynchia retusifrons (O p p e l, 1861)

(Pl. XI, fig. 2a—c)

- 1861 *Rhynchonella retusifrons* O p p. n. sp. — A. O p p e l: Ueber die Brachiopoden etc., p. 544, pl. 2, fig. 5.
 1889 *Rhynchonella retusifrons* O p p. - G. G e y e r: Über die liasischen Brachiopoden etc., p. 62, pl. 7, figs. 8—12 (cum syn.).
 1918 *Cuneirhynchia retusifrons* — S. S. B u c k m a n: The Brachiopoda etc., p. 35.

Dimensions in mm:	length 10;	width 11.5	thickness 8
	10.5	11	8.5

Material: 12 well preserved specimens.

Description: Trigonal in outline, the width is greater than the length. Dorsal valve more convex than ventral valve, with distinct but deepened fold, on ventral valve there is a flat and wide sinus. Ribs only in frontal part, fine, on sides stronger, 8 to 12, in central fold 4 to 6. Beak short, slightly incurved, with sharp beak ridges. On lateral parts of dorsal valve there are unsharp delimited planareas.

Remarks: Similar in shape is *Cuneirhynchia dalmasi* (D u m.), differing by flatter ventral valve.

Occurrence: Lower and Middle Liassic.

Distribution: ČSSR — Strážovská hornatina (Čierna Lehota, Valaská Belá), Žiar (Rudno); Austria; Italy.

Cuneirhynchia dalmasi (D u m o r t i e r, 1869)

- 1905 *Rhynchonella Dalmasi* D u m. — K. R a u: Die Brachiopoden etc., p. 35, pl. 2, figs. 56—61 (cum syn.).
 1918 *Cuneirhynchia dalmasi* D u m. — S. S. B u c k m a n: The Brachiopoda etc., p. 35, pl. 18, fig. 6.

Dimensions in mm: length 11; width 14; thickness 9
 11,5 10,5 9,5

Material: 2 well preserved specimens.

Description: Trigonal in outline, the ventral valve is almost flat, slightly convex only near the beak, with wide sinus in frontal part. The dorsal valve is strongly convex, with fold having a slight depression. Both valves are smooth posteriorly, in frontal part there are 11–13 ribs, of which 4–7 are confined to the fold. The ribs on the sides are stronger than those in the fold and sinus. Beak small, slightly incurved, with sharp, long and distinct beak-ridges. On the sides of brachial valve there are depressed planareas.

Remarks: *C. retusifrons* (Oppel) differs from described species in sharper ribs, more convex ventral valve and smaller dimensions.

Occurrence: Middle Liassic.

Distribution: ČSSR — Velká Fatra (Belá-valley), Strážovská hornatina (Čierna Lehota); Austria; Germany; England; Italy; France; Turkey.

Gibbirhynchia Buckman, 1914

Gibbirhynchia curviceps (Quenstedt, 1871)

1868–1871 *Terebratula curviceps* n. sp. — F. A. Quenstedt: Petrefactenkunde Deutschlands, p. 57, pl. 37, figs. 118–127.

1905 *Rhynchonella curviceps* Qu. — K. Rau: Die Brachiopoden etc., p. 18, pl. 2, figs. 14–17.

1906 *Rhynchonella curviceps* Quenst. — G. d. Piaz: Sulla fauna liasica etc.; p. 23, pl. 2, figs. 1–3 (cum syn.).

1918 *Gibbirhynchia curviceps* Quenstedt — S. S. Buckman: The Brachiopoda etc., p. 44.

Material: 1 partly preserved specimen.

Description: Oval in outline, width greater than the length, ventral valve strongly convex with sinus in frontal part, dorsal valve gibbous, passing to central fold in frontal part. Ribs strong, sharp, 16, 6 of which are in central fold. On sides there are small deepened lateral planareas. Frontal commissure deeply bent against dorsal valve. Beak fails.

Occurrence: Middle Liassic.

Distribution: ČSSR — Little Carpathians (Prístodolok, Sološnica-valley), Strážovská hornatina (Kostelec); USSR — Caucasus; Roumania; Italy; Germany.

Tetrarhynchia Buckman, 1914

Tetrarhynchia austriaca (Quenstedt, 1851)

(Pl. XII, fig. 1a–c)

1868–1871 *Terebratula tetraedra Austriaca* n. var. — F. A. Quenstedt: Petrefactenkunde Deutschlands, p. 60, pl. 37, figs. 124–125.

1854 *Rhynchonella Austriaca* n. sp. — E. Suess: Über die Brachiopoden etc., p. 53, pl. 3, figs. 10–15.

1964 *Tetrarhynchia austriaca* (Quenstedt) — G. Raileanu — M. Iordan: Studiiul brachiopodelor etc., p. 8, pl. 1, fig. 3.

Dimensions in mm: length 15; width 18; thickness 11.
 15 16,5 11

Material: 2 well preserved, 1 partly preserved specimens.

Description: Subpentagonal in outline, the width is greater than the length, dorsal valve strongly convex, more than ventral valve, with raised central fold. On ventral valve there is a flat and distinct sinus. Ribs strong, rounded, stronger in central than in lateral parts. 8 to 9, 2 to 3 of which are in central fold. Beak short, slightly incurved, with sharp beak-ridges. On sides there are small, slightly deepened lateral planareas.

Remarks: F. A. Quenstedt (1851) in his work „Der Jura“ described this species as *Terebratula tetraedra Austriaca*. It differs from *Tetr. tetrahedra* (Sow.) in stronger and fewer ribs and more pronounced dorsal fold.

Occurrence: Middle Liassic.

Distribution: Roumania; Austria; Germany; England.

Tetrarhynchia aff. *tetrahedra* (Sowerby, 1812)

Dimension in mm: length	15;	width	17;	thickness	11
	13		13		9,5
	13		16		10

Material: 22 well preserved, 12 partly preserved specimens.

Description: Oval to subpentagonal in outline, the width is generally greater than the length, dorsal valve is very strongly convex, ventral valve moderately convex. There is a flat wide sinus on the ventral valve and an undistinct flat fold on the dorsal one. The beak is small, slightly incurved, with unsharp but pronounced beak-ridges. Ribs numerous, sharp, 18 to 30, 6 to 12 of which are confined to the fold.

Internal characters: The delthyrial cavity is rectangular in cross-section, limited by almost parallel, very slightly dorsally divergent dental lamellae. The umbonal cavities are semicircular to subtrigonal in cross-section.

Remarks: The described type differs from *Tetrarhynchia tetrahedra* (Sow.) in having more ribs, more convex dorsal valve and flatter sinus in ventral valve.

Occurrence: Middle Liassic.

Homocorhynchia Buckman, 1914

Homocorhynchia acuta (Sowerby, 1816)

- 1852 *Rhynchonella acuta* Sow. sp. — T. Davidson: A Monograph of British etc., p. 76–77, pl. 14, figs. 8–9.
 1868–1871 *Terebratula acuta* — F. A. Quenstedt: Petrefactenkunde Deutschlands, p. 64–65, pl. 37, figs. 150–153.
 1884 *Rhynchonella acuta* Sow. sp., 1818 — H. Haas: Étude monographique etc., p. 44–47, pl. 2, fig. 24, pl. 3, fig. 56 (cum syn.).
 1918 *Homocorhynchia acuta* J. Sowerby — S. S. Buckman: The Brachiopoda etc., p. 36, pl. 18, fig. 13.

Dimensions in mm: length 14,5; width 15; thickness 9.

Material: 1 well preserved specimen.

Description: Trigonal in outline, the ventral valve is almost flat, the dorsal valve is strongly elevated. The valves are in posterior part smooth, in frontal part there are 5–6 strong rounded ribs, 2 of which are confined to the fold of the dorsal valve and 1 to the sinus of the ventral valve. The beak is small and incurved.

Occurrence: Middle Liassic.

Distribution: CSSR — Strážovská hornatina (Kostelec). England; Germany; Switzerland; France; Portugal.

coarse and rounded. The beak is small, slightly incurved, with sharp beak-ridges.

Remarks: The described species differs from the similar species „*Rhynchonella*“ *parvirostris* Römer in having less convex dorsal valve, fewer, more rounded and shorter ribs.

Occurrence: Lower to Middle Liassic.

Distribution: ČSSR — Malá Fatra (valley of Rajecká Lesná), Stratenská hornatina (Lipovec), Strážovská hornatina (Strážov, S from Košeca, Trenč. Teplá); England; France; Switzerland; Germany; Turkey.

Rhynchonella Fischer, 1809, s. l.

„*Rhynchonella*“ *parvirostris* Römer, 1836

(Pl. XII, fig. 3a—c)

1905 *Rhynchonella parvirostris* Römer — K. Rau: Die Brachiopoden etc., p. 25, pl. 2, figs. 32—39.

Dimensions in mm:	length 13;	width 13,5;	thickness 9
	12	14	9
	13	14	9
	12,5	13,5	8

Material: 10 well preserved, 3 partly preserved specimens.

Description: Pentagonal in outline, the width is greater than the length, the dorsal valve is strongly convex, the ventral valve is little convex. There is a distinct fold in the frontal part of the dorsal valve and a distinct sinus in the frontal part of the ventral valve. The valves are smooth posteriorly, the ribs are only in the frontal part, they are rounded, 6 to 7, 2 to 3 of which are confined to the fold. The ribs on the sides are stronger than the ribs in the fold or in the sinus. The strongest are the ribs delimiting the sinus. Beak small, slightly incurved, with sharp beak-ridges.

Internal characters: The dental lamellae are almost parallel, slightly divergent dorsally, the delthyrial cavity is subquadrate in cross-section, the umbonal cavities are semicircular in cross-section, the dental lamellae are distant, the median septum of the dorsal valve is short.

Occurrence: Middle Liassic.

Distribution: Germany.

„*Rhynchonella*“ *prona* Oppel, 1861

1861 *Rhynchonella prona* Opp., n. sp. — A. Oppel: Ueber die Brachiopoden etc., p. 547, pl. 13, fig. 7.

1911 *Rhynchonella prona* Oppel — F. Hahn: Neue Funde etc., p. 547, pl. 20, fig. 5 (cum syn.).

Dimensions in mm: length 11,5; width 13,5; thickness 7.

Material: 1 well preserved specimen.

Description: Pentagonal in outline, both valves are little convex, the convexity of dorsal valve is more than that of ventral valve. Both valves are smooth posteriorly, in frontal part of the valves there are 5 to 6 rounded ribs, 3 of which are confined to the fold. Beak small, slightly incurved, with rounded beak-ridges.

Remarks: The described specimen agrees with the type of F. Hahn in having 3 ribs in the fold. Therefore it is somewhat different from the type of G. Geyer that has only 2 ribs in the fold, and from the type of A. Oppel that has one rib in the fold.

Occurrence: Lower to Middle Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok); Austria.

„*Rhynchonella*“ *stachei* Böse, 1897

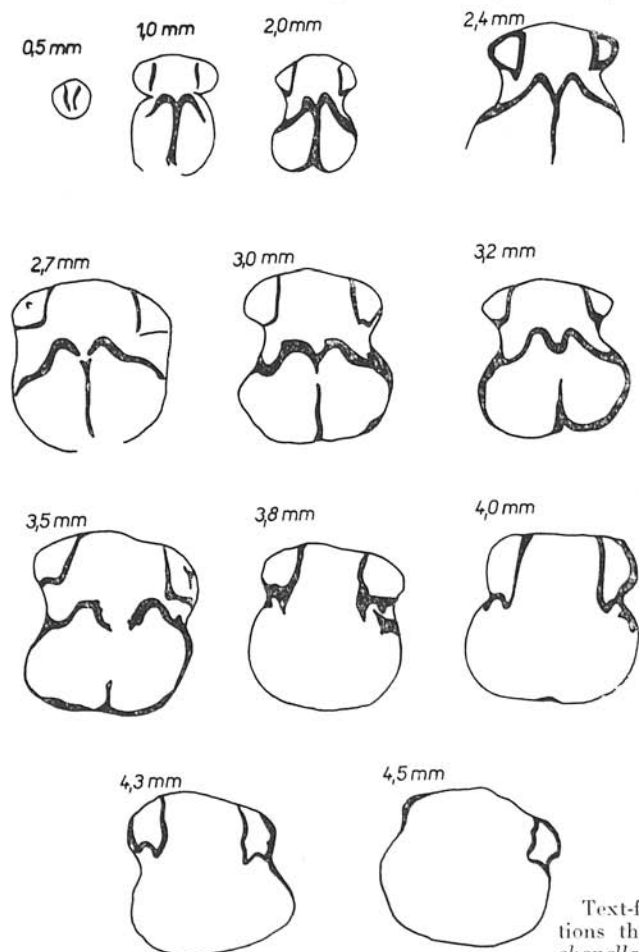
(Pl. XI, fig. 3a–c)

1897 *Rhynchonella stachei* nov. sp. — E. Böse: Die mittelliasische Brachiopodenfauna etc., p. 192, pl. 14, figs. 5–8.

Dimensions in mm: length 14,5; width 16; thickness 10.
13,5 15 9,5

Material: 2 well preserved and 1 partly preserved specimens.

Description: Pentagonal in outline, the width is greater than the length, the dorsal valve is strongly convex, having a distinct fold in the frontal part, the ventral valve is flat, having a wide sinus in the frontal part. The valves are smooth posteriorly. In the frontal part there are strong, rounded ribs, 7 to 8, 3 to 4 of which are confined to the fold. Beak short, upright, with sharp beak-ridges.



Text-fig. 3. Series of transversal sections through posterior part of „*Rhynchonella*“ *parvirostris* Römer.

Remarks: The described species is a transitional type between „*Rhynchonella*“ *paoli* Canavari having less sharp beak-ridges and a more convex ventral valve and *Cuneirhynchia dalmasi* (Dumortier) having longer and sharper beak-ridges and depressed dorsal fold.

Occurrence: Middle Liassic.

Distribution: ČSSR — Žiar (Rudno); Austria.

„*Rhynchonella*“ *gumbeli* Oppel, 1861

(Pl. XI, fig. 4a—c)

1861 *Rhynchonella Gumbeli* Opp., n. sp. — A. Oppel: Ueber die Brachiopoden etc., p. 545, pl. 13, fig. 3.

1889 *Rhynchonella Gumbeli* Opp. — G. Geyer: Über die liasischen Brachiopoden etc., p. 46, pl. 5, figs. 19—23 (cum syn.).

Dimensions in mm: length 15; width 14.5; thickness 11.

Material: 1 well preserved and 2 partly preserved specimens.

Description: Trigonal in outline, the length is greater than the width, the convexity is slight, stronger in umbonal part of valves. The sinus in the ventral and the fold in the dorsal valves are undistinct. There are 7 to 9 strong ribs. Beak short, slightly incurved, with sharp beak-ridges. On the sides there are a little depressed lateral planareas.

Remarks: Types with similar shape to described species are „*Rhynchonella*“ *greppini* Oppel being thinner, wider and having thinner ribs and *Prionorhynchia forticostata* (Böckh) having fine ribs in posterior part reducing to few strong ribs in frontal part.

Occurrence: Lower to Middle Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok), Strážovská hornatina (Mojtín); USSR — Caucasus; Austria.

Terebratulidae Gray, 1840

Lobothyris Buckman, 1918

Lobothyris punctata (Sowerby, 1812)

1852 *Terebratula punctata* Sow. — T. Davidson: A Monograph of British etc., p. 45, pl. 6, figs. 1—6.

1889 *Terebratula punctata* Sow., typ. — G. Geyer: Über die liasischen Brachiopoden etc., p. 3, pl. 1, figs. 1—2 (cum syn.).

1905 *Terebratula punctata* Sow. — K. Rau: Die Brachiopoden etc., p. 46, pl. 3, figs. 15—33.

1918 *Lobothyris punctata* J. Sowerby — S. S. Buckman: The Brachiopoda etc., p. 108, pl. 20, fig. 7.

Dimensions in mm: length 19; width 16.5; thickness 10.
23 18 11

Material: 2 well preserved and 2 partly preserved specimens.

Description: Oval in outline, the ventral valve is more convex than the dorsal valve. Beak small, incurved.

Occurrence: Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok, Smolenice), Strážovská hornatina (Kostelec, Čierna Lehota); Austria; Germany, USSR; Hungary; Roumania; Bulgaria; England; France; Italy; Spain.

Lobothyris andleri (Oppel, 1861)

- 1861 *Terebratula Andleri* Opp., n. sp. — A. Oppel: Ueber die Brachiopoden etc., p. 536, pl. 10, fig. 4.
 1889 *Terebratula punctata* Var. *Andleri* Opp., n. var. — G. Geyer: Über die liasischen Brachiopoden etc., p. 3, pl. 1, figs. 3–8, 11, 15–16.
 1964 *Lobothyris punctata andleri* (Opp.) — G. Raileanu — M. Iordan: *Studiiul brachiopodelor* etc., p. 15, pl. 4, fig. 21 (cum syn.).

Material: 4 partly preserved specimens.

Description: Pentagonal in outline, valves little convex, beak is not preserved.

Occurrence: Lower to Middle Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok), Strážovská hornatina (Trenč. Teplá), Žiar (Rudno); Hungary; Roumania; Austria; Germany.

Zeilleriidae Rollier, 1919

Zeilleria Bayle, 1878 (= *Waldheimia* King, 1850)

Zeilleria mutabilis (Oppel, 1861)

- 1861 *Terebratula mutabilis* Opp. (*Waldheimia*) n. sp. — A. Oppel: Ueber die Brachiopoden etc., p. 538, pl. 10, fig. 7.
 1889 *Waldheimia mutabilis* Opp. — G. Geyer: Über die liasischen Brachiopoden etc., p. 18, pl. 2, figs. 31–36, pl. 3, figs. 1–7 (cum syn.).

Dimensions in mm: length 18; width 14; thickness 10.5.

Material: 1 well preserved specimen.

Description: Pentagonal in outline, the length is greater than the width, the greatest width is in halfways of the length. Both valves are equally convex having slight depressions in frontal part. Anterior commissure straight. Beak wide, small, slightly incurved, beak-ridges sharp reaching to about one third of the length.

Remarks: The original specimen of A. Oppel is shorter and has more distinct depressions. According to G. Geyer this species is very variable in shape, varying from pentagonal to trigonal outline.

Occurrence: Lower to Middle Liassic.

Distribution: ČSSR — Little Carpathians (the valleys of Parná and Bohatá rivers), Strážovská hornatina (Čierna Lehota); Austria; Italy.

Zeilleria ewaldi (Oppel, 1861)

- 1861 *Terebratula Ewaldi* Opp. (*Waldheimia*), n. sp. — A. Oppel: Über die Brachiopoden etc., p. 539, pl. 11, fig. 1.
 1889 *Waldheimia Ewaldi* Opp. — G. Geyer: Über die liasischen Brachiopoden etc., p. 31, pl. 4, fig. 3–7.

Dimensions in mm: length 12; width 13; thickness 10.

Material: 1 well preserved and 1 partly preserved specimens.

Description: Subpentagonal in outline, the length is as great as the width, the convexity of both valves is equal. There is a wide, distinct sinus in the frontal part of the dorsal valve corresponding to which the ventral valve is flattened in the frontal part. Beak small, wide, incurved, with sharp, distinct beak ridges.

Occurrence: Lower to Middle Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok), Strážovská hornatina (Čierna Lehota), Malá Fatra, Žiar (Rudno); Austria; Italy.

Zeilleria alpina (Geyer, 1889)

1889 *Waldheimia alpina* nov. sp. — G. Geyer: Über die liassischen Brachiopoden etc., p. 29, pl. 3, fig. 33–38.

Dimensions in mm: length 16; width 15; thickness 6.

Description: oval in outline, the length is almost as great as the width, the convexity of both valves is slight, the dorsal valve has a slight depression in the frontal part. Beak small, wide, slightly incurved, with sharp beak ridges.

Occurrence: Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok), Strážovská hornatina (Čierna Lehota), Žiar (Rudno); Austria; Hungary.

Zeilleria waterhousi lunaris (Schübler-Zieten)
(Pl. XII, fig. 4a–c)

1905 *Waldheimia Waterhousi* var. *lunaris* Schübler-Zieten — K. Rau: Die Brachiopoden etc., p. 75, pl. 4, figs. 49–50.

Dimensions in mm: length 15; width 13; thickness 10.
15.4 14 10.5

Material: 3 well preserved and 5 partly preserved specimens.

Description: Subpentagonal in outline, the length is greater than the width. There are frontal depressions in both valves, the depression in the dorsal valve is deeper. The depressions are separated from the sides by rounded off and convergent edges. The depression in the dorsal valve has sometimes a small elevation. Beak small, slightly incurved, with sharp beak-ridges.

Occurrence: Middle Liassic.

Distribution: ČSSR — Little Carpathians (Pristodolok); Austria; Germany.

Conclusions

The mentioned ammonites point to a stratigraphical position of the described fauna equivalent to Lotharingian and Pliensbachian. In all probability the majority of the described species is of Pliensbachian age as it also likely follows from the entire brachiopod association.

Except the species described from alpine localities there are also represented species that were found in nonalpine regions in West European province.

REFERENCES

- Ager D. V., 1956, 1958: A Monograph of the British Liassic Rhynchonellidae. Palaeontographical Society I, II. — Ager D. V., 1957: Some New Liassic Terebratuloids. Proceedings of the Geol. Ass. 67. — Ager D. V., 1959: Lower Jurassic Brachiopods from Turkey. Journ. of Paleont. 33. — Böse E., 1897: Die mitelliasische Brachiopodenfauna der östlichen Nordalpen. Palaeontographica 44. — Buckman S. S., 1918: The Brachiopoda of the Namyau Beds, Northern Shan States, Burma. Palaeont. Indica, New. ser. 3, 2. — Davidson Th., 1851: A Monograph of British Oolitic and Liassic Brachiopoda III. Palaeont. Soc. — Davidson Th., 1876–1878: A Monograph of the British Fossil Brachiopoda IV, 2. Supplement to the British Jurassic and Triassic Brachiopoda. Palaeont. Soc. — Geyer G., 1889: Über die liassischen Brachiopoden des Hierlatz bei Hallstatt. Abhandl. der k. k. geol. Reichsanst. 15, Wien. — Haas H., 1885–1891: Étude monographique et critique des Brachiopodes Rhétiens et Jurassiques des Alpes Vaudoises et des contrées environnantes. Mém. Soc. Pal. Suisse 11, 14, 18, Basel. — Haas H., 1889–1893: Kritische Beiträge zur Kenntniss der jurassischen Brachiopodenfauna des schweizerischen Juragebirges und seiner angrenzenden Landestheile.

Mém. Soc. Pal. Suisse 16, 17, 20, Basel. — Hahn F., 1911: Neue Funde in nordalpinem Lias der Achensee-Gegend und bei Ehrwald. Neues Jahrb. f. Min., Geol., Pal. 32. Stuttgart. — Lóczy L. jun., 1915: Die geologischen Verhältnisse der Gegend zwischen Végújhely, Oszombat u. Jablánc in den Nordwestkarpaten. Jahresberichte d. k. k. Ungar. Reichsanstalt für 1914, Budapest. — Nucubidze K. S., 1949: Lejaskije brachiopody periferii Dzirufskogo masiva. Trudy geol. inst. AN Gruz. SSR 5 (10), Tbilisi. — Oppel A., 1861: Ueber die Brachiopoden des unteren Lias. Zeitschr. d. deutsch. geol. Gesellschaft 13.

Ormós E., 1937: Die Brachiopoden-Fauna der unteren Lias in Kékhegy (Bakonyerwald). Abhandl. aus dem min.-geol. Institut der St. Tisza Univ. 9. — Parona C. F., 1893: Revisione della fauna liasica di Gozzano in Piemonte. Mem. d. Reale Accad. d. Scienze di Torino 2, 43. — Pevný J., 1964: Brachiopoda severnej časti Malých Karpát. Geol. práce, Zprávy 33, Bratislava. — Piaz G. D., 1906: Sulla fauna liasica delle tranze di Sospirolo I. Mém. Soc. Pal. Suisse 33, Basel. — Quenstedt F. A., 1868–1871: Petrefactenkunde Deutschlands II, Brachiopoden. — Raileanu Gr., Jordan M., 1964: Studiul brachiopodelor liasice din zona Svinita. Studii si cercetari de geogr., geofizica, geologie. Ser. geol. 1, 9, Bucuresti. — Rau K., 1905: Die Brachiopoden des mittleren Lias Schwabens. Geol. und Pal. Abh. 10, Jena. — Siblik M., 1964: K nálezu liasových brachiopodů v horní části Belanské doliny. Geol. práce, Zprávy 31, Bratislava. — Sowerby J., 1812–1829: The Mineral Conchology of Great Britain. — Suess E., 1854: Über die Brachiopoden der Kössener Schichten. Denkschr. d. Akad. Wiss. 7, Wien. — Trauth F., 1909: Die Grestener Sch. der Österreich. Voralpen und ihre Fauna. Beitr. z. Paläontologie Öster.-Ung. 22. — Vysvetlivky k prehľadnej geologickej mape ČSSR 1:200 000 Wien—Bratislava. 1962, Bratislava.

Review by M. Siblik.

Explanation to Plates

Plate XI

Fig. 1a–c. *Cirpa fronto* (Quenstedt), x2. — Fig. 2a–c. *Cuneirhynchia retusifrons* (Oppel), x2,5. — Fig. 3a–c. „*Rhynchonella*“ *stachei* Böse, x2. — Fig. 4a–c. „*Rhynchonella*“ *gümbeli* Oppel, x1,5. Photo F. Vrbovský.

Plate XII

Fig. 1a–c. *Tetrrhynchia austriaca* (Quenstedt), x1,9. — Fig. 2a–d. *Tetrrhynchia* aff. *tetrahedra* (Sow), x2. — Fig. 3a–c. „*Rhynchonella*“ *parvirostris* Römer, x2. — Fig. 4a–c. *Zeilleria waterhousi lunaris* (Schubler-Zieten), x1,5. Photo F. Vrbovský.

