

Cardioceras elizabethae n. sp. and *C. zalasiensis* n. sp.
(Ammonoidea) from the Oxfordian in the vicinities of
Cracow

by

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Summary. Two new species of ammonites are described from the Lower and Middle Oxfordian in the vicinities of Cracow: *Cardioceras (Plasmatoceras) elizabethae* n.sp. and *C. (Scoticardioceras) zalasiensis* n.sp. Stratigraphic ranges of these species are fairly narrow and the geographic ones—wide, comprising Poland, France, Switzerland, and FRG. Thus, the fossils match the requirements of the guide ones and they appear potentially useful for biostratigraphic purposes.

Some cardioceratids (Ammonoidea), so far not described in detail, have been found in Lower and Middle Oxfordian rocks in the vicinities of Cracow. Some remarks on that fauna were given in an earlier paper [4] but specimens available at that time were scarce and insufficiently preserved for proposal of new specific names.

Further field studies made it possible to gather a rich collection of cardioceratids previously described [4] as *Cardioceras (Plasmatoceras)* sp. *A* and *C. (?Scoticardioceras)* sp. *B*. Conspecific specimens were also found in collections from Neuvizy (France), Herznach (Switzerland), Hersumenschichten (FRG) and in Malinowska's collection of ammonites from the vicinities of Częstochowa.

The available specimens of cardioceratids are very numerous, well preserved and often complete and they appear to be characterized by wide geographic distribution and narrow stratigraphic range. They cannot be accommodated in any of the existing species so two new specific names are proposed for them: *Cardioceras (Plasmatoceras) elizabethae* n.sp. and *C. (Scoticardioceras) zalasiensis* n.sp.

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Family Cardioceratidae Hyatt, 1877

Genus *Cardioceras* Neumayr et Uhlig 1881Subgenus *Plasmatoceras* Buckman 1925*Cardioceras (Plasmatoceras) elizabethae* n.sp.

(Table: Figs 10, 11, 13–15, 18)

1981. *Cardioceras (Plasmatoceras)* sp. A; Matyja and Tarkowski, p. 11, Pl. 3, Fig. 12.

Holotype: Specimen RT202, shown in the Table, Fig. 11.

Type horizon: Marls and spongy marly limestones, the *Cardioceras cordatum* Subzone, the *C. cordatum* Zone.

Type locality: Quarry at Zalas near Cracow.

Derivation of the name: From the first name of the author's friend, Elżbieta Chmielewska.

Material: 44 specimens, well preserved, usually with body chamber, not exceeding 28 mm in size.

Diagnosis. Ribbing dense, thread-like; whorl section ovate; keel with ledge-like ornamentation.

Dimensions*): RT200: D = 21.7 mm, H/D = 0.40, T/D = 0.25, O/D = 0.35, Pz = 7, J = 20, S = 2.0, K = 23; RT201: D = 22.0 mm, H/D = 0.35, T/D = 0.26, O/D = 0.30, Pz = 7, J = 12, S = 2.3, K = 26; RT202: D = 28.1 mm, H/D = 0.39, T/D = 0.24, O/D = 0.36, Pz = 6, J = 21, S = 2.0, K = 18; RT204: D = 26.1 mm, H/D = 0.42, T/D = 0.27, O/D = 0.34, Pz = 5, J = 20, S = 2.0, K = 11; RT205: D = 23.5 mm, H/D = 0.38, T/D = 0.28, O/D = 0.34, Pz = 4, J = 20, S = 2.0, K = 16.

Variability of individual features: H/D: from 0.35 to 0.42; T/D: 0.24–0.29; O/D: 0.33–0.36; Pz: 4–7; J: 19–12; S: 2.0–2.3; and K: 11–26.

Description. Shell ovate in cross-section, with convex sides. Whorl sides covered with densely-spaced, thread-like ribs. Ribs regularly bifurcating somewhat below the mid-height, somewhat flexuoid on inner whorls, usually straight on the outer, strongly bending forward at rounded margin of ventral side and becoming more crowded, thinner and sometimes untraceable at the venter. Keel low and wide or elevated and narrow, covered with ledge-like elements; the elements are more numerous (up to 26 in number) on low keel than on the high one (11 or more).

Remarks. The studies on this species give support to its intermediate position between *Cardioceras (Plasm.) platum* Buckman and the species *C. (Plasm.) tenuicostatum* (Nik.) and *C. (Plasm.) tenuistriatum* Bor., previously assumed by Matyja and Tarkowski [4].

Age: The *Cardioceras cordatum* Subzone of the *C. cordatum* Zone.

Occurrence: Zalas, Nowa Krystyna and Paczółtowice in the vicinities of Cracow. This species was also found in the material from Kłobuck and Częstochowa in collection of L. Malinowska.

Genus *Scoticardioceras* Buckman, 1925*Cardioceras (Scoticardioceras) zalasiensis* n.sp.

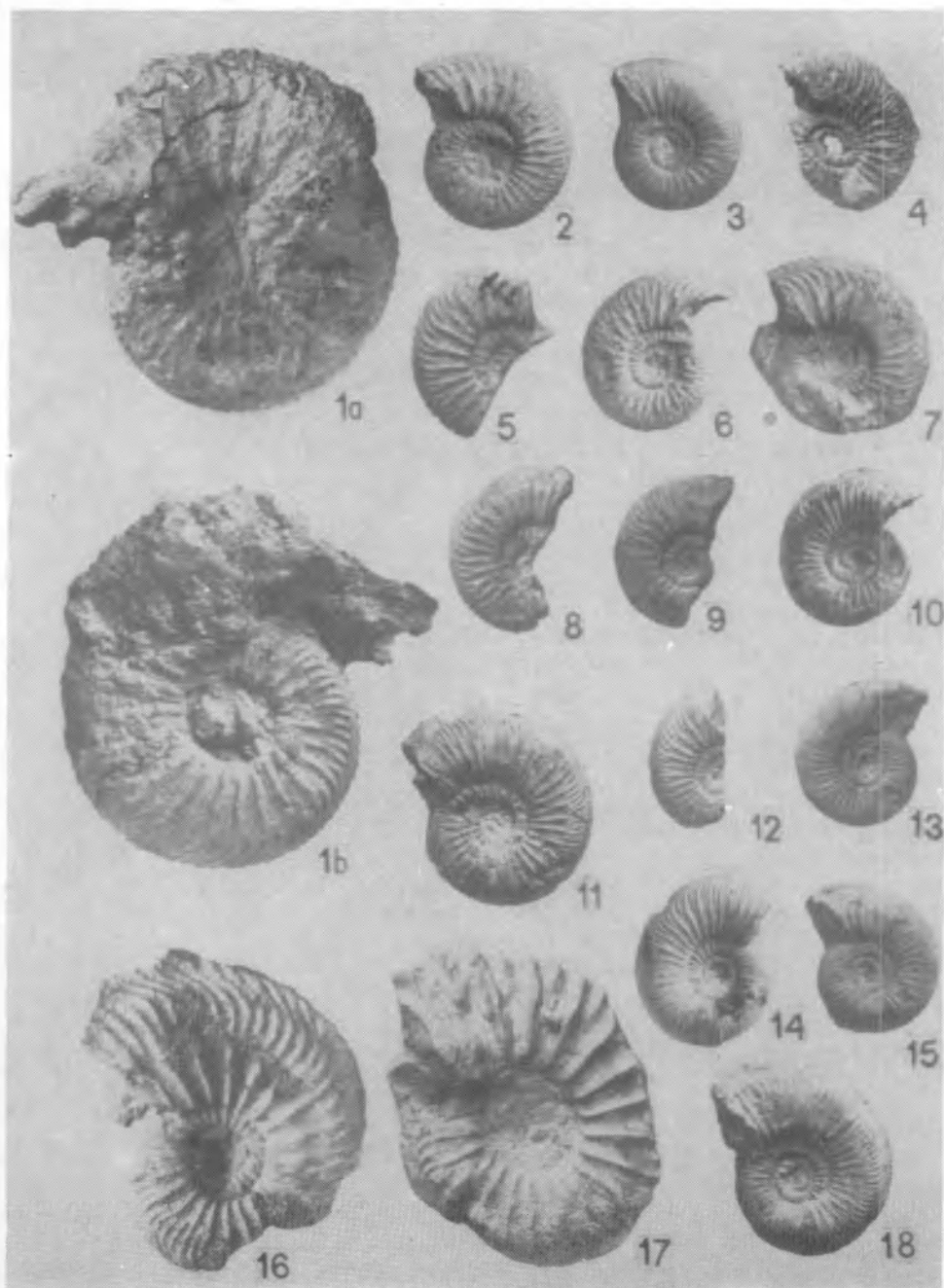
(Table: Figs. 1–9, 12, 16, 17)

1981. *Cardioceras (?Scoticardioceras)* sp. B; Matyja and Tarkowski, p. 11, Pl. 4, Fig. 1a, b.

Holotype: Specimen RT206, shown in the Table, Fig. 1a, b.

Type horizon: Marls and marly spongy limestones, the *Cardioceras cordatum* Subzone of the *C. cordatum* Zone and the *C. tenuicostatum* Subzone of the *Perisphinctes plicatilis* Zone.

*) D—shell diameter, H—whorl height, T—whorl thickness, O—umbilical diameter, Pz—crossing ribs index (see [5]), J—number of primary ribs per half of whorl side at a given diameter, S—ratio of secondary to primary ribs, K—number of tubercles per 1 cm of keel.



TABLE

Figs 1a, b, 2—9, 12, 16, 17—*Cardioceras* (*Scoticardioceras*) *zalasensis* n. sp.: 1a, b—RT206, Zalas locality (holotype), 2—RT209, Zalas, 3—RT217, Zalas, 4—RT212, Zalas, 5—RT211, Radwanowice, 6—RT216, Nowa Krystyna, 7—RT213, Zalas, 8—RT214, Zalas, 9—RT210, Zalas, 12—RT215, Radwanowice, 16—RT207, Zalas, 17—RT208, Radwanowice
 Figs 10, 13, 14, 15, 18—*Cardioceras* (*Plasmatoceras*) *elizabethae* n. sp.: 10—RT203, Zalas, 11—RT202, Zalas (holotype), 13—RT201, Zalas, 14—RT205, Zalas, 15—RT200, Zalas, 18—RT204, Zalas

Type locality: Quarry at Zalas near Cracow, section L.

Derivation of the name: After Zalas, type locality of this species.

Material: 82 specimens, generally well preserved. The bulk of them display at least a half of whorl and the ribbing is always traceable. Specimens below 26 mm in size predominate in the material and only three individuals are over 40 mm in size.

Diagnosis. Whorl sides flat, ornamented with fine ribs; ribs bifurcating at the mid-height; bifurcation point accentuated by some longitudinal rise of a rib.

Dimensions: RT206: D = 51.1 mm, H/D = 0.44, T/D = 0.28, O/D = 0.31, Pz = 3, S = 2, K = 5; D = 36.0 mm, H/D = 0.43, T/D = 0.28, O/D = 0.32, Pz = 3, J = 14, S = 2, K = 6; RT207: D = 39.0 mm, H/D = 0.41, T/D = 0.23, O/D = 0.29, Pz = 3, J = 12, S = 2, K = 5; RT210: D = 21.3 mm, H/D = 0.38, T/D = 0.29, O/D = 0.36, Pz = 2, J = 13, S = 2.3, K = 9; RT214: D = 23.0 mm, H/D = 0.37, T/D = 0.27, O/D = 0.37, Pz = 3, J = 15, S = 1.6, K = 9; RT216: D = 22.1 mm, H/D = 0.38, T/D = 0.26, O/D = 0.39, Pz = 3, J = 14, S = 2.1, K = 9; RT217: D = 22.1 mm, H/D = 0.37, T/D = 0.31, O/D = 0.39, Pz = 3, J = 15, S = 2.1, K = 11.

Variability of individual features: H/D: 0.37–0.44; T/D: 0.23–0.31, O/D: 0.29–0.39; Pz: 2–4; J: 11–16; S: 1.6–2.3; K: 5–12.

Description. Holotype (RT206). Ornamented at 40 mm diameter. Mould with flat sides, the thickest close to umbilical margin, with fairly wide, shallow umbilicus. Ribs straight on whorl sides, bifurcating at the mid-height or somewhat below; bifurcation point not accentuated by tubercle but by longitudinal rise of rib. Sculpture somewhat weakening between primary and secondary ribs but smooth band does not develop. Secondary ribs somewhat pronounced at ventral margin, bending forward and thinning out at ventral side. Although thinner than on whorl sides, secondary ribs are crowded at the venter and they reach keel tubercles. Ventral side triangular in outline, with slightly concave sides. At 51 mm diameter, sculpture remains essentially the same as at 40 mm, except for more loosely spaced primary ribs and more elevated and better pronounced keel.

Small specimens, most common in the collection, always display a part of body chamber. They are characterized by fine sculpture and whorls with flat to slightly convex sides, thickest close to umbilical margin. Whorl section varying from rectangular to lanceolate. Ribs bifurcate regularly, straight, with more or less strong forward twist at ventral margin (rib overpass index ranging from 2 to 4), thinning out but remaining always traceable at the venter. Keel tuberculated, with 8–12 tubercles per 1 cm. Primary ribs sometimes passing into secondary.

Remarks. The character of keel and the trend to smoothness of outer whorls make possible allocation of this species in the subgenus *Scoticardioceras* Buckman, 1925.

The specimens resemble those assigned to *C. excavatum* (Sow.) by Kniazev [2] but their flat whorl section and dense ribbing preclude allocation in the species *C. excavatum* (Sow.).

The species appears similar to *C. russiense* Sazonov (Amnanniazov [1]) in flattened whorl sides, thin and densely spaced ribs and their regular bifurcation at the mid-height. However, the latter species differs from that described here in clearly heart-shaped whorl section, sharp keel as well as strong, sickle-like bending of secondary ribs.

Age: The *Cardioceras cordatum* Subzone of the *C. cordatum* Zone and the *C. tenuicostatum* Subzone of the *Perisphinctes plicatilis* Zone.

Occurrence: Zalas, Nowa Krystyna, Radwanowice and Szklary in the vicinities of Cracow. The species was also found in collections from Neuvizy (*C. cordatum* Subzone—basal part of *C. tenuicostatum* Subzone). Herznach (extent as above). Herszumenschichten (top of *C. cordatum* Subzone—basal part of *C. tenuicostatum* Subzone).

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Р. Тарковский, *Cardioceras elizabethae* n. sp. *Cardioceras zalasiensis* n. sp. (Ammonoidea) из оксфорда в окрестностях Кракова

В настоящей работе описываются два новых вида аммонитов из нижнего и среднего оксфордов в окрестностях Кракова: *Cardioceras (Plasmatoceras) elizabethae* n.sp. и *Cardioceras (Scoticardioceras) zalasiensis* n. sp. Эти виды отличаются узкой вертикальной дальностью, а также широким горизонтальным распространением (Польша, Франция, Швейцария, ФРГ). Рассматриваемые окаменелости хорошо выполняют условия для руководящих окаменелостей и в будущем они могут использоваться в биостратиграфических целях.