



Aishacrinidae, a new family of camerate crinoids from the Silurian of Bohemia, Czech Republic

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ABSTRACT. This is a report on the occurrence of a new, monogeneric family of camerate crinoids *Aishacrinidae* fam. n., represented by a new genus *Aishacrinus* gen. n., with type species *Aishacrinus carus* sp. n., that is described from tufites and tuffaceous limestones of the Kopanina Formation, Cromus beaumonti Zone (Ludlow). All specimens were discovered in the abandoned “Amerika” quarries near Karlštejn (Barrandian area), Czech Republic.

KEY WORDS. Crinoids, *Aishacrinidae* n. fam., Silurian, Bohemia

INTRODUCTION

During 1929–1956, amateur paleontologist Josef Bouška collected and studied rich fossil assemblages from the Lower Silurian (Ludlowian) tufites and tuffaceous limestones revealed in the “Amerika” quarries near Karlštejn, Barrandian area, Czech Republic. Bouška gathered a large and significant collection of crinoids from these layers (often in excellent level of preservation) containing a number of new species for the Bohemian Silurian. He also published several articles on crinoids (Bouška 1942, 1943, 1946, 1956a,b, Růžička & Bouška 1944). After Bouška’s death in 1956, his private collection remained in the possession of his family until 2003, when it was acquired by the Department of Paleontology of the National Museum (NMP), Praha, and deposited there under the Accession Number 73/2003.

Abundant crinoidal fauna from the “Amerika” quarries is closely related both to the Silurian crinoids from the North American Niagaran Formation (see Springer 1926), and to the crinoid assemblages of the European Wenlock, known especially from Great Britain and Sweden (Gotland Island). Presence of the perfectly preserved crowns of crinoids with closed arms in the tufites and tuffaceous sediments in the famous locality “Amerika” gives evidence that these crinoids were most probably killed by a submarine eruption and subsequently buried by ash and other volcanic ejecta.

SYSTEMATIC PART

Subclass Camerata Wachsmuth et Springer, 1885

Order Diplobathrida Moore et Laudon, 1943

Suborder Eudiplobathrida Ubahgs, 1953

Superfamily Dimerocrinitacea Zittel, 1879

Aishacrinidae fam. n.

DIAGNOSIS: Calyx pentalobate, flat to low bowl shaped with flat to slightly convex basis composed by three unequal IBB, five BB, pentagonal in outline with the exception of hexagonal posterior basal that is directly followed by posterior PIBr. Five equal RR, rather low and broad, adjoining each other except for a division which has resulted from placement of the posterior PIBrBr. Shallow notches for primibrachials; radial facets narrow and slender, occupying all upper margin of radials. Interprimibrachs very large, conspicuous, elongate hexagonally shaped, intersecundibrachs suboval, minute, well visible. Fixed brachials low and broad. Tegmen unknown. Free arms biserial, short and slender, three times isotomously bifurcated. Brachials minute, low and wide.

INCLUDED GENUS: *Aishacrinus* gen. n.

REMARKS: Crinoids of the family Aishacrinidae fam. n, resemble those of the family Gazacrinidae, especially in the presence of single primibrachials and large conspicuous interprimibrachs in each interray. They differ from gazacrinids in having low, bowl-shaped calyx resembling the same element of monobathrid crinoids of the family Marsupiocrinidae, first of all the genus *Marsupiocrinus* Morris, 1843.

Genus *Aishacrinus* gen. n.

TYPE SPECIES: *Aishacrinus carus* sp. n.

DERIVATIO NOMINIS: After our lovely dog, German boxer Aisha (Ajša in Czech).

RANGE AND DISTRIBUTION: Upper Silurian, Ludlow, Ludfordian, Kopanina Formation. Barandian area, Bohemia, Czech Republic.

REMARKS: Diagnosis, range and distribution are the same as those given for the family.

***Aishacrinus carus* sp. n.**

(Figs. 1–11)

HOLOTYPE: NMP L 37772, isolated crown, Figs. 1-2.

PARATYPE: NMP L 37780, almost complete crown with good visible SIBrBr, Fig. 9.

TYPE HORIZON: Upper Silurian, Ludlow, Ludfordian, Kopanina Formation, Cromus beaumonti Horizon.

TYPE LOCALITY: “Amerika“ quarries near Karlštejn, Central Bohemia, Czech Republic.

MATERIAL: In addition to types, 16 complete or almost complete crowns and calyces in different stage of preservation.

DESCRIPTION: Calyx depressed, much wider than high, low bowl shaped with slightly concave basis; calycinal plates moderately thick to massive, with prominently granulated external surface. Minute infrabasals three, unequal, mostly covered by basilarid. Five basals, pentagonal in outline with the exception of the posterior basal that is hexagonal and is directly followed by a large posterior interprimibrach. Five equal radials, low and wide, hexa - to heptagonal in outline, adjoining each other and dividing only by the posterior interprimibrach. Both basals and radials bear low, but distinct transversal rounded ribs (see Figs. 1, 6 and 7). Radial facets occupied the whole upper margin of RR. Fixed brachials, i.e. primibrachials, secundibrachials and large, almond-like interprimibrachs only one in every ray. Free arms short, endotomously ramified, biserial. Pinnulae and tegmen unknown. Stem circular in section, slender, homeomorphic, composed of cask-like columnals connected probably by symplexy or cryptosymplexy. Articular facets with minute circular lumen and large areola. Crenularium created by short, sparse but relatively massive crenellae concentrated only at the facet's periphery. Distal part of stem and holdfast unknown.

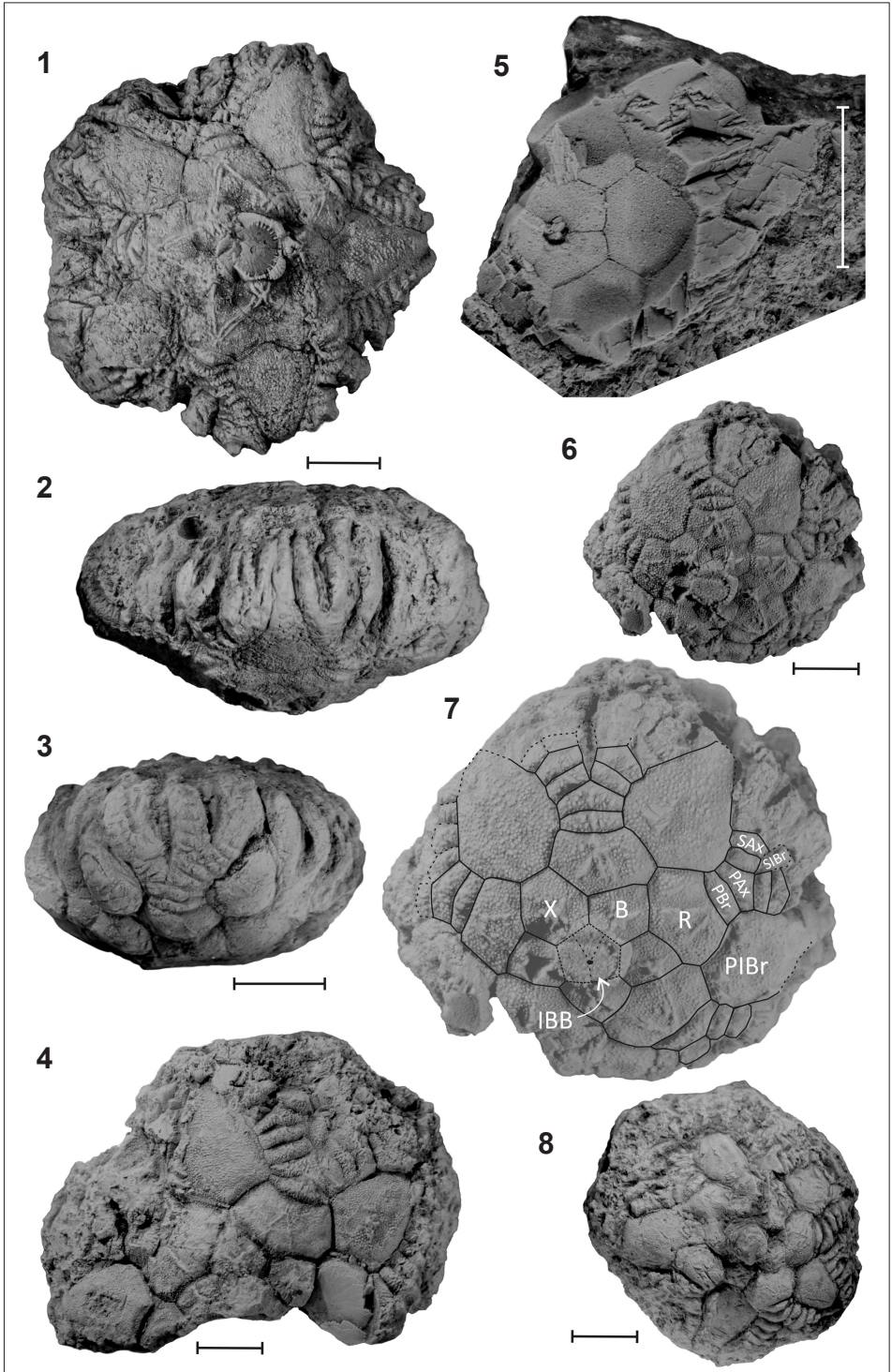
REMARKS: Some specimens are slightly differentiated in their skeletal morphology; by the calyces of the specimens L 37775, L 37776 and L 37779, minute PAX occupied only the central parts of PBrBr or missing. The specimen L 37775 has not one, but two secundibrachials.

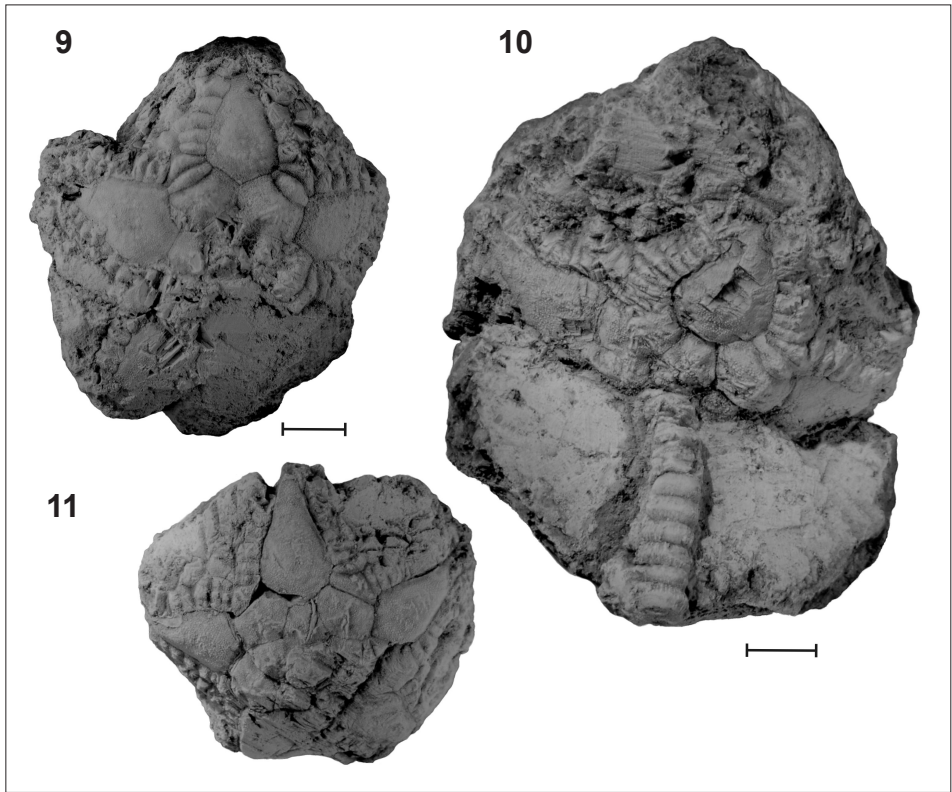
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REFERENCES

- Bouška J., 1942: Krinoidengattung *Pygmaeocrinus* Angelin im böhmischen Silur. – Mitteilungen der Tschechischen Akademie der Wissenschaften 52(21): 1-5, pl. I.
- Bouška J., 1943: Die Vertreter der Gattung *Gissocrinus* Angelin im böhmischen Silur. – Mitteilungen der Tschechischen Akademie der Wissenschaften 53(44): 1-12, pls. I-II.
- Bouška J., 1946: On *Crotalocrinidae* (Angelin) from the Silurian and Devonian of Bohemia. – Bulletin International de l'Académie Tchèque des Sciences 47(4): 1-17, pls. I-IV.
- Bouška J., 1956a: O rodu *Protaxocrinus* Springer (Crinoidea) ze středočeského siluru [On the genus *Protaxocrinus* Springer (Crinoidea) from the Silurian of Central Bohemia]. – Sborník Ústředního Ústavu Geologického, Oddíl Paleontologický 22: 323-333, pl. I.
- Bouška J., 1956b: Pisocrinidae Angelin Českého siluru a devonu (Crinoidea) [Pisocrinidae Angelin from the Silurian and Devonian of Bohemia (Crinoidea)]. – Rozpravy Ústředního Ústavu Geologického 20: 1-138, pls. I-VI.
- Růžička R., & Bouška J., 1944: Zkameněliny z českého siluru z lomů „Amerika“ u Vel. Mořiny [Fossils from the Bohemian Silurian from the "Amerika" quarries near Vel. Mořina]. – Věda Přírodní 22(7): 1-4. [In Czech.]





Figs. 1–11. *Aishacrinus carus* gen. et sp.n. Upper Silurian, Ludlow, Ludfordian, Kopanina Formation. “Amerika” quarries near Karlštejn. All specimens are deposited in the collections of the Palaeontological Department of the National Museum, Praha (NMP), catalogue L. Scale bars = 1 cm. Photographs by V. Turek and R.J. Prokop.

1: Holotype NMP L 37772, isolated crown, dorsal view. 2: dtto, lateral view. 3: NMP L 37784, isolated crown, lateral view. 4: NMP L 37775, incomplete calyx in dorsal view showing both two secundibrachials and good developed intersecundibrachs. 5: NMP L 37782, internal view to the basal part of calyx with good visible infrabasals and basals. 6: NMP L 37785, calyx, dorsolateral view. 7: dtto, enlarged with distinguished calycinal plates. 8: NMP L 37777, isolated calyx with the most proximal part of stem, dorsal view. 9: NMP L 37780, almost complete calyx showing intersecundibrachs, dorsal view. 10: NMP L 37778, almost complete crown with proximal part of stem, dorsolateral view. 11: NMP L 37776, almost complete calyx with reduced primibrachials in dorsolateral view.

- Springer F., 1926: American Silurian crinoids. – Smithsonian Institution Publication 2871: 1-23.
- Ubaghs G., 1953: Classe des Crinoidea. – In: Piveteau J. (ed.): *Traité de paléontologie*. Vol. 3: 658-773. Paris: Masson et Cie.
- Ubaghs G., 1978: Crinoidea, Camerata. – In: Moore R.C. & Teichert C. (eds.): *Treatise on invertebrate paleontology*. Part T. Echinodermata 2/2: 408-519. Boulder, CO: Geological Society of America; & Lawrence, KS: University of Kansas Press.