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**MIDDLE PALAEOZOIC VERTEBRATES OF
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GONDWANA**

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DEVONIAN FISHES FROM TAJIKISTAN

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The earliest fossil fish finds in Central Asia came from the Lower Devonian, Lochkovian of Uzbekistan (Merishkor mountain, North Nuratau ridge) (Fig. 1, 1). They belonged to the acanthothoracid (placoderm) *Kimaspis* (Mark-Kurik, 1973). L. V. Vyushkova (in Blicek & Cloutier, 2000, pl. 1) figured fish microremains from the Pragian - Lower Emsian interval of

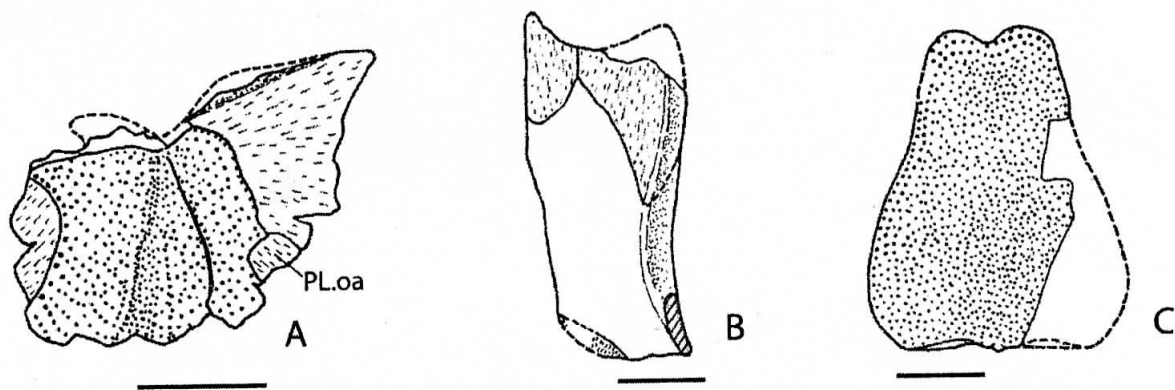


Figure 2. A, Buchanosteidae gen. n., right ADL plate with overlap area for PL plate (P- 018); B, buchanosteid AL plate, visceral side (P- 019); C, *Tityosteus* sp. or buchanosteid?, Nu plate (P- 020). Scale bars =10 mm.

(5) The Salyktash Fm. (Pragian) has a triple structure subdivided into two members. The 20-m thick lower member, corresponding to the lower part of the formation consists of dark grey bedded organodetrital sandy-clayey limestone. The basal part of the member is rich in fossils (mostly preserved as detritus): tabulates, bryozoans, brachiopods, crinoids, tentaculites, conodonts and fishes, arthrodire Buchanosteidae gen.n. and a very small placoderm (samples 23, 24, 25, 2H-57). Westward 800 m along the line of dip thickness of the member increases to 100 m. Fossils, occurring in the upper part of the member are crinoids, solitary and colonial rugose corals, tabulates, bryozoans, brachiopods, gastropods and fishes. Buchanosteidae gen.n.? and *Tityosteus* sp. (or buchanosteid?), a larger placoderm, and elasmobranchs (Ctenacanthida gen. indet) are identified in samples 424, 424-1, 424-2.

(6) The upper member of the Salyktash Fm., 500-1300 m thick, corresponds to the middle and upper parts of the formation. It is composed of grey and light grey, thick-bedded limestone, in the upper part of the unit massive, partly organodetrital. Tabulates and conodonts in the middle part of the unit show the Pragian age, in the upper part the Emsian age.

(7) The Kukurtak Fm. is a 200-m thick unit, consisting of grey variably bedded dolomitic limestone and dolomite (dolostone). Tabulates in it are characteristic of the Eifelian, conodonts characterize the Emsian.

(8) Northward situated small isolated exposures of variably bedded dolomitic limestones, 150 m thick, contain tabulates close to the Middle Devonian forms.

Microremains from the rock samples of eastern Pamir were obtained by V. Karatajūtė-Talimaa, dissolving limestone samples 424, 424-1 and 424-2. Scales of two types occurred: these of undoubtedly growing type or growing polyodontodia (Figs. 3 C-J) and chondrichthyan (ctenacanthid) scales (Figs. 3. L, M) (see Karatajūtė-Talimaa, 1992, p. 224). The growing scales form a morphological set, including simple ones with one tubercle or odontode on crown (Figs. 3 C-E), and more complicated scales with a primordial tubercle in the middle and smaller ones situated laterally and in front of it (Figs. 3 F-J). The base of the scales is round or rhombic, wider than long, rather flat and shallow, and with a small knob (convexity) in the middle. Earlier the scales were described under the name *Pamyrolepis* (nomen nudum) and considered as the *Protacrodus* morphogenetic type of chondrichthyan scales (Karatajūtė-Talimaa, 1992). In thin sections, made later, the scales appeared to be quite black, not showing any microstructure. However, the external morphology suggested their placoderm origin. Recently several micromeric scales of placoderms have been figured (see

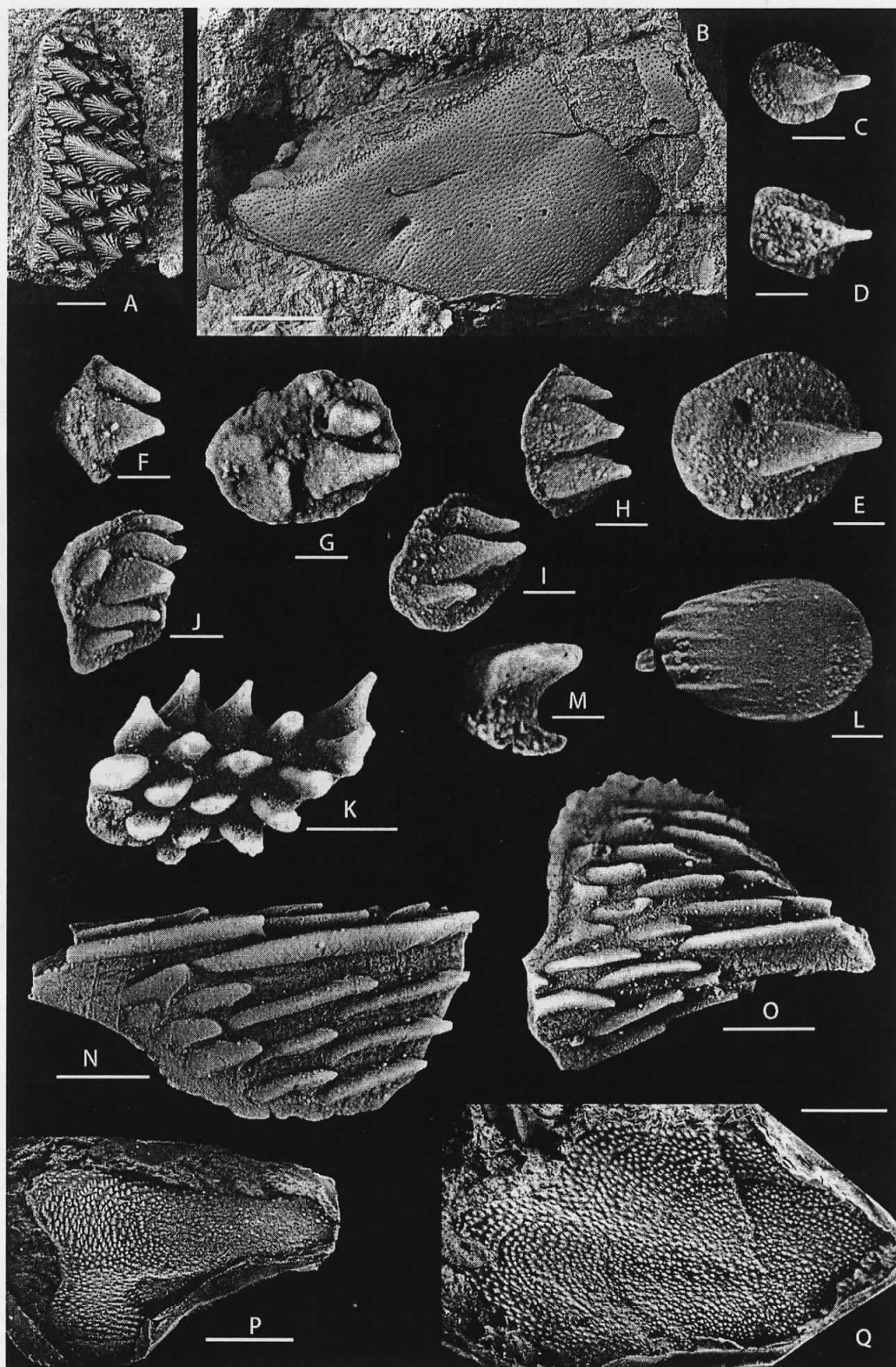


Figure 3. Early Devonian fish remains from Tajikistan. A, acanthothoracid scale (P-014); B, mandible fragment of sarcopterygian (*Powichthys* or *Youngolepis*) (P-013); C-J, placoderm scales, crown view (P-015, P-001 – 007); L, M, Ctenacanthida gen. indet., scales: L (P-011), crown view; M (P-012), lateral view; K, N, O, placoderm? platelets (009, 008, 010); P, placoderm interolateral? plate (P-016); Q, placoderm plate (P-017). P and Q are latex casts. Scale bars for A = 1 mm; for B = 16 mm; for C-J, L, M = 0.2 mm; for K, N, O = 1 mm; for P, Q = 10 mm. All specimens are hold in the Institute of Geology and Geography, Vilnius, Lithuania.

e.g., Blicek & Turner, 2000), some being close in their morphological characters to the scales of "*Pamyrolepis*". Small platelets covered with high narrow crests (Figs. 3 N, O) may also belong to placoderms. They are probably ridge scales (?) situated posterior to the body armour. An unusual, small, strongly convex platelet, covered with high conical tubercles (Fig. 3 K) is provisionally identified as that of a placoderm. The microstructure of these small platelets is also not preserved.

Fish macroremains were preliminarily studied by E. Mark-Kurik. More common are buchanosteid arthrodires (fam. Buchanosteidae). A representative of a new genus has characteristic anterior dorsolateral (ADL) plate with the overlap area for the posterior lateral plate (Fig. 2 A, PL.oa) and with partly concentric ornament. An anterior lateral (AL) plate (Fig. 2 B) probably belongs to this arthrodire. A nuchal (Nu) plate resembles that of *Tityosteus* (fam. Homostiidae), though is somewhat shorter (Fig. 2 C). It is not excluded that the plate belongs to buchanosteids. The plates a larger placoderm (Figs 3 P, Q) are hard to identify. Several remains are referred to a very small placoderm. Its tubercles are smooth with a pointed tip, elongated or drop-shaped, more rarely mushroom-shaped; tubercles of postbranchial lamina are either triangular with finely indented margin or fused into narrow ridges. Two platelets (Figs. 3 N, O) could provisionally be referred to this placoderm. Buchanosteids are characteristic of the Lower Devonian, Emsian of many regions of the Eastern Hemisphere from the Arctic to Australia. In the Burrinjuck Dam area, New South Wales, they may have an earlier, Pragian age. Two Emsian species, *Buchanosteus* sp. indet. and *B. nuricus* Mark-Kurik come from Uzbekistan (Norbonak Regional Stage) and Kazakhstan (Biotar Fm.), respectively (Mark-Kurik, 2004, table 1). In western Europe the homostiid *Tityosteus*, occurring in the Hunsrück Shale, Germany, and in the Mariposas Formation, Spain, is from late within the Early Emsian. The late Emsian *Tityosteus orientalis* Mark-Kurik was discovered in the Tashtyp Formation, South Minusinsk Depression (Mark-Kurik & Carls, 2004).

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