SDĚLENÍ O VÝZKUMU

Acanthodian (Acanthodii) jaws from the borehole Sa-2a

(2 text-figs., 2 pls.)

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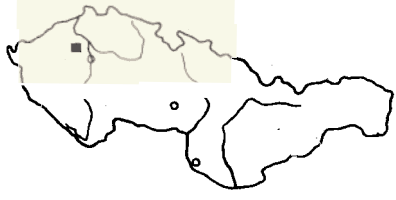
Abstract. The paper deals with lower jaws, a fragment of palatoquadrate, and several other skeletal remains of a head of the *Acanthodes* sp. indet. found isolately in the Mšec Member, borehole Sa-2a (Slaný).

Abstrakt. V předložené zprávě je popsán nález izolovaných spodních čelistí, část palatokvadrata a několika dalších drobných kosterních elementů hlavy akantoda *Acanthodes* sp. indet. ze mšeckých vrstev vrtu Sa-2a (Slaný).



Introductio

The finding described comes from J. Šetlík's extensive Permo-Carboniferous paleobotanic collection of specimens ascertained in evaluated drill cores. Faunal remains listed in the collection are but a few, represented chiefly by the invertebrates.

The borehole Sa-2a (Slaný, Kladno Basin, Central Bohemia) reached the final depth of 771 m, the total Carboniferous thickness being 752.5 m. The above Quaternary and Upper Cretaceous rocks are 6 m thick, the underlying layer is Proterozoic. The material refers to the Mšec Member (Stephanian B; for stratigraphy see Zajíc, Štamberg 1986) and is deposited in collections of the Geological Survey, Prague under Nos. YA 1347 and YA 1348.

The first acanthodians found in the Mšec Member were described by Frič (1877, 1893) from the Žilov locality in the Plzeň Basin (M 1115, M 1117). Other specimens have been reported from the localities Hředle, Kněževes, Krupá, and Malesice (Frič 1912, Fritsch 1893, Obrhel 1958) from the Plzeň, Rakovník, and Kladno Basins. Lately some acanthodian remains of the Mšec Member layers have been borehole-encountered in the Kladno, Mšeno, Roudnice, and Mnichovo Hradiště Basins (Zajíc 1987 a, b - both in press; unpublished finds). The finds of the acanthodians, the same as of other fishes are, although fragmentary, fairly frequent in the Mšec Member, some of them being surprisingly well preserved.

Explanations: BMNH - British Museum (Natural History), London; DMSW - D. M. S. Watson Collection, University Museum, Cambridge; EKSC - Emporia Kansas State College, Emporia; M - National Museum, Prague; YA - Geological Survey, Prague.

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Description

Order *Acanthodida* Berg, 1940

Family *Acanthodidae Huxley, 1861*

Acanthodes sp. indet.

Pls. I, II; text-figs. 1, 2

Material: Several lower jaws and a palatoquadrate fragment
Horizon: Mšec Member, Slaný Formation, Stephanian B
Locality: Borehole Sa-2a (Slaný, Kladno Basin)

Palotoquadrate: Of the palatoquadrate, but an anteroventral part of quadrate ossification has been preserved (YA 1348; pl. II, fig. 3; text-fig. 1). The quadrate, the same as meckelian cartilage, is formed of a preriochondral bone underlain by a globular calcified cartilage (see Denison 1979). Remains of the perichondral bone are well observable on the ventral margin of the specimen YA 1348 (Pl. II, fig. 3) and are traceable on the basal part of its prearticular process. Even more of the perichondral bone has remained on the counter part (not figured herein). Along the quadrate dorsal margin there is a partly preserved groove (depression for pseudobranch after Jarvik 1977) to which, according to Denison 1979, hyomandibula supporting the quadrate region of the palatoquadrate was adjoined. The prearticular process is comparatively robust, similarly as in the case of the *Acanthodes lundi*, and is slightly anteriorly directed (at *A. lundi* it is essentially ventral-oriented) which may be due to imperfect preservation. In the *Acanthodes* from Lebach the situation is absolutely different, for the prearticular process in less distinct on the rostral side and trends ventrocaudally (see Boy 1976, Jarvik 1977, Miles 1968, Reis 1895).

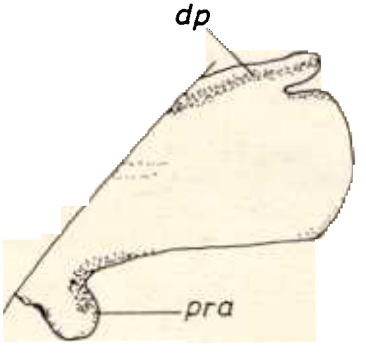

Fig. 1 *Acanthodes* sp. indet. (YA 1348), anteroventral part of the quadrate ossification of left palatoquadrate in mesial view; dp - depression for pseudobranch; pra - prearticular process

Meckelian cartilage: The specimen YA 1347 (Pl. I, Pl. II, figs. 1, 2; text-fig. 2) is represented by a pair of lower jaws in lateral view, formed of anterior (mentomandibular) and posterior (articular) ossification of meckelian cartilage and the mandibular bone. The perichondral bone is easy to distinguish on posterior thirds of both posterior ossifications of meckelian cartilage and in the region of preglenoid processes (Pl. I, fig. 1, Pl. II, figs. 1,2). The calcified cartilage has an interesting structure with some irregular growth lines formed of globules. The course of the lines (apparent

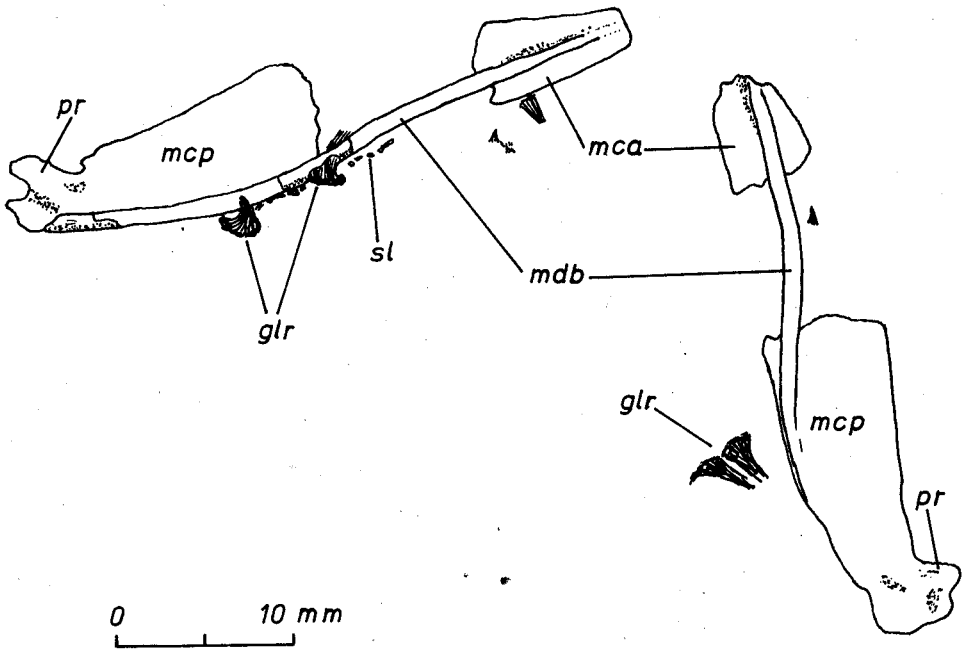

Fig. 2 *Acanthodes* sp. indet. (YA 1347), lower jaws in lateral view; glr - gill rakers; mca - anterior ossification of meckelian cartilage; mcp - posterior ossification of meckelian cartilage; mdb - mandibular bone; pr - preglenoid process; sl - sensory line

namely when less magnified) roughly corresponds on the mandibular to the caudal margin and on the articular to the oral one. From this we may infer that the "ossification" centres were close to the anterior and/or the posterior margin of the elements given and ossification proceeded toward the jaw centre. Furthermore, the perichondral bone was obviously formed secondarily and extended rostrally. The mandibular joint is ill-preserved and only fragments of preglenoid process can be unequivocally determined. Neither the rostral mentomandibular termination has been preserved. The dorsal margin of the lower jaw is slightly convex, its ventral margin mostly even, only at the posterior articular half moderately elevated. The gap between the anterior and posterior ossification of meckelian cartilage is comparatively large (9 mm) and attains to 23 per cent of the estimated length of the lower jaw (40 mm). The length corresponds to that of the isolated lower jaw of the *Acanthodes* sp. indet. (EKSC unnumbered) from the Stephanian Kansas Hamilton Quarry (Zidek 1976, fig. 3). In this case, however, the unossified central part makes about 5 per cent of its length. The value in the *Acanthodes* of Lebach — if ever measurable — fluctuates from 0 to 52 per cent (Dean 1907, Reis 1895, Watson 1937). In *A. lundi* both parts of meckelian cartilage are co-ossified (Zidek 1980). Referred to Zidek (1985), the jaws (except for the mandibular bone) of only at least 270 mm long specimens have been preserved.

Mandibular bone: The bone is present even in the smallest specimens with jaws already unossified (Zidek 1985), moreover, it shows a considerable resistance. Therefore it has been detected isolately, too (Zajíc 1985; two unpublished finds from the borehole Kb1-2). On the basis of the stable ratio of mandibular bone length to total specimen's length, analogically as in *A. bridgei* and *A. lundi* (Zidek 1985), the total length of the specimen YA 1347 can be estimated at 270 up

to 380 mm. Since the found ossified jaws belonging to the *Acanthodes* do not measure less than 270 mm (Zidek 1985), our specimen must have reached higher values of the length interval. Length of the mandibular bone of the specimen YA 1347 is estimated at 37 mm. Comparison with the individuals from Lebach (see Watson 1937, p. 95), especially with DMSW P494 (lower jaw of the same length - 40 mm) and BMNH 22658 (identical length of the mandibular bone - 37 mm) indicates that the mandibular bone of YA 1347 is longer than its lower jaw. The fact, however, is rather distorted due to estimation of both the lengths, for no rostral parts of lower jaws of the specimen YA 1347 have been preserved. The mandibular bone is slim and sigmoidally curved. Its oral end was not found but according to the counter part of YA 1347 (Pl. I, fig. 2) it obviously continued, although a bit narrower, to the oralmost-preserved part of the mentomandibular. The caudal part of the mandibular bone is only gently widened and reaches as far as under the preglenoid process. On the articular the mandibular bone is adjacent to the ventral margin (moderately rising at the oral end of the articular), on the mentomandibular it already lies at the mid-third height of the element. Cross-section through the mandibular bone is distinctly semi-ovate, while the flat bonal part reposes in shallow groove on the lateral surface of meckelian cartilage and the convex part is free-lying.

Gill rakers: Preserved in the specimen YA 1347 (Pl. I, fig. 1, Pl. II, figs. 1, 2; text-fig 2) and the counter part (Pl. I, fig. 2). I have found a sole isolated posthyoid gill raker, fairly well preserved. In the overall shape of the base, size, the same as in the sculptured surface, it does not differ at all from the isolated gill rakers having been found in the Kounov Member (Zajíc 1985, text-fig. 2). The other posthyoid gill rakers are accumulated in clusters.

Sensory line of the head: Along the lower margin of YA 1347 specimen's lower jaw appears a short fragment of a sensory line, with its location likely corresponding to the mandibular canal. The heavily disturbed ossicles indicate nothing at all as to their former shape.

Translated by G. Buberlová

Submitted March, 27, 1987, received for publication October, 7, 1987

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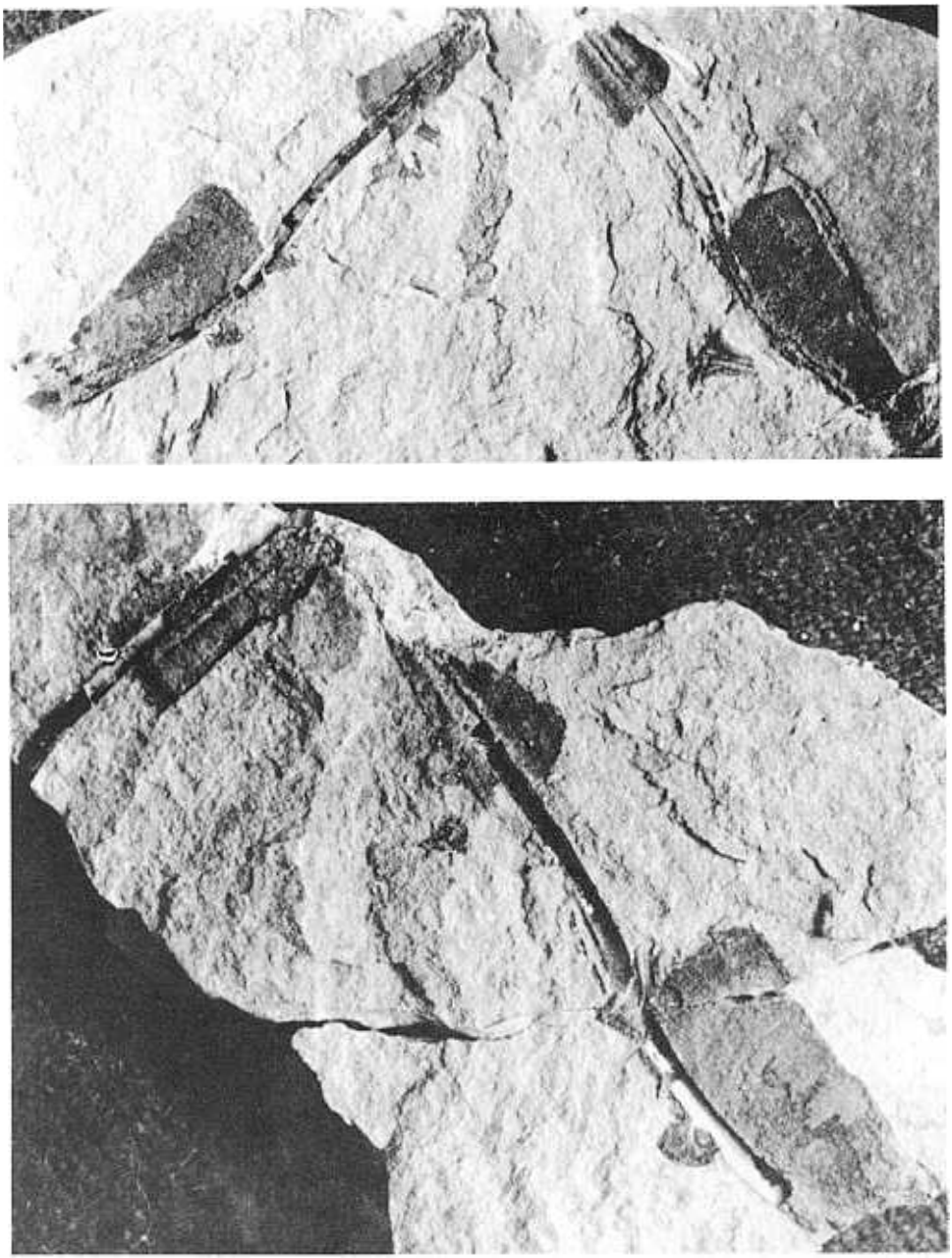
RECENZE

A. Whittaker - D. W. Holliday - I. E. Penn: *Geophysical logs in British Stratigraphy.* — The Geological Society Special Report No. 18. Blackwell Scientific Publications. 74 str., 44 obr. Oxford 1985.

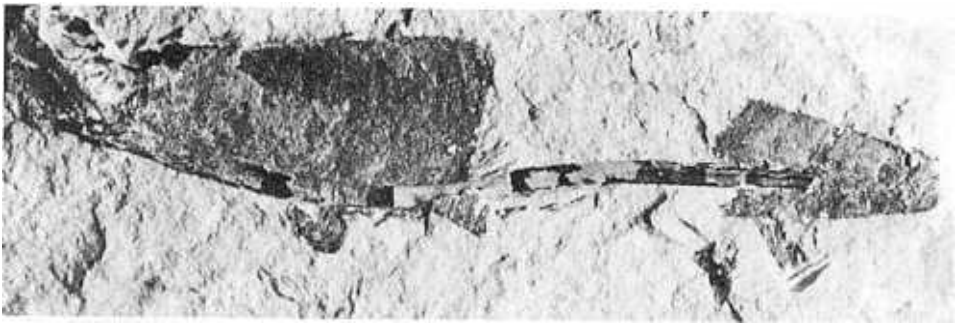
Intenzívní vrtný výzkum spojený zejména s vyhledáváním ložisek živic, vyvolal nutnost změn v nazírání na metodiku faciálních, paleogeografických a stratigrafických výzkumů. Intervalový odběr jader ve vrtech je zpravidla doplňován jen studiem vrtných úlomků. Proto základem pro stratigrafické členění profilů a pro jejich korelaci, podobně i pro faciální a stratigrafickou analýzu se stávají metody vrtní geofyziky - karotáž. Karotážní měření poskytuje souvislý záznam o petrofyzikálních vlastnostech hornin v profilu, o jejich porušení, obsahu fluid ap., a tak umožňuje detailní porovnávání sledů hornin a vyčleňování horninových sekvencí jako podkladu pro sekvenční analýzu. Karotážní měření se tak stala významnou metodou litostratigrafického a litofaciálního výzkumu. Ve spojení s litostratigrafickými a biostratigrafickými poznatky získanými klasickými metodami z jader, případně výchozů, moderní hodnocení karotážních měření vyústilo v definování standardních karotážních profilů, které představují určitou specifickou formu definice typových profilů litostratigrafickými jednotkami.

Práce, o které referuji, shrnuje výsledky stratigrafické standardizace 44 profilů z území Anglie a Severního Irska, které zachytily údaje především o devonských a mladších uloženinách. Okrajově jsou v této práci charakterizovány vyvřelé a přeměněné horniny a profily starším paleozoikem. Standardizace vychází především z měření od-



Acanthodes sp. indet., (YA 1347) *1* - lower jaws in lateral view, x2 . 1; *2* - lower jaws, counterpart, x3 . 2

Photographs by J. Zajíc



Acanthodes sp. indet. *1* - lower jaw (YA 1347), detail, x3.3; *2* - lower jaw (YA 1347), detail, x3.9; *3* - anterolateral part of the quadrate ossification of palatoquadrate (YA 1348), x5.0

Photographs by J. Zajic