

## REDESCRIPTION OF *ASPIDICHTHYS*: ARTHRODIRA, DEVONIAN

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In the early winter of 1952 the junior author, while searching for hibernating salamanders along Wieser Run, a small tributary entering the Olentangy River from the east some three miles south of Delaware, found a large arthrodire plate. This proved to be a median dorsal of *Aspidichthys clavatus*, and its discovery permits a better understanding of that poorly known species and genus.

*Aspidichthys* was established by Newberry (1873a, p. 322) for the single species *A. clavatus* Newberry (id., p. 322, pl. 35, fig. 1-2) and compared by him with "*Pterichthys milleri*". No complete plate was known, and the description was based on an incomplete median dorsal which showed no diagnostic characters except a coarsely tuberculated surface. Reference of other species to the genus has of necessity been uncertain, and the systematic position of the genus itself has been indeterminate.

In describing a median ventral plate from the Devonian of Manitoba Whiteaves introduced the species *A. notabilis* (1892, p. 354, pl. 47, fig. 1, 1a). Whiteaves felt that this plate suggested relationship with the coccosteids rather than with the pterichthyids. Since then material from New York has been described and referred to Whiteaves' species: various ventral plates from the Genesee by Hussakof and Bryant (1918, p. 91-94) and a postorbital and antero-ventral median from the Ludlowville by Bryant (1929, p. 37).

Branson and Mehl (1931, p. 516) have described some fragmentary plates and a right antero-centro-lateral bearing a pectoral spine from the Jefferson formation of Utah. This material was referred to *Aspidichthys*, but without a specific designation.

In Europe the genus has been tentatively recognized in the species *A. ingens* v. Koenen, which has recently been redescribed by Gross (1933, p. 48; 1937, p. 40, text fig. 20).

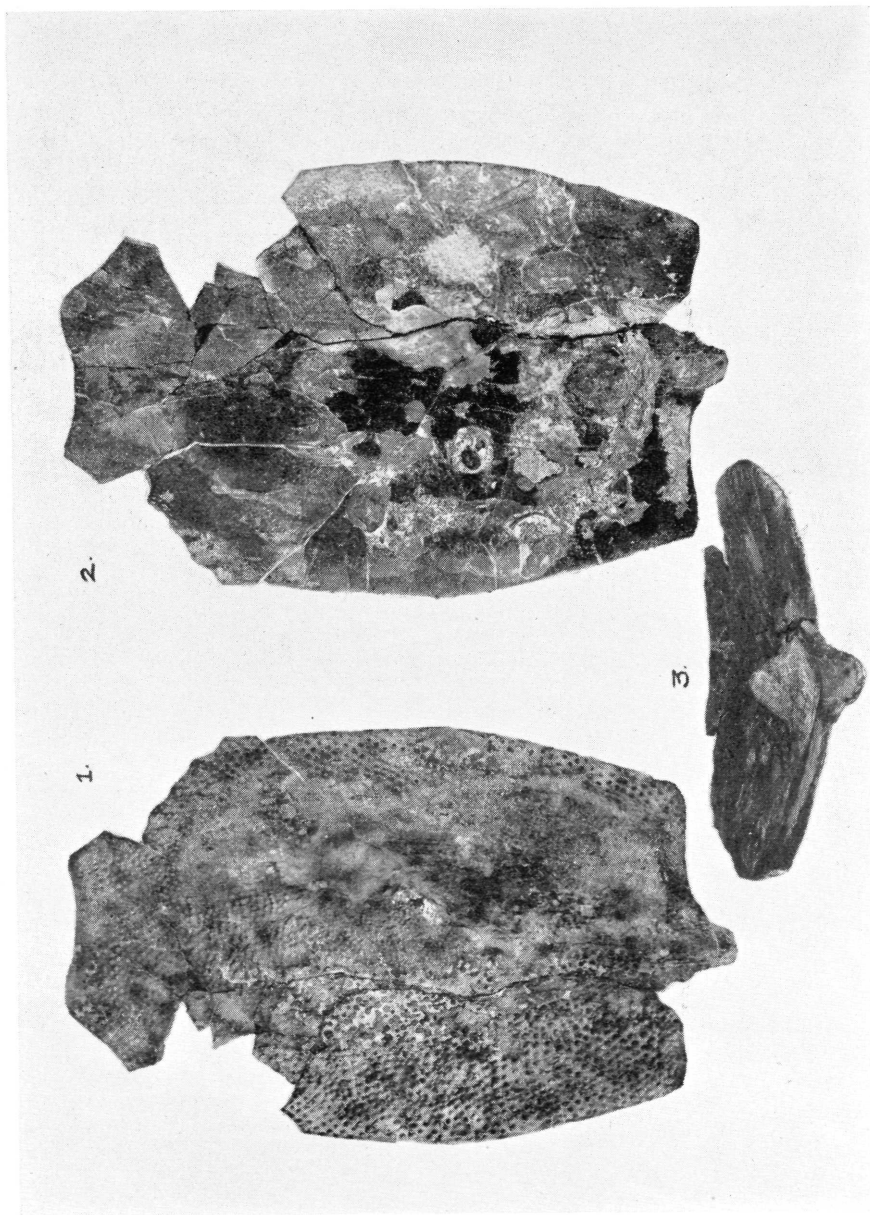
### DESCRIPTION

The present plate is complete except for the antero-lateral corners and a small portion of the left posterior margin. It is large and subquadrate, with the antero-lateral corners truncated. The anterior margin is gently concave for about one-third of its width (for 90 mm.), then bends rather sharply to run directly or in a somewhat concave curve to the lateral corners (which are missing). The lateral margins are gently and irregularly convex, the postero-lateral corners sharp. The posterior margin is almost straight and transverse, apart from the posterior medial projection. The plate is rather evenly and moderately convex transversely, and almost flat longitudinally. The plate thins toward all the edges, which are well rounded in front and laterally, somewhat sharper at the posterior margin.

The posterior one-fourth of the dorsal side is marked by a prominent low rounded median ridge which is defined rather by depression of the postero-lateral corners of the plate than by any actual elevation of the median region itself. This ridge continues past the posterior margin of the plate, without change in contour, as a short projection. In lateral view this projection is sharply triangular, since its ventral surface is steeply inclined.

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The ventral side of the plate is marked only by a prominent blunt rounded knob, which arises about 45 mm. in front of the posterior margin, a little to the left of the mid-line of the plate. The anterior slope of the knob is comparatively gentle, the posterior slope abrupt, and the lateral slopes intermediate in steepness.



#### DESCRIPTION OF PLATE

FIGURE 1 and 2. Dorsal and ventral views of the plate,  $\times \frac{1}{4}$ . The margins are entire except for the antero-lateral corners and a notch in the left posterior edge.

FIGURE 3. Posterior view, the anterior end of the plate slightly raised to show the ventral knob. The ventral surface is uppermost.

There is no trace of a keel, either in front of or behind the knob (*pace* Newberry). Two narrowly triangular depressed regions, very indefinitely delimited, may represent articular surfaces in contact with the anterior dorsolaterals. They extend to about mid-length, narrowing posteriorly.

The dorsal surface is covered with large scattered tubercles, averaging five to seven mm. in diameter, and separated by about the same distance. No pattern is seen in their distribution. Where perfect the whole surface, including the tubercles, is covered by a finely punctate surficial layer, which is readily lost. Where this layer is missing the tubercles appear smooth and shiny. In a few places the punctae on the lower slope of tubercles are sufficiently elongate to suggest radial grooves, but this is never a striking feature. The ventral surface is smooth, with a normal bony texture.

*Dimensions.* Length in the mid-line, 386 mm., greatest width (about one-third the length from the front), 257 mm., height as preserved, 42 mm.

*Locality.* The specimen was found in soft blue Olentangy shale along Wieser Run, and thus is from the type area and from approximately the type horizon of *A. clavatus*, for Newberry (1873 p. 157) emphasized that his specimen did not come from the concretions which carry most of the fossil fish at Delaware, but was found "lying in the laminated shale." The present specimen was in a horizontal position, the ventral side down.

*Depository.* The specimen is being placed in the U. S. National Museum, where it will bear the number 20730.

*Remarks.* The plate is impregnated with pyrite. Experiments on broken fragments suggested that chemical removal of the tough clay covering the specimen would be safe, but this proved to be wrong. The disfigurement of the right side of the dorsal surface is due to application of potash which caused local peeling. Other areas, apparently more thoroughly replaced, were unaffected. The critical region around the ventral knob is obscured by pyritic deposits, and further preparation was felt to be too hazardous to attempt.

*Comparisons.* Since no median dorsal plate has been described for the other American species direct comparison is not possible. It is plausible that *A. clavatus* and *A. notabilis* are congeneric. The median dorsal has been described in *A. ingens*, and differs rather strikingly in outline. The anterior outline is not recurved, and the posterior projection is very feebly developed.

*Systematic position.* This specimen confirms *Aspidichthys* as a good genus in the family Coccosteidae, differing in no essential way from better known genera of that family.

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