

PROCEEDINGS
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THE CYPRINID SUBFAMILY CHONDROSTOMINÆ.

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Some time ago, when working on the North American Chondrostominae, I was warned by Dr. Jordan to compare the European *Chondrostoma*, as it might be found that the supposed close relationship did not exist. This was not possible at the time, but I now have before me scales of five species of *Chondrostoma*, and have made the necessary comparisons. On the whole it must be said that there is sufficient resemblance to strongly indicate that the affinities assured from the jaw-characters, teeth, etc., are not illusory. Restricting the American Chondrostominae to *Acrocheilus* and *Orthodon*, there seems to be no reason why these should not be placed in the same subfamily as *Chondrostoma*, and regarded as an offshoot from the Old-World group, which doubtless reached America in



Figure 1.
Scale of *Orthodon microlepidotus*.
San Miguel, Calif.

Miocene times. *Oxygeneum* I have never seen; it is said to have the form of *Moxostoma*, and I suppose it to come of quite different stock from the Chondrostomines.

The Chondrostominae, according to scale-characters, may be classified as follows:

- (A) Tribe Chondrostomini. Palæarctic fishes; scales relatively large, about as broad as long, retaining the prominent, lateral basal angles (as in the American *Moxostoma* and *Carpiodes*); lateral circuli very numerous genus *Chondrostoma* Agassiz.

Group 1. Scales rather small; apical radii numerous, about 12 to 14; basal radii well developed . . . *C. polylepis* and *C. meigii*.

Both from S. Domingo de Silos, Burgos, Spain,
(*Gonzales*); Brit. Museum.

Group 2. Similar to the last (both have the nuclear area basad of the middle), but apical radii fewer, 7 or 8 *C. knerii*.

River Arga near Pamplona (*A. T. D. Berrington*);
Brit. Museum.

Group 3. Scales large, about 8 mm. diameter; apical radii few, 5 or 6, wide apart; nuclear area little basad of the middle.

C. nasus L.;

Visoko Fojnica, Bosnia (*Dr. F. Werner*); Brit. Mus.

C. soëtta.

River Mincio, Italy (*Dr. F. Werner*); Brit. Mus.

- (B) Tribe Acrocheilini. Fishes of Pacific slope of North America; scales very small, oval to subcircular, without latero-basal angles; basal radii evanescent; apical radii few; lateral circuli very few as compared with the European group; apical circuli (between the radii) widely spaced; nuclear area far basad of the middle.

(1) Lateral circuli about 15 *Orthodon microlepidotus*.
San Miguel, California.

(2) Lateral circuli about 12; nuclear area rather more basal; apical circuli more widely spaced, but general features of scale as in *Orthodon* *Acrocheilus alutaceus*.
Payette River, Idaho.

So far as the scales go, it must be held that the European group is certainly the more primitive one. It is also to be noted that species of *Chondrostoma* have been found in the Upper Oligocene or Lower Miocene of Bohemia.

All the scales described are from the vicinity of the lateral line, at the level of the beginning of the dorsal fin.



Cockerell, Theodore D. A. 1909. "The cyprinid subfamily Chondrostominae." *Proceedings of the Biological Society of Washington* 22, 209–210.

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