

CORRESPONDENCE

Oldest Indian Fish

(Plate 1)

SIR—An Upper Silurian or Lower Devonian fish fauna has been found in Kashmir in the Naubug beds. These are the oldest fish remains in India to date and include acanthodian and heterostracan fragments.

Sediments from the uppermost units of the Naubug beds, from near Lutherwan (33° 6' 00" N: 75° 45' 00" E) in Anantnag District, Kashmir, contain a rich conodont fauna and fragmentary fish remains (Gupta, Rhodes & Austin, 1967). From the mega- and microfossil evidence the Naubug beds are considered to be of Upper Silurian to upper Lower or lower Middle Devonian age and the fauna from these beds is comparable with that from Europe, and elsewhere. The lower units of the Naubug beds are definitely of uppermost Silurian age as indicated by the rich coral, brachiopod and trilobite fauna. The upper units are conformably overlain by the fossiliferous Muth Quartzite, ranging in age from Middle to Upper Devonian. The lower boundary of the Muth Quartzite is not uniform and varies in age from lower Middle Devonian in parts of Kashmir, to lower Upper Devonian in the Kumam Himalaya.

The fish remains are fragmentary and waterworn scales and bony plates. Most are acanthodian scales (Gross, 1971). There are rectangular scales of *Gomphonchus* sp. cf. *hoppei* (Gross), both single and double scales, and the more complex scales from *Nostolepis striata* Pander (Plate 1a, b). There are *Nostolepis* tooth whorls and 'Protodus' type teeth, and spines (Plate 1c, d, f). Small, smooth, round tubercles with a central depression may be from *Nostolepis* (Plate 1e).

Fragments of heterostracan armour are present; some of cyathaspid type with fine striations. Tesseræ resembling those of *Tesseraspis* species, found in the Silurian of Arctic Canada and the Lower Devonian of Europe (Tarlo, 1965), have been found (Plate 1g).

This fauna is comparable with that described from the Upper Silurian and Lower Devonian of Arctic Canada, Europe, the Sahara and Australia (Gross, 1971; Mutvei, 1956; Turner & Dixon, 1971; Turner, 1973). This suggests that the Kashmir area during the Devonian period was on the migration routes connecting these regions, and within the equatorial or warm temperate belt. These are, therefore, the oldest fish remains found in India to date.

The specimens are lodged at the Centre of Advanced Study in Geology, the Panjab University.

References

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EXPLANATION OF PLATE

Plate 1. Fish remains from Kashmir, India (Panjab University Centre of Advanced Study in Geology collection). *a.* *Gomphonchus* sp., single scale (VJG8/4); *b.* *Nostolepis striata* Pander, star tessera (VJG10/468/17); *c.* *Nostolepis* tooth whorl (VJG8/23); *d.* 'Protodus' type tooth of *Nostolepis* (VJG8/32); *e.* *Nostolepis*? tubercle (VJG8/12); *f.* Acanthodian spine (VJG8/29); *g.* *Tesseraspis*?, tessera (VJG10/468/19).

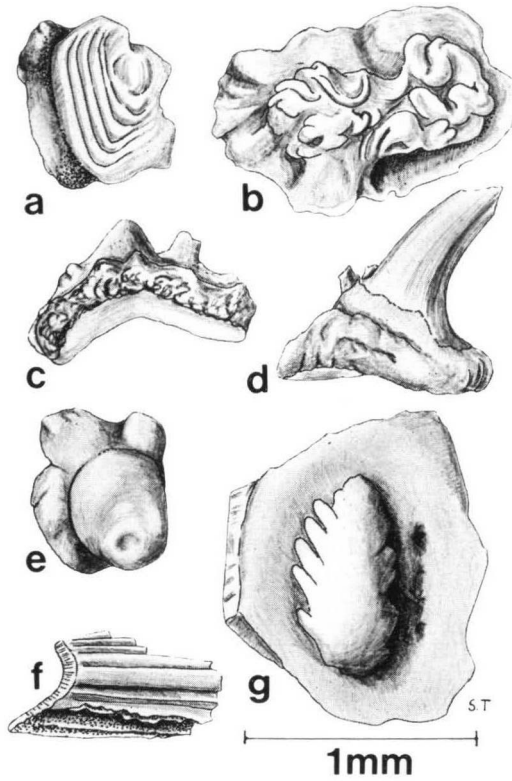


Plate I. Fish remains from Kashmir.