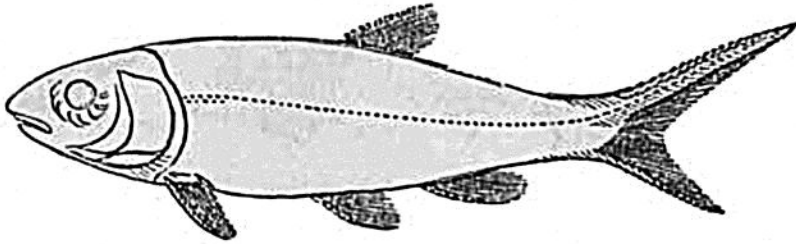


of fossil fish of the genera *Palæoniscus*, *Pygopterus*, *Coelacanthus*, and *Platysomus*, genera which are all found in the coal-measures of the carboniferous epoch, and which, therefore, says Mr. King, probably lived at no great distance from the shore. But the Permian species are peculiar, and, for the most part, identical with those found in the marl-slate or copper-slate of Thuringia.

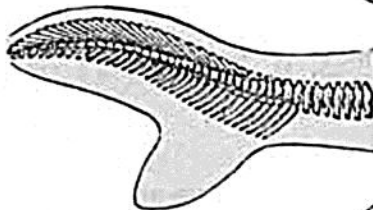
Fig. 450.



Restored outline of a fish of the genus *Palæoniscus*, Agass.
Palæothrissum, Blainville.

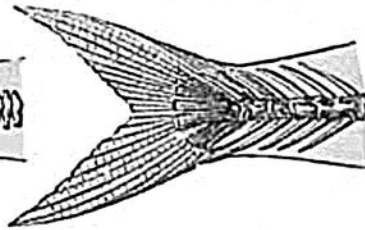
The *Palæoniscus* above mentioned belongs to that division of fishes which M. Agassiz has called "Heterocercal," which have their tails unequally bilobate, like the recent shark and sturgeon, and the vertebral column running along the upper caudal lobe. (See fig. 451.) The "Homocercal" fish, which comprise almost all the 8000 species at present

Fig. 451.



Shark.
Heterocercal.

Fig. 452.



Shad. (*Clupea*, Herring tribe.)
Homocercal.

known in the living creation, have the tail-fin either single or equally divided; and the vertebral column stops short, and is not prolonged into either lobe. (See fig. 451.)

Now it is a singular fact, first pointed out by Agassiz, that the heterocercal form, which is confined to a small number of genera in the existing creation, is universal in the Magnesian limestone, and all the more ancient formations. It characterizes the earlier periods of the earth's history, when the organization of fishes made a greater approach to that of saurian reptiles than at later epochs. In all the strata above the Magnesian limestone the homocercal tail predominates.

A full description has been given by Sir Philip Egerton of the species of fish characteristic of the marl-slate in Prof. King's monograph before referred to, where figures of the ichthyolites which are very entire and well preserved, will be found. Even a single scale is usually so characteristically marked as to indicate the genus, and sometimes even the par-