

and *Pterichthys* may throw some light on the apparently membranous condition of fin peculiar to the families of this order. What appears in the fossil a mere scaly membrane attached to a single spine of bone, may have had in the living animal a cartilaginous framework, like the fins of the dog-fish and thorn-back, that are amply furnished with rays of cartilage — though, of course, all such rays must have disappeared in the stone, like the rest of the internal skeleton. Unquestionably, the caudal fin of the two last described fossils must have been strengthened by some such internal framework, for, as they differ from the other fins, in being unprovided with osseous spines, they would have formed, without an internal skeleton, mere pendulous attachments, altogether unfitted to serve the purposes of instruments of motion. There may be found in the bony spines of all this order direct proof that, had there been an internal skeleton of bone, it would have survived. The spines run deep into the body, as a ship's masts run deep into her hulk; and we can see them standing up among the scales to their termination, in such bold relief, that, from a sort of pictorial illusion, they seem as if fixed to the creature's sides, and foreshortened, instead of rising in profile from its back or belly. (See Plate VIII. fig. 1.) The observer will of course remember, that, in the living animal, the view of the spine must have terminated with the line of the profile, just as the view of a vessel's mast terminates with the deck, though the mast itself penetrates to the interior keel. Now, it must be deemed equally obvious, that, had the vertebral column been of bone, not of cartilage instead of exhibiting no trace, even the faintest, of having ever existed, it would have stood out in as high relief as the internal butts or stocks of the spines. And such are the general characteristics of a few of the ichthyolites of this