

lated rather to the lower part of the head than to the shoulders ; and this by what at first appears to be simply a ball-and-socket joint, like that of the human thigh, but which, on further examination, proves to be of a more complex character, as we find a pin-like protuberance from the socket finding, in turn, a socket in the ball. The abdomen of the creature was flat ; the dorsal portions strongly arched ; and not in our Gothic roofs, constructed on strictly mathematical principles, do we discover more admirable contrivances for combining in the greatest degree lightness with strength, than in the arch of osseous plates which protected the *Pterichthys*. Nay, we find in it the two leading peculiarities of the Gothic roof anticipated,—the contrivance of a series of ribs that radiate from certain centres, and the contrivance of the groin. The helmet was united to the cuirass by a curious and yet very simple joining, that united the principle of the dovetail of the carpenter to that of the keystone of the architect. Further, the creature, with its inflexible cuirass and its flexible tail, and with its two arms, that combined the broad blade of the paddle with the sharp point of the spear, might be regarded, when in motion, as a little subaqueous boat, mounted on two oars and a scull. And such was the *Pterichthys*,—the characteristic organism of the Old Red Sandstone. I may remark, in connexion with this fish,—a remark, however, which bears equally on all its ganoidal contemporaries,—that the development of its dermal or skin-skeleton, compared with that of its internal one, was singularly great. In the present creation, with but a few exceptions, such as the Pangolin and Armadillo among quadrupeds, the crocodiles and tortoises among reptiles, and the *Lepidosteus* and *Polyopterus* among fishes, the dermal skeleton is but very slenderly represented. In our own species, for instance, it is represented by but the teeth, the hair, and the nails ; and were there no other portions of us to survive in the fossil state, each of the male