

Upper Old Red Sandstone, I shall have to draw mostly from single specimens. But the evidence may be equally sound so far as it goes.

The difference between the superior and inferior groups of the system which first strikes an observer, is a difference in the size of the fossils of which these groups are composed. The characteristic organisms of the Upper Old Red Sandstone are of much greater bulk than those of the Lower, which seem to have been characterized by a mediocrity of size throughout the entire extent of the formation. The largest ichthyolites of the group do not seem to have much exceeded two feet or two feet and a half in length; its smaller average from an inch to three inches. A jaw in the possession of Dr. Traill—that of an Orkney species of *Platygnathus*, and by much the largest in his collection—does not exceed in bulk the jaw of a full-grown coal-fish or cod; his largest *Coccosteus* must have been a considerably smaller fish than an ordinary-sized turbot; the largest ichthyolite found by the writer was a *Diplopterus*, of, however, smaller dimensions than the ichthyolite to which the jaw in the possession of Dr. Traill must have belonged; the remains of another *Diplopterus* from Gamrie, the most massy yet discovered in that locality, seem to have composed the upper parts of an individual about two feet and a half in length. The fish, in short, of the lower ocean of the Old Red Sandstone—and I can speak of it throughout an area which comprises Orkney and Inverness, Cromarty, and Gamrie, and which must have included about ten thousand square miles—ranged in size between the stickleback and the cod; whereas some of the fish of its upper ocean were covered by scales as large as oyster-shells, and armed with teeth that rivalled in bulk those of the crocodile. They must have been fish on an immensely larger