

tychi, &c. are very perfect in the coal measures of Newhaven, and Burdiehouse near Edinburgh, Bradford, Yorkshire, the Hundrück, &c. The marl slates of the magnesian limestone, the slaty lias clays of Lyme Regis, certain clays and limestones of the oolitic system, and the chalk of Lewes, have yielded abundance of beautiful marine and fluviatile fishes in an extraordinary state of perfection. Besides these, the deposits of Monte Bolca and many fresh water strata of later (tertiary) date, are stored with fishes, every part of whose structure remains uninjured.

Struck with the contrast offered by these layers of fishes in ancient marine sediments, with the few and scattered fragments which occur in modern deposits, M. Agassiz has conjectured that the rate of deposition of these ancient strata must have been almost inconceivably rapid. An examination of the lamination, frequent changes of composition, alternation of organic remains, and other marks indicating tranquil and slow deposition, which occur in nearly all the localities where the fossil fishes are found in this state of perfection, does not appear to countenance these views; but we must evidently ascribe the destruction of whole races of fishes at a certain exact date (as in the copper state of Thuringia) to some remarkable change of physical condition in the liquids.

The bones of fishes and other vertebrated animals differ from the internal and external shelly appendages of the lower tribes by the admixture of phosphate of lime. The state of conservation of bones differs much, therefore, from that of shells and corals; their substance, in almost every case, remains; the peculiar polish of the teeth and scales of many fishes causes their immediate detection; they are generally heavy, often dark in colour, very compact and brittle; the cells in bones are often filled with crystallised carbonate of lime, but sometimes remain open. It was therefore possible for naturalists profoundly versed in recent ichthyology, to determine the real analogies between