

a fact decisive against its being formed by mechanical deposition of drift, or detritus of older limestones. The preservation of the most delicate textures of animals before referred to, proves beyond doubt, that those organic bodies had not been transported from a distance, or subjected to the violent action of inundations or currents.

The fossil fish found in chalk with the body preserving the natural form, and with the air bladder uncompressed, proves beyond doubt, that the animals were encased in mineral matter, before the putrefactive process had effected the destruction of the fleshy parts. A sudden eruption of thermal water holding calcareous earth in solution or suspension, might instantly, deprive the animals of life, and protect their bodies from decay. The matter, called *creta* by Ferrara, erupted from Macaluba, was certainly a soft limestone, analogous to chalk; and though the eruption lasted only part of a day, it formed a stratum many feet in thickness. Had this eruption taken place under water, the earthy matter would have been more widely diffused, and the stratum of limestone deposited, would have been proportionably thinner. In the case of the fossil fish before stated, we are not obliged to suppose the deposition to be so rapid: several days might elapse, before the body was entirely buried under calcareous earth. If we say seven days, and estimate the thickness of the fish at three inches, we shall have a chronometer to measure the time required to form a stratum of chalk three inches in depth, which is one week. This is equal to one foot in a month, or twelve feet in a year; and could we suppose the deposition to proceed without interruption, it would not require more than ninety years, to form a mass of chalk beds, one thousand feet in thickness; which is more than that of all the chalk beds in England. It is by no means intended to support the opinion, that the chalk beds were all deposited in so short a period; long intervals of repose might pass between different eruptions. My object in calling the attention of geologists to this subject is, to show that strata may be formed more rapidly than they are generally disposed to believe, and that the feeble operations of natural causes in our own times, however similar in kind, bear no proportion, in their intensity, to the mighty agents that have formed the ancient crust of the globe. The deposition of a bed of calcareous earth, a few feet in thickness, in some of the Scottish lakes, as described by Mr. Lyell, would appear to have required many centuries for its completion. In some of the beds of oolite, the quantity of animal remains bears a considerable proportion to the whole mass, and the beds of encrinal limestone in some of our mountain limestones, are formed, principally, of the stems and branches of encrinites, probably broken by the violent action of the sea; but it is not improbable, that the interstices have been filled by calcareous depositions. It is obvious, that limestone strata of considerable thickness, if composed chiefly of organic remains, would require centuries for their completion.