under the same laws as now, is as conclusive as that it exists under the same laws on the farther side of the Atlantic. And these laws cast much light, as in the case of the peat-moss of our illustration, on the rate at which many of the mechanical deposits must have gone on. The Lias of Eathie, for instance, consists, for about four hundred feet in vertical extent, of an almost impalpable shale, divided into layers scarce thicker than pasteboard. It might well be predicated, from the merely mechanical character of the deposit, that its formation could not have been rapid. But how greatly is the argument for the lapse of a vast period of time for its growth strengthened by the fact, that each one of these many thousand layers formed a crowded platform of animal life, and that so thickly are they covered with the remains of not only free shells, such as ammonites, but also of sedentary shells, such as ostrea, that the organisms of but two of the more crowded platforms could not find room on a single one! And these shells were the contemporaries of slow-growing pines, that on the average increased in diameter little more than the fifth of an inch yearly.

Nor, though we lack the regulating unit, is the evidence of the lapse of vast periods during the deposition of the palæozoic systems much less complete. The oldest wood that presents its structure to the microscope,—a fossil of the Lower Old Red Sandstone,—exhibits no annual rings; but it presents as dense a structure as the Norfolk Island pine. The huge araucarian of Granton has a structure nearly as dense. We have already incidentally referred to the solid ivory and much worn teeth of the reptile fishes of the Coal Measures. In the Mid-Lothian basin there are thirty seams of workable coal intercalated among deposits of various character, whose united thickness amounts to nearly three thousand feet, and under most of these seams the original soil may still be detected on which the plants that formed their coal flourished