

have continued there till the end of time, notwithstanding any igneous operations which the materials might have afterwards undergone. But as the discovery of very minute traces of phosphoric acid, when mixed with the other ingredients of a rock, is a problem of no small difficulty, an indirect method of ascertaining its presence suggested itself to me in some experiments of the kind which I have instituted, namely, that of sowing some kind of seed, such for instance as barley, in a sample of the pulverized rock, and determining whether the crop obtained yielded more phosphoric acid than was present in the grain, it being evident that any excess must have been derived from the rock from which it drew its nourishment. Should it appear by an extensive induction of particulars, that none of the rocks lying at the base of the Silurian formation, which have come before us, contain more phosphoric acid than the minute quantity I detected in the slates of Bangor and Llanberis, which were tested in the above manner, it might perhaps be warrantable hereafter to infer that we had really touched upon those formations, that had been deposited at a time when organic beings were only just beginning to start into existence, and to which therefore, the term Azoic, assigned to these rocks by some of the most eminent of our geologists, might not be inappropriate. The proofs of the former extension of glaciers in the Northern hemisphere, far beyond their actual limits, tend also to complicate the question which has at all times so much engaged the attention of cosmogonists with respect to the ancient temperature of the earth's surface, compelling us to admit that, at least during the latter of its epochs, oscillations of heat and cold must have occurred, to interfere with the progress of refrigeration which was taking place in the crust. On the other hand, facts of an opposite tendency, such as the discovery announced at our last meeting by Capt. Belcher, of the skeleton of an Ichthyosaurus in lat.  $77^{\circ}$ , and of the trunk of a tree standing in an erect position in lat.  $75^{\circ}$ , have been multiplying upon us within the same period; inasmuch as they appear to imply, that a much higher temperature in former times pervaded the Arctic regions that can be referred to local causes, and therefore force upon us the admission, that the internal heat of the nucleus of our globe must at one time have influenced in a more marked manner than at present the temperature of its crust.

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Twenty years ago it was thought necessary to explain at our meetings the character and objects of this Association, and to vindicate it from the denunciations flung against it by individuals, and even by parties of men, who held it up as dangerous to religion, and subversive of sound principles in theology. Now so marked is the change in public feeling, that we are solicited by the clergy, no less than by the laity, to hold our meetings within their precincts; and we have never received a heartier welcome than in the city in which we are now assembled, which values itself so especially, and with such good reason, on the extent and excellence of its educational establishments. It begins, indeed, to be generally felt, that amongst the faculties of the mind, upon the development of which in youth success in after life mainly depends, there are some which are best improved through the cultivation of the Physical Sciences, and that the rudiments of those sciences are most easily acquired at an early period of life. That power of minute observation—those habits of method and arrangement—that aptitude for patient and laborious inquiry—that tact and sagacity in deducing inferences from evidence short of demonstration, which the Natural Sciences more particularly promote, are the fruits of early education, and acquired with difficulty at a later period. It is during child-