

4 HISTORY OF GEOLOGY AND PALÆONTOLOGY.

Lower Egypt had been at one time covered by the sea, and that the material carried down by the Nile had been discharged into the sea-basin between Thebes and Memphis and the present delta, and gradually filled it up. Herodotus could not form any definite opinion as to the cause of the Nile inundations, although he gave a careful report of the hypotheses then in favour.

Heraclitus (born 535 B.C.) thought there was in the universe nothing stable, nothing lasting. Everything was in a state of constant change, like a stream in which new waves endlessly supplant the old. For him fire was the primeval force, which unceasingly transformed itself, pervaded every portion of the universe, produced individuals, and again destroyed them. Fire became the ocean, and that again earth, and the breath of life. The rising vapours burned in the air and formed the sun, which was renewed from day to day. Thus Heraclitus taught that although the universe always had been and always would be, no portion of it had ever been quiescent, and that from time to time a new world was constructed out of the old.

Pythagoras, who was born at Samos about the year 582 B.C., and afterwards went to Crotona in Italy, is one of those eminent leaders of thought around whose name and teaching much that is mythical has gathered. The exponents of his teaching in subsequent ages too often attributed to the early Pythagoreans conceptions which were in reality foreign to the doctrines of the great master himself, and it is extremely difficult to disentangle the threads of original thought from the confused web of tradition. It is clear that the Pythagoreans indulged more in abstract speculation than their predecessors, and gave less attention to observation of nature. They sought to explain natural phenomena chiefly by analogy with definite numerical relationships. An ordered universe depended, according to the Pythagoreans, upon the principle of numbers. Consequently the properties of numbers, individually considered, in sequence, and in combination, were investigated with a zeal which enabled the school to lay the foundation of important mathematical advances. In applying the principle of numbers to musical sound, Pythagoras is reputed to have arrived at a true conception of musical intervals and to have established the theory of the octave. On the other hand, the Pythagoreans were less happy in their application of the limita-