

ERUPTIVE ROCKS.

NOTHING is more difficult than to write a chronological history of the revolutions and changes to which the earth has been subjected during the ages which preceded the historic times. The phenomena which have concurred to fashion its enormous mass, and to give to it its present form and structure, are so numerous, so varied, and sometimes so nearly simultaneous in their action, that the records defy the powers of observation to separate them. The deposition of the sedimentary rocks has been subject to interruption during all ages of the world. Violent igneous eruptions have penetrated the sedimentary beds, elevating them in some places, depressing them in others, and in all cases disturbing their order of superposition, and ejecting masses of crystalline rocks from the incandescent centre to the surface. Amidst these perturbations, sometimes stretching over a vast extent of country, anything like a rigorous chronological record becomes impossible, for the phenomena are so continuous and complex that it is no longer possible to distinguish the fundamental from the accidental and secondary causes.

In order to render the subject somewhat clearer, the great facts relative to the progressive formation of the terrestrial globe are divided into epochs, during which the sedimentary rocks were formed in due order in the seas of the ancient world, the mud and sand in which were deposited day by day. Again, even where the line of demarcation is clearest between one formation and another, it must not be supposed there is any sharply defined line of separation between them. On the contrary, one system gradually merges into that which succeeds it. The rocks and fossils of the one gradually disappear, to be succeeded by those of the overlying series in the regular order of succession. The newly-made strata became the cemetery of the myriads of beings which lived and died in the bosom of the ocean. The rocks thus deposited were called *Neptunian* by the older geologists.

But while the seas of each epoch were thus building up, grain by