

study for himself, with the eyes of an original discoverer, this part of nature; for in following the steps of such an observer, the reader will have no difficulties arising from the assumption of a previous acquaintance with the subject which he may not possess, to surmount, but every new observation will arise from those which have preceded, in precisely that series which is best calculated to convey elementary information.

§ 1. Geology being the knowledge of the Earth's structure as far as it lies open to our observation, the fundamental point on which it rests, is, the ascertaining the order in which the materials* constituting the *surface* of our planet (for beyond this our observation cannot penetrate) are disposed. The superficial and hasty observer might suppose that these materials are scattered irregularly over the surface and thrown confusedly together, but a slight degree of attention will prove that such a conclusion would be entirely erroneous.

§ 2. If we suppose an intelligent traveller taking his departure from our metropolis, to make from that point several successive journies to various parts of the island, for instance to South Wales, or to North Wales, or to Cumberland or to Northumberland, he cannot fail to notice (if he pays any attention to the physical geography of the country through which he passes)

* A competent knowledge of Mineralogy is required to instruct the geological student in the nature of those materials as considered in themselves, and of chemistry to enable him to understand their constitution analytically; yet the number of mineral masses forming rocks of usual occurrence is so small, and the composition of those so simple, that a very limited knowledge of these sciences is sufficient for all introductory purposes, as far as the general outlines of Geology are concerned. Siliceous, argillaceous, and calcareous masses (substances with which every one is familiar under the common names of sand, clay, and limestone) constitute probably nine-tenths of these materials, and the compound rocks forming the remaining tenth consist principally of only four minerals, quartz, felspar, mica, and hornblende. These great masses contain, dispersed in various manners through them, and in comparatively small quantities, all the other substances included in the mineral kingdom; of these the various ores of the different metals are the most important; the geologist must of course, as he proceeds in his enquiries, acquire a competent knowledge of all these substances; but this knowledge which is the ultimate object of the mere mineralogist, is to the geologist only a subordinate acquisition, and forms but the alphabet by which he endeavours to decypher the part of nature which he studies. Hence the rarer varieties which will, in the estimation of the mineralogist, possess the highest interest, will, in the eyes of the geologist, attract the least regard. On this principle nearly one-half of the mineral species may be safely neglected in beginning a course of geology, nor is a knowledge of more than 100 species essential as a preliminary acquisition. The geologist therefore need not be alarmed at the extent of this *alphabet* which he must in the first place master: any common treatise on mineralogy will prove a sufficient guide in this, provided it be accompanied by the examination of a tolerable collection of specimens; but no description can possibly supply the want of actual inspection.