

*Sect. 4.—Geological Synonymy, or Determination of Geological Equivalents.*

It will easily be supposed that with so many different sources of names as we have mentioned, the same stratum may be called by different designations; and thus a synonymy may be necessary for geology; as it was for botany in the time of Bauhin, when the same plants had been spoken of by so many different appellations in different authors. But in reality, the synonymy of geology is a still more important part of the subject than the analogy of botany would lead us to suppose. For in plants, the species are really fixed, and easily known when seen; and the ambiguity is only in the imperfect communication or confused ideas of the observers. But in geology, the identity of a stratum or formation in different places, though not an arbitrary, may be a very doubtful matter, even to him who has seen and examined. To assign its right character and place to a stratum in a new country, is, in a great degree, to establish the whole geological history of the country. To assume that the same names may rightly be applied to the strata of different countries, is to take for granted, not indeed the Wernerian dogma of universal formations, but a considerable degree of generality and uniformity in the known formations. And how far this generality and uniformity prevail, observation alone can teach. The search for geological synonyms in different countries brings before us two questions;—first, *are* there such synonyms? and only in the second place, and as far as they occur, *what* are they?

In fact, it is found that although formations which must be considered as geologically identical (because otherwise no classification is possible,) do extend over large regions, and pass from country to country, their identity includes certain modifications; and the determination of the identity and of the modifications are inseparably involved with each other, and almost necessarily entangled with theoretical considerations. And in two countries, in which we find this modified coincidence, instead of saying that the strata are identical, and that their designations are synonyms, we may, with more propriety, consider them as two corresponding series; of which the members of the one may be treated as the *Representatives* or *Equivalents* of the members of the other.

This doctrine of Representatives or Equivalents supposes that the geological phenomena in the two countries have been the results of