

not speak of a Geological Nomenclature till we come to Werner and Smith. The earlier mineralogists had employed names, often artificial and arbitrary, for special minerals, but no technical and constant names for strata. The elements of Werner's names for the members of his geological series were words in use among miners, as *Gneiss*, *Grauwacke*, *Thonschiefer*, *Rothe todte liegende*, *Zechstein*; or arbitrary names of the mineralogists, as Syenite, Serpentine, Porphyry, Granite. But the more technical part of his phraseology was taken from that which is the worst kind of name, arbitrary numeration. Thus he had his *first* sandstone formation, *second* sandstone, *third* sandstone; *first* flötz limestone, *second* flötz limestone, *third* flötz limestone. Such names are, beyond all others, liable to mistake in their application, and likely to be expelled by the progress of knowledge; and accordingly, though the Wernerian names for rocks mineralogically distinguished, have still some currency, his sandstones and limestones, after creating endless confusion while his authority had any sway, have utterly disappeared from good geological works.

The nomenclature of Smith was founded upon English provincial terms of very barbarous aspect, as *Cornbrash*, *Lias*, *Gault*, *Clunch Clay*, *Coral Rag*. Yet these terms were widely diffused when his classification was generally accepted; they kept their place, precisely because they had no systematic signification; and many of them are at present part of the geological language of the whole civilized world.

Another kind of names which has been very prevalent among geologists are those borrowed from places. Thus the Wernerians spoke of Alpine Limestone and Jura Limestone; the English, of Kimmeridge Clay and Oxford Clay, Purbeck Marble, and Portland Rock. These names, referring to the stratum of a known locality as a type, were good, as far as an identity with that type had been traced; but when this had been incompletely done, they were liable to great ambiguity. If the Alps of the Jura contain several formations of limestone, such terms as we have noticed, borrowed from those mountains, cease to be necessarily definite, and may give rise to much confusion.

Descriptive names, although they might be supposed to be the best, have, in fact, rarely been fortunate. The reason of this is obvious;—the mark which has been selected for description may easily fail to be essential; and the obvious connexions of natural facts may overleap the arbitrary definition. As we have already stated in the history of botany, the establishment of descriptive marks of real classes presupposes the important but difficult step, of the discovery of such marks.