

It was eventually found, for instance, that some granite overlies instead of underlying the slates of the Primitive series; that some greenstones, instead of occurring among the Primitive rocks, lie in the Floetz division; that there are ever so many horizons for porphyry, which was at first believed to be entirely Primitive. These contradictions were surmounted by affixing such adjectives as "oldest" or "newest" to the several appearances of the same rock, or by numbering them according to their various horizons. Thus there were oldest and newest granites, oldest and newer serpentine, and first, second, and third porphyry formations.

This patching up of the system may have saved it in appearance, but a moment's reflection will show us that it was fatal to Werner's fundamental doctrine of a series of successive chemical precipitates from a universal ocean, which by the deposition of these precipitates was gradually altering its constitution. The modifications rendered necessary by fresh discovery proved that the supposed definite sequence did not exist. In fact, as was well said by a critic at the time, they were mere "subterfuges by which the force of facts was evaded."¹ They were devised for the purpose of bolstering up a system which was entirely artificial, and to the erroneousness of which new facts were continually bearing witness.

It was claimed for Werner that he first established the doctrine of geological succession in the earth's

following his teaching, in proportion as their observations have multiplied, have added, and are continually adding new improvements to his system."—*Traité de Géognosie* (1819), preface, p. xvi.

¹ *Edinburgh Review*, vol. xviii. (1811), p. 95.