

debris of pre-existing crystalline masses or fragmentary strata being gradually consolidated to new rocks. Exactly parallel to these operations of nature are certain artificial processes at work around us, the products of which are entirely analagous to the two classes of rocks just indicated. We may stand before an iron furnace and watch the steady stream of slag flowing from the hearth into a large iron wagon, and there solidifying to a mass of solid, sometimes crystalline rock; and we may also visit a stamp mill where valuable metallic particles are being extracted from poor vein-stones, and find, in the slime-pits of the establishment, banded layers of half solidified strata, requiring but a little time to effect their perfect consolidation.

These two means employed by nature in producing rocks have been steadily recognized by the majority of geologists, and the two classes which result have been indicated by a superabundance of names. Unstratified and stratified; igneous and aqueous; eruptive and sedimentary; exotic and indigenous; primary and secondary; (protogene and deuterogene;) crystalline and elastic; massive and fragmentary; original and derivate, are all terms which have been used for distinguishing these two great classes, and the least objectionable among them would appear to be the two last mentioned. The first of these, original (*Ursprüngliche*.) was first adopted by Zirkel* for denoting igneous or eruptive rocks, while the term derivate was first suggested by David Forbes† as equivalent to secondary or sedimentary rocks. The latter term we have ventured to modify, and in the following pages we shall use the names original and derived for indicating the two great classes. These names would seem to deserve the preference, for the following reasons. It is admitted by geologists, on all hands, that the material which constitutes the various sedimentary formations, consisting of limestone, hardened clay, or consolidated sand, although it may have been immediately derived from pre-existing rocks of a detrital nature, originally came from the decomposition and disintegration of crystalline rocks, of such as are known to constitute the oldest formations of the earth's crust or to have broken through and deposited themselves on the

* *Petrographie I.*, p 173.

† *The Microscope in Geology.* p 6.