

names to these classes, for the most part borrowed from theoretical views, or conveying descriptive ideas which are far from being universally applicable : in order to avoid these objections, we have taken the terms by which they are designated in the present work, from the unquestionable fact of their relative position. Regarding the third, or carboniferous series, as the middle group, we have assigned the term *supermedial* to the second series, as being next above it, and *submedial* to the fourth as being next below it. To the highest and lowest series, the terms *superior* and *inferior*, which require no commentary, have been applied. The reasons which have guided us in the details of this arrangement, will be found fully stated in the introductory chapters of the several books, and it would at present be premature to enlarge upon them ; a comparative view of this arrangement, and that of other writers, will be seen in the subjoined note.\*

\* The most general relation under which the various formations present themselves, is that whence they have been denominated *primitive* and *secondary*; the former comprising the lowest series of rocks, which serve as the fundamental basis upon which the rest repose, never containing any traces of organised beings (i. e. animals or vegetables) imbedded in them, and being entirely of a chemical composition: these therefore, it was inferred, constituted the materials of the Earth's surface at its first formation, while on the other hand the series which covered them were observed to contain, often in great abundance, the imbedded remains of the vegetable and animal kingdoms, and to be often also made up of fragments apparently torn by some convulsion from the primitive rocks and cemented again together under a new form; these therefore were necessarily considered as of subsequent and secondary origin. This distinction was first perceived by Lehman (about the year 1759), and made the basis of his system. In its principles it is philosophical and just, but does not carry the subdivision far enough for practical purposes, leaving all the secondary rocks under a single class. Werner, observing that between the primitive rocks and those which exhibited the characters of the secondary class in the most striking manner, a series of intermediate character (containing comparatively few organic remains and approaching more nearly to the chemical structure of the primitive than the mechanical of the secondary rocks) intervened, introduced the title *transition rocks*, as descriptive of this intermediate series; and a similar idea appears to have occurred perhaps yet earlier to Rouelle in France, who applies to it the designation 'travaille intermédiaire.' As these so-called transition rocks were of course taken from those which, strictly speaking, belonged to the secondary class, the introduction of this class made it necessary to abandon that term. Werner accordingly employed in its stead, for the rocks reposing on his transition series, the term *flatz rocks*, derived from the belief that they generally were stratified in planes nearly horizontal, while those of the older strata were inclined to the horizon in considerable angles. But this holds good only with regard to the structure of countries comparatively low: in the Jura chain, the borders of the Alps and Pyrenees, Werner's *flatz* formations are highly inclined: should we therefore persist in the use of this term, we must prepare ourselves to speak of vertical beds of *flatz* (i. e. horizontal) limestone, &c. As the enquiries of geologists extended the knowledge of the various