

1. In every stratigraphical research, the fundamental requisite is to establish the true or original order of superposition of the strata. Until this is accomplished by careful study of the actual relations of the rocks in the field, it is impossible to arrange relative dates and make out the sequence of geological history.

2. The stratified portion of the earth's crust, or Geological Record, may be subdivided into natural groups or "formations" of strata, each marked throughout by some common *facies* of organic remains, that is, by the occurrence of some characteristic genera or species or a general resemblance in their palæontological type or character,¹ or, for limited tracts of country, by some common lithological features.

3. Living species of plants and animals can be traced downward into the more recent geological formations; but grow fewer in number as they are followed into more ancient deposits. With their disappearance, we encounter other species and genera which are no longer living. These in turn may be traced backward into earlier formations, till they too cease, and their places are taken by yet older forms. It is thus shown that the stratified rocks contain the records of a gradual progression of organic types. A species which has once died out does not seem ever to have reappeared.

4. When the order of succession of organic remains among the stratified rocks of a district or country has once been accurately determined on the basis of the true strati-

¹ The student may consult an interesting paper by Prof. E. Renevier (Arch. Sci. Phys. Nat. Geneva, 1884, xii. p. 297) on "Geological Facies." The total mean depth of the fossiliferous formations of Europe has been set down at 75,000 feet, or upward of 14 miles.