

(the Valley of the Loire), to overlie the Parisian formation, and in another (in Piedmont) to underlie the Subapennine beds. The first example of these was pointed out in 1829 by M. Desnoyers, who ascertained that the sand and marl of marine origin called Faluns, near Tours, in the basin of the Loire, full of sea-shells and corals, rested upon a lacustrine formation, which constitutes the uppermost subdivision of the Parisian group, extending continuously throughout a great table-land intervening between the basin of the Seine and that of the Loire. The other example occurs in Italy, where strata, containing many fossils similar to those of Bourdeaux, were observed by Bonelli and others in the environs of Turin, subjacent to strata belonging to the Subapennine group of Brocchi.

Without pretending to give a complete sketch of the progress of discovery, I may refer to the facts above enumerated, as illustrating the course usually pursued by geologists when they attempt to found new chronological divisions. The method bears some analogy to that pursued by the naturalist in the construction of genera, when he selects a typical species, and then classes as congeners all other species of animals and plants which agree with this standard within certain limits. The genera A and C having been founded on these principles, a new species is afterwards met with, departing widely both from A and C, but in many respects of an intermediate character. For this new type it becomes necessary to institute the new genus B, in which are included all species afterwards brought to light, which agree more nearly with B than with the types of A or C. In like manner a new formation is met with in geology, and the characters of its fossil fauna and flora investigated. From that moment it is considered as a record of a certain period of the earth's history, and a standard to which other deposits may be compared. If any are found containing the same or nearly the same organic remains, and occupying the same relative position, they are regarded in the light of contemporary annals. All such monuments are said to relate to one period, during which certain events occurred, such as the formation of particular rocks by aqueous or volcanic agency, or the continued existence and fossilization of certain tribes of animals and plants. When several of these periods have had their true places assigned to them in a chronological series, others are discovered which it becomes necessary to intercalate between those first known; and the difficulty of assigning clear lines of separation must unavoidably increase in proportion as chasms in the past history of the globe are filled up.

Every zoologist and botanist is aware that it is a comparatively easy task to establish genera in departments which have been enriched with only a small number of species, and where there is as yet no tendency in one set of characters to pass almost insensibly, by a multitude of connecting links, into another. They also know that the difficulty of classification augments, and that the artificial nature of their divisions becomes more apparent, in proportion to the increased number of objects brought to light. But in separating families and genera, they have no other al-