

Limestone, and *Rhynchonella tetrahedra* is a shell of the Lias, we could not, from mere inspection of the fossils themselves, pronounce as to their real geological position.<sup>19</sup> It is quite true that, by practice, a palæontologist has his eye so trained that he can make shrewd approximations to the actual horizon of fossils which he may never have seen before (and this is more especially true in regard to the mammalia, as will be immediately adverted to), but he can only do this by availing himself of a wide experience, based upon the ascertained order of appearance of fossils, as determined by the law of superposition. For geological purposes, therefore, and, indeed, for all purposes of comparison between the faunas and floras of different periods, it is absolutely essential, first of all to have the order of superposition of strata rigorously determined. Unless this is done, the most fatal mistakes may be made in palæontological chronology. But when it has once been done in one typical district, the order thus established may be held as proved for a wide region where, from paucity of sections, or from geological disturbance, the true succession of formations cannot be satisfactorily determined.

The order of superposition having been determined in a great series of stratified formations, it is found that the fossils at the bottom are not quite the same as those at the top of the series. As we trace the formations upward, we discover that species after species of the lowest platforms disappears, until perhaps not one of them is found. With the

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<sup>19</sup> The derivation of some forms by descent from others may be inferred with more or less probability, and such genetic affinities may furnish valuable suggestions to the palæontologist. But that the risk of erroneous interpretation and fanciful deduction in such matters is real and serious was well shown in the discussion of the presumed derivation of the Olenellidian trilobites from the Paradoxidian forms, until it was shown that the former were really the precursors of the latter.