can be separated into zones and sections. But though traceable over wide regions they were probably not general over the whole globe. There have never been any universal interruptions in the continuity of the chain of being, so far as geological evidence can show. The breaks or apparent interruptions no doubt exist only in the sedimentary record, and may have been produced by geological agencies of various kinds, such as cessation of deposit from failure of sediment owing to seasonal or other changes; alteration in the nature of the sediment or character of the water; variations of climate from whatever cause; elevation or subsidence by subterranean movements, bringing successive submarine zones into less favorable conditions of temperature, etc.; and volcanic discharges. The physical revolutions, which brought about the breaks, were no doubt sometimes general over a whole zoological province, more frequently over a minor region. Thus, at the close of the Triassic period the inland basins of central, southern and western Europe were effaced, and another and different geographical phase was introduced which permitted the spread of the peculiar fauna of the "Avicula contorta zone" from the south of Sweden to the plains of Lombardy, and from the north of Ireland to the eastern end of the Alps. This phase in turn disappeared to make way for the Lias with its numerous "zones," each distinguished by the maximum development of one or more species of ammonite.[27] These successive geographical revolutions must, in many cases, have caused the complete extinction of genera and species possessing a small geographical range.

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[27] Consult on this subject the memoirs on Jurassic Geography of the late Prof. Neumayr, quoted ante, p. 1086.