

## SECTION XXIII.

## LIMITATION OF SPECIES TO PARTICULAR GEOLOGICAL PERIODS.

Without entering into a discussion respecting the precise limits within which this fact is true, there can no longer be any doubt, that not only species, but all other groups of animals and plants, have a definite range of duration, as well as individuals.<sup>1</sup> The limits of this duration, as far as species are concerned, generally coincide with great changes in the physical conditions of the earth's surface;<sup>2</sup> though, strange to say, most of those investigators who would ascribe the origin of organized beings to the influence of such causes, maintain also, that species may extend from one period to another, which implies that these are not affected by such changes.<sup>3</sup>

When considering, in general, the limitation of species to particular geological periods, we might very properly disregard the question of the simultaneity of the successive appearance and disappearance of Faunæ, as in no way affecting the result of the investigation, as long as it is universally conceded, that there is no species, known among the fossils, which extends through an indefinite series of geological formations. Moreover, the number of the species, still considered as identical in several successive periods, is growing smaller and smaller, in proportion as they are more closely compared. I have already shown, long ago, how widely many of the tertiary species, long considered as identical with living ones, differ from them,<sup>4</sup> and also how different the species of the same family may be, in successive subdivisions of the same great geological formation.<sup>5</sup> Hall has come to the same result in his investigations of the fossils of the State of New York.<sup>6</sup> Every monograph reduces their number, in every formation. Thus Barrande, who has devoted so many years to the most minute investigation of the Trilobites of

<sup>1</sup> Compare Sect. XIX.

<sup>2</sup> ELIE DE BEAUMONT, *Recherches sur quelques-unes des Révolutions de la surface du Globe*, Paris, 1830, 1 vol. 8vo.

<sup>3</sup> For indications respecting the occurrence of all species of fossil organized beings now known, consult, BRONN, (H. G.) *Index palæontologicus*, Stuttgart, 1848-49, 3 vols. 8vo. — ORBIGNY, (A. D.) *Prodrome du Paléontologie stratigraphique universelle etc.*,

Paris, 1850, 2 vols. 12mo. — MORRIS, (J.) *Catalogue of the British Fossils*, London, 1854, 1 vol. 8vo.

<sup>4</sup> AGASSIZ, (L.) *Coquilles tertiaires réputées identiques avec les espèces vivantes*, Neuchâtel, 1845, 4to. fig.

<sup>5</sup> AGASSIZ, (L.) *Etudes critiques sur les Mollusques fossiles*, Neuchâtel, 1840-45, 4to. fig.

<sup>6</sup> HALL, (J.) *Palæontology of the State of New York*, q. n., p. 23, note 1.