so slow that the upward growth of the reefs has on the whole kept pace with it.[221] More recent researches, however, show that the phenomena of coral-reefs are in some cases, at least, capable of satisfactory explanation without subsidence, and hence that their existence can no longer be adduced by itself as a demonstration of the subsidence of large areas of the ocean.[222] The formation of coral-reefs is described in Book III. Part II. Section iii., and Mr. Darwin's theory is there more fully explained.

Distribution of plants and animals.—Since the appearance of Edward Forbes's essay upon the connection between the distribution of the existing fauna and flora of the British Isles, and the geological changes which have affected that area,[223] much attention has been given to the evidence furnished by the geographical distribution of plants and animals as to geological revolutions. In some cases, the former existence of land now submerged has been inferred with considerable confidence from the distribution of living organisms, although, as Mr. Wallace has shown in the case of the supposed "Lemuria," some of the inferences have been unfounded and unnecessary.[224] The present distribution of plants and animals is only intelligible in the light of former geological changes. As a single illustration of the kind of reasoning from present zoological groupings as to former geological subsidence, reference may be made to the fact, that while the fishes and mollusks living in the seas on the two sides of the Isthmus of Panama are on the whole very distinct, a few shells and a large number of fishes are identical; whence the inference has been drawn that though a broad water-channel originally separated North and South America in Miocene times, a series of elevations and subsidences has since occurred, the most recent submersion having lasted but a short time, allowing the passage of locomotive fishes, yet not admitting of much change in the comparatively stationary mollusks.[225]

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[221] See Darwin's "Coral Islands," Dana's "Corals and Coral Islands," and the works cited postea, Book III. Part II. Section iii. § 3, under "Coral-reefs." The various theories on the subject are discussed by R. Langenbeck in his "Theorien über die Entstehung der Koralleninseln und Korallenriffe," 1890.

[222] See Proc. Roy. Phys. Soc. Edinburgh, viii. p. 1.

[223] Mem. Geol. Survey, vol. i. 1846, p. 336.

[224] "Island Life," 1880, p. 394. In this work the question of distribution in its geological relations is treated with admirable lucidity and fulness.

[225] A. R. Wallace, "Geographical Distribution of Animals," i. pp. 40, 76.