water, cut off more or less completely from the sea, underwent concentration until chemical precipitation could take place. Looking back at the history of the Carboniferous rocks, we can understand how such a change in physical geography was brought about. The Carboniferous Limestone sea having been by upheaval excluded from the region, wide lagoons occupied its site, and these, as the land slowly went down, crept over the old ridges that had for so many ages been prominent features. The downward subterranean movement was eventually varied by local elevations, and at last the Permian basins came to be formed. As a result of these disturbances, the Permian rocks overlap the Carboniferous, and even cover them in complete discordance, the denudation of the older formation having been, in some places, enormous before the Permian strata were laid down.[245]

In Southern Europe and thence eastward, abundant evidence of open seas is supplied by limestone containing a rich fauna of foraminifera, gasteropods, orthoceratites, and early precursors of the ammonites.

LIFE.—The conditions under which the Permian rocks of the greater part of Europe were deposited must have been eminently unfavorable to life. Accordingly we find that these rocks are on the whole singularly barren of organic remains. So great is the contrast between them and older formations, that instead of such rich faunas as those of the Silurian, Devonian, and Carboniferous systems, they have yielded only somewhere about 300 species of organisms.

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[245] In some places, the whole of the Carboniferous system has been worn away down to the Carboniferous Limestone, upon which the Permian sandstones and conglomerates have been directly deposited. The discordance, however, sometimes disappears, and then the Carboniferous and Permian rocks shade into each other.