the larger portion of them consists of compacted fragmentary materials. Shales, sandstones, and conglomerates, in infinite variety of texture and colour, are piled above each other to form the foundation of plains and the structure of mountains. Each of these rocks is composed of distinct particles, worn by air, rain, frost, springs, rivers, glaciers, or the sea, from previously existing rocks. They are thus derivative formations, and their source, as well as their mode of origin, can be determined. Their component grains are for the most part rounded, and bear evidence of having been rolled about in water. Thus we easily and rapidly reach a first and fundamental conclusion—that the substance of the main part of the solid land has been originally laid down and assorted under water.

The mere extent of the area covered by these water-formed rocks would of itself suggest that they must have been deposited in the sea. We cannot imagine rivers or lakes of magnitude sufficient to have spread over the sites of the present continents. The waters of the ocean, however, may easily be conceived to have rolled at different times over all that is now dry land. The fragmental rocks contain, indeed, within themselves proof that they were mainly of marine, and not of lacustrine or fluviatile origin. They have preserved in abundance the remains of foraminifera, corals, crinoids, molluscs, annelides, crustaceans, fishes, and other organisms of undoubtedly marine habitat, which must have lived and died in the places where their traces remain still visible.

But not only do these organisms occur scattered through sedimentary rocks; they actually themselves form thick masses of mineral matter. The Carboniferous or Mountain Limestone of Central England and Ireland, for example, reaches a thickness of from 2000 to 3000 feet,