

bottom of the sea to its summit. In a case such as this, it is easy to see that the ordinary marine sediments of the area would get intermingled with volcanic ashes, and possibly with submarine streams of lava.

Explosions of steam accompanied by floating cinders are mentioned by Darwin as occurring at intervals in the South Atlantic; and anyone who will tax his memory a little will recollect that a large proportion of the volcanoes of the world are islands, or in islands, in the Atlantic, the Indian Ocean, the Indian Archipelago, and the Pacific Ocean, south and north. It has been often remarked that almost all volcanoes are in the neighbourhood of the sea.

I think, then, at the time of the deposition of the Llandeilo and Bala beds of our area, our terrestrial scenery consisted of groups of volcanic islands scattered over the area of what is now North Wales and South Wales, and extending westward into the region of the Irish strata of the same age, and northward as far as the sea that then rolled where Cumberland now stands; for there also volcanic rocks occur in great force, all of the same general character as those found in Wales. There is however, this difference between the two areas, that, whereas in Wales ordinary sediments are plentifully interstratified with lavas and ashes, and sometimes even lithologically intermingled with volcanic ashes, in the Cumbrian area it is only for a few feet at the very base of the volcanic series that interstratifications take place, the whole of the rest of these Silurian volcanic rocks of Westmoreland and Cumberland being quite destitute of any intermixture of marine sediments. Exclusive of intrusive rocks, the whole consists of purely terrestrial lavas, volcanic conglomerates and ashes, the latter often well stratified, for where showers of ashes fall