

Cumberland were mountains at least before Old Red Sandstone times, and the last great movement of the rocks of Wales is certainly older than the Permian epoch, and, probably, like the mountains of Cumberland, very much older.

There was therefore plenty of time, in what is now Wales, long before the beginning of the great Glacial episode, for the more ordinary agents of denudation to have formed deep valleys, down which, when that episode began, the growing glaciers might gravitate, deepening their channels as they pressed forward, and mammillating and striating the rocks over which they slid; for the great original valleys of the mountains were by no means entirely scooped out, but merely modified by the glaciers.

Thus, for example, it happens in Wales that all the striations in the valley of Dolgelly and the estuary of the Mawddach, in Merionethshire, follow the south-westerly trend of the valley, the glacier that filled it when at its greatest being fed by the snows of the slopes of Cader Idris and Aran Mowddwy, and those of the tributary valleys of Afon Eden and the Mawddach that joined it from the north; while from a central low watershed, near the sources of the Wnion, another branch pressed north-easterly, into and far beyond the region now occupied by Bala lake.

The striated rocks exposed among the sands at low tide in the estuary of the Mawddach, and the islet-like heathy bosses of rock that stand out amid the marshy moss opposite Barmouth, are merely *roches moutonnées*, once buried deep beneath the glacier that pressed forward to join the great northern glacier that then filled Cardigan Bay.

In like manner all the western valleys of the