

known as the district of Lleyn. These, ere exposure by denudation, probably were the *roots* of the volcanos, or in other words the deep-seated centres from whence the explosive force of steam drove out the lavas and showers of ashes, which, during successive eruptions, with minor periods of repose, got interstratified with the mud and sand beds that were deposited in the sea of the Llandeilo and Bala or Caradoc period.

On a smaller scale similar volcanic rocks are interstratified with the Llandeilo and Bala beds of the Berwyn Hills, also of the Breidden Hills, and the hills west of the Longmynd and Stiper Stones towards Chirbury and Church Stoke, of the country between Builth and Llandegley in Radnorshire, and in North Pembrokeshire from the ground round St. David's, extending for many miles to the east, by Mathry, Fishguard, St. Dogmells and Mynydd Preselley.

The next question that occurs to me is, what was the nature of the physical geography of this area during the deposition of the Arenig slates, and also at a later epoch when the Llandeilo and Caradoc or Bala beds were being deposited.

With regard to the Arenig slates in Pembrokeshire and Merionethshire, I know of no signs of unconformity, that is to say, of a lapse of time unrepresented by the deposition of marine strata either in Pembrokeshire or in Merionethshire, unless there be some symptoms of it in the latter county. But when we go further north into Carnarvonshire, the case is different. There, at the widening of the Passes of Llanberis and Nant Ffrancon, the Lingula flags are not more than 2,000 feet thick, whereas further south, between Ffestiniog and Portmadoc, they are at least 4,000 feet in thickness. Furthermore, in those valleys in Caernar-