

length of that beautiful valley, through various Permian rocks, for nearly forty miles. At the mouth of the valley, at and near Carlisle, a patch of New Red Marl lies on the Permian sandstones, and on the Marl rests the Lias. Whether the whole length of the Permian strata of the Vale of Eden was once covered by these rocks it is impossible to determine, but I believe that it must have been so to a great extent, and also that the Lias may have been covered by Oolitic strata. A great fault east of the Eden has thrown these formations down on the west, so that the faulted edge of the Permian beds now abuts on the high Carboniferous hills that form the eastern side of the valley. As these Permian and Secondary were denuded away by time, the present river Eden began to establish itself, and now runs through rocks in a faulted hollow, in the manner shown in fig. 104. What is the precise geological date of the origin of this great valley and its river course in their present form, I am unable to say; but I believe that it may approximately be of the same age as the valleys last described: that is to say, of later date than the Oolites, and probably it is later than the Cretaceous and Eocene, or even than the Miocene epoch. And so with the other rivers of the west of England—the Lune, the Ribble, the Mersey, and the Weaver.

In Wales, the Dyfi partly runs in a valley formed by denudation along an old line of fault; and the Teifi in Cardiganshire, and the Towey in Caermarthenshire, in parts of their courses along lines running in the direction of the strike of soft Llandeilo flags, sometimes slaty and easily worn down by water, their valleys being bounded on either side by hills to a great extent formed of harder Silurian grits.

To sum up the subject: It seems to me that all