

principal facts and theoretical conclusions arrived at by Mr. Geikie were in harmony with those which I had announced. He refers the till, the thickness of which exceeds in some places 150 feet, not to icebergs, but to ice action on the land, confined to the valleys in which the till occurs, for it consists in each case of the debris of those rocks which belong to the same hydrographical basin.

The author attributes the absence of marine shells in the till to its having originated in glacier action and on land; nevertheless, he admits a great submergence of Scotland during part of the glacier period, far exceeding that of the greatest height (515 feet) to which he has traced marine shells in the drift. The main valleys in Scotland he considers older than the boulder clay.

He also infers a recent date for the last upheaval of Scotland, from the freshness of the glacial striæ, which often pass under the sea. The higher raised beaches, he observes, are fainter than the lower ones, that of forty feet, for example, on the west coast of Scotland, being more obliterated than that of twenty-five feet. The Glen Roy beaches, therefore, could not have remained so fresh in all their character had they been of marine origin, for in that case their great height would imply a very high relative antiquity.

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## G

(p. 268.)

### DISCOVERY IN WALES OF FIFTY-FOUR SPECIES OF FOSSIL SHELLS IN THE GLACIAL DRIFT OF MOEL TRYFAEN (OR TRYFANE) AT THE HEIGHT OF 1360 FEET ABOVE THE SEA.

In former editions, I relied on the accuracy of Mr. Trimmer's observations, confirmed by those of the late E. Forbes, as well as Mr. Prestwich and Professor Ramsay, in regard to the great height at which marine shells occur in the glacial drift of North Wales. But some of my friends, well skilled in Natural History, had subsequently explored Moel Tryfaen and the adjoining district around Snowdon, without being able to detect a single fossil in the drift; and they hinted to me that, since elsewhere, whether in Europe or North America, fossil shells of the glacial sea have never been traced to half the height ascribed to the drift of Moel Tryfaen, it was desirable, before I inferred that so vast an upheaval of land had taken