have originated in dislocation of the strata, through the action of subterranean forces; but here there is no trace of such dislocation. The valley has been hollowed out of a uniform level bed of chalk. Other valleys have been excavated by torrents from the surrounding hills, but here there is no evidence of any river-current capable of producing the supposed effect. We remark further, that valleys scooped out by river torrents become narrower as they get deeper, and though they may afterwards be filled with gravel or sand, the original channel cut out of the rock has always the character we have ascribed to it. Other valleys are formed by glaciers; but in the neighbourhood of the Somme there is no trace of glacier action, as far, at least, as the accounts given by Sir C. Lyell and Mr. Prestwich show.

If, as we said, we rightly understand the accounts given of the valley, there seems to be but one cause to which its formation can be assigned. That is the action of floating ice, carried backwards and forwards by a tidal current.

If we suppose the Somme, at first, to have flowed into the sea, through some little narrow creek, the ice formed on its surface, at a time when a boreal climate prevailed, must have rapidly worn away the chalk which formed its banks. When the mouth of the river gradually enlarged into a long narrow estuary, that estuary would be filled in a great measure with fresh water, which would be frozen over in winter. The flux and reflux of the tide would be like that which we find in the Solway Firth at the present time. It would produce very powerful currents, and give to the ice on its surface an impetus which a substance so soft as chalk could not resist. If the sides of the depression had been formed of any of the harder rocks, they would not only have been better able to withstand the shock of the floating ice, but the fragments broken off from them would have formed beds of gravel which would have lessened the force of the ice. The abraded chalk would be diffused through the water and carried out into the ocean; the embedded flints only would remain.

Since various considerations have led to the conlusion that a boreal climate prevailed at the time when the valley was formed, it seems no improbable conjecture to suppose that masses of floating ice, with sand and gravel adhering to the bottom and sides, were the means by which the excavation was originally formed.

Yours truly,

JAMES BRODIE.

ON THE ORIGIN OF VALLEYS.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—My friend Mr. Scrope, in his article "On the Origin of Valleys," published in your last number (p. 193), has rightly represented me as a convert to his opinions on that subject; but by remarking that I had *at last* acknowledged the correctness of his views, he might lead your readers to infer that I had obstinately maintained an opposite theory, until a very recent period.

It may therefore be worth while for me to appeal to the second edition of my "Descriptions of Volcanos," published so long ago as 1848, as showing, that although in my earlier publications I had been led by the authority of Professor Buckland to attribute the formation of valleys to catastrophic action, such as the Noachian Deluge, I had for many years abandoned that hypothesis.

This circumstance might of itself have been considered a tacit acknowledgment on my part of the value of Mr. Scrope's earlier contributions to Geology, but I was glad of the opportunity afforded by the publication of my recent paper "On the Antiquity of the Volcanos of Auvergne," of more distinctly recognizing the claims of the author alluded to, to the merit of having been the first of our countrymen who clearly pointed out the evidence afforded by the valleys of that volcanic district, as to the erosive agency of rivers continued during long periods of time.

CHARLES DAUBENY.

OXFORD, May 5th, 1866.

THE LONGMYND AND ITS VALLEYS.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—I have just read Mr. Mackintosh's paper in the April number, as well as his letter in the May number of the GEOLOGICAL MAGAZINE.

I am well acquainted with the Longmynd and its valleys, and I am still of the same opinion that I formed more than twenty years ago, as to the origin of those deep valleys, locally called "gutters." I feel not the slightest doubt that they were cut by running brooks. I know of no better locality to which I would refer for so good an example, to show the result of long-continued wear by running water, than the Longmynd with its deep valleys. If the brooks that now run in these valleys have the power to furrow even their bottoms, they require only time to cut down a thousand feet. I believe that the action of the sea could in no way excavate those valleys or any similar ones.

I may add, that after many years of constant observation in the field, on a subject I have always been particularly interested in, I feel now convinced that an immense amount of denudation is due to causes subaërial, and not to the action of the sea.

I am, Sir, yours truly,

W. TALBOT AVELINE.

GEOLOGICAL SURVEY OF GREAT BRITAIN,
EDEN MOUNT, KENDAL, *7th May*, 1866.

A DENUDING AGENT.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—I have all my life been a diligent explorer of little brooks, in search, I must confess, of beauty rather than fossils. I have often been struck with the steady, and by no means unsuccessful, co-oper-