LXIII. Correction of an erroneous statement in the account of Mr. Bakewell's lectures, as to his originality in exhibiting a geological map of England: with remarks on the geological questions, whether the lower derbyshire strata anywhere else appear in England?; were caverns formed by subterranean currents of water?; and, how were mineral veins opened and filled?

Mr. John Farey Senior

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LXIII. *Correction of an erroneous Statement in the Account of Mr. BAKEWELL'S Lectures, as to his Originality in exhibiting a Geological Map of England: with Remarks on the Geological Questions, Whether the lower Derbyshire Strata anywhere else appear in England?; Were Caverns formed by subterranean Currents of Water?; and, How were Mineral Veins opened and filled?.* By Mr. JOHN FAREY Senior.

To Mr. Tilloch.

SIR, WHEN I first read in your account of Mr. Robert Bakewell's Lectures, at the Russell Institution, p. 234, of your March Magazine, that Mr. B. exhibited to his auditors, "a Geological Map of England, drawn for the purpose" of his Lectures, and said, "that, so far as he knew, *this was the first attempt* to represent in a Map the geological outlines of England," I supposed this statement, of a claim to originality in mineral Maps of England, to be made, by an error or misconception of your Reporter, and which from its manifest *injustice to others*, would receive a speedy correction from Mr. Bakewell, or some of those who attended his Lectures: after waiting, however, the conclusion of his three courses, without seeing anything further on the subject, I am induced to request your permission to point out, that it is incredible that Mr. B. should have been uninformed, that Mr. *William Smith* of Buckingham-street, had nearly completed such a Map years ago, as very often has been mentioned in your Magazine*, in Dr. Rees's Cyclopædia, &c.; not to mention a work, to which Mr. B. himself refers (at p. 236), my Derbyshire Report, vol. i. p. 108; nor is it more likely, that Mr. B. was uninformed, that a primary object of the Geological Society of London, as expressed in their printed "Geological Inquiries," was to prepare "Mineral Maps of districts," or that he was altogether ignorant of the progress, that G. B. Greenough, Esq. their very able and indefatigable president had made, in a Map of England and Wales, and another of Scotland, which have been very liberally shown (as his important collection corresponding to them has) to great numbers, besides the members of the Society assembled at their meetings; which last Maps, from combining, all that had been learnt from Mr. Smith, either directly or through me, or others who have examined his Maps and collection, with

* Particularly in volume xxxv. p. 114.

the extensive and systematic observations of Mr. G. himself, and the more local observations of others on the British strata, and with most of what has been from time to time published on the British strata, and on the unstratified districts of Cornwall, the central and northern parts of Wales, the Malvern Hills, Charnwood Forest, parts of Westmoreland, Cumberland, and Northumberland, &c. and of great part of Scotland (with which last districts Mr. Smith had not much concerned himself), are, doubtless, much more extensive and correct, than anything that Mr. B. would be able to produce, or at least, to which he could justly lay claim, without acknowledgement of the sources whence he derived part at least of his materials. I was, therefore, and still am desirous, sir, of thinking, that Mr. B. only intended to say, that this was the first time that a Geological Map of England had been exhibited in a course of *public Lectures* expressly on the subject; which yet, if it be literally true, will scarcely render this claim of Mr. B. a fair one, as it is stated, when it is considered, that Mr. Greenough's Maps have, often I believe, been exhibited to geological assemblies of persons, and that Mr. Smith's were more than once, I believe, exhibited to numerous meetings of the Board of Agriculture, and have so often been shown publicly, at meetings congenial with Mr. B.'s previous pursuits in life*, at Bath, Woburn, Holkham, Goswell-street, &c. as I have mentioned in your xxxvth vol. p. 114, and elsewhere. Let it not be supposed, that I am herein laying any claim to a Geological Map of England of my own, since it is well known to my friends, that the obligations which I have felt myself under to Mr. Smith, as the *original practiser and promoter of useful and general investigations of the Strata*, have, as much as the want of time for it, prevented my attempting any general Map, such as those of Mr. Smith and Mr. Greenough above mentioned: while at the same time, I have never been backward, in the very frequent interviews with which I have been honoured by the latter gentleman, to communicate or contribute any thing within my knowledge, towards the perfecting of his Map, always relying, as I do, that no publication of it will ever take place, without at the same time, rendering ample acknowledgements to Mr. Smith, from whose useful labours the ground work, and much of the materials in the superstructure have been obtained.

While I am upon the subject of Mr. Bakewell's Lectures,

* I allude here, to his investigations and work on *Wool*.

or rather the account of them that you have published, permit me to mention, that I still with additional reason, as I conceive, adhere to my former position, in the Derby Report, &c. with respect to the metalo-basaltic Limestone Rocks of Derbyshire, having *lower places in the series* than any other Rocks that I have seen, or know by the Reports of others, in the British Islands; and still conclude, as I mentioned in your 102d page (vol. xxxix.), that the same do not appear in the north-west of Yorkshire, in particular, as Mr. Bakewell is made to assert, p. 236; since on inquiry, I am told, that his reasons for so saying are, that "the *quality* of the Limestone and the Mineral Veins are the same," which I hold to be very inadequate marks of the identity of strata: surely Mr. B. might have done, or can now tell us, whether the *succession* upwards, from what he calls the 4th Limestone, is the same, or at all allied, to that I have described in Derbyshire? but above all, whether he was able to detect, all or any considerable proportion of the species of shells and other *Reliquia* in the Yorkshire Limestones, that the late Mr. William Martin has figured and described in his "*Petrificata Derbiensia*"? Shropshire or North Wales, I have not seen, except in the distant horizon, but from what I have read of Mr. Arthur Aikin's on those districts, and learnt from my valuable friend Mr. John Lloyd, of Wygfair, (who descended into Elden Hole, many years ago,) and others, I conclude the limestone Rocks there, to be the same with that which underlies the great South Wales Coal bason, of which I have made mention in the preface to my Report, p. xiii, and which overlies a *Red-Marl* series, such as I have described at p. 270, in your 39th volume, but not the same probably.

That the *Caverns* in Limestone Rocks, were not generally formed by the washing of subterranean currents, at least, are not now enlarging or deepening by that means (as I hear that Mr. B. maintains respecting certain Caves in or near Cumberland), must be abundantly evident, to those who will examine the bottoms of such Derbyshire caverns or opens, as are connected together, and which will be found in great part filled up with mud, sand, shale-grit and quartz gravel, &c., washed into them from the surface of the shale, by means of some of the Water-swallows that I have mentioned, Rep. i. p. 295: Merlin's Cave, in the Land occupied by the late William Langsdon, Esq. (but as I am told, not belonging to him, as I have stated) and now

by Mr. Thomas Bird, I believe, in Eyam, is a very complete instance of this filling up of caverns by subterranean currents, instead of their being formed thereby.

Respecting the opening of the fissures occupied by *mineral veins*, Mr. B. (p. 314) appears, like Dr. James Miller, when speaking of the Wernerian Theory (as I have observed in the note, p. 74 of my Report) to overlook the causes assigned, and principally insisted on by M. Werner himself, in his "new Theory" of Veins, lately translated, viz. *slips* "in rainy seasons," and the yielding and cracking of the mass by its own weight, when the rock was "at first wet and possessed little solidity," and part of it fell to the free side!. The suggestions which Mr. Bakewell offers, at the bottom of page 315, as to the probable voltaic influence which the sides or cheeks of the Vein have had on the metallic deposits within it, is ingenious, and accords well with most of the facts which I know, particularly that remarkable one, that the bearing measures (Rep. i. 246), or particular beds of Rock between which the ore is principally lodged in the vein, were in several of the most productive Mines in Derbyshire, *considerably inclined to the horizon*, and are so in the Gang and some others, that are yet working: indeed, where the Limestone laps round an irregular lump of Toadstone in the floor of the Rock, as in Ashover Velly, Crich, Matlock High-Tor and Masson Hills, &c., the bearing-measures therein, are found to conform to this shape of the floor, with very various and sometimes sudden changes in their inclination to the horizon: and furnish a good proof, in accordance with every other ascertained fact, that these Limestone Rocks could not have been *bent* into their present form by injected Lava between them, as Mr. B. appears, I think, disposed to concede to Mr. Whitehurst: since few persons would grant, that the *crystals* of spar and ore in a vein could have been *soft* and capable of bending, without the least fracture or distortion being observable in them; whatever a superficial knowledge of stony *depositions*, might dispose them to concede, with respect to the rocks that contain the veins.

I am, sir,

Your obedient servant,

Westminster, June 14, 1812.

JOHN FAREY Senior.