X. Cursory Geological observations lately made, in Shropshire, Wales, Lancashire, Scotland, Durham, Yorkshire NR., and Derbyshire. Some observations on Mr. Bakewell's Geological map, and on the supposed identity of the Derbyshire Peak and the Craven Limestone Rocks, &c. &c.

Mr. John Farey Sen.

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X. *Cursory Geological Observations lately made, in Shropshire, Wales, Lancashire, Scotland, Durham, Yorkshire NR., and Derbyshire. Some Observations on Mr. Bakewell's Geological Map, and on the supposed Identity of the Derbyshire Peak and the Craven Limestone Rocks, &c. &c. By Mr. JOHN FAREY Sen.*

To Mr. Tilloch.

SIR,—I HAVE for a long period been prevented from communicating to your useful work, although I have frequently in the interval been reminded by my friends, that a letter in your xth volume, p. 45, required an answer from me.

Several weeks before this letter appeared, I left home, spent two or three days near Ludlow, in examining the Clee Hills to the E, and the two Limestone Rocks (besides that under Clee Hills) which I found ranging on the west and north-west sides of that Town. From hence I proceeded to Hafod, and spent several days in examining the strata and ranges of the Cum-ystwith and several others of the Mineral Veins of that curious district. I then proceeded by Aberystwith, Shrewsbury, Liverpool, Kendal, and Carlisle, to Edinburgh, where I took a hasty view of Arthur's Seat and a few other objects in the vicinity, and then proceeded for Perth, Aberdeen, Banff, Fochabers, Nairn, and Inverness, where I spent a day in examining the excavations for the eastern end of the Caledonian Canal, &c. and then went through Tain and Dornoch to Dunrobin Castle, in whose neighbourhood I spent several weeks, examining the strata thence into Caithness, and as far SW as Bonar Bridge, and particularly within the *Coal-field*, which has been worked* since 1598, with some intervals, and was lately resumed (Phil. Mag. vol. xxxix. p. 337), on the banks of the Brora River, near its mouth.

On my return, I came by sea to Banff, spent a day there, and examined the coarse slate on the shore near MacDuff and that Town, then again through Aberdeen and Bervie to Perth: here I spent two days examining Kinnoul Hill, &c.

* In Edinburgh, the hot-bed of Geological speculation and contention, a learned Doctor lately edited a 2d edition of the late Mr. John Williams's very valuable work on the "Mineral Kingdom," and has affixed a Life of the Author, wherein he has shown his ignorance of the fact, that Mr. Williams was for several years prior to 1770, the Lessee under the Earl of Sutherland, and worker of these Coal-pits (although in his work Mr. W. scarcely alludes thereto), and the Doctor strongly insinuates, if not asserts, there are no Coals in Sutherland!

whose massive strata appear to me to form part of the continuous edge of Basalt, stretching (generally with a north-western dip I believe) from near Montrose on the German Ocean, to Dunbarton on the Clyde, (and perhaps thence across Arran, &c. to Rothlin and Antrim?) covering and limiting the great Coal-field of the Forth and Clyde; great part of which, it seems once to have covered, before the vast and complicated denudations were performed, which have in many parts cut deep into the Coal measures; and left numerous detached Hummocks of Basalt, like that of Arthur's Seat, and all others which I saw thence to near Kinross.

From Edinburgh I returned by Haddington, Dunbar, Berwick, and Belford, to Newcastle; a day which I spent here was lost as to any observations on the strata, owing to a dismal thick fog: next day I was more fortunate at Sunderland and Durham: at West Bolden, I left the Coal-measures and ascended the regular edge of the lower yellow Limestone Rock, which I at once recognised, and descended it again a mile NE of Houghton le Spring. At Ferry Hill I again ascended the edge of the lower yellow Limestone Rock, and was there hospitably entertained and much instructed, by Mr. Thomas Arrowsmith, who works a colliery through the lower Limestone Rock, as at Parlington, Knitaker, Skegby, Nuthall, Bilborough, &c. are or has been done, *Derb. Rep.* i. 156, and *Phil. Mag.* vol. xxxix. p. 99 and 103. South of Ferry-Hill, I soon ascended an indistinct edge of the Red Marl between the Limestone Rocks, such as had often deceived me in Notts. and Derbyshire, as mentioned *Phil. Mag.* vol. xxxix. p. 104, and then the edge of the upper Yellow Limestone, which dips into a trough at Rushyford, and is there covered by a clayey soil (perhaps alluvial?) which trough and covering stratum, seems to me from my inquiries, to extend eastward by Sedgefield, or south of it, to the coast SW of Hartlepool; but these are points on which I am extremely desirous of precise information from your Correspondents.

On the S of Aycliff I again descended the edge of the upper Rock, and came upon the Red Marl, here not ambiguous or doubtful, being thicker than at Fairburn (*Phil. Mag.* vol. xxxix. p. 104), and thereon (or its imbedded grit-stone) I travelled, through Darlington, Croft, North-Cawton, Catterick-Bridge, Leeming, and Ripon; soon after which, I descended again on to the top of the lower yellow Lime Rock (left on the S of Ferry Hill), and after seeing several large Lime-works therein, which stretch
NNW

Mr. Farey's Geological Observations in Derbyshire, &c. 55

NNW and SSE for many miles, as I was told, I obliquely descended the edge of this lower Rock, passed through Ripley, and was proceeding on Coal-measures towards High Harrowgate, when unfortunately it grew dusk, and *night* soon prevented my seeing the very interesting country thence to Leeds, as it had previously done through several miles of my approach to Newcastle, and to Perth in my return, and to Nairn, and to Bank-house in the southern extremity of Edinburgh county, in my way North: interruptions to the course of my Observations, which I much lament, but could not avoid without the loss of a day in each case (which I could not spare) and much extra expense for post-chaises, which I always avoid, also, when I can obtain a much more favourable seat for observation *on* a mail or stage coach, with the privilege secured, of a seat *inside* in case of night coming on, or of rain, &c. which would prevent the constant recording of my observations.

From Leeds I hastened to Ashover, and with my son's assistance (William F.) who had previously resumed the Survey of Ashover and its vicinity, (that we began in the preceding year) by the middle of November, we had so far proceeded, that a Report thereon could be made up, my Maps copied, &c. * which, and those relating to my Sutherland

* I have great reason now to wish, that I could recall or expunge the last paragraph in page ix of the preface to vol. ii. of my *Derby Report*, published in February last: a paper, of 120 closely written folio pages having been prepared by me, under the advice and copied after the repeated perusal of G. B. Greenough, Esq. the late President of the Geological Society, was presented through him to that Body on the 4th of February last, accompanied by a *Mineral Map*, filled up with the strata of more than thirty square miles including Ashover, on a scale of $1\frac{1}{2}$ inch to a mile; these were in addition, and by Mr. G.'s desire prepared, for explaining a large *Section* from actual survey, of the strata for more than seven miles in length of surface, crossing Ashover, and an attached and corresponding *Map* of the strata and every object on the surface, half a mile wide, on a scale of 10 inches to a mile, which *Section* had been *conditionally* presented and left with the Society since March 1812, by desire of Sir Joseph Banks, Bart., formerly a member thereof.

I heard nothing from the Society, until towards the end of April, when I received a Letter acknowledging (according to a printed form) *the receipt* of my paper, &c. and a few days after there appeared in yours and the Journal of Mr. Nicholson, a similar paper (sent officially as I have been informed) from the Geological Society, as a Report of their proceedings. About a month after this, in consequence of a remonstrance on my part to Mr. G. on some reports and circumstances of a novel kind that had reached me, regarding my paper and Maps, he introduced a Gentleman to me, who a short time after called on me, and among other things told me, that the forth-coming volume of the Society's Transactions was *intrusted* to him, and nothing would appear therein but what *he approved*; that the ideas of the Council were averse to the publication of my paper, he believed he could

56 *Mr. Farey's Geological Observations in Scotland, &c.*

land business and other urgent matters, have occasioned the interruptions to my occasional contributions, through your valuable work, towards the knowledge of the stratification of the British Isles.

Before any leisure occurred to me for adverting to Mr. Bakewell's Letter in your Number for July 1812, he had announced his being engaged on an "Introduction to Geology," and I have since waited until I could give a very attentive reading to his Book. Now we are more fairly at issue, on the points in our Letters in your xxxixth vol. p. 425, and xlth vol. p. 45.

The precise nature of Mr. B's original "Geological Map of England" is now seen, in his 4th plate. As an "Outline"

say so of *every individual thereof*, of this fact he produced however *no proof*, nor have I the opportunity to the present hour of learning in a regular way, *any opinion or decision whatever of the Council* (much less of the Society) respecting my Paper, Section, or Maps, or the nature of the objections that have *privately* been raised to any parts of either!

This learned Editor and caterer for the Geological taste, went on to persuade me, that he himself was a well wisher to my pursuits and communications (with what truth the circumstances best tell) and had therefore taken immense pains to *write a new paper for me*, which after perusing (as I did with great care) I would do well he said to adopt and allow my signature to be placed as *my original communication!* I scarcely need say more, to convey an idea of this performance, to my Friends, who *know the facts of Derbyshire and its strata*, than that the Report in the Phil. Mag. vol. xli. p. 303 to 305, and its many misconceptions and blunders, was made *from this Editor's Paper*, instead of my original paper; and perhaps this only was Read (not on a regular meeting day) instead of my original paper? The above fact as to the original of the printed Report, appeared clearly to me, from their perfect coincidence in the erroneous points.

On my objecting to this course to Mr. Editor, and attempting to show, that the first part of my paper (near half of it and by far the most important part) would be injured greatly by the total change of arrangement and inordinate compression it had suffered (the Report on this part is accordingly compressed into 4 lines, p. 303), and my Mineral Map greatly spoiled, by the alteration (from whim only, as far as I could learn) that was insisted on therein I was coolly told, that the Secretaries would immediately *return* my papers, *if I applied for them*; and so they did, on the 21st of June, without the least explanation of or apology for, the extraordinary circumstances pointed out to them or referred to, in my Letter of the 19th of June. I have not attempted to quote the *precise words* which passed on the above unprecedented and disagreeable occasions, but to give the substance, as concisely and as correctly as I could.

It appeared unnecessary above, in referring my Derbyshire Friends to the Geological Report on my paper, p. 303, vol. xli. to state, that the loose and inapplicable *Anglo-Wernerian terms* therein, were not used by me, but some of them expressly disclaimed in my paper as being contrary to more proper terms, *previously* in use among *English Geologists*, and to which I adhered: this was in consequence of being actually told by an individual Member of the Geological Council, while my paper was in hand, that *if I did not use Wernerian Terms nobody would read my paper!* It was rather unfortunate, that I could not then see the *full import* of this hint, and have avoided the loss of many weeks of my time this spring, and some subsequent vexation.

it

it is rather materially incorrect in two or three places: viz. to the north and north-east of York, the Oolite Limestone, so distinctly described in your xxxixth vol. pages 97 and 98, is omitted in the "low district," a name of his, which certainly ill befits this elevated Limestone tract. Mr. B's Alpine or "Devonian Range" of *Primitive and Transition Rocks*, has been carried a great many miles too far to the north-east, on the shore of the Bristol channel, as Mr. B. might have learnt, from Mr. *Wm. Smith's* Report on the *Nailsea Coal-field*, &c. in your xxxviiiith vol. p. 321; had not this Gentleman, and his pursuits, been denied all mention or even allusion, in this work, containing so much "original information" (page xi). and whose arrangement of particulars on the Geology of England, had not "been before noticed" (p. 13).

Mr. B. seems not aware, that the Chalk extends, on and near to the south Coast, considerably to the west of his "low district," and that the large tract called Blackdown, is covered by Sand, &c. from under the Chalk, very different from any thing in his "middle district," as he might have gathered from Mr. James Sowerby's "Mineral Conchology," pages 41, 57, 58, 60, &c. The inhabitants of Exeter and all its vicinity, would doubtless be much obliged to Mr. B., if he could *find there*, the characteristic minerals of his "middle district," viz. "coal*, ironstone, and rock-salt," (p. 274 and 11).

The Flintshire *Coal-field* on the SW shore of the Dee is not shown, although mentioned, p. 295, nor that of Anglesea (alluded to p. 275 note.) of whose situation (on the Cefni River) he might have learned something, from Mr. Aikin's Tour, p. 132, and Mr. Parkinson's Org. Rem. i. 178.

In Mr. B's "northern Alpine range," some of the small *Coal Basins* or Swilleys occur, which I have mentioned in your xxxixth vol. p. 30 Note, and had I time, I could I think mention several Collieries in different and more central parts, of this *primitive and transition* tract of Mr. B.

Mr. B. asserts, p. 264, that "no metallic veins" are found east of his line C C C, in any part of England. At pages 254 and 270 and 407 of the Derby Rep. vol. I. I have mentioned two contrary instances, another is mentioned in your

* The *Wind-Coal* of Bovey, occurring, as is very usual with this substance, "in alluvial ground," p. 141, "separated by strata of clay and gravel," p. 159, underlaid (as I have heard) by alluvial sand and gravel, on a district of *coarse Slate*, has no pretensions to rank with the regular Coal-fields of the "middle district," wherein slate has no place, being a "Transition" Rock, p. 58. The Coal of Portland Isle and Kimeridge, seem to have better claims to be placed in the middle district, than that of Bovey has.

xxxixth vol. p. 498, and I could I think from other districts, increase the list. What Mr. B. calls "subterranean" Forests, p. 11, 205, and 269, viz. stumps of Trees buried in *peat*, are not peculiar to the Lincolnshire and Yorkshire Coast, or even to his "low district," but in every situation from the Land's-end to John o' Groat's, on both sides of the Island; on *flat shores which have neither wasted or increased* by the action of the currents, in modern times, the same phenomenon and others occur, indicative of *the gradual rise of the Sea*. In Sutherland this is proved, by the waves having lately covered with Beach, the hillocks of Coal-pits worked in Queen Elizabeth's Reign. In the Manuscripts of the late ingenious Lecturer, Mr. Waltire, his observations on this phenomenon, on the various Coasts of England, and also of Holland, which he went to examine, are detailed, as I have been informed. Westminster Hall, Boston Church, and perhaps other fine old buildings, being now often flooded some feet deep by the increasing tides, furnish other proofs of the same thing.

The contemptuous boast by Mr. B. (p. 45 of your xliith vol.) of his ignorance of what Mr. Smith may have done, towards a Map of *the Strata of England*, (for as to *faults*, he had no ground for coupling me and Mr. Smith, as appears from your xxxviii vol. p. 441) surely does not seem much calculated to raise his character as a philosophical enquirer after *truth*, or as a liberal historian of the labours of his cotemporaries*, to say nothing of the *interested* views which might be taken of such conduct, from one professional man towards another.

I am extremely happy, however, to be able to state, that the public are not likely to remain long ignorant of Mr.

* Mr. B's eagerness to renew his attacks on the subject of *Faults* (p. 212 and 283) would not permit him to appear totally to overlook me as he has done Mr. Smith, and it is not unworthy of remark, that in the only instance in which I am expressly referred to, for a single Geological fact or inference, it has been done in an unfair way.—After the account of the Derbyshire Mineral Veins had been written for my Report, Mr. Joshua Gregory, the very able and respectable overseer of the Gang Mine near Wirksworth, happening to be in town, I either read or related to him all the most material points therein; on which occasion, and after I had any opportunity of making inquiries of other *Miners throughout the county*, as in most, if not on every other material point was expressly done; Mr. Gregory stated, that "*some of the thickest of the clay wayboards*" divide even the largest Veins, as completely as the Toadstone strata do" (Report I. 245), and for the reasons above stated, I added, "as I am informed by Mr. Joshua Gregory, an experienced miner." Yet Mr. B. p. 226, thus refers to the passage, "Mr. Farey" says, "that where the beds of lime-stone are divided by seams of clay, *these seams frequently cut off the vein as effectually as the thick beds of Toadstone*," omitting all mention of Mr. Gregory, or his and my distinction, that only "*some of the thickest*" wayboards, were here spoken of.

Smith's

Smith's meritorious labours on this important subject, since Mr. John Cary of the Strand has the publication now in hand, and the greater part of a Map of England, Wales, part of Scotland, France, and Ireland (for the sake of shewing the connections of strata) is already engraved, on a scale of 5 miles to an inch, for Mr. Smith's intended publication.

Mr. B. will I conceive find it difficult to shew, that I have asserted that *the* metalliferous limestone (in the singular) in Derbyshire is the very lowest stratum of Rocks in England: for although to suit the purposes of the transition part of his new *Theory*, Mr. B. chuses always to speak of the *four* regular calcareous Rocks, which Mr. Whitehurst and myself have described in the Peak Hundreds, as *one* Rock, yet this won't prevent our seeing, that should *the top* of the first or upper of these Rocks be proved to appear from under Shale-grit and Millstone-grit near Burnsal (as I rather believe it does), yet that the top of the second, the third and the fourth of these Rocks in succession, and more so *the bottom* of the last or lowest of them, in short the whole series appearing in Craven or near it, may still safely be doubted, since no new light is thrown, or confirmation offered in Mr. B's recent work, of such his opinion; it is true he has "repeated the assertion again," at pages 274, 279 and 281.

After having seen the different ranges of Limestone between Lancaster and Kendal, overlies a Slate, which Mr. B. has admitted to be the same Slate with that of Craven; I have now better reasons than when I first wrote, for agreeing with Mr. Mushet (vol. xl. p. 53) in thinking these to be very different Rocks from any in the north of Derbyshire; and to me they seemed, well to answer to the Rocks I had observed W and NW of Ludlow (as already mentioned herein) and had more recently crossed when again leaving the slate, near to Welsh-pool, in my return from Wales.

Mr. B's assertion, that I had nothing to advance in support of my opinion; as to the Peak and the Craven Limestones, but the existence of my "imaginary great Fault," and his question in the next page, as to how the Limestone has passed "over or under" the Fault, too well proves, that this Gentleman is but slightly acquainted, or rather not at all, with my investigations, on the principles of *Faults*: but as this is a subject on which I must further enlarge, I shall introduce the same in a future Letter, and remain

Your obedient servant,

Upper Crown-street, Westminster,
16th July, 1813.

JOHN FAREY Sen.