

CORRESPONDENCE.

FAULTS.

SIR,—If Professor Blake will kindly look at the GEOLOGICAL MAGAZINE, Vol. III., p. 148 and Plate IX. Fig. 9 (1866), he will see a notice of some faults in Malta that do not penetrate the limestone lying below the bed in which they occur. These faults are thus accounted for—"I suppose that the rock, being already jointed, was pressed down before it was quite hard by the weight of the superincumbent strata, and the pressure on each fragment being proportional to the area of the upper surface, those fragments which had the largest upper surface in proportion to their bulk were more compressed than the others, thus forming faults. The broken state of many of the fossils, particularly the *Echini*, in this bed is a proof that it has undergone considerable compression. I may, perhaps, here mention that I consider that all cases of 'reversed faults' will be found nearly to have been caused by lateral pressure." As this was written nearly twenty years ago, I hope you will not mind reproducing it.

F. W. HUTTON.

CHRISTCHURCH, N.Z.

FULLER'S EARTH.

SIR,—I shall feel obliged if you will give notice to the accompanying facts connected with the detergent properties of the fuller's earth,—I mean with regard to its use as an agent in clarifying water, a reference to which appeared in the GEOL. MAG. for February last. These strike me as being the more curious, because, as far as I can learn, they are but little known.

In the fen districts of Cambridgeshire and Lincoln, where the people are entirely dependent upon the discoloured drainage off the peat for their water supply, *fuller's earth*, brought round by dealers, is used to purify the water, rendering it colourless and pleasant to the taste. The method adopted is somewhat after the old fashion in country districts, of placing perforated trays or *latches*, as they were called, containing wood or other ashes, over vessels put to catch the rain.¹

To test the efficacy of fuller's earth as a filtering medium, I have experimented with it upon the mineral water of Flitwick, which is the colour of dark sherry and so powerfully impregnated with iron² as to act upon the palate as alum, with the result that it was made nearly colourless and its strength reduced by one-half.

Muddy water too, if filtered through it, becomes clear and free of sediment. Springs issuing from beneath the fuller's earth are re-

¹ Dr. Thos. Stevenson, Guy's Hospital, has kindly written to say— "fuller's earth is an agent which I conceive would be very useful for the purpose, it is a substance which would clarify, remove organic matter in solution, and also soften by carrying down chalk.

² Professor W. White's analysis gives 144·00 grains per gallon, oxide and carbonate of iron, "a most extraordinary amount and far exceeding the most noted chalybeate springs in the world." E. W. Lewis, upon "The Geology of Leighton and Neighbourhood."

markably limpid and free from earthy impregnations. The interstratification in the rusty brown sands of the white stone (detailed sections of these beds will be given in Survey Memoir on Sheet 46), on which the fuller's earth rests, may be due to the bleaching properties of the fuller's earth with which it is in contact. The Flitwick water comes off peat lying in a valley cut down through the Greensands to the underlying Oxford. There is an enormous quantity of iron in the water (as the analysis shows), encrusting everything over which it flows, and a tufaceous-looking deposit of bog iron ore is being formed of some extent and thickness.

BEDFORD.

A. G. CAMERON,
H. M. Geological Survey.

 OBITUARY.

JOHN FRANCIS CAMPBELL, F.G.S., &c.,

(IAIN ILEACH), OF ISLAY.

John Francis Campbell, of Islay, the bearer of a name well known among geologists some years ago, was born in Edinburgh on the 29th December, 1821. He had high family connections on the side of both parents—his father being cousin to the present Duke of Argyll, and his mother, who died while he was still a youth, being the Lady Ellinor Charteris, daughter of Francis, seventh Earl of Wemyss. By birth he was heir to a large patrimonial estate. This inheritance was, however, lost to him through adverse circumstances shortly after he came of age; and the magnanimous spirit in which through life he bore this reverse of fortune gained him the abiding esteem of the large circle of friends whose regard his generosity of heart and many attractive qualities must in any case have secured.

When, on the death of his father, who several years before had contracted a second marriage, he found himself at a comparatively early age the head of the family, he did everything in his power to promote the welfare of his step-mother and her children. In the year 1855 he joined them in their newly-adopted home at Niddry Lodge, Campden Hill; and, laying aside the study of the law which he had for some years previously pursued, he found occupation successively as Private Secretary to his chief, the Duke of Argyll; Secretary to the Board of Health, to the Mines Commission, and to the Lighthouse Commission,—the two latter employments stimulating him in those studies of Geology and Solar Physics which engaged his attention and effort even in the last years of his life. During the years 1861–1880 inclusive he held in succession two posts in the Queen's Household. Having withdrawn from the Court at the latter date, he afterwards occupied himself till the close of his life with scientific study, travelling, and the social life of his home.

His many journeys in former vacations had taken him several times into Iceland and Scandinavia. On one occasion (1873–74) he passed from Archangel through Russia to the Caucasus, returning