

Thames, at highest 407 feet above the sea. The author compares it with the rubble-beds overlying the raised beaches of Sangatte and Brighton. It is unconnected with any river-course, is not of marine origin, and its materials, where not local, are derived from the southward.

CORRESPONDENCE.

DR. CALLAWAY *versus* MR. G. H. KINAHAN.

SIR,—Mr. Kinahan, in his observations in your current issue on my paper, "On the Rocks South of Wexford," which appeared in your November Number, is, I think, a little too sweeping in his assertions. It is incorrect to say that I pronounced his work wrong without first seeing it. I examined carefully all the localities he was kind enough to point out, and others which seemed likely to throw light upon my special investigation, except the Saltee Islands, which, from their isolation, could have no bearing on the question, and the Crossfarnoge section, which I had not time to visit. It was the less necessary to study the latter, since Mr. Du Noyer's Map favoured my views, and Mr. Kinahan's own descriptions appeared to me to admit of a similar interpretation. I believe the difference between us may be fairly stated thus: Mr. Kinahan argues that there is a passage between the metamorphic rocks and the series which he calls Cambrian (my Pebidian), because these are interstratified with the granitoid and gneissic bands of the former beds of schist similar to the adjoining beds of the latter. I hold that there is no passage, not only because there is a distinct break, but also because the schists associated with the gneiss differ widely from the so-called Cambrians, in mineral characters and degree of alteration; the schists being truly metamorphic (crystalline and foliated), while the "Cambrians" are merely felspathic shales, slates, and grits, which, having undergone some alteration, often bear a superficial resemblance to the true schists. If this statement of the case is correct, the issue between us is largely one of lithology, and the value of our observations will depend upon our respective competence to distinguish between different kinds of rocks. I cannot but think that the loose views which have prevailed, as to what constitutes a true passage between formations, have seriously vitiated much of our current geology.

I am rather surprised that Mr. Kinahan should recommend me to visit Yar-Connaught with a view of ascertaining whether there is a passage between metamorphic and unaltered Cambrian in the area south of Wexford; especially since in the former district, according to Mr. Kinahan himself (*Geology of Ireland*, p. 190), the metamorphic rocks graduate, not into Cambrian, but into "Cambro-Silurian."

I owe Mr. Kinahan an apology for attributing to him a change of front in describing as "Cambrian" rocks which he had, as I thought, previously regarded as "Cambro-Silurian." As he is the author of

the Survey Memoir on the district in question, I naturally inferred that he was also responsible for the Map. He informs me, however, that the Map issued to me by the agents of the Irish Survey is an obsolete edition with which he had nothing to do. I am happy to vindicate Mr. Kinahan's consistency, but I cannot think that geologists will be greatly benefited by being supplied with Maps which a prominent member of the Survey declares to be superseded.

WELLINGTON, SALOP, Dec. 22, 1881.

C. CALLAWAY.

LAURENTIAN ROCKS IN DONEGAL.

SIR,—It is with great reluctance that I feel obliged to reply to the letter of Mr. Kinahan which appears in the current Number of the GEOLOGICAL MAGAZINE, as it might be supposed by some who may have read this letter that I have been endeavouring to take from my late friend and preceptor, Professor Jukes, the credit of having first made the discovery of Laurentian rocks in Donegal, and in other parts of Ireland—a charge which I unequivocally deny.

On seeing Mr. Kinahan's letter in the December Number of the GEOL. MAG. in which he states (p. 575), "While in reality the question" (of the existence of Laurentian rocks in Donegal) "has not been worked out since Jukes first suggested they were Laurentian rocks," I wrote to Mr. Kinahan to ask for his authority for this statement, inasmuch as I had, when reading over papers on the Geology of Donegal, been unable to find anything to support it. The following is a copy of my letter and of Mr. Kinahan's reply:—

"DUBLIN, 6 Dec. 1881.

"SIR,—In the current number of the GEOLOGICAL MAGAZINE there appears a letter in which you state that 'In Donegal we are now told that undoubtedly there are Laurentian rocks, while in reality the question there has not been worked out since Jukes first suggested they were Laurentian rocks.' As I have been unable to discover any suggestion to the above effect in the writings of Professor Jukes, I would be obliged to you to inform me on what authority you have made the above statement.—I am, Sir, your obedient servant,

"To G. H. Kinahan, Esq.

EDWARD HULL."

The following is Mr. Kinahan's reply (by post-card):—

"Letters like that about the Geol. Mag. have no official bearing. I may however tell you to read the first chapter of the Geol. of Ireland written and in print in my book before the Laurentian craze set in.

"7. xii. 81.

G. H. KINAHAN."

On referring to the passage in Mr. Kinahan's book, all I can find bearing on the subject is as follows:—"Rocks older than the Cambrian formation are not known in Ireland; but Jukes suggested that some of the highly metamorphosed rocks of the North of Ireland might possibly be Pre-Cambrian."

It would appear, therefore, that in making the statement contained in the GEOL. MAG. for December, Mr. Kinahan quotes from himself, but there is no reference to any published expression of Mr. Jukes' views here or elsewhere.

It would appear, however, from Mr. Kinahan's second letter, that the whole statement rests on his recollection of conversations on the