

stratified rocks above, indurating the latter, but not contorting them.

The next evening meeting of the Society will be held on November 11th.

---



---

CORRESPONDENCE.

---

ON THE STRATA, NEAR ELY.

SIR,—Mr. Seeley's humorous communication in your August Number, p. 347, has called attention to a paper which I read at Cambridge more than eighteen months ago, but which has only quite lately been printed. Thinking any interest it might have had would have passed away, I have hitherto sent out no copies of it, but I now enclose one to you.<sup>1</sup>

It is fortunate for Cambridge men that they have so near them a section on which differences of opinion may exist; and, if ever the old system of the schools should be revived, a lively disputation might be held in excellent dog-latin on Roswell pit, at Ely.

This is one of those cases where any one who wishes to form an opinion must go and see for himself. Mr. Seeley and his class of students may come to one conclusion, and other observers may surely differ from them without offence.

O. FISHER.

HARLTON, CAMBRIDGE,  
4th August, 1868.

---

THE CHALK OF ANTRIM.

Sir,—It will no doubt be a source of much pleasure to many of your readers to find my friend Professor Jukes entering an appearance at last for the geology of the North of Ireland, and giving us the first instalment, as he did, upon a subject of great interest in your last number. I have no fear but that, in his hands, and those of Mr. Du Noyer, the subject will be exhausted.

Permit me, however, as an observer here to say a word, and ask for some little more light before we abandon, or even finally adopt, the received theory upon the subject of Professor Jukes's article. The phenomena alluded to are seen near this place, where the white limestone occurs with the basalt of Benyvenagh, etc., near the mouth of the Foyle. Now I do think that the concentric coloured bands of the flints may hereafter admit of some better explanation than that of the action of heat, but I object to the deduction of Professor Jukes from the observed facts.

He argues that the basalt (4 in his diagram) could not have indurated the limestone without altering the lignite and clay, and he quotes in the P.S. an experiment, showing that the lignite was so volatile, when treated with red heat in a platinum capsule, as to lose 75.8 per cent. of its weight.

<sup>1</sup> We have reprinted it at p. 407 of the present Number, so that our readers have now the entire case before them as it stands.—EDIT.

We often find lignite in the state described in the indurated Carboniferous rocks themselves, and here we may get some little inkling as to the nature of metamorphic action.

We know that the basalt (4) was very hot; that the lignite clay (3) was hot too; that the flint bed (2) was hot also; and that the limestone (1) was at least very warm. At the time of this basaltic outburst the whole district affected by it must have had a very high temperature indeed, and the lime was deposited in a pasty mass. Now why the lignite was not altered it is not necessary to discuss here. I think a satisfactory reason can be shown, but I will only remark that volatilizing matter in a compressed bed of clay, and in a "platinum capsule," are two very different things; but a strong heat transmitted through the clay (but not sufficient to indurate it) would be quite sufficient to indurate a paste of lime below it. I for one do not believe in the necessity for very great heat in metamorphic action. It has been observed that many substances (minerals) seem only to have to be brought into close contact, to be changed, under pressure, from loose particles to solid rocks.

In a rough way, we observe this, when we break up the rich limestones of the Co. Cork for instance, for road metal, and leave them for years subject to pressure (which is convertible into heat), and when we afterwards break up the mass, we find we have to quarry an exceedingly hard breccia or conglomerate, and can scarcely even disturb it with a pickaxe; but take the basalts or earthy rocks (of which bed 3 in diagram is only the waste), and all we can do will not make a compact mass of them.

We have then ample reason for admitting that the transmitted heat of the superincumbent mass could affect and indurate the lime below, but we must guard cautiously against the idea that the alteration, or induration, or metamorphism of rocks, can only be affected by a fierce heat. It remains yet to be shown that the basalt and the induration of the white limestone "are not connected in the way of cause and effect."

Looking forward with much pleasure and confidence to the labours of Professor Jukes in this new field in Ireland.—I am, &c.,

WILLIAM HARTE, C.E.,

County Surveyor of Donegal.

*County Surveyor's Office, Buncrana, Co. Donegal,  
10th August, 1868.*

---

#### MISCELLANEOUS.

---

DR. FALCONER ON THE HIMALAYAHS.<sup>1</sup>—"The rock formations of the Himalayahs are all primary; the Sub-Himalayan is very recent.

<sup>1</sup> Extract from a letter written by the late Dr. Hugh Falconer, in 1834, to the Rev. Dr. Gordon, of Birnie, N.B., soon after his return from ascending the Jumnootree as far as the hot springs at the sources of the Jumna. See Biographical Sketch, p. xxxi., Falconer's Palæontological Memoirs, vol. i.; reviewed in the present No. of this MAGAZINE, p. 423.