fore, only tend to confusion." The author next pointed out that palæontologically the Coal-measures of Kilkenny, Queen's County, Limerick, Clare, Kerry, etc., were similar to those of Coalbrookdale, Staffordshire, and other places in England.

Mr. W. Hellier Baily, F.G.S., gave a list of the fossils common to both the English and Irish Coal-measures.

Mr. Hull, F.R.S., briefly replied, and referred chiefly to the lower members of the Coal-measures in England, with which he compared the Irish coal.

The Secretary, Prof. McAlister, exhibited the skull of the grizzly bear (*Ursus ferox*), found in digging the Ulster Canal. This led to a discussion on fossil bears, after which the Society adjourned.

CORRESPONDENCE.

RIVER TERRACES, ETC.

SIR,—I make no remarks on the obliging expressions at the end of the Rev. Mr. Bonney's letter (GEOL. MAG., p. 526), but the beginning of his letter *is* of public and scientific interest. He says, "I certainly did not understand that Colonel Greenwood was speaking *solely* (Mr. Bonney's italics) of terraces in closed valleys. This, it appears to me, was by no means clearly brought out in his first letter. With regard to these, I can only say that, owing to the general correspondence between all these terraces that I have seen and those in the open valleys, it seems more natural to refer both to the same cause."

The difference between the two is this, that marine terraces (including those deposited in "fiords") cannot be formed without a *general* cause, that is, without a general subterranean upthrow of the *district*. Whereas inland terraces arise from a *local* cause, that is, flood and deposit caused by rain-water checked at a gorge, and when the gorge, by erosion, is widened and deepened, the alluvium being cut into two parallel terraces.

With regard to my first letter (GEOL. MAG., April, 1871) "speaking *solely* of terraces in closed valleys," the first half of that letter is on marine terraces. The second half begins, "So far in reference to marine alluvial plains," and refers to the difference of the causes of marine and inland terraces. My letter exists in black and white. Has Mr. Bonney written his letter without referring to mine?

BROOKWOOD PARK, ALRESFORD,
2 *November*, 1871.

GEORGE GREENWOOD, Colonel.

ROYAL COAL COMMISSION.

SIR,—In the review of the Royal Coal Commission Report (GEOL. MAG., p. 520, November, 1871) the reviewer has fallen into an error in stating that I reported to the Commissioners on South Staffordshire, East Worcestershire, and Shropshire. By reference to vol. i., p. 27, of the Report it will be found that Mr. John Hartley, of Tong Castle, Shropshire, reported upon South Staffordshire and East Worcestershire. My report only refers to the county of Shropshire (*vide* p. 28),

the charge of which I was intrusted with by Mr. Hartley, one of the Commissioners.

I regret that my evidence on the co-relation of the Shropshire and Staffordshire Coal-fields is not published in detail in vol. ii. Prof. Ramsay has given an importance to it by his remarks (p. 121, vol. i. Coal Commission Report) which it might not otherwise have enjoyed. I hope shortly to arrange for its appearance in print, so that the reader may judge for himself of the reasonableness of my arguments.

ALBRIGHTON, NEAR WOLVERHAMPTON;
November 8, 1871. DANIEL JONES.

RELATIVE AGES OF IGNEOUS ROCKS.

SIR,—On my return from Italy a few days since, I had the pleasure of reading Mr. Allport's article, "On the Relative Ages of Igneous Rocks," in the GEOL. MAG. for October, p. 448. I am obliged to him for directing my attention to an error into which I was led by quoting from my impression of the results of Mr. Forbes's researches on the microscopical structure of basalts, and if I have incorrectly represented them, I sincerely apologize.

I am glad, however, that I have correctly stated the result of Mr. Allport's own observations, with which I was well acquainted through the valuable papers he has contributed to this MAGAZINE, and I take this opportunity of thanking him for the ready assistance he afforded myself when commencing the microscopical examination of rocks. As he has shown, olivine, which was once considered as characteristic of Tertiary or modern basalts, is present either in its primary form or by its pseudomorphs in melaphyres, dolerites, and basalts of various geological epochs; and with reference to Dr. Zirkel, whose name I ventured also to quote, I have it on very good authority that he has arrived at a similar conclusion.

My own observations on the microscopical structure of basalts and dolerites are not sufficiently extended to enable me to come to any certain conclusion as regards the presence of olivine, or the structural peculiarities of rocks of different ages. It is, in the first place, often quite impossible to determine to what geological period or epoch a trap-dyke may be referable. In the case of the Mourne Mountains we have an unusual means for the determination of the relative ages of two sets of basaltic or doleritic dykes, owing to their relations to the granite; and we cannot be far wrong in assuming that the dykes more recent than the granite are referable to the Tertiary epoch, and that those more ancient than the granite are of Upper Carboniferous, or possibly Permian, age. Now, on referring to my notes of the few specimens I have been able to examine microscopically from this district, I find that the crystalline grains of olivine, or its pseudomorphs, are (as far as I can determine) only present in the more recent dykes. The number of specimens is, however, quite insufficient for any general conclusions to be founded on them.

In conclusion, allow me to express a hope that Mr. Allport will not be content with publishing a few papers on the interesting