

bottom, as he does, but neither in respect to them, or to very much more of the facts connected with the North Norfolk Cliff (inclusive of the *true* Forest-bed), can I admit Mr. C. Reid's memoir to be any authority whatever, regarding it, as I do, as greatly at variance with the real state of the case.

As to tracing the masses in the Contorted Drift in a train up to Lincolnshire, which Mr. Reade challenges me to do, the formation containing them has been destroyed over West and North-west Norfolk, and over the area between there and the Lincolnshire Wold, by the subsequent advance of the Land-ice giving rise to the Chalky clay, as delineated in the maps to my late memoir on the Newer Pliocene period in England, but as far as the Contorted Drift can be distinguished in that direction they occur.

June 16th, 1883.

SEARLES V. WOOD.

WEST GALWAY ROCKS.

SIR,—These rocks are referred to at page 657 of the "Text Book of Geology," by Dr. A. Geikie, and it is stated that my classification suggests that the Upper Cambrians pass unconformably into the Llandeilo formation without the occurrence of the thick Arenig rocks of Wales. I presume that my opinions have not been made sufficiently plain, as this eminent geologist has evidently misunderstood my writings on the subject. In the "Geology of Ireland" the classification of Lyell, and which also appeared to be the opinion of Sir A. C. Ramsay, was followed,—the representatives of the Arenig rocks of Wales being included in the Cambrian group, among the Upper Cambrians. But as some of my reviewers suggested that I had ignored the Arenig series, in subsequent writings more details were entered into; as, for instance, in the papers on *Irish Palæozoic Rocks*, Manchester Geol. Soc. April, 1879; *Supposed Upper Cambrian Rocks, Counties Tyrone and Mayo*, Royal Irish Academy, December, 1879; *On the Thickness of the Irish Bedded Rocks*, Royal Dublin Society and Royal Geol. Soc. Ireland, November, 1880, etc., etc. In these and other papers published about that time, the supposed equivalents of the Welsh Arenig rocks are specially mentioned, and the reasons given for supposing them to be equivalents.

How the rocks in the south portion of West Galway can be older than those in the north portion, it is hard to conceive when we know that the former are in part made up of fragments of the latter; that is, the rocks which are said to be oldest are made up of the *débris* of the younger rocks. Furthermore, on account of the remarkable similarity in the rocks and groups of strata that margin on the north-east and south, the rocks of the Bennabeola group of hills, also for other cognizable reasons, I am compelled to believe with Griffith and all the geologists who have examined the country that the rocks of the Bennabeola group of hills must be older than those in the country to the south-east and north of them.

In this south-west Connaught tract of Metamorphic rocks, which includes portions of N.W. Galway and S.W. Mayo, there were two

periods of intense metamorphic action;—one before and the other after the accumulation of the Upper Silurian strata, as has been stated in the Memoirs of the Geological Survey, and in the “Geology of Ireland.” Mr. Symes was the first to suggest that these metamorphic rocks belonged to two distinct geological formations; which was subsequently satisfactorily proved, because at the junction of his and my work, his younger metamorphic rocks graduated into un-metamorphosed rocks in which occur numerous fossils principally of Wenlock types.

G. HENRY KINAHAN.

IRISH DRIFTS.

SIR,—In the April Number of the GEOL. MAG., Mr. Swanston in reference to a former paper of mine on the Irish Drifts (GEOL. MAG. Vol. X. 1873, p. 447) says, that if Mr. Howorth had relied “more on the work of Portlock” “and less on” myself, certain inaccuracies would have been avoided.

The mis-spelling of a name by the substitution of the letter *r* for the letter *v* (an error due to my caligraphy I presume), was hardly worth cavilling about, and the height of the glacial bed at Bovevagh was correctly given in my paper.

Referring to Portlock, I find at p. 157, *Turritella*, *Cyprina*, and *Nucula* (*Leda oblonga*) all referred to in the same sentence, the first species being confined to the bed near Bovevagh Old Church, the next reference, p. 159, says the bed is full of *Turritella* and contains only fragments of any other shell, yet at p. 737 *Astarte multicosata* (*A. compressa*) is recorded. Will Mr. Swanston kindly say what species are represented by these fragments?

After carefully reading Portlock’s chapters, I cannot come to any other conclusion than that he found them all associated together. His special reference to *Turritella* being on account of its abundance at this place and not elsewhere.

I acknowledge that I have not personally examined the beds concerning which I wrote; but inasmuch as no two Irish geologists were in accord upon these beds, and having had the advantage of inspecting collections of species from most of the localities I have referred to, besides an intimate acquaintance with nearly, if not quite all the papers that have treated upon the subject, and the use of communications, lists of species, and parcels of unsorted stuff sent by various geological friends, I wrote with a view to bring together all that had been done up to that time. If Mr. Swanston will point out my inaccuracies, being on the spot, he can easily do so, and the cause of geology will be served.

Should Mr. Swanston be desirous of publishing a list of Irish Post-Tertiary fossils, a work much needed, I shall be very happy to assist him.

ALFRED BELL.

With the deepest regret we have to announce the death of the President of the Royal Society—Mr. W. Spottiswoode, LL.D., F.R.S., on the 27th of June, 1883, aged 58 years. The death is also announced of the former President, General Sir Edward Sabine, aged 95 years.