

I am not aware that I ever held such an extraordinary view, I ask in what part of my letter this supposition is supposed to be contained, My reasoning is altogether based upon the *mean* thickness and superficial extent of the sedimentary strata of the earth, or otherwise their actual bulk, so the question as to whether Mr. Wallace has under or over-estimated the *maximum* thickness is quite immaterial.

Your correspondent says in conclusion that he has "never seen a *single fact* that tells against the view of the permanency of oceanic areas." I feel that this statement of what he "cannot see" is conclusive, and that further argument is useless.

Nov. 3rd, 1883.

T. MELLARD READE.

#### MIDDLE HEADON AND MEADEND BEDS OF HORDWELL CLIFF.

SIR,—What could have induced Mr. Keeping to charge my father with error, and with saying that a bed which he had described as underlying the *Upper Freshwater only*, underlay the *Lower Freshwater*?

One of the objects of my father's paper was to correct antecedent errors, as to the extension of the Lower Freshwater into Barton Cliff (where Lyell had asserted that it occurred), and to show that the marine bed theretofore known only at Headon Hill, where it occurred between the Upper and Lower Freshwater, and was then known as the "Upper Marine" (now called the Middle Headon), but which had not been observed in Hordwell Cliff (and indeed had been expressly stated by Lyell not to occur there), did occur there, viz. at the ravine near Milford, 10 to 12 feet above high-water mark; and my father proceeded to describe it as occupying exactly the same position, relatively to the Upper and Lower Freshwater, that it did at Headon Hill, *i.e.* between the two, which is the position Mr. Keeping claims for it.

As the only bed which answered to Mr. Keeping's version of my father's description, viz. close to the beach and underlying all the Lower Freshwater, was the one which my father had described at Meadend, I naturally took him to mean this; for he named no locality.

"Paddy's Gap" is this ravine where my father described the then called "Upper Marine" as occurring, and *overlying* the Lower Freshwater, "the remaining portion of the Cliff to the eastward being, he considered, more from position than from its organic contents, the *Upper Freshwater*;" and from Mr. Elwes' letter, it appears that he, Mr. Keeping, Mr. Dawkins, Mr. Willett, and Mr. Shore have found the bed exactly in the position my father assigned, both geologically and actually; for even to the comparatively unimportant particular of its position, 10 to 12 feet above high-water mark, Mr. Elwes's statement that it is *in situ* "13 feet above the shore" shows that my father was right, and that what he described was no slipped mass as Mr. Keeping asserted, and as Mr. Elwes, strangely enough, repeats. Instead therefore of these gentlemen having, as they think, proved my father's error, they have demonstrated his accuracy in all respects.

As Mr. Keeping has distinctly stated that my father was "clearly wrong" in putting the Lower Headon Freshwater above this bed, and that he had been unable to convince him of his error for reasons which he assigns (my father, however, never had any communication with him, I am sure, on this, or, I think, on any other subject), I trust that he will see fit to apologize to my father's memory, and bear witness to his accuracy instead of impugning it.

The Paddy's Gap bed is the one which Prof. Judd in his letter says "appears to have been first discovered by the late Mr. Edwards about the year 1840." That at Meadend, on the contrary, was discovered by my father in July, 1843, and was unknown to Mr. Edwards until he joined us a fortnight after. It is an important bed, for it shows the transition from the Upper Eocene to the Lower Oligocene in England, and seems to me to have the same "gisement" as the "Laekenian" of the Belgian area, though from the latter (as well as the "Bruxellian" below it, which is regarded as the equivalent of the Barton Clay) being purely marine, while the Meadend Bed is very fluvio-marine, there are not many species in common; and there are more common to it and the "Sables moyens" of the French area. It is rich in fossils, and it is most desirable that a proper list of the shells from it should be published. Were I physically capable of properly examining the Edwards collection at Kensington, I would make this; but I cannot trust merely to the materials I have, and which alone are available to me to make it.

Nov. 14th, 1883.

SEARLES V. WOOD.

#### THE RUSSIAN TERTIARY.

SIR,—Dr. Trautschold commences his article in your November Number, by referring to geology having entered the order of exact sciences, and concludes it with the remark that "evidently during the whole Tertiary period the land [of the northern half of Russia] was deprived of vegetation till the Diluvial period," and an inquiry whether this should not be attributed to a great accumulation of ice in this part of the earth during the Tertiary period.

Considering that the vegetation of a temperate climate flourished during Eocene or Miocene times (probably during both) in Spitzbergen, in lat.  $80^{\circ}$ , and that the Tertiary beds of the province of Cherson in lat.  $51^{\circ}$ , in South Russia, contain a molluscan fauna of a tropical character, about half the species published from which are identical with, and nearly all the rest closely allied to species from one or other stages of the Eocene, and Oligocene, of England, France, Germany, and North Italy, and that this Eocene and Oligocene extends, between latitudes  $44^{\circ}$  and  $52^{\circ}$ , across the meridians from  $0^{\circ}$  to  $35^{\circ}$  (east of Greenwich), the longitude of Cherson, while Spitzbergen lies between the meridians  $10^{\circ}$  E., and  $25^{\circ}$  E., it seems to me simply impossible, upon any hypothesis of climate whatever, that this inquiry can be answered in the affirmative; and that the making it is scarcely in accordance with that exactness which Dr. Trautschold assigns to the science of geology.

Nov. 14th, 1883.

SEARLES V. WOOD.