

published at intervals running over sixteen years, on the origin of, and on changes in, serpentine, chrysotile, and other related minerals.

Nor is there the least notice of any of the phenomena which we ascribe to chemical changes (methylosis) in rocks.

My Memoir on Jointing and Slaty Cleavage, published in the Transactions of the *Royal Irish Academy*, vol. xxv. pp. 605-662, 1875, is altogether unnoticed.

I have in the last place to mention that all reference to my *Monograph of the Permian Fossils of England*, also some subjects introduced, are omitted in the *Text-Book*; although the latter contains (p. 752) some figures of shells copied from it, but without acknowledgment.

Under the conviction that Dr. Geikie doubtless desires his *Text-Book* to contain fair and correct references to the labours of his colleagues on the subjects he has touched upon, I am disposed to believe that he will not overlook these notes when preparing, as pretty certainly will be the case, another edition of his valuable work.

WILLIAM KING.

GLENOIR, NEAR GALWAY, Nov. 5, 1882.

THE RIGIDITY OF THE EARTH.

SIR,—In his letter in the November No., 1882, "On the Depression of Ice-loaded Lands," the Rev. O. Fisher laments the disagreement between the mathematical physicists and the geologists respecting the rigidity of the body of the earth. But if the earth have a *viscous* rigidity, there need be no incompatibility between their respective contentions. The character of a viscous solid is that, though it may seem to be quite rigid when tested by a short-lasting stress, it may be capable of yielding very considerably, in some cases almost indefinitely, to a much smaller stress continued for a sufficiently long time. Sir William Thomson's conclusion as to the steel-rigidity of the earth is founded upon the magnitude of the short-period ocean tides, classing with these even the monthly tides due to the ellipticity of the moon's orbit (he has given up the argument from precession). But he himself declared in his Address to the Physical Section of the British Association, at Glasgow, in 1876, that the absence of any indication of a 18.6-year ocean tide, depending on the revolution of the moon's nodes, could not be easily explained without assuming or admitting a considerable degree of yielding in the body of the earth. That is to say, our earth, as a whole, is a viscous, or practically viscous, solid, which, notwithstanding its apparently very high rigidity when tried by reciprocating stresses of short period, may be able to yield to the full satisfaction of geologists to a sufficiently long-continued pressure, such as that of a great depth of ice in high latitudes during the Glacial period. I omit some other considerations which go to strengthen this conclusion.

M. H. CLOSE.

UNIVERSITY CLUB, DUBLIN, Nov. 7, 1882.