

“views” on the rocks until after the examination of years, and the views first published are those I believe in still. In the *Times* report of the Brit. Assoc. Meeting, York, an Archæan geologist called me a geological Ishmael. I think, however, if he had called me a Knox or a Luther or a Calvin, this name would have been more appropriate; my hand not being against every one; but only against those that promulgate errors.

OVoca, Nov. 4th, 1881.

G. H. KINAHAN.

#### RATE OF DENUDATION OF LAND BY RIVERS.

SIR,—Mr. Tylor's astounding calculation, that during the “Pluvial” period “the mean denudation” of the land was *nine inches per annum, or 729 times its present rate*, has filled me and probably other geologists with profound astonishment. Having just perused Mr. Darwin's most excellent book on Mould and Earthworms, it has occurred to me to ask Mr. Tylor to suggest what became of earthworms during his “Pluvial” period. Mr. Darwin calculates that ten tons of earth per annum per acre is frequently brought to the surface in the form of worm casts, and that the superficial soil has passed *again and again through the bodies of the worms*. Nine inches of soil over an acre of land would weigh, at a carter's estimate of one cubic yard to the ton, not less than 1210 tons.

No mould could possibly form under these circumstances, except perhaps in deltas, as it would be removed 100 times as fast as made. But I am really understating Mr. Tylor's estimate, as his nine inches of denudation means solid rock, or nearly double, or say 2000 tons per acre per annum.

T. MELLARD READE.

PARK CORNER, BLUNDELLSANDS,  
Nov. 9th, 1881.

#### LAURENTIAN (?) ROCKS, IRELAND.

SIR,—In the epitome of the paper read on these rocks at the Brit. Assoc. York, by Prof. Hull, you end it by stating that I suggest there are Laurentian rocks in the Co. Tyrone. I cannot understand why I am to be made an advocate in favour of the present Laurentian mania. More especially as in my paper read before the Royal Irish Academy, and in a recent paper in the *GEOL. MAG.*, I believe I have brought forward good reasons for supposing these Tyrone rocks to be of Cambrian age.

G. HENRY KINAHAN.

OVoca, Nov. 5. 1881.

#### MISCELLANEOUS.

THE GEOLOGICAL SURVEY.—In the *GEOLOGICAL MAGAZINE* for January, 1881, we drew attention to some recent Parliamentary statements concerning the Geological Survey. Since then Mr. Mundella has announced that the solid Geological Survey of England and Wales on the one-inch scale will be completed in two years and a half, while a considerable portion of the solid and superficial Survey of Ireland will be completed in seven, and that of Scotland in eleven years. He was informed that the re-survey for superficial geology of those areas of England which were originally surveyed for solid geology alone, would take about twenty years. It was hoped that within the next few months the re-organization of the staff for remaining surveys would be completed, and no efforts would be spared to finish the work at as early a date as possible.—*Standard*, Aug. 19.