iferous strata far beyond what had hitherto been regarded as their northern limits in these islands.

Second.—It affords a new and very striking illustration of the enormous denudation which must have preceded the outpouring of the Tertiary lavas of Scotland, and of the remarkable series of accidents to which the preservation of many vestiges of the geological formations in the Highlands are due.

Third.—It gives the geologist a base to the grand series of Poikalitic (Permian and Triassic) rocks in the Highlands.

Fourth.—It affords us, moreover, another link towards the completion of the 'Geological Record' in the Highlands; which now embraces representatives of *all the great geological formations except the Upper Silurian.*

I must of course postpone the description of these interesting beds, and of their wonderful relations to the surrounding rocks, together with the discussion of the considerations which their occurrence suggests to the geologist, till the publication of the third part of my memoir, "On the Secondary Rocks of Scotland."

JOHN W. JUDD.

ÅSAR.

SIR,—Will you allow me, a foreign hammerer, to advance in your MAGAZINE a theory on the above-named subject.

Sweden (and all Scandinavia) was once covered by a sliding ice-sheet, moving towards a lower level. In our days we have no such thing; the ice-sheet disappeared by being melted away; indeed, some of it may have been carried off and floated away by a rise in the level of the sea, but not all, for this might require a rising of the sea equal to $\frac{9}{10}$ the thickness of the ice (1000—7000 feet?) + the elevation of the ground, or a rising of several thousand feet. I refer to the last sheet of land-ice, but I do not deny an earlier melting and the existence of icebergs, floating-ice, etc., nor do I deny a submergence of the land.

This ice-sheet disappeared, I venture to suppose, by melting away. Nor is such general melting of glaciers any strange thing, for we may find it so in the Alps, in Greenland, etc.; only, of course, the increase is usually equal to the decrease of the ice.

The melting probably always goes on at the bottom of a glacier —that at the surface mostly during summer-time.

At the bottom of a large and vast ice-sheet or mer-de-glace, such as that supposed to have covered Sweden, the melting will hardly be uniform all over, but may be heightened, where the ice passes depressions in the ground and valleys, especially those with running waters; along such places, the ice being greatly reduced in mass, there may be a flowing towards it from one or both sides of the ice-sheet, to compensate this loss and want of stability; probably here much detritus was accumulated, either at the bottom, or in the ice, or upon its surface; and this surface may have had depressions, sometimes with running waters and even lakes, and in these depres-

sions deposits may have been formed, resting upon the surface of the ice or else upon the ground itself, and in lakes dammed up by the ice; and currents, rapids, falls of water in and through the ice may tear the sand-and-gravel drift and till.

But the ice-sheet is constantly moving on towards a lower level; the accumulations or deposits on and in the ice must go along with it downwards and forwards to its termination to be finally heaped up as ridges, Åsar, along the course the whole has taken, down to the disappearance of the ice. Some of the åsar may have been formed in this way, and while the ice was retreating from a lower level or was melting away; but undoubtedly others were deposited in a different manner, for instance, as banks heaped up by the sea along ancient coast-lines. (See A. Erdmann, Bidrag till kännedom om Sveriges quartära bildningar, Stockholm, 1868, and Atlas, pp. 84–131; see also J. Geikie, The Great Ice Age, London, 1874, pp. 385–397.)

I cannot feel certain that the theory here advanced is a new one. So many geologists having studied these phenomena, many different interpretations of the subject are sure to have been made; but if my recollection serve me well, this may be a new one. But I would not omit to refer here to the theories of C. W. Paijkull, of Mr. A. E. Törnebohm, and of H. v. Post, as well as that of Mr. A. Stoppani, Corso di Geologia, 1873, ii. 1195: "Gli antichi ghiacciai si gettarono attraverso i confluenti, arrestandone le acque, etc."

RÖNNE ON BORNHOLM, DENMARK, *October* 25, 1874. M. JESPERSEN.

WATER SUPPLY AND "DIVINING RODS."

SIR,—My friend Dr. S. Palmer, F.S.A., of Newbury, informs me that in sinking a well in "Bussock Camp," at the north end of Snelsmore Common, on an outlier of Tertiary beds, about three miles north of Newbury, Berks, the diggers came upon a bed of fossil Oyster Shells at a depth of forty feet. This fact establishes the existence of the Ostrea band in the bottom bed of the Woolwich and Reading series further in that particular direction than previously known.

The search for water proved fruitless at that depth, and the well has been filled in. The "divining rod" had been here used by an "expert," who had the reputation of having been most successful at Sandleford, near Newbury! And this fact seems to prove a more southern and easterly extension of the ignorance of water-seekers than previously noticed in the remarks on this semi-superstitious and wholly ignorant procedure, either in the "Proceedings of the Bristol Naturalists' Society," new series, vol. i. p. 60, etc., or the GEOLOGICAL MAGAZINE, Vol. IX. p. 528. The case of the erratic "dowser," met with by Mr. J. E. Taylor, on the London Clay in Essex (*ibid.* p. 576), certainly proves a still further extension of these conceits and impositions. Let us hope, however, that such easterly instances are evanescent outliers or ultimate attenuations of the old senseless practice. T. RUPERT JONES.

YORKTOWN, *Nov.* 9, 1874.