and an annual rise of the sea of 3 inches of sea-level, a delta of 729 feet could have been formed by the deposits obtained by the overflow of the river-water, with the assistance of some material thrown back by the sea into the estuary or delta.

The deltas of all our great rivers are thus later than Post-Pliocene, and of the age of the Pluvial period. No part of any of these deltas has been uplifted by volcanic or subterranean agency above the general level of the delta; this is another proof of recent origin.

ALFRED TYLOR.

ROCK-BASINS IN GRANITE.

SIR,—In reply to the query of Mr. T. Cragor in your last number, I would refer him to a paper "On the Rock-Basins in the Granite of the Dartmoor District, Devonshire," by G. W. Ormerod (Quart. Journ. Geol. Soc. vol. xv. p. 16). In this paper the author brings forward reasons for considering that the Rock-basins were formed by atmospheric action, which commenced in irregularities on the surface of the granite and was probably assisted by a globular or spheroidal structure in the rock. H. B. W.

JOINT-STRUCTURE AT GREAT DEPTHS.

SIR,—Mr. Crosby (GEOL. MAG. Sept. 1881, p. 416) explains the absence of joint-structure at great depths by attributing the formation of these divisional planes to the cooling of strata from a temperature which prevented them from becoming jointed by contraction before they were thoroughly desiccated and consolidated. This appears to me to explain what occurs in jointed conglomerates, in which hard quartz and other pebbles are often "cut through by joints, as neatly as if they had been sliced by a lapidary's wheel." But, if this is the cause of jointing, why have we joint planes continuous in direction over wide areas, cutting rocks up into cuboidal or polygonal masses, and not division along planes of least resistance, such as would form the prisms so familiar in rocks which have cooled from fusion or from a high temperature like the columnar mud of Tideswell dale.

The conditions suggested by Mr. Crosby appear to me to be such as would produce columnar jointing, viz. slow, regular contraction in a more or less homogeneous rock; why then is not the jointing of this nature? Seeking purely for information on this head, I am yours, &c., W. W. WATTS.

SIDNEY COLLEGE, CAMBRIDGE,
October 11*th*, 1881.

DISCOVERY OF COAL-MEASURES UNDER NEW RED SANDSTONE AND ON SO-CALLED PERMIAN ROCKS AT ST. HELEN'S, LANCASHIRE.

SIR,—Permit me to point out that the author of this paper in the current number of the GEOLOGICAL MAGAZINE, in identifying the limestone bands met with beneath the New Red Sandstone at Winwick in 1879, with the Ardwick Limestones of the Manchester Coal-field, does not state that this identification was made by me

in May of that year, when Mr. A. Timmins, Stud. Inst. C.E., kindly showed me the series of specimens, at Runcorn. Mr. A. Timmins had himself recognized the fact that the beds in question were *limestones*, and had, in fact, made a rough analysis of them, which I urged him to send to the Manchester Geological Society, with a note from myself as to their geological identification, which I at once recognized—having shortly before, through the courtesy of Mr. Vivian, of the North England Rock Boring Company, examined the fine series of cores obtained at Clayton Vale, east of Manchester, where the *Ardwick Series* was penetrated. In the fifth report of the Underground Water Committee of the British Association, read at Sheffield in August, 1879, and printed in the volume for that year, I alluded to my identification, and in June, 1880, I published the detailed section of the Winwick boring, drawn up from my notes of the samples, in my paper published in the Manchester Geological Society's Transactions, on "Further Notes on Triassic Borings near Warrington." From which, perhaps, I may be permitted to quote the following passages. "These Coal-measure deposits occurring at a depth of only 340 feet or 113 yards from the surface, cannot be regarded as a discovery of the highest commercial interest, for looking to the westerly attenuation of thickness of the Coal-measures of South Lancashire, to which I have already drawn the attention of the Society, there can be little doubt but that the Manchester Coal-field will occur at a less depth beneath the limestone than at Manchester, in which case a valuable and workable Coal-field may be under the London and North Western Railway at Parkside, where a boring has recently been carried out," . . . . and, "should the limestones of Winwick belong to the same horizon as those of the Manchester Coal-field, it is in the highest degree probable that another 600 feet, and possibly much less, would reach the Openshaw Coal, or its equivalents."

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Chas. De Rance, F.G.S.,
Assoc. Inst. C.E.

MR. H. H. HOWORTH ON THE SUDDEN EXTINCTION OF THE MAMMOTH.

Sir,—As one of a numerous body of students of that most fascinating science Geology, I venture to address you a few lines to ask you to use your influence to induce writers, at least in your own Magazine, to make use of their own language in their scientific papers, and so to largely to increase the number of their readers. In your September Number is a paper on a subject in which I—and many other equally unlearned students of nature—take much interest. From the cause above named, all who are not thoroughly versed in both Latin and German are bound to take on trust evidence that is quoted in support of the theory brought forward, which evidence, had it been given in English, would have considerably increased the interest in the paper of myself and many other of your readers. Why should Englishmen, more than any other men, err in this way? We have a language much more expressive