whose parents can afford them an, in some places fancy, education that can in the nature of things be only attainable by the rich?

In view of the discussion upon the proposed Teaching University for London it is to be hoped that these things will not be overlooked amid the local questions and rival institutions. It is to be hoped on the one hand that those who will have the privilege of learning in the greatest city in the world will not be deprived of the personal influence of its greatest men by relegating these to some haven of laboratories where no bracing breath of students shall interfere with the inmates. On the other hand it is to be hoped that London will so far honour itself as not to be content until it sees its University a centre of thought and investigation from which shall radiate new ideas and discoveries to enlighten and benefit the whole nation. Before I close there is a matter of great importance to which I fear sufficient importance is not attached by those who are directing this matter and that is the great objections there are to mixing up Universities and Colleges with examining boards. We here in Trinity College, Dublin, suffer very much from the fact that a considerable number of our students never reside here, but only come over for periodical examinations. We only suffer in one way, while if London adopted this abominable arrangement it would suffer in two ways. We suffer because our degree is much less valued than it would be if all our students were compelled to reside. All our students have not that education got by friction with their fellows and by contact with trained intellects which no examination can test, and which is such a valuable training, and in consequence our degrees are the less valuable. London would suffer in this way, and it is a very serious way too. In addition to this London would suffer from the inordinate importance that would be attached to extern examiners if the University examined London and extern students. So far we have escaped this danger, but it is inevitable in London because the extern element there would be large, influential and organized, while with us it is of little strength. The result would be to perpetuate and intensify that horrible teaching for examinations which is so necessary an evil in the case of the majority of students, but from which the leaders of thought should be exempt. It matters not that the syllabus nor even that the very questions are approved by the professor, if the examination is conducted to any serious extent by an independent mind. The student will seek a coach, who will probably teach him very well indeed, but whose whole view of learning will be of the passing-an-examination type, and who will infect his pupil with this miserable disease. Gradually the professor himself will be involved in the vortex, and the whole University will gradually look upon the passing of examinations as the end of life for students, and this is the acme of coaching and the bathos of education.

GEO. FRAS. FITZGERALD.

Trinity College, Dublin, November 25.

The Stars and the Nile.

AFTER reading Mr. J. Norman Lockyer's papers on the connection of the orientation of Egyptian temples with the heliacal rising of certain stars, I was interested to find that a custom still exists in the neighbourhood of the Second Cataract having a strong resemblance to the old Egyptian custom.

The Nuba people of this part foretell the first rise of the Nile by the heliacal rising of the Pleiades, or as they call it, "Turáya." For Sirius they have no special name, calling it merely "the driver" or "follower" of the three stars (Orion).

It must be remembered that the first sign of the rise at Wady Halfa occurs at the beginning of June, reaching Assouan about a week later, but for some days the increase is very slow, and scarcely perceptible except in the readings of the Nile gauges.

These Nuba people still preserve in their language many ancient Egyptian words, and possibly we may have here a trace of the old custom, the Pleiades being taken instead of Sirius on account of the earlier date of the rise in the district of the Second Cataract than in Egypt itself.

H. G. LYONS, Capt. R.E.

Cairo, November 14.

A Palæozoic Ice-Age.

THE account by Dr. Wallace in NATURE (p. 55) of glacial deposits recently discovered in Australia is a most important and welcome addition to our knowledge. But to us the surprising circumstance is that Dr. Wallace appears quite unaware of the fact that this is only an addition to a great series of discoveries, by no means confined to Australia, affording evidence of a Palæozoic ice-age. That the deposits near Sandhurst are Palæozoic may, in the absence of any indication to the contrary, be assumed, since they are clearly similar in position and character to the well-known boulder beds of Bacchus Marsh, and these have been correlated with the strata containing ice-borne fragments, amongst the marine beds west of Sydney and also at Wollongong to the southward, and in Queensland to the northward. All these beds have been shown to be upper carboniferous. A good account of the facts known up to 1886 may be found in Mr. R. D. Oldham's paper on the Indian and Australian coal-bearing beds (Rec. Geo. Surv. Ind. xix. p. 39).

It is scarcely necessary to refer to the fact that extensive Palæozoic glacial deposits, of the same age as those of Australia, have been found in several parts of India, some as far within the tropic as lat. 18° N., others in the Salt Range of the Punjab, that the famous Dwyka conglomerates of South Africa are similar and in all probability contemporaneous, and that boulder beds of very possibly the same geological date have been observed in Brazil. We should not have mentioned these but for the fact that the idea of a Palæozoic ice-age is apparently novel to Dr. Wallace. We do not think, however, that the reason why so well-informed a naturalist is unacquainted with geological data long known to many is any mystery. It has become an accepted article of faith amongst most European geologists (there are, of course, exceptions) that no ice-age occurred before the last glacial epoch, just as it is part of the geological creed that the carboniferous flora was of world-wide extension, and as it has become the prevailing belief that the deep oceans have been the same since the consolidation of the earth's crust. Now the discoverers of glacial evidence in the carboniferous beds of India and Australia also assert that the carboniferous flora of those countries differed *in toto* from that of Europe and resembled the jurassic flora of European regions, and some of them add that the great southern flora of South Africa, India, and Australia must have inhabited a vast continent, part of the area of which is now beneath the depths of the Indian Ocean. Partly from Indian and Australian geologists being regarded as heretics geologically, partly from other causes, the evidence of ice-action in India and Australia has been generally ignored. No better proof could be afforded of the fact that European geologists in general have omitted to notice the series of discoveries in the southern hemisphere and in India than the publication of Dr. Wallace's paper.

The glacial evidence as it now stands is extremely interesting and perhaps transcends in importance that of the Pleistocene glacial epoch. For as the effects of the carboniferous ice-age were felt within the present tropics, either the earth's axis of rotation must have shifted considerably, or else the refrigeration of the surface must have been due to a cause distinct from that supplied by the late Mr. Croll's theory, even when supplemented by Sir R. Ball's amendment.

Our own interest in the whole subject is chiefly due to the circumstance that we happened in 1856 to be the first who met with the ancient boulder-bed in India, and suggested that it might be explained by the action of ice. The discoveries in Australia and South Africa were of course quite independent of those in India, but were, we believe, slightly later in date.

November 20. W. T. BLANFORD.
HENRY F. BLANFORD.

Geology of Scotland.

MAY I supplement Prof. Green's history of geological mapping in Scotland (NATURE, vol. xlvii. p. 49) by pointing out that Mr. Cruchley published, on March 23, 1840, "A Geological Map of Scotland by Dr. MacCulloch, F.R.S., &c., published by order of the Lords of the Treasury by S. Arrowsmith, Hydrographer to the King." This fine map is on the scale of four miles to an inch. From the omission of "the late" before MacCulloch's name, it seems possible that the plates were in course of engraving before his death in 1835.

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