

## THE GLACIAL DEPOSITS OF THE VALLEY OF THE AMAZONS.

SIR,—I have been much interested in the various articles on the subject of Glaciers published in the Magazine, and all the more interested as I find the statements supported by facts. I take the liberty of sending you a notice of some discoveries recently made, which bear particularly upon the origin of the great clay formation spread over the Valley of the Amazon. It is well known that Professor Agassiz, both before and after his visit to Brazil, considered it "Drift," the accumulation of detritus brought down from the Andes by glaciers. His theory rests mainly on the supposed absence of fossils, neither he nor your countryman Mr. Bates finding any. But in my late expedition across the continent I discovered a fossiliferous deposit at Pabos, and since then my valued correspondent, Mr. Hauxwell, at my suggestion, has explored in other places on the Amazon, and found them in abundance near Cochaquinas, on the south side of the Morsion. The shells are all found in the coloured plastic clays, which stretch, unbroken, from the foot of the Andes to the Atlantic. I have placed these interesting fossils in the hands of our eminent palæontologist, T. A. Conrad, Esq., of Philadelphia, for determination, and the result is as follows: 17 species, all extinct; 9 genera, six extinct.<sup>1</sup> The forms are all very singular and unique, and from their extermination, especially of one genus, with all its representatives, we infer that the formation cannot be late Tertiary, and may be Miocene. The species indicate fresh or brackish water life; and the perfect preservation of the most delicate parts, some specimens retaining even the epidermis, shows a quiet lake or estuary. There certainly are no indications of a "grinding glacier."—I am, yours, etc.,

JAMES ORTON.

VASSOR COLLEGE, POUGHKEEPSIE, NEW YORK,  
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MISCELLANEOUS.

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PETROLEUM.—In the Records of the Geological Survey of India, there appears a notice by Mr. A. B. Wynne, F.G.S., of the occurrence of Petroleum, (near the village of Sûdkal), near Futtijung, west of Rawul Pindi, in the Punjab. As usual in the Punjab, the Petroleum at this place occurs in the Nummulitic Tertiary rocks, which consist mainly of grey grits and sandstones, with some bands of grey fossiliferous limestone, interstratified with thick zones of red shale. The Petroleum pits are bounded by rocky ridges of slight elevation, on both sides of which the Tertiary rocks are much contorted along narrow axes, possessing considerable regularity of strike, and dipping at high angles. Fossils occur close by the Petroleum pits, as well as to the north and south of them. Orbitolites are by far the most numerous, but fragments of bivalve shells are also to be found, together with teeth of sharks and large bones. It is understood that the mineral oil produced from this locality is to be used for lighting the Station of Rawul Pindi with gas.—H. W. B.

<sup>1</sup> The living genera are *Hemisinus*, *Bulimus*, and *Neritina*.