

that in the Glacial period they seemed to have been accompanied by subsidence, and that Greenland appeared to be sinking at the present day under its ice-cap. On the 21st June of this year, Mr. T. F. Jamieson, F.G.S.,¹ read a paper before the Geological Society, the published abstract of which represents his view of the subject to be "that the depression of the land was caused by the weight of ice laid upon it, and the re-elevation by the disappearance of the ice." I do not know whether Mr. Jamieson claimed complete originality for his hypothesis, but in any case the evidence collected by him must be of great value and is very welcome.

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GREAT POST-GLACIAL FLOODS AND THE PLUVIAL PERIOD.

SIR,—In reference to Mr. H. H. Howorth's statement (see *GEOL. MAG.* Sept. p. 417) that Mr. Belt urged that these Floods (Gravel-Period) were caused by the pounding back of the European rivers, and the consequent formation of a European lake by a Great Atlantic Glacier (see Thomas Belt's papers, *Quarterly Journ. of Science*, No. 44, Oct. 1874, and July, 1878, pp. 316-360), I may observe that (in the *Quart. Journ. Geol. Soc.* 1868, vol. xxv. p. 10) I had previously stated that, "the gorging of ice at the mouth of the Thames, Seine, and Somme, may have assisted in the production of some of the remarkable gravel-beds in these rivers."

With regard to Mr. Howorth's criticisms on the uniform motion of rivers (*op. cit.* p. 419), I may observe that if the water in a navigable river did not tend not only to a uniform mean motion, but to uniform maximum and minimum motion in the respective parts of its channel, floods or short water would ensue.

I particularly excepted the case of floods, because they occur whenever the motion of the stream at any part deviates by excess from its uniform mean motion. If Mr. Howorth will refer to my paper in the *Phil. Mag.* 1853, pp. 258-274, he will find that I have particularly noticed the inequality of the current in rivers, and show that the origin of horse-shoe bends is attributable to inequalities of rainfall, and of speed of the water in different parts of its channel.

From Mr. Howorth's criticisms of the various opinions, explanations and theories of Sir Charles Lyell, Messrs. Prestwich, S. V. Wood, T. Belt, Croll, myself, and others, I conclude that the explanations of these geologists all fail to satisfy him; nevertheless he is ready with a theory of his own, calculated to meet all the difficulties of the student of Quaternary Geology. This, so far as I am able to comprehend it, is a modification of, but far transcends the wildest speculation of M. Adhémar.

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¹ See the full text of Mr. Jamieson's paper, *GEOL. MAG.* Sept. and Oct. 1882, pp. 400 and 457.—EDIT. *GEOL. MAG.*