

**THE NORTH POLE, THE GREAT ICE
AGE, AND THE DELUGE: WITH AN
APPENDIX ON THE DIFFERING
MAGNETIC PHENOMENA OF THE
SOUTH**

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W. B. GALLOWAY

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*APPENDIX ON THE DIFFERING MAGNETIC
PHENOMENA OF THE SOUTH*

BY

W. B. GALLOWAY, M.A.

"Out of whose womb came the ice?"—JOB

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THE NORTH POLE, THE GREAT ICE AGE, AND THE DELUGE

SECTION I.

THE GREAT ICE-AGE continues to supply ever fresh material to the genius of modern geologists, and treasures of intellectual speculation are still being added to the rich accumulations of the last fifty or sixty years.

Crescunt divitiæ, tamen
Nescio quid curtae semper abest rei.

But, all other suggested causes of the supposed glacial Epoch having failed to give satisfaction,¹ "another possible cause" of it has been propounded, in a paper read before the Victoria Institute, by Professor Edward Hull, LL.D., F.R.S., F.G.S., which is published in the Journal of that Institute in the last year (1899)², and has been followed up by him in continuance in another paper, in February of the present year. Dr. Hull proceeds on the same general idea with some

¹ Such as the astronomical theory of Dr. Croll favoured by Sir C. Lyell, and also by Professor Geikie. "*Great Ice Age*," Chapters ix. and x., and Journal of the Victoria Institute, vol. xxvi. page 221.

² Vol. xxxi. No. 123, p. 141.

previous speculations of Mr. Warren Upham, a member of the Geological Survey of the United States, in supposing that the mysterious world-wide freezing had been attributable to some former great elevation of land in the Northern region such as to produce extreme and widely extended cold¹: but Dr. Hull endeavours to connect that conjectural cause with deductions from soundings taken in the Atlantic by the British and the American navies, and partly also by private enterprise.

He informs us that a submerged terrace has been discovered, stretching out under the Atlantic from the eastern coast of America to the hundred fathom line, and there terminating in an escarpment going down to an average depth of 450 to 500 fathoms (2700 to 3000 feet), where another terrace is met with, stretching out to a greater or less distance under the Atlantic, and which is often so steep that the two contours approach very close together; and that from the second terrace there is a sudden descent to the bottom, at the abysmal depth of 10,000 to 12,000 or 13,000 feet; and that in the Gulf of Mexico the valley or "cañon," in continuation of the bed of the Mississippi, and through which he assumes that it had once flowed, is traceable extending under the Gulf to a depth of 10,000 feet. That

¹ See Mr. Warren Upham's paper in the *Journal of the Victoria Institute*, vol. xxix. p. 201, with discussion thereon.

It may be well to note here a neglected partial qualification by the late pre-eminent Baron Humbolt, who writes as follows. "Among the causes which tend to lower the mean annual temperature, I include the following:—Elevation above the level of the sea, *when not forming part of an extend-d plain,*" &c. In the present case it is a whole extended continent. "*Cosmos*" vol. i. p. 36, Bohn's Edit.

these submarine terraces being continuous throughout so great an extent of coast line, and with levels generally so uniform, exhibit, at these depths, marks of the present American rivers, like the Mississippi under the Gulf, stretching out also under the Atlantic from 200 to 300 miles; from which it is inferred that the Eastern coast of America was at one time 600 feet higher above the sea-level, or even from 2,700 to 3,000 feet higher than now, nay, beyond that from 10,000 to 12,000 feet.

II. It will be observed that, as the evidence is drawn from the tracing of supposed river channels at those depths, it is an elevation of the *continent*, not of a mere coast line, which is postulated; since the river Mississippi flows through the very centre of the continent, and receives the affluence of the Missouri, the Red River, the Ohio, the Arkansas, and their tributaries. But the possibility of tracing with any certainty river-channels at a depth of 10,000 feet under the ocean may be questionable. It is obvious that even if the prolonged continuance of a valley or rocky cleft should be traced at that depth, there is no proof that the river, which may have taken advantage of its hollow in an upper portion, did not discharge its waters into the sea long before it reached those depths of the continuous cleft or cañon. The Atlantic Ocean doubtless has such depths; but was there then no Atlantic Ocean for the rivers to flow into, or for the land to sink into? Twelve thousand feet would imply an elevation of the very bottom, "the abysmal floor," of the Atlantic, as well as of the whole continent of North America; and Dr. Hull goes so far as to suppose that the Gulf of

Mexico did not then exist, but formed an Antillæan Continent, so that there was no longer any "gulf-stream" to mitigate the cold in the British Islands. And, of course, if the floor of the Atlantic was upheaved, there could be none. We do not profess to see a way through these inconsistencies, the Antillæan Continent having done away with the gulf and river's outflow: and Dr. Hull himself only masks the difficulty by quoting the remark that they "open new problems in dynamic geology." That *phrase* has certainly the ring of science, if only it conveyed any intelligible solution of the difficulty. The Mississippi, the St. Lawrence, and all the southward and eastward-flowing rivers of North America would have no ocean in which to deposit their burden of waters; or if the ocean were upheaved as well as its floor, what would become of the elevation above the sea-level? Of course the ocean is not meant to be upheaved upon its floor, whatever else is to be done with it.

No doubt there might be a question of dynamics. Has it been calculated how many hundred millions of tons, say rather of cubic miles, of solid rocks, each at least twice or thrice the weight of an equal bulk of water, are to be estimated in the vast continent of North America; and what applied force will be necessary all underneath, to upheave the whole continuous mass in its length and breadth twelve thousand feet aloft into the air? The illustrious Archimedes is reported to have said that, if he had a long enough lever, and a proper fulcrum to rest it on, he could move the world. But here neither lever nor fulcrum is provided, nor any platform, or screw,

or apparatus whatever, nor any effort of force and will, nor any parallel since the days of the fabled giants, for uplifting on high the great continent of America, with the Mississippi and other rivers running down his broad back.

Hunc armat glacialis ATHOS. Hoc OSSA movente
Tollitur. Hic RHODOPEN HEBRI cum fonte revellit
Et socias truncavit aquas, summâque levatus
Rupe Giganteos humeros irrotat ENIPEUS.¹

But all those mountains put together, which the giants upheaved, were a mere trifle to this; and the Enipeus was but as a dewdrop to the Mississippi. And all this merely to account for how the intense cold was to be got, sufficient to freeze up the world; all called out in that new internecine combat of giant glacial theorists, whose whole speculation is only a conjectural substitute for the UNIVERSAL DELUGE of scripture and of Christian faith, and of the still lingering vestiges of its memory among all nations. No doubt the Almighty power of God was sufficient for Dr. Hull, but we have no right to presume upon it to back up philosophical speculations. If it be thought that the ocean soundings prove the existence of a former coast line on the east of America relatively higher than the present, the explanation must be sought only by reasonable deduction from known facts of nature, and in accordance with its laws. The Most High "hath ordered all things by measure and number and weight." He hath "weighed the mountains in scales, and the hills in a balance." And this not only in regard to the heaviest things,

¹ Claudian, *Gigantomachia*.

but also to the lightest. "He hath made a weight for the winds, and He weigheth the waters by measure"; and He had told us this long before Torricelli obtained celebrity by practically applying it. But it is obvious that what the suboceanic terraces would prove is distinctly a relative sinking, not an actual elevation of the land there. At the hundred fathom line it is stated that the upper terrace breaks off with a precipitous descent to the lower terrace. The marks of the rivers, therefore, break off there, but are alleged to be found again continued on the lower terrace. Does this mean that, just at the hundred fathom line, all the rivers on the east of North America took a leap over the precipice to the depth of 450 or 500 fathoms (2700 or 3000 feet), and immediately found their continuous channels at that lower depth, and went on till they came to another break, where they took another leap, this time into abysmal space, or to the "abysmal floor of the Atlantic," perhaps then dry? These leaps seem to add to the doubt of the continued traceability of the rivers.

But to pass that over; and, assuming that the terraces under the Atlantic are *bonâ fide* sunk terraces, once dry land, does it prove more than that they have sunk? Some explanation may be asked and expected of their sinking, and we confidently hope that it may be satisfactorily given, though it may not be on the see-saw principle of alternate ups and downs; or, as Dr. Hull expresses it "periods of emergence and depression, interrupted by pauses"; which are meant to be in correspondence with their supposed alternations