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## AN ACCOUNT OF THE RESEARCHES RELATING TO THE GREAT LAKES\*.

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An old text book upon geology briefly says that the lake basins are due to movements of the earth's crust. What the movements were and how they affected the history of the great lakes was left a subject of discovery for recent years. In the mean while, theories arose as to their origin, the disposal or modification of which was fraught with difficulties as great as those of discovering the history itself. Ramsay had attributed the origin of the American lakes to glacial excavation;† Hunt, Newberry, Carll and many others had collected the evidence of buried channels occurring in the lake region. Gen. G. K. Warren‡ had followed up the observations of Prof. H. Y. Hind § in the history of the Winnipeg basin, and proposed the northeast warping as closing the Ontario basin, to such a degree that he may be considered the father of lacustrine geology. But the great impetus towards the investigation of the great lakes is due to Prof. J. S. Newberry, ¶ whose contribution was followed by one from Prof. E. W. Clappole.¶ To give a full account of the researches concerning the great lakes, and to tell how each author had contributed to the subject would make a very long chapter. As the present writer has been so closely connected with the pioneering study of the subject, and has announced progress from time to time before the American Association it seems a fitting opportunity to tell how his investigations have been influenced by his co-workers, leaving to others the narration of the most recent studies.

Newberry followed upon the lines of Ramsay in attributing the basins of the lakes to glacial excavations, yet there was a counter current in his writings which finally advocated that the glacial excavation had taken place only after their courses

\*Read at the Detroit meeting of the A. A. A. S., 1897.

†Quart. Jour. Geol. Soc., Lond., vol. XVIII, pp. 185-204, 1862.

‡Appendix J., Rep. of the Chief of Engineers, U. S. A., 1875; Am. Jour. Sci. (3), vol. XVI, 1878, pp. 416-431.

§Report on the Assiniboine and Saskatchewan Exploring Expedition. By Henry Youle Hind. Toronto, 1859, pp. 1-20.

¶Geology of Ohio, vol. II, 1874, pp. 72-80.

¶On the pre-Glacial Geography of the region of the Great Lakes, E. W. Clappole. Can. Nat., vol. VIII, 1877, pp. 187-206.