

Prof. N. H. Winchell, in an article in the 'Popular Science Monthly' for June 1873, entitled "The Drift Deposits of the North-west," broadly accounts for the glacial phenomena on the supposition of a polar glacier. His illustrations are chiefly borrowed from a careful study of the region south of the Great Lakes of the St. Lawrence; but as he includes the Valley of the Red River and the entire North-west in his deductions, a brief note may not be inappropriate. The most suggestive portion of the paper is that in which, like Mr. Belt, he traces the necessary production of a great inland lake or sea of fresh water while the foot of such an ice-sheet as that supposed gradually retreats towards the north, down the gentle inclined plane of the surface of the country. In this manner the finer stratified deposits of certain regions south of the Great Lakes are accounted for, and also those of the great valley south of Lake Winnipeg.

Ingenious as this hypothesis of a great glacial lake undoubtedly is, its inapplicability to the phenomena and physical features presented by the region under consideration is at once apparent. In addition to what has already been said, I need perhaps mention but one additional circumstance which appears discordant with it.

From the physical geography of the region it will be evident that the entire drainage of the supposed immense lake must have passed southward by the Red-River valley. There is here no range of mountains to be crossed; and no reason can be assigned why a channel once formed should not have been cut down through the gentle swell of the watershed and remained the permanent, as it appears to have been the primitive, exit of the drainage of the country.

The whole question is a very interesting one; and it would seem probable that the solution once arrived at will be found to apply equally to Northern America and Northern Asia.

#### EXPLANATION OF PLATE XXXII.

- Fig. 1. Map of part of the interior region of North America, showing the watersheds and three primary levels of the plains, the general character of the drift, and the Missouri Coteau. *a*. The Drift plateau of Northern Minnesota, with drift chiefly of northern and north-eastern origin. *b*. Lowest prairie-level and valley of the Red River. *c*. Second prairie-plateau, drift derived chiefly from the east and north-east. *d*. Third or highest prairie-plateau, drift chiefly composed of quartzite from the Rocky Mountains, *x*. *z*. Missouri Coteau.
2. General section along the 49th parallel from the Rocky Mountains to the Laurentian axis. Vertical scale much exaggerated. *a*, *b*, *c*, *d*, *x*, and *z* as in fig. 1. *y*. Turtle Mountain.