

Glaciers and Landscape Evolution of the Western Reserve

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The importance of the landscape evolution brought about by the last ice age to the growth and development of Cleveland and the Western Reserve cannot be over-emphasized. William Ganson Rose was aware of this as he began *Cleveland: The Making of a City*, with the following words: "Under a sheet of ice a mile thick lay the site of the City of Cleveland more than 20,000 years ago. Vast glaciers covered much of North America, including two thirds of what became the State of Ohio." "The glaciers helped to shape the Great Lakes, a mighty influence upon Cleveland's growth and progress. " "The district owes much to its geologic past."

More than to any other legacy of the glacier, Cleveland and the Western Reserve owe their existence to their water resources, particularly Lake Erie. This region has its water resources because great basins were scraped out by ice sheets and because weather patterns continue to bring abundant rainfall to these basins. This good fortune is the result of a lucky coincidence - climatic conditions that supply the region with water and geology that provides places to store it - out of the way, yet handy when needed.

In the last 1.8 million years, the northern hemisphere has experienced numerous glacial episodes, four of which have been recorded in the landscape of the Great Lakes. The present mild climate may be only momentary, the result of an interglacial age. Only a brief time ago, geologically speaking, this area was very different. If Lake Erie's shoreline today resembled what it was some 13,000 years ago, most of downtown Cleveland would be under water. Icebergs would speckle the lake. To the west, Bowling Green would be a small peninsula barely above water. Toledo's now notable lakefront would be lake bottom. The glacially abetted landscape evolution that produced modern Lake Erie is complex. A succession of numerous predecessor lakes occupied the basin beginning with the withdrawal of the ice around 14,500 years ago. Their existence was the result of several factors including the position of glacial ice to the north, the height and erosion of drainage divides, and depression of the land surface by the weight of glacial ice and its subsequent slow rebound.

A glacier-free future for the Western Reserve is not assured. Although anthropogenic "greenhouse effect" warming may disrupt climatic processes, the northern hemisphere still appears to be in a 40 million year long cooling trend. A new glacial advance would be disastrous for this area as fragments of Toronto, Buffalo, and Cleveland, along with natural glacial debris, would be conveyed southward by the advancing

ice. Nevertheless, when the ice melted away, its legacy would again be evident, renewing the land. Thus, based on what is known of the history of landscape evolution in the Western Reserve, the long-term weather forecast calls for “destruction and regeneration.”