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THE TOPOGRAPHY AND GEOLOGY OF CLIFTON GORGE.

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This gorge is located in Greene county, Ohio, about two miles from the town of Yellow Springs. It is made by the headwaters of the Little Miami river.

The beauty of the gorge is not surpassed by anything of a like nature in the State. It has been visited by thousands of pleasure-seekers from all the surrounding country, especially from the near-by cities of Dayton, Springfield and Xenia. Neither is this remarkable gorge unknown to the scientists of this and other states. In the gorge are found two quite rare plants—Ground Hemlock (Taxus canadensis), found nowhere else in the county, and Asplenium ruta-muraria, found nowhere else in the State.

The origin of the gorge seems to be as follows: The headwaters of the Little Miami flow with an apparently gentle slope over the glacial drift, for some distance. At the town of Clifton, however, the drift thins out and the Niagara limestone comes to the surface. At the same time the slope increases, with the natural result that the river has hewn for itself a deep bed in the solid rock. This deep bed is the gorge.

At its beginning the gorge is very narrow, having an average width of about 40 feet. The average depth here is 34 feet. But as the stream proceeds the valley gradually widens. This is due to the fact that the Springfield division of the Niagara has been more easily eroded than the Cedarville division just above it; so that from time to time the latter has broken off. In proof of this we find the valley floor strewn with rock masses, most of them moss-covered, some of the largest with

small trees growing on their upper surfaces. One large mass has lodged in mid-stream, and from its resemblance is called "Steamboat rock."

About three miles downstream a softer ridge (Clinton) is encountered, whereupon the valley becomes broader and the cliffs disappear for the most part. About a mile further down, the river passes through a still softer rock (Cincinnati limestones and shales). As a result the valley becomes very capacious, being one-fourth to one-half a mile wide.

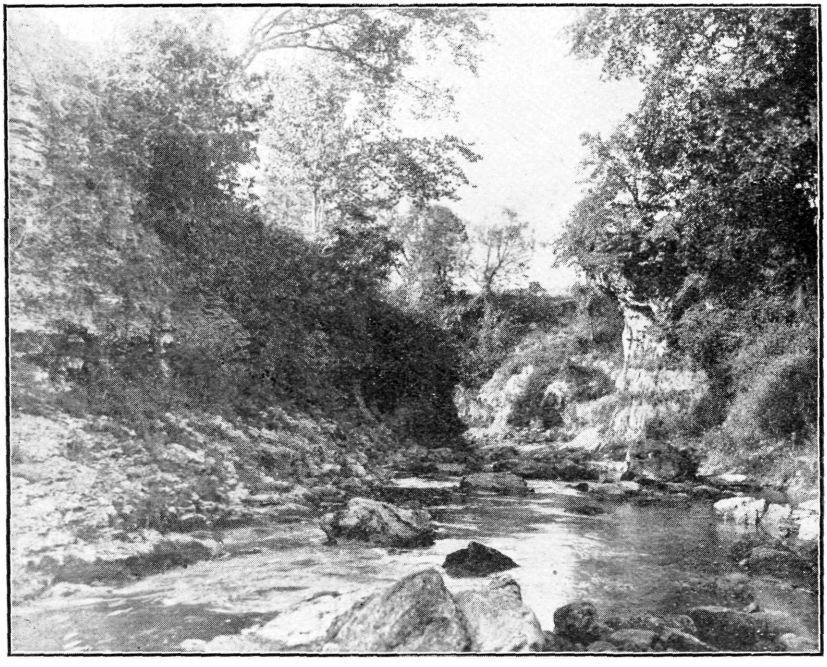


FIG. 1. Looking down the Gorge towards the site of the old Woolen Mill, just above the Waterfall.

The slope of the river bed in the gorge was found to be about 35 feet to the mile. It is hardly necessary to add that this produces an abundant water power. Fifty years ago not much of this power was allowed to go to waste. In 1855 there were in the gorge alone five grist mills, one paper mill, one woolen mill, one saw mill and three distilleries. But as time went on these enterprises, one by one, were abandoned, until at the present time only two grist mills are left. The only reason that can be given

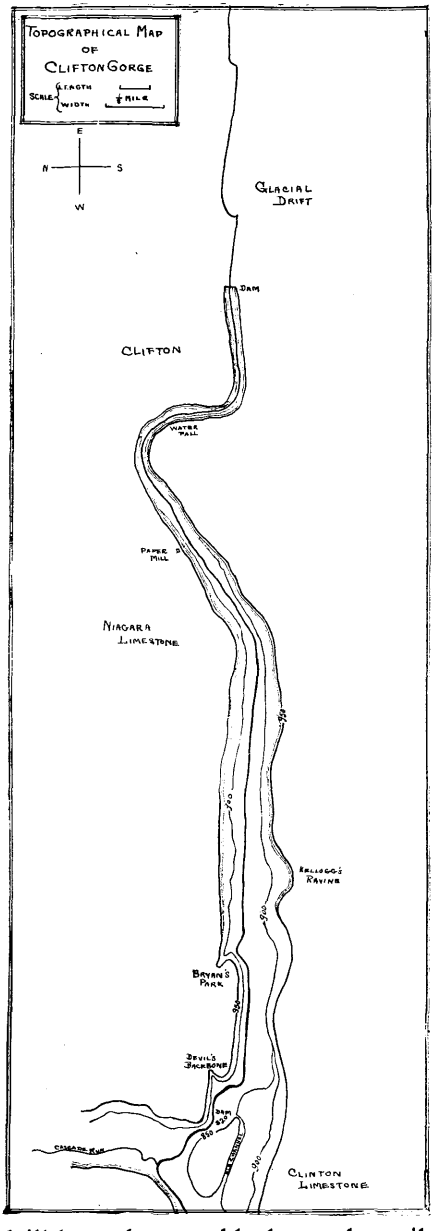
for this failure to utilize so bountiful a supply of free power is that this particular locality has failed, generally, to meet the expectations of its first settlers. The town of Yellow Springs was laid out for a city of 10,000 inhabitants. It now has 1,300.

In the softer strata just under the overhanging cap rock, are some shaly seams. These act as water bearers, and as a result the gorge is well supplied with springs, some of considerable strength. They always appear at the base of the cliffs.

It is interesting to note in this connection that this same stratum furnishes the remarkable iron spring which has given the town of Yellow Springs its name.

The hard cap-rock (Cedarville) when burned makes excellent lime; and yet, in over two miles of exposure we found the remains of but two limekilns.

Not the least among the interesting things connected with a study of this gorge is the existence of an old abandoned channel. In 1876, Prof. Claypole, then a professor in Antioch College, worked out this channel very completely. The record of his work, unfortunately, is lost. All we know of his investigations is, that he dug into the channel to the depth of about 20 feet before reaching rock. At this depth the drill brought up a black, mucky soil,



filled with old, dead leaves! The channel is located near the mouth of the gorge and is cut through Clinton limestone. Its length is about one-half mile, its average width 125 feet, and its present height above the river, 22 feet. This corresponds to the depth of Prof. Claypole's drilling. In fact, all the evidence goes to prove that this channel is preglacial and is now largely filled with drift. At the head of the channel a ravine has cut a deep trough, showing very nicely the character of the filling (boulder clay). The owner of the land upon which the channel is located says that at one time a large stump standing in the old channel turned over and in the course of a few months disappeared entirely. A few bluffs are to be seen at the lower end of the channel, giving additional proof of its origin.

Not long ago Prof. Bownocker worked out the history of this river, but unfortunately overlooked this old channel. He has traced, however, the old channel to within about a mile of this one. So that this discovery simply extends the course of some ancient river bed, whose course is being gradually mapped out.

A terrace with an average height of about 30 feet was found in the gorge. This would indicate, in the history of the present stream, a general upward movement of the crust, in times past.

The gorge itself is without doubt post-glacial.

NOTE: The topographical map which accompanies this sketch was made by Miss Alice Carr, Miss Gertrude Baker and Mr. R. O. Wead of the geology class of Antioch College.

Antioch College.