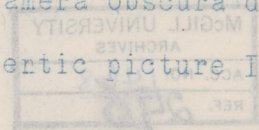


Atlanta, Dec., 14th, 1893.

My Dear Sir,

I shall not have the pleasure of seeing you in Boston for I do not intend to go. I am very glad that your health is so much stronger this winter. You ask about the buried St. David's - whirlpool ravine. It is strange that so much has been made of it in recent years, but some excuse can be made as the floor is mostly obstructed by land slides. But when last there, the Clinton limestone ^{was seen} crossing the little stream at about 160 feet above the lake or probably 250 feet above the bed of the whirlpool. The Niagara shales occur along the side of the valley considerably higher. Equally remarkable is it that no attention has been paid to the buried basin of the Tonawanda which crosses the gorge at the falls. It is over a mile wide, and 90 feet below the rocky ridge immediately to the north through which the modern cañon is perfectly new. But the buried valley continues in nearly a straight line behind the western end of the rocky ridge and is again discovered in a basin half a mile west of the whirlpool, which is more than 50 feet below the rocky floor, beneath the drift, upon the western side of the pool. Into this ancient depression the little stream from the buried channel at the pool emptied and thence descended to the valley of St. David's. It is only a coincidence that the modern river happened to unearth a portion of the whirlpool valley, which has had no appreciable effect upon the rate of erosion, which is not the case with the buried Tonawanda valley. The question of the Niagara history is most complex, and after all of these years, we now know a little about it. I feel sure that you will be not displeased with my forthcoming paper. I think that I shall have it read in London as it is a subject of cosmopolitan interest. I have got a good camera obscura drawing of the falls made in 1852. This is the oldest authentic picture I know of. The greatest difficulty is in working out the duration of the



second episode. The age of the falls is over 30000 years, but this is only a step in the study of the antiquity of the glacial age. If the ice age ended with the commencement of the lake epoch, then it is doubtless at least 60000 years ago. If we are to have glacial lakes holding in the great bodies of waters, then the end may not have been more than 15000 years ago. I should like very much to go to the arctic for comparative glacial studies. We have got over \$5000 it will take ten. When I wrote to you I had Sir D. A. Smith in view as I once knew him and he was interested in high latitudes. One American and one German paper have each given \$500 and they are to have the narrative in the U.S. The Gazette might take it for Canada. I have just learned that Wabash College at Crawfordsville, which has money is about to establish a chair of geology. It is a Presbyterian institution of good standing. It is so located that my researches ^{would be of use} in college work. I may write you shortly when I get the particulars.

Yours faithfully,
J. W. Spencer.

Spencer
Dec 1903

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