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Niagara Falls, waterfall on the Niagara River in northeastern North America, one of the continent’s most famous spectacles. The falls lie on the border between Ontario, Canada, and New York state, U.S. For many decades the falls were an attraction for honeymooners and for such stunts as walking over the falls on a tightrope or going over them in a barrel. Increasingly, however, the appeal of the site has become its beauty and uniqueness as a physical phenomenon.  
  
The falls are in two principal parts, separated by Goat Island. The larger division, adjoining the left, or Canadian, bank, is Horseshoe Falls; its height is 188 feet (57 metres), and the length of its curving crest line is about 2,200 feet (670 metres). The American Falls, adjoining the right bank, are 190 feet (58 metres) high and 1,060 feet (320 metres) across.  
  
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The formation of the Niagara gorge (downriver) and the maintenance of the falls as a cataract depend upon peculiar geologic conditions. The rock strata from the Silurian Period (about 444 to 419 million years ago) in the Niagara gorge are nearly horizontal, dipping southward only about 20 feet per mile (almost 4 metres per km). An upper layer of hard dolomite is underlain by softer layers of shale. Water exerts hydrostatic pressure and only slowly dissolves the dolomite after infiltrating its joints. Dolomite blocks fall away as water from above infiltrates and rapidly erodes the shale at the falls itself. The disposition of the rock strata provides the conditions for keeping the water constantly falling vertically from an overhanging ledge during a long period of recession (movement upstream) of the cataract. As blocks of dolomite are undercut, they fall off and are rapidly destroyed by the falling water, further facilitating the retreat of the falls and the maintenance of a vertical cataract.  
  
Horseshoe Falls Horseshoe Falls on the Niagara River, Ontario, Canada, during winter. Photos.com/Thinkstock  
  
The water flowing over the falls is free of sediment, and its clearness contributes to the beauty of the cataract. In recognition of the importance of the waterfall as a great natural spectacle, the province of Ontario and the state of New York retained or acquired title to the adjacent lands and converted them into public parks.  
  
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The very large diversion of water above the falls for hydroelectric power purposes has lessened the rate of erosion. Elaborate control works upstream from the falls have maintained an even distribution of flow across both the U.S. and Canadian cataracts, thereby preserving the curtains of the waterfalls. A large part of the great river above the falls is diverted and disappears into four great tunnels for use in the power plants downstream. Because of concern over the possibility of major rockfalls, water was diverted from the American Falls in 1969, and some cementing of the bedrock was done; an extensive boring and sampling program was also carried out. River flow was returned to the American Falls in November of that year, and it was decided that safety measures for the viewing public should be implemented and that measures to stem natural processes were both too expensive and undesirable.  
  
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Excellent views of the falls are obtained from Queen Victoria Park on the Canadian side; from Prospect Point on the U.S. side at the edge of the American Falls; and from Rainbow Bridge, which spans the Niagara gorge about 1,000 feet (300 metres) downstream from Prospect Point. Visitors may cross from the U.S. shore to Goat Island by footbridge and may take an elevator to the foot of the falls and visit the Cave of the Winds behind the curtain of falling water. The Horseshoe Falls, which carry about 90 percent of the river’s discharge, receded upstream at an average rate of about 5.5 feet (1.7 metres) per year in 1842–1905. Thereafter, control works and the diversion of water decreased the erosion rate, which is presently so slow at the American Falls that large blocks of dolomite accumulate at the base of the falls, threatening to turn it into rapids.