

There stand great cities on its alluvial banks. The crumbling bluffs by spells slide into the river. Above the limits of city populations the river is already gathering in the mud destined to journey to the Gulf of Mexico—mud which has already been floated from some remoter region and deposited here at times of overflow. Here comes the Niobrara, with slime from the prairies of Nebraska; the Cheyenne, with washings from the mining camps in the Black Hills; the Little Missouri and Yellowstone, with sands worn from the Big Horn, the Wind River, and the Snow Mountains; here, on a grassy plain, unite the Jefferson, Madison and Gallatin tributaries, which bring the dust of the continent from the high watershed of the Red Rock Mountains, which parts the continental drainage to opposite points of the compass. It is a bewildering breadth and complexity of operations. Over every foot of this wasting expanse the land is yielding to the corrosive action of rivers and rains and frosts. The proud mountain domes and pinnacles are coming down to acknowledge the supremacy of the powers of denudation. The Rocky Mountains have begun their journey to the Gulf of Mexico. Cubic miles of their granitic substance are buried in the delta of Louisiana and the bar of the Mississippi.

Now that we discover in action the forces which could transform the face of the land in some hundreds of thousands of years, we take a new view of the aspects of the terrestrial surface which had already been acquired when man came into existence. We discover that the face of the earth had already been transformed before we began our observations on it, and by means of agencies which corroded the rocks and carried away the materials precisely as the forces of nature are wasting the continent before our eyes. We have already recognized the fact that aqueous erosion cut through the Straits of Mackinac and chiseled down the steep sides of the monumental island in the Straits. We have seen the deep precipitous-walled gorge of the Niagara, and the rock-bluffs bounding on certain sides the basins of the great lakes—the works of rivers and waves.