the timber becomes more scarce, and a large part of the bottom land is open prairie. The average elevation of the bottoms is a few feet above the ordinary high-water level, but below the range of the extreme floods of exceptional years. The river winds to and fro in a circuitous course between the bluffs, with little apparent regularity—the width from bank to bank, measured between the wooded or grass-grown shores, varying from 300 to 1,500 yards, and averaging about half a mile. At low water the channel contracts within much smaller limits, becoming reduced to 600 or 700 feet, and leaving the remaining width a dry and desolate sand bar.

The usual fall being from 10 inches to a foot in the mile, the current is very rapid, varying with the different stages of water, in an ordinary season, from three miles an hour to eight. The bed of the river, the sand bars and the substratum of the bottom lands are composed partially of sand and partially of a fine silt, having a specific gravity little greater than that of water* ; a considerable quantity of this silt is always held in suspension by the water, and the current, when strong, moves the combined silt and sand with surprising rapidity. The current is most violent during a rise in the river, and the velocity is dependent on the suddenness of the rise, the level of the water being raised from above, and the surface slope thereby temporarily increased. On these occasions the current is often strong enough to deepen the channel 20 feet in a single day, and if impinging on a low bank, to cut several yards into the shore in a single hour. There is a local saying that the Missouri has a standing mortgage on the entire bottom land from bluff to bluff, and the farmer on the Missouri bottom often learns to his sorrow, by the loss of his farm, that real estate is not always immovable property.

The water of the Missouri is found by analysis to contain less solid matter in solution than is found in the water of any other important river of the continent ; but it always holds a large amount of silt and fine sand in suspen-

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* The weight of one cubic foot of different varieties of Missouri River sand and silt was found to be as follows :

Coarse sand,	dry,	108 lbs.,	saturated,	132 lbs.
Fine sand,	"	101 lbs.,	"	125 lbs.
Silt,	"	87 lbs.,	"	110 lbs.
Silt, very fine,	"	77 lbs.		