

The common method of comparing the fall or slope of rivers is to divide the difference of height between their source and the sea-level by their length, so as to give the declivity per mile. This mode, however, often fails to bring out the real resemblances and differences of rivers, even in regard to their angle of slope. For example, two streams rising at a height of 1000 feet, and flowing 100 miles to the sea, would each have an average slope of 10 feet per mile; yet they might be wholly unlike each other, one making its descent almost entirely in the first or mountain part of its course, and lazily winding for most of its way through a vast low plain; the other toiling through the mountains, then keeping among hills and table-lands, so as to form on the whole a tolerably equable and rapid flow. The great rivers of the globe have probably a less average slope than 2 feet per mile, or 1 in 2640. The Missouri, which has a descent of 28 inches per mile, is a tumultuous rapid current even down as far as Kansas City. The average slope of the channel of the Thames is 21 inches per mile; of the Shannon about 11 inches per mile, but between Killaloe and Limerick about $6\frac{1}{2}$ feet per mile; of the Nile, below Cairo, 3.25 to 5.5 inches per mile; of the Doubs and Rhone, from Besançon to the Mediterranean, 24.18 inches per mile; of the Volga from its source to the sea, a little more than 3 inches per mile. Higher angles of descent are those of torrents, as the Arve, with a slope of 1 in 616 at Chamounix, and the Durance, whose angle varies from 1 in 467 to 1 in 208. The Colorado River rushes through its cañons with an average declivity of 7.72 feet per mile, or 1 in 683. The slope of a navigable river ought hardly to exceed 10 inches per mile, or 1 in 6336.¹¹⁸

¹¹⁸ D. Stevenson, "Canal and River-Engineering," p. 224.