

animals, that have been surprised and drowned by freshets, or bones that have been exhumed by the waters.

The amount of transportation going on over a continent, especially in seasons of floods, is beyond calculation. Streams are everywhere at work, rivers with their large tributaries, and their thousands of little ones spreading among all the hills and to the summit of every mountain; and thus the whole surface of a continent is on the move toward the oceans. The amount transported is a measure of the amount lost by the land, as well as of that gained by the river plains, lakes, and seas. The *amount of silt* carried to the Mexican Gulf by the Mississippi, according to the Delta Survey under Humphreys and Abbot, is about $\frac{1}{1500}$ the weight of the water, or $\frac{1}{2500}$ its bulk; equivalent for an average year to 812,500,000,000 pounds, or a mass one square mile in area and 241 feet deep.

The following table contains the ratio of sediment to water by weight, as obtained by the Delta Survey, and also the results of other investigations.

	Ratio.	Time.
Mississippi River, at Carrollton, by Delta Survey,	1 : 1808	12 mos., 1851-1852.
Mississippi River, at Carrollton, by Delta Survey,	1 : 1449	12 mos., 1852-1853.
Mississippi River, at Columbus, by Delta Survey,	1 : 1321	9 mos., 1858.
Mississippi River, at Mouths, by Mr. Meade,	1 : 1256	2 mos., 1838.
Mississippi River, at Mouths, by Mr. Sidell,	1 : 1724	1838.
Mississippi River, at various places, by Prof. Riddell,	1 : 1245	14 days, summer of 1843.
Mississippi River, at New Orleans, by Prof. Riddell,	1 : 1155	35 days, summer of 1846.
Rhone, at Lyons, by Mr. Surell,	1 : 17000	1844.
Rhone, at Arles, by Messrs. Gorsse and Subours,	1 : 2000	4 mos., 1808-1809.
Rhone, in Delta, by Mr. Surell,	1 : 2500.	
Ganges,	1 : 858,	at flood-time.

For the Danube, the ratio at low water is 1 : 33,000 ; at flood, 1 : 2400 ; for the Po, at flood, 1 : 300 (Lombardini) ; for the Meuse, at low water, 1 : 71,420 ; at flood, 1 : 2100 (Chandellon) ; for the Irrawaddy, at low water, 1 : 5725 ; at flood, 1 : 1700 (Login) ; for the La Plata at Buenos Ayres, 1 : 7752, at which rate it carries seaward about 224,000 tons of sediment each 24 hours, but dropping part of it along the 100 miles before it reaches the sea (Higgin).

The annual discharge of sediment from the Ganges has been estimated at 6,369,000,000 cubic feet, or 378,100,000 tons. The Nile brings down annually nearly 150,000,000 tons. The bulk may be calculated, by taking 1.9 as the specific gravity of the material.

Besides the material held in suspension, the Mississippi *pushes* along into the Gulf large quantities of earthy matter ; and the annual amount thus contributed to the Gulf is estimated to be about 750,000,000 cubic feet, — which would cover a square mile 27 feet deep ; and this, added to the 241 feet above mentioned, makes the total 268 feet.

This amount is equivalent to an average of $\frac{1}{4920}$ of a foot annually from the whole drainage area of the river ; or, in other words, the area would be lowered by it, on an average, one foot in 4920 years. The Ganges works faster, the amount it transports to the sea being such as would lower its drainage area, on an average, a foot in 1880 years. All the rivers that enter the ocean or the seas over the land, are working in the same way, and with results to the continental surface mostly between these two extremes.