

It requires some reflection properly to appreciate the amount of solid mineral matter which is every year carried in solution from the rocks of the land and diffused by rivers into the sea. Accurate measurements of the amount of material so transported are still much required. The Thames carries past Kingston 19 grains of mineral salts in every gallon, or 1502 tons every twenty-four hours, or 548,230 tons every year. Of this quantity about two-thirds consist of carbonate of lime, the rest being chiefly sulphate of lime, with minor proportions of the other ordinary salts of river-water. Mr. Prestwich estimates that the quantity of carbonate of lime removed from the limestone areas of the Thames basin amounts to 140 tons annually from every square mile. This quantity, assuming a ton of chalk to measure 15 cubic feet, is equal to a loss of  $\frac{1}{100}$  of an inch from each square mile in a century, or one foot in 13,200 years.<sup>128</sup> According to monthly observations and estimates made in the year 1866 at Lobositz, near the exit of the Elbe from its Bohemian basin, this river may be regarded as carrying every year out of Bohemia from an area of 880 German square miles, or, in round numbers, 20,000 English square miles, 6,000,000,000 cubic metres of water, containing 622,680,000 kilogrammes of dissolved and 547,140,000 of suspended matter, or a total of 1169 millions of kilogrammes. Of this total, 978 millions of kilogrammes consist of fixed and 192 millions of volatile (chiefly organic) matter. The proportions of some of the ingredients most important in agriculture were estimated as follows: lime, 140,380,000 kilogrammes; magnesia, 28,130,000; potash, 54,520,000; soda, 39,600,000; chloride of sodium, 25,320,000; sulphuric acid, 45,690,000; phosphoric acid, 1,500,000.<sup>129</sup>

Mr. T. Mellard Reade has estimated that a total of 8,370,630 tons of solids in solution is every year removed by running water from the rocks of England and Wales, which is equivalent to a general lowering of the surface of the country, from that cause alone, at a rate of  $\cdot 0077$  of a foot in a century, or one foot in 12,978 years. The same writer computes the annual discharge of solids in solution

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<sup>128</sup> Prestwich, Q. J. Geol. Soc. xxviii. p. lxvii.

<sup>129</sup> Breitenlohner, Verhand. Geol. Reichsanst. Vienna, 1876, p. 172. Taking the 978,000,000 kilogrammes to be mineral matter in solution and suspension, this is equal to an annual loss of about 48 tons per English square mile. But it includes all the materials discharged by the drainage of an abundant population.