factory answer to the inquiry, but some approximation may already be made to the minimum of time required.

When I visited New Orleans, in February 1846, I found that Dr. Riddell had made numerous experiments to ascertain the proportion of sediment contained in the waters of the Mississippi; and he concluded that the mean annual amount of solid matter, was to the water as $\frac{1}{1243}$ in weight, or about $\frac{1}{3000}$ in volume.* From the observations of the same gentleman, and those of Dr. Carpenter, and Mr. Forshey, an eminent engineer, to whom I have before alluded, the average width, depth, and velocity of the Mississippi, and thence the mean annual discharge of water, were deduced. I assumed 528 feet, or the tenth of a mile, as the probable thickness of the deposit of mud and sand in the delta; founding my conjecture chiefly on the depth of the Gulf of Mexico, between the southern point of Florida and the Balize, which equals on an avarage 100 fathoms, and partly on some borings 600 feet deep in the delta, near Lake Pontchartrain, north of New Orleans, in which the bottom of the alluvial matter is said not to have been reached. The area of the delta being about 13,600 square statute miles, and the quantity of solid matter annually brought down by the river 3,702,758,400 cubic feet, it must have taken 67,000 years for the formation of the whole; and if the alluvial matter of the plain above be 264 feet deep, or half that of the delta†, it must have required 33,500 more years for its accumulation, even if its area be estimated as only equal to that of the delta, whereas it is in fact larger. If some deduction be made from the time here stated, in consequence of the effect of the drift-wood, which must have aided in filling up more rapidly the space above alluded to, a far more important allowance must be made on the other hand, for the loss of matter owing to the finer particles of mud not settling at the mouths of the rivers, but being swept out far to sea, and even conveyed into the Atlantic by the Gulf stream. Yet the whole period during which the Mississippi has been transporting its earthy burden to the ocean, though perhaps far exceeding 100,000 years, must be insignificant in a geological point of view, since

* The calculations here given were communicated to the British Association, in a lecture which I delivered at Southampton in September, 1846. (See Athenæum Journal, Sept. 26. 1846., and Report of British Association, 1846, p. 117.) Dr. Riddell has since repeated his experiments on the quantity of sediment in the river at New Orleans without any material variation in the results; although Messrs. Andrew Brown and M. W. Dickeson, in their Report to the Amer. Assoc. for Advancement of Science, Philadelphia, 1848, estimate the mean annual discharge of water by the Mississippi as nearly one-third more than Dr. Riddell's, and the solid matter held in suspension as 1 to 528 instead of 1 to 3000! Knowing the great care taken by Dr. R. to procure test-water, holding an average portion of sediment in suspension, I am disposed to believe that the waters selected by the two other observers must have been in a turbid condition far above the annual mean; but so great a discrepancy shows the need of a new series of experiments.

† The Mississippi is continually shifting its course in the great alluvial plain, cutting frequently to the depth of 100, and even sometimes to the depth of 250 feet. As the old channels become afterwards filled up, or in a great degree obliterated, this excavation alone must have given a considerable depth to the basin which receives the alluvial deposit, and subsidences like those accompanying the earthquake of New Madrid in 1811–12 may have given still more depth.