

that, at the rate of denudation which has been just postulated as probably a fair average, a valley 1000 feet deep may be excavated in 1,200,000 years, a period which, in the eyes of most geologists, will seem short indeed.

Objection may be taken to the ratios from which this average rate of denudation is computed. Without attempting to decide what this average rate actually is—a question which must be determined for each region upon much fuller data than are at present available—the geologist will find advantage in considering, from the point of view now indicated, what, according to the most probable estimates, is actually in progress around him. Let him assume any other apportioning of the total amount of denudation, he does not thereby lessen the measurement of that amount, which can be and has been ascertained in the annual discharge of rivers. A certain determined quantity of rock is annually worn off the surface of the land. If, as already remarked, we represent too large a proportion to be derived from the valleys and water-courses, we diminish the loss from the open country; or, if we make the contingent derived from the latter too great we lessen that from the former. Under any ascertained or assumed proportion, the facts remain, that the land loses a certain ascertainable fraction of a foot from its general surface per annum, and that the loss from the valleys and water-courses is larger than that fraction, while the loss from the level ground is less.

### 3. *Marine Denudation—its comparative rate*

From the destructive effects of occasional storms an exaggerated estimate has been formed of the relative potency of marine erosion. That the amount of waste by the sea must be inconceivably less than that effected by the subae-