

erosive work of running water depends for its rate and character upon (a) the friction of the detritus driven by the current against the sides and bottom of a water-course, modified by (b) the varying declivity and the geological structure of the ground.

(a) Driven downward by the descending water of a river, the loose grains and stones are rubbed against each other, as well as upon the rocky bed, until they are reduced to fine sand and mud, and the sides and bottom of the channel are smoothed, widened, and deepened. The familiar effect of running water upon fragments of rock, in reducing them to rounded pebbles, is expressed by the common epithet "water-worn." A stream which descends from high rocky ground may be compared to a grinding mill; large boulders and angular blocks of rock, disengaged by frosts, springs, and general atmospheric waste, fall into its upper end; fine sand and silt are discharged into the sea.

In the series of experiments already referred to (p. 640), Prof. Daubrée made fragments of granite and quartz to slide over each other in a hollow cylinder partially filled with water, and rotating on its axis with a mean velocity of 0.80 to 1 metre in a second. He found that after the first 25 kilometres (about 15½ English miles) the angular fragments of granite had lost $\frac{4}{10}$ of their weight, while in the same distance fragments already well rounded had not lost more than $\frac{1}{100}$ to $\frac{1}{400}$. The fragments rounded by this journey of 25 kilometres in a cylinder could not be distinguished either in form or in general aspect from the natural detritus of a river-bed. A second product of these experiments was an extremely fine impalpable mud, which remained suspended in the water several days after the cessation of the movement. During the production of this fine sediment, the water, even though cold, was found in a day or two to have acted chemically upon the granite fragments. After a journey of 160 kilometres, 3 kilogrammes (about 6½ lbs. avoirdupois) yielded 3.3 grammes (about 50 grains) of soluble salts, consisting chiefly of silicate of potash. A third product was