

mated to contain from 12 to 25 per cent of infusoria, and that of the Nile 4.6 to 10 per cent.

Beyond their ordinary powers of transport, rivers gain at times considerable additional force from several causes. Those liable to sudden and heavy falls of rain, or to a rapid augmentation of their volume by the quick melting of snow, acquire by flooding an enormous increase of transporting and excavating power. More work may thus be done by a stream in a day than could be accomplished by it during years of its ordinary condition.<sup>138</sup> Another cause of sudden increase in the efficacy of river-action is provided when, from landslips formed by earthquakes, by the undermining influence of springs, or otherwise, a stream is temporarily dammed back, and the barrier subsequently gives way. The bursting out of the arrested waters produces great destruction in the valley. Blocks as big as houses may be set in motion, and carried down for considerable distances. Again, the transporting power of rivers may be greatly augmented by frost (see postea, p. 701). Ice forming along the banks or on the bottom, incloses gravel, sand, and even blocks of rock, which, when thaw comes, are lifted up and carried down the stream. In the rivers of northern Russia and Siberia, which, flowing from south to north, have the ice thawed in their higher courses before it breaks up further down, much disaster is sometimes caused by the piling up of the ice, and then by the bursting of the impeded river through the temporary ice-barrier. In another way, ice sometimes vastly increases the destructive power

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<sup>138</sup> The extent to which heavy rains can alter the usual characters of rivers is forcibly exemplified in Sir T. Dick Lauder's "The Morayshire Floods." In the year 1829 the rivers of that region rose 10, 18, and in one case even 50 feet above their common summer level, producing almost incredible havoc. See also G. A. Koch, "Ueber Murbrüche in Tyrol," *Jahrb. Geol. Reichsanst.* xxv., 1875, p. 97.