

hillocky surface from which the top of a submerged palm-tree would here and there protrude.

Between the destructive effects of mere water-torrents and that of these mud-floods there is, of course, the notable difference that, whereas in the former case a portion of the surface is swept away, in the latter, while sometimes considerable demolition of the surface takes place at first, the main result is the burying of the ground under a new tumultuous deposit by which the topography is greatly changed, not only as regards its temporary aspect, but in its more permanent features, such as the position and form of its water-courses.

Effects of the Closing of a Volcanic Chimney—Sills and Dikes.—A study of the volcanic phenomena of former geological periods, where the structure of the interior of volcanoes and their funnels has been laid bare by denudation, shows that in many cases a vent becomes plugged up by the ascent and consolidation of solid material in it, while yet the eruptive energy of the volcano, though lessened, has not ceased. A time is reached when the ascending magma, impelled by pressure from below, can no longer overcome the resistance of the column of solid lava or compacted agglomerate which has sealed up the orifice of discharge, or at least when it can more easily force a passage for itself between the sedimentary strata on which the whole volcanic pile may rest, or between the lava sheets at the base of the pile, or into fissures in either or both of these groups. Hence arise intrusive sheets or sills and dikes or veins (see pp. 952, 958). That these later manifestations of volcanic energy have sometimes taken place on a great scale is shown by the number and size of the sills which are found at the base of the Palæozoic volcanic groups of Britain. This fea-