

the northern Caithness coast, exposed to the full fury of the gales and rapid tidal currents which rush from the Atlantic through the Pentland Firth, we see at once that though the base of the cliff is scooped out by the restless surge into long twilight caves, nevertheless the recession of the precipice is caused by the wedging off of slice after slice, along lines of vertical joint, and that this process begins at the top, where the subaerial forces and not the waves are the sculptors. Undoubtedly the sea plays its part by removing the materials dislodged, and preventing them from accumulating against and protecting the face of the precipice. But were

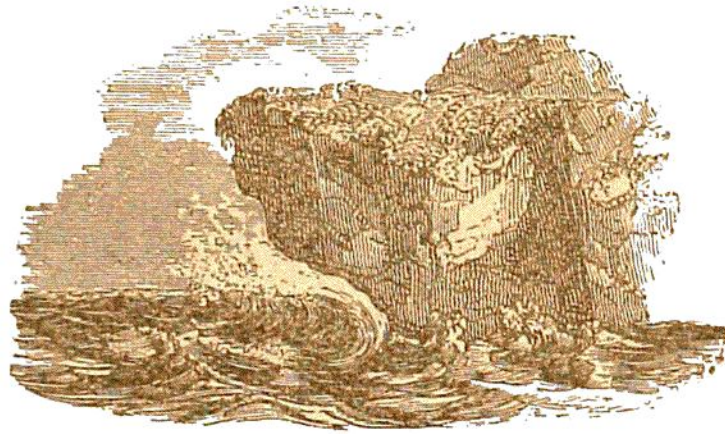


Fig. 171.—Marine erosion, where exceptionally the base of a cliff recedes faster than the upper part.

it not for the potent influence of subaerial decay, the progress of the sea would be comparatively feeble. The very blocks of stone which give the waves so much of their efficacy as abrading agents, are in great measure furnished to them by the action of the meteoric agents. If sea-cliffs were mainly due to the destructive effects of the waves, they ought to overhang their base, for only at or near their base does the sea act (Fig. 171). But the fact that, in the vast majority of cases, sea-cliffs, instead of overhanging, slope backward, at a greater or less angle, from the sea (Fig. 167), shows that the waste from subaerial action is really greater