

observation. While, therefore, the height of the shore platform depends on the tides, and the degree of exposure to the waves, the breadth of it will be determined by the same causes in connection with the nature of the rock material.

On basaltic shores it is not usual to find a shore platform, as the rock scarcely undergoes any degradation, except from the most violent seas ; such coasts are consequently often covered with large fragments of the basaltic rocks. But on sandstone shores, this gradual action keeps the platform of nearly uniform breadth. Moreover, any uptorn masses thrown upon it, are soon destroyed by the same action, and carried off ; and thus the platform is kept nearly clean of débris, even to the base of the cliff.

It is apparent that one single principle meets all the various cases. The rocky platform of some sea-shores, the low tide sand-spits on others, and the coral reef platform of others, require but one explanation. The material of the coral platform is piled up by the advancing surges, and cemented through the infiltrating waters. These surges, advancing toward the edge of the shelf, swell over it before breaking, and thus throw a protection about the exposed rocks ; and as the tide rises, this protection is complete. They move on, sweeping over the shelf, but only clear it of sand and fragments, which they bear to the beach.

The isolated blocks in the Paumotus which stand on the platform, attached to it below, are generally most worn one or two feet above high-tide level, a fact which corresponds with the statement in a preceding paragraph with regard to the height of the greatest wave-action.

III. EFFECTS OF WINDS AND GALES.

In addition to this ordinary wave-action, there are also more violent effects from storms ; and these are observed alike on the Australian shores referred to, and on those of coral islands. The waters as they move in, first draw away and then drive on with increased velocity up the shallowing shores, or under shelving layers, and thus they easily break off great