

sea within the historical period. 'On the Kincardineshire coast,' says Sir Charles Lyell,¹ 'an illustration was afforded at the close of the last century of the effect of promontories in protecting a line of low shore. The village of Mathers, two miles south of Johnshaven, was built on an ancient shingle beach, protected by a projecting ledge of limestone rock. This was quarried for lime to such an extent that the sea broke through, and in 1795 carried away the whole village in one night, and penetrated 150 yards inland, where it has maintained its ground ever since, the new village having been built farther inland on the new shore.' In order to check the further ravages of the waves, a stone bulwark was erected, which is still kept up for the protection of the houses that stand nearest the beach.²

To the north of Stonehaven, the crystalline schists of the Highlands abut upon the sea-margin. Their wide diversities of structure and durability have given rise to a much more notched and irregular coast-line than in the tracts of Old Red Sandstone; the harder and more massive schists and eruptive rocks projecting in crags and promontories, while the more yielding members of the series are cut out into creeks and gullies. The Aberdeenshire coast, jutting well forward into the North Sea, is exposed to the fury of the easterly gales, and shows in its wasted lines of cliff how steadily the waves have been making way. As an instance of the force with which the breakers fall on these shores, reference may be made to the gale of 10th January 1849, during which three successive waves carried away no less than 315 feet of a bulwark at Peterhead that had been built many years before at a height of nine and a half feet above the high-

¹ *Principles of Geology*, ninth edition, p. 302.

² *New Stat. Acc. Kincardine*, p. 275.