

impulsion of the winds from west to south-west. In the North Sea, owing to the land shelter from the west, winds round about the north-east are those setting up the severest wind-waves.

Land springs frequently disintegrate the base of a cliff or disturb a foreshore to such a degree that the recurrent effect of gales is increased. Wherever cliffs of Tertiary clay abut on a foreshore their plasticity is a constant source of danger. They are apt to slide in the fashion of a glacier, and the pressures they cause can only be counteracted by heavy works.

Another action seldom allowed for is that set up where sea-walls or other littoral defences are built at or near the foot of a cliff. The weight of the cliff then causes the strata on which it is based to buckle, and the foundations of the sea-wall may thus be crushed out of line and the wall ruptured.

Another action which is certainly not negligible is the effect of the concussion of waves on the crust of the earth. The record of seismic disturbance is a registration of the ripple of oscillation conveyed by this action to a spot perhaps on the opposite side of the globe. Professor Milne's instruments proved that relatively trifling displacements of weight cause an appreciable tilting of the earth's crust, and Sir George Darwin calculated that the movement of the tide, the addition and subtraction of the weight of its waters, set up oscillatory disturbance inland for a distance of 100 miles.

In the planning of a seaside town these considerations are important. At some of the older watering-places the building area is pushed forward to within a few yards of high-water line. The wise course is to leave a wide belt of lawns or gardens between the sea beach and the houses; thus can long flat slopes be substituted for high sea-walls. A line of such walling is one of the best expedients conceivable for producing dangerous scour, and perforce it has to be supplemented by heavy groyning. The art of Dutch foreshore engineers relies on the methods which are the antithesis of such expedients. In that country of nicely adjusted equilibrium between land and sea Nature