

farther waste will be checked ; the abrupt cliff will at last become a slope, and that slope become defended by its grassy coat of proof. It should appear that even the action of the sea, certainly the most powerful and important of all those we have surveyed, has a similar tendency to impose a limit to its own ravages. It has obviously in many instances formed an effectual barrier against itself, by throwing up shingle banks and marsh lands in the face of cliffs against which it once beat ; and after the destruction has been carried to a certain point, it appears necessary from the mode of action, (excepting where very powerful currents interfere) that the very materials resulting from the ruin should check its farther encrease : even where these currents exist, these also have a tendency to throw up barriers of shingle in their eddy. Historical records, and the very nature and physical possibilities of the case, alike compel us to dissent entirely from those crude and hasty speculations which would assign to the causes now in action, the power of producing any very material change in the face of things ; and which would refer to these alone, acting under their present conditions, and with only their present forces, the mighty operations which have formed and modified our continents.

It is a curious object of enquiry arising from this subject, whether the materials thus carried into the sea have produced any effect on its level. The materials derived from the destruction of lofty cliffs by the waves, having been deposited in the formation of low marshes, must of course occupy a greater surface in the latter than in the former condition, and if they have formed banks in the shoal waters, the same consequence must have resulted ; so that the sea must in either case have lost more room by the diffusion of the materials, than it can have gained by encroaching on the cliff ; to this must be added the materials brought down to the sea coast, and there deposited by rivers ; so that it cannot be doubted but that the basin of the ocean must, by the combined action of these causes, been in some degree (however trifling that degree may be) narrowed. If therefore, as seems probable or rather indeed certain, the quantity of water in the ocean is permanent, its level cannot but have been slightly raised by this reduction of the superficial space allotted to it. It is probable, however, that this effect can only be spoken of theoretically, being so small in proportion to the total mass of waters in the ocean, and the area they occupy, as to be absolutely imperceptible. But although it is little probable that any perceptible change can thus have been produced in the general level of the ocean, it is nevertheless very possible that the level of the tides along the coast may have been sensibly affected, since the effect of these depo-