not abrade the surface when it acts by itself. We see this surface, on rocks and the sides of piers and dikes, perpetually beaten by the waves, covered with fuci, confervæ, byssi, and other delicate vegetables, *without roots*, which the waves have not prevented from contracting a first and feeble adherence, and which they do not hinder from growing. But, if the waves carry with them pebbles, or even sand, it is those hard bodies which act; the surface of the rocks is abraded, and all vegetation ceases.

The same effect takes place, and is even augmented by the real degradation of the coasts, if the sea acts upon friable rocks, capable of mixing with water, such as argillaceous or calcareous marl, or chalk, or upon rocks which are hard, but naturally fissured, or partly disaggregated, such as certain granites; it then easily removes the crumbled or previously detached parts, scoops out the foot of the rock or steep coast, and causes the upper part, which is deprived of support, to fall. But, in consequence of this fall, it forms a slope, which, by its inclination, deadens the violence of the shock, and even protects the foot of the cliff, for some time only, if it be friable, or capable of disintegration; and for ever, if, being compact, it does not carry in it the causes of destruction. The action of the waves ceasing, the slope is covered with vegetation; and if the coast continues, nevertheless, to be worn, the changes are then owing to causes unconnected with the action of water.

Such is, in few words, the ordinary action of the water of the sea upon steep coasts, and even that of great masses of water in a state of agitation. M. De Luc, in his various works, has estimated this action with a cor-