new channel thus taken may become permanent, and a valley may be cut out or widened.

3. Effects upon the sea.—The great sea-wave propagated outward from the centre of a sub-oceanic earthquake and reaching the land after the earth-wave has arrived there, gives rise to much destruction along the maritime parts of the disturbed region. When it approaches a low shore, the littoral waters retreat seaward, sucked up, as it were, by the advancing wall of water, which, reaching a height of sometimes 60 feet or more, rushes over the bare beach and sweeps inland, carrying with it everything which it can dislodge and bear away. Loose blocks of rock are thus lifted to a considerable distance from their former position, and left at a higher level. Deposits of sand, gravel, and other superficial accumulations are torn up and swept away, while the surface of the country, as far as the limit reached by the wave, is strewn with débris. If the district has been already shattered by the passage of the earth-wave, the advent of the great sea-wave augments and completes the devastation. The havoc caused by the Lisbon earthquake of 1755, and by that of Peru and Ecuador in 1868, was much aggravated by the co-operation of the oceanic wave. Where the wave breaks on land rising out of deep water little damage may be done.

4. Permanent changes of level.—It has been observed, after the passage of an earthquake, that the level of the disturbed country has sometimes been changed. Thus after the terrible earthquake of 19th November, 1822, the coast of Chile, for a long distance, was found to have risen from 3 to 4 feet, so that along shore, littoral shells were exposed still adhering to the rocks, amid multitudes of dead fish. The same coast-line has been further upraised