of the highest commendation, both for efficiency and economy. (Vide letter of Wm. Lord, Esq., Surveyor of the Port of Liverpool, and returns of local corporations, appendix.)

It is thus seen that the best managed lights of Europe are under the management and direction of boards, with proper officers to assist them in their duties. That this service should be deemed sufficiently honorable in France, Scotland, &c., to be performed gratuitously, is not so much to be wondered at, when we recollect the high standard of excellence it has reached through the instrumentality of the philanthropic individuals constituting those light-house boards.

In concluding this part of their report, the board consider it their duty to urge upon Congress the necessity for a change in the present management of our light-house establishment.

In investigating the subjects confided to them, they have endeavored to reach the truth from observation and research. That they have not done injustice to any one, they feel perfectly conscious; to have passed over palpable defects in the present management of our lights, involving great loss of human life and property, without pointing them out, would have been culpable and unpardonable; and that they have looked as leniently as possible on many points considered exceptionable, it is believed will be clearly shown by their report.

The board have not sought so much to discover defects and point them out, as to show the necessity for a better system. Commerce and navigation, in which every citizen of this nation is interested, either directly or indirectly, claim it; the weather-beaten sailor asks it, and humanity demands it.

*On the Alluvial Formations and the Local Changes of the South-Eastern Coast of England. First Section, from the River Thames to Beachy Head. By J. B. REDMAN.**

The paper stated, that the passage of shingle along the English coast, due, as was generally believed, to the action of waves alone, took on the south coast a course from west to east, and on the east a course from north to south; during certain winds the shingle was heaped up coincident with their direction, and repeated withdrawals and renewals (the latter being the most frequent) caused a leeward movement of the material, forming it, at the same time, into a series of triangles, of which the shore was the base. If any natural or artificial projection interrupted this motion, an accumulation, which would increase and be held in check according to the state of the wind, took place up to a certain point, or until the angle formed was filled up, when the shingle would pass round. With groyne, by far the most common action was, unless they were of great height, or short length, for the shingle, after accumulating on the weather side to the level of the top of the groyne, to pass over it, and then travel to leeward.

The degradation of the north shore of Kent, the local formation of shingle around the Isle of Thanet, by the wasting away of that chalky

* From the London Athenæum, December, 1851.

promontory, and the retention of large masses of alluvial matter in Pegwell Bay, were dwelt on. The main belt of shingle lying to the south of Deal, and extending from thence to Dover, with its early and present effects on the harbor at the latter place, were then described; also, the early condition of Folkestone Harbor, the large accumulation of shingle arrested to the westward of that haven, by the projection of a low-water pier, or groyne, at right angles to the harbor, and its effect upon the shore to the eastward, by retarding the progressive motion of the shingle in that direction. Further on, the curious formation at Dungeness Point, which it was reasonable to suppose did not at one time exist, as the parallel "fulls" of beach between Romney and Lydd, and extending from Winchelsea on the west to Hythe on the east, seemed formerly to have constituted the sea coast. The rectangular "full," running from the banks on the west side of Lydd towards the point, might have been created by an accumulation of shingle traveling from the westward, held in check by the outfall of the river Rother; the angle contained by this spit and the coast to the westward becoming gradually filled up with shingle, a silty deposit would take place on the east side, consequent on the gradual loss of Romney Harbor, and the length of the spit would be increased by the parallel ridges of shingle periodically added to, and traveling round it. Numerous examples, extending over two centuries, showed that the average annual increase was six yards, reaching, over certain periods, an average of eight yards per annum, the absolute increase since the time of Elizabeth being nearly one mile; and they proved conclusively, that the average progress seaward, producing a determinate aggregate elongation in a south-easterly direction, was much greater than had been generally assumed, though not regular, for the Ness had even been stationary during certain periods.

The gradual decadence of the ancient ports of Hythe, Romney, and Lydd, to leeward of this Point, was then alluded to; as also, the diversion of the outfall of the river Rother to Rye, once an estuary of the sea, and then forming Romney Harbor; the great increase of shingle to the westward; the early and abortive attempts to form a harbor at Hastings; the vast abrasion of the coast along Pevensey Bay, the harbor of which place had been lost by the elongation and extension of Langley Point. Between the origin of this Point and that of Dungeness, there was a remarkable similarity, both having originally had a tidal haven to the leeward, eventually choked up by the elongation of these spits across their outfalls; both had pools, or meres, arising from the land-locked waters, and in both cases the modern "fulls" of shingle could be plainly distinguished from the more ancient, by their forms and direction. The remarkable decrease of this point, about three-eighths of a mile, during the last century, appeared to arise principally from Old Brighton Beach no longer affording the necessary supply of shingle.

The early condition and present state of Cuckmere and Newhaven Harbors, the great degradation of the coast at Rottingdean, the sweeping away during Elizabeth's reign of the beach and town of Old Brighton, then standing on the site of the present Chain-pier, the materials from which formed the spits to the eastward, were described.—*Proc. Inst. Civ. Eng.*, December, 1851.