indeed been treated, more or less fully, by many writers on Geology and Physical Geography long before the recent deep-sea investigations were undertaken, and hence there is less necessity to dwell on them in this place. Our remarks will therefore be limited to indicating the principal physical conditions and essential characters of the deposits in each of the above-mentioned zones.

*Littoral Deposits.*—These deposits are formed between high and low water marks, and if we take the length of the coast lines of the world at 125,000 miles,[1] and the average width of this zone at half a mile, then, at the present time, these deposits are now forming over an area of 62,500 square miles[2] of the earth's surface. The littoral zone is the one in which boulders, gravels, sands, and all coarser materials accumulate, though occasionally muds may be met with in sheltered estuaries. Generally speaking, the nature of these deposits is determined by the local character of the adjoining lands and the nature of the organisms living on the neighbouring coasts in shallow water. The heavier materials brought by rivers from high terrestrial regions, or thrown up by the tides and waves of the sea, are here arranged with great diversity of stratification through the alternate play of the winds and waves. Twice in the twenty-four hours the littoral zone is covered by water, and exposed to the direct rays of the sun or the cooling effects of the night. There is a great range of temperature, mechanical agencies produce their maximum effects, and the whole of the physical conditions are of the most varied character, while the fact that the zone is inhabited by both marine and terrestrial organisms introduces still greater diversity. The evaporation of the sea-water that flows over marshes and shallow basins leads to the formation of saline deposits in this zone.

*Shallow-Water Deposits.*—These deposits are laid down in the zone of the ocean comprised between low-water mark and the 100-fathom line; they cover, consequently, about ten millions of square miles of the earth's surface. Fundamentally they have the same composition as the deposits of the littoral zone, with which they are continuous at their upper limit, while at their lower limit they pass insensibly into the Deep-Sea Deposits in the seaward direction. The fragments of which these deposits chiefly consist are smaller than those of the littoral zone and larger than those of the deep-sea regions. Gravels, sands, and coarse materials prevail, but in cup-shaped depressions and enclosed basins there are muddy deposits. While some of the deposits are wholly composed of inorganic debris derived from the disintegration of the adjoining lands, others are almost wholly made up of organic remains, as, for instance, in the vicinity of coral reefs. The mechanical effects of erosion are everywhere present, produced by the combined action of tides, currents, and waves, these being well marked in the shallower depths of the zone, and less and less so as the 100-fathom line is approached. There is a great range of temperature, varying with latitude and the seasons of the year. The

[1] About 200,000 kilometres.

[2] About 160,000 square kilometres.