

## CHAPTER III.

### ON RECENT MARINE FORMATIONS AND THE DIFFERENT TYPES OF DEEP-SEA DEPOSITS: THEIR COMPOSITION, GEOGRAPHICAL AND BATHYMETRICAL DISTRIBUTION.

#### *α.* RECENT MARINE FORMATIONS IN GENERAL.

IN the preceding chapters we have described the methods employed in the study of Marine Deposits; thereafter we have given detailed descriptions of all the specimens of these deposits collected during the Challenger Expedition, and have pointed out some of the principal variations which these undergo with change of depth and other conditions.

In the present chapter we shall discuss the various kinds of marine formations now in process of being laid down on the floor of the ocean, and, as the Challenger investigations lay for the most part in the great ocean basins, we shall deal more especially with the different types of deposits discovered in the deep sea. Indeed, shallow-water and littoral formations will only be referred to incidentally and by way of illustration in the present work, which is devoted to a consideration of Deep-Sea Deposits.

What are we to understand by the deep sea? In this Report the term "deep sea" is applied to all depths of the ocean exceeding 100 fathoms (183 metres). We have been led to adopt this somewhat arbitrary limit from a number of considerations. The 100-fathom line is well delineated on all charts. All soundings in depths less than 100 fathoms are regarded by marine surveyors as useful for navigational purposes, and their positions are in consequence carefully entered on the charts along all coasts. In this way it happens that the 100-fathom line is at the present time the best defined of all the bathymetrical contour lines. Soundings beyond 100 fathoms were exceptional until within the last thirty years, when, in connection with telegraphic construction, it became necessary to ascertain the relief as well as the nature of the bottom from soundings along many lines across the great oceans.

Although there is no sudden or well-marked change in the nature of the deposits at a depth of 100 fathoms, still along all coasts bordering the great oceans this appears to be the average depth at which, in proceeding seawards, great abundance of fine amorphous particles settle permanently on the bottom. At about this depth the bottom is in general rarely disturbed by the action of currents or waves, and sunlight and vegetable life are nearly, if not quite, absent;<sup>1</sup> beyond 100 fathoms we have, as a rule, muds and ooze, while within the 100-fathom line sands and coarser deposits prevail.

<sup>1</sup> See P. M. Duncan, "On Some Thallophtes parasitic within recent Madreporaria," *Proc. Roy. Soc.*, vol. xxv. pp. 238-257, 1876.