

b. THE DIFFERENT TYPES OF DEEP-SEA DEPOSITS.*I. Pelagic Deposits.*

We have just indicated that the deposits of the deep sea may be divided into two great groups distinguished by the terms "Pelagic" and "Terrigenous." Pelagic deposits are situated at a considerable distance from land, and for the most part in the greatest depths of the ocean. It is only in exceptional circumstances that sandy or other particles immediately derived from the land make up any considerable portion of these deposits. The most characteristic minerals are derived from volcanic eruptions, floating pumice, or are of secondary origin formed *in situ*. The remains of pelagic organisms that have fallen from the surface form the principal part of many of these deposits, as indicated by the names: Pteropod, Globigerina, Diatom, and Radiolarian Oozes. In some of the deeper regions of the ocean these organic oozes are replaced by Red Clays, formed for the most part by the disintegration of rocks and minerals *in situ*.

Generally speaking, the physical conditions in the areas occupied by the pelagic deposits are very uniform; the temperature is near the freezing-point of fresh water, and the range never exceeds 7° F., being constant throughout the year at any one locality. Sunlight and vegetable life are absent, and, although animals belonging to all the principal groups are present, there is no great wealth either in the number of individuals or of the species, though many of the latter may present archaic characters. There are but few indications of change of any kind, and the rate of accumulation of some of these pelagic deposits must be exceedingly slow, so that we apparently find the remains of Tertiary species lying on the sea-floor alongside those of species inhabiting our present seas. With some doubtful exceptions, it has been impossible to recognise in the rocks of the continents formations identical with these pelagic deposits.¹

Before commencing the description of the different types of Deep-Sea Deposits, it may be well to repeat that while it is easy to distinguish one kind of Deep-Sea Deposit from another when dealing with typical samples, this becomes less and less easy when, with a change of conditions, a deposit gradually changes its characters and slowly assumes those of another. In this way it happens that there is at many points in the ocean a gradual transition from the one type of deposit into another, and generally it may be said that there is no sharp and distinct line limiting the areas occupied by the various kinds of deposits either in depth or geographical extension, as might be supposed from an examination of our map representing the distribution by means of colours.

We commence the consideration of pelagic deposits, taking first the most characteristic type,—the clays formed in the greatest depths and greatest distance from dry land.

¹ J. B. Harrison and A. J. Jukes-Browne, *The Geology of Barbados* (published by authority of the Barbadian Legislature), 1890; H. A. Nicolson, *Trans. Edin. Geol. Soc.*, vol. vi. p. 56, 1890; G. J. Hinde, *Ann. and Mag. Nat. Hist.*, ser. vi. vol. vi. p. 45, 1890.