

These analyses represent the composition of the three deposits as almost identical. In the first place, they are specially characterised by the high percentage of carbonate of lime, much higher than the average percentage in a Globigerina Ooze, which in this case must be attributed to the presence of Pteropod, Heteropod, and other delicate and larger shells, which are absent or rare in the last-named deposit. Having regard to the small quantities of alumina, silica, and iron, there can be but little argillaceous and ferruginous matters present, and the loss on ignition can most probably be referred to the organic matter associated with the calcareous shells. There is nothing special to remark regarding the sulphate and phosphate of lime, and carbonate of magnesia. These have, it is evident, the same origin as in the case of the Globigerina Oozes; it may be noted, however, that the magnesia does not augment with the proportionally great increase of carbonate of lime.<sup>1</sup>

As the soluble portion rises to a mean of more than 93 per cent. of the whole deposit, few anhydrous minerals could be expected in the insoluble portion, and indeed no quantitative analysis has been attempted of the 3 per cent. of which it is made up.

With reference to the Pteropod Ooze, it may be here stated that with the view of determining whether or not these shells contained mineral matters other than carbonate of lime, an analysis was made of a number of the shells of *Cavolinia* taken at the surface of the sea and still containing the animal. After having removed with all possible care the whole of the animal matter, these shells were analysed, and we were able to detect, in addition to the carbonate of lime, only traces of iron and of organic matter.

From all the foregoing considerations, then, we arrive at the conclusion that a Pteropod Ooze differs from a Globigerina Ooze only in the larger percentage of carbonate of lime, and it has already been pointed out that this is due to the greater abundance of the more delicate shells of pelagic organisms.

Pteropod Ooze was found by the Challenger Expedition only in the Atlantic Ocean. It was met with in its most typical form on the central ridges of the Atlantic, where the depths did not exceed 1400 fathoms; in these regions it is estimated to cover about 400,000 square miles of the sea-floor. Had the Challenger been fortunate enough to discover similar ridges far from land in the tropical and subtropical regions of the Pacific, they would in all probability have been found to be covered by Pteropod Ooze. In nearly all cases these shells are very numerous in the shallower depths near tropical lands, but usually they are not in sufficient abundance to give a distinctive character to the deposit, being masked by the large quantity of other more rapidly accumulating materials either of an organic or inorganic nature. In some exceptional cases, however, as off coral reefs and oceanic islands, they are sufficiently abundant to allow of the deposit being called a Pteropod Ooze, for instance, off the Antilles and the Azores in the Atlantic, and off some of

<sup>1</sup> See pp. 200, 201.