

turbed, as, for instance, off the north of Scotland. Murray has termed the limit of wave-action the *mud-line*, and the average depth in the open ocean at which mud commences to be laid down he places at about 100 fathoms.

Beyond the mud-line the physical conditions become more and more uniform, and for a few hundred fathoms below this limit animal life is exceedingly abundant. This region, according to Murray, is the "great feeding ground" of the ocean, especially around continental shores; the organic particles from the continents and from the shallow waters there slowly come to rest on the bottom and supply food to the wealth of crustaceous forms which are captured in such situations (*Calanus*, *Euchaeta*, *Pasiphaea*, *Crangon*, *Calocaris*, *Pandalus*, *Hippolyte*, *Pagurus*, Amphipoda, Isopoda, and Mysida).

The surface layers of the organic deposits which are situated in moderate depths towards the central parts of the ocean basins (Diatom ooze, Globigerina ooze, Pteropod ooze), yield an abundance of food for benthonic animals, but all investigations go to show that where the organic oozes pass with increasing depth into Red clay, the quantity of food for bottom-living animals rapidly diminishes, and the number of animals captured on Red clay bottoms likewise diminishes very greatly. The poorest hauls during the whole of the "Challenger" Expedition were those taken in the stretches through the central Pacific from Japan to Valparaiso, and Alexander Agassiz's investigations on board the "Albatross" gave similar results. He calls the central South Pacific a "barren region."

Decreasing amount of food on proceeding into deep water.

This short statement will make it obvious, that the conditions of life offered to organisms may vary greatly in different depths. Murray's theory on the importance of the deposits to the distribution of animal life is of special value, because it opens up to science the possibility of finding certain definable reasons for the differences observed in the specific composition, and in the abundance, of animal life from place to place.

Relation between the different kinds of deposits and the fauna living on them.

This study has, however, been somewhat neglected as far as the oceans are concerned. Most of the deep-sea expeditions have been so absorbed in faunistic research, that the problems of the economy of the ocean have been very little attended to, and the strong interest taken in theoretical plankton-research peculiar to recent times has drawn attention away from the bottom-life of the ocean and the importance of the deposits as food for the bottom fauna, but Lohmann and C. G. J. Petersen have recently turned attention again to Murray's point of view.