

northern and southern Polar areas the isotherm of the mean temperature of 36° F. rises towards the surface, and we find in the seas of Scandinavia and Kerguelen Island, at moderate depths, a mixture of abyssal types, with the fauna of what Professor Edward Forbes defined as the *infra-median* zone.

III. Pressure and the absence of light appear to affect animals to a certain extent. No differences exist in the composition or the comparative salinity of the sea-water of the abyssal region, or in the amount, or the proportion, or the nature of the gases dissolved in it, to affect animal life.

IV. The abyssal fauna is very special, and remarkably uniform throughout the enormous area over which it extends. It is characterised by the abundance and variety of certain conspicuous invertebrate groups, which are either unrepresented or play a very subordinate part in the shallow-water faunæ.

V. In all probability the depressions in the crust of the earth which now form the great ocean basins date from an early geological epoch, and, consequently, during the period occupied by the deposition of the Jurassic, the Cretaceous, and the Tertiary formations at least, the greater part of the surface of the earth has been covered by a sea. As the physical conditions of the world have apparently remained during that time much the same, there seems to be no special reason to doubt that the mean depth of the sea has been throughout about 2500 fathoms, and the temperature of its abyssal region 32° to 40° F., as at the present day.

VI. The belts of shallower water, whose history during the Jurassic, the Cretaceous, and the Tertiary periods is known to us through local upheavals, slow or rapid, which have brought almost a continuous series of their records into view, show a fauna, different certainly from the shallow-water fauna of the present day, but comparable with it in every respect. The records of the abyssal fauna of these past times are naturally more scanty, seeing that they are still mostly beneath the sea; but occasional disturbances have given sufficient evidence that the abyssal region of the ocean has been inhabited throughout.

VII. The existing abyssal fauna, including many characteristic animal forms, of which the few mentioned above are perhaps among the most striking, does not appear to bear as a fauna any direct genetic relation to the faunæ of shallower water, and seems to be to a great degree independent of the distribution of temperature, due to direct solar radiation or to surface currents.

VIII. The recent abyssal fauna has a relation to the deep water fauna of the Oolite, the Chalk, and the Tertiary formations, so close that it is difficult to suppose it in the main other than the same fauna which has been subjected to a slow and continuous change under slightly varying circumstances according to some law, of the nature of which we have not as yet the remotest knowledge.

It has been discovered within the last few years through a series of investigations, of