

the mineral accumulations and the fauna of the margin of some sea. We may say that they have been deposited in the shallow water of tertiary seas whose deep-sea fauna is unknown, and this mode of expression is most in accordance with previous ideas; but if the view here advocated be correct, we must regard the tertiaries as the deposits formed and exposed by depressions and upheavals of the borders of the cretaceous sea; of a sea which, with many changes of condition produced by the same oscillations which alternately exposed and submerged the tertiaries, existed continuously, depositing conformable beds of chalk-mud from the period of the ancient chalk.

Mollusca are chiefly shallow-water forms, although some of them are special to deep water, and others have a great vertical range. As I have already said, considering the many changes in the conditions which most affect animal life which have occurred during later geological times, we cannot expect to find any animals of the higher groups specifically identical with chalk fossils; the difficulty in the case seems rather to be to account for the identity of many living deep-water species with species found in the Tertiaries. I think, however, that we can find a clue. Most of the species common to the modern Atlantic and to tertiary beds are now found in the Atlantic at much greater depths than those at which they were imbedded in the tertiary seas. This we know by the species from shallower water which are associated with them in the Tertiaries. They are, therefore, species which had a considerable vertical range; and probably while many of the shallower water forms were exterminated by elevations or other change