

it be, appears not to be confined within definite limits, probably every point on the surface of our planet may have successively passed through all the different terrestrial climates.¹

Though his theory of the interchange of land and sea cannot be accepted, it is impossible to read without admiration Lamarck's marshalling of the facts on which he relied, and his acute reflections on the deductions to be drawn from the characters and probable habitats of organic remains. He points out the importance of distinguishing pelagic from littoral shells, each series being usually found in distinct beds, the one marking deep water the other former shore-lines. Every part of the earth's surface that has once been overspread by the sea has had twice a zone of littoral shells and once a deposit of pelagic shells, making three distinct and successive formations, representing the passage of a vast lapse of time. No sudden catastrophe is admissible as an explanation of the facts; such an event would have jumbled the organisms together and would have broken the more delicate shells, which have nevertheless been admirably preserved in great numbers among the other fossils. Again, the bivalves, with which many of the limestones are crowded, would not so commonly have retained their valves in contact, unless they had lived and died where their remains are found. In Lamarck's opinion a large part of the calcareous material, now to be found on the surface and within the crust of the earth, has been derived from once living organisms. He will not admit the propriety

¹ *Op. cit.* p. 87.