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Drift or Expansion: Probing continental movement over the global surface

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Ever since, the first authentic map of the world was prepared in 1570, the remarkable similarity of the coasts of Africa and South America across the Atlantic attracted attention of many, including the pioneer cartographer Abraham Ortelius. Amongst all the observers, Alfred Wegener's concept of continental drift presented in 1912 attracted much attention. The author has, nevertheless, stressed that only in case of sufficiently fluid state of the mantle movement of continents would be feasible. While in unaltered dimension of the globe appropriate fittings of continents cannot be accomplished, Hilgenberg showed that in a globe, reduced to two-third of its present radial thickness, perfect adjustment of continents can be achieved. Since such a globe would be devoid of oceans, initially the ocean-forming water would be associated with the mantle, turning that geosphere considerably fluid and suitable for expansion. In the planet's interior, owing to external gravitational pull from a planetary object, semi-fluid mantle was gradually uplifted rupturing the original inner core -mantle conjunction, along which a fluid geosphere was opened up. With continued expansion the dimension of the newly formed fluid geosphere was increased, while over the global surface a number of long sinuous expansion cracks were formed fragmenting the super-continent. Through these expansion cracks or mid-oceanic ridges, large scale molten lava disgorged forming ocean basins and segregating the fragmented continents. Further expansion of the earth caused enlargement of the ocean basins which were filled up with water that emerged as moisture-rich volatiles along with magma emission .

Biography

Subhasis Sen has completed his PhD from Nagpur University and worked in Central Fuel Research Institute of the Council of Scientific and Industrial Research, India, as a Geologist from where he retired in 1996. He has published more than 170 papers in reputed Indian and international journals and has published two books '*Earth–The Planet Extraordinary*' and '*Decoding the Solar System*'. He has developed some global tectonics termed 'Unified Global Tectonics' for understanding the earth system. He also served as an Editor of the *Gondwana Geological Magazine*.

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