by Sir William Thomson (Lord Kelvin), in his famous paper "On the Secular Cooling of the Earth" (1862), that even mathematical methods could not lead to any definite calculation of the age of the earth. According to Thomson and Tait's *Handbook of Theoretical Physics*, the formation of a solid crust took place not less than twenty million years ago, and not more than four hundred million years ago. Helmholtz calculated, upon the basis of the original temperature of the earth-vapour, that the age of the earth might be sixty-eight million years.

In 1893, the American geologist, Clarence King, published a paper "On the Age of the Earth." He supposes the earth to have been originally molten, and now to have a solid nucleus and a solid crust, and a zone of molten material between crust and nucleus. From a number of observations and experiments, King concludes that the original temperature of the earth was not more than 2000° C., and that its age might be about twenty-four million years.

A remarkable theory of the earth's constitution was presented by the chemist Sterry Hunt in Canada. He starts from the hypothesis of a homogeneous, gaseous, rotating sphere, in which the parts undergoing condensation seek the centre; there they again become heated, and are kept circulating, finally settling down in zones according to their density and forming a molten, plastic sphere. The consolidation of this sphere begins in the central region. Slow cooling also goes on at the surface of the molten mass, and chemical combinations are effected there owing to the pressure of atmospheric vapours. Gradually a crust forms permeated with water, and in its lower horizons more immediately affected by the internal heat of the earth, the inner crust is again melted and forms a plastic watery zone between the solid, heated nucleus and the outer crust. This intermediate zone is the centre of volcanic action, of earthquakes, and of deforming changes in the earth's crust.

Another ingenious thinker in this subject was Robert Mallet (1810-81), a civil engineer in Dublin. Mallet thought that the cooling of the original molten sphere began at the Poles. Certain portions, as they solidified at the Poles, sank into the molten mass, but again rose to the surface at the equatorial regions and began to return towards the Poles, the circulation of rock-material being analogous with that of the ocean currents at the present day. The formation of a crust proceeded out-