pression to the theory of horizontal compression in explanation of the origin of mountains. The early papers by Dana upon crust-movements were published in the *American Journal of Science* in the years 1846 and 1847. In them Dana boldly contested the possibility of continents and mountains being raised by the expansive force of subterranean vapours and the ascent of rock-magma; and he also dissented from the gravitation theory of his compatriot, James Hall (1859), according to which the gradual accumulation of sedimentary masses in areas of subsidence must, on account of the altered equilibrium, give rise to folding and fracture of the crust, and consequently to mountain-chains. Hall's idea was to a great extent a modification of previous suggestions by Babbage and Herschel, but these investigators had attributed the subsequent uplift of thick deposits in areas of subsidence to the expansion of the sediments on account of the high temperature in their deeper horizons.

In common with Descartes, De la Beche, Cordier, Élie de Beaumont, and others, Dana considered the fundamental cause of crust-deformation to be the slow cooling and contraction of the earth's nucleus. But he made a closer geological investigation than any previous observer of the precise mode of action displayed by the contracting forces.

Dana assumed that the orographical limits of continents and mountain-chains were determined by certain pre-existing lines of minimum resistance (cleavage-lines) associated with inequalities of thickness and temperature in the earth's crust. He then argued that as the primitive earth cooled, the first crust-blocks that consolidated formed continents, and the pressure caused by shrinkage was most intense at the continental margins. There the greatest mountain-systems developed, and as a rule the height of a marginal mountain

as well as his comprehensive works on Zoophytes and Crustaceans, are amongst the finest productions in the literature of scientific travel. Dana was a Professor at Yale University from 1850 to 1894, and died on the 14th April 1895. He was distinguished as a zoologist, geologist, and mineralogist; his high merits were recognised in England by the award of the Wollaston and Copley medals. His *Text-book of Geology*, published in 1863, has since passed through several editions, and has had a marked influence on geological thought and progress. Over a hundred papers by Dana have appeared in the *American Journal of Science*, and they treat almost every subject of general geological interest.