

This change may have amounted since the beginning of Mesozoic time to one-third of its whole present width, which would place the line of the coast ranges about two degrees of longitude farther west." Here we have evidence that a tract of country 400 miles wide and consisting largely of mountain ranges and table-lands, has been crushed bodily back over two degrees of longitude; and this applies not to British Columbia merely, but to the whole west coast from Alaska to Chili. Yet we know that any contraction of the earth's nucleus can crumple up only a very thin superficial crust, which in this case must have slid over the pasty mass below.¹ Let it be observed, however, that the whole lateral pressure of vast areas has been condensed into very narrow lines. Nothing, I think, can more forcibly show the enormous pressure to which the edges of the continents have been exposed, and at the same time the great sinking of the hard and resisting ocean-beds. Complex and difficult to calculate though these movements of plication are, they are more intelligible than the apparently regular pulsations of the flat continental areas, whereby they have alternately been below and above the waters, and which must have depended on somewhat regularly recurring causes, connected either with the secular cooling of the earth or with the gradual retardation of its rotation, or with both. There is, however, good reason to believe that the successive subsidences alternated with the movements of plication, and depended on upward bendings of the ocean floor, and also on the gradual slackening of the rotation of the earth. Throughout these changes, each successive elevation exposed the rocks for long ages to the decomposing influence of the atmosphere. Each submergence swept away and deposited as

¹ This view is quite consistent with the practical solidity of the earth, and with the action of local expansion by heat, of settlement of areas overloaded with sediment, and of primitive or downward sliding of beds. This we shall see in the sequel.