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THE DEPTHS OF THE EARTH¹

By Professor REGINALD A. DALY

HARVARD UNIVERSITY

INTRODUCTION

CHARLES LAPWORTH was one of the intellectual princes of our profession. He it was who discovered the "Secret of the Highlands." In another Scotland Yard he triumphantly illustrated the British genius for detective work. His penetrating eye saw in principle, and later Peach and Horne proved, the majesty of the Scottish thrusts. Thus a revolutionary idea became generally accepted. Yet a still more vital secret underlies the secret explained by the brilliant Lapworth. That further mystery, still unsolved to general satisfaction, is the cause of the clean-cut slicing and plastic shearing of the rocks when mountains are made. Clearly the data for solving the mystery

must be sought under all the lands and seas—in the earth's vast interior.

There, too, is the condition for the isostatic rise of the crust when the regional ice-caps melted, or when continents lost weight by denudation and rose to renew their equilibrium. There ultimately is the key to the problem of former land bridges between continents and the key to paleogeographic problems in general. The petrologist also can not escape the necessity of thinking intensely about the third dimension, depth, as well as about the two dimensions of the maps. In short the geologist, however specialized, has to be a courageous soul and venture where angels can not tread. The equipped geologist shall know not only his six continents and the seven seas; he shall faithfully treasure every scrap of information that may come to him regarding the invisible and intangible, where lies the secret of secrets of all geological science.

¹ Presidential address read before the Geological Society of America, December 28, 1932. Somewhat abridged; illustrations and references omitted; to be printed in full in the *Bulletin* of the Geological Society.

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