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EARTHQUAKES

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SEISMOLOGY

BY

CLARENCE EDWARD DUTTON, MAJOR U.S.A.

AUTHOR OF "THE HIGH PLATEAUS OF UTAH," "HAWAIIAN VOLCANOES"
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PREFACE

THE methods of studying earthquakes which have been developed during the last thirty years differ so much from those which preceded them, that they have justified the name of "The New Seismology." Prior to 1870, the studies published upon this subject were, with few exceptions, little more than narratives of disasters. Prof. Alexis Perrey had, it is true, compiled some extensive catalogues of earthquakes and published some comparisons which were interesting and which suggested inferences concerning the relations between earthquakes and the phases of the moon. Dr. Robert Mallet had investigated, with a minuteness never before attempted, the severe Neapolitan earthquake of 1857, and drew from his studies some remarkable conclusions. Neither Perrey's nor Mallet's work, however, added much of permanent value to the science except the truly scientific purpose and spirit which animated them. In general, the seismology of more than thirty years ago was descriptive only, and might be regarded as just within the outermost pale of scientific philosophy. The new seismology is eminently scientific, and in the strictest sense, for it investigates its phenomena by means of instruments which measure force and motions, speeds and acceleration. Its field is within the great department of physics, and is a