

## CHAPTER V.

THE PROPER TEMPERATURE OF THE GLOBE—WERNER'S THEORY OF THE CENTRAL HEAT—AT WHAT RATE HEAT INCREASES IN DESCENDING UNDERGROUND—RESULTS OF VARIOUS EXPERIMENTS STATED—EXPERIMENTS BY MEANS OF ARTESIAN WELLS—HEAT OF MINERAL SPRINGS—THE GEYSERS OF ICELAND—THE MOLTEN MATTER EJECTED FROM VOLCANIC CRATERS,

327

## CHAPTER VI.

EFFECTS OF THE INTERNAL HEAT AS SHOWN IN EARTHQUAKES—THEIR GENERAL PHENOMENA—THEIR CAUSES INVESTIGATED—THEIR SIGNS AND PRECURSORS, SUCH AS SUBTERRANEAN NOISES—THEIR SUPERFICIAL EXTENT, AND PROPAGATION OF THE EARTHQUAKE WAVE—DURATION AND DIRECTION OF THE SHOCKS—EFFECTS OF THE CONFIGURATION OF THE SOIL, WITH NUMEROUS EXAMPLES, AND NATURE OF THE DISASTERS PRODUCED BY EARTHQUAKES—THEIR PHYSICAL AND MORAL CONSEQUENCES—EARTHQUAKES IN GREAT BRITAIN—MORAL IMPRESSIONS RESULTING FROM SUCH CONVULSIONS—HORRORS ATTENDANT UPON THEM—ILL EFFECTS OF FEAR—AN ORIENTAL APOLOGUE,

335

## CHAPTER VII.

DESCRIPTIONS OF SOME SIGNAL CALAMITIES—THE GREAT EARTHQUAKE OF LISBON IN 1755—THE EARTHQUAKE OF CALABRIA IN 1783—THE EARTHQUAKE OF RIO-BAMBA IN 1797—EARTHQUAKES IN THE NINETEENTH CENTURY—THE EARTHQUAKE OF ECUADOR AND PERU IN 1868—CAUSES OF CERTAIN EARTHQUAKE PHENOMENA—VELOCITY OF THE GREAT EARTHQUAKE WAVE,

357

## CHAPTER VIII.

VOLCANOES : CENTRAL AND LINEAR—VOLCANOES AND VOLCANIC SYSTEMS OF THE WORLD DESCRIBED—MOUNT ETNA—ITS HEIGHT AND EXTENT—ITS PHYSICAL FEATURES—ITS CRATER DESCRIBED BY ELIE DE BEAUMONT, AND BY M. DE QUATREFAGES—SUNRISE FROM THE SUMMIT—LIST OF ERUPTIONS—VOLCANIC DISTRICT OF CAMPANIA—THE SOLFATARA—LAKE AVERNUS—LAKE OF FUSARO—THE PHLEGRÆI CAMPI—MOUNT VESUVIUS—ITS ANCIENT HISTORY—ERUPTION OF A. D. 79—FORMATION OF MONTE NUOVO—LIST OF ERUPTIONS—TWELFTH ERUPTION DESCRIBED—ERUPTION IN 1822—ERUPTION IN 1868—ASCENT OF MR. BABBAGE—WHAT IS LAVA?—ON CERTAIN VOLCANIC PHENOMENA—DESCRIPTION OF THE CRATER OF VESUVIUS—VOLCANOES IN THE LIPARI AND CYCLOPEAN ISLANDS—STROMBOLI—ASCENT OF, BY M. DE QUATREFAGES—ASCENT OF FRIEDRICH HOFFMANN—THE ISLAND OF JAN MAYEN—VOLCANOES IN ICELAND—MOUNT HEKLA—ITS ERUPTIONS—MOUNT SKAPTA—ERUPTION OF 1783—THE GEYSERS OF ICELAND—AFRICAN VOLCANOES—EL PICO, IN THE AZORES—PICO DE TEYDE, IN THE CANARY ISLANDS—ISLANDS OF MAURITIUS AND BOURBON—ASIATIC VOLCANOES—IN KAMTSCHATKA—MOUNT ARARAT, IN ARMENIA—MOUNT DEMAVEND—IN JAVA—MOUNT PAPANDAYANG—GUNTUR—GALON-GOON—GUEVO-UPAS—TASCHEM—TANGKUBAN PRAHU—SUMBAWA—TOMBORO—SUMATRA—THE MOLUCAS—THE NORTHERN ISLANDS—THE SANDWICH ISLANDS—HAWAII, OR OWHYHEE—MOUNA LOA—THE CRATER OF KILAUEA—IN THE POLYNESIAN ISLANDS—IN NEW ZEALAND—TONGARIRO—VOLCANIC DISTRICT OF LAKE TAUPO—ASCENT OF TONGARIRO, BY BIDWELL—MOUNT RUAPAHO—THERMAL SPRINGS IN THE WAIKATO VALLEY—THE TE-TA-RATA—SOUTH AMERICA—LINEAR VOLCANOES OF THE ANDES—COTOPAXI—PICHINCHA—ANTISANA—SANGAY—THE MEXICAN VOLCANOES—ERUPTION OF JORULLO—POCATEPETL—ORIZABA—THE WEST INDIAN VOLCANOES—ON THE CAUSES OF ERUPTION—SUBMARINE VOLCANOES—FERDINANDA ISLAND, ITS RISE AND DISAPPEARANCE,

387