

sumptions first, that the interior of the earth is a molten mass, existing at an enormous temperature; and secondly, that the solid crust of the earth is yielding and elastic. I will enumerate here only the two theories which have received the greatest number of adherents. At considerable depth below the surface, there must be vast seas of fluid lava. There they would remain quiescent as long as they are not interfered with; but if, as is quite possible, a considerable quantity of water should obtain access to them, an immense volume of internal heated vapours, would be suddenly generated, with power amply sufficient to upheave the superincumbent earth and even break through into the atmosphere. This theory however does not account for all the phenomena presented by earthquakes, especially for the wave like motion, which, propagated with marvellous rapidity, marks the progress of the shock. We know that under a pressure far lower than that which they would obtain below the earth's surface, the gases which issue most copiously from volcanoes are reduced to a liquid state. That that is the condition then in which they exist beneath us is tolerably certain. Now if these are by any disturbances subjected to an increase of temperature their expansive power is vastly multiplied, so vastly indeed, that no superincumbent mass, such as we believe to constitute the earth's crust, would suffice to resist it, and the surface would not only be shaken and convulsed, but even rent through by the force of the imprisoned gases, which long before they reached the surface would become cooled, or absorbed, and so might not be perceptible in the atmosphere. This latter theory is the more acceptable for reasons which my limited space will not allow me to detail; in fact I am already reminded that if I would enumerate a few of the most remarkable earthquakes which history has recorded, I must begin at once and leave scientific speculations for another occasion.

Mention of earthquakes comes down to us from the earliest times. Strabo and Pliny, have referred to them with particularity, the former writer having described how Ischia and Procida were convulsed. Volcanic eruptions are

constantly attended with earthquakes more or less severe, sometimes amounting to nothing more than a tremulous motion of the adjoining country, and sometimes involving loss of life and destruction of property. But as might be supposed, many of the most serious earthquakes have taken place elsewhere than in the immediate neighbourhood of volcanoes, some localities being more subject to them than others.

The end of the 17th century was especially prolific in earthquakes. In 1692, the Island of Jamaica, was visited by one of great violence, whole towns were swallowed up, and Port Royal itself was nearly destroyed: a large portion of the town being submerged beneath the sea. The earth opened, and many people disappeared down enormous chasms, which immediately afterwards closed over them, while in other places the dead bodies were cast up again through new rents, together with enormous quantities of water and sulphurous gases. In the following year, the entire island of Sicily was convulsed, and several thousand persons were suddenly entombed in the caverns of Sortina and Vecchio, the courses of rivers were changed; and not less than fifty towns, utterly destroyed. It is estimated that the earthquake caused the loss of not less than 100,000 souls.

In 1699, an earthquake occurred at Java, during which no less than 208 distinct shocks are said to have been counted. In 1746, a terrible earthquake also happened in Peru, when 200 shocks were noted in the space of 24 hours, and several thousand persons perished; Lima was destroyed, the coast line changed, a whole fleet of ships submerged, and some, including a large frigate, were carried far inland, and left aground upon the hills. Five years later, the town of Conception, in Chili, was sunk beneath the sea, and several times since a like catastrophe has taken place in the same locality.

But nothing more fearful has occurred within recent times than the earthquake which destroyed Lisbon, in 1755. The whole country for miles around, was shaken, the sea rose fifty feet above its ordinary level—flames issued from the mountains, the earth split and rent in all