

meet, is very seldom to be attributed to the effort of the magma, or molten matter, to force its way to the surface; an effort which is explained in two ways, either because of a release of pressure from above, or because a great mass of water finds its way into the fissures of the rock, and, reaching a depth where the temperature is very high, is suddenly converted into steam. If we find in the same region the centres of volcanic activity and seismic disturbance, this, according to the opinion of most seismologists, is due to the weakness of the slopes of the great depressions and uprisings of the surface of the earth, where the strata are under great stress and become, therefore, points of fracture. These points are at the same time centres of seismic disturbance and also of volcanic activity on account of fissures and the movement of the interior strata. Dr. Milne, our highest authority in the matter, says that unless we have distinct evidence of its volcanic character, an earthquake must be regarded as tectonic. Volcanic earthquakes are characterized by their small meizoseismal area, the shock being violent in the epicentre, or first point of the surface where it is felt, and diminishes very rapidly from that point; whereas the tectonic earthquakes are characterized by their large meizoseismal area, and the destruction in the epicentre is not so great as in the volcanic generally speaking. This difference between them leads to the belief that the centre of disturbance in the latter is very deep-seated, while in the former it is not so far below the surface of the earth.

An earthquake may also be defined as a vibratory movement produced within the earth and propagated outward through the strata of the earth. Now, according to the laws of vibratory motion, when this is propagated through a homogeneous and perfectly elastic medium, the intensity of the movement at any point is inversely proportional to the square root of the distances to the centre, from this law it is evident that when the centre of vibration is nearer the surface the distances from this centre to the different points of the surface increase proportionally much more rapidly than when the centre of disturbance is deeper, and therefore the intensity of the shock decreases with much more rapidity around the epicentre when the focus is not so deep-seated. This also shows that in the tectonic earthquakes the cause of the shock is much stronger than in the volcanic ones; although in the latter the destruction in the epi-