

together by the roots of trees, prevents the formation of a sloping bank. The usual effect of the earthquake, he continues, was to disconnect all those masses which either had not sufficient bases for their bulk, or which were supported only by lateral adherence. Hence it follows that throughout almost the whole length of the chain, the soil which adhered to the granite at the base of the mountains Caulone, Esope, Sagra, and Aspramonte, slid over the solid and steeply inclined nucleus, and descended somewhat lower, leaving almost uninterruptedly from St. George to beyond St. Christina, a distance of from nine to ten miles, a chasm between the solid granitic nucleus and the sandy soil. Many lands slipping thus were carried to a considerable distance from their former position, so as entirely to cover others; and disputes arose as to whom the property which had thus shifted its place should belong.

From this account of Dolomieu we might anticipate, as the result of a continuance of such earthquakes; first, a longitudinal valley following the line of junction of the older and newer rocks; secondly, greater disturbance in the newer strata near the point of contact than at a greater distance from the mountains; phenomena very common in other parts of Italy at the junction of the Apennine and Subapennine formations.

Mr. Mallet, in his valuable essay on the Dynamics of Earthquakes*, offers the following explanation of the fact to which Dolomieu has called attention. When a wave of elastic compression, of which he considers the earth-wave to consist, passes abruptly from a body having an extremely low elasticity, such as clay and gravel, into another like granite, whose elasticity is remarkably high, it changes not only its velocity but in part also its course, a portion being reflected and a portion refracted. The wave being thus sent back again produces a shock in the opposite direction, doing great damage to buildings on the surface by thus returning upon itself. At the same time, the shocks are at once eased when they got into the more elastic materials of the granitic mountains.

The surface of the country during the Calabrian earthquakes often heaved like the billows of a swelling sea, which produced a swimming in the head, like sea-sickness. It is particularly stated, in almost all the accounts, that just before each shock the clouds appeared motionless; and, although no explanation is offered of this phenomenon, it is obviously the same as that observed in a ship at sea when it pitches violently. The clouds seem arrested in their career as often as the vessel rises in a direction contrary to their course; so that the Calabrians must have experienced precisely the same motion on the land.

Trees, supported by their trunks, sometimes bent during the shocks to the earth, and touched it with their tops. This is mentioned as a well-known fact by Dolomieu; and he assures us that he was always on his guard against the spirit of exaggeration in which the

* *Procced. Roy. Irish Acad.* 1846, p. 26.