

occurrence. This does not prevent, however, certain conjunctures of atmospheric or other circumstances from exercising a determining influence on the times of their occurrence. According to the view we have taken of their origin (viz., the displacement of pressure, resulting in a state of strain in the strata at certain points, gradually increasing to the maximum they can bear without disruption), it is the last ounce which breaks the camel's back. Great barometrical fluctuation, accumulating atmospheric pressure for a time over the sea, and relieving it over the land; an unusually high tide, aided by long-continued and powerful winds, heaping up the water; nay, even the tidal action of the sun and moon on the *solid* portion of the earth's crust,—all these causes, for the moment combining, may very well suffice to determine the instant of fracture, when the balance between the opposing forces is on the eve of subversion. The last-mentioned cause may need a few words of explanation. The action of the sun and moon, though it cannot produce a tide in the solid crust of the earth, *tends* to do so, and, were it fluid, *would* produce it. It therefore, in point of fact, does bring the solid portions of the earth's surface into a state alternately of strain and compression. The effective part of their force, in the present case, is not that which aids to *lift* or to *press* the superficial matter (for *that*, acting alike on the continents and on the bed of the sea, would have no influence), but that which tends to produce lateral displacement; or what geometers call the *tangential force*. This of necessity brings the whole ring of the earth's surface, which