

Ottomite Indians, and the Bridge of the Mother of God, by the Mexican Spaniards. It is difficult to decide respecting the origin of these channels, which sometimes serve as beds for subterranean rivers. Are these pierced rocks hollowed out by the impulse of a current? or should we rather admit that one of the openings of the cavern is owing to a falling down of the earth subsequent to its original formation; to a change in the external form of the mountain, for instance, to a new valley opened on its flank? A third form of caverns, and the most common of the whole, exhibits a succession of cavities, placed nearly on the same level, running in the same direction, and communicating with each other by passages of greater or less breadth.

To these differences of general form are added other circumstances not less remarkable. It often happens, that grottoes of little space have extremely wide openings; whilst we have to creep under very low vaults, in order to penetrate into the deepest and most spacious caverns. The passages which unite partial grottoes, are generally horizontal. I have seen some, however, which resemble funnels or wells, and which may be attributed to the escape of some elastic fluid through a mass before being hardened. When rivers issue from grottoes, they form only a single, horizontal, continuous channel, the dilatations of which are almost imperceptible; as in the Cueva del Guacharo we have just described, and the cavern of San Felipe, near Tehuilotepic in the western Cordilleras of Mexico. The sudden disappearance* of the river, which took its rise from this last cavern, has impoverished a district in which farmers and miners equally require water for refreshing the soil and for working hydraulic machinery.

Considering the variety of structure exhibited by grottoes in both hemispheres, we cannot but refer their formation to causes totally different. When we speak of the origin of caverns we must choose between two systems of natural philosophy: one of these systems attributes every thing to instantaneous and violent commotions (for example, to the elastic force of vapours, and to the heavings occasioned

* In the night of the 16th April, 1802.