

caverns in both continents, that several geologists of the school of Freyberg have given it the name of cavern-limestone (höhlenkalkstein). It is this rock which so often interrupts the course of rivers, by engulfing them into its bosom. In this also is formed the famous Cueva del Guacharo, and the other grottoes of the valley of Caripe. The muriatiferous gypsum,\* whether it be found in layers in the Jura or Alpine limestone, or whether it separate these two formations, or lie between the Alpine limestone and argillaceous sandstone, also presents, on account of its great solubility, enormous cavities, sometimes communicating with each other at several leagues distance. After the limestone and gypseous formations, there would remain to be examined, among the secondary rocks, a third formation, that of the argillaceous sandstone, newer than the brine-spring formations; but this rock, composed of small grains of quartz cemented by clay, seldom contains caverns; and when it does, they are not extensive. Progressively narrowing towards their extremity, their walls are covered with a brown ochre.

We have just seen, that the form of grottoes depends partly on the nature of the rocks in which they are found; but this form, modified by exterior agents, often varies even in the same formation. The configuration of caverns, like the outline of mountains, the sinuosity of valleys, and so many other phenomena, present at first sight only irregularity and confusion. The appearance of order is resumed, when we can extend our observations over a vast space of ground, which has undergone violent, but periodical and uniform revolutions. From what I have seen in the mountains of Europe, and in the Cordilleras of America, caverns may be divided, according to their interior structure, into three classes. Some have the form of large clefts\* or crevices, like veins not filled with ore; such as the cavern of Rosenmüller, in Franconia, Elden-hole, in the peak of Derbyshire, and the Sumideros of Chamacasapa in Mexico. Other caverns are open to the light at both ends. These are rocks really pierced; natural galleries, which run through a solitary mountain: such are the Höhleberg of Muggendorf, and the famous cavern called Dantoe by the

\* Gypsum of Bottendorf, *schlottengyps*.