

the Andes. It is by connecting in the mind the primitive, secondary, and volcanic rocks, and distinguishing between the oxidated crust of the globe, and the interior nucleus, composed perhaps of metallic and inflammable substances, that we may account for the existence of grottoes everywhere. They act in the economy of nature as vast reservoirs of water and of elastic fluids.

The gypseous caverns glitter with crystallized selenites. Vitreous crystallized plates of brown and yellow stand out on a striated ground composed of layers of alabaster and fetid limestone. The calcareous grottoes have a more uniform tint. They are more beautiful, and richer in stalactites, in proportion as they are narrower, and the circulation of air is less free. By being spacious, and accessible to air, the cavern of Caripe is almost destitute of those incrustations, the imitative forms of which are in other countries objects of popular curiosity. I also sought in vain for subterranean plants, those cryptogamia of the family of the *Usneaceæ*, which we sometimes find fixed on the stalactites, like ivy on walls, when we penetrate for the first time into a lateral grotto.\*

The caverns in mountains of gypsum often contain mephitic emanations and deleterious gases. It is not the sulphate of lime that acts on the atmospheric air, but the clay slightly mixed with carbon, and the fetid limestone, so often mingled with the gypsum. We cannot yet decide, whether the swinestone acts as a hydrosulphuret, or by means of a bituminous principle.† Its property of absorbing oxygen gas is known to all the miners of Thuringia. It is the same as the action of the carburetted clay of the

\* Lichen tophicola was discovered when the beautiful cavern of Rosenmüller in Franconia was first opened. The cavity containing the lichen was found closed on all sides by enormous masses of stalactite.

† That description of fetid limestone called by the German mineralogists *stinkstein* is always of a blackish brown colour. It is only by decomposition that it becomes white, after having acted on the surrounding air. The *stinkstein* which is of secondary formation, must not be confounded with a very white primitive granular limestone of the island of Thasos, which emits, when scraped, a smell of sulphuretted hydrogen. This marble is coarser grained than Carrara (*Marmor lunense*). It was frequently employed by the Grecian sculptors, and I often picked up fragments of it at the Villa Adriani, near Rome.