

without any appearance of vegetation. On the African soil excessive heat and lengthened drought retard the growth of cryptogamous plants.

The basalts of Graciosa are not in columns, but are divided into strata ten or fifteen inches thick. These strata are inclined at an angle of 80 degrees to the north-west. The compact basalt alternates with the strata of porous basalt and marl. The rock does not contain hornblende, but great crystals of foliated olivine, which have a triple cleavage.\* This substance is decomposed with great difficulty. M. Haüy considers it a variety of the pyroxene. The porous basalt, which passes into mandelstein, has oblong cavities from two to eight lines in diameter, lined with chalcedony, enclosing fragments of compact basalt. I did not remark that these cavities had the same direction, or that the porous rock lay on compact strata, as happens in the currents of lava of Etna and Vesuvius. The marl,† which alternates more than a hundred times with the basalts, is yellowish, friable by decomposition, very coherent in the inside, and often divided into irregular prisms, analogous to the basaltic prisms. The sun discolours their surface, as it whitens several schists, by reviving a hydro-carburetted principle, which appears to be combined with the earth. The marl of Graciosa contains a great quantity of chalk, and strongly effervesces with nitric acid, even on points where it is found in contact with the basalt. This fact is the more remarkable, as this substance does not fill the fissures of the rock, but its strata are parallel to those of the basalt; whence we may conclude that both fossils are of the same formation, and have a common origin. The phenomenon of a basaltic rock containing masses of indurated marl split into small columns, is also found in the Mittelgebirge, in Bohemia. Visiting those countries in 1792, in company with Mr. Freiesleben, we even recognized in the marl of the Stiefelberg the imprint of a plant nearly resembling the *Cerastium*, or the *Alsine*. Are these strata, contained in the trappean mountains, owing to muddy irruptions, or must we consider them as sediments of water, which alternate with volcanic deposits? This last hypothesis seems so much the less admissible, since, from the

\* Blættriger olivin.

† Mergel.