

The grünsteins of Tucutunemo, which we consider as constituting the same formation as the serpentine rock, contain veins of malachite and copper-pyrites. These same metalliferous combinations are found also in Franconia, in the grünsteins of the mountains of Steben and Lichtenberg. With respect to the green slates of Malpaso, which have all the characters of transition-slates, they are identical with those which M. von Buch has so well described, near Schönau, in Silesia. They contain beds of grünstein, like the slates of the mountains of Steben just mentioned.* The black limestone of the Morros de San Juan is also a transition-limestone. It forms perhaps a subordinate stratum in the slates of Malpaso. This situation would be analogous to what is observed in several parts of Switzerland.† The slaty zone, the centre of which is the ravine of Piedras Azules, appears divided into two formations. On some points we think we observe one passing into the other.

The grünsteins, which begin again to the south of these slates, appear to me to differ little from those found north of the ravine of Piedras Azules. I did not see there any pyroxene; but on the very spot I recognized a number of crystals in the amygdaloid, which appears so strongly linked to the grünstein that they alternate several times.

The geologist may consider his task as fulfilled when he has traced with accuracy the positions of the diverse strata; and has pointed out the analogies traceable between these positions and what has been observed in other countries. But how can he avoid being tempted to go back to the origin of so many different substances, and to inquire how far the dominion of fire has extended in the mountains that bound the great basin of the steppes? In researches on the position of rocks we have generally to complain of not sufficiently perceiving the connection between the masses, which we believe to be superimposed on one another. Here the

* On advancing into the adit for draining the Friedrich-Wilhelmstollen mine, which I caused to be begun in 1794, near Steben, and which is yet only 340 toises long, there have successively been found, in the transition-slate subordinate strata of pure and porphyritic grünstein, strata, of Lydian stone and ampelite (alaunschiefer), and strata of fine-grained grünstein. All these strata characterise the transition-slates.

† For instance, at the Glyshorn, at the Col de Balme, &c.