

difficulty seems to arise from the too intimate and too numerous relations observed in rocks that are thought not to belong to the same family.

The phonolite (or *leucostine compacte* of Cordier) is pretty generally regarded by all who have at once examined burning and extinguished volcanos, as a flow of lithoid lava. I found no real basalt or dolerite; but the presence of pyroxene in the amygdaloid of Parapara leaves little doubt of the igneous origin of those spheroidal masses, fissured, and full of cavities. Balls of this amygdaloid are enclosed in the grüenstein; and this grüenstein alternates on one side with a green slate, on the other with the serpentine of Tucutunemo. Here, then, is a connexion sufficiently close established between the phonolites and the green slates, between the pyroxenic amygdaloids and the serpentines containing copper-ores, between volcanic substances and others that are included under the vague name of transition-traps. All these masses are destitute of quartz like the real trap-porphyrries, or volcanic trachytes. This phenomenon is the more remarkable, as the grüensteins which are called primitive almost always contain quartz in Europe. The most general dip of the slates of Piedras Azules, of the grüensteins of Parapara, and of the pyroxenic amygdaloids embedded in strata of grüenstein, does not follow the slope of the ground from north to south, but is pretty regular towards the north. The strata incline towards the chain of the coast, as substances which had not been in fusion might be supposed to do. Can we admit that so many alternating rocks, imbedded one in the other, have a common origin? The nature of the phonolites, which are lithoid lavas with a feldspar basis, and the nature of the green slates intermixed with hornblende, oppose this opinion. In this state of things we may choose between two solutions of the problem in question. In one of these solutions the phonolite of the Cerro de Flores is to be regarded as the sole volcanic production of the tract; and we are forced to unite the pyroxenic amygdaloids with the rest of the grüensteins, in one single formation, that which is so common in the transition-mountains of Europe, considered hitherto as not volcanic. In the other solution of the problem, the masses of phonolite, amygdaloid, and grüenstein, which are found