

The small volcanic stratum of Ortiz (lat. $9^{\circ} 28'$ — $9^{\circ} 36'$) formed the ancient shore of the vast basin of the Llanos of Venezuela: it is composed on the points where I could examine it, of only two kinds of rocks, namely, amygdaloid and phonolite. The greyish blue amygdaloid contains fendillated crystals of pyroxene and mesotype. It forms balls with concentric layers of which the flattened centre is nearly as hard as basalt. Neither olivine nor amphibole can be distinguished. Before it shews itself as a separate stratum, rising in small conic hills, the amygdaloid seems to alternate by layers with the diorite, which we have mentioned above as mixed with carburetted slate and amphibolic serpentine. These close relations of rocks so different in appearance, and so likely to embarrass the observer, give great interest to the vicinity of Ortiz. If the masses of diorite and amygdaloid, which appear to us to be layers, are very large veins, they may be supposed to have been formed and upheaved simultaneously. We are now acquainted with two formations of amygdaloid; one, the most common, is subordinate to the basalt: the other, much more rare,* belongs to the pyroxenic porphyry.† The amygdaloid of Ortiz approaches, by its oryctognostic characters, to the former of those formations, and we are almost surprised to find it joining, not basalt, but phonolite,‡ an eminently felspathic rock, in which we find some crystals of amphibole, but pyroxene very rarely, and never any olivine. The Cerro de Flores is a hill covered with tabulary blocks of greenish grey phonolite, enclosing long crystals (not fendillated) of vitreous felspar, altogether analogous to the phonolite of Mittelgebirge. It is surrounded by pyroxenic amygdaloid; it would no doubt be seen below, issuing immediately from gneiss-granite, like the phonolite of

* We find examples of the latter in Norway (Vardekullen, near Skeen). in the mountains of the Thuringerwald; in South Tyrol; at Hefeld in the Hartz, at Bolanos in Mexico, &c.

† Black porphyries of M. von Buch.

‡ There are phonolites of basaltic strata (the most anciently known) and phonolites of trachytic strata (Andes of Mexico). The former are generally above the basalts; and the extraordinary development of felspar in that union, and the want of pyroxene, have always appeared to me very remarkable phenomena.