

sembling crevices, have been widened by running waters; but these hypotheses of successive erosions cannot well be applied to the completely enclosed basins of Titicaca and Mexico. These basins, as well as those of Jauja, Cuenca, and Almaguer, which lose their waters only by a lateral and narrow issue, owe their origin to a cause more instantaneous, more closely linked with the upheaving of the whole chain. It may be said that the phenomenon of the narrow declivities of the Sarental and of the valley of Eysack in the Tyrol, is repeated at every step, and on a grander scale, in the Cordilleras of equinoctial America. We seem to recognize in the Cordilleras those longitudinal sinkings, those "rocky vaults," which, to use the expression of a great geologist,\* "are broken when extended over a great space, and leave deep and almost perpendicular rents."

If, to complete the sketch of the structure of the Andes, from Tierra del Fuego to the northern Polar Sea, we pass the boundaries of South America, we find that the western Cordillera of New Grenada, after a great depression between the mouth of the Atrato and the gulf of Cupica, again rises in the isthmus of Panama to 80 or 100 toises high, augmenting towards the west, in the Cordilleras of Veragua and Salamanca,† and extending by Guatemala, as far as the confines of Mexico. Within this space it extends along the coast of the Pacific, where, from the gulf of Nicoya to Soconusco (lat.  $9\frac{1}{2}^{\circ}$ — $16^{\circ}$ ), is found a long series of volcanos,‡ most frequently insulated, and sometimes linked to spurs or lateral branches. Passing the isthmus of Tehuantepecor Huasacualco, on the Mexican territory, the Cordillera

\* Von Buch, Tableau du Tyrol meridional, p. 8. 1823.

† If it be true, as some navigators affirm, that the mountains at the N. W. extremity of the republic of Columbia, known by the names of Silla de Veragua, and Castillo del Choco, be visible at 36 leagues distance, the elevation of their summits must be nearly 1400 toises, little lower than the Silla of Caracas.

‡ See the list of twenty-one volcanos of Guatemala, partly extinct, and partly still burning, given by Arago and myself, in the Annuaire du Bureau des Longitudes pour 1824, p. 175. No mountain of Guatemala having been hitherto measured, it is the more important to fix approximately the height of the *Volcan de Agua*, or the Volcano of Pacaya, and the *Volcan de Fuego*, called also Volcano of Guatemala. Mr. Juaros expressly says, that this volcano, which by torrents of water and