kalk, quadersandstein, Jura limestone, secondary sandstone with lignites (green and iron sand), and the tertiary strata lying above chalk, I believe that the bitumen which everywhere accompanies gem-salt, and most frequently salt-springs, characterizes the muriatiferous clay of the peninsula of Araya and the island of Marguerita, as linked with formations lying below the tertiary strata. I do not say that they are anterior to that formation, for since the publication of M. von Buch's observations on the Tyrol, we must no longer consider what is below, in space, as necessarily anterior, relatively to the epoch of its formation.

Bitumen and petroleum still issue from the mica-slate; these substances are ejected whenever the soil is shaken by a subterranean force (between Cumana, Cariaco, and the Golfo Triste). Now, in the peninsula of Araya, and in the island of Marguerita, saliferous clay impregnated with bitumen is met with in connexion with this early formation, nearly as gem-salt appears in Calabria in flakes, in basins inclosed in strata of granite and gneiss. Do these circumstances serve to support that ingenious system, according to which all the co-ordinate formations of gypsum, sulphur, bitumen, and gem-salt (constantly anhydrous) result from floods passing across the crevices which have traversed the oxidated crust of our planet, and penetrating to the seat of volcanic action. The enormous masses of muriate of soda recently thrown up by Vesuvius,* the small veins of that salt which I have often seen traverse the most recently ejected lavas, and of which the origin (by sublimation) appears similar to that of oligist iron deposited in the same vents,† the layers of gem-salt and saliferous clay of the trachytic soil in the plains of Peru, and around the volcano of the Andes of Quito, are well worthy the attention of geologists who would discuss the origin of formations. In the present sketch I confine myself to the mere enumeration of the phenomena of position, indicating, at the same time, some theoretic views, by which observers, in more advan-

* The ejected masses in 1822, were so considerable, that the inhabitants of some villages round Vesuvius, collected them for domestic purposes.

† Gay-Lussac, on the action of volcanos, in the Annales de Chimie, vol. xxii, p. 418.