

and small veins traversing beds of lignite and bituminous wood. Both these substances, so different in their origin, contain all that constitutes alum, that is to say, alumina, sulphuric acid, and potash. The ores of Tolfa, Milo, and Nipoligo; those of Montione, in which silica does not accompany the alumina; the siliceous breccia of Mont Doré, which contains sulphur in its cavities; the alumiferous rocks of Parad and Beregh in Hungary, which belong also to trachytic and pumice conglomerates, may no doubt be traced to the penetration of sulphurous acid vapours. They are the products of a feeble and prolonged volcanic action, as may be easily ascertained in the solfataras of Puzzuoli and the Peak of Teneriffe. The alumite of Tolfa, which, since my return to Europe, I have examined on the spot, conjointly with Gay-Lussac, has, by its oryctognostic characters and its chemical composition, a considerable affinity to compact feldspar, which constitutes the basis of so many trachytes and transition-porphyrries. It is a siliciferous subsulphate of alumina and potash, a compact feldspar, with the addition of sulphuric acid completely formed in it. The waters circulating in these alumiferous rocks of volcanic origin do not, however, deposit masses of native alum, to yield which the rocks must be roasted. I know not of any deposits analogous to those I brought from Cumana; for the capillary and fibrous masses found in veins traversing beds of lignites (as on the banks of the Egra, between Saatz and Commothau in Bohemia), or efflorescing in cavities (as at Freienwalde in Brandenburg, and at Segario in Sardinia), are impure salts, often destitute of potash, and mixed with the sulphates of ammonia and magnesia. A slow decomposition of the pyrites, which probably act as so many little galvanic piles, renders the waters alumiferous, that circulate across the bituminous lignites and carburetted clays. These waters, in contact with carbonate of lime, even give rise to the deposits of subsulphate of alumina (destitute of potash), found near Halle, and formerly believed erroneously to be pure alumina, belonging, like the porcelain earth (kaolin) of Morl, to porphyry of red sandstone. Analogous chemical actions may take place in primitive and transition slates, as well as in tertiary formations. All slates, and this fact is very important,