

culation in regions not far from the surface, it must be supposed that, wherever earthquakes prevail, much larger bodies of water will be forced by the pressure of the ocean into fissures at greater depths, or swallowed up in chasms; in the same manner as on the land, towns, houses, cattle, and trees are sometimes engulfed. It will be remembered, that these chasms often close again after houses have fallen into them; and for the same reason, when water has penetrated to a mass of melted lava, the stream into which it is converted may often rush out at a different aperture from that by which the water entered. The frequent explosions caused by the generation of steam in the neighbourhood of the sea or of deep lakes, may shatter the solid crust of the earth, and allow the free escape of gases and lava which, but for this cause, might never have reached the surface, and might only have given rise to earthquakes.

It seems generally admitted, that the gases exhaled from volcanos, together with steam, are such as would result from the decomposition of salt water, and the fumes which escape from the Vesuvian lava have been observed to deposit common salt.* The emission of free muriatic acid gas in great quantities favours the theory of the decomposition of the salt contained in sea water. It has been objected, however, that M. Boussingault did not meet with this gas in his late examination of the elastic fluids evolved from the volcanos of equatorial America; which only give out aqueous vapour (in very large quantity), carbonic acid gas, sulphurous acid gas, and sometimes fumes of sulphur.†

But in reply Dr. Daubeny has remarked, that muriatic acid may have ceased to be disengaged, because the volcanic action has become languid in equatorial America. Sea water may no longer obtain admission, or the heat may be inadequate to cause the union of the alkali of the sea salt with the earths present, or, if generated, it may be prevented from rising to the crater by combining with calcareous rocks through which it has to pass.‡

M. Gay Lussac, while he avows his opinion that the decomposition of water contributes largely to volcanic action, calls attention, nevertheless, to the fact, that hydrogen has not been detected in a separate form among the gaseous products of volcanos; nor can it, he says, be present; for, in that case, it would be inflamed in the air by the red-hot stones thrown out during an eruption. Dr. Davy, also, in his account of Graham Island, says, "I watched when the lightning was most vivid, and the eruption of the greatest degree of violence, to see if there was any inflammation occasioned by this natural electric spark—any indication of the presence of inflammable gas; but in vain."§

May not the hydrogen, Gay Lussac inquires, be combined with chlorine, and produce muriatic acid? for this gas has been observed

* Davy, *Phil. Trans.*, 1828, p. 244.

† *Ann. de Chim. et de Phys.* tom. lii. p. 181.

‡ Daubeny, *Jam. Ed. New Phil. Journ.*, No. lii, p. 298.

§ *Phil. Trans.*, 1832, p. 240.