

PLATE 68. V. I. p. 563.

Section shewing the basin-shaped disposition of Strata belonging to the Tertiary and Cretaceous Formations, in the Basin of London, and illustrating the causes of the rise of water in Artesian Wells. See V. I. p. 564. Note. (Original.)

servable in them? Copper, Tin, Iron, and Zinc, in combination with the sulphuric and muriatic acids, being very soluble in water, are, in this state, capable of conducting voltaic electricity; so, if by means of infiltration, or any other process, we suppose the water to have been impregnated with any of these metallic salts, the rocks containing different salts would undoubtedly become in different or opposite electrical conditions; and hence, if there were no other cause, electric currents would be generated, and be readily transmitted through the fissures containing water with salts in solution; and decompositions of the salts and a transference of their elements, in some cases, to great distances, would be the natural result. But, on the known principles of *Electro-magnetism*, it is evident that such currents would be more or less influenced in their direction and intensity by the magnetism of the earth. They cannot, for instance, pass from N. to S. or from S. to N. so easily as from E. to W. but more so than from W. to E. The terrestrial magnetism would therefore tend, in a greater or less degree, to direct the voltaic currents through those fissures which might approximate to an east and west bearing, and in separating the saline constituents, would deposit the metal within or near the electro-negative rock, and the acid would be determined towards the electro-positive rock, and probably enter new combinations. Or, the sulphuric acid might, by means of the same agency, be resolved into its elements; in which case the sulphur would take the direction of the metal, and the oxygen of the acid, and in this way, the metallic sulphurets may have probably their origin; for, if I mistake not, the metallic *sulphates*, supposing them to have been the prevailing salts, as at present, would be fully adequate to supply all the sulphur required by the same metals to form sulphurets; indeed more than sufficient, if we deduct the oxide of tin, and other metalliferous oxydes found in our mines. The continued circulation of the waters would, in time, bring most of the soluble salts under the influence of these currents, till the metals were in great measure separated from their solvents,