

tertiary strata. Veins are evidently fissures of mechanical origin; they have been opened by elevatory forces, and in some instances have been filled from beneath by the sublimation of metalliferous matter by igneous action; and in others, from the surface, by the transportation of various materials which have flowed into them. In other examples the veins are connected by a gradual mineral transition with the contiguous rocks, and then appear to have resulted from an electro-chemical "separation, or segregation, of certain mineral and metallic particles from the mass of enveloping rock, while it was in a soft or fluid state, and their determination to particular centres." The nature of these veins receives illustration from those nests of spar and mineral matter in masses of trap rocks, from Scotland, in which there appears to have been no possibility of the introduction of any foreign substance from without. From the observations of M. Fournet, in the mines of Auvergne, it seems probable that sulphurets of iron, copper, lead, zinc, sulphate of barytes, and other minerals, have been introduced at different periods, by electro-chemical action, accompanied by new fractures and dislocations of the rocks, and the widening of previous fissures.* The observations and experiments of Mr. Fox add great weight to the hypothesis which refers the filling up of some veins to electrical agency. M. Becquerel remarks, that when a vein is filled either

* Mr. Lyell's Anniversary Address.