

weather yellow on exposure and oxidation; sometimes segregated in layers, or replacing the substance of fossil plants or animals; also in veins through crystalline rocks. This form of the sulphide is especially characteristic of stratified fossiliferous rocks, and more particularly of those of Secondary and Tertiary date. It is extremely liable to decomposition. Hence exposure for even a short time to the air causes it to become brown; free sulphuric acid is produced, which attacks the surrounding minerals, sometimes at once forming sulphates, at other times decomposing aluminous silicates and dissolving them in considerable quantity. Dr. Sullivan mentions that the water annually pumped from one mine in Ireland carried up to the surface more than a hundred tons of dissolved silicate of alumina.³⁴ Iron disulphide is thus an important agent in effecting the internal decomposition of rocks. It also plays a large part as a petrifying medium, replacing the organic matter of plants and animals, and leaving casts of their forms, often with bright metallic lustre. Such casts when exposed to the air decompose.

Pyrrhotine (Magnetic pyrites, Fe_7S_8) is much less abundant than either of the forms of ordinary iron-pyrites, from which it is distinguished by its inferior hardness and its magnetic character.

It will be observed that great differences exist in the relative importance of the minerals above enumerated as constituents of rocks. Prof. Rosenbusch points out that they may be naturally arranged in four groups—1st, ores and accessory ingredients (magnetite, hæmatite, ilmenite, apatite, zircon, spinel, titanite), 2d, magnesian and ferruginous silicates (biotite, amphibole, pyroxene, olivine), 3d, felspathic constituents (felspar proper, nepheline, leucite, melilite, sodalite, hauyne), 4th, free silica.³⁵

§ iii. Determination of Rocks

Rocks considered as mineral substances are distinguished from each other by certain external characters, such as the

³⁴ Jukes' "Manual of Geology," p. 65.

³⁵ Neues Jahrb. 1882 (ii.) p. 5.