flected light; resists corrosion by acids when the powder of a rock containing it is exposed to their action, while magnetite is attacked and dissolved. Titanic iron frequently resists weathering, so that its black glossy granules project from a weathered surface of rock. In other cases, it is decomposed either by oxidation of its protoxide, when the usual brown or yellowish color of the hydrous ferric oxide appears, or by removal of the iron. The latter is believed to be the origin of a peculiar milky white opaque substance, frequently to be observed under the microscope, surrounding and even replacing crystals of titanic iron, and named Leucoxene by Gümbel.[21] In other cases the decomposition has resulted in the production of sphene.

Chromite ($FeCr_2O_4$) occurs in black opaque grains and crystals not infrequently in altered olivine-rocks.

Spinels, a group of minerals, may be taken here. They are closely related to each other, having cubic forms and varying in composition from *magnetite* (see above) at the one end to *spinel* ($MgAl_2O_4$) at the other. They are not infrequent as minute grains or crystals in some igneous and metamorphic rocks. Between magnetite and spinel come intermediate varieties, as *chromite* (see above), *Picotite*, *Hercynite* and *Pleonaste*.

4. MANGANESE OXIDES are frequently associated with those of iron in ordinary rock-forming minerals, but in such minute proportions as to have been generally neglected in analyses. Their presence in the rocks of a district is sometimes shown by deposits of the hydrous oxide in the forms of Psilomelane ($H_2MnO_4+H_2O$) and Wad ($MnO_2+MnO+H_2O$). These deposits sometimes take place as black or dark brown branching, plant-like or *dendritic* impressions between the divisional planes of close-grained rocks (limestone, felsite, etc.), sometimes as accumulations of a black or brown earthy substance in hollows of rocks, occasionally as deposits in marshy places, like those of bog-iron-ore, and abundantly on some parts of the sea-floor. (See p. 769.)

5. SILICATES.—These embrace by far the largest and most important series of rock-forming minerals. Their chief groups are the anhydrous aluminous and magnesian silicates embracing the Felspars, Hornblendes, Augites,

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[21] "Die Paläolitische Eruptivgesteine des Fichtelgebirges," 1874, p. 29. See Rosenbusch, Mik. Physiog. ii. p. 336. De la Vallée Poussin and Renard, Mém. Couronnées Acad. Roy. de Belgique, 1876, xl. Plate vi. pp. 34 and 35. Fouqué and Michel-Lévy, "Minéralogie Micrograph," p. 426. See postea, p. 1040.