

II.—*On the Wallbridge Hematite Mine, as illustrating the Stock-formed Mode of Occurrence of certain Ore-Deposits.* By E. J. CHAPMAN, Ph. D., LL.D.

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Metalliferous deposits, viewed broadly, may be regarded as falling under the following sub-divisions: Veins, stocks, net-works, gash-lodes, impregnations, beds, alluvions. Briefly defined, without regard to accidental or local conditions, these are characterized as follows:—

VEINS are ancient fissures filled up, forming, as a rule, comparatively narrow sheets of mineral matter, which commonly pass through various kinds of rock without regard to the strike or dip of these, and which, normally, extend downward to great depths.

STOCKS are limited masses of ore, although often of large dimensions, lenticular or irregular in form, and inclined or horizontal in position. In some cases, they conform more or less to the structural characters of the rocks in which they occur; in other and perhaps the majority of cases, they shew no relations of this kind, but occupy a totally independent position as regards the enclosing rock.

NET-WORKS, sometimes called STOCK-WORKS, are assemblages of narrow, reticulating veins, branching irregularly through the enclosing rock, and commonly tapering off and dying out in thin strings.

GASH-LODES are simply narrow, often more or less linear, stocks, usually of short length, but commonly occurring in closely adjacent parallel bands, thus resembling a series of short, broken veins. As a rule, they consist wholly of metallic matter, without any accompanying vein-stone or trace of vein structure.

IMPREGNATIONS consist of metallic matters diffused through zones or areas of rock in small, often imperceptible, particles, or in patches or stains. Impregnations or diffusions of this kind are occasionally of independent occurrence; but more commonly they occur in intimate connection with veins, stocks, or other ore-deposits, being evidently emanations from these, or otherwise due to similar causes.

BEDS are deposits of mineral matter lying parallel, or practically parallel, with the stratification or foliation of the rocks in which they occur, and never extending upward in strings or other prolongations into the overlying rock, as they are necessarily of earlier deposition than the latter.

ALLUVIONS cannot strictly be separated from beds proper, as they are simply beds or bedded deposits of more or less superficial occurrence, but for practical purposes they are conveniently classed apart. They consist of accumulations, from springs, streams and rivers, of detrital or precipitated matters in which metallic substances or other economic products are present.

As regards Canadian iron ores, the existence of stock-formed deposits hardly seems to have been recognized, if recognized at all, in the earlier explorations of the country. Many of our iron-ore deposits, perhaps the majority, are nevertheless in that condition. In the