

of these instances there is the same genetic relation of gabbro, granite and siliceous sediments or schists. An important special feature of the extraordinarily thick and extensive sheet of the Sudbury district in Ontario is an apparent case of the gravitative differentiation of the famous sulphide ores of that district."

New facts gained in the present writer's study of the same phenomena have led him to the following conclusions:—

(a) That the sills were formed from practically simultaneous injections of a series of magmas—varying from acid to basic—in distinct sills.

(b) That these magmas are differentiation products of a subcrustal or intercrustal magma.

(c) That after intrusion, the magma of those sills composed of basic material solidified without differentiation.

(d) That in the case of those sills composed of the more acid magma, differentiation under influence of gravity took place and the granitic portions formed in this way with little or no aid from assimilation.

(e) That the hornblende of the sills is secondary after augite.

GENERAL GEOLOGY OF THE PURCELL RANGE.

The Purcell range, as shown on the accompanying map, lies in southeastern British Columbia, between Kootenay river on the east and Kootenay lake on the west. The range for the most part is made up of sedimentary rocks called the Purcell series, of Pre-Cambrian age. This series, with a thickness of about 23,000 feet, is folded into broad anticlines and synclines striking in a northerly direction and is broken by a few subsidiary normal faults. These orogenic movements were accompanied or closely followed by an intrusion of granite, especially in the western part of the range.

The Purcell series consists mainly of argillaceous quartzites, and argillites, with subsidiary amounts of purer quartzites, sandstones, and limestones.

Amongst these strata, and especially in the oldest known member of the Purcell series, occur the Purcell Sills—the subject