in actual contact with the plutonic rocks. They must, therefore, have been subject to profound alteration. The magnetite bodies are usually developed in the altered or metamorphosed marble, but are occasionally in contact with the basic and schistose diorite, and more rarely with the unaltered marble.

"An exceptionally good contact of the magnetite with pure marble occurs on the *Conqueror* claim, on Bugaboo creek. There the magnetite body, which forms a cliff 30 to 40 feet high over which the creek falls, is in contact with a mass of white crystalline marble, at least 100 yards in width, which occurs down-stream, that is to the north. Irregular magnetite veins extend from the magnetite body into the pure marble, brecciating it and including blocks of marble much as apophyses of an igneous rock would brecciate and include fragments of an invaded formation. From the above evidence it is seen that the magnetite-deposits of the Nitinat formation not only owe their origin to the intrusion of the plutonic rocks, but since it seems as if the original limestones were pure, the minerals of the deposit have apparently been derived from the intruding batholith. After the limestones had been more or less contact-metamorphosed, as inclusions of silicates occur in the magnetite, solutions of magnetite, with small amounts of sulphides, penetrated the contact zone and replaced it in part.

"The solutions were apparently very concentrated, virtually magnetite magma, since they intruded and brecciated the sheared diorite and unaltered marbles in much the same manner as rock magma intrudes and brecciates. Very large deposits of magnetite supposed to have been formed in a similar manner—that is, by the intrusion of concentrated magnetite solutions or magnetite magma—occur in Norway, the famous deposits of Kirunavaara. Similar contact deposits have been recognized by several observers, and in recent classifications of ore-bodies have been made a separate type of contact deposits, the magnetite type."

The associated minerals found with the magnetite are the usual contact-metamorphic minerals, principally epidote, andradite (lime-iron garnet), augite, and varieties of amphibole.

The distribution of the lenses of magnetite are noticeably very erratic, as they are found along the contact of lime diorite, lime porphyrite, porphyrite diorite, and also in some cases are found enclosed in all three formations at considerable distances from their boundaries. In two cases, at least, on Texada island, as well as in some instances on Vancouver island, lenses of magnetite have formed at the ends of quartz-diorite dykes.

Up to the present time there has been practically no exploration on any of the deposits of magnetite to determine the question of continuity of the ore to a depth below 430 feet from the apex of the outcrop, and that has only been done at one point on Texada island; consequently the question as to the conditions in respect to the depth to which the various ore-deposits may maintain persistency is yet to be determined. The conditions surrounding some of the magnetite-deposits on Vancouver island suggests shallowness, but until prospecting with diamond-drill has been done the question must remain open, so far as actual proof is concerned.

THE MINES, SOOKE DISTRICT.

The deposits of iron ore in this portion of Vancouver Island belong to the type classified by Clapp as "replacement or segregation deposits in the Sooke gabbro."

As no work has been done since 1900 on any of the magnetite-deposits in this district, the writer did not examine them during the past summer, as the conditions are the same as when an examination was made by Herbert Carmichael in 1902 and reported on in the Minister of Mines' Report for that year, as follows: "Magnetic iron has been known for many years to exist at Sooke, on the peninsula to the east of Sooke harbour, where there are very extensive surface exposures. These deposits were mentioned by Dr. Dawson in 1887, who said: 'The deposit is rather of the