Marble Bay mine, but they have been noted in two instances in the neighboring deposits.

ORE VALUES.

The ore throughout is essentially high grade and carries good values in gold and silver. The ore, which is finely disseminated through the pyroxene gangue, carries much higher values in gold and silver than the purer and more massive bornite and chalcopyrite. It has also been found that the percentage of copper has steadily increased with depth.

As it is necessary to mine considerable barren gangue which is intimately mixed with the productive, the ore is hand sorted before shipping and graded into coarse and fines. The waste, on account of its fluxing properties, is shipped in large part and sold to the smelter. At present the total production is sent to the Tacoma smelter for treatment.

In order to ascertain the average value of the ore, the smelter returns for the year beginning in June, 1905, and ending June, 1906, were examined with the following result:

Grade.	Gold oz. per ton.	Silver oz. per ton.	Copper per ct. (dry)	Net value per ton.
Coarse	0.498	4.138	6.765	$28.77
Fines	0.1678	1.569	1.602	6.88
Waste	Tr.–.08	0 15–0.9	0.22–0.8	0.50
Coarse	1.006	5.73	11.25	

The last entry of coarse grade refers to a shipment of 116 tons made in July, 1906.

About 13,000 tons are mined annually, and approximately for every ton of coarse, two tons of fines and two of waste are shipped. Through the courtesy of Mr. F. C. Robinson, of the Sheffield Smelting Works, I am enabled to publish a few interesting assays which he made of the ore and gangue. The samples were taken from a stope on the 660 level, and the gold and silver values are stated in ounces per long ton.

Assays			Analyses	I	II
Number.	Gold.	Silver.			
I.	0.40	18.60	Insoluble ..	31.60	43.10
II.	1.05	7.85	Copper	43.00	13.60
III.	0.008	0.86	Iron	10.30	9.90
IV.	0.025	0.07	Lime	Trace	....

I. Bornite and chalcopyrite (massive ore).

II. Pyroxene and garnet gangue with finely disseminated bornite.

III. Calcite after removing mineralized portions.

IV. Calcite and garnet after removing mineralized portions.

Numbers III. and IV. are interesting in showing the occurrence of gold and silver in what was apparently barren gangue. Free gold in distinguishable leaves and grains has been found occasionally, but it is not a common occurrence.

SIMILAR DEPOSITS.

The ore chutes of the Copper Queen and Cornell mines adjacent to the Marble Bay are associated with basic dykes, some of which are older than the ore bodies. These are very much decomposed and in places have altered to a serpentine which carries ore, and is occasionally traversed by small veins of greenish white asbestos. The former mine has been noted for certain occurrences of free gold and argentiferous tetrahedrite. The deposits in the White Horse District, Yukon Territory, differ from the above, in that they carry low values in gold and silver, and higher values in copper. Their mode of occurrence, however, seems to be identical.

CONCLUSION.

The past development of these mines on Texada Island has proved the ore bodies to a considerable depth, the Copper Queen being 740 feet deep, while a winze is now being sunk to the 860 level in the Marble Bay. As regards the permanence of these deposits, there seems to be very little doubt but that they will continue until the limestone granite contact is reached.

Magnetic Concentration of Iron Ores by the Grondal Process

By P. McN. Bennie, FitzGerald & Bennie Laboratories,
Niagara Falls.

(Toronto Meeting, 1907).

The writer had the pleasure of attending the Toronto meeting of the Canadian Mining Institute, in March, 1904, when a very interesting paper on Magnetic Separation was presented by Mr. F. T. Snyder. The technics of the magnetic separation of various materials were well covered in Mr. Snyder's paper, so that those features need hardly be again referred to.

In the present paper it is proposed to give an account of progress in magnetic separation with a specific process, and to draw some conclusions as to its possible bearing on the utilization of certain Canadian iron ores or to the economic benefit of the Dominion.

It is not the intention to enter closely into mechanical details of the various forms of apparatus used in the Gröndal Processes for grinding, separating and briquetting iron ores. The results obtained in actual practice are probably of superior interest, and for this purpose a typical series of products may be taken, as follows:

1. Ore from Herräng, Sweden, ground in the Gröndal Ball Mill, as prepared for subsequent magnetic separation by the Gröndal Process.

2. Tailing from this Herräng ore, after passing through the Gröndal Magnetic Separator.

3. Concentrate from Herräng ore, showing the perfection of the separation.

4. Briquette made from such concentrates by the Gröndal Briquetting Process.

The composition of these various materials, with reference to iron, sulphur and phosphorus content, is as follows: