been tested, while other British Columbia ores have been sent East for experimentation. Magnetic concentration is as yet in its infancy, and from experiments which the writer had the pleasure of recently witnessing when in the East, he is convinced of the wonderful possibilities of the process as applied to a number of British Columbia ores, the concentration of which by any water method is impossible.

"That certain strongly magnetic minerals are separable by magnetic concentration is a fact so well known as scarcely to need comment, but that many minerals which are not acted upon by an ordinary magnet may be eliminated by higher magnetic powers is not so fully realised and is worthy the serious consideration of mine owners. To quote from Ingall's 'Production and Properties of Zinc' (p. 268) :---'It has been snown by Farady, Plucker, Wiedeman and others that magnetism is an inherent property of all substances, which are either attracted or repelled by the poles of a magnet, though in most substances the manifestation of this property is exceedingly feeble.'

"At the works of the Wetherill Separating Co., at Newark, N.J., the writer saw certain samples of zinc blende magnetically 'picked up' out of a mixture of gangue, galena, pyrite, etc., making a clean separation, while a similar separation of tetrahedrite (gray copper) was made from gangue and pyrite.

"Upon inquiry as to what minerals had been found separable by the process, it was said that no rule could be laid down, but that each special ore required to be determined by experiment, since, for example, of two samples of zinc blende, one could be easily attracted by the magnet of high power, while the other sample was so feebly attracted as to preclude any practical separation; similarly with tetrahedrite, although the sample of this mineral experimented upon, an ore from British Columbia, was strongly magnetic. This lack of uniformity is accounted for by the fact that in few ores does the mineral conform strictly to its theoretic composition, but contains usually associated minerals which materi-Certain minerals ally affect the magnetic action.

"No reliable data could be obtained as to exactly what the assay on an average sample of this ore body' (on the Red Line claim) "would be, although the ore was admittedly too low grade to stand shipping without concentration. The ore consists of quartz and rock carrying a considerable proportion of iron pyrites, with varying proportions of tetrahedrite (gray copper), and the values seem to be chiefly associated with and contained in this latter mineral. Small shipments of sorted ore have been made which gave smelter returns as follows :- Copper, 4.1 per cent.; silver, 237 oz., and gold, 0.41 oz. per ton. The silver values of the ore seem to be nearly in proportion to the grav copper contained therein, and concentrates therefrom run as high as 1,000 oz. silver per ton, while the gold values are with the iron pyrites.

"A concentration by water of the gray copper from the iron pyrites and quartz was recognised as impossible; consequently, a lot of the ore was sent to New York for a trial of concentration by the Wetherill Separating Co., the results of which have been kindly furnished by the manager of the mine, Mr. Thos. Starbird, and are here given as being of more than local interest. It is perhaps unfortunate that the ore sent was sorted too high to make the test of much practical value to this property, as it in nowise represents the bulk of the ore. As a matter of fact, indeed, the ore sent was so highly sorted as not to require any concentration, but could be well shipped as it was. The following is an analysis of this ore, as reported by the Wetherill Company:—

## ANALYSIS OF ORE TESTED.

Copper (per cent.)	11.09
Zinc	trace.
Iron (per cent)	22.67
Sulphur (per cent)	31.38
Antimony (per cent)	10.78
Bismuth (per cent)	0.15
Silica (per cent)	16.32
Gold (oz. per ton)	0.73
Silver (oz. per ton)	116.47

TEST OF SILVER ORE BY WETHERILL SEPARATING COMPANY.

ORIGINAL.				POLES 3 & 4, 15 AMPERES.				POLES 5 & 6, 28 AMPERES.				NON-MAGNETIC TAILS.				
Size.	Weight Grms,	Copper %	Silver Oz.	Gold Oz,	Weight Grms,	Copp'r %	Silver Oz,	Gold. Oz.	Wght Grms	Cop- per %	Silv'r Oz.	Gold Oz.	Weight Grms.	Copper %	Silver Oz.	Gold Oz.
10 to 20 20 to 40 40 to 80 80 to 200 Dust E.	39,615 20,170 10,880 7,430 7,000	$     \begin{array}{r}       6.94 \\       7.05 \\       6.54 \\       6.33 \\       7.03 \\     \end{array} $	$\begin{array}{c} 283 & 25 \\ 273 & 80 \\ 248 & 97 \\ 241 & 35 \\ 277 & 50 \end{array}$	$\begin{array}{c} 0.45 \\ 0.55 \\ 0.52 \\ 0.50 \\ 0.53 \end{array}$	9,675 4,700 2,240 1,070	22.59 23.72 27.28 27.53	858.77 910.40 1,030.80 1.049.30	$     \begin{array}{c}       0.67 \\       0.50 \\       0.50 \\       0.45 \\     \end{array} $	$1,710 \\ 1,300 \\ 240 \\ 290$	9.70 15.59 16.18 15.85	358.70 580.25 592.40 982.50	0 55 0 75 0.87 0.53	28,230 14,170 8,400 6,070	$1.85 \\ 1.15 \\ 0.9 \\ 1.55$	$\begin{array}{c} 67.20\\ 42.18\\ 32.75\\ 63.85\end{array}$	0.50 0.49 0.50 0.48

which naturally are practically non-magnetic may be rendered so by a partial or complete roasting."

The tetrahedrite, the treatment of which the Provincial Mineralogist had the opportunity of witnessing, as mentioned above, was from the Ptarmigan mine. In his account of a visit made to that mine last summer that official says: The property now called the Ptarmigan mines was formerly known as the Red Line, or McDonald mines. It is owned by a syndicate of eastern American investors, and includes the following Crown-granted mineral claims: Red Line No. 1, Red Line No. 2, Iron Cap, Iron Crown Fraction, and Contention Fraction. The mine is situate in a basin