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SHOULD BE ADDRESSED TO THE DIRECTOR.

DIVISION OF ORE DRESSING AND METALLURGY

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DEPARTMENT OF MINES
CANADA

MINES BRANCH

EUGENE HAANEL, PH. D.
Director.

OTTAWA, March 3rd, 1919. 191

Report of Ore Dressing & Metallurgical Laboratories

Test No--109

A sample of about six pounds of Platinum-gold concentrates was received from the Bullion Mine, Cariboo District, B.C. through the Canadian Munition Resources Commission.

This sample was submitted for test purposes on the amalgamation of the Platinum by a new method which consisted of sprinking Zinc- amalgam on the dressed plates, the pulp being fed over the plates in a weak solution of Copper sulphate and sulphuric acid. An electro-chemical action is supposed to take place, and a permanent coating is deposited on the platinum, which in passing over the plates is held by the mercury.

One half of the sample received was taken and crushed to 150 mesh. A sample was cut out for assay. One pound of the material through 150 mesh was placed in a bottle, with 200 c.c. of solution of 0.05 per cent copper sulphate and 0.05 per cent sulphuric acid, one-tenth of a pound of mercury to which had been added 1 gram. of powdered zinc-amalgam was put in the bottle and the bottle gently rolled for 10 minutes. The contents of the bottle were then panned to recover the mercury and the tailings sampled for assay.

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The results

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The results of this test were as follows:-

Before amalgamation -	Au.- 0.25 oz.	Pt.- 0.013 oz.
After amalgamation -	Au.- 0.15 oz.	Pt.- 0.006 oz.
Retort sponge -	Au.- 0.14 oz.	Pt.- 0.004 oz.
Extraction -	Au.- 40 %	Pt.- 54 %

Another pound sample was taken of the 150 mesh material and placed in the bottle with 200 c.c. of solution of 0.1 % copper sulphate and 0.1 % sulphuric acid. One-tenth of a pound of mercury to which was added 1 gram. of powdered zinc-amalgam. was put in the bottle and the bottle gently rolled for 10 minutes. The contents of the bottle were panned to recover the mercury and the tailings sampled for assay.

The results obtained from this test was similar to the preceding one.

The tailings from these two tests were taken and put in a pebble jar with 400 c.c. of solution of 0.1 % copper sulphate and 0.1 % sulphuric acid. One-fifth of a pound of mercury to which was added 2 grams of powdered zinc-amalgam was put in the jar and the whole revolved for one hour. The contents were then panned to recover the mercury and the tailings sampled for assay.

The results were as follows:-

Before amalgamation -	Au.- 0.12 oz.	Pt.- 0.007 oz.
After amalgamation -	Au.- 0.10 oz.	Pt.- 0.005 oz.
Extraction -	Au.- 17 %	Pt.- 30 %
or a further extraction of-	Au.- 8 %	Pt.- 15 %

The remaining portion of the original concentrate was then ground to 200 mesh and sampled for assay. One side of

the amalgamation

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the amalgamation plates was partitioned off and the plates dressed. On the upper two plates was sprinkled powdered zinc-amalgam. A quantity of solution was made up of 0.2 % copper sulphate and 0.2% sulphuric acid and fed with the pulp over the plates. The tailings were panned to remove any mercury which was carried down and sampled for analysis.

The results of the test were as follows:-

Before amalgamation	- Au.- 0.10 oz.	Pt.- 0.003 oz.
After amalgamation	- Au. 0.06 oz.	Pt.- 0.001 oz.
Extraction	- Au. 40 %	Pt.- 66 %

Summary and conclusions:

Results of the last test performed in a commercial way were similar to the bottle tests. There is a large variation in the two head samples of the same material showing the difficulty in getting an accurate sample. The accuracy of the above tests is doubtful owing to the low assay of the material on which the tests were conducted.