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LOW GRADE ORES AND TRANSMISSION OF PO By JAMES BRADY, C.E., M. E. V

Following is a paper read b nual meeting of the Provincial ion Land Surveyors at Ottawa, of the present year:
GOLD QUARTZ.
Two dollar auriferous quartz,

Two dollar auriferous quartz, in large veins or lodes, can no and milled in California at a pr this branch of mining was firste in that State, fifty dollars p quartz was about as low grade mined and milled profitably, dollar rock was thrown aside owing to the cost of labor and tors of production, imperfect ms methods, and profound ignorabusiness. Managers and sup methods, and profound ignorabusiness. Managers and supwere without knowledge, practmical, and the mining and regineers brought from abroad
in learning to adapt themselve
methods to the widely different
ces that prevailed here. Failur
rule, and for many years idle
and abandoned mines were to
over California. This was not
proverty of the mines, but to the over Camornia. This was not poverty of the mines, but to the ces above enumerated, and quartz mines, abandoned in ear been re-opened within the last so and, with improved machine so and, who improved machine competent management, are dividends; and gold mining safe and profitable a business fruit growing, commerce or any suit in California.

The same remarks apply to er-bearing metal mines. Owin ver-bearing metal mines. Owing improvements in mining, min trating and smelting machinery the application of electricity to mission of power, and the increledge possessed by our minin superintendents, foremen and proper methods of mining and the ores, it is a fact that conce of the above character, yielding of only \$5 per ton in value of simulation of the period of the above character, when the period is not a superiod of the above character, yielding of only \$5 per ton in value of simulation of the period of the p

GOLD QUARTZ MILL AND I The modern gold mill is used a situation that the ore of

The modern gold mill is use such a situation that the ore ca ded by car or wagon at the upper it is dumped against an inclined and the finer ore, passing throus stices of the grizzly falls direct main ore bin. The coerser ore pass through the grizzly is ser gravitation into the coarse or which it is drawn, by gravity, the rock breakers, or it falls un front of the rock breakers; by crushed and falls into the main. From the main ore bins the through gates into the "self-fee supply it automatically to the Quicksilver is fed at intervals to of the battery, and coming in a the native or "free" gold of crushed ore, forms with it a thin amalgam is caught partly per plates in the battery, and the amalgamated, or silver plates on the apron and in the outside, after it has issued screens of the mortar. The "cleaned up" periodically a Retorting consists in the subliquicksilver; the vapours of which was and the quicksilver; the vapours of which and the micksilver; the vapours of which are all in water and the quicksilver; the vapours of which are all in water and the quicksilver; the vapours of which are all in water and the quicksilver; the vapours of which are all in water and the quicksilver; the vapours of which are all in water and the quicksilver; the vapours of which are all in water and the quicksilver. Retorting consists in the sublif quicksilver, the vapours of whi densed in water and the quicks ed; the residual gold is in a por is melted with fluxes in crucible in ingots. The pulp from whi gold has been extracted by a gold has been extracted by a passes over concentrators of varical devices; these concentrates are the worthless gangue. In Concentrated sulphurets are the chlorination process. In some of the country the sulphurets a smelting works.

AURIFEROUS SULPHU per ton of sulphurets (about 40 of quartz before concentration ment, and return 90% of the Under conditions ordinarily plant treating 6 to 9 tons per 2 reduce the sulphurets at a cos per ton, extracting 90 to 94 pe assay value of the gold.

SILVER MILLING ORES, FREE AN Silver milling ores are eith "base," and the latter requir ary or chloridizing rousting.
ing ore passes through the sam
gold ores until the battery is ro
ores are crushed wet in the
battery amalgamation is no
From the battery the pulp pa
sluices into settling tanks what
fluous water is drained off. To
showeled into the pans, where s shoveled into the pans, where s stone or other "chemicals". Here the ore is first ground and gamated. After several hours run into settlers where it is water, and the heavy amalgam silver settles to the bottom; th ected and strained and the

lected and strained and the oretorted.

Base or rebellious silver militain too much sulphur, arsen etc., to be treated by free mil After crushing in a rock brea quire a previous chloridizing adapt them to the pan-amalgam are dried before the stamply stamped dry. The mortars discharge. The pulverized ore through the screens of the moried safe by conveyers to elevat it to the furnace floor. There types of furnaces in use, notati types of furnaces in use, notati ner, the White & Howell, th the O'Hara, and the ordinary i n the mineralogical character when there is much arsenic idizing roasting of the ore. It should be the oughly incorthe pulp. To obtain a highlight chloridation, sufficient sulp the pulp. To obtain a hig chloridation, sufficient sulph present to effectually liberate of the salt. Calcspar, braunspassar, etc., retard the chlorida sorbing a large part of the su produced. Minerals contains antimony, tellurium, seleniu crease the loss of silver arising ization. Zinchlende requires le Zinchlende requires vert it into sulphate. T