

A diluted solution of cyanide of potassium (the strength of which has to be determined in each case) is continually fed from a storage tank through iron pipes, regulated by iron valves.

The pulp is reduced to 100 mesh or finer and is discharged with the solution and conducted into a revolving copper silver-plated drum, properly insulated from the other parts of the machine.

This electric amalgamator makes ten revolutions per minute, is six feet long and three feet in diameter, and is so constructed that the pulp and solution passes over one hundred square feet of plates before finding a way out, making a perfect deposition of gold and silver on the plates and quicksilver.

By this operation practically no values are lost, as the slimes are successfully treated by classifiers and improved electric amalgamating tables, which are six feet wide and twelve feet long, divided into four compartments provided with copper silver-plated plates placed in the form of steps.

From the tables the material passes through two or more traps, collecting all amalgam which escapes during the operation.

Finally, the tailings are discharged into filter bags and the solution extracted by pressure, which is pumped back to the solution tank and used over again.

The pulp (or tailings) is then dried and pulverized by rolls and conveyed to an electric magnetic separator, when the oxide of iron is extracted, this being marketable for use in paint, etc.

The dynamos used in connection with this process are of special construction to suit the peculiarities of the case. Ameters, voltmeters, etc., are of the latest design, and insure perfect control of the current.

The expenses in connection with the running of a mill treating one hundred tons from the bins per diem of twenty-four hours, exclusive of power, will not exceed fifty cents per ton of two thousand pounds, and the highest known percentage in gold and silver is extracted.

The operation is continuous and requires no extra labour or expert help, and very little attention, while the clean-up can be made at any time without interfering with the operation of the mill.

In order to install the DeKeyser process in any mill using the amalgamating process, very little change is necessary, the crushing and grinding of the ore being the same in either case, viz.: 50 to 60-mesh (or finer preferred), as may be determined by experiment.

The process is adjustable to the treatment of auriferous gravel and sands by dredging, hydraulic and placer mining in general, but the electric deposition is eliminated.

MACHINERY NOTES.

A new electric hoist has been installed at the Payne mine, Sandon.

The Slocan Star concentrator is being entirely remodelled, and additional machinery, including six Wilfley tables, installed. The company have also in view the installation of a zinc magnetic separator plant.

A 20-h.p. Westinghouse electric motor has been installed at the Granby Company's mines machine shop. The company has also received another small locomotive for mine haulage work, manufactured by the Davenport Machine Works.

An additional motor has been installed at the Le Roi No. 2 Elmore Mill, by which its capacity will be increased to 60 ton per diem.

Work is progressing rapidly on the improvements at the Tacoma smelter. These comprise additions to the lead refining plant, a three-storey brick bag house and a large steel blast furnace. The bag house building, which is 110x60 feet, is practically completed and the apparatus is being installed in it. It includes 1,000 bags, each 25 feet in length by two in diameter. The bags are placed suspended with the open end downward. The smoke is passed into the bag house

and forced through the bags, which catch all the valuable mineral otherwise carried off in smoke. It is expected that the bag house will be in use in two months. The new steel blast will make the fourth lead furnace in operation at the plant. Its capacity will be about 200 tons daily. The cost of the furnace is estimated at \$10,000, while the bag house will cost about \$50,000. These improvements when completed will materially increase the capacity of the smelter. The new blast furnace will nearly double the capacity of the lead plant. The total capacity of the smelter will be about 300 tons of copper ore and 500 tons of lead ore daily.

It is reported that the Cherry Creek Mining Co., operating in the Vernon district, propose installing a ten-stamp mill on its property in the spring. The Fraser & Chalmers two-stamp experimental mill has been in successful operation a month, crushing from eight to ten tons a day.

The 1,000-foot gravity tramway at the E. P. U. and Goldfinch mines near Greenwood, has been completed, and will greatly facilitate shipments from these properties.

At the Mountain Lion in Republic Camp, Wash., the property of a Canadian company, a Hendryx electro-cyanide plant is now being installed. It is intended to crush the ore to 80 mesh, first reducing it with 20 stamps and then crushing to the required fineness with four Huntington mills. From the latter the pulp will be automatically conveyed to a series of five storage tanks and thence to the agitator, which will be charged four times every 24 hours, requiring six hours' agitation for an extraction of 80 per cent. of the gold and silver contents of the ore. Each charge will consist of 40 tons of ore, 60 tons of water and 1 pound of cyanide of potassium.

The machinery to be installed at the Iron Mask mine, Kamloops, will consist of a large double-drum hoist, capable of lifting a four-ton skip 600 feet per minute. A tandem Corliss condensing engine capable of developing about 250 horsepower with all modern improvements, such as the super-heating of steam between high and low pressure cylinders. A ten-drill two-stage air compressor. A 300-light electric light plant. A sawmill and timber framing machinery. Two 125-h.p. steam boilers of 150 lbs. working pressure have also been ordered from the Vancouver Engineering Works. The concentrating plant will be capable of treating 200 tons per day.

It is reported that it is the intention of the Granby Company to increase the capacity of the smelter at Grand Forks by the addition of six additional furnaces, this coming summer.

A 20-drill compressor and a 150-h.p. hoist have been installed at the White Bear mine, Rossland.

BOOKS RECEIVED.

Annual Report of the Board of Regents of the Smithsonian Institution, 1903.

Summary Report of the Geological Survey Department of Canada for the year 1902.

This report contains much matter of interest to the West. Mr. R. G. McConnell, assisted by Mr. Joseph Keele, contributes a lengthy and comprehensive description of conditions in a section of country tributary to the MacMillan River, in the Yukon, where both an instrumental topographical survey and a geological reconnaissance was made. Mr. Arthur Webster, a former member of the staff, and Professor Ernest Haycock of Acadia College, Wolfville, Nova Scotia, report on the rocks and possible economic minerals of the outer or southwestern coast of Vancouver Island; Dr. R. A. Daly writes of his work commenced in 1901 in connection with the survey along the International Boundary between British Columbia and the State of Washington; Mr. R. W. Brock and Mr. W. H. Boyd report on a fifteen-mile area around the town of Greenwood, and Mr. W. W. Lesh describes at length geological conditions in the vicinity of Blairmore.

Modern Workshop Hints, by Robert Grimshaw, M.E., London; Sampson Low, Marston & Company, Limited.

This work should be of inestimable use to mechanical engineers and machinists, containing as it does a fund of useful data, describing unusual and rapid ways of doing work