

Trail, B.C., then producers may hope that zinc in lead ore may become a source of profit rather than a loss by penalty.

Ore-dressing.—It is also found that momentous progress has been made in the field of ore-dressing through the development of flotation; in zinc ore treatment by leaching and electrolysis, in the leaching of copper ores, and in the improvement of copper-smelting practice.

Copper Metallurgy.—In copper metallurgy, leaching has made great strides. Naturally, flotation has checked any tendency to leach lean sulphide copper ores. It is, however, an open question whether roasting and acid-leaching of flotation concentrate may not in time seriously invade the field of the reverberatory furnace for copper recovery.

The period under review has also seen complete revolutionary change of practice in copper converting, in the substitution of basic lining of the vessels in which the metal is blown to blister copper for the siliceous material heretofore used. It is common to figure each siliceous lining as being good for 20 tons of copper, while a basic lining is found to be good for as high as 20,000 tons, which has allowed the use of larger units and decreased the time and cost of operation.

General.—In the metallurgy of gold, silver, and lead there is little of note to record. One of the largest gold mills in the world is that built near Juneau, Alaska, by the Alaska Gold Mining Co., this mill having a 1,000-ton capacity. There concentration precedes amalgamation or cyanidation of the concentrate, and the plant is doing good work.

In crushing as a preliminary to concentration, the tube-mill has found general adoption, either in the conical or the short cylindrical type. The advantages of the ball mill, long in use in Europe and Australia, are now recognized in America, and American metallurgists have improved on the European type.

Another field is that of by-product recovery from smeltery smoke fume and dust. Facilities for recovering sulphuric acid are now possessed at some smelting works and at many the sulphur is now being conserved.

Conclusions.—In conclusion, it is found that momentous progress has been made in the field of ore-dressing through the development of flotation, in zinc ore treatment by leaching and electrolysis, in the leaching of copper ores, and in the improvement of copper-smelting practice.

If one were venturing into the field of prophecy he would predict the growth of flotation and of hydro-metallurgy with a gradual encroachment of these two upon the realm of pyro-metallurgy.

One significant feature of the progress here reviewed is that practically all of it has occurred west of the Rocky Mountains and under the direction of American engineers and metallurgists, and as the result of sound training coupled with long experience and diligent application.

Dr. E. T. Hodge, professor of geology at the University of British Columbia, recently lectured in Vancouver on "How Mountains Have Been Formed," illustrating his address with numerous instructive lantern-slide views. Later, he took part in the proceedings of the Canadian Mining Institute at the meeting of the Western Branch.

ADDITIONS TO HOLLINGER PLANT.

Additions to plant at Hollinger Consolidated mines during 1916 cost \$599,417, distributed as follows:

Buildings.

Mill additions	\$59,217
Cyanide plant	23,715
Central shaft headgear	23,465
Administration building	19,207
Directors' lodge	9,362
Transformer station	6,341
Dwellings.	5,776
Central shaft plant	4,322
Fencing.	1,254
Acme hoist house	1,111
Compressor plant	449
Powder magazines	386
Miscellaneous.	942

Equipment.

Central shaft plant	\$183,079
Mill additions	144,642
Cyanide plant	44,456
Transformer station	44,816
Mine equipment	5,692
Acme hoisting plant	5,108
Machine shop	3,355
Office fixtures	3,289
Directors' lodge	2,606
Surface plant	2,398
Tailings, launder	2,217
Railway siding	1,445
Miscellaneous.	258
Camp equipment	495

HOUSING OF UNDERGROUND CABLES.

In placing electric cables in underground conduits or in laying them on the bottom of a body of water, frequent joints are necessary. These are apt to be weak spots both electrically and mechanically unless properly made and protected. A new and improved type of joint-box or housing for use on submarine cables has recently been developed and perfected by the Standard Underground Cable Co. of Canada, Limited, and successfully used on submarine cables supplied the Halifax Electric Tramway Co. and the City of Ottawa Water Works Department.

SUDBURY PROPERTIES WORTH \$100,000,000.

The Ontario Nickel Commission is not in favor of Government ownership of Sudbury nickel properties and points out that to expropriate would cost about \$100,000,000.

Mr. Alex. Sharp, mining engineer for the P. Burns Co., on February 28th addressed an audience in Vancouver, B.C., on the subject of "Canada's Economic Wealth and World Power," giving prominence to the mineral resources of the Dominion.

70,000,000 TONS NICKEL ORE PROVEN.

According to the Ontario Nickel Commission proven ore reserves in the Sudbury field amount to 70,000,000 tons, while the total of proven, probable and possible ore is estimated at 150,000,000 tons.

The excellent report of the Ontario Nickel Commission has been received too late for review in this issue. We reprint a few extracts only.