

a general adoption of the process. Whether, however, cyanide is capable of leaching out the precious metals when contained in mineral sulphurets like pyrrhotite and copper pyrites is a moot point. We know its capabilities when dealing with free gold, existing alone or associated with minerals in an ore, but when combined with them, as it seems to be in these smelting ores, it naturally suggests itself that the dissolution of the mineral itself would be necessary in order to secure the desired extraction. This latter point is most certainly not to be wished for. The present experiment at Rossland is a sound object lesson and one which must guide us very much in the application of cyanide to our ores in British Columbia.

THE GOLDEN CACHE MINES PLANT.

BY A. C. MACCALLUM.

(Continued from last month).

THE vanners are of the "Frue" type and possess every modern improvement, recommending themselves as machines well adapted to the work required of them.

A 10-inch by 16 inch slide valve engine is employed to drive the stamps and rock crusher, the vanners being driven by a small upright engine.

Attached to the mill is a small portable saw mill, by means of which all lumber and timbers required for the mill and adjoining buildings was sawn.

Water for the mill is supplied by means of a duplex pump of Northey, Toronto, make, and is placed upon the banks of Cayoosh Creek, some 200 feet from the mill, thereby water is pumped up to a large circular tank erected upon the crusher floor, a steady flow of water being ensured to the stamps and vanners from this source.

There is the usual boarding house superintendent's dwelling place, assay office and cook house, adjacent to the mill.

The entire plant is driven by means of compressed air, the compressors having recently been installed. The compression plant is driven by means of water power, a method which certainly recommends itself, for utility, compactness and low running cost, in fact where water is available this is undoubtedly the best method for developing power for mine and mill.

The power house is situated above three-eighths of a mile below the mill of Cayoosh Creek, where a head of fifty feet is utilized to generate power. A dam was constructed at the head of the rapids here, upon one

end of the dam was constructed the inlet to the flume built upon the side of the canyon walls and carried some 250 feet down stream where the flume is led into a vertical penstock at the bottom of which is placed the turbine water-wheel; the turbine is placed horizontally, the water being discharged through a draft tube of some twenty feet long, into the rapids below.

The building into which the compressor is placed is some forty feet square, and this was erected with a view to the installation at an early date of an electrical lighting plant.

The compressor is of the duplex type, belt driven, the cylinders being 14 by 22. The compressor is run at a speed of ninety-five revolutions per minute against a pressure of ninety pounds air. This compressor is of the "Rand" type by the Canadian Rand Drill Co.; the wheel shaft extends through the penstock and into the compressor room, belt connection to the compressor being made from this shaft, from the same shaft power will be taken to drive electric light plant when installed, grip clutch pulleys being supplied, thereby providing facilities for cutting off either compressor or electric light machine, as the case may be.

The turbine is the well-known "McCormick" wheel, and under a fifty foot head will develop over 300 horse-power at 350 revolutions per minute. The water power plant here is controlled by means of one of Repogle's "double acting" relay governors. The fineness of regulation of governing as performed by this governor is worthy of more than passing remark.

This type of governor embraces the relay principle, that is, it works by instalments, cutting itself out automatically every time it operates. This is to prevent "hunting" or "racing." It is now an accepted fact amongst turbine wheel experts that water-wheel regulation of a reliable character can be provided only by the use of this relay principle in the governor.

The compressed air from compressor is conveyed by piping to the receiver placed overhead above the compressor and from there the air is conveyed in pipes to the mill and mine. The pipes are carefully boxed in and

covered. At the the mine has recently been set in operation five Rand Drills, driven by means of the compressed air; it is anticipated that by means of this outfit at the mine much work will be accomplished.

The entire plant, namely, the stamp mill and com-



1. THE DAM AND FLUME.

2. MILL AND OTHER BUILDINGS.