

MINING.

COSTS OF MINING AND MILLING FREE GOLD ORES.—Hamilton Smith, Jr., contributes to the Engineering and Mining Journal a most interesting and valuable article on the "Costs of Mining and Milling Free Gold Ore." The milling process described is very similar to the process in vogue in Nova Scotia, although in some cases the tailings flowing from the sluices are passed over rough blankets, or through buddles or vanners in order to save and concentrate the heavy particles of either amalgam or pyrites. The figures given are derived from the official reports of the several companies, and embrace operating expenses of every kind including dead work in the mines, etc., etc. The information given is invaluable to mining men and we should like to publish the article in extenso, but its length compels us to give only a summary of the principal facts.

CALIFORNIA.—The Sierra Buttes and Plumas-Eureka mines are situated some 35 miles by wagon-road from the Central Pacific Railroad. Wood for timber and fuel is abundant and cheap. Mining labor costs about \$2.50 per day. Water-power is used for crushing at the Sierra Buttes; at the Plumas-Eureka, both water and steam are used. The lodes worked are of good size, averaging a thickness of perhaps 8 feet, and are reached by adit levels.

The following results were obtained for the year 1885, when a very fair amount of prospecting or dead-work appears to have been carried on in both mines.

Sierra Buttes—93 stamps running for first six months and 60 stamps for last six months, being an average of 76½ stamps; 51,479 tons mined, yielding \$380,145, or \$6.98 a ton.

Cost per ton—Mining..... \$4.06
Milling..... .56
Management and dead work..... 1.21=\$5.83

The net cash profit per ton was hence \$1.15.

Plumas-Eureka—60 stamps running for entire year, 56,052 tons mined, yielding \$124,791, or \$7.60 a ton.

Cost per ton—Mining..... \$4.36
Milling..... .61
Management..... .60=\$5.57

The net cash profit per ton was hence \$2.03.

The Sierra Buttes and Plumas-Eureka Mines are owned by English corporations under the same general management, and have been operated in a very judicious and economical manner; in these respects, their management compares most favorably with that of other foreign mines owned in England.

The Homestake, Father de Smet and Caledonia mines are situated near the town of Deadwood. Wood for fuel and timber is very high priced, while water for mill purposes is more than usually expensive. Mining labor costs from \$2.25 to \$3 per day.

The Homestake mine has two mills running, one of 80 and the other of 120 stamps, and they have been in continuous operation for over six years.

In 1882-83 the cash profit paid in dividends was \$459,757. The average yield of gold to the ton was \$6.60, and the total cost of production was \$4.63, leaving a net profit of \$2.57 per ton. In 1884-5 the cash profit paid in dividends was \$5,868. The cost per ton for mining and milling amounted to \$3.25, and the average yield per ton in gold was \$5.75.

The Father de Smet mine runs one hundred stamps, and in 1885 the yield per ton of quartz crushed was \$3.57. Total cost, \$2.12, and yet \$155,517 was paid in dividends.

At the Caledonia mine the following results were obtained:

48,848 tons crushed, yielding..... \$224,098 or \$1.58 per ton.

Cost—Milling..... .88
Mining and general expense..... 2.67 = 2.95

Net cash profit during nine months.... \$1.63 per ton.

VENEZUELA.—The gold mines of Venezuela, Guayana, are enormously rich and the stock is in great demand in London. The mines are situated 110 miles inland from the Orinoco River, and the want of transportation facilities, the unhealthiness of the climate, and the necessity of importing skilled labor, makes the mining and milling expenses very high. Native labor is cheap, miners and ore handlers receiving from \$2.20 to \$2.50 per day. El Callao is the principal mine, and in 1882, with six stamps running, the average yield of gold to the ton of quartz crushed was \$87.41, while the expenses reached \$45 per ton. New machinery has since been added and the last half of 1885—100 stamps were running and the expenses had been reduced to \$15 per ton. This is an astonishing decrease in cost, and shows what can be done by good machinery and improved methods of management even in a locality as unfavorable for economy as Venezuela.

AUSTRALIA.—The Port Phillip and Caines Companies own the most notable gold quartz properties in Victoria, and from official reports extending over a number of years we find the average yield of gold to the ton of quartz crushed to be about \$5.56 cents a ton, and the expenses \$4.47 a ton.

With great veins of quartz having a thickness of 15 feet and upwards, when they are worked upon a large scale under fair conditions in the United States, the total cost of mining, milling, and management now vary from \$2.12 to \$3.25 per ton, as shown by the last published reports of the Father de Smet and Homestake companies. For mines with veins from 4 to 8 feet in thickness and favorably located for reasonable cheap power, the cost of the Sierra Buttes of say \$6 a ton can be assumed a fair figure. In Nova Scotia with its fine climate, its cheap fuel, labor, and abundant water supply, miners should be able to mine and mill gold ore at still lower rates. Large deposits of low grade ore are to be found in many mining districts,

but they still remain unworked. The figures given by Mr. Smith prove that mines yielding as low as \$4 per ton can be made to pay handsome dividends. This being the case it is surprising that the long-headed, pushing mining men now operating in this Province do not invest some of their surplus cash in erecting, say, a one hundred stamp mill at Mount Uniacke or some equally favorable locality. Our belts of low grade ore are destined to yield large dividends to the miner of the future, and will give a permanency and stability to mining, which the rich, pockety, veins, now being worked will never furnish.

WONDERFUL IF TRUE.—The following statements appear in the Hobart Daily Telegraph of August 3:—"The Mount Lyell Gold Discovery.—The recent development of the Mount Lyell gold discovery bids fair to eclipse anything of the kind hitherto found in Tasmania, and even to rival the famed Mount Morgan, of Queensland, the value of which is counted in millions. Mount Lyell is situated about seventeen miles north-east of Macquarie Harbor, on the west coast of Tasmania. The miners—whose long and indefatigable labors have at last been crowned with such splendid and well-deserved success—have been prospecting in the locality for some three years or more. At an early period of their operations they found some very coarse reef gold, giving every indication of the presence of an exceeding rich reef or lode in that vicinity. Reasoning from the indications, the prospectors (who had secured a prospecting area of fifty acres, under a protection order), commenced a systematic search for the lode, carrying up a tail race and working away a large slice before them, and obtaining gold in considerable quantity as they proceeded. The ground presented extraordinary difficulties, being encumbered with large masses of tin ore, rock, and cement, which required to be blasted with dynamite. The tail-race was carried through a peculiar formation, and one day one of the miners employed by the prospectors threw down the hydraulic hose which they were using, and the jet was left playing on the side of the cutting. After a while the man's attention was caught by the rich appearance of gold near the jet, where the stream was depositing it so as quite to gild the soil. Further prospecting has revealed to some extent the extraordinary richness of the deposit. It would appear at first sight to be a dyke formation, but its exploration so far indicates that it is of hydrothermal origin, like the celebrated Mount Morgan Mine. Several assays have been made, giving magnificent results. We know of three which were respectively at the rate of 161 oz., 187 oz., and 384 oz. to the ton."

WHITEBURN DISTRICT.—Mr. James McGuire has just brought to the city a gold brick weighing 175 oz from 35 tons of quartz crushed. The quarterly returns of this rich property show a total yield of 508 oz. from 79 tons of quartz and \$89 days work.

OLDHAM.—Mr. E. C. McDonnell is working his property at Oldham and is meeting with great success. He reports that mining matters are quiet, but that all who are working in this old and justly celebrated district are doing well.

The following are the official returns for the month of September as received at the mines office:

		Tons Crushed	Oz Gold
The Dufferin Mill,—Durs Hill, Salmon River District,		873	260
Davidson	—Uniacke	21	41
Wallace's	—Waverley	10	16½
Cowan	—Kempt G. M. Co.	15	151
	—Cowan G. M. Co.	11½	5½
McClure's	—Waverley	8½	5
De'uth G. M. Co's	—Leipsigite	210	31
McGuire	—Whiteburn	35	175
Miners	—Sherbrooke	72	18
Goldenville	—	218	43
Crow's Nest	—	34	411
Oxford	—L. ke Ca. cha	41½	633

OUR GOLD FIELDS.—Whether arrangements are, or are not completed to work the Hall-Owen mine, we are glad to understand that there will shortly be at least one, and probably other, additional crushers at work on the Whiteburn areas. Mr. Douglas is pushing with his accustomed energy the work on the crusher which he is building. It appears, in fact, that the area likely to be practically worked at Whiteburn is considerably larger than was a short time ago supposed, recent discoveries of rich leads to the westward of McBride's Hill being reported.

As to the Malaga Barrens and adjoining areas, nothing definite as to immediate working has, so far as we are aware, been determined upon, but the considerable amount of capital lately invested in purchasing the interests of original parties, and the richness of the leads being opened up towards Ponhook Lake, makes the early working of one or more properties in that locality an absolute certainty.

Meantime our enterprising fellow townsman, N. D. Hammett, Esq., with a number of our other citizens have taken up a large number of areas at Vogler's Cove, Lunenburg Co., where the indications are very favorable, and where a number of men are now at work opening up, and searching for the leads.

The long and plucky search of Mr. Goddard and others for the leads near Doran's Lake, to the eastward of Charleston, has been rewarded with success, very good quartz having been found in several leads at a depth of between twenty and thirty feet. The work of developing these however has been, we hear, temporarily suspended on account of the water.—*Litton Advance.*