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# MINING REVIEW

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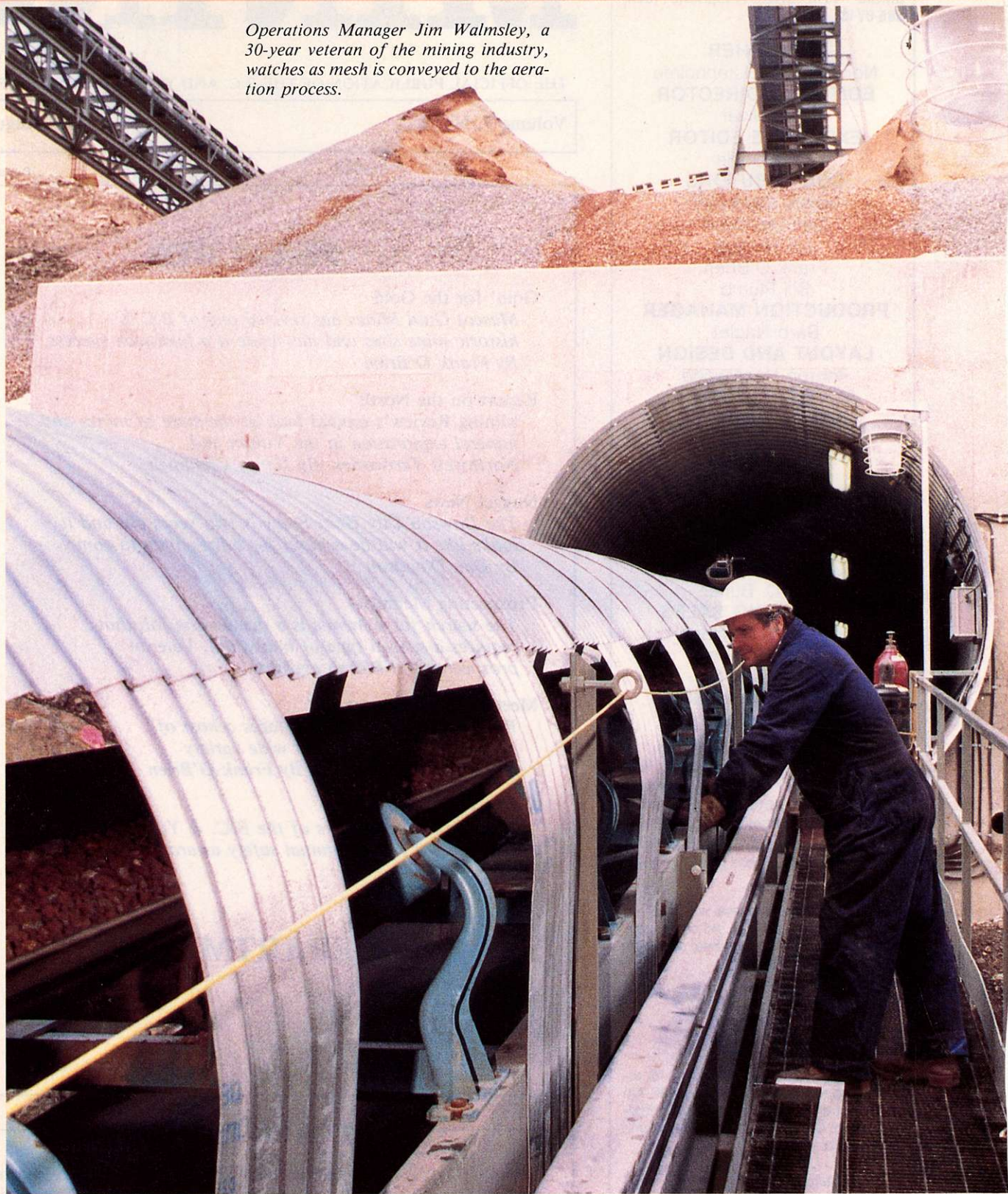
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## COVER PHOTO

When 158 drill holes packed with 23,000 pounds of explosives are detonated on Nickel Plate Mountain, it can mean only one thing — Mascot Gold is breaking ore. See story on page 4.  
Cover photos: F. O'Brien



*Operations Manager Jim Walmsley, a 30-year veteran of the mining industry, watches as mesh is conveyed to the aeration process.*





# Goin' for the gold

*Mascot Gold Mines has injected new life into the historic Nickel Plate Mountain property.*

by Frank O'Brien



*An extensive system of conveyor belts links Mascot's primary crushing plant to the mine's grinding mills.*

A three-minute-warning whistle wails over the mountains of south central British Columbia. There is five seconds of silence. Then a rumble, instantly echoed, as 23,000 pounds of Iregel 1116 explosives blast solid rock into rubble. The dust has barely settled before twin 60-ton Wabco trucks and a 'Cat' 992 loader wheel to the latest blast. It is high noon on Nickel Plate Mountain and

Mascot Gold Mines is breaking ore.

Here, nearly 4,000 feet above the town of Hedley, high explosives are a daily assurance that the largest gold play in the province has revived a historic mine idled for 30 years. The speed at which Mascot has come into near full production, however, has amazed even mining veterans like James Walmsley, Mascot's operations manager.

Walmsley, who has worked in mining for over 30 years, notes it took Mascot Gold Mines only 11 months to turn the slopes of ore-rich Nickel Plate Mountain into a \$70-million open pit mine-mill operation which employs 158 people and moves 26,000 tons of rock a day. "We started clearing the site in May of 1986," Walmsley said. "We poured our first gold bar in April of 1987."



10.3 m tons = 9.3 m tonnes

As of mid-May, Mascot was into its tune-up stage, three months ahead of schedule. "We should be up to full steam within a matter of weeks," Walmsley said. A grand opening is planned for August.

Mascot Gold Mines' Nickel Plate property straddles 2,285 hectares along the south and east slopes of Nickel Plate Mountain, about 200 miles east of Vancouver. Three open pits — the Bulldog, Sunnyside and Nickelplate — are grouped near the 5,600-foot level above the Similkameen Valley in an area first staked in 1898. The pits cover the upper portions of the ore bed systems, which extend at least 4,500 feet southwest from the old underground Nickel Plate mine that was shuttered in 1955. Proven reserves of surface mineable ore are 8.3 million short tons with a stripping ratio of 8.6 to one. Surface reserves grade at 0.14 ounces of gold per ton. There is an additional two million short tons estimated below ground. Mascot expects to mill from 120,000 to 150,000 troy ounces of gold out of Nickel Plate every year — about half of the total annual output of all British Columbia gold mines in 1984 — for at least the next eight years.

Surface drilling is assigned to three Ingersoll-Rand 45E blasthole hammer drills. The blasted ore and waste are hauled away by one 75-ton and



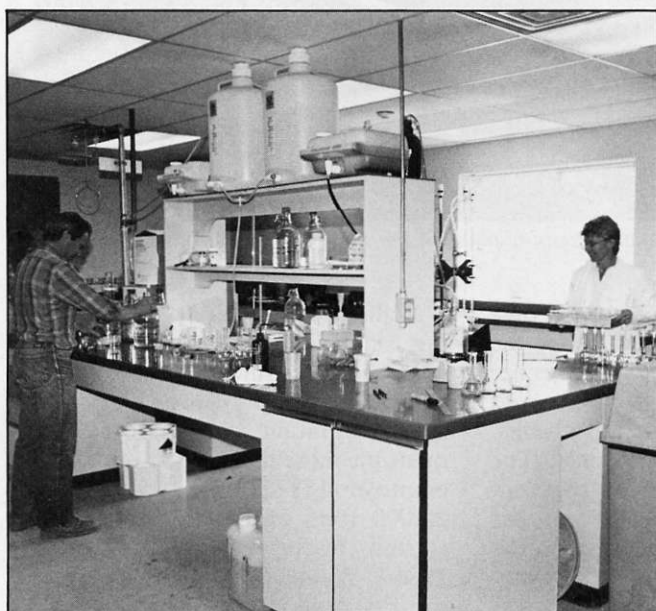
The main mill building at Nickel Plate. It took Mascot less than a year to develop and construct the mine and mill operation.

six 60-ton Wabco trucks loaded by the 992 Cat loader and two P&H 1600 E shovels. Capacity was established at 26,000 tons a day but, Walmsley said, 30,000 tons a day is not unusual. The mining operation runs seven days a week, 24 hours a day, with crews working two night and two day shifts before four days off. Ore is hauled to the crushing plant below the pits at a rate of 2,700 tons daily, while waste rock is hauled to a nearby dump site.

While the ore bodies at Nickel Plate are massive, they are also elusive. In the assay area of the plant,

on-staff personnel run an average of 550 core samples every day through the 2000°F ovens, the test tubes and the computers to establish mill feed growth. The gold is of such fine grain size that a two-stage crushing process is required before the ore is moved through to the grinding circuits.

The crusher operation, running 60 hours a week at 350 tons per hour, involves a first stage of crushing to minus 5/8-inch particles. It is here that pebbles are removed and stockpiled to become an inexpensive grinding medium. Grinding equipment includes a 1,000 hp rod mill; a 2,000 hp



The mine's assay office checks more than 500 samples a day.



Mascot's open pit operation yields 2,700 tons of ore daily. Here, a P&H 1600 shovel loads one of the company's 60-ton Wabco haulers.

ball mill; 10 Linatex cyclones; and three 1,000 hp pebble mills. "It is all very conventional," explains Walmsley, over the whine of the motors and the crash of rocks. Gold recovery is optimized at a grind of 80% passing 400 mesh. The once giant boulders are now a thick soup. The ground ore is aerated and the solution changed prior to cyanidation, oxidizing iron-bearing sulphides and minimizing cyanide consumption.

Following two-stage leaching (filtering occurs at a later stage in the process) in the giant tanks connected to the plant, conventional cyanidation techniques are used for optimum gold recovery. Dissolved gold is precipitated from the solution by the use of zinc dust in the Merrill Crowe process. Mascot is not allowed to discharge any effluent into the environment. The closed water system includes a tailing pond about 5,000 feet from the plant, though some extra water is drawn from freshwater wells. Like most milling operations, water at Nickel Plate, because of its scarcity, is nearly as valuable as the ore.

Dore bullion is poured an average of twice a week into 1,000 ounce bars. Producing gold at Nickel Plate costs Mascot about \$120 (US) an ounce — similar to the Teck-Corona mine in Hemlo, Ontario — and the entire mine-mill operation was based on gold prices of \$300 (US) an ounce. At press time gold was selling for \$458 (US).

The buoyant market for gold partly explains the quick start-up at Nickel Plate, but shrewd shopping for equipment also played a role. Nearly all of the crushing and grinding equipment was bought second-hand and moved wholesale to the site from as far away as Quebec, California and even Missouri. It was all refurbished and in working order much quicker than waiting for new equipment, Walmsley explained. The plant layout and evaluation were under the direction of Kilbon Engineering Ltd., Vancouver, and Mascot Gold Mines Ltd.

Innovation and experience were also apparent in the financing of the entire \$70-million Nickel Plate project. Mascot has been holding Nickel Plate since 1971, but it was not until



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1984 that exploration funded by flow-through financing uncovered the extent of the gold mineralization. To finance the discovery, Mascot reached an innovative financing agreement with the Canadian Imperial Bank of Commerce for the full cost of development. Mascot, however, converted part of the loan to a gold loan by borrowing 100,000 ounces of gold from the bank. The gold was sold for \$409.80 (US) an ounce to net \$56.9 million (Cdn). The gold is to be returned to the bank by April 28, 1988. During the period of the gold loan, interest is being charged at only 3% annually. Henry Ewanchuck, president and chief executive officer of Mascot Gold Mines Ltd., said the company will be able to repay the entire \$70-million loan within two years.

The high-tech operation at work on Nickel Plate Mountain is the latest, and possibly the last, mining play on a site first discovered during the waning days of the gold rush of the 1890s. The initial claim was staked by two prospectors high on Nickel Plate 90 years ago, and the first underground mine — Yale Mining Company — began in 1902. Production continued until the first reserves were exhausted in 1929. Two years later, after a detailed study by geologist Paul Billingsley, new ore reserves were proven.

A new company — Kelowna Exploration Company — was formed and mining and milling resumed in 1934. With the price of gold fixed and reserves declining, the mining was discontinued in September, 1955.

In 50 years, Nickel Plate had given up 1.5 million ounces of gold, four million ounces of copper and 189,000 ounces of silver from four million short tons of ore. In the next eight years, Mascot expects to process nearly one million ounces of gold.

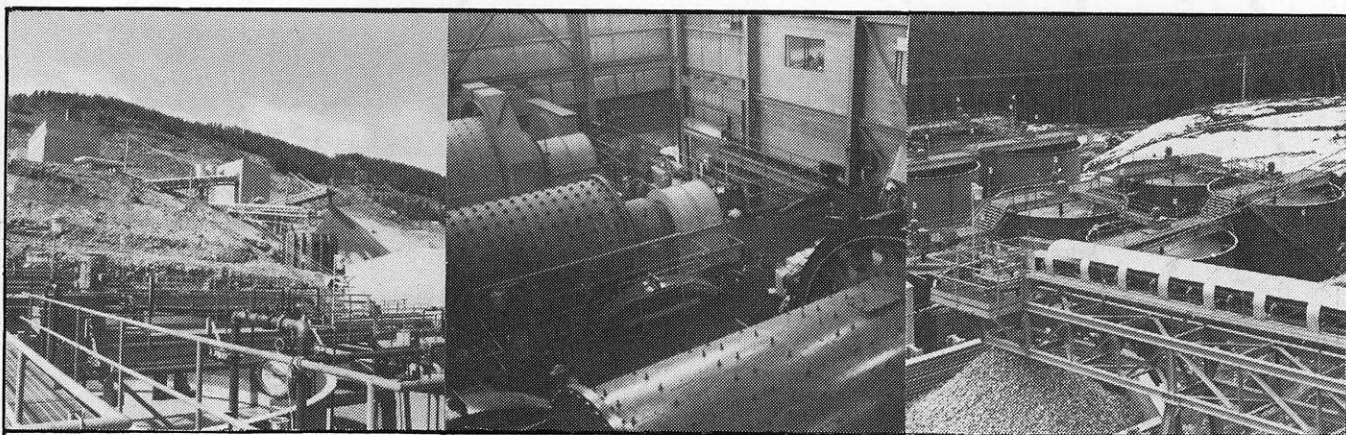
The legacy of the old-time miners remains in the shafts and tunnels radiating through Nickel Mountain and in the files of William Wilkinson, Mascot Mines' senior geologist. "We have nearly every available bit of data on the mines right back to the 1900s," Wilkinson said. And he notes, recent drilling indicates the two million short tons of mineralization underground are open to expansion. After all, the underground miners were hauling ore graded at 0.39 ounces of gold per ton, more than twice as rich as the average open-pit grade. While glory holes have been discovered at the 6,000-foot level, the major underground workings, 50 years old, start at the 5,600-foot level. Rusting rail tracks lead to a 1,500-foot-deep Dixon shaft in the heart of the mountain. Glory holes are surface expressions of the extensive underground workings served by the Dix-

on shaft, which leads 1,500 feet down to deeper workings. Wilkinson, who has explored virtually every inch of the old mine, says it is hard not to be touched by the well-preserved pilings and hard rock tunnels. "I feel we are writing a new chapter in B.C. mining history," he said.

But the book is closing. For safety and to ease the recovery of pillars, the old mine workings will be filled with lower grade material before the open pits break through. At the pace Mascot's crews are going, it won't be long before the subterranean workings are open to the Similkameen sky.

It is not only the topography that has changed on Nickel Mountain. Today Mascot's workers — more than half of whom hail from British Columbia — commute on good roads from Penticton, Hedley, Apex and other local communities. Mascot's payroll will pump about \$7.5 million annually into the Okanagan economy. Aside from the open-pit miners, the assay office technicians and the crushing and milling plant workers, Mascot employs a rotating shift of two dozen mechanics in their own maintenance centre at the mine site.

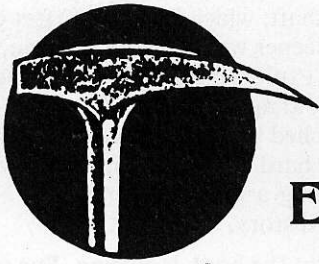
Walmsley says he is proud, not only of the calibre of the Mascot employees, but also of the near accident-free record during the fast track con-



# KILBORN

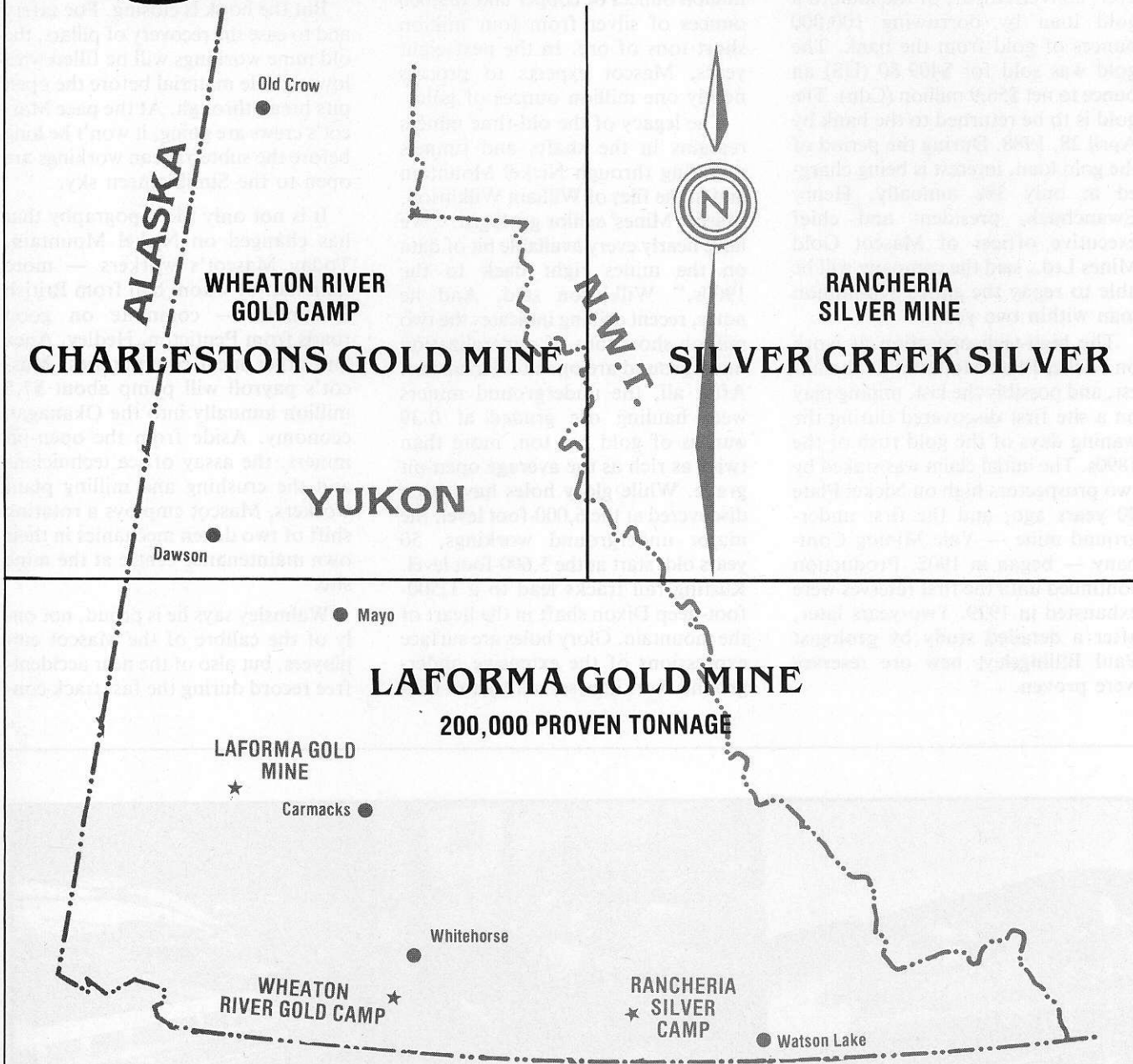
Congratulations Mascot! Kilborn is proud to be the engineer for the Nickel Plate Project.

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struction and the current production stage. Only two men have been hurt — the worst a broken finger — since mine development began. "When it comes to safety, we leave nothing to chance," Walmsley said.

The modern power that makes Nickel Plate possible is through a new 60/138 KV electrical transmission line from West Kootenay Power and Light Co., three miles away in Hedley. An emergency generator assures vital equipment never stops.

Mascot Gold Mines was incorporated in 1971 to acquire the Nickel Plate Mine property and the company has its roots in the local mountains. Originally, a subsidiary of Giant Mascot Mines Limited, which in turn originated as Hedley Mascot Gold Mines, the company was amalgamated in 1984 with E and B Explorations to become Mascot Gold Mines Ltd.

While Nickel Plate is the major gold producer in the Mascot stable, it is not the only property with potential that the Vancouver company is involved with. Mascot's other principal Canadian site is the Bralorne property at Bridge River, 100 miles north of Vancouver, which has current reserves of more than one million tons grading 0.27 ounces of gold per ton. Principal exploration targets include Cariboo Bell, a gold-copper property near Williams Lake, B.C.; and Cariboo Gold, also near Williams Lake, where a drilling program started this year. Mascot wholly owns the formerly producing Giant Nickel property, 100 miles east of Vancouver and has a major interest in the Mica property, near Revelstoke.

In the United States, Mascot is involved in the El Plomo gold property in Colorado. The company also carries out exploration and evaluation on other North American properties on behalf of its corporate parents: International Corona Resources Ltd. and Royex Gold Mining Corporation. Lacana Mining Corporation recently purchased 51% of Mascot to become the major shareholder.

But it is in the hills above Hedley, where high-technology and history meet, that Mascot Gold Mines has staked its claim in the North American mining industry. □

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