

CHENI GOLD MINE camp in spring is still engulfed with snow, while its roads soften and thaw.

Photo by Grant Webb

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A visit to a gold mine

Toodoggone gold

by John Young

A distant rumble from deep within Toodo Mountain signals the drop of tons of ore from mining operations a couple of hundred metres above.

Here at the bottom level of Lawyer's Mine in the Toodoggone camp, operated by Cheni Gold Mines Ltd., a tram moves toward the pinpoint of light at the portal, shuttling ore along a half-kilometre of tunnel, hauling to a nearby mill tons of gold-rich ore blasted from the mountain's heart.

Located below the mine at about 1600 metres above sea level, Cheni's

mill each day coaxes precious metal out of up to 530 metric tons of drab, dun-colored rock. Invisible flecks of gold and silver are separated from worthless rock through crushing, sifting, rolling, filtering and eventually smelting to produce 25-kilogram bars of near-pure bullion.

They seem small in proportion to the size of Cheni's operation, but these bars, flown out and shipped to Germany for refining, produce the profit that fuels manpower and equipment at the mine site 300 kilometres north of Smithers.

Each week three crates containing 24

of the shining bars leave the Cheni site, completing a process begun by miners toiling at the rock face of what is known as "the AGB."

Standing for "amethyst gold breccia zone," the AGB is a geological deposit rich in precious metal that miners blast and muck out, working 24-hours a day, seven days a week.

Like mice eating the centre out of a giant cheese, miners follow the AGB's twisting veins along a fault, working upwards drilling and blasting a complicated system of tunnels and chambers.

Cheni's superintendent Ned Reid,

who has worked in copper, gold and silver mines during 30 years in the industry, says mining is basically the same wherever you go.

"Some are easier than others," Reid says. "These little vein mines are the toughest to keep going. It's very labor intensive. You can't just go in and pick up the ore reserve."

Locating and following the ore is detective work left up to the engineers, who don't just punch out tunnels and shafts in every direction.

"There is some kind of rhyme or reason to it," says Cheni's chief engineer Syd DeVries, explaining that the ore body's characteristics dictate which mining methods are used.

In the ore-rich sectors of the AGB deposit, large blasts remove efficiently tons of material at one time, leaving cavities called "blast hole stopes."

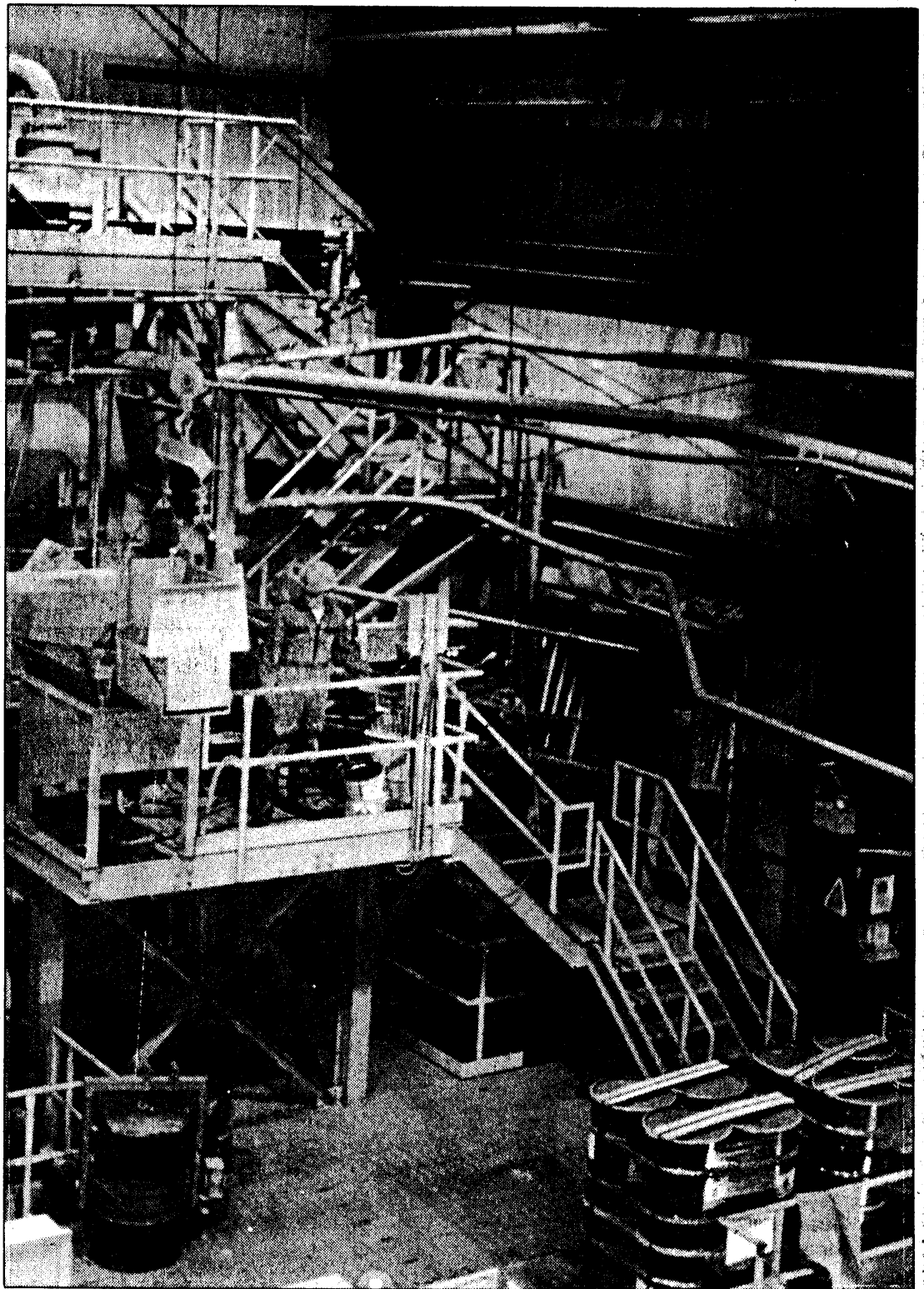
But in peripheral regions, mining takes on a slower pace in cavities called "shrinkage hole stopes," where miners follow the twists and turns of the complex veining.

DeVries says compared to the massive removal of material with a single blast, shrinkage-hole stope mining can proceed at a snail's pace.

"One stope it took two guys a year to finish. We got about 30,000 tons out of that particular stope."

(That translated to about 6,000 ounces of gold and about 180,000 ounces of silver.)

By comparison, workers spent three or four days loading explosives into a larger blast hole stope and brought down 12,000 tons in a single blast.



A NETWORK OF RAMPS AND PLATFORMS run through Cheni's mill. Purposely built below Lawyer's mine to take advantage of gravity, the mill is fed by a tram hauling material from the mountain's heart after miners drop ore down a central ore pass.

That massive removal technique works in areas containing wide sections of ore, DeVries explains, but not in areas with narrow veining, where mineral is diluted with too much worthless rock to make milling practical. Miners must instead proceed selectively.

Explosives wrest the rock from mountain, and miners follow the engineers instructions about where to drill explosive holes and how big a charge to place.

"There's a certain knack to blasting," DeVries says. "You want to make sure when you set off a blast that it goes -- otherwise it's a complete disaster. Some go and some don't under certain conditions and it doesn't blast right."

Two types of explosive are used: a powder type and sticks containing nitro-glycerine charges. ANFO, an inexpensive powder mixture of diesel fuel and fertilizer, works in dry holes while the nitro works in both dry and wet conditions.

Blasting caps fixed with delays allow timed explosions tailor-made for each rock condition.

In about 18 months, when the AGB yields its store of gold and silver and operations move to other deposits on nearby mountains, Cheni engineers predict miners would have pulled an estimated 450,000 tons of "muck" (mineral-containing ore) from the mine.

Since it began operations in early 1989, Cheni has produced some 48,045 ounces of gold and 915,467 ounces of silver. When the AGB is mined out, the company plans to move on to the Cliff Creek and Duke's Ridge zones atop an adjacent mountain. Unlike the AGB, ore will be hauled by truck from that site.

That is expected to increase expenses somewhat. Cheni's mill site was built below the Lawyer's mine to take advantage of gravity.

As superintendent Reid points out, mining upwards and letting the ore fall down to the mill is the most cost-effective mining method.

"Gravity -- that's the cheapest way. The AGB is nice that way. You just let it fall."



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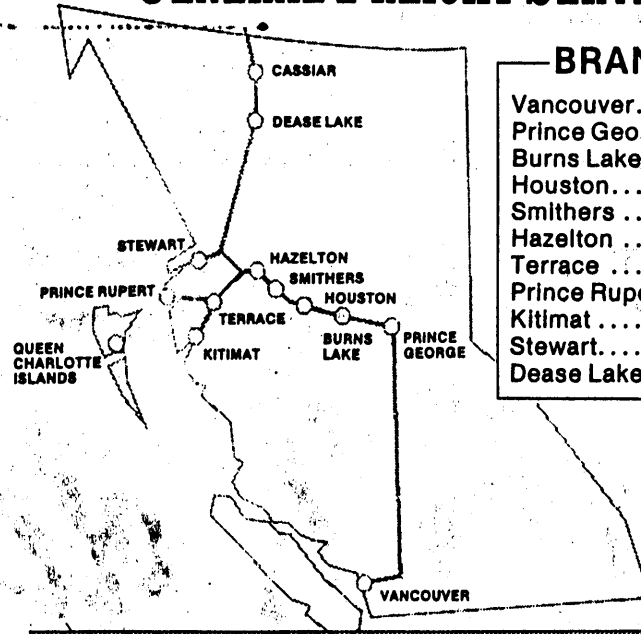
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