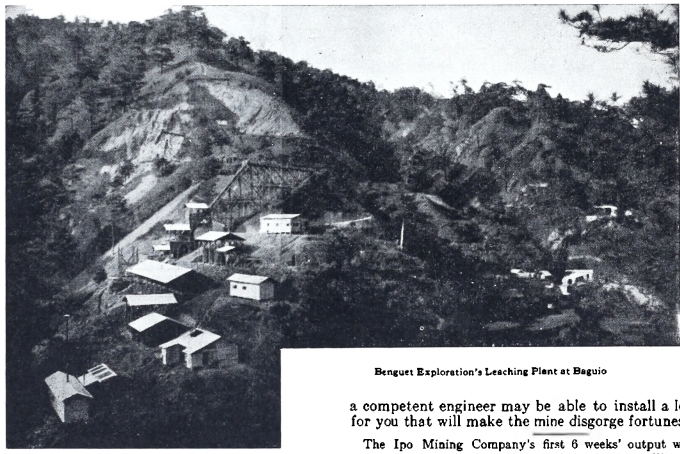
# Cyanide Leaching Process for Certain Types of Gold Ore

## *Operated at much less cost than the complete cyanidation plant, this oldtime mining method is practical with lowgrade ores*

The cut on this page shows the mine, plant and employés' quarters of the Benguet Exploration company, at Baguio. The plant is the type commonly called a leaching plant. It is reported to be the largest such plant now in operation in the Philippines, though Antamok Goldfields, at Baguio, and IXL, at Masbate, have similar plants. Benguet exploration produced 2,564 ounces of gold bullion last year, valued at ₱137,951.50 at the standard value of gold, $20.67 a fine ounce. It is because the leaching plant seems adaptable to much ore in the gold region ranging from Ipo and Salacot around to Balete, if not to much ore even in the Baguio district, that it is discussed here.

C. M. Eye, former superintendent of Benguet Consolidated, says the process is the old, the first, cyanidation process used in gold mining in the United States—more specifically, in Montana. Plants of this type cost only a fraction as much as plants involving the complete cyanidation process. The leaching plant, too, handles ore at a cost of about 75 or 80 cents a ton. The complete cyanidation process needs, for assured profit, ore running average values of at least $6 a ton; but the leaching plant handles $2 and $3 ore nicely. It is only a question of quantity and convenient supply.



Benguet Exploration's Leaching Plant at Baguio

Observing the cut from top to bottom, in its longer section, main parts of the plant can be identified. First, the mine—a mere open cut. Second, the ore dump. Third, the ore chute running to the crusher, this crusher reducing the rock to diameters of no more than 2 inches. Fourth, the ball mill in which the rock is reduced to maximum diameters of 1/2 inch. Fifth, a battery of leaching tanks in which cyanide solution leaches out the gold recoverable by this process. (Complete cyanidation goes on from this point; it is the process for higher grade ores which it is profitable to reduce to fine powder).

Below the leaching tanks are the recovery plant, where the gold is recovered from solution by use of zinc shavings; and below the recovery plant is the refinery. A capital of ₱200,000 suffices for such a plant, and various American companies in Manila can provide equipment for such plants.

Density of ore determines the cost of milling it, a main factor of cost in its extraction with cyanide. Much recent exploration of the ore region at Ipo and Salacot and northward has exposed friable ore that mills at low cost. It is possible that throughout this whole field, apparently a very large one, there are many locations to which the leaching plant is ideally adapted. The same factor seems a determining one at Aroroy, Masbate. There the old Syndicate company disposed of its property when values subsided below the operating cost; but the purchaser simplified the process, cut costs and has steadily made very generous profits. Nearby, again with friable, easily accessible lowgrade ore, IXL is having similar good fortune; it produced bullion to the value of ₱175,000 last year.

If your explorations discover ore enough, but of low grade, don't abandon hope; a competent engineer may be able to install a leaching plant for you that will make the mine disgorge fortunes.

The Ipo Mining Company's first 6 weeks' output was ₱123,000 of bullion at the new price of about $35 an ounce. The mill of 150 tons daily capacity runs 10 to 20 tons over capacity daily, an illustration of the plenitude of friability of the Ipo ore deposits. While the operations began on secondary enrichments, depth indicates the possibility of primary enrichment. Such a discovery would add much interest to this new field.

Balatoc's January output was 10,868.68 ounces of gold valued at ₱760,807.60 and 7,737.64 ounces of silver valued at ₱9,904.04; total, ₱770,711.78. February, 6,985.04 ounces of gold valued at ₱648,952.80 and 6,310.74 ounces of silver valued at ₱8,077.73; total, ₱637,130.53. March, 11,861.38 ounces of gold valued at ₱830,296.60 and 7,366.13 ounces of silver valued at ₱11,428.65; total, ₱839,725.25. Total quarter-year, ₱2,247,467.56. Benguet Consolidated's January output was 3,546.66 ounces of gold valued at ₱598,266.20 and 4,970.63 ounces of silver valued at ₱6,362.41; total, ₱604,628.61. February, 6,837.45 ounces of gold valued at ₱478,621.50 and 4,156.27 ounces of silver valued at ₱5,320.02; total, ₱483,941.52. March, 9,748.55 ounces of gold valued at ₱682,398.50 and 4,377 ounces of silver valued at ₱5,602.56; total, ₱688,001.96. Total quarter-year, ₱1,776,571.19: grand total both mines during quarter-year, ₱4,024,038.75—gold values $35 an ounce and silver values $0.64 an ounce.