

WHEN MENES, THE bearded first Pharaoh of ancient Egypt, 5000 years ago decreed that one part of gold was worth $2\frac{1}{2}$ parts of silver, he established gold in the first rank among valuable metals. Subsequent Egyptian kings sat on thrones fashioned out of the prized yellow metal, and many rulers, like Tutankhamen, even tried to "take it with them" by being buried in golden coffins.

Down through the ages man has continually searched for the precious element. In the Middle Ages alchemists sought a "Philosopher's Stone" which would transform base metals into gold, a process which amazingly enough in the Atomic Age has become scientifically possible. Rich deposits of gold have been found by Spanish explorers in Colombia and American prospectors in the Yukon, but the greatest goldfield of them all was found in 1886 by a penniless British adventurer named George Harrison digging on a farm on the high plateau of the Transvaal in South Africa. Harrison's strike brought him little luck. He was soon broke again. He disappeared, and was rumored to have been killed by lions.

Untold Wealth

A lengthy chain of mines, reduction works, and refineries swiftly sprang up in the Transvaal on the "Golden Arc" of the Witwatersrand—the "Ridge of White Waters," as the Boer settlers called it. In over three-quarters of a century the Witwatersrand bonanza has yielded 19 billions worth of bullion and today provides more than half of the world's annual gold production.

Gold—the most malleable (it can be hammered into foil 4 millionths of an inch thick), and most ductile (one gram can be drawn into a wire two miles long), and least chemically active metal, is found in its native state along the Witwatersrand reef in widely dispersed tiny particles. The particles, invisible to the naked eye, are embedded in a two-

foot thick band of quartz pebbles and matrix rock which dips $2\frac{1}{2}$ miles into the earth.

This band of gold-bearing ore came into existence millions of years ago when an immense inland sea existed in the Transvaal. Specks of gold were washed down from the towering mountains, lodged in the mud and pebbles of the shoreline, and in later epochs were covered by sedimentary rocks until they were thousands of feet below the earth's surface.

To extract the gold bearing ore from this 350-mile long twisting and plunging underground reef today there are over 60 mines costing about \$34 million each, and employing half a million workers, of whom the great majority are Bantus—Black Natives of Southern Africa. The mines operate in such proximity to each other that it is possible to descend into one mine, wander through the tunnels, and exit through another mine 45 miles away. Along the landscape the vast curve of the Golden Arc is strewn with yellowish man-made hills, sawed-off pyramids of crushed rock and golden sand—the dumpings of worked ore.

Fatal Accident

Plummeting a mile into the earth on a "skip" (elevator) down a mine shaft is definitely not for claustrophobes. The skip is blacked-out, sardine-packed with miners, and the ride down takes a good while. For us—on a visit—it was ample time in which to brood over the news we had been told while donning our miner's protective clothing in the dressing room: a tunnel had collapsed a few hours before. One miner had been killed, one was missing, and four others were injured. It had been the first accident in over a million man-hours—and the first fatality in a much longer time. While we were sipping a hospitable, last-minute cup of tea offered by the Mine Supervisor in his office, there was still time to postpone our trip down to a more auspicious day, but the urgent call