



RISE & FALL OF THE MIGHTY

Story & photos by Denise Seith

ARGGO

The Argo Gold Mill and Argo Tunnel in Idaho Springs, Colo. made quite an impact on the state's mining history. It all began in 1859 with the first discovery of placer gold.

Mining continued to thrive until 1943, when a fatal underground accident closed the mill and tunnel forever. The best way to learn about this significant time in Colorado's past is to visit the Argo Gold Mill and Mine, now a national historic site. Renovated and opened to the public in 1978, the mine still has much of the original equipment used for processing the ore, though a bit worse for wear.

A visit to the Argo also includes a self-guided tour of the Double Eagle gold mine and a chance to pan for gold. The main attraction here is not a mine tour, but rather a mill tour with a history lesson. The bottom level of the mill serves as a museum, displaying mining tools, milling artifacts and old photographs. A custom-built 1930s trommel, a funky spiral concentrator, ore cars, stamp mills and even a miner's porta potty are scattered around the property. Take a close look at these relics and you'll likely gain a new appreciation for modern-day mining methods and equipment!

The tours kick off with a presentation by a member of the Argo staff. You'll not only learn the history of the Argo Mill and the Argo Tunnel, but also the difference between placer mining and hardrock mining. You'll also discover how and why it all got started on this spot more than a century ago. During the talk, samples of gold and gems found in the local mines are passed around the room. A film is also shown that helps bring the Argo's story to life, as does a very loud pneumatic drill demonstration.

Following the demo, a short bus ride up the

hill to the 1890 Double Eagle gold mine (on the same level as the top of the five-story mill) begins the self-guided portion of your tour. At the top, you're on your own to explore a short section of mine and to walk back down through the mill. Inside the mill, you'll encounter narrow stairs with uneven treads, loose floorboards and shaky handrails, so watch your step and your children. Interpretive signs rather than a tour guide help explain how the mill and much of its machinery once operated.

The Argo's story began with the discovery of gold in Idaho Springs at the confluence of what is now Chicago Creek and Clear Creek. George Jackson was responsible for this first major find in 1859 which set off Colorado's Gold Rush. Good news traveled fast and practically overnight some 50,000 gold-seekers streamed into Clear Creek Canyon.

After a couple of decades, the easy placer gold in the streams gave out and lode mining replaced panning and sluicing. At least 100 hardrock mines — the Orr, Queen, Sunnyside, Bertha, Arizona, Saratoga and others — were worked between Idaho Springs and Central City, a distance of a little more than four miles. As the shafts were sunk ever deeper into Quartz Hill and the Seaton and Pewabic mountains, the mines filled with water. As the mines reached depths of 500 and 1,000 feet, pumping costs made up the bulk of the mining expense. Soon enough

Exterior of Argo Mill.

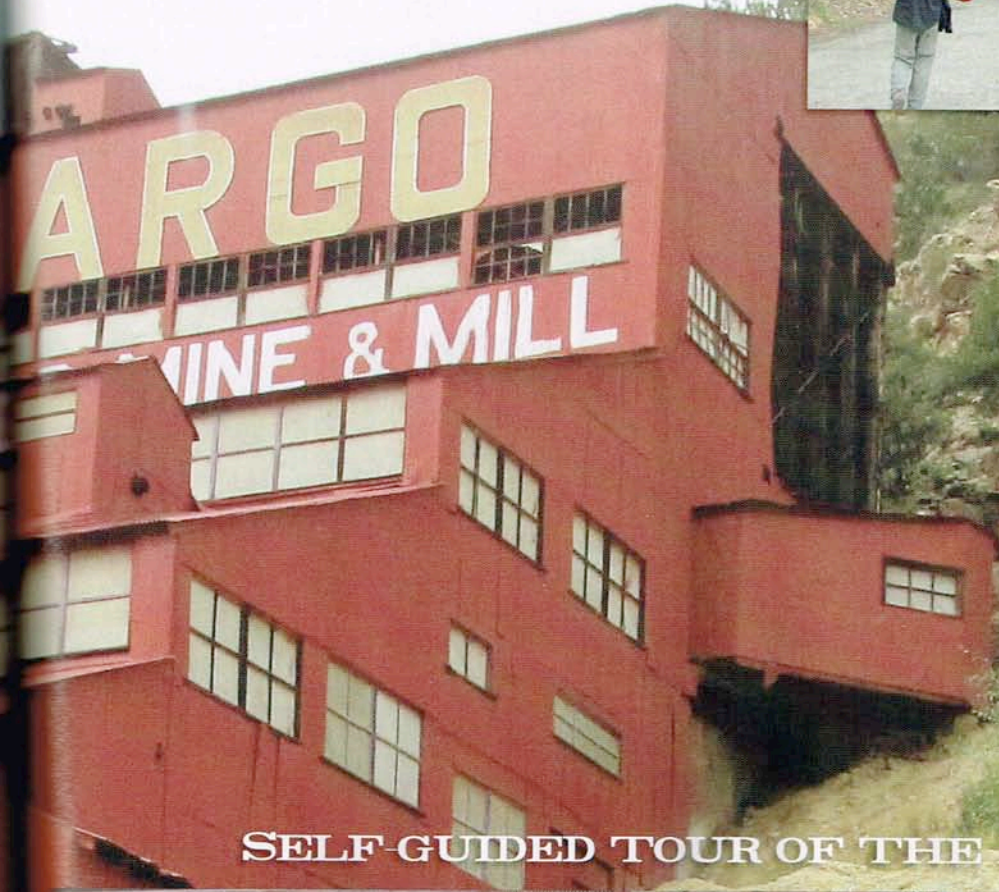
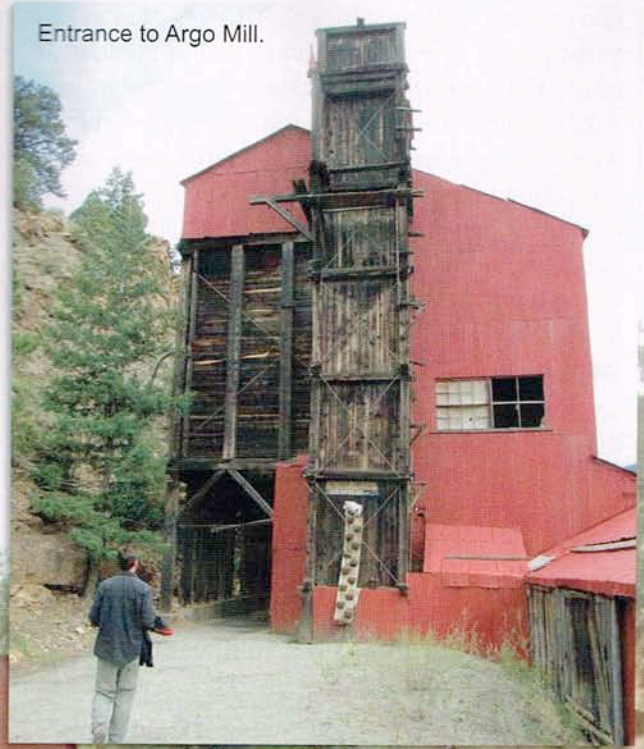


mines that could have continued to produce were closed. Prospectors just couldn't stay ahead of the rising water or the rising costs.

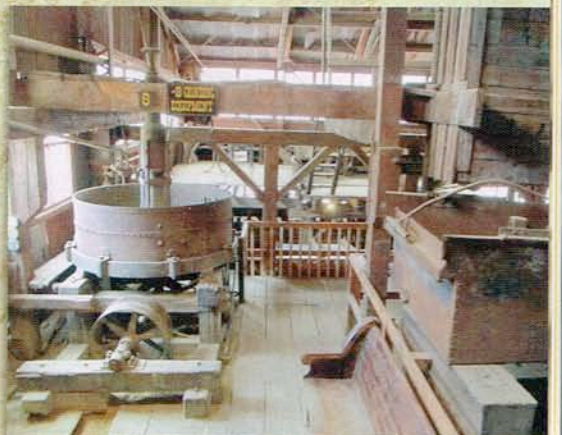
The solution to the water problem was to build a tunnel that would run horizontally below the vertical mine shafts. The tunnel would not only act as a drainage system, but also provide ventilation and transportation of the ore to a processing mill. Last year was the 120th birthday of the Argo Tunnel, initially known as the Newhouse Tunnel. The project was started in 1893 thanks to Samuel Newhouse and his investors. It was the most ambitious and costly mining venture ever undertaken at the time. But, it proved to be worth the risk.

Drilling and construction continued for 17 years. By 1910, the Argo Tunnel ran from the east end of Idaho Springs to the northwest corner of Central City. Along the 4.16-mile route, it intersected directly or by crosscut tunnels an estimated 100 mines. The tunnel was built on a slight grade to

Entrance to Argo Mill.



SELF-GUIDED TOUR OF THE ARGO MILL



allow water to flow into a flume out to the portal. The first two-and-a-half miles of the tunnel were 12 feet wide with a double track. Beyond that, the width of the tunnel decreased to 10 feet, allowing for a single track. The combined benefits of drainage without pumping and the ability to haul ore to a mill at the tunnel's portal allowed mines that had been closed for years to reopen.

In 1913, soon after the Argo Tunnel was in operation, the Argo Mill was completed. The most up-to-date milling processes were incorporated here to ensure the highest percentage of precious metals recovery. During its three-decade lifetime, the mill processed more than \$100 million worth of gold ore! Electric locomotives were used to haul three-ton ore cars to the mill. Each mine that shipped ore to the Argo Mill through the tunnel was allocated a separate storage bin. Upon arrival, the ore

was assayed to determine its mineral content. If both the mine owner and the mill agreed on the value, the total ore shipment was sold to the mill and concentration began.

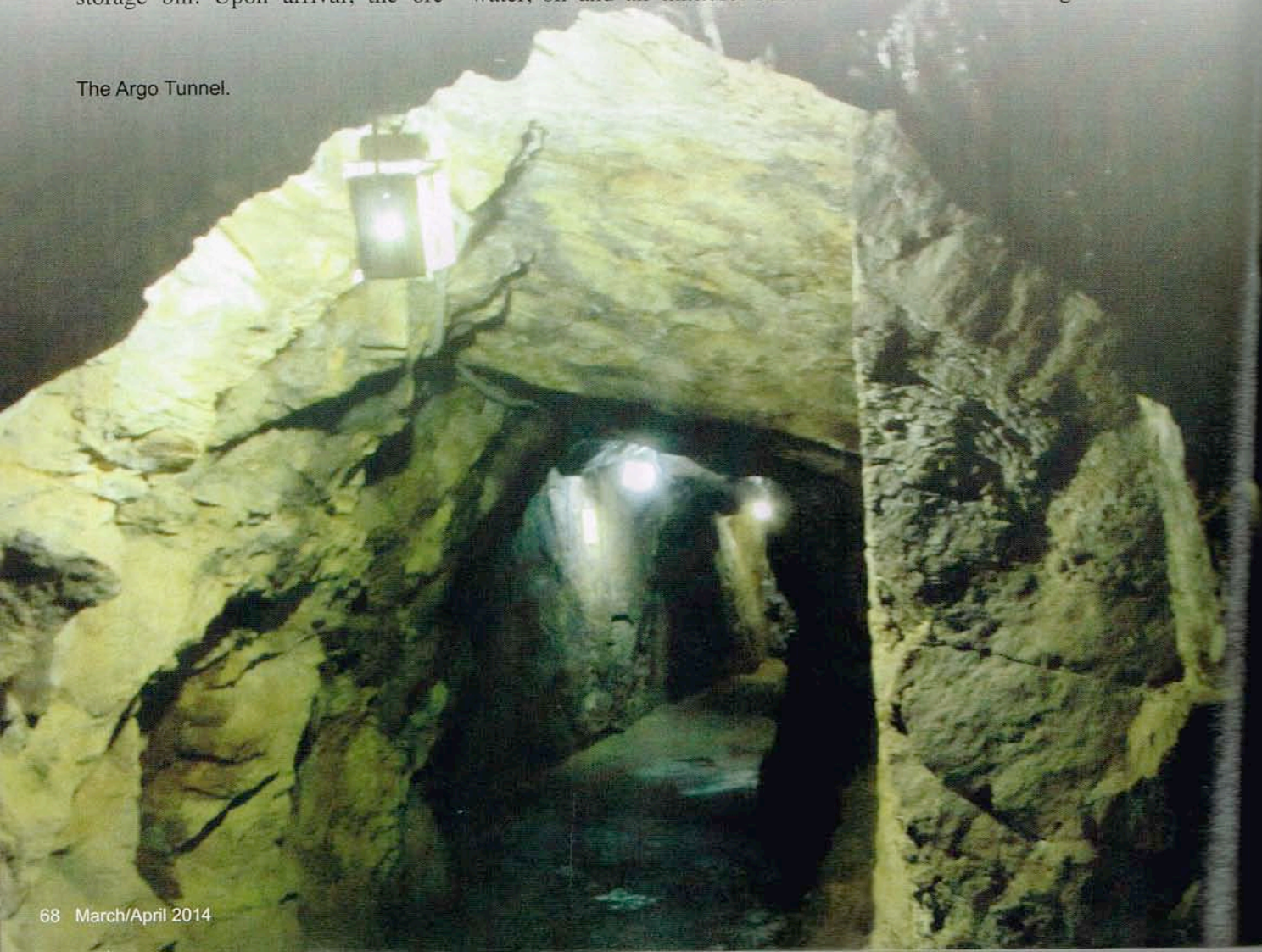
On your self-guided tour down through the mill, you'll see many pieces of machinery that were used to extract gold and other minerals such as silver, copper and lead from the rock. The diversity of the local ore required many different types of equipment. One example is an amalgamation table. Amalgamation is the process of removing gold by absorbing it in mercury while other metals and waste rock wash away. The gold and mercury mixture (amalgam) was heated, causing the mercury to vaporize and leave nearly pure gold behind. Flotation cells were another major concentrating method used in the Argo Mill. Finely ground ore was combined in a complicated chemical, water, oil and air mixture. Metallic

particles then floated to the top and formed a froth. This gold-bearing froth was skimmed off and dried.

At one point, seven concentrating tables were in use at the Argo. The vibration of this type of table caused powdered ore to separate into bands of heavy and light materials as it washed across wooden ridges. Heavy gold could be removed in this way and further concentrated by amalgamation, flotation or cyanidation. Today, one of the mill's old cyanide leaching tanks serves as a photo gallery, which is located in the museum on the bottom level of the mill. You can actually walk into the round tank and admire an interesting collection of black-and-white photos of early local mining activities. Just try not to think about all those caustic chemicals of yesteryear!

Several varieties of ore-crushing and grinding machines were also at work at the Argo. The arrastra,

The Argo Tunnel.




A brief history of drilling & blasting

Among the many improvements made to mining technology during the Industrial Revolution, perhaps the most important involved drilling and blasting. In the early days, black powder, a relatively low-power explosive was the only blasting agent available. To use it, holes had to be pounded into rock by hand. Working in teams of two, one miner would hold a pointed steel chisel while the other hit it with a sledge hammer. Each hole had to be hand drilled to six or eight inches in depth. Needless to say, this was slow, tedious and tiring work. During a 10-hour shift, a team could typically drill, load, and fire black powder charges in only eight or 10 holes. Depending on the size of the mine tunnel, that single blast could bring down three quarters to two and a half tons of rock.

Dynamite, an explosive five times more powerful than black powder, was invented in 1866 by Swedish chemist, Alfred Bernhard Nobel. (The Nobel Prizes awarded today were named after him.) Nobel held 350 different patents; dynamite is his most famous claim to fame. By the mid 1870s, dynamite had largely replaced black powder in the mines.

Around the same time period, pneumatic machine drills were first developed. Compressed air to power the drills was piped underground from large steam-powered compressors located at the surface. Machine drills could accommodate five to six foot drill steels that were capable of drilling three to four foot holes into solid rock in a matter of minutes. This new drill increased the tonnage of rock that could be blasted by two-man teams of miners to between four and 10 tons per shift. But, the new technology was not without hazards — namely the disease of silicosis. Machine drilling created clouds of razor sharp microscopic silica dust that miners breathed into their lungs. It took only a few years of operating this drill for a miner to develop this incurable disease. Unfortunately, thousands of hard rock miners died before J. George Leyner of Denver, Colorado invented a better machine drill that all but eliminated deadly silicosis. The improved drill forced water into the drill hole and created a harmless mud out of the drill shavings. The mud acted as a very efficient wet grinding compound while also cooling the drill bit, and the flow of water flushed out the drill hole. Leyner patented his mechanism in 1897. This type of drill hasn't changed much over the years, and is still used in modern-day hard rock mines.



BACKGROUND: When temperatures dipped below freezing, dynamite would lose most of its power. Miners would place the frozen sticks of dynamite in the holder and set it over a hot bed of coals to thaw.

BELOW: This early pneumatic drill was nicknamed the "widow maker" because operating this type of drill meant that miners were breathing in large amounts of dust that caused "miner's consumption" or silicosis. This disease resulted in early death for miners.



ball mill and tube mill functioned to break up the ore and expose the individual particles of valuable metals so they could be separated from the waste rock. Twenty 1,050-pound stamps were also used to pulverize gold-bearing ore. No amount of earplugs could block out the deafening noise of a stamp mill!

Operations at the Argo Mill and Tunnel continued quite successfully until a fatal accident occurred on Jan. 19, 1943. Four miners working in the tunnel blasted into a water-filled shaft, (pumping had stopped and the unused area had not drained) causing a huge wave to flood out the tunnel entrance, instantly drowning the four men. For hours, the water blasted out of the tunnel like a fire hose. Coincidentally, it wasn't long after the accident that the federal government ordered the shutdown of all gold mines in the United States because they were not seen

as essential to the war effort. The Argo Tunnel and Argo Mill closed forever.

Throughout the ages, hardrock miners have contended with many of the same problems: water drainage, ventilation and economic transportation of their gold-bearing ore to a processing mill. Fortunately, these problems were resolved for the region's miners for a good amount of time, allowing for many to truly strike it rich. The diggin's around Idaho Springs yielded millions of dollars of gold — and that was when the shiny stuff was only worth \$18 to \$35 per ounce. Eureka!

Denise Seith is a freelance travel writer and treasure hunter in Salem, Oregon. She and her husband Larry are GPAA members and own www.GoldRushTradingPost.com, an online prospecting equipment and supply store.



A member of Argo staff shows tourists how to pan for gold after the tour. Each paid admission includes a small bag of panning gravel that contains flecks of gold, the use of a gold pan and instruction.





Demonstration of a "widow maker" drill.

If you go:
Argo Gold Mine and Mill
2350 Riverside Dr.
Idaho Springs, CO 80452
(303) 567-2421
Located on I-70 just 35 minutes west of Denver
www.historicargotours.com



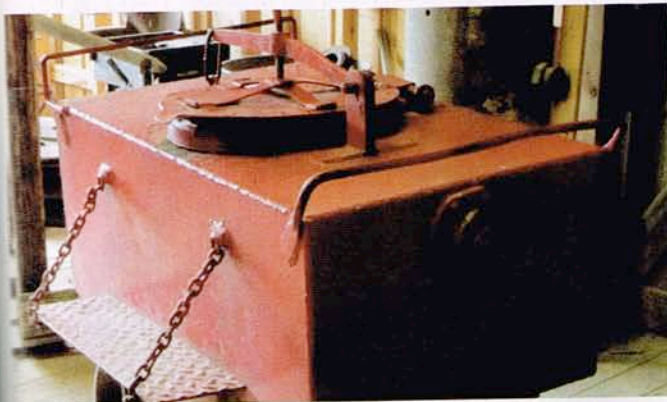
The Argo Tunnel entrance.



Photos hanging in an old cyanide leaching tank.



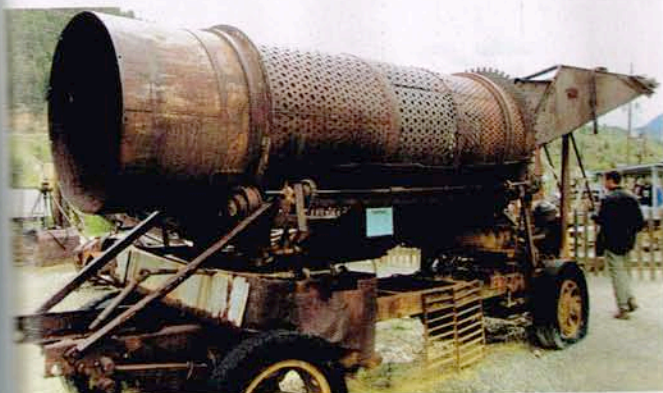
Argo Tunnel began in 1893 and took 17 years to complete.



Miners used this forerunner of the modern-day porta potty.



Antique mining tools found in the museum.



A custom-built antique trommel.



Old mining equipment on display in the museum.