THE GILDED DREAM OF EL DORADO

From Ancient Egypt, to Dream Gulch, to Science and the Sea

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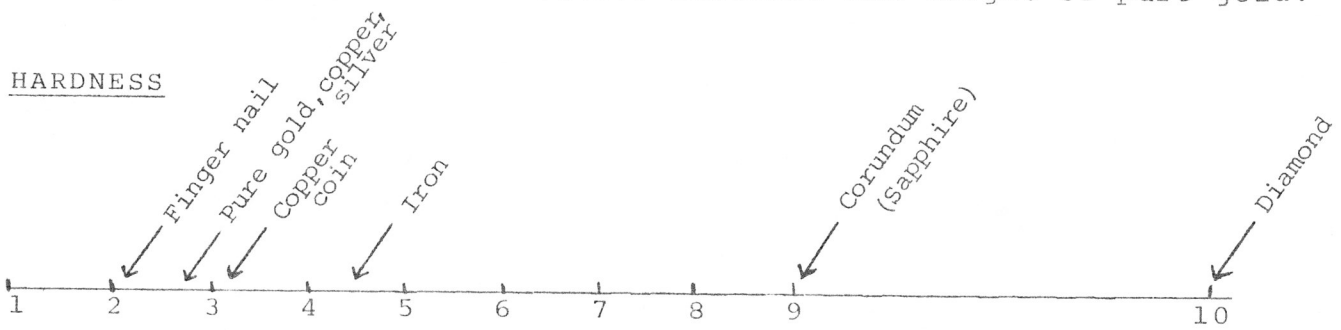
G O L D

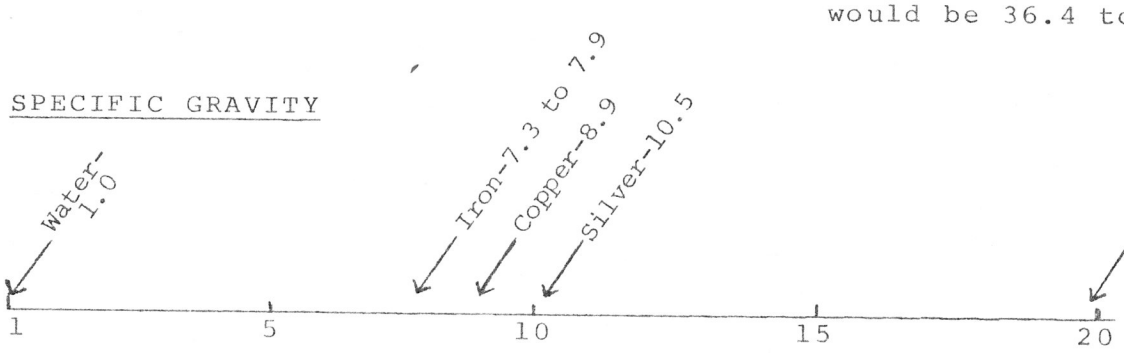
Gold is a native metal in the isometric crystal group. Although very rare, it is sometimes found in pure crystal form. Still quite rare is a variation of the pure crystal, sometimes referred to as crystalline wire gold, which is actually a flattened and elongated form of crystal. Some specimens of crystalline wire gold are really quite beautiful in their natural state. (See specimen) Pure gold has a hardness of 2 1/2 to 3 on the Mohs scale, a specific gravity of 19.3, and melts at 1064.43°C. The following two charts will give an idea of the relative hardness and weight of pure gold:

HARDNESS



On an absolute scale diamond would be 36.4 to 42.4.

SPECIFIC GRAVITY



However, most all native gold contains some silver. For example, California gold typically contains ten to fifteen percent silver. (See specimen) When more than twenty percent silver is present,

the natural alloy is known as electrum. (See specimen) Small amounts of other minerals may also be present and include copper, iron, bismuth, lead, tin, zinc, and platinum. The purity of gold is expressed as "fineness", and refers to parts per 1000. Most native gold contains about 10 percent of other metals and therefore has a fineness of 900. The carat description of purity in gold with which most are more familiar is usually used in describing jewelry items, and refers to the number of parts of gold in 24. Thus, 24K is pure gold and 18K, for example, is 18 parts gold and 6 parts some other metal. Pure gold is alloyed with other metals for jewelry in order to increase its hardness (and to reduce expense). It should be remembered that the weight of gold is measured by the Troy ounce which is equal to 1.0971 Avoirdupois ounces, or 31.1035 grams.

Gold is valuable because of its scarcity, beauty, softness, density, resistance to chemicals, malleability (can be hammered into thin sheets), and ductility (can be drawn into a fine wire). Because of these characteristics gold has many uses. Money and jewelry are the greatest uses with all countries of the world accepting gold as payment for international debts, and gold being a favorite metal for jewelry for thousands of years. Gold is also used in dentistry, in making gold leaf which is used in the arts for lettering and gilding, and in electronics because it is an excellent conductor of electricity and does not corrode. Another characteristic of gold is its ability to reflect light--up to 98 percent of the sun's rays. For this reason, it has been widely

used in space exploration to protect spacecraft, instruments, and men. The windows of some buildings in extra-hot climates are coated with a thin film of gold, and the exhaust outlets of the famous Concorde aircraft are plated with gold to protect the surrounding areas from heat.

Although a relatively rare metal, gold occurs in small amounts rather widely distributed in nature. It has even been found in sea water. Some have estimated that as much as 8,000 million tons of gold particles are floating in the world's sea water! It has also been estimated that only about 80,000 tons have been mined from the earth since 4000 B.C. Gold is found most commonly in veins associated with silicic types of igneous rocks. The primary source is the hydrothermal gold-quartz veins where the gold, along with pyrite ("fools gold") (see specimen) and other sulfides, was deposited from ascending mineral bearing solutions. In most ore the gold particles are so small and evenly distributed that it is not visible to the unaided eye.

The gold is obtained from this ore sometimes by finely crushing the ore and allowing it to pass over mercury coated copper plates. Other materials pass over the plates but the gold combines with the mercury and is later removed by heat. In other cases the gold must be removed from the finely crushed ore by various chemical processes.

When gold-bearing veins weather near the surface of the earth, the gold is liberated naturally and either remains in the soil as a residual concentration or is washed into streams where "placer"

deposits are formed. Here various mechanical means, capitalizing on the weight of the gold, are used to recover it. These methods include the familiar sluice box and gold panning methods, and range from the pick, shovel, and gold pan of the prospector to giant dredges that can remove thousands of cubic yards of gold-bearing gravel per day. While some of these methods are fairly routine and mechanical, there is a certain amount of skill necessary in using a gold pan to insure that the gold is separated from the other material and not thrown back into the stream. (See gold pan specimen)

One of my favorite stories was told by a geology graduate student at Whitworth College in Spokane, Washington. During his spare time he liked to roam the mountains of the Pacific Northwest and pan for gold just for the pure enjoyment of it. At times he would take his wife along, but apparently she never mastered the skill of using a gold pan and consequently never found any gold. Being a good husband, he wanted her to share his joy, so he filled her pan with material and asked her to "try this one." As he filled the pan, but without her knowing it, he had placed a nice large nugget in the bottom, and eagerly waited to see her joy at finding it. Well, after she had worked the pan diligently for a few minutes--you guessed it--she tossed the remains back into the stream and exclaimed, "Nothing in that one either!" In a gesture of what had to be true love, he never did tell her about the nugget.

Although gold is found in some quantity scattered throughout the world, it is not at all evenly distributed. South Africa is

by far the leading gold-producing area of the world, with Russia coming in second, Canada third, and the United States fourth. In 1974, for example, South Africa mined 24,363,000 Troy ounces, Russia mined 7,300,000 Troy ounces, Canada mined 1,718,000 Troy ounces, and the United States mined 1,127,000 Troy ounces. The most productive gold mining region in Africa is the Witwatersrand, "the Rand," near Johannesburg in the Transvaal. Gold was first discovered there during the digging of a foundation for a house, but there was no gold rush because the vein ran down into the earth at an angle of 25 degrees and thus required a considerable sum of money to begin commercial mining. However, this deposit, which extends for over one hundred miles in an east-west direction, has since its discovery produced about 40 percent of all gold ever mined in the world from prehistoric times to the present.

No one knows just when or where gold was first discovered and used by man, but it was one of the first known metals. Most sources agree that the oldest known gold artifacts were made about 3500 B.C., and include gold cups and jewelry dug up at Ur in Mesopotamia (now Iraq), and gold bracelets from the tomb of King Zer in Egypt. The artistry of these items suggests that the craft of working with gold had been developed hundreds of years earlier. One authority reports that gold decoration of objects is known to date back as far as 20,000 years ago. The Egyptians' artistry in working with gold was highly developed even in quite ancient times. For example, they knew how to hammer gold into a sheet leaf so thin that it would take 367,000 leaves to make a pile one inch high.

Perhaps the most famous treasure in history is that found in 1922, with the discovery of the tomb of Egyptian King Tutankhamen who died about 1350 B.C. (at the age of 20). Inside the rooms of his tomb were found many articles of gold including a throne with a back panel made of sheet gold. The outside shell of the king's coffin was thickly coated with sheet gold and there was a likeness of his head and hands of solid gold. The third and inside shell of the coffin was entirely of gold. Inside, on the mummy itself were another mask and pair of hands molded of beaten gold, and a solid gold dagger and sheath.

Throughout history, since its first discovery, gold has been an object of passionate desire of kings and paupers alike. Search for it has often dictated the course of history for better and for worse. Perhaps even more than in ancient times the development of the new world has been dictated by the lust for gold, and one would find it difficult to imagine what things would have been like without it. Dreams of finding rich stores of gold are best illustrated by the legend, started in the 1500's, of a land rich in gold called "El Dorado", meaning, "the gilded." Spanish conquerors sought such gold in the lands of the Aztecs in Mexico and the Incas in Peru, and pirates of the seas looted the ships that were carrying their plunder from the Americas to Spain.

Over the centuries explorers and prospectors have set out to find El Dorado, and with each new major discovery the dream has been rekindled--in California, Australia, Alaska, South Africa. Some of the dreams of El Dorado in America have led to famous

rushes for gold with which most of us are familiar. On January 24, 1848, James Wilson Marshall discovered gold in California at a place called Sutter's Mill. By the next year a large scale rush from all over the world was underway, and the "forty-niners" invested all they had, often even their lives, in an effort to reach what then appeared to be the land of El Dorado. Within one year San Francisco grew from a small town to a city of 25,000, and the population of the state rose from 20,000 to over 107,000. Ships from all over the world brought men there, but the greatest number of the forty-niners came over the rugged Oregon Trail in covered wagons, on horseback, and on foot.

Another famous rush was to Colorado in 1858, with primary focus on the Pikes Peak area and the gold rush towns of Central City, Leadville, and Cripple Creek. The slogan, "Pike's Peak or Bust" became the cry of the day. (See specimen) The last great gold rush in the United States was to the Black Hills of South Dakota in 1874 and 1875.

In Alaska, the big rush was to the Klondike district of the Yukon in 1897, following the discovery of gold the year before. In three weeks time the population of the town of Skagway increased by almost 4,000. Most of us today are concerned about the problem of inflation. But contemplate if you will the fact that during those days when salaries and prices were normally much lower than ours today, a shack in San Francisco rented for as much as $100 and more per week, and in Alaska eggs sold for a dollar each, and a plate of ham and eggs sold for $10. The value of a person's gold was often determined by merely guessing

its weight. It is said that the sawdust saloon floors in the Klondike were sprinkled with gold dust that fell from the pockets of the miners. (See specimen)

Some less known gold rush areas are also important in our history and of interest. The first gold rush in the United States was not in the west at all, but was to the mountains of north Georgia and what is now the town of Dahlonega. Gold was discovered there in 1828, and Dahlonega quickly became a boom town. As early as the 1500's, Spanish explorers had suspected that there was gold in that area, and the Indians had probably known of it for a long time. In fact, when white men discovered it there in '28 it was on Cherokee land, but that didn't seem to matter. White men staked claims, fought over, and sold the land to each other. Within a year thousands of miners had rushed to Georgia's hillsides and streams. In December, 1828, the Governor declared jurisdiction over the Cherokee Nation, and in 1830, the state assumed ownership of the Chrokee Territory.

Some of the deposits of ore in this region contained a higher percentage of gold than did the later California mines, and yielded millions of dollars worth. There is no way to know just how much gold was mined there since much of it was used in private commerce, but between 1828 and 1837, nearly two million dollars worth of Georgia gold reached the Philadelphia mint. Then in 1835, the U.S. Congress authorized the country's first branch mints at New Orleans, Charlotte, and--Dahlonega. During its operation from 1838 to 1861, the Dahlonega unit minted over

six million dollars in U.S. gold coins, though it is not clear whether or not all of this was Georgia gold.

Many of the Dahlonega miners went to California and other areas during and after 1849 in search of more gold. One of them, Green Russell, returned from California and then, with his two brothers, led a gold seekers party to what was then the Kansas Territory, starting the "Pikes Peak or Bust" rush.

One day in 1849, in an effort to encourage miners to stay in Dahlonega, Matthew F. Stephenson, assayer of the mint, spoke to a crowd from the courthouse balcony and pointed to Findley Ridge in front of him, saying, "There's millions in it." Although many of the miners left for California anyway, some of them remembered what Stephenson had said. A friend of Mark Twain told him of Stephenson's speech, and Twain later wrote in Gilded Age his now famous version of Dr. Stephenson's expression: "There's gold in them thar hills." (See specimen) If you visit Dahlonega today, be sure to visit one of the mines where you can pan your own and keep anything you find!

Before leaving the story of Dahlonega, an incident of nearly a hundred years later is of interest. Citizens of Dahlonega and Lumpkin County panned gold for months and others gave up cherished nuggets and findings which were all placed in a chest, which was then placed in an ox cart that was joined by 15 mules, 7 horses, and 7 covered wagons for a three-day trek from Dahlonega to Atlanta. There the gold treasure was donated, melted down, made into gold leaf, and used to cover the entire dome of the State

Capitol with Dahlonega gold!

One final gold rush story involved a somewhat smaller and shorter lived rush but is nonetheless of interest. It was in the north Idaho mountains in 1883, when a man named Prichard discovered gold and a new rush started in 1884. For the next couple of years people came from all over the American west and included such colorful figures as Calamity Jane and Wyatt Earp. Wyatt Earp of Dodge City and Tombstone fame, came with his two brothers to try their luck, but found only failure. After their mining ventures proved fruitless, they opened a saloon in a tent which they operated under the name of the "White Elephant."

One favorite, documented, story of that area is of a prospector who, after much searching and panning, had a very vivid dream one night about striking it rich. So vivid was the dream that the next morning he went straight to the spot pictured in his dream and in fact did strike a rich claim. The area became known as Dream Gulch, and today bears a state historical marker telling the story.

Later during World War I another big effort was made at mining this whole area with large dredges. By 1960, the state of Idaho had produced over 205 million dollars in gold (at old prices!). The largest nugget from the Murray district is known as the Idaho Potato and measures about four inches in length--worth many thousands today. (See specimen)

During the dredging operation just mentioned most of the canyon floor in this area was mined--except where some of the old

store buildings and homes stood. A few years ago (about 5 I think) one of the operators of a tavern there, who also lived in the back of the building, decided to see if any gold could be found under his building. So he simply tore up some of the boards from the floor of the bedroom and started digging--sinking a shaft straight down. During the digging there was found, along with some smaller ones, a rather large nugget--worth thousands of dollars today. The find yielded much publicity, including at least one appearance on a well known national TV show. Continuing to capitalize on this, the "Bedroom Gold Mine" is now open to the public. Gravel is brought up from the bottom of the shaft and you can pan your own--keeping anything you find.

In the United States today the leading gold producing states are South Dakota, Nevada, and Utah. The largest gold mine in the U.S. today is the Homestake Mine at Lead, South Dakota. (See specimen) For about a hundred years after gold was discovered in California that state was our leading gold producer. Its production was exceeded by South Dakota in 1949, and by Utah in 1950.

Where will the next "El Dorado" be found? Or will there be any more? Have all the major gold deposits of the world been found? Will scientists find an inexpensive way to extract the gold from sea water? What effect will this winter's unprecidented rise in gold value have on prospecting and mining when the winter snows melt in the mountains of the U.S.? Are our present gold reserves at Fort Knox going to be enough to sustain us? The answers to these and similar questions about this fabulous metal

may have a lot of influence on the future of our nation--and of the world.

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