

Beneath the Tarnish

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Introduction

Copper. In its ore form, a brownish, greenish, grimy regular old rock. Why does it have such value to the public? The history of copper and the mines that the copper lies within are crucial for not only Arizona, but for the world at large. Arizona is one of the most well-known copper producers, the best in the states. Recognizing Arizona's past and the importance that comes with it will allow us to continue to prosper for years to come. Copper lends itself to many of the aspects that are significant to our society such as our history, electricity, economy and even culture.

Mother Mofford

In the 2022 season, the Sunrise Mountain Marching Band had the great honor of participating in Arizona's 50th edition of the Fiesta Bowl Parade. Given that the majority of us are members of the band, we got to witness many big and beautiful floats showing off Arizona's culture. Despite how many floats we saw, we all agreed that one float in particular caught our attention. This float was a large copper mine, followed by a team of miners and led by a car whose passenger and the crowd around it were all dressed as the great former Governor Rose Mofford. This float mesmerized us as it depicted all the amazing things she did for our state and the things she achieved; it also showed us her humble beginnings in the small mining town of Globe. In Governor Mofford's own words, "Arizona may have its unparalleled sunsets, magnificent canyons and heart-stopping mountains, but it's the people who bring the state alive." She knew better than anyone just how much community meant. After all, it was the community of Globe that taught her how to be the wonderful person she became.

Safford Mine

An important part of copper's history in Arizona begins with the Safford Mine. Eight miles north of the city of Safford is an open-pit copper mine located in Graham County, Arizona. This mine is owned by Freeport-McMoRan Copper and Gold and is Arizona's first new large-scale copper mine in over thirty years. Construction on this mine started in 2006, and copper production began in the next year. About 130 years prior, in 1874, the town was founded. Joshua Eaton Bailey, Hiram Kennedy, and Edward Tuttle travelled from Gila Bend in southwestern Arizona because the canals and dams they had built were destroyed by water damage earlier that

year. After coming and laying out the town site, Safford was named after the Arizona territorial governor, Anson P.K. Safford. The town of Safford was officially incorporated later in 1955 (Thorburn). The history of this town is important because it has had a major impact on Arizona and considering that over the span of more than 100 years, Safford is still highly valued and provides plentiful resources such as copper to the state of Arizona. An even more impressive and lucrative mine was the Bisbee Mine.

Queen of the Copper Camps

By 1975, the Bisbee Mine made around 8 million pounds of copper and \$33 billion (\$6 billion in 1975), but how did it come to be? It all started with Jack Dunn. On a military mission to find renegade Apache, Lt. Dunn found signs of mineralization in the Mule Mountains. Dunn contacted George Warren to file a claim for mining. Even though Lt. Dunn didn't get any money and George Warren lost the mine in a bet, the mine still grew and was opened in 1877. Then on January 9, 1902, Bisbee was incorporated as a city.

Most Bisbee miners were eastern European and Mexican seeking a source of income. Due to the miners being mistreated and in dangerous conditions, the Industrial Workers of the World gave the mining companies a list of improvements. On the morning of July 12, 1917, more than 1,300 striking miners were illegally deported from Bisbee.

Although the miners suffered, they made something historic. The Bisbee Mine became one of the richest copper mines ever. In 1910, the Copper Queen Town "was considered the largest in the territory, with over 25,000 people" (City of Bisbee). Phelps Dodge Corporation became the largest copper producers in the United States. Bisbee Mine was "called the 'Queen Mine' because it was the biggest copper mine in Arizona" (Queen Mine Tours). Ore reserves were empty causing the inevitable closure of mines in December 1974. Mayor Chuck Eads, along with Phelps Dodge, transformed the mines into a safe place for tourists in 1976. "Since the mine tour has opened more than 1 million people have come from all 50 states, and 30 foreign countries" (Queen Mine Tours). In the hearts of Arizonians, Bisbee Mine will always hold a legendary place.

King of the Conductors

Arizona's history with copper mining is deep and rich, but the life of the pinkish-orangish metal outside the mines is just as interesting. Copper and electricity have a long history, dating to the creation of the first electrical motor by Michael Faraday, who used the magnetic fields of an electrified coil of copper wire to rotate a magnetic pole placed inside. Now, copper lives as the most common electrical material, whose conductivity is second only to silver, which also has a rich history in Arizona and is 100 times cheaper to produce. In modern society, electricity is essential to life, for things as basic as air conditioning to something as important as government databases; furthermore, providing access to electricity to all of Arizona and the greater United States is an important mission to further societal advancement. Arizona is one of the fastest developing states in the West, putting a huge load on the power grid that increases day by day. Arizona is also host to the Navajo Nation, of which, as reported by 12News in 2021, 14,000 homes still don't have running electricity, relying solely on batteries for light once the sun goes down. Copper is also a major part of renewable energy production, mainly because, according to the U.S. Geological Survey, there are two million tons in reserve, thanks in part due to recycling and, of course, our own mines in Arizona. Copper, the most cost-effective wire material, is a key part for those ends, giving the Grand Canyon state a huge economic advantage.

The Penny-Pinching Economy

Over 68% of the chestnut-colored metal produced in the United States comes from our home state of Arizona resulting in a strong economic impact. According to AZ Big Media, "Copper mining in Arizona in 2020 gave an estimated 48,000 people jobs that paid an average of \$81,000 a year, contrasting to the rest of the United States miners' wages of \$59,000 a year." A miner in Arizona makes much more than the average Arizonan's salary. The mining of copper is also a reliable source of income for the state of Arizona, and we produced \$6.8 billion worth of copper in 2019. Arizona also had 19.3 billion dollars' worth of revenue in 2019 and 59% went to state agencies, 8% went to taxpayer refunds, 23% went to cities, and 10% went towards countries. This would have only been about 12.5 billion dollars without the mining of copper. Copper is an abundantly used material and Arizona is blessed to have a great deal of natural deposits in our state: "The World Bank predicts that the price of copper could rise by 200% by 2050." Copper in 2019 was about \$2.76 at the end of the year and if it increases by 200% (using

the price of copper now, \$4.25) it could increase to \$12.75 per pound! While this could be a very big paycheck for Arizona, the demand for copper may continue to rise, which can continue to have positive economic impact on the great state 48.

Copper in Culture – Connecting All

The state of Arizona is home to many diverse cultures and traditions, unique due to its significant Indigenous population. In fact, along with being the leading producer of copper in the United States, Arizona is recognized as being part of the largest Indigenous reservation in the country. While copper mining has many positive impacts on our state's culture today, such as its widespread use in jewelry, construction, and renewable energy, it is also important to acknowledge its reliance in production on ancestral Indigenous land. For example, just last year a large mining industry known as Resolution Copper proposed a site on Chi'chil Biłdagoteel, also known as Oak Flat, in Pinal County, Arizona. According to National Public Radio, Chi'chil Biłdagoteel is a sacred land to Indigenous tribes such as the San Carlos Apache – however, the company has since released an official document promising to protect Native cultural heritage. “Resolution Copper is committed to preserving Native American culture and sacred sites while developing partnerships and bringing lasting benefits to the entire region,” the text states. This shows that with the proper respect and communication, copper may provide a way for Indigenous peoples and Americans to unite in their culture regarding mining and metal production.

Future of Copper

Copper has had a powerful impact on Arizona throughout the ages, but what benefits will copper contribute to the future? Copper is used in several ways and developing a greener planet heavily depends on it. “Copper will be a key metal in the transition to renewable and sustainable energy. Whether it is electric cars or solar or wind power farms, copper is a key component to environmentally beneficial energy,” explains Francis McAllister, Vice President of Land and Water at Freeport McMoRan and Chairman of the Arizona Mining Association. More environmentally friendly forms of power such as wind, solar, hydroelectric, and nuclear power all demand copper. Even the infrastructure that allows green energy to be harnessed uses copper. In addition, it is estimated that within the next decade, there will be approximately 20 million electric vehicle charging stations, and this step towards an eco-friendlier society would require

almost three times more copper production. Moreover, electric vehicles themselves need around one hundred eighty pounds of copper per vehicle, which is already three times more than regular vehicles. However, that is not all; copper's uses are quite numerous. Military vehicles and equipment depend heavily on copper; some examples being planes, submarines, and advanced weaponry. Copper is also a valuable antimicrobial element and due to its 99.9% bacteria reduction, is used a great deal within hospitals. This includes bed rails, instruments utilized in surgery, and diagnostic imaging systems. There are clearly countless benefits that copper brings to the table across various areas of society, and it will undoubtedly continue to create a better society within the great state of Arizona.

Conclusion

According to Laurence Yep, famed writer of several *American Girl* novels, "Just because there is tarnish on the copper, does not mean there's not a shine beneath." Copper plays an irrefutable role in our history, electricity, economy, and culture. Our inspiration, Rose Mofford, has shown us the importance of our community and history. The establishment of copper mines in Arizona put our state on the map. Looking ahead, the future is electricity, deepening the importance of common and affordable copper conductors. Copper has driven our state to thrive economically, and it will continue to set forth a prosperous future for the Grand Canyon State. The Arizona government and Indigenous peoples are using copper to unify and celebrate their heritage. Copper shows us that even through the trials and tribulations of the great State 48, our rich history and community will always allow our radiant state to shine.