



MINING FOUNDATION OF THE SOUTHWEST

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# CONCENTRATES

## 2013 MINING'S PAST INDUCTEES

This year, six exceptional individuals who have made significant contributions in mining related industries will be honored at the 31st American Mining Hall of Fame Awards Banquet and Fundraiser.

### **Bartolomé de Medina 1497-1585**

#### Inventor of the Patio Metal Extraction Process

Bartolomé de Medina was a successful Spanish businessman who discovered that silver could be extracted from ground ores using mercury and salt water brine. The process involved first crushing silver ores to a fine slime, then mixed with salt, water, magistral (impure copper sulfate), mercury and then spread in layers in a shallow-walled open enclosure patio. The introduction of amalgamation to silver refining replaced smelting as the primary method of silver extraction and inaugurated a rapid expansion of silver production in Mexico and Peru.



The Americas became the primary source producing three-fifths of the world's silver supply until around 1900. Spanish American production fed the demand for silver, facilitating the development of extensive trade networks and this rapid expansion is often recognized as the key to early modern world trade linking Europe, Africa, Asia, and Americas.

### **Ben Williams 1852-1925**

#### Mine Superintendent and General Mine Manager

Ben Williams was the son of a prominent family of Welsh metallurgists and whose father and brother-in-law, De Witt Bisbee, founded the mining firm of Bisbee, Williams and Company. Williams' first job in Arizona was as superintendent of the San Xavier Mine and he was placed in charge of general operations when the Copper Queen claims were purchased by a group of mine investors and hired Bisbee, Williams and Company from San Francisco to manage the Copper Queen Mine near Mule Gulch in 1880. Their company was instrumental to the development of the Copper Queen Mine and the mine became the first and only successful one in the district. As trade and commerce increased, Mule Gulch population grew sufficiently to warrant



a post office and the town was renamed in 1883 after Bisbee for his total support in ore prospecting.

At Williams' retirement, Bisbee was "Queen of the Copper Camps" and he continued to be active in general business and local fraternal organizations.



### **Charles E. Mills 1867 – 1929**

#### **Mining Manager, Founder and President, Apache Powder Company and The Valley Bank**

Charles E. Mills left major footprints in both the banking and the mining industries. He joined the Copper Queen Mine at Bisbee, Arizona in 1888, shortly thereafter, left for Harvard University and returned after two years to become the general manager of the Detroit Copper Mining Company at Morenci. In 1912, he became the dual general manager of the Inspiration Consolidated Copper Company and the International Smelting Company at Miami. The Inspiration Mine is today one of the largest copper producers in the world.

On his return after the WWI, Mills recognized the need for a regional source of explosives and formed the Apache Powder Company providing explosives for the southwestern mines and successfully eliminating freight expenses. In 1899, Mills embarked on another notable career beginning with the Gila Valley Bank and Trust Company and under his direction, became the largest branch banking institution in Arizona. In 1914, Mills was appointed to reorganize The Gila Valley Bank and The Valley Bank and merged the two banking institutions in 1922 to form The Valley Bank, later known as The Valley National Bank. Mills remained the guiding source of The Valley Bank and the Apache Powder Company and served as President of both industries until his death in 1929.



### **Louis Caryl Graton 1880 – 1970**

#### **Economic Geologist and Professor Emeritus, Harvard University**

Louis Caryl Graton was valedictorian of his class and received both his BS and PhD from Cornell University. While he timely completed the PhD course requirements, the degree was not conferred until 28 years later following submission of his 1930 thesis, "Hydrothermal Origin of the Rand Gold Deposits."

In 1903, Graton joined the US Geological Survey and was appointed Director of the newly formed Copper Producers' Association in New York City in 1909 but left immediately when invited to join the faculty by Harvard University. When the United States entered World War I, Graton served as secretary of Copper Producers' Committee for War service. Graton devoted his life to the study of ore deposits and occupied a pre-eminent position in economic geology. He was President of the Society of Economic Geologists in 1931 and was the winner of the Penrose Gold Medal in 1950.



### **John (Jack) Spence Finlay (1873-1935)**

### **Edwin Burton (Burt) Royle (1904-1957)**


#### **Co-Inventors of the Mucking Machine**

John S. Finlay and Edwin B. Royle together increased mucking production through their revolutionary design at faster and easier ways than ever thought possible. Finlay was the North Lilly Mine superintendent when the young Royle, a hoist engineer, approached him with his vision for a powered mucking machine to replace the hand removal of broken rubble. Finlay realized the potential of the machine and approved its assembly using parts from the mine's "bone-yard" (scrap pile). After several improvements, four mucking machines were manufactured for \$1600 per unit. The earlier mucking machines were known as EIMCO-Finlay Mucker.

An agreement to commercialize the invention was later reached and the first patent was issued in 1938 to Royle. The Overshot Mucking Machine not only freed underground miners from backbreaking work but also allowed the job to be completed more efficiently.

## OUTREACH CORNER by Pam Wilkinson

### MFSW Outreach Coordinator Activities: May-June 2013

The school year ended and the summer program began. During the month of May I spent three days in classrooms and two days on the MineZone program with the culminating activity days at the Arizona Science Center where students and families could meet me and ask more questions. The multi-disciplinary Summer Engineering Camps saw 120 students spend 2 hours at the mining engineering department: operating the shovel simulator, breaking rocks and trying to tunnel through sliced bread. The big event of the past two months was organizing and implementing the week-long summer camp that focused on mining engineering. Eighteen students participated in the camp about half of them rising seniors the other half rising juniors, ten men and 8 women. The students participated in a variety of competitions from engineering the removal of chocolate chips from cookies, marble mining, learning how to operate the shovel simulator and the capstone competition: “Design  Mine.” The students went underground at the San Xavier mine and toured the ASARCO Mission mine and mill. They presented their projects to the mining engineers at the Freeport-McMoRan Sierrita mine and then were shown the actual pit that they had been designing. Students were from Phoenix, Tucson, Yuma, Morenci, Globe, Arizona, Texas, and Ohio. I am optimistic that we convinced at least a few of them to consider mining engineering as a career and the University of Arizona as their school of choice. This was the first year for this program and everyone involved considers it a huge success. We will take what we learned from this year and make it even better next year.

The school year was a huge success as I spent 61 days in classrooms teaching over 240 classes where over 6,000 students and 66 teachers participated in my presentations and hands on activities. In addition another 2,700+ children and adults were exposed to the mining industry in a variety of venues: from the Math and Science Experience to MineZone, Imagine Engineering and teacher workshops. I am looking forward to another busy school year, as I have already received requests for repeat visits.



“Under The Earth”: creating a drift through sliced bread.



Mining Engineering Summer Camp: Meet Peter, on my left in the middle picture, who attended the camp because of my presentation at Sahuaro High School in Tucson.

## RECOGNITIONS

The Hall of Fame committee wishes to acknowledge the support from companies and members in submitting nominees for the **2013 Medal of Merit under 40** category. Fifteen candidates, all with impressive credentials, were provided to the sub-committee comprised of six members with vast experiences for review and consideration. To select just one honoree among fifteen well qualified young scientists was challenging and following analysis, the sub-committee elected Dr. Sean D. Dessureault, Associate Professor of The University of Arizona, as the 2013 recipient.

The Medal of Merit under 40 category, inaugurated at the 2012 American Mining Hall of Fame Banquet, received enthusiastic response and MFSW is hopeful that members will continue to identify young talents who have made significant contribution to mining and its related disciplines and submit nominees for future years.

### **THE 31st AMERICAN MINING HALL OF FAME BANQUET**

**JW Marriott Starr Pass**

**Saturday, December 7, 2013**

The Hall of Fame Banquet, an annual fundraiser with about 500 attendees, recognizes the achievements of individuals and companies, who through their innovations and leadership, not only have significantly impacted mining successes but also have contributed to the continued relevance and strength of the modern mining industry.

MFSW is currently seeking sponsorships at four donation levels and early commitments will ensure inclusion of public recognition on the MFSW website and on all other event circulars. Additionally, sponsors of Diamond, Platinum, Gold and Silver levels will be featured in video scrolls at the VIP and general receptions and awards ceremony. MFSW is introducing a new ticket category and members are encouraged to participate to "Sponsor a Student" and provide young adults the opportunity to honor our inductees and witness the importance of mining on our quality of life. Sponsorship and Registration Forms are attached for your convenience and those wishing to reserve banquet tickets may indicate their preferences on the same form. Please contact MFSW office if you need assistance.

## MEMBERS' CORNER

### IN MEMORIAM

#### Alex Chisholm

**12/9/1930—5/22/2013**

A long time Gold Member of MFSW, Chisholm was the driving force for the start-up of L&M Radiator in Hibbing in 1961 and expanded the company globally. He was appointed to the U.S. Presidential Advisory Committee for Trade Negotiations by Presidents Gerald Ford and Jimmy Carter and served until 1981. In 1982, Chisholm was inducted into the Minnesota Business Hall of Fame and was also awarded the Lifetime Achievement Award by the Hibbing Chamber of Commerce in 2000.

#### ED HUNT

**1926—2013**

Hunt was a mining engineer and a historian. Much of his career was spent with US Smelting, Mining and Refining and later joined Victor & Cripple Creek Mining, the largest gold producer in CO. A founding member of the Southern Teller Country Focus Group, he conducted guided tours of the Gold Coin Mine and was the 2002 recipient of the Rodman Paul Award for his outstanding contributions to mining history.

## GOVERNING BOARD CHANGES

#### AL PERRY

Following many years of dedicated service, Perry has resigned from the Governing Board. MFSW wishes to acknowledge his sound advice and innovative leadership and will miss his guidance and foresight.

## CALENDAR

#### July 15 to 24, 2013

National Boy Scouts Jamboree,  
Summit Bechtel Family National Scout Reserve  
Gen Jean, W. VA

#### August 11-15, 2013

23rd World Mining Congress  
"Mapping the Future: Advances in Mining Engineering"  
Montreal, Quebec, Canada  
[www.wmc-expo2013.org](http://www.wmc-expo2013.org)

#### September 14, 2013

National Mining Hall of Fame Banquet  
Brown Palace Hotel, Denver, CO  
Interested members for two free tickets to attend the banquet should contact MFSW office.

#### February 22, 2014

The International Mining Hall of Fame  
Grand America Hotel, Salt Lake City, Utah