



MINING FOUNDATION OF THE SOUTHWEST
Thomas L. Aldrich, Executive Director
PO Box 42317 , TUCSON, AZ 85733
520-577-7519 (office)

September, 2021
www.miningfoundationsw.org
admin@miningfoundationsw.org

CONCENTRATES



39TH ANNUAL AMERICAN MINING HALL OF FAME

We have never been more excited because The 39h Annual American Mining Hall of Fame Banquet and Awards Ceremony will be back live and in-person at the JW Marriott Star Pass Resort & Spa on December 4, 2021 and promises to be bigger and better than ever as we celebrate this year's nominees and honor mining's past. Be sure to get your tickets and be part of this great event where you will be able to greet new and old friends while networking with your peers and enjoying a great celebration.

[Payment Form \(miningfoundationsw.org\)](http://miningfoundationsw.org)

SPONSORSHIPS [2021 Sponsors \(miningfoundationsw.org\)](http://miningfoundationsw.org)

Sponsorship for the American Mining Hall of Fame are what will fund our Outreach program and coordinator for the coming year. The MFSW greatly appreciates the generosity of those who have already donated and are listed on our website and below. For those who have contributed in the past, we appreciate your consideration for this year and hope that you will become a sponsor so that the Outreach Program will continue to evolve and stimulate interest and understanding of mineral resources and the mining industry in today's youth.

Diamond: Lundin Group;

PLATINUM: Eclipse Mining Technologies, Freeport-McMoRan, Hexagon Mining, and M3 Engineering & Technology;

GOLD: Ames Construction, Doosan Bobcat, Empire Southwest, Mining & Metallurgical Society of America, Resolution Copper, Ruen Drilling, Rummel Construction, Inc., SRK Consulting and Westland Resources;

SILVER : Ausenco, BGC Engineering, CAID, CalPortland, Cascade Drilling, Cementation, Civil & Environmental Consultants. Inc. (CEC), CTI, DeConcini McDonald Yetwin & Lacy, P.C., Fennemore, First Majestic Silver Corp., Florence Copper, Golder, Hudbay, KGHM (Carlota Copper Company), Montgomery & Associates, Next Plan LLC, Pioneer Equipment, Professional Minerals Development, LLC, Quarles & Brady LLP, Skyline Assayers & Laboratories, South32, Sundt, T.P. McNulty & Associates, Valley Forge & Bolt Mfg. Co., Wood, and Yellow Jacket Drilling.

OTHERS: National Mining Hall of Fame & Museum

President's Corner

MESSAGE FROM PRESIDENT, Andrew Soderman



FALL IS HERE...

In the last few newsletters, I have covered mission, membership and donating. I feel that the organization made tremendous headway this year while working our way through covid-19. We are still not out of the woods, but things are getting better.

Copper has been consistently above \$4 since the end of February. We are getting wonderful response for our banquet coming up in December and it will be very exciting to see everyone in person for the first time in a long time.

We are working with the Marriott to make sure that we put on an event that is enjoyable. JW Marriott has implemented a variety of new protocols and elevated practices, in response to the COVID-19 pandemic and keeping with their high standards of cleanliness and commitment to providing excellent service.

So, please attend the banquet this year. In addition, I again challenge all members to tell someone about the MFSW and invite them to join and to attend the banquet.

Thank you to all our members for your continued support.



Hall of Fame Chairman

**Amanda Best, Associate /Senior Environmental Specialist
Westland Resources**

Greetings Everyone!

What a great monsoon we have had this year! It is hard to believe it is officially Fall!

The Hall of Fame Committee continues to coordinate for another successful annual American Mining Hall of Fame Banquet. We have planned the menu for appetizers, dinner and deserts, and are finalizing the awards presentation.

A special thanks to all our sponsors this year!

If you have not done so already, please consider committing to a sponsorship and purchase your tickets for this event. Hope to see you all at the 39th annual American Mining Hall of Fame Banquet on December 7 at the JW Marriott Tucson Star Pass Resort & Spa!

I'm so looking forward to it!





LOWELL INSTITUTE FOR MINERAL RESOURCES



OUTREACH CORNER BY CHRIS EARNEST



The monsoon rains came back with a vengeance this year, helping to make driving around Arizona a much greener experience than usual. As the rains abated, schools have settled into their new normal which means the Education Outreach Program is back on the road and headed back to classrooms.

Connecting With Teachers

“This was amazing. I can’t wait to have you come talk to my students.” – RAIN participant.



As schools made final decisions about their teaching status for the new semester, teachers are looking for more interactive things to do with their students. This year has brought a lot of new science teachers into classrooms across the state. To connect with those teachers and let them know about all the program offers the education outreach team is attending teacher conferences across the state this fall.

On September 17th and 18th, we were invited to participate in the Rural Action and Innovation Network (RAIN) annual retreat in Safford, Arizona. RAIN connects rural teachers, librarians, and STEM educators with resources to benefit their students and communities.

RAIN Retreat – Building STEM skills and networks with teachers in rural Arizona.

We enjoyed meeting with educators from across the state and are looking forward to presenting to the Wilcox School and Verde Valley school systems in the coming fall. We also made some great connections with librarians looking to add mining and minerals to their STEM programs. Through rural schools and libraries, we look forward to a great relationship with the new contacts we made.

In the coming months the outreach team will also travel to Phoenix to participate in the 2021 STEM & Innovation Summit and the Arizona Science Teachers Association Annual Conference. It will be great to continue to network with Arizona educators and introduce them to all our program has to offer.



Outreach Cont.



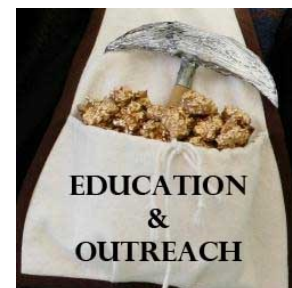
Hydrometallurgy experiment activity for Highschool Chemistry and Engineering courses.

Continued Development

To better serve the students of Arizona the outreach program is continuing to develop new activities aligned with the state science standards. Our newest activity brings an introduction to the principals of hydrometallurgy and industrial process design into high school chemistry and engineering classrooms. The activity will be continually improved as we receive feedback from the students and teachers who participate in our outreach presentations. We are always on the lookout for more hands-on activities to add to the program to help serve the students of Arizona.

Winter is Coming

The fall presentation for the outreach program is steadily filling up. As cooler weather approaches, we look forward to a busy semester. Along with classroom presentations and STEM events we are looking forward to starting the filming for the "Mining is Us" video pilot project. Stay tuned to this space for updates on the project and pictures from the outreach events.



If you have any questions, please don't hesitate to email Chris@earnest@arizona.edu

December 4th Awards Ceremony to Induct the 2021 Mining's Past Honorees



Frederick Gardner Cottrell (1877 – 1948) Inventor and Philanthropist



Frederick Gardner Cottrell was born on January 10, 1877, in Oakland, California. After finishing high school, he entered the University of California, Berkeley at age 16 and graduated in 3 years. Cottrell then enrolled at Harvard but soon left to pursue graduate work in Germany where he received an advanced degree from the University of Berlin in 1901 and a Ph.D. from the University of Leipzig in 1902. Returning to a professorship at the University of California, he married Jessie Mae Fulton, a former high-school classmate, in 1904. While at Berkeley he embarked on his best-known work which culminated in 1908 patent for the Cottrell electrostatic precipitator for smelters, one of the first inventions designed to eliminate air pollution. The Cottrell process used a system of electrodes or pipes energized by a high-voltage electrical source to collect (or precipitate) dust and particles from the smoke and gases resulting from the smelting of ores. The process also recovered valuable metals from smelter dust and is still widely used throughout the world. Cottrell established the philanthropic Research Corporation in 1912 where his patents funded scientific research. Cottrell later served as director of the U.S. Bureau of Mines and was instrumental in helium production during World War I. In 1921 he began work with the National Research Council, and the U.S. Department of Agriculture's Fixed Nitrogen Laboratory. He was elected to the National Academy of Sciences in 1939. On November 16, 1948, Cottrell died while attending a meeting of the National Academy of Sciences held at his alma mater, the University of California at Berkeley.

George H. Dern (1872 – 1936) Mining Man and American Politician



“George H. Dern was an American politician, mining innovator, and businessman. He is remembered today as the co-inventor of the Holt-Dern ore-roasting furnace, as a former governor of Utah (1925–1933), and as a former U.S. Secretary of War (1933–1936). Dern was born in Dodge County, Nebraska, on September 8, 1872. He graduated from Fremont Normal College (now Midland University) in 1888 at the age of 16 and later attended the University of Nebraska (1893–1894). In 1894, Dern moved to Salt Lake City, Utah joining the Mercur Gold Mining and Milling Company, where his father served as president. He married Charlotte "Lottie" Brown in 1899 and they had six children. Dern rose rapidly from bookkeeper to company treasurer and in 1901 he was promoted to general manager. Along with T. P. Holt, Dern designed the Holt-Dern roaster, a furnace for the Holt-Christenson roasting process, which was a technique for recovering silver from low-grade ores. After Mercur Gold Mining and Milling shut down in 1913, Dern went on to positions with mining companies in the Park City, Tintic, and Little Cottonwood mining districts of Utah. His experience and passion for mining would be reflected later in his political career. He served as the Governor of Utah for eight years, pushing to develop the state economy by using Utah's rich natural resources. During his tenure, a landmark mineral leasing act was passed that leased, rather than sold, Utah's mineral rights to private concerns. Dern died in 1936 from kidney and heart complications caused by influenza. His legacy includes descendants Bruce Dern and Laura Dern, both prominent actors.

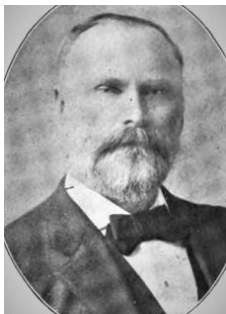
December 4th Awards Ceremony to Induct the 2021 Mining's Past Honorees

Francis W. MacLennan (1876 – 1947) Underground Miner



Francis William MacLennan was an internationally renowned mining engineer and former Vice President of the Miami Copper Company. He was born in Cornwall, Ontario, Canada in 1876 and graduated from McGill University in Montreal in 1898. He and his wife Alta had no children. He worked for various mining enterprises in British Columbia, Utah, Nevada and Peru. From 1919 to 1936 he worked for the Miami Copper Company in Arizona in management and as Vice President. By 1925 many financial experts were looking to the salvage value of Miami Copper Company. The mine had been very profitable, but the end of the high-grade ore body was in sight. There was however information from drilling and exploration work that had been conducted over the years. Using this data, MacLennan devised a mining method that would drastically reduce mining costs and extend mine life. At the time, block caving used blocks 60 to 100 feet in height. MacLennan designed a system using blocks 300 feet in height by utilizing detailed design, engineering and costing. MacLennan published a 44-page technical paper in 1930 detailing his caving methods through the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME). He was a member of AIME, the Mining and Metallurgical Society of America (MMSA) and the Canadian Institute of Mining, Metallurgy and Petroleum (CIM). In 1931, MacLennan was awarded the William Laurence Saunders Gold Medal for “outstanding achievements in mining methods which create ore out of rock” as the originator of the high block caving method, which greatly extended the life of the Miami Copper mine. He died in 1947 after a long illness.

Robert B. Metcalfe (1825 – 1905) Exploration Geologist



Robert Metcalfe was one of the discoverers of the Morenci copper deposits in Arizona. He was born in Kentucky and educated at West Point. In 1849 Metcalfe headed for the goldfields of California where he amassed a fortune from mining. More than a decade later he joined the Confederate Army. At the close of the Civil War, Metcalfe found his home destroyed, his wife gone, and his fortune lost. He then headed west looking for his wife and prospecting for a new future. In 1870 while Metcalfe was scouting the area near Silver City, New Mexico in pursuit of a band of Apaches who had raided local ranches, he discovered a rich copper deposit. He returned two years later with his brother Jim and located the Longfellow claim. Metcalfe was among the original group of prospectors who organized the Copper Mountain Mining District in 1872. The Metcalfes sold majority interest in the mine to the Lesinsky brothers but disagreements followed, so the Metcalfes sold them the remaining shares in the Longfellow Company. The Lesinskys further developed the Longfellow and in 1882, sold the mine to the Arizona Copper Company. The town of Metcalf along Chase Creek about 8 miles from present day Clifton was named after Robert Metcalfe. Established in 1875, it became an Arizona Copper Company owned town in 1882. The town was shut down shortly after Phelps Dodge acquired it in 1921 and was eventually overtaken by the advancement of the Morenci open pit mine. Metcalfe died in 1905 at the age of 80 in his home state of Kentucky.

HALL OF FAME COMMITTEE MEETING

Date: Wednesday, October 13, 2021

Time: 3:30 p.m. — 4:30 p.m. HOF Committee Meeting

M3 Engineering and via ZOOM by Invitation

RSVP: admin@miningfoundationsw.org or 520-577-7519



MFSW 2021 DONATIONS (\$145,122.00)

Mining Foundation of the Southwest (MFSW) President, Andrew Soderman is pleased to announce the following donations that have recently been approved by the Board of Governors of the MFSW

- **Lowell Institute of Mineral Resources at the University of Arizona**
 - * Funding for the intern program for the Mining Outreach Program - \$12,386.00
 - * Funding support for the Modern Mining Video Series—\$10,000.00
- **UA Alfie Norville Gem and Mineral Museum**
 - * Funding for the purchase of a high end printer system—\$15,000.00

In addition, the following donations were made earlier this year.

- **Lowell Institute of Mineral Resources at the University of Arizona**
 - * Funding for the MFSW/LIMR Outreach Program - \$87,936.00
 - * Donation to cover activities within the LIMR —\$1,000.00
- **Arizona Geological Survey**
 - * Funding for Arizona Mining Review Monthly Live stream Podcasts.—\$2,000
 - * Funding to relocate the ADMMR’s Arizona mining archive to a permanent home at the Arizona Historical Society’s Tucson Museum—\$1,000.00
- **Children’s Museum of Tucson**
 - * Donation for Annual Family SciFest Day—\$500.00
- **Donations to the SME student chapters**
 - * Colorado School of Mines—\$1,500.00
 - * Montana Technological University—\$1,500
 - * New Mexico Institute of Mining & Technology—\$1,500
 - * South Dakota School of Mines—\$1,500.00
 - * University of Arizona—\$1,000.00
 - * University of Nevada, Reno—\$1,500.00
 - * University of Texas at El Paso— \$1,500.00
 - * University of Utah.—\$1,500.00
- **Donations to the SEG Student Chapter**
 - * University of Arizona—\$1,000
- **Lowell Institute of Mineral Resources at the University of Arizona**
 - * Donation to cover activities associated with the LIMR—\$1,000.00
- **The University of Arizona**
 - * Dept. of Mining and Geological Engineering—\$1,000.00
- **PIMA JTED Foundation**
 - * Donation to fund a student scholarship—\$1,000.00

Mission of the MFSW

Working to educate the public about mineral resources and the mineral extraction and processing industries while honoring outstanding accomplishments in the mining industry both past and present.

**SME**

Society for
Mining, Metallurgy
& Exploration

**ARIZONA**
CONFERENCE★2021

Focused on the unique professional development needs of mining and mineral professionals in the Southwest, the SME Arizona Conference brings the industry together for educational and networking opportunities.

This regional event explores the challenges and opportunities unique to the mining business in the desert southwest. Learn about the latest developments on mining projects and technical innovations in the areas of mining, geology, metallurgy, environmental, new projects, and blasting in the Southwest U.S. and Northern Mexico.

December 5 & 6 2021

JW Marriott Star Pass Resort & Spa

Register at [SME Arizona Conference | 2021](#)

- THE FINAL EVENT OF A "MINING WEEKEND"
- UNIVERSITY OF ARIZONA SME STUDENT CHAPTER GOLF TOURNAMENT –DECEMBER 4
- MINING FOUNDATION OF THE SOUTHWEST HALL OF FAME BANQUET–DECEMBER 4
- ITS TIME TO RECONNECT

**SME**

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& Exploration

**ARIZONA**
CONFERENCE★2021



The Annual Diggers & Duffers Golf Tournament is an ongoing tradition for the University of Arizona's SME Student Chapter and also acts as the primary fundraiser throughout the academic year. While the past year and a half have been extraordinarily challenging times, the UA chapter is rebounding and growing this 2021 Fall Semester. They have had a dramatic increase in membership and participation, and were even able to send over 30 students to the MinExpo conference in Vegas earlier this month. The proceeds from this tournament are used to directly help student members experience meaningful professional and educational opportunities such as this. Other events throughout the year include University Career Fairs, SME MinExchange in Salt Lake City, the Intercollegiate Mining Games in Golden CO, and field trips to historic mining districts throughout southern Arizona.

Registration includes: 18 holes of golf, exclusive goodie bags, T-shirts, unlimited driving range access, golf cart and more! The link to the Eventbrite is [here](#).

Listed below are our sponsorship levels:

Platinum Sponsorship (+\$8,000), Gold Sponsorship (\$5,000), Silver Sponsorships (\$2,500), Copper Sponsorship (\$1,000), Individual Hole Sponsor (\$250), Donations (\$\$\$?)

Companies can choose to remain anonymous and receive a tax deduction

If you or your company would like to become a sponsor of the tournament, please email

uofasme@gmail.com