



MINING FOUNDATION OF THE SOUTHWEST

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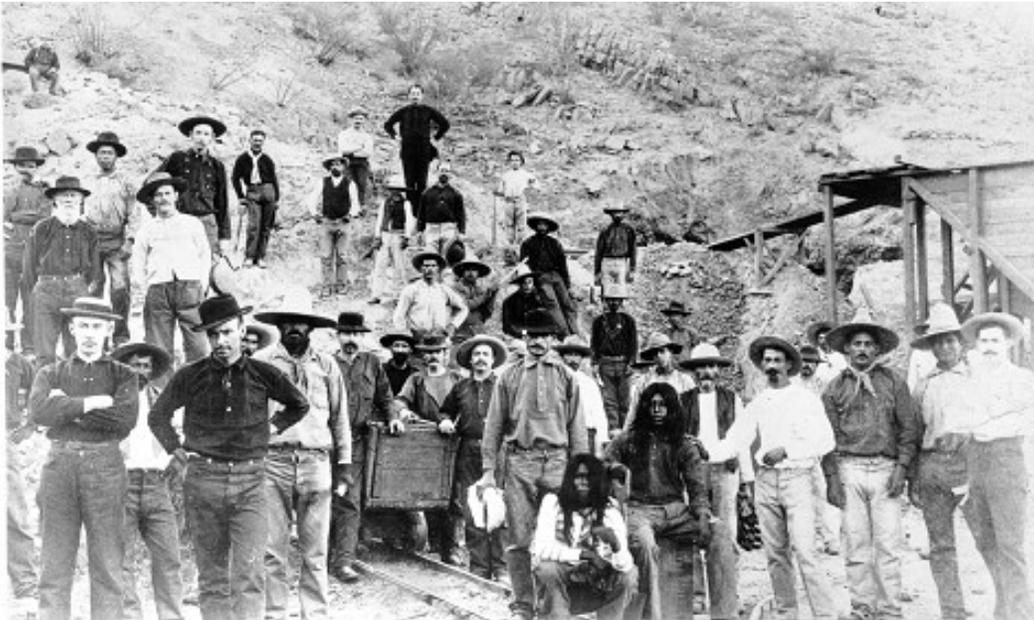
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CONCENTRATES

12/7 Awards Banquet to Induct the 2019 Mining's Past Honorees



Juan Jose Gradillo

(1830 –Unknown)

Tohono O'dham Prospector

In the late nineteenth century, O'dham traditional knowledge of mineral resources led to the discovery of one of the richest silver lodes in Arizona Territory, the Vekol mine. Juan José Gradillo was the Tohono O'dham man who discovered the silver mine in 1879 in the Vekol Mountains about 30 miles southwest of Casa Grande, on land that is now part of the Tohono O'dham Nation.

The circumstances of the discovery are uncertain, but Gradillo alone seems to have discovered the lode that came to be known as Vekol, Tohono O'dham for "grandmother." Juan José shared the news with former Army captain and federal Indian agent John D. Walker. Gradillo, Walker, and another man, Peter R. Brady, soon staked out the rich silver cropping, and in February 1880 the three men together filed a claim on it.

It was one of the few times in Arizona history where Native Americans and Anglo-Americans jointly filed a mining claim. Later in 1880, Juan José sold his interest in the mine to his two partners and settled down on his homestead near Florence, not far from the farm of Captain Walker. Within a year, the Vekol had become one of the largest producers of silver in Arizona Territory, and a substantial town had grown up around the mine. The mine remained a top silver producer through the 1880s and was worked to lesser degrees until 1894.

Because of the strong prejudice of most nineteenth-century Anglo-Americans against the Tohono O'dham, Gradillo was given little credit for his discovery of the Vekol, but his contributions as a pioneer miner of Arizona are worthy of remembering and honoring.

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Enos Andrew Wall

(1839 - 1920)

Mine Operator and Entrepreneur

Enos Wall lived in Indiana until he was twenty. He then moved west, mining, freighting and selling goods in Colorado, Montana and Utah. In 1868, he moved to southern Utah, to the newly discovered mines at Silver Reef. Here he discovered and operated the Kinner mine and also met and married his wife, Mary Mayer.

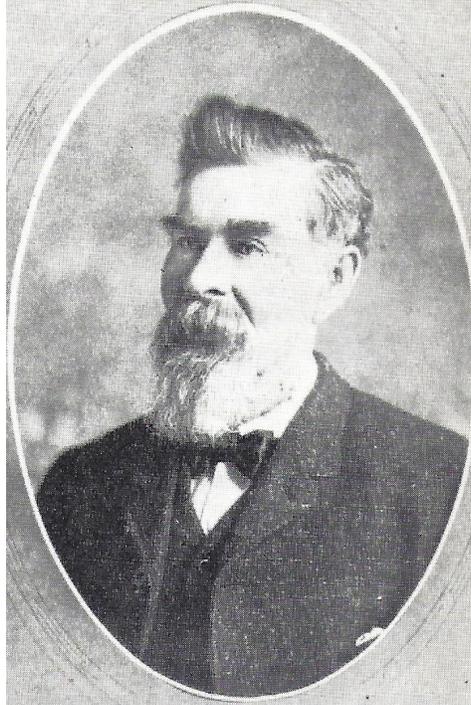
After a financial setback in Silver Reef, the Walls moved to Idaho in 1882 where he operated a mine, and was elected to the legislature. Three years later, they moved back to Utah where Enos successfully owned and operated mines at Mercur and Ophir.

Moving north in the same mountain range, he developed and sold the Yampa mine at Bingham Canyon. He noticed widespread low grade copper mineralization elsewhere at Bingham and sampled several abandoned adits, which indicated a large tonnage of low grade copper. He located about 10 claims and maintained the assessment, despite the derision of having only "Wall Rock" for ore.

The profits derived from the sale of his other mines were not enough to develop the copper claims, so he optioned them to Captain Joseph DeLamar (a successful mine operator), who ultimately had two engineers in his employ conduct an examination.

Daniel Jackling, one of the engineers, was so convinced of the value of the property that he devoted the next four years getting investors to develop the great Bingham Canyon mine. Enos Wall retained a 20% interest, but has largely been forgotten as the man who discovered Utah Copper and inherently realized its value.

12/7 Awards Banquet to Induct the 2019 Mining's Past Honorees



Charles J. Senter

(1845 - 1924)

Discoverer of Climax Molybdenum Deposit

Charles J Senter served in the Union Navy during the Civil War. After the war, he traveled west, where in his eyes, "Indians were committing crimes against the settlers", so he joined the army, engaging in bloody conflicts with the natives. At the end of the South Dakota campaign, he mustered out with the rank of sergeant and first worked freighting supplies.

Then, after marrying a Plains Indian woman, Senter made a living by placer mining in the mountains along the Continental Divide in Colorado. In his quest for the source of the gold in the creeks, he came upon a mountain covered with small veinlets of mineral resembling graphite. He finally found out from assayers and from the Colorado School of Mines that the mineral was molybdenite (a sulfide of molybdenum).

He had only a few assays run - the cost being \$5, which was ten times what a gold assay cost. He was impressed by the enormity of the deposit - virtually the entire mountain had the tiny veinlets. He figured that such quantity would be worth something. He staked several claims, which were formally recorded in 1893.

The following years saw Senter's hopes rise and fall, with an uncertain outlook for molybdenum. Finally, with the outbreak of the World War, the German discovery of the alloying properties of molybdenum and the discovery of the flotation process for upgrading molybdenite, Senter's discovery finally had value.

12/7 Awards Banquet to Induct the 2019 Mining's Past Honorees



Sarah Herring Sorin

(1861– 1914)

Arizona's First Woman Attorney

Sarah Inslee Herring Sorin was Arizona's first woman attorney and was representing mining concerns in 1913 when she became the first woman to try a case in front of the United States Supreme Court unassisted by a male attorney.

She was born in New York City on January 15, 1861. Sarah finished high school in New York and then went on to obtain her teaching credentials. In 1882 Sarah moved west to join the rest of the family and became the first woman school teacher in Tombstone.

In 1892 Sarah quit her teaching job and started working in her father's law firm. Later that year she applied for a license to practice law and passed her oral examination in open court unanimously. After being admitted to the Bar, Sarah returned to New York City to attend New York University's School of Law. Sarah graduated with an L.L.B. in 1894.

In 1896 the Herring family moved north to the thriving city of Tucson. They were helped in their move by Thomas Sorin, who was to become Sarah's husband. Sarah married Thomas Sorin on July 22, 1898. After her father's death, Sorin moved to Globe, Arizona and specialized in mining law, traveling around Arizona representing mining companies, including Old Dominion Copper Co. and the United Globe mines.

In 1914, she died of bronchial pneumonia and influenza at the age of 53. Sorin is a member of the Arizona Women's Hall of Fame.

PRESIDENT'S CORNER

MESSAGE FROM INCOMING PRESIDENT, CHRIS WILSON



Our outreach activities were extensive this past summer, with everything from a new web page feature allowing educators to request presentations to collaboration with the International Science and Engineering Fair in Phoenix. A core component of our Foundation is our outreach efforts, and a major thank you goes out to those hardworking members who make these efforts possible. Moving forward, we encourage any teachers to reach out for presentations, or if you know a teacher, please mention our outreach program! I would also like to welcome Chris Earnest as our new Outreach Coordinator.

The last quarter of 2019 will be even busier as we move toward our Hall of Fame Awards Banquet. It's never too early to buy tickets! Please also consider a sponsorship. The funds raised through this annual event help support our activities, both charitable and educational, and we would not be able to do what we love and care about so much without the monetary support of so many gracious and committed individuals.

Our 2019 guest of honor and Hall of Fame inductee is Darren M. Pylot, President and CEO of Capstone Mining Corp. Pylot represents a fierce and determined entrepreneurial spirit, taking Capstone from exploration in Mexico to multi-million dollar mergers and the purchase of the Pinto Valley Operation in the Globe-Miami area of Arizona. We are proud to have him join us this December and induct him into the Hall of Fame.

Thank you for a wonderful year (so far). I'm excited to see how the last months of 2019 shape up, and look forward to all we can do together as a team.

BOARD MEETING AND HALL OF FAME COMMITTEE MEETING

Date: Tuesday, October 15, 2018

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

Time: 4:30 p.m. — 5:30 p.m. Board Meeting

Place: ASARCO Training Center, 1150 N. 7th Ave., Tucson, AZ

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

Outreach Corner

MFSW Outreach Coordinator Summer Activities

As in previous years, Mining Engineering was rated as one of the most engaging/enjoyed parts of the Summer Engineering Academy. The campers were brought on tours of San Xavier Mine, Komatsu Proving Grounds and did activities in smelting magnetite and virtual reality. Other events have been geared towards promoting the classroom program and the Mineral Resource Discovery workshop at Flandrau Science Center.

Preparations are well underway for the Mineral Resource Discovery. The workshop will be led by four U of A undergraduates and four graduate students and staff members. The workshop stations include activities on ore formation, mineral exploration, mine planning, metallurgy and environmental management. Engineers from Call and Nicholas are helping to develop the mine planning activity. We are looking forward to a great semester of workshops and classroom visits. Please see Minerals.Arizona.edu/content/education-outreach for the latest program offerings.

Event (location)	Type of event (tabling, lecture, workshop, tour)	Number of interactions (age of most participants)
SciTech Leadership Institute (Phoenix)	Tabling/Panel	280 (6 th – 12 th grade)
College of Engineering Summer camp – Mining day (Tucson)	Tour/activities at SX Mine	40 (11 th – 12 th grade)
College of Science Freshman Welcome Event (Tucson)	Tabling	50 (College)
Girl Scout Fest (Tucson)	Tabling	150 (1 st – 8 th grade)
Cholla High School (Tucson)	Guest Presentation	40 (11 th – 12 th grade)



BB Mining at the Girl Scout Fest

New Outreach Coordinator

Chris Earnest



Chris Earnest is the new Outreach Coordinator at the University of Arizona IMR. He is a graduate of the University of Arizona with a BS in Geosciences and a minor in Spanish. As well as English, Chris speaks Japanese and Spanish. As a senior teacher of English as a foreign language in Japan, Chris has over a decade of experience of classroom teaching grades 1-6 as well as experience teaching secondary students and adults in both classroom and small-group settings. Chris stated "I am especially excited about being able to present in a variety of educational settings, including classrooms, seminars, and public events as I believe that being available to the public is key to effective communication and outreach. I have been looking for an opportunity that allows me to combine my passion for education with my passion for geology."

Chris also has experience instructing teenagers in basic geologic principles while volunteering for the Boy Scouts of America, Scout Association of Japan, and the Society of Earth Science Students. As a member of those organizations, he instructed teenagers in basic geologic principles such as: rock and mineral identification and classification, concepts of structural geology, the concept of superposition and the fundamentals of orienteering.

Prior to teaching in Japan, Chris worked at the Arizona Radiogenic Helium Dating Lab Preparing and processing mineral samples for U-Th-He thermochronologic age dating and was responsible for preparing and maintaining lab standard samples, managing lab supplies, and collection and categorization of hazardous waste. Chris and his wife, Yohko, live in Tucson.

MEMBERS' CORNER

We now have 11 new members. Thank you all for your support of the MFSW. Total membership is at 131. Go out and encourage your associates to join. On behalf of Chris Wilson our 2019 President, the Foundation wishes to extend a warm welcome to:

Mike Wickersham- Wickersham is presently the General Manager of the Pinto Valley Mine. He graduated with a Bachelor of Science degree in Chemical Engineering from the University of Utah. He has held various positions in a variety of locations across the United States from Utah to Vermont back to California and into Canada spending over 15 years with Rio Tinto before ending up at Pinto Valley.

Bradley Neptune - Neptune is the Global Sales Manager at Corrosion Engineering and is located in Mesa, AZ. He graduated with a BS in Metallurgical Engineering from the Colorado School of Mines. Brad has also previously worked at Martin Engineering and Power Motive Corp.

Chris Earnest - See above



December 7, 2019 Hall of Fame Awards Banquet Information

SPONSORSHIP OPPORTUNITY IS STILL AVAILABLE

Sponsorships are offered at 4 levels: Diamond (\$10,000), Platinum (\$5,000), Gold (\$2,500) & Silver (\$1,000). All sponsors are recognized on the Foundation's website, press releases, banquet program and during the banquet ceremony.

TICKET SALES

Voting, Silver and Gold members in good standing are extended 2 member pricing banquet tickets at \$200 per ticket.

STUDENT TICKETS

If your company would like to earmark some of their tickets for University of Arizona students or purchase a table for students and faculty, please let me know. Last year we had over 50 students and faculty attend the banquet due to the graciousness of our members and sponsors.

HOTEL RESERVATION

Plan to join the Mining Weekend (12/7-12/9/19) cohosted by MFSW, SME Arizona Conference, UA SME Students and AMIGOS. Attendees are extended a special room rate of \$138 + tax per night, discounted \$85 golf rate and a 20% spa only discount. Hotel reservations can be made online at <https://book.passkey.com/go/SMEArizona2019> (**preferred**) or by calling 1-877-622-3140 (ask for "SME Arizona Conference/MFSW/Summit 2019").

For additional information, please go to: www.miningfoundationsw.org



IN MEMORIAM

Doug Charles John Austin 1941 –2019

Long time MFSW Board member



Douglas Charles John Austin passed away September 10, 2019 at Pathways Hospice, surrounded by his loving family. Doug was born November 4, 1941 in Belleville, Ont., Canada, the eldest child of Neville and Magdalena Austin. In Lashburn High School in Saskatchewan, Doug met his future wife, Jean Retzlaff, to whom he was happily married for 54 years.

Doug attended the University of Saskatchewan and earned his B.S. in Electrical Engineering. He had an illustrious 50 year career in the field of mining starting in 1968 when he took a job with Noranda Mines at Colonsay, near Saskatoon. In 1988, he became a partner in M3 Engineering and Technology, becoming CEO from 1993 - 2002 and from then until his death continued as a senior VP and consultant. Doug was instrumental in opening an office in Hermosillo, Mexico and helped his company open offices in Chandler, Buenos Aires and Peru.

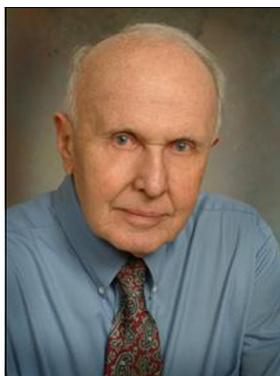
His project experience in United States, Mexico, Canada and South America was monumental and he worked on some of the biggest mining projects in the world. His career was described as "quietly and unassumingly orchestrating major projects all over the world and his medals and plaques and accomplishments are the process plants that dot the globe." He consulted until two weeks before his death reluctantly stopping only when his health no longer permitted him to do more.

Doug was a member of SME, MMSE, MFSW, CIM, NSPE, and Professional Engineers of B.C. and Ontario. Doug served on the Board of Governors of the MFSW for 12 years from 2005 – 2016.

He is survived by his wife, Jean; son, Wayne; daughter, Leigh Wojewoda (Igor); granddaughter, Elie; sisters, Pat McIntosh (John) and Brenda (Ken Hugo), and nephews, Kyle and Reid. A "Celebration of Life" will be held Saturday, September 28, 2019, 1:00 p.m. at EAST LAWN PALMS MORTUARY, 5801 E. Grant Rd. In lieu of flowers, donations in Doug's name may be made to one of his favorite charities, "Doctors Without Borders", or a charity of your choice.

Dr. Spencer Titley 1928 –2019

1997 Medal of Merit Recipient



University of Arizona Distinguished Professor, author, and leader in the field of geology for more than half a century, Dr. Spencer (Spence) Titley passed away in Tucson on Sunday morning, August 18, 2019.

Spence was born September 27, 1928, in Denver, Colorado, where he grew up and graduated from East High in 1946. His first taste of the future was spent working as an underground miner at Cripple Creek and Idaho Springs during the summers of 1947 and 1948. Spence earned an undergraduate degree in Geological Engineering from the Colorado School of Mines in 1951.

From 1958 to 1960, he continued as Regional Exploration Geologist for New Jersey Zinc in Arizona and New Mexico. Spence joined The University of Arizona faculty as an Assistant Professor in 1960, progressing to Professor of Geosciences Emeritus. A lifetime member of the Arizona Geological Society, Spence served as AGS President in 1974-75 and its Vice President of Field Trips in 1973-74. He was also a co-editor of the 2008 AGS Ores and Orogenesis Digest. He also served as President of the MFSW in 2007 and as Hall of Fame Chairman in 2006.

At a 2009 event honoring Spence for his then-50 years of teaching at the University of Arizona, Joaquin Ruiz, dean of UA's College of Science and a UA professor of geosciences, stated, "Spence Titley is truly one of the most extraordinary economic geologists in the world. He also has a legacy of educating students so that they themselves have become leaders in their fields." Titley mentored more than 130 graduate students during his career at the university. He is survived by wife Helen, son Ronald (Jane Broadbent) of Sydney, Australia, and daughters Jane Titley of Tucson, and Jennifer Titley-Rubio (Martin Rubio) of Tucson, and grandchildren Alex Rubio and Isabelle Rubio, as well as numerous nieces and nephews.

Dr. Titley was a true gentleman, a geologist's geologist, a student's teacher, and a client's consultant. He had a lasting impact on his students and the field of economic geology