



MINING FOUNDATION OF THE SOUTHWEST

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CONCENTRATES



MEDAL OF MERIT UNDER 40 RECIPIENT

SCOTT M. SHIELDS

MANAGER, MINING APPLICATION ENGINEERING

JOY GLOBAL SURFACE MINING

Scott M. Shields is a fifth generation Arizona Miner. In 1995 he joined the Phelps Dodge Morenci Mine as a Surveyor and despite his young age, was able to successfully implement new techniques, both conceptual and infield, to improve mine operations. Shields initiated ground breaking work with GPS integration and co-authored "Optimization of GPS on Track Type Dozers" and "GPS in the Pits: Differential GPS Applications at the Morenci Copper Mine." This novel idea of building roads by using GPS without first conducting surveys won best of session at the Institute of Navigation conference and resulted in Shields being sponsored by Senator John McCain to represent Phelps Dodge Mining Company for GPS on the Hill.

During his tenure at Phelps Dodge and later with Freeport-McMoRan Copper and Gold Inc., Shields helped to develop Sulfide leaching with Bacterial Augmentation, Advanced Electrowinning technologies, Leach pad monitoring, and GPS Integration. While serving as the Autonomous Mining Program Site Coordinator, Shields supervised the construction of the San Juan Experimental Mine and was instrumental in laying the groundwork for a real autonomous mine of the future.

Shields left Freeport-McMoran in 2007 to earn a BS in Mining Engineering at the University of Arizona. While attending school, he was employed by the U of A as an associate mine engineer and was placed in charge of overseeing the design and construction of the new San Xavier Underground Training Center facilitating research funded jointly by mining companies, private organizations, and the government.

Although challenged with full time work and school, Shields was the winner of the 2008 Copper Club Scholarship, the 2009 Leonard Judd Freeport-McMoRan Foundation Scholarship, the Mining Engineering nominee for the Thomas G. Chapman fellowship and scholarship, the 2010 MMSA/SMEF Presidential Scholarship and was the U of A COE 2011 Outstanding Senior in Mining Engineering. In addition, Shields graduated Magna Cum Laude in 2011 and was inducted into Tau Beta Pi, a National Engineering Academic Fraternity.

Shields now manages a team of Joy Global Mining Engineers supporting the applications of P&H Surface Mining and Joy Mining Machinery Underground products. Notably he has provided optimization and best practice in over 60 mines and in 18 countries on five continents. Shields is an advisor for the University of Arizona ILB, Montana Tech MIAB, University of Missouri Science and Technology Advisory Committee, South Dakota School of Mines ECE Advisory Board and also serves as an Executive Committee Member and officer of the SME.

MINING'S PAST HONOREES



Patrick E. Connor
1820—1892
“Father of Utah Mining”

Patrick Edward Connor emigrated from Ireland to the United States at age 12 and at 18 enlisted in the US Army. He re-enlisted during the Mexican War distinguishing himself for courage and military skill. When the Civil War broke out, Connor was commissioned as Colonel to guard the overland mail route across the west.

In October, 1862, Connor moved his command to Salt Lake City and immediately encountered differences with the Mormons. He soon realized making the area appealing to outsiders would dilute the Mormon influence and encouraged prospecting which led to many silver discoveries. In 1866, Connor, now a General, left the Army, plowed his fortune and efforts into mining. He authored Utah's mining laws, introduced navigation on the Great Salt Lake, platted the town of Stockton and invested in developing mines and smelters but failed to profit by it dying relatively poor in 1892.



Earl T. Stannard
1882—1949
President, Kennecott Copper Co.

Earl Tappen Stannard, a Yale University graduate, was working for the Federal Mining Co. (a subsidiary of Guggenheim) in Missouri when he was dispatched to Chile to oversee the new mill construction and testing. In 1913, Guggenheim next transferred him to the Kennecott Copper Mine in Alaska to perfect its dated recovery system. While there, Stannard invented an ammonia leaching system increasing the recovery of copper carbonates to more than 95%. Additionally, he improved the concentrators to meet fluxing requirements of the smelters and introduced one of the first flotation plants at the Beatson Mine.

During his tenure, Stannard steadily transformed Kennecott into a multi-national company and replaced Stephen Birch, his mentor, as President. On September 9, 1949, Stannard and other top Kennecott executives were en route to Canada to visit the newly acquired titanium plant when a bomb detonated killing all aboard and caused a severe setback in Kennecott's foundation.



Arthur Barrette Parsons

1887—1966

Mining Editor and Author

Arthur Barrette Parsons was born in Salt Lake City in 1887. While working on a farm at 17, he noticed mining engineers traveled by automobiles while the masses traveled by stage coach or horseback. This observation might have influenced him to enter the Utah School of Mines and he worked at various mines as assayer, surveyor and superintendent after earning his B.S. in 1909.

Later Parsons redirected his interest and became Associate Editor for Mining and Scientific Press and Engineering and Mining Journal and was President of Mineral Research Corporation. A member of AIME, he chronicled its history through 1947 and published more than 200 articles on the technical and political phases of the mineral industries but is best remembered as the author of The Porphyry Coppers in 1933, a seminal work detailing the history and technical information on the major porphyry copper deposits and on the 1956 update of the same work.



Ernest R. Dickie

1902—1955

General Manager, Bagdad Copper

Ernest Dickie was born near Cripple Creek, CO and grew up in Arizona. He became associated with John C Lincoln when he worked at the Vulture mine. When Lincoln acquired control of Bagdad Copper Co. in 1944, he sent Dickie to oversee the operation. Dickie realized the ore body was not suitable for underground mining and immediately started converting Bagdad to an open pit mine. Converting the underground mine to an open pit was a major challenge and Dickie succeeded, despite wartime shortages of materials and manpower, and infrastructure issues related to remote areas. Bagdad was the first Arizona underground mine to convert to open pit, ahead of the better publicized Inspiration and Ray mines.

Dickie is perhaps best remembered for his equipment tests, which led to improved mining equipment. Sadly, Dickie died of a fatal heart attack in December of 1955.

OUTREACH CORNER by Pam Wilkinson

MFSW Outreach Coordinator Activities: August-September 2014

Summer is over and the 2014-15 school year is off to a very busy start. Over 1000 students and 8 teachers have participated in my outreach program to date and it is just the middle of September! Currently there are over 30 schools that have scheduled programs for this year. I am also involved with creating a workshop that will enable Boy Scouts to earn the new Mining in Society merit badge in one day. The first of these workshops will be held in Miami, Arizona at the Freeport-McMoRan mine. Fifty scouts will be participating and earning their merit badge at the event scheduled for November 15, 2014.

School	City	Students	Adults	Date
Park MS	Phoenix	96	1	8/22/2014
Morenci HS	Morenci	120	1	8/26/2014
Mohave HS	Bullhead City	372	3	8/9-11/2013
Verrado MS	Litchfield Park	330	2	9/16-17/2014
Parkridge Elem.	Peoria	95	1	9/18/2014

The highlight of this month was my being recognized by the National Mining Hall of Fame of Leadville, Colorado with the Prazen Living Legend award. I received the award at their banquet on September 13, 2014 in Denver, Colorado. It is truly an honor to have received this award for the work that I do, and it is a credit to the Mining Foundation of the Southwest for supporting my program. Thank you all so very much.



As chairman of the Minerals Education Coalition Committee of SME, I will be participating in the mid-year board meeting being held this month in Phoenix, Arizona. The committee is taking a look at all that it has accomplished in the years since Mii became part of SME and we are tasked with creating a plan on how to move the MEC into the future. Being a part of this organization at this time is very rewarding for me.

NEW MEMBERS

Chris Dahl—Technical Manager, Southwest Energy LLC

Dahl earned his B.S. in Mining Engineering from the Colorado School of Mines. He has spent over 19 years working in all aspects of drilling and blasting including operations, engineering, management and technical services in both surface and underground applications.

Denerd Brandt– Senior Fragmentation Engineer, Freeport-McMoRan Copper & Gold Inc.

Following graduation from Northern Arizona University, Brandt joined Kennecott in Hayden and Ray Industrial Engineering as a blasting foreman. Subsequently he worked in various capacities in drilling and blasting in Minnesota, in Wyoming, in Argentina and in Peru before returning to the United States to work at the Dos Pobres Mine in Safford. Currently Barndt works at Freeport-McMoRan's corporate office and one of his main duties is to conduct blasting safety audits at all Freeport-McMoRan's mine sites.

Jenine Dalrymple– Chief Financial Officer, Southwest Energy LLC

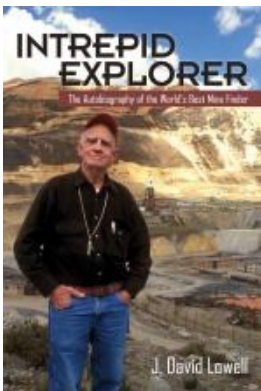
Dalrymple graduated from the University of Arizona with an Interdisciplinary Studies degree, with Accounting, French and Political Science emphases. She worked in public accounting with Deloitte in Arizona and California for over 15 years before joining Southwest Energy's home office in Tucson in 2006. Her experience is predominantly in middle market financial and administrative management and serves on several non-profit boards in Tucson.

Nancy Roth—Principal/Writer, Blue Canoe Marketing

Roth is an experienced marketing professional who specializes in writing white papers, articles, news releases, and web content for products and technology used in mining, construction, meteorology, and energy. In addition to writing, Blue Canoe Marketing also helps companies who are heavy in engineering but light on marketing with new product launches and trade shows. She is proud to serve as the current Section Chair the SME Tucson Section and is on the Ambassador's Committee for the Arizona Technology Council.

William Ascarza—Archivist, University of Arizona, College of Law, Author & Travel Guide

Ascarza is the weekly contributor of the popular Arizona Star column "Mine Tales" about the history of mining in Arizona and the author of Zenith on the Horizon: An Encyclopedic Look at the Tucson Mountains from A to Z, Tucson Mountains, Sentinel to the North: Exploring the Tortolita Mountains, Arizona-Sonora Desert Museum, Southeastern Arizona Mining Towns and Chiricahua Mountains: History & Nature. As an active member of the Tucson Gem & Mineral Society, he has visited mines across the state and has undertaken extensive research on Arizona's mining history. He is an archivist at the University of Arizona College of Law and leads guided tours across Arizona for Pima Community College, Southwest Trekking and Traildust Adventures.



Intrepid Explorer

The Autobiography of the World's Best Mine Finder

By [J. David Lowell](#)

<http://www.uapress.arizona.edu/Books/bid2494.htm>

J. David Lowell, a long time member, advisor and supporter of MFSW, was the only honoree ever to receive the dual recognition as a Medal of Merit recipient and as the inductee by the American Mining Hall of Fame. Anyone wishing to learn more about his fascinating life story can purchase his autobiography by accessing the link above. An e version will be available at a later date. The University of Arizona plans to host a book signing event on November 7, 2014 during its Homecoming Weekend.

IN MEMORIAM

WILLIAM H. DRESHER 3/15/1930—8/10/2014



A cherished charter member of the MFSW, Dresher played a key role in shaping MFSW from a Breakfast Club to its current prominence. He was an active board member passionate about educating the public on the importance of the mineral industry and sustaining it for future generations. Dresher was internationally recognized for his expertise in processing, products and environmental aspects of copper with unabated passion for science and technology. He joined Union Carbide Corp. as an Extractive Metallurgist in 1956 immediately after earning his Ph.D. and was Project Manager for Corporate Research when he left in 1971 to become the Dean of the College of Mines at the University of Arizona. After spending a decade as Dean, he left Tucson to become President of International Copper Research Association, then served as Vice President of Technology for International Copper Association Ltd. before retiring in 1995. Following retirement, he returned to Tucson and formed WHD Consulting and was one of the originating founders of SciEnTeK-12 Inc. and Arizona Research and Engineering Foundation (SARSEF) in 1997, organizations focused on promoting science, engineering and technology in grades K to 12 and host the prestigious annual Southern Arizona Regional Science Fair.

Memorial service was held on 8/14/14 at Casas Adobes Congregational Church where Dresher attended Sunday service for decades. Dresher's family has requested anyone wishing to honor his memory to contact sarsef.org.

CALENDAR

9TH Annual Lacy Lecture

Date: 11/5/2014

Time: 5pm

Speaker: Charles A. Jeannes, President & CEO of GoldCorp

Place: College of Law Ares Auditorium, 1201 E. Speedway, Tucson, AZ 85721

PLEASE COMPLETE REGISTRATION FORM ON ATTACHED FLYER FOR THE

32nd American Mining Hall of Fame Awards Banquet & Fundraiser

DECEMBER 6, 2014

JW MARRIOTT, TUCSON STARR PASS

Please note that only members in good standing are extended member discount.