# Mining History Association

Annual Meeting June 9-11, 2016
Telluride, Colorado

## ABSTRACTS & BIOS

## Friday June 10

### Session 2: The San Juans

**Jane Bardal,** *Postcards of Mining from Silvery San Juan: Then and Now*
Psychology Instructor, Department of Communication, Humanities, and Social Sciences, Central New Mexico Community College, Albuquerque, NM. PhD. 1996, University of New Mexico, Albuquerque. Publication Bardal, J. (2011). Southwestern New Mexico Mining Towns. Charleston: Acadia Publishing.

The "golden age" of postcards occurred from 1908 to 1915, which also coincided with large-scale mining operations in the San Juan Mountains of southwestern Colorado. Postcards illustrated many aspects of mining; the mines, mills, boardinghouses, trams, miners, towns, and railroads. People proudly showed off mining operations and the towns they lived in by sending postcards to family and friends. This presentation will feature postcards from the early 1900's, along with photos that show what these areas look like today.

Most of the mine buildings, mills, and boardinghouses have been dismantled, leaving only an occasional headframe, foundation, or debris to mark the location of past mining activities. Near Silverton, the Stoiber brothers developed mines and built a stamp mill near Silver Lake. Today this high mountain lake is only accessible via a steep hiking trail. Many of the stamps from the mill remain at the site. Heavy snows and the passage of time have leveled the five-story , steam-heated boardinghouse. The red brick foundation of the boiler house remains, with a marmot as the current occupant.

Other mines and mills depicted will include the following: Near Silverton – Highland Mary, Gold Prince, Gold King,; between Silverton & Ouray – Red Mountain mining district; near Ouray – Camp Bird & Revenue; near Telluride – Tomboy mine, Ames electric power plant and the Ophir Loop.

Treasures still abound in this part of Colorado when it comes to exploring the remnants of our rich mining heritage. Today many visitors enjoy various outdoor activities in this scenic area, such as mineral collecting, photography, hiking, jeeping, and railroading.

**Ed Raines,** *The Tomboy Gold Mine*

The Tomboy Claim was mined by a series oif operating companies from its discovery in 1887 to 1899. In that year The Tomboy Gold Mines Company, Ltd. was formed by the London-based Rothschild-controlled Exploration Company, Ltd., to acquire the Tomboy-Belmont group of claims. By the end of 1899, mine manager John Herron had built a successful operation that was producing 165 tons of ore per day. Within the following year, however, the orebody began to show signs of playing out, and in 1901 manager Herron took an option on the nearby Argentine vein that he had noticed the previous year. Several years later, John Herron left the company for health reasons, and the manager's job was passed onto his brother David.

By 1913, the Argentine had paid more than $2,000,000 in dividends from Argentine ore. In July, 1911, a northern extension of the Argentine vein, the Montana, was acquired by the Tomboy Co. from A.E. Reynolds, and by 1914 the production had reached the rate of 20%. In 1924 the Tomboy halted mining of the Montana-Argentine Vein, and several years of rather spotty production followed. The company ceased operations in 1927. Between 1899 and 1924, the Tomboy produced more than a million ounces of gold and paid more than $4.5 million dollars in dividends. Some 25 years later the Montana-Argentine Vein system was again brought into production, this time by the Idarado Mining Company. The Idarado operated into the mid 1970's.

**Rudy Davison,** *J.H. Ernest Waters and the Sheridan Mine*

BA Degree in Geography from the University of Colorado at Boulder. Underground mining experience at Climax Molybdenum at Fremont Pass, Colorado and Dixilyn Mining Company at Silverton Colorado and Payson, Arizona. Zookeeper at the Denver Zoo, Brucellosis Eradication Scheme on the South Island of New Zealand for the New Zealand Ministry of Agriculture & Fisheries, Publisher *The Telluride Times* newspaper, Telluride Travel Connection owner and tour leader for trips to Australia, Africa, and South America, Telluride real estate developer, Author *Rudy's View, a Diving Guide from Telluride to the Top of Imogene Pass*, Rocky Mountain PBS program creator and commentator for the Colorado Experience historical documentary series, Board member of the Telluride Historical Museum.

Irish born John Henry Waters was educated as an engineer at the Royal Academy of London and the school of mines at Freiberg University in Saxony, Germany. His career began in 1872 when an English syndicate sent him to Central City, Colorado to look for gold mining properties and this introduction to the Rocky Mountain West made a lasting impression on him. Following a six year hiatus that took Ernest to Japan, Mexico, and other mining properties in the United States, he finally returned to Colorado and the San Juan Mountains, mainly in the Telluride area, that became his home for the rest of his life. During these formative years, Ernest made a life long friendship with smelter man John Porter, with whom he would become a business partner in mines located along the great Smuggler vein high up in Marshall Basin above Telluride. Waters' first challenge, putting the poorly run Sheridan mine back into an ideal working operation, led to two engineering achievements that he started in 1887, the Sheridan Crosscut Tunnel and Sheridan Incline. Once the two projects were completed, ore could be dropped to the bottom of the mine and trammed to the outside rather than being hoisted to the surface, and the incline eliminated the need for pack animals to take ore to a mill located at the bottom of the Telluride Valley. During construction of the crosscut tunnel and incline, Ernest and Porter were involved with bringing a railroad into Telluride, but this would not be realized untgil 1890 with the arrival of the Rio Grande Southern. It was during this time though, that Ernest and Porter collaborated to acquire more mines along the Smuggler vein and create the Smuggler-Union Mining Company in 1891. Unfortunately for Ernest, his workaholic nature led to what he called a weak heart, and in 1891, he nearly died in a buggy roll over accident that left him blind in one eye. During his convalescence, he fell in love with his care giver Fanny Brown, also called "Queenie", and married her. The marriage was not a good one and led to a separation. During this period, Queenie unintentionally poisoned herself to death by swallowing carbolic acid. Ernest was devastated, and combined with the Economic Panic of 1893 that left the Smuggler-Union Mining Company in dire straits, he was no longer able to work. In May of that year, Ernest died from a self medicating overdose of belladonna and morphine in his room at the Denver Club. He was only 42 years old. Sadly, even though his mining accomplishments were recognized world wide and led to the golden age of mining in Telluride, his untimely death robbed him from enjoying the fruits of his labor and achieving long lasting recognition in Telluride's mining history.

## Session 3: Colorado Uranium Country

**Jane Thompson & Joel Lubenau,** *Standard Chemical Company in Western Colorado & Pennsylvania*

**Jane Thompson,** President of the Rimrocker Historical Society of Western Montrose County, member of the Montrose County Historical Landmark Advisory Board, 3rd generation Uravan resident, comes from a family of uranium miners and millers. Jane and her sister, Sharon Johannsen, are passionate about preserving their mining heritage.

**Joel O. Lubenau,** BCE, 1961, The Cooper Union, MS, 1965, Rutgers University, one-time civil engineer, health physicist, and radiation safety and security consultant, now writes about the history of the use of radiation and radioactive materials in medicine and industry and their impact upon popular culture.

The story about the Standard Chemical Company is a story about two brothers, James J. and Joseph M. Flannery, originally undertakers, who twice made once rare metals readily available for commercial and medical use. The success of their first venture – producing vanadium – provided the blueprint for the radium company. They had no training in metallurgy, chemistry, or medicine but were classic entrepreneurs – identifying promising business opportunities, assembling capital, having a talent for finding persons having the requisite technical knowledge, and in Joseph's case, being a genius in marketing. The carnotite ore was mined mainly in Paradox Valley and concentrated at the Joe Junior Mill which became Uravan in later years. The ore was shipped to Pennsylvania where the radium was extracted and refined. In the eight years it operated, the Standard Chemical Company produced more radium than any other company in the world. Standard Chemical Company's legacies include paving the way for today's use of radioactive materials but it also left radioactively contaminated sites requiring remediation.

**Jane Thompson & Joel Lubenau,** *Uravan from Early Placer Gold Mining to Manhattan Project*

Uravan, Colorado is the town that is no more. From the Uncompahgre Utes to the ranchers and cowboys at the Club Ranch, a beautiful place among the San Miguel River was settled by these early inhabitants. Gold fever brought prospectors looking for a fortune into the San Miguel River and Dolores River basins. If gold could be found at the headwaters of the San Juan Mountains, than surely there would be gold down river. The Hanging Flume was an engineering marvel that became one of the ways to get to this gold, but alas, the gold was "flake gold", impossible to capture with hydraulic mining. But a new kind of ore, carnotite, was discovered in the mountains along the rivers. Vanadium, radium, and eventually uranium were discovered in the ore and there was a new rush to find the "new gold". The Standard Chemical Company and the Joe Jr. Mill produced radium for Madame Curie. United States Vanadium built the town of Uravan and processed vanadium for use in steel. World War II brought the Manhattan Project and the atomic bomb to Uravan followed by nuclear energy and the Cold War. Super Fund site designation resulted in the entire town of Uravan being dismantled and buried.

## Session 4: Mining in the Americas

**Mark Wasserman,** *Mining in the Mexican Revolution: Tragedy or Opportunity*

Professor of History, Rutgers, The State University of New Jersey, New Brunswick, Ph.D., Latin American History, 1975, University of Chicago. Recent publications: Pesos and Politics: Business, Elite, Foreigners, and Government in Mexico, 1854-1940, Stanford, Stanford University Press, 2015; The Mexican Revolution: A Brief History and Documents. New York: Bedford-St. Martins. Bedford Series on History and Culture, 2012; Readings on Latin America and its People. Ed. With Cheryl E. Martin, New York; Prentice Hall, 2010.

On January 10, 1916 soldiers of the army of Pancho Villa stopped a train headed from Ciudad Chihuahua to Cusihuiriachic, a mining camp in the western part of the state, robbed its nineteen passengers and then proceeded to shoot eighteen of them in what became known as the Santa Ysabel Massacre. All of the victims were males involved in the mining industry. Revolutionaries killed more than a few foreign and Mexican miners during the years from 1910 to 1920. They also kidnapped and extorted many others. The combat of the Revolution took a terrible toll on the mining industry in Mexico in physical terms as well, as often desperate revolutionary soldiers stole livestock, food, tools, weapons, and ores; captured or destroyed wagon And railroad transportation for resupply and ore shipments; and destroyed equipment and infrastructure. Art the same time, however, the Revolution proved a time of unparalleled opportunity.

The executives of the American Smelting and Refining Company transformed the wreckage of the revolution, especially the fierce civil wars between 1913 and 1920, to the company's enormous advantage. With its huge financial resources ASARCO went on a buying spree of Mexican mines and smelters. For example, in 1910 ASARCO acquired the National Metallurgical Company, the Tiro General Mine (SLP) and the Potosi Central Railroad. Between 1910 and 1912, it obtained a number of properties in the Pachuca region of the state of Hidalgo. In 1913 the company bought the famed Velardeña mine for $350,000. From 1915 to 1920 it purchased nearly all of the productive mines in Veta Grande. In 1917it acquired the Compañia de las Minas de Cobre de Magistral. From 1917 to 1920 it expanded its mine holdings in Hidalgo de Parral, Chihuahua, one of the country's oldest and most productive mining centers.[2] From 1919 to 1922 ASARCO and other major smelters scrambled to acquire mines. They formed or expanded their exploration departments and bought new properties, concentrating mainly on those near railroads or population centers.[3]

The Mexican Revolution thus had two stark aspects, considerable destruction and personal tragedy, but at the same time it formed the basis for economic opportunity.

**Elena McGrath,** *Drinking and Dynamite: Ritual and Political Protest in Bolivian Mining*
PhD Candidate, History Department, University of Wisconsin, Madison. M.A., 2011 University of Wisconsin-Madison: M.A. History (2011) MA Thesis: "Reproducing the Nation: the Revolutionary Miner and the Bolivian State, 1942-1992." DISSERTATIONB "Drinking and Dynamite: Revolution and Social Struggle in a Bolivian Mining Town, 1900-1922."

Bolivian miners are famous around the world for two things: political militancy and colorful ritual celebrations of the Virgin Mary above the ground and the devil below. In this paper, I will show how these traditions of ritual and political protest have served to reinforce each other over the course of the 20th century. I will explore rituals and festivals honoring both the devil-like Tio underground and the Catholic traditions such as Carnival in a copper mining community in northeastern Bolivia, Corocoro, from the 1920s to the 1980s. In the 1920s, miners in Corocoro were some of the most politically active and militant in the country. For 30 years, under both revolutionary and military governments, miners in the nationally-owned Empresa Corocoro consistently demanded that the Bolivian government honor promises made to workers and their families to provide schools, supplies, and safe working conditions in the mines. At the same time these miners hedged their bets by continuing to offer alcohol, cigarettes, and coca leaves to homemade devil effigies underground, on the hopes that Tio would keep them safe from accidents and bad luck. When Company officials tried to shut down this practice, miners rebelled and union officers supported the workers.

Over the course of the 20th century, these ritual practices shifted in meaning and import as life in Corocoro became more precarious and the mines lost productivity and national importance. Finally, in 1985, the Bolivian government shut down the nationally-owned mines in Corocoro and throughout Bolivia, sending 25,000 miners in search of new homes and jobs. A nation-wide March for Life and proposed general strike could not save the miners or their mines, but the diaspora of miners from communities like Corocro once again spread the ritual and social culture of the mines

throughout the country. Contemporary, Corocoeños are more likely to gain attention for their colorful Carnival dances, pension for unruly use of dynamite during festivals, and underground "devil" worship than union militancy. Yet cultures of militancy and of ritual both evolved to combat the violence and precariousness of life in the mines. My paper uses research conducted in judicial, state, municipal, and company archives over eighteen months in Bolivia, Europe and the United States to trace the social and ritual life of revolution in Corocoro.

**Session 5: The Corners of Mining**

**Barbara Clements,** *Silver,Gold, and Vanadium Dreams: One Family's Adventures in Mining*
MHA Member since 1991. Former Board member and current MHA Facebook account manager. Long interested in researching her family's history, it wasn't until the summer of 2013 when Bob Spude kept emailing her information about the brothers that Barbara realized the fascinating history of her great-grandfather, William F. Patrick, and his brothers.

This paper will look at the hstory of the Patrick Brothers. Originally from St. Louis, they started heading west after William earned his masters' degree in Mining Engineering from Washington University in 1874. The brothers' experiences covered the gamut of mining, from prospecting, grub-staking, and mine management to mine promotion, bankruptcy, relocating and doing it all over again. Money and law suits aplenty, hope and disappointment, charges of fraud and being the victim of a famous swindler, the Patrick Brothers experience it all, except that one big strike to make them millionaires.

James M., William F., Warner K., Edward T., and Lucien L. were the five brothers. They were later joined by their brother-in-law, W.H. Eddy, a cousin of George Osgood. William started with the *Aftermath Mine* in the Ten-Mile district and then moved on to the *Colonel Sellers Mine* in Leadville where his brothers served their apprenticeships before moving on to mines of their own. The *Gold King* in Telluride and the *Combination* in Goldfield were two mines assoiciated with the brothers. Their Colorado mining interests included Leadville, Rico, Tin Cup, and Aspen. Outside Colorado, they spread to Nevada, Utah, Idaho, British Columbia, and Mexico.

**Christian Wright,** *A Respectable Way to Make a Good Living Without Any Discrimination: "United Mine Workers and the Lady Miners of Utah, 1974-1985*
Seasonal Park Guide, Arches National Park.

From their initial 1974 hiring, female miners in Utah's underground coal industry expanded opportunities for women, challenged the condition of miners' solidarity, and articulated a practice of working class feminism through their participation in the United Mine Workers of America and the Coal Employment Project (CEP). Organized as a CEP affiliate in 1981, the Lady Miners of Utah provided a forum for mutual support through education, activism, and legal empowerment, and helped elect their district's first female union officer in 1985. Also in that year, they highlighted the challenges of women miners throughout the west when they hosted the National Conference of Women Miners in Price, UT.

Like other visionaries of the 1970-1982 intermountain energy boom, Lady Miners experienced major setbacks through disproportionate layoffs as energy prices collapsed in the latter year. From a high point of approximately 200 women miners in early 1982, coal mining in Utah has become almost resegregated by gender. By the 1990s, the Lady Miners' organization disbanded. Similarly, the union culture they fought to expand experienced continued setbacks, with Utah's last union mine set to close next year.

Who were these Lady Miners? What obstacles did they encounter, and what strategies did they adopt to overcome them? How did they transition from isolated individuals into a self-organized

political force? How did their participation invigorate a struggling labor union at a turning point in its influence?

**Erik Melchiorre, Tera Ochart, Darly Schendel,** *Post-mining Estimation of Silver Production from the Silver King Mine, Calico District California*

**Erik Melciorre and Tera Ochart,** *Department of Geological Sciences, California State University San Bernardino, 5500 University Parkway, San Bernardino, CA 92407-2318, USA.*

**Daryl Schendel,** *Calico Ghost Town Regional Park, 36600 Ghost Town Road, Yermo, CA 92398, USA.*

The Calico silver district, located approximately 9.5 miles northeast of Barstow, California, is attributed with 10-15 million ounces of silver production (Jenkins, 1953; California Registe of Historical Places, 1962; Weber, 1966; Jessey, 2010). Several sources cite the Silver King Mine as the largest contributor to this total (Lindgren, 1887; Weber, 1966). Yet the official silver production for this important district is very small in comparison to other large producers. For example,m the Sunshine Mine in Idaho has recorded production of 364.9 million ounces (Olsen, 2005), or about 30 times the official production of the whole Calico District. In some years, production from the Comstock district exceeded the entire total production over the life of the Calico District (Becker, 1882). An examination of the official silver production from the Calico District was significantly underestimated.

Between 2009 and 2015, a project was undertaken to estimate the total silver production from the Silver King Mine of the Calico District. This project would not have been possible without the effort of geology students from California State University. As there are no maps of the Silver King Mine, students and faculty produced detailed mine maps using the tape and Brunton compass method. These maps were used to produce estimates of the volume of ore removed from the stopes along the King Vein, and pockets of "black breccia ore". Representative samples were taken from ore pillars in these stopes, and along their margins, for estimation of ore density and grade. It is assumed that these ore pillars would represent a minimum silver ore grade, as rich pillars would have been robbed out by tributers working for the Zenda Mining Company in the 1920's during the final life of the mine. Ore density measurements permitted stope volumes to be converted to tonnage. Samples were analyzed for silver content by conventional fire assay, and later by portable X-ray fluorescence detectors provided by a generous grant by the W.M. Keck Foundation. Using these ore grades and stope tonnages, the silver production from the accessible portions of the Silver King Mine were mapped out, stope by stope. With these methods, a minimum of 20-24 million ounces of silver were estimated to have been produced from the Silver King Vein and black oxide ore pockets. The large discrepancy between the low historical estimate for the entire district, and our geological estimate for just the Silver King Mine, is attributed primarily to poor records during the early bonanza years of the district. Exceptionally rich surface pockets, confirmed by fragments found during our field work, were qualitatively recorded for the upper portions of the King Vein (Lindgren, 1887); yet no quantitative record exists for this early silver production. It is also possible that corporate fraud and milling inefficiencies contributed to this discrepancy, but would be insufficient by themselves to account for the entire difference. This technique of using geology and field mapping as a forensic tool for mining history has promise for future clarification of ore production in other districts.

**Session 6: Beyond Metals and Coal Mining**

**Justin Whitney,** *"The Great Steam Rush"; Geothermal Mining on California's Subterranean Energy Frontier, 1960-2015*

Graduate Teaching Assistantship, Mississippi State University 2012-16. Ph.D. 2016, History, Mississippi State University. Dissertation: "The Ring of Fire: An Environmental History of Geothermal Energy in the Pacific World, 1958-2015".

On January 9, 1969, the California Desert Sun announced the arrival of the "Great Steam Rush". Led by Pacific Gas & Electric, American drilling and energy companies sought to lay claim to the vast pockets of steam percolating out of the Geysers Geothermal Field. At the time, geothermal boosters believed the only problem they faced was gaining access to public land. However, this changed in 1970 when the federal government entered the "great gold rush" of the twentieth century. Due to the possibility of tapping an everlasting supply of clean energy, Congress approved the Geothermal Steam Act, allowing private companies to lease federal lands for geothermal exploration and production. Furthermore, one year after the 1973 oil crisis, Congress passed the Geothermal Energy Research, Development, and Demonstration Act.

This expedited the expansion of the geothermal industry by providing federal loans to petroleum companies such as Chevron and the Union Oil Company of California. In due time, the United States became a global leader in harnessing the heat of the Earth. Essentially, this paper examines the evolution of geothermal mining in California. While it analyzes the relationship between private industry and the federal government in developing "sustainable" energy, it pays particular attention to the social and ecological changes that emerged in California's diverse geothermal environments. In addition to creating geothermal boom town within the vicinity of The Geysers, the industry deterred the Owens Valley Paiute and Shoshone Band of Indians' access to the Coso Hot Springs Geothermal Field. Moreover, the process of drilling thousands of feet into the lithosphere significantly altered the geological structure of geothermal areas. Not only did the world's largest geothermal field show signs of depletion, the extraction of subterranean steam led to the emergence of artificial earthquakes in northern and southern regions of the state. Ultimately, by focusing on the rise of geothermal energy in the Imperial Valley, the Mayacamas Mountains, and the Mojave Desert, this paper unearths the hidden nature of an alternative mining frontier in the Western United States.

**Magen Hudak,** *Beach Sand and Gravel Mining in the Canadian Maritimes*

Ph.D. Candidate, Canadian Studies, Trent University, 2014-Present.

Numerous pockets of Canada's Maritime coastline have been subject to extensive sand and gravel removal for centuries. 'Hauling' of aggregate from these sites was popularized upon the arrival of European settlers to the region, and continued well into the 1970s, in most areas, while continuing into the 19080s, in others. Beach sand and gravel was used in the development of urban, commercial and military infrastructure, and became integral in the production of concrete, roadways, bridge blocks and building foundations. Since beach materials are naturally sorted by wave action, their removal from the regions' abundant shorelines was deemed more cost, time and technology efficient than obtaining comparable materials elsewhere. At the time, inland sources were viewed as vastly inferior alternatives – extraction from quarries was immensely labor intensive, time-consuming and costly.

However, as technologies and techniques related to beach sand and gravel 'mining' grew more and more advanced, so too did the environmental pressures it imposed upon the shoreline. Concerns about its ecological soundness, and whether its economic benefits outweighed the cons of environmental degradation – including the reduced aesthetic and recreational appeal of many favored coastal spots – arose, and then continued, from the late 1950's onwards. Significant geomorphological and topographical shifts became common occurrences at a number of sites, which were unable to replenish themselves at increasingly accelerated rates of extraction. Thus, while

regional growth and development, reliant on sand and gravel aggregate, soared, tensions between provincial governments, private enterprise, and the public; between matters of economics and matters of the environment, mounted.

This presentation paper will recount the conflicted environmental history of this industry in the region, focusing on its peak period, during the 1940s and 1950s, before turning to address its subsequent decline, in the 1970s. Paying particular attention to a handful of case studies from the provinces of Nova Scotia and New Brunswick, it will address various methods, theories, politics and legislation, associated with beach 'mining', along with contemplating their contested outcomes. A discussion of shifting societal values and attitudes, exhibited towards these afflicted coastal areas, will highlight the dominant trends which have determined the patterns of their aggregate use; over time.

## Saturday June 11

### Session 7: Mining Professionals

**Jeff Bartos,** *Mining Engineers as Public Intellectuals*
Ph.D. Candidate, Department of History, Philosophy, and Religious Studies, Montana State University, Bozeman. Publications: The Blight of the Federation: James McParland, the Pinkerton National Detective Agency, and the Western Federation of Miners, 1892-1907. M.A. Thesis.

I examine prominent American mining engineers involved in gold extraction in the British Empire in the late nineteenth and early twentieth century. Professional engineers such as John Hays Hammond and Herbert Hoover aided in maintaining British and American imperial domination through the support of the gold-standard monetary regime, transferring technology and ideas about race to the British colonies, and acting as public intellectuals and experts. I draw heavily on economic and world systems theory and a transnational methodology to expose the interdependent networks of power surrounding gold extraction, imperialism, and global capitalism. These networks of power, while narrowly focused on mining, have broad historical implications on national identity and trade, as well as tangible impacts on military and industrial strength and the projection of power.

Mining engineers often acted as public intellectuals alongside of their engineering duties, frequently offering public lectures, and publishing articles and books, adding to their role as professionals and experts. Their journeys around the world offered credibility to their technical, social, and cultural claims. Two of the most prominent mining engineers of the late Victorian era, John Hays Hammond and Herbert Hoover, offer a great example of the engineer as a public intellectual in an area where technocratic ideas of society and governance held great appeal.

Some of Hammond's rhetoric, however, joined the racialist discourse within the scientific community and in broader society, as the doctrines of scientific racism and eugenics commanded broad attention. Hammond's career following his experiences in southern Africa provides an example, as he returned to the United States and became a professor of mining at his alma mater, Yale University. Hammond offered public lectures on his *rediscovery* of what he thought were King Solomon's mines. In Mashonaland, Hammond examined auriferous reefs, concluding that of "1,980 miles of quartz reefs... 880 miles actually cover ancient workings." He was "quite positive" that for "discontinuance of the workings... the most probable cause to have been the extermination of the gold mining race, in wars with the negro tribes who have occupied the country since its modern re-discovery." This led him to conclude that he had rediscovered the source of Solomon's legendary wealth, the mines of Ophir, and his conclusions became the subject of numerous lectures on the subject.

Herbert Hoover similarly embodies the mining engineer as a public intellectual, especially through his publications, including *Principles of Mining, Valuation, Organization and Administration,*

and his collaboration with his wife, Lou Hoover, on the translation of Geogius Agricola's *De Re Metallica.* Hoover initially wrote *Principles of Mining* as a series of lectures delivered at Stanford and at Columbia, two of the foremost schools of mining engineering in the United States. Agricola's 1556 work was the authoritative text on mining in Europe for nearly two hundred years. In 1912, the Hoovers offered their English translation of *De Re Metallica* by subscription, complete with extensive footnotes and references. While this translation served the public good by making Agricola's work accessible to a wider audience, it also represents another case of historical appropriation by an American mining engineer. Taken together, *De Re Metallica* and *Principles of Mining* reflect Hoover's modernizing impetus and his appeal to a legitimatizing antiquity.

These two famous mining engineers occupied a unique position as public intellectuals, and both later became involved in politics, with Hammond considering government positions within the Taft administration, and Hoover's position as Secretary of Commerce and later, President of the United States. Their status as public intellectuals, including publications and lectures, marked their transition from engineering prominence into a respected authority outside the mining profession.

**Stan Dempsey,** *The Bulletin of the Mining and Metallurgical Society of America: Primary evidence of the Attitudes of the Leaders of the Mining Industry of the late 19th and Early 20th Centuries*
J.D., University of Colorado, B.S. Geology, University of Colorado, and completed the Program for Management Development at the Harvard Business School. He was awarded an Honorary Doctor of Engineering degree from the Colorado School of Mines in 2006, and received the 2007 William Lawrence Saunders Gold Medal Award from the Society for Mining, Metallurgy and Exploration. He was the 33rd Gold Medal Recipient of the Mining and Metallurgy Society of America in 20121. His upcoming induction into the National Mining Hall of Fame will take place on September 24, 2016.

Retired in 2014, as Chairman of the Board of Royal Gold, Inc., a mining royalty and streaming company he founded in 1981. Royal Gold has its headquarters in Denver, Colorado. Over the years, he has been an underground miner, a geologist, a lawyer, a mining company executive and an investment banker. The beginning of his career was spent with AMAX where he held various engineering, legal, operating and executive positions including Vice President of AMAX, Inc. and Senior Vice President of Climax Molybdenum Company. At AMAX, he pioneered collaborative approaches to environmental conflicts arising out of mine development. His Experiment in Ecollogy program led to the successful development of the Henderson Mine in Colorado. For several years, Dempsey practiced law as a partner of the Washington, D.C. firm of Arnold & Porter. He is active in trade, professional, civic and environmental organizations. He is a former director of the World Gold Council, a former chairman of the Colorado Mining Association, past president of the Mining History Association, and past president of the Rocky Mountain Mineral Law Foundation.

The Mining and Metallurgical Society of America celebrated its Centennial in 2008. Although formed by many of the same people as the American Institute of Mining Engineers, MMSA is not a technical society. Its membership includes many of the industry's best known mining engineers and executives. One of its principal objectives over the years has been to foster cooperation with and between other organizations interested in the mining industry. MMSA has been involved in major issues of mining, including mining law revision, health and safety, environment, and protection of mining investors. The Society advocated for the creation of the United States Bureau of Mines. It also pushed for investor protections, such as requiring that mining firms publish annual reports and ore reserves, and testified before the United States Congress on a variety of other mining issues.

Members of the Society were generous with their individual and collective treasure in war time. Many members became "dollar a year men", working in the national government on mineral supply during both World War I and II, and the Society donated the surplus in its treasury to the government at the time of World War I. Publications of the Mining and Metallurgical Society of America (MMSA) provide insight into policy positions of the leaders of the American mining industry

during the last century, MMSA'S Bulletin chronicles the Society's activities with fully reprinted texts of member's speeches and papers, complete texts of the various resolutions and position papers, and accurate lists of members, resigning members, and proposed members. MMSA has also produced detailed biographical directories of members that contain material useful to scholars.

The paper will discuss the availability of publications of the Society. I will describe the confusing numbering system used for Bulletins in the early years of its publication, and discuss availability of the Bulletin including its recent availability in a full text, digital version.

**Session 8: Mining's Odds and Ends**

**Bob Spude,** *Re-Discovering Jerome, Arizona*
Ph.D. University of Illinois at Urbana-Champaign, B.A. and M.A. Arizona State University; recently retired after 35 years with the National Park Service. Is a founding member, former secretary, and past-president of MHA.

Re-discovering Jerome highlights some new research on Jerome, the "billion dollar copper camp," as well as the renewed interest of the author in Jerome after the MHA 2012 tour there (and years after finishing his 1976 master's thesis on early Arizona copper mining). Jerome's re-discovery period reveals much about the influence of the Nevada mining experience on early Arizona copper mining, the importance of community in the setting up and protecting districts and claims, the false starts and early attempts at financing isolated copper mine operations, and the endurance of long held folk-myths about the discovery and immediately after. The Jerome deposit was first staked in early 1876 by a party of prospectors from Pioche, Nevada. They established a mining district and kept a district record book, which is still extant, providing insights on early claimants. It also provides suggestions about how a new, evolving military and mining community interacted with the mining community. The paper also reviews the series of speculators who finally purchased and brought the major claims into production, such as Governor John C. Fremont, Professor Silliman of Yale, a parade of mining engineers, the Jerome family of New York, and others in the mining fraternity. The conclusion suggests that the power of folk memory on who really discovered the deposit and staked the first claim will forever cloud Jerome's earliest history.

**Brian Leech,** *Selling a Risky Business: Gambling, Mining History and Popular Culture*
Assistant Professor of History at Augustana College in Rock Island, Illinois

Gambling has long been a popular pastime for members of mining communities, but for almost as long, it has served as an important symbol – a symbol of both the seediest and the most exciting parts of the mining industry. Throughout much of the nineteenth and twentieth centuries, gambling represented the backwards, uncivilized nature of U.S. mining towns. By the late twentieth century, however, popular culture came to revel in the idea of the frontier gambler, with TV shows ready to celebrate men and women gamblers from mining communities. The fact that the gaming industry and the mining past share the principles of risk and chance meant that people who wanted to promote gaming in the American West started to closely tie two industries together. The results can be seen in two case studies. The first is the building of Reno, Nevada's Silver Legacy Hotel, which promotes a completely manufactured mining history as a way to sell risky gambling. The second is the use of historic images of mining and its gambling past in the town of Deadwood, which uses part of the proceeds from gaming to pay for historic preservation.

**Nathan Delaney,** *American Metal Company and the Politics of Copper during the First World War*
Ph.D. candidate (ABD), 2016, Social History and Poilicy, Case Western Reserve University, Cleveland, Ohio. Dissertation: "Copper Capitalism: The Origins and Making of a Global Market in Metals, 1877-1919." Mining History Association Research Grant, funding for research at Freeport-McMoRan corporate archive, spring 2016.

This past year I was awarded the Mining History Association (MHA) Fellowship to conduct research at the Freeport McMoRan corporate archive in Phoenix, Arizona. While there, I was able to locate material on the American Metal Company, an independent copper mining and trading firm that was eventually purchased by Phelps Dodge in 1993. My research turned up numerous primary source photos, correspondence, and annual reports that I used to document the evolution of this company throughout the twentieth century.

In this talk, I explore how the Great War affected the non-ferrous metals (specifically copper) industry. I do so by examining the business history of a major copper trading firm, the American Metal Company, which also happened to be a subsidiary of the German metal giant, Metallgesellschaft.

During the early years of the war (1914-1915) the United States attempted to maintain a neutral trading party. Copper was a particularly valuable commodity to both the Entente and Central Powers as neither alliance had enough copper internally to support the total needs of the vast armies and navies. Both the British and the Germans sought to secure shipments of base metals while also denying their enemy the same. Despite the Blockade of German ports by the British Navy, numerous German-American metal companies endeavored to trade with all European countries, including Germany.

The German U-Boat attack on the Lusitania in May 1915 proved to be an important catalyst in shifting US public opinion to support the British war cause. When the United States declared war on Germany in 1917, American Metal was appropriated by the US Alien Property Custodian, and from then on, cut all ties with its Frankfurt-based parent company. After the war, American Metal became its own I independent company, and was publicly incorporated in 1922.

Preliminary findings suggest that the war influenced the newly empowered executives at American Metal to pursue a profoundly different business strategy. Whereas before the war AMCo had functioned primarily as a trading firm – making only limited inroads into the world of production and refining – after the war, AMCo sought a strategy of vertical integration. My talk will conclude with a discussion on why AMCo executives pursued this new direction.