A CENTURY OF WOMEN AT MINES

A retrospective collection of the challenges, victories and achievements of Colorado School of Mines alumnae
A CENTURY OF WOMEN AT MINES

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The Century Book outlines the evolution of women’s participation in studies at the Colorado School of Mines. This document originally started out to be a memory book for the Caldwell Celebration that was held by Mines women, for Mines women, October 3, 4 and 5, 1998. During the 100 years from 1898 to 1998 over two thousand women have graduated from this distinguished institution. This is a significant accomplishment, especially if one considers that only nine women had graduated during the seventy-year period from 1898 through 1968.

The depth and goal of the Century Book has grown during its creation. As members of the committee have sifted through archives and alumni files, Mines Magazines and Orediggers, it has become apparent that a wealth of information has been buried and it could be lost to posterity if it is not documented. The committee has made every effort to be accurate and to report the truth about the history of the Mines coeds and the school itself. However, information has not been well organized and is, at times, contradictory. If there are mistakes or omissions, please send corrections or additions so an accurate history can be saved for future generations.

The information in this history has been broken down into six eras and one section to document the celebration itself. They are:

- The Early Years (1895–1959): The Pioneers
- The 1960s: The Beginning
- The 1970s: The Caldron
- The 1980s: The Transitional Years
- The 1990s: Part of the Crowd
- The Florence Caldwell Centennial Celebration
- The Future: Comments from President Bickart

As the committee has worked on assembling the information to be presented in this documentary, the evolutionary process has become familiar. The Early Years are obvious; four women graduated during this time period. The enrollment of women students became more and more acceptable during the 1960s, pre-ERA (Equal Rights Amendment). During this decade, a total of ten women graduated. No longer will a coed have to brave the challenges of the school without the companionship of other Mines coeds. However, classes were still generally limited to one woman per class with few exceptions.

The Caldron of the1970s saw the advent of the equal rights movement, environmental regulations, an escalation of the controversy and strife of Vietnam and the civil rights movement and other substantial changes in our world. During this decade, 153 more women graduated from Mines. Graduates of this decade seemed to express feelings of anger and frustration, perhaps because of the changes swirling about them while they were students. This decade signified a loss of the old, comfortable roles and positions that had been enjoyed and a confrontation of the uncertainty of all the unsettling transformations taking place in society.

The 1980s could be called the transitional years. Students weathered the upheaval of the caldron just as the country did. Mines women established a clear, sustained presence on the Colorado School of Mines campus. During this time women began to participate in all available activities and established some of their own. This is the decade where a feeling of belonging was generated.

As the twentieth century nears an end, the feelings seem to have evolved to a period of acceptance. The female graduates of this decade do not seem to feel the sting of being different and the attitude seems to have changed to “what’s the big deal?” We belong here, too. All student are just “one of the guys.” Although this educational institution has been dominated by men and by traditions oriented towards males, women now have a firm place here, too. This document is an effort towards recognizing the accomplishments of women who dared to break traditions and establish a foothold as engineering professionals trained at the World’s Foremost School of Mineral Engineering. This book is dedicated to the women, graduates or not, who are known by name or not, who attended the Colorado School of Mines during its 125-year history. This book is also in recognition of the women who have served on committees and served tirelessly to make the Florence Caldwell Centennial Celebration a success. This is their story. This is our story. Thanks to all of the individuals who have contributed to this project and to all of the individuals who have supported this project, directly or indirectly, male or female, young or old. For we all are the foundation upon which this institution and its fame are based.
THE EARLY YEARS
(1895–1959)
THE PIONEERS
The earliest years of the Colorado School of Mines, women were not strangers to the campus. The 1880–1881 President’s report to the Board of Trustees, noted that there were 18 “regular” students and 51 “special” students including 13 ladies that attended lectures and drawing classes. In 1881 a total of 33 ladies attended the drawing classes and special lectures. Shortly thereafter, the school made a concerted effort to raise its standards and formalize the course of instruction to include a four-year curriculum. This change in policy eliminated the courses that had been so popular.

Dean Morgan suggested in his 1955 book that “the original founders of the school never dreamed of the School of Mines as a coeducational institution.” However, the Territorial Act of 1874 established the School of Mines as a Territorial School by stipulating that “The School of Mines shall be open to any inhabitant of the Territory, of either sex, without regard to sex or color.” The combination of the clearing of the Act and the relatively high attendance of women students following the act suggests that the legislators knew precisely what they were doing and contradicts Dean Morgan’s comments.

During the first 75 years of the school’s existence (1874 to 1949) a total of four women graduated from the Colorado School of Mines. They were:

- Florence Caldwell Jones
  - C.E. (Civil Engineer) 1908
  - E.M. (Engineer of Mines) 1920

- Grace McDermut Mulligan
  - E.M. (Engineer of Mines) 1903
  - P.R.E. (Petroleum Refining Engineer) 1949

What prompted these women to attend a predominantly male engineering school during this era? Grace C. Updike McDermut entered Mines in 1899 at the suggestion of an aunt who had invested in the Razzle Dazzle gold lode in Colorado. Grace’s parents and aunt thought she should study mining engineering so she could oversee the mine. Both Ninetta Davis and Jacqueline Borthick were residents of the Denver area. Ninetta Davis was a native of Colorado. She was born in Denver on April 12, 1899 and graduated from East Denver High School. Jackie Borthick did her preparatory work at Kent School in Denver. She lived with her family in Englewood, Colorado prior to enrollment at CSM. Since they lived nearby, these women undoubtedly knew that Mines was dominated by men and masculine traditions. Although Florence Caldwell’s accomplishment as the first woman to graduate from Mines has been memorialized by naming the first woman’s residence hall on campus and the recent Centennial Celebration in her honor, little is known about her as a person. The motivation that led Florence to leave her native Ohio, to come west and study at Mines can only be surmised as no record is known to give us a clue. Florence Hazel Caldwell was born in Galipolis, Ohio, on August 31, 1868. She attended public school in Cleveland and graduated from Cleveland High School in 1886. Florence enrolled in Adelbert College in Cleveland. In 1888, coeducation was abolished at Adelbert. She entered Ohio Wesleyan University and received her Bachelor of Science from that institution in 1890. She then enrolled in graduate classes and taught free-hand and scientific drawing at the Cleveland School of Art from 1892–1895 before enrolling at Mines as a sophomore in the 1895–1896 academic year.3, 4, 23 A fellow student at Mines, Frederick C. Steinhauer, Met. E. 1899, reported that the initial tenacity among the other students was to discourage her, but once they found out that she was there to stay, she was accepted as one of the gang and did her share of work.3 School records show that she was a good student who scored exceptionally well in calculus.30 Florence received a degree in Civil Engineering in 1899. Her diploma was altered to read, “on consideration of her successful completion of the prescribed course of study and work.” At the time of her graduation, the school was known as the State School of Mines (S.S.M.).

Florence Caldwell and Frank H. Jones, E.M. 1898, met at school. Both were older students and shared mutual interests. They were not able to wed immediately after graduation,24 so they simply returned to teach at the Cleveland School of Art while Mr. Jones accepted a position in Georgetown, Colorado. Three years after graduation from the School of Mines, Mines married Frank in Cleveland, Ohio, 3, 4, 23 on April 10, 1901. They adopted one son, Lawrence, in 1909.25

After their wedding, Mr. Jones was appointed Deputy Mineral Surveyor for the District of Colorado so they returned to Colorado to live. For the next 12 years they resided in various mining towns including Lehighsville, Colorado, McEw and Ely, Nevada, Trail, British Columbia, and Milner, Idaho. The March 1913 Colorado School of Mines Magazine reports:

“Frank H. Jones, with his wife and little boy, visited the school on February 4th, and the assistant secretary had a very enjoyable time talking over old times with them. They are leaving Jerome, Idaho, for Houston, Texas, where Jones will open an engineering office.”

Perhaps there were few enough alumni at the time that it was assumed that readers would know that Mrs. Jones was also a Mines graduate. However, she was not given credit for her accomplishment in the text. The April 1913 Personal Reports indicated that the address of Mr. Jones’ new professional offices26 and the December 1913 magazine indicated that “Mr. and Mrs. Frank H. Jones have given up their offices in... Houston, Texas... Frank Jones is now with a construction company.”27 By July 1914, Frank had returned to the mining industry and was with Gold Road Mines Company, Goldfield, Arizona.28 After a lifetime of supporting her husband’s transient mining career, Florence Caldwell Jones died on April 22, 1937 in Clarkdale, Arizona.

In 1940, Fred Steinhauer quoted how Mr. Jones described his wife in a recent letter:

“There is little to write about her engineering experience...I prefer to remember how much help she was to me in assisting to solve the many knotty problems in my work. Her personal characteristics were admirable—loyalty to friends, kindness and sympathy to anyone in distress of body, mind and unwavering courage. She kept me encouraged through many rough places.”

What prompted her to seek multiple college degrees at a time when it was not customary for women to be educated? And what on earth prompted her to leave the relative civility of Ohio to attend school in Colorado while traveling to the wild-west alone took an extended time period and renowned
schools that taught engineering were available in the east. Still unmarried at the age of 27, she would have been considered an old maid at the turn of the century. Perhaps she chose to escape her more traditional existence in the pioneering spirit and in search of adventure. Without a doubt, she was a strong, independent woman capable of making rare choices for her time. She was described as “a very robust young woman” by Mr. Steinhauer.20 One could guess that she came from a family that was fairly affluent and open minded with regard to the aspirations and accomplishments of their daughter. Indeed, Florence was the fourth child and only daughter of the five children of a prominent Cleveland family. Her father was Judge Hugh J. Caldwell, Judge of the Eighth Circuit Court of Ohio. Her mother and her father were graduates of Mount Union College in Ohio.23

Grace McDermut was from Jersey City, New Jersey. She enrolled in the freshman class of 1899–1900 in the company of 350 male students.24 As mentioned previously, she is reputed to have enrolled at Mines to learn the expertise required to manage the family’s interest in a gold mine. Unfortunately, the mine passed out of the family’s possession just a few weeks prior to Grace’s graduation from Mines in 1903.2,20 and there she was with a “fancy degree on my hands and no place to make use of it.”24 After seeking suitable employment for a person with her credentials, she applied at the Bureau of Standards in 1904.24 No one knew what to do with the application. Correspondence from Dr. H. B. Brooks to Dr. Rose, Assistant to Dr. S. W. Stratton, Bureau Director at the time said, “...any young woman who had the courage to fight her way, probably the only woman in her class, through a four-year engineering course, ought to be given a chance.”24

Grace became the first woman hired by the National Bureau of Standards (NBS) in a permanent position in 1904.24 Prior to her death in 1979, Grace was featured in the November 1978 Mines Magazine as the oldest living graduate of the school. No doubt, alumnae can be proud of the professional precedents that were set by Grace McDermut.

What prompted her to seek multiple college degrees at a time when it was not customary for women to be educated? And what on earth prompted her to leave the relative civility of Ohio to attend school in Colorado when traveling to the wild-west alone took an extended time period and renowned schools that taught engineering were available in the east? Mulligan. Her early example teaches us that women cannot only meet the rigorous standards set by CSM, but they can also make significant contributions in the professional world.

Ninetta Davis was popular with her classmates. She was elected secretary of her freshman class. She completed her Engineer of Mines degree in 1920.24 Following graduation, she worked for Midwest Mining Co., Union Oil of California, Shell Oil Co., the United States Geological Survey, and in private business.23

In her first job, Ninetta worked for four years as an assistant to the petroleum engineer at Midwest Refining Company in Casper, Wyoming. Her tenure with Union Oil of California included one year as an office geologist. After several years in private business, she started in the Conservation Branch of Geological Survey on January 1, 1934. She completed office geology of dam sites and studied the subsurface geology of oil fields in the western states to help with the natural history of oil and gas on public lands.23

Ninetta also became active in the Rocky Mountain Association of Petroleum Geologists (RMAG). She served as secretary-treasurer of the Volumetric and Density Section.26 In the density laboratory, Grace assisted with determinations of the density and expansion of alcohol-water solutions. She compiled and tabulated density data of various kinds, some of which appear in the international Critical Tables, some in Bureau and other publications.26 Grace stayed at NBS for 44 years achieving numerous promotions, including the Medal for Meritorious Service in 1949.24 She attained the position of Assistant Chief Capacity, Density and Fluid Meter Sections Mechanics Division of the NBS3,24 prior to retirement.

After moving to Washington, D.C., Grace married Barry Mulligan,24 a graduate of the Case School of Applied Science.2 They had one son, Barry, Jr.2 They were divorced in 1920.2 Prior to her death in 1979, Grace was featured in the November 1978 Mines Magazine as the oldest living graduate of the school. No doubt, alumnae can be proud of the professional precedents that were set by Grace McDermut.
The Early Years (1895–1959): The Pioneers

Jackie Borthick was obviously well-liked by her fellow classmates. She was chosen by popular vote to be the Homecoming Queen in 1948. The next Mines coed was not selected as Homecoming Queen for nearly 25 more years. She also served on the Junior-Senior Prom Committee, the *Oredigger* staff and as the secretary of the American Society of Mechanical Engineers.

Earlier references have not provided much information about Jacquelyn Borthick Kircher. During a recent phone call to her home in Southern California, she said she is simply not a very public person. However, she is a congenial lady, quick to laugh and fun to talk to. It is easy to see why her classmates liked her.

An interest in chemistry and math led Jackie to attend Mines. Being from the Denver area, it was well known that the Colorado School of Mines provided a better education in those fields than any other school in the area. Her older brother, Gilbert D. Borthick, P.R.E. 1948, MSc. P.R.E. 1951, attended Mines one year ahead of her. He tolerated his little sister following in his footsteps by ignoring her as much as possible.

Initially, Jackie left the family home in Cherry Hills and roomed in Golden. One of the biggest problems to solve was that there was no place for her to eat. She made arrangements to eat with the cook at the Beta House, but was not allowed in the dining room with the men. Later her family moved to Golden and she was able to live at home for the remainder of her college career.

One challenge at the “World’s Foremost” included a lack of restrooms for her to use on campus. This problem continued for the coeds who followed her long into the 1960s. But, other than that, she does not remember much more than going to school, studying and sleeping as she completed the requirements for a professional degree.

Finishing a degree in Petroleum Refining Engineering “just came about” because the option offered more chemistry than other options. It also offered the best alternative when it came to field trips. The Senior Trip included travel by bus to tour refineries and oil fields in Colorado and Wyoming. She says she had no problems and was treated like any other student during the tours. They stayed in hotels, which was preferable to the tenting accommodations associated with field trips for other options.

The day after graduation, Jackie married a classmate, Rex E. Kircher, P.R.E. 1949. The first year, they stayed in Golden while Rex completed his MBA from the University of Denver. Jackie worked for the Denver and Rio Grande Western Rail Road doing laboratory work at the Bureau of Standards and Research. The following year, the Kircher’s moved to Salt Lake City where Rex worked for the Standard Oil Company of Utah. In 1953, they moved to Southern California and have lived there ever since. The Kircher’s have two children, a son and a daughter, and one granddaughter.

Jackie has a variety of interests that include gardening and travel, with Alaska being one of her favorite destinations. As she has raised her family she has been active in the PTA, Boy Scouts, Girl Scouts, the Easter Seal Society and the Hospital Auxiliary where she is currently working with the blood bank.

Mrs. Kircher seems to think that what she has done is “no big deal,” as if anyone could do it. She says she would not presume to tell anyone anything when asked the question from the Century Book Biographical Summary, “What would you tell a woman student at Mines today?” Others think that what Jackie did is an important part of the history of women at Mines. She is one of only four female students to graduate from the Colorado School of Mines in its first 75 years. Her unassuming manner and willingness to fit in are a likely reason for her success. Being able to share a small portion of her accomplishments is a significant contribution to documentation about Mines women.
Timeline

**1960**
- New submarine depth record set (24,000 ft)
- Non-violent “sit ins” adopted by African Americans to protest discrimination
- Triton submarine circumnavigated the globe entirely underwater
- U-2 spy plane, piloted by Gary Powers, shot down by Soviet Union

**1961**
- President John F. Kennedy’s inaugural speech, “Ask what you can do for your country”
- First man in space (Yuri Gagarin, Soviet Union)
- The “Bay of Pigs”
- The first American in space, sub-orbital flight (Alan Shepard, Jr.)
- First American to orbit the earth (John Glenn)

**Cuba**
- Fisk, a CU instructor, became the first female instructor at Mines. Two days a week she taught a fine arts appreciation class. In 1967, Ruth Simon was hired as a research assistant in the geophysics department and in 1965 Jerri Hamilton was hired as the museum curator and research technician in the geology department. While these last two women did not teach courses, they contributed to the scientific research at the school.

**Summer field camp sessions** were another obstacle for women in Mines’ 60s. Even with the influx of women, the Mines faculty was still reluctant to have single women living in close quarters with men in the early 60s. Mary Edwards reports when she was planning to attend petroleum field camp near Rangely, Colorado, there was only one other woman in P.E., Juanita Williams, who was behind her in school. Dr. Barb made an exception that year in the field camp attendance and allowed Juanita to take field camp early so there could be two women in the section. She also allowed the women to live in a nearby “modern motel” of the era rather than tenting with the men. Mary says that there were the only concessions Dr. Barb made. Both women were expected to perform at the same level of participation as the men as far as the fieldwork was concerned. By 1969, when there was only one woman in P.E., Mary Beth Beach lived in Massadona, Colorado, in a small flood-salvaged trailer that was infested with pack rats. On trips to the Pierceance Basin in southwest Colorado and Casper, Wyoming, she got a motel room rather than tenting with the men. She says she still has problems with long-tailed rodents.

**Pat Mosch and Betty Gibbs both had to take the Mining field camp (Mine Surveying) and the Saturday Mining Lab. Betty remembers taking Mine Surveying up at the Edgar Mine in Idaho Springs for her field camp. Her crew worked well together and remained friends. The Mining Lab (Saturdays, taught by Sam Shaw) was an interesting situation. Betty says fellow students told her that women could not take the course. However, Betty and Pat spoke to Sam Shaw and he informed them they could. Betty remembers there were circumstances when the equipment was too heavy for one woman alone to carry, but with another team member they could haul it along the dirt and get the job done. Everyone in the lab course was told at the beginning that getting an “A” would be difficult unless a student had previous mining experience. Although neither Betty nor Pat had had any experience they both received an “A” for the course. Betty feels that the women’s enthusiasm, interest in the course, and attitudes to work and participate to their fullest capabilities were instrumental in the grade.

**Addis Ababa earthquake** (9.4 magnitude) due to the Red Sea spreading.

**1962**
- First American to orbit the earth (John Glenn)
- First submarine-launched atomic missile tested
- Marilyn Monroe dies
- Cuban missile crisis

**1963**
- First four African Americans graduate from U.S. Air Force Academy
- First woman in space (Valentina Tereshkova, Soviet Union)
- Zone Improvement Plan (ZIP) zones introduced
- Martin Luther King march on Washington, D.C., “I have a dream” speech
- Escalation of U.S. involvement in Vietnam
- Allison shaker by 9.4 earthquake
- Civil Rights Act passed
- Wilderness Act set aside pristine lands in the West
- Dorothy Crowfoot Hodgkin, Nobel Laureate—Physics

**1964**
- First woman named chief justice of a state supreme court (Lorna Gilbert Lockwood, Arizona)
- First women to walk in space (Edward White III)
- Space rendezvous of manned orbiting spacecraft (Gemini 6 and Gemini 7)
- Cesar Chavez led work- ers in a huge stand against grape growers
- The Grateful Dead was formed
- Apollo 8 and Gemini 10 missions

**1965**
- First women named for Outstanding Young Woman for 1971
- First woman to receive a Geological Engineering degree from Mines
- First women to wear a coveted Tau Beta Pi box coat
- Alaska and Hawaii are admitted to the Union
- First woman graduate in a PhD program in North American history
- First woman named for Outstanding Young Woman for 1971
- First woman named for Outstanding Young Woman for 1971
- First woman to graduate in the new engineering science degree program graduated during this decade as well.

**First woman at Mines to wear a coveted senior Stetson graduated in 1966, and a school tradition of the Mines campus has grown in the presence of women in industry and the corporate world. When the ’60s began, four women had graduated from the Colorado School of Mines. Ten more women graduated from the school during the decade. In each of the years 1961, 1962, 1965, 1966, and 1967 only one woman graduated. In 1969 the largest class of coeds (female students) to date graduated—one woman in January and four more in June.

The list of these dedicated, confident women and their degrees follows:

**Shirley M. Valencia, Geol. E. 1961**
- Mary (McGill) Edwards, P.E. 1962
- Juanita A. Williams, P.E. 1965
- Joann Bacon, Chem. E. 1966
- Elsie J. (Stewart) Rowe (Decesed), Chem. E. 1967, MSc. Min. Ec. 1986
- Mary Beth (Patterson) Beach, P.E. 1969
- Patricia C. (Herald) Mosch, Geol. E. 1969

**Firsts**
- Several of the women who graduated during this decade were the first women at Mines to receive their recognition for their accomplishments. The first woman from Mines elected to Who’s Who Among Students in American Universities and Colleges was Juanita Bacon in 1966. Following were Mary Anna Zemits Wheeler in 1969. Mary Anna was also the first woman at Mines to receive the Woman’s Badge from Tau Beta Pi. Betty Gibbs was the first Mines woman to be selected as a candidate for Outstanding Young Woman for 1971.

**Pamela Mosch was the first woman to receive dual Professional degrees from Mines, Geological Engineering and Engineer of Mines of Colorado in 1969. The first Mines women to receive degrees in Geological Engineering, Petroleum Engineering, Math Engineering and Physics Engineering graduated during the ’60s. The first woman to graduate under the new engineering science degree program graduated during this decade as well.

**Biographies**
- Shirley Valencia transferred to Mines in January 1957, having received credit from the University of Southern California and the University of Colorado, and Wyoming University. She was the first woman to receive a Geological Engineer degree from Mines. Shirley Valencia graduated in June 1961. Following graduation she worked for Ralph M. Parsons Co. employed Shirley as a mechanical engineer/technical writer in Los Angeles, California. She received a Master of Science in Geology from the University of Southern California in 1966. She worked for Mobil Oil Corp. in Los Angeles for a year before spending a year at the University of Pennsylvania as a research assistant. Shirley also worked in South Africa from 1968 to 1970.1 Most recently she worked for Hercules Powder Co. in California.

- Although Shirley Valencia remained an active member of the CSM Alumni Association through 1993, the Alumni Association has not kept in contact with her. A recent search via the Internet was also unable to locate Shirley.

- Mary Edwards entered Colorado School of Mines in the fall of 1957 with four female coeds. She was the only coed from this class to graduate with her silver diploma and professional degree, and was the first female Petroleum Engineer (P.E.) from Mines. Mary says her Act II of Mines for college was due to “divine intervention.” She wanted to attend UNAM in Mexico City and traveled there to take a language course. She realized that her Spanish was unlikely to reach the level needed for college classes. She called her mother and asked her to see about getting her into “the best engineering school west of the Mississippi.” Mary came to CSM. After graduation Mary worked three years in the oil and gas industry with the North Dakota Geological Survey before marriage to an Air Force officer changed her career opportunities.1 Thus Mary has a little call for a P.E. at most of her husband’s postings, so Mary became a certified mechanical engineer and is still working in the engineering field as a project manager with the Corps of Engineers in Maryland.

- Shirley Valencia has a silver degree from Mines.

**NEXT PAGE**
has six grandchildren “and counting.”

Juanita A. Williams originally planned on attending the University of Colorado (CU) in Boulder, but decided on Mines because it was a better engineering school and closer to her home in Indian Hills, Colorado. She graduated in 1964 in Petroleum Engineering. Following graduation, she also worked for the North Dakota Geological Survey, succeeding Mary Edwards, at the headquarters at North Dakota Geological Survey in Grand Forks. Juanita left the oil and gas industry in 1968 to serve as a missionary in Zurich, Switzerland. After returning to the U.S. in 1970, she attended Adams State College in Alamosa, Colorado, to get her teaching certification. Juanita began her teaching career in 1974 in Rockville, Maryland. She has since accepted a job in Hanna, Wyoming, and currently enjoys teaching remedial Title I students.

Mary Beth Beach graduated with a degree in Mineral Engineering-Chemistry. She was the first woman to receive a degree under the new engineering-science degree program. Joan received her master’s degree from the University of Tulsa while working for Sinclair’s research center. Joan worked as a geochemist and chemist, a consultant and a cattle rancher, a whitewater river guide and outfitter, and an investor. She has also been a river ranger and backcountry ranger. Joan is enjoying her retirement, doing extensive volunteer work for the National Park Service, Bureau of Land Management, and U.S. Fish and Wildlife Service. Joan wrote in her biographical summary that going into the next century she wants “to give back to the outdoors (especially wild rivers) a small fraction of what it gave to her.” She also prefers to look forward rather than back on “ancient history.”

Elsie Rowe also graduated with a degree in Mineral Engineering-Chemistry. She was the second woman to receive the new degree at Mines. Elsie worked for the U.S. Geological Survey and American Metal Climax-Exploration before her early death on July 1, 1990. Mary Beth Beach was the third coed to receive a professional P.E. degree from CSM. She transferred to Mines from the University of Utah for several reasons—she felt that Mines was the best engineering school around, her father was a 1942 graduate, and due to allergies, her desire to become a veterinarian was unrealistic. Mary Beth married a Mines graduate, Richard Beach, B.S. (Geol.) ‘66 during her last semester at school. After raising her two children to school age, she went to work for Petro-Lewis Corp. in 1977. She developed oil and gas properties, providing geology and engineering, in Wyoming, Texas, and California, as well as preparing oil and gas reserve updates. After eight years, Mary Beth went to work for an independent oil company, doing acquisition analysis and oil and gas reserve updates for another seven years. She is now retired and has her own knitting business.

Elizabeth (Betsy) Gibbs worked long and hard to achieve her degree, Engineer of Mines. Betty started her college career at Virginia Polytechnic Institute in 1962 with four coeds. After her sophomore year, she came to Colorado and worked for two years before enrolling at Mines in 1966. Betty chose Mines because she always wanted to be a geologist. She worked miscellaneous jobs on campus while taking classes and raising her first child. She received a scholarship loan from the Women’s Auxiliary of the American Institute of Mining Engineers in her senior year at Mines. Following graduation Betty surveyed possible coal deposits in Colorado, Utah, and New Mexico. In 1970 she moved to Library, Pennsylvania, where she became involved in data storage and recovery. In an article from the February 14, 1971, issue of The Pittsburgh Press (reprinted in The Mines Magazine, April 1971) Betty stated that the only times she ran into discrimination was in the metal mining domain. In 1971 Betty was the first Mines woman selected as a candidate for Outstanding Young Women of America. Betty completed her Master of Science degree in Mining Engineering in December 1971 while working part-time for CONOCO in Denver. She went to work for Climax Molybdenum Co. in 1973. Betty has her own business, Gibbs Associates, in Boulder, Colorado, which she identifies as an earth science software information company, providing software and computer education for the mineral industry.

As noted previously, Patricia Mosch attained two undergraduate Professional degrees in 1969. Her career at Mines began in 1956 when there were only two other women in the school. She left school in 1958 and married a Nederland, Colorado miner, Al Mosch. She returned to Mines in 1964 taking classes while raising her children. Pat graduated in 1969. While at CSM she experienced discrimination on some field trips to mines because of the miners’ superstition that a woman underground spells disaster. Fortunately, her husband did not hold such views. Al has always counted on Pat’s expertise in engineering to complement his practical mining experience in the Middle East and Europe.

Pat and Al are still investigating several mining properties in the area to determine if they can be operated economically. The Phoenix Mine in Idaho Springs is owned and operated by the Mosch family and is their primary focus at present. Pat has also worked for Dames and Moore and the Oil Shale Corp. (TOSCO). Pat has four children and three grandchildren. Pat remembers she chose Mines because of an interest in geology generated by her mother and because her high school counselor told her Mines was no place for a woman and she should attend it. While at Mines, Pat’s favorite professors were Sam Shaw and Harry Kent, as well as Carl Nordquist and Paul Keating. She enjoyed the friendships she had with the foreign students, especially those from the Middle East and Europe.

Rosalyn Temple married a Miner, Harry (Bud) Temple (P.E. ’69), while still in school. Ros was the first Mines woman to graduate with a Math Engineering degree. She worked for several years as a programmer/analyst for Honeywell Information Systems in Massachusetts. She then was a General Partner of a dental laboratory, and currently is the Business Manager for her husband’s dental practice. She has two children, one attending the University of Pennsylvania in Philadelphia and one in high school. Rosalyn remembers that her high school counselor at South High in Pueblo, Colorado, told her to look toward Mines because of her good math and science skills. He told her that Mines was a good engineering school and he did not feel Ros would have any problems getting along in a male-dominated school. When Dean Burdick visited her high school, he made Mines sound like an interesting school to attend and gave encouragement to women who might consider attending the school.

Mary Anne Wheeler was very active in campus activities while at Mines. She was on the Prospector staff, and a member of the Engineer’s Day Committee, Chi Rho, and the student society of the American Institute of Physics. Mary Anne worked as a graduate assistant at Northwestern University for two years while getting her Master of Science in Material Science, “really Metallurgy, since that was my area rather than plastics.” Her first position at Ford Motor Co. was in research. Mary Anne intended on being an engineer, not a scientist. She had interviewers tell her they did not hire women as engineers. So to get out of research she obtained a Master of Business Administration from the University of Michigan. Mary Anne is currently a business planner for Ford Motor Co. and lives in Michigan with her husband, Paul. They have a 19-year old son who is enrolled in college. Even though in high school Mary Anne had no vague idea of what an engineer did, she says she came to Mines because she wanted to be an engineer and Mines was the best engineering school in Colorado. Mary Anne graduated with a Physics Engineering degree, the first woman at Mines to do so.

ACTIVITIES

Mary Beth Patterson Beach, AIME 1967

Mary Beth Patterson Beach, AIME 1967

Claudia Gancar Blazas, first woman in band.
The Sixties: The Beginning

While the Professional degree is still available today, combining some lab and class requirements and a Masters/Doctoral degree program, Mines modified its curriculum to reconcile with other schools. As a result, students of the decade of the '60s saw changes at Mines, too. The most significant was the termination of the Professional degree and the introduction of the Masters degree from other institutions. This was confusing for some businesses and was difficult for the national college accreditation board to accept. A total of twelve women received Silver diplomas, the ten degrees still get the silver diploma. As a result of an increasing number of women entering Mines, was an expanding physical training (PT) curriculum during the second half of the decade. This was a welcome change for the women. Previously, physical training and military requirements had been waived for coeds. Women had to work to find substitute courses available to them. Band was one substitute for PT, while swimming, rifle team, skiing, or bowling were other options by the end of the decade.

In fact, Mary White ('70) lettered in rifle in 1968 and was the first woman to letter at Mines. Participation in the Reserve Officers Training Corps (ROTC) was still required for two years in the '60s; members of Blue Key escorted the coeds through the gauntlet. But, by the end of the decade, the gauntlet was history, although clothes worn backward, the “Miner’s bible,” and “sounding off” were still around. The climb to the “M” by the entering freshmen included much whitewash and a large rock for everyone then, as now. A special tradition remembered fondly by the women was the presentation of a red rose at graduation by the President of the school to each coed as she accepted her diploma. Joan Bacon’s favorite memory of Mines is President Chiles giving her a rose. The rose tradition began in June 1966 and was discontinued shortly after the end of the decade.

SUMMARY

The women of the '60s decade overwhelmingly report that their education at Mines gave them the confidence to go into the world with strong skills to pursue any career they wanted. They dedicated women were the dawning of the expanding presence of women at Mines and in the workforce. They also feel that now, just as in their own era, hard work pays off. The message to women at Mines seems to be timeless.
### BIOGRAPHICAL SUMMARIES

#### Maiden name: Bacon
- **Title:** Retired
- **Mines Degree:** Chem E. ’66

**LIFE AT MINES**
- **Biggest challenges:** Keeping my old Jeep operating
- **Special interests outside work:** River rafting/canoeing, cooking, travelling
- **Additional Comments:** What personal goals do you have to carry you into the next century? To give back to the outdoors (especially wild rivers) a small fraction of what it gave me.

**HIGHLIGHTS SINCE GRADUATION**
- **Current Professional Field:** Self-employed knitter
- **Job experiences:** While at Petro-Lewis Corp. I worked in development, drilling, and production, and was responsible for over 100 wells being drilled, and maintaining and/or improving production of about 200 additional wells in California. I also worked in property acquisitions and was liaison between the Company, bank engineers, and consultants during semi-annual reserve updates. At Ensign Oil & Gas, I was the first engineer/manager for the company, responsible for reviewing non-operated properties and evaluating potential acquisitions.

**Special Interests Outside Work:** Hiking, rafting/canoeing, cooking, travelling

**Other significant achievements (including family):** Our son, Richard W., chose Mines for his college education (BSc. Math ’91, BSc. Chem. ’91).

#### Maiden name: Bacon
- **Maiden name:** Bacon
- **Title:** Owner, Knit With Care
- **Mines Degree:** P.E. ’69
- **Spouse’s name:** Richard A.
- **Location:** Beach
- **Additional Comments:** What would you tell a woman student at Mines today? The world can be your oyster but the pearl must be sought through consistency and hard work.

**HIGHLIGHTS SINCE GRADUATION**
- **Current Professional Field:** Computer software for the mineral industry
- **Job experiences:** Consolidated Coal; CONOCO (part-time); Climax Molybdenum; Gibbs Associates

**Special Interests Outside Work:** Hiking, rafting/canoeing, cooking, travelling

**Other significant achievements (including family):** Neither of my daughters has carried on my business, and consultants.

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- **Spouse’s name:** Richard A.
- **Location:** Beach

**LIFE AT MINES**
- **Biggest challenges:** Working past the “invisibility” of being female; field surveying; and summer field camp (fruity rate)

**Favorite Memories:** Mud labs; Professor Abdullah’s stories in Econ 101; working for Professor Campbell in Basic Engineering

**Additional Comments:** What personal goals do you have to carry you into the next century? To live a full, interesting, and productive life through volunteer work and my business, and to enjoy the successes of my family and friends.

### HIGHLIGHTS SINCE GRADUATION
- **Current Professional Field:** Accounting
- **Job experiences:** Systems analysis first within manufacturing and then for government projects; general partner of a dental laboratory; business manager for dental practice

**Other significant achievements (including family):** A daughter who is a fresh-man at the University of Pennsylvania; a daughter who is a junior in high school; a husband who is also a graduate of Mines that I have been married to for 30 years

**Additional Comments:** Biggest disappointment: Neither of my daughters has the slightest interest in engineering!!!!!!

### Maiden name: Bacon
- **Maiden name:** Bacon
- **Mines Degree:** Math E. ’69
- **Spouse’s name:** Harry V.
- **Years:** Temple, Jr.
- **Additional Comments:** What lasting impact did Mines have on you? It was great for me because I got an excellent education and learned how to compete in the “real world.”

What would you tell a woman student at Mines today? The women graduating today probably cannot appreciate the hurdles those of us in the “60’s” went through. Without things like affirmative action, we would still be being told “we don’t hire women as engineers.”

### HIGHLIGHTS SINCE GRADUATION
- **Current Professional Field:** Business Planner
- **Job experiences:** For Ford Motor Co.—initially in the Research Laboratory doing electron microscopy, x-ray diffraction, and ion scattering spectroscopy. Then I moved to a planning area in 1977, working on lightweight materials planning in response to the oil crisis and the need for fuel economy improvements. Lightweight materials such as aluminum and plastics were in vogue. From there I moved to Advanced Engineering and then to program engineering on the Tempo, Escort, and Mustang programs. Later I moved to the Climate Control Division where I was the Program Manager for the new Taunus. Now I am Business Planner for the Climate Control Division.

**Other significant achievements (including family):** You can read about me in the book, Car, by Mary Walton; my husband, Paul Wheeler, is a graduate of Northwestern with a PhD. in Theoretical and Advanced Mechanics. He is a manager at General Dynamics, manufacturer of the Abrams tank. Paul and I have a son, Michael, who is 19 and a sophomore at Ringling School of Art and Design in Sarasota, Fla. He is majoring in computer animation.

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A Century of Women at Mines

The 1970s

THE CALDRON

A CENTURY OF WOMEN AT MINES
The Colorado School of Mines celebrated its 100th anniversary in 1974, as the rest of the country argued about the morality of the Vietnam War and struggled with ratification of the Equal Rights Amendment. The issues of civil rights, equal rights and Vietnam had caused such turmoil in the United States by this decade that even Mines felt the effects of the struggles and became part of the Caldron. In spite of the unrest, by the end of 1974 a total of 51 women had graduated from Mines.

The number of graduating women continued to increase during the 1970s. This decade began with the class of 1970 graduating five women and ending with the class of 1979 graduating 36. By 1979, a total of 167 women had graduated from the School. This was a significant contrast to the 14 females that had graduated from Mines from 1898 through 1949. For the first time in the 98-year history of the school, 100 women were enrolled simultaneously in 1972. The student body was 1688 students, of which 1308 were undergraduate students.2 Between 1970 and 1979, 153 women graduated and the average class had 15 women graduates. The class of 1980 graduated 99 women, another reflection of the struggle and the average class had 15 women graduates.

In 1970 the women's residence hall was named the Florence Caldwell Hall. The "girls" who lived in the hall suggested the name to President McBride and the change was approved by the Board of Trustees during their October, 1970 meeting.4 The former fraternity house, known as Caldwell Hall was officially named during Homecoming 1970. The building was located at 1622 Illinois Street until 1979 when it was demolished to facilitate the construction of the Brown Building.

Due to the increasing female student population, other on-campus residences became available for women during the '70s. This included the first floor of Morgan Hall in 1976 and the basement of Bradford Hall in 1977. By the end of the decade plans to build Twin Towers also included accommodations for women students. In addition to the rigors of the studies, the freshmen coeds living in Morgan learned quickly the various types of attention they may get from the student body. For 1st floor Morgan, these included disruptions from adjacent Thomas Hall or the lowering of objects from the male residences on the Morgan floors above. One of the many pranks executed late one night included sod being placed meticulously on the Morgan 1st woman's bathroom. The sod had been "borrowed" from a construction area adjacent to the library. Women living in Morgan Hall were seated to a curfew. Doors were locked at 10:00 p.m. on weeknights and reopened at 8:00 a.m. the following morning. On weekends residents were allowed to stay out until midnight.

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1970
- Arab oil embargo continued
- Nixon visits China and Taiwan
- Arab terrorists murder Israeli athletes at the Olympic Games
- Prison revolt at Attica Prison
- U.K. converts from the pound system to decimal
- Creation of Environmental Protection Agency (EPA)
- Environmental rates oil shortages
- First Director of Student Activities: Dr. Patsy Wegner, Women's Studies
- Runtime of the ERA by Congress
- Women's rights activist Betty Friedan coined the description "Sick Up and Fed!

1971
- U.S. converts from the pound system to decimal
- Smartphone first introduced
- Second one-up and fed conference
- Environmental Protection Agency (EPA) established
- Women's rights activist Betty Friedan coined the description "Sick Up and Fed!

1972
- Passage of the Equal Rights Amendment (ERA) by Congress
- First Earth Day was celebrated
- Arab terrorists murder 11 Israeli Olympians in Munich
- Nixon visits China and the U.S.S.R.
- Roe v. Wade decision legalized abortion
- U.S. participation in the Vietnam war ended
- OPEC quadruples the price of oil

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- Roe v. Wade decision legalized abortion
- U.S. participation in the Vietnam war ended
- OPEC quadruples the price of oil

1974
- Nixon resigned in wake of Watergate scandal
- Arab oil embargo causes oil shortages
- - Continued on page 27

1975
- Arab oil embargo continues
- Nixon resigns in wake of Watergate scandal
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1976
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- Nixon resigns in wake of Watergate scandal
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Island nuclear disaster (1979). On a global level, the Vietnam peace agreement was put into place in 1973. Saigon surrendered, ending the Vietnam war in 1975. Nixon visited both China and USSR in 1974. John Paul II became pope in 1978. While the world saw the progression of technology and struggled with peace, the United States also faced the birth of the environmental age and the changes of the social status of women in the work place and at home.

In a more micro perspective, Colorado School of Mines experienced fluctuations and changes from the impacts of these and other national and international events. The school saw an increase in student population and interest in the petroleum related fields due to the quadrupled price of oil by OPEC (1973). Astronaut Harrison Schmitt of the Apollo 17 mission visited the campus and brought the notorious “moon rocks” collection. In addition, the ERA prompted change in all aspects of domestic society thus bringing forth a larger presence of women in all arenas on campus. In campus classes, in addition to the introduction of handheld calculators to replace slide rules, freshman computer classes featured computer cards to be processed in a “main-frame” in the Green Center’s computer center. The decade abruptly ended with the Iranian hostage crisis in Nov. 1979. The large old trees bordering the former 15th street in front of Guggenheim Hall were decked with large yellow bows, placed by female students, in hopes of a safe return of the hostages and a reign of world peace.

The conservative environment of the Mines campus was slow to join the national turmoil with regard to political pressures and social change. Yet, as the decade of the ’70s unfolded, even this protected school became part of the caldron boiling with the issues regarding the morality of the Vietnam War and the economic strain it imposed, the impact of the equal rights movement and the changes brought about by the Civil Rights Act of the previous decade.

At the beginning of the ’70s, athletics for women on the Mines campus included competing on the rifle team, bowling or participating on the cheerleading squad. At the end of the decade, many women participated competitively in swimming, basketball, volleyball, and track.

In 1972, five of the six veterans of the CSM rifle team were women including Sandra (Thielen) Kramer (BSc. Min. ’73), Debra Carnell (BSc. Met. ’74), Joan Stratton (BSc. Geol. ’74), Nancy Money (BSc. Geosp. ’74, MSc. Geosp. ’77) and Melody Ulen (BSc. Geol. ’75). Sandy Kramer was chosen “Athlete of the Week” for her marksmanship ability on the CSM women’s rifle team in 1973. The 1973 Cheerleading squad consisted of 14 members including five male students and nine female students.

Four women received CSM athletic scholarships for the first time in 1975. These scholarships went to: Vera Fowler, a sophomore on the ski team; Colleen Lynch, a freshman on the varsity rifle team and ROTC rifle team; Elaine Montoya (BSc. Met. ’79), a freshman on the men’s golf squad; and Leslie Puttuck (BSc. Min. ’79), a sophomore and first woman to be a member of the varsity swimming squad.

The decade saw such diversity and changes as the “green” movement beginning with Earth Day in 1972 and the disco music rage closing the ’70s. Technology raced ahead with calculators replacing slide rules, the first human heart transplant and birth of a test tube baby (1978). The ’70s saw the creation of the Environmental Protection Agency (1970), the passage of the equal rights amendment (ERA) by congress (1972), the resignation of Nixon (1974), Roe vs. Wade (1973), and the Three Mile
The Seventies: The Caldron

What lasting impact did you have on Mines?

A few of us worked hard to get CSM to start a woman's intercollegiate sports program—we wanted to play basketball but were turned away several times. Thank you Coach Allison for coming to CSM and allowing women to be athletes, too!

What lasting impact did Mines have on you?

Mines has opened doors for me and I am very thankful for that so being a Mines graduate has had a very positive impact on my career. However, actually going to college at Mines in the late 70's was more like attending boot camp—it took several years to recover from the terror.

What would you tell a woman student at Mines today?

Have fun and enjoy your college years, make some really good life-long friends, and get a C once in a while if it allows you to balance your life. Also, be sure that the field you have chosen is one you truly enjoy. If you aren't thrilled with it, try something else. If you choose is one you truly enjoy. If you aren't thrilled with it, try something else.

Optional: Add a personal story about your Mines experience here.

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Optional: Add a personal story about your Mines experience here.
What lasting impact did Mines have on your life? What personal goals do you have to carry you into the next century? Recovering sufficient health to do volunteer work. What personal goals do you have to carry you into the next century? I keep trying to make a difference (i.e., “do some good”) but still have a sane and balanced life. I want to still be skiing and climbing mountains when I’m 65! What lasting impact did Mines have on your life? Security of having struggled and working for a degree, along with high quality, strong background in my field. What would you tell a woman student at Mines today? Learn not to let the ultra conservative attitude of male dominance, not ‘push your buttons.’ Industry is no different.
What would you tell a woman student at Mines today? Stick with it—you can do anything.

**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Geologist, Formerly Associate Professor

**Maiden Name:** Balderston (graduated Sauls)

**Title:** Mrs.

**Professional Certifications, Registrations, and Titles:** Active member Society Exploration Geophysicists

**Mines Degree:** BSc. Math. ’76

**Other Degree(s):** MS ’78, St. Univ. NY—Stony Brook

**Spouse’s Name:** Ernest R. (Rick) Alexander

**Mines grad?** No

**Degree:** BS EE ’88, CU

**Children:** 3, Ages: 8, 11, 14

**LIFE AT MINES**

**Biggest Challenges:** “Make it or break it” reputation of the whole Basic Engineering Department.

**Favorite Memories:** Freshman year—Florence Caldwell Dormitory for female students, the sound of the carillon.

**What lasting impact did Mines have on you?** To successfully experience, that when I believe in my goal, even if it seems that I am standing still, as long as I continue to focus on that goal, I am making progress.

**What would you tell a woman student at Mines today?** Hang in there. If you make it through Mines, you can make it anywhere.

**Title:** Vice President and Director of Contract Management Services

**Mines Degree:** BSc. Met. ’72, MSc. Min. Ec. ’77

**LIFE AT MINES**

**Biggest Challenges:** Becoming “one of the guys”

**Favorite Memories:** Becoming “one of the guys”

**What lasting impact did Mines have on you?** None that I know of. Perhaps I positively influenced a few individuals.

**Maiden Name:** Gancar

**Title:** Sr. Data Analyst

**Mines Degree:** Geop. E. ’70

**LIFE AT MINES**

**Biggest Challenges:** The discrimination in the classes offered to the women in training; the process of reaching the required number of semester hours needed for graduation; that there was no standardized tool or R.O.T.C. credit and so we had to make up that portion with real classes, whose grades counted toward our G.P.A.

**Favorite Memories:** The sound of the carillon.

**What would you tell a woman student at Mines today?** Believe in yourself. You’re not just any woman—be a professional woman and carry you into the next century! The Golden Rule—treating other people as I’d want to be treated; enjoy what’s here and now, as well as look forward.

**Current Professional Field:** Homemaker, volunteer in public schools, Cub Scout den leader


**Special Interests Outside Work:** Quilting

**Professional Certifications, Registrations, and Titles:** Professional Geologist, Formerly Associate Professor

**Degree(s):** BSc. ’60, Alfred University, M.A. ’53, Columbia University; Ph.D. ’68, Columbia University

**Spouse’s Name:** William J. C. Merrill

**Mines grad?** No

**LIFE AT MINES**

**Biggest Challenges:** Getting senior staff’s respect

**Favorite Memories:** 1) Most of my students. 2) Field Camp. 3) Many of my colleagues—faculty and staff.

**What lasting impact did Mines have on you?** The family of Mines provides backup worldwide.

**What would you tell a woman student at Mines today?** “Illegitimí no carborun- dum”! Just keep working and you will succeed—and have fun and friends along the way.

**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Retired/disabled (arthritis)

**Job experiences:** Teaching night school... in New York City in the ’60s; teaching geological engi-
What lasting impact did Mines have on you? Learned to work hard, figure things out, and awarded CSM Scholarship at Harvard Business School

What would you tell a woman student at Mines today? Work hard! Participate! Stay in touch with the non-technical aspect of life—the arts. Treat yourself to a nice dinner out.

What lasting impact did Mines have on your life and your family every day? Enjoy life to its fullest. You only get one chance and you never know how long you have.

What personal goals do you have to carry you into the next century? Help clean up Rocky Flats.

What personal goals do you have to carry you into the next century? 1) To be happy and unstressed. To work no more than absolutely necessary to be able to keep my dogs in dog food and to allow me to continue with my volunteer work. 2) To design and build my own home.

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and got over 1000 signatures out of student body of approximately 1700; sat on committees on this for more than one year.

What lasting impact did Mines have on you? Gave me a world of opportunity, and a lifetime of friends.

What would you tell a woman student at Mines today? You have to decide what you want in life and do what you have to do to get it. Don’t let other people decide what’s important to you and what isn’t. Any decision is a good decision as long as it’s your decision.

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Consultant to construction companies and construction project owners on contract dispute mitigation

Job experiences: Kennecott Copper—metallurgical engineer in smelter and electrolytic refinery; Westhouseing—process metallurgist in uranium solution mining; 2nd Lead Industry—process metallurgist and manager in secondary lead smelting and refining; Business Development/Sales of process engineering services and mineral processing equipment; Construction—contract administration, disputes avoidance and resolution

Professional ground-breaking experiences: First woman in Kennecott’s copper refinery (Utah) and first woman in plant at Kennecott’s Utah smelter.


Special Interests Outside Work: Skiing, hiking, travel. Currently a Major in the U.S. Air Force Reserve in the position of Chief of Bioenvironmental Engineering Services for the 452 Medical Squadron, March ARB, Calif.

Other significant achievements (including family): Arbitrator with American Arbitration Association since 1987.

What personal goals do you have to carry you into the next century? I’m constantly striving to grow—in both knowledge and experiences (professionally and personally). This hasn’t changed since I left Mines, and I don’t expect it to change after 2000.

Additional Comments: I’m satisfied with where I’ve been and where I am now. My goal is to feel the same when I’m 90.

Maiden Name: Larson
Title: Dr.

Mines Degree: BSc. Geol. ’72

Other Degree(s): MA ’90, CU—Denver; PhD. ’97, CU—Boulder

Spouse’s Name: Thomas E. Kelley

Mines grad? No

Children (#): 5: Sarah & Emily Tomso, Sean, Maria, & Andrew Kelley

Grandchildren (#): 1

LIFE AT MINES

Biggest Challenges: Passing Flows with Dr. Faddick
Favorite Memories: Surveying—all summer
“First woman to . . .” at Mines: (of 3) to attend geology field camp

What lasting impact did you have on Mines? Most likely my doctoral dissertation: “Constructing Engineers Through Practice—Gendered Features of Learning & Identity Development”

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Professor of Women’s Studies, Anthropology, & Education


Publications: Too numerous to list

Special Interests Outside Work: Play piano, garden, backpacking


What personal goals do you have to carry you into the next century? Continuing to document the wide variety of experiences that women and men engineering students (and practicing engineers) have.

Maiden Name: Goodrich
Title: Deputy Director, Groundwater/Vadose Zone/Columbia River Project

Mines Degree: BSc. Geol. ’78

Spouse’s Name: Bruce A. Williams

Mines grad? Yes

Year: ’80

Degree: BSc. Geol.

Children (#): 2, Ages: Dallas 10, Troy 7

LIFE AT MINES

Biggest Challenges: Trying to grow up surrounded by men!

Favorite Memories: Starting an annual “Casino Night”; trips to Central City, “hat” parties at the old house, and hanging out with the lacrosse team. (And there was Bob, Russell, Doug, Mar, Dave, Mike, and . . .) My “anti-favorite Memory” was geology field camp.

“First woman to . . .” at Mines: . . . to sign up for weight training! Yes, the coach did try to explain to me how I must have accidentally signed up for the wrong class.
**Timeline:

The 1980s: The Transitional Years**

1980
- Yugoslavian President Tito dies
- Mount St. Helens erupts
- CERCLA, or Superfund, enacted

1981
- Iranian hostage crisis which began 1979 ends
- President Reagan shot in assassination attempt
- US launched first reusable manned spacecraft, space shuttle Columbia
- Sandra Day O'Connor became first woman on the U.S. Supreme Court

1982
- Falklands War

1983
- AIDS virus identified
- Barbara McClintock becomes Nobel laureate in medicine
- Falklands War
- Sally Ride became the first American woman to travel in space
- Barbara McClintock becomes Nobel laureate in medicine

1984
- AIDS virus identified
- Bhopal, India, leak of poisonous gas from pesticide plant kills over 2000 people
- Geraldine Ferraro is the first woman to run for Vice President of the U.S.

1985
- The movie "Out of Africa" is released
- Exxon Valdez runs aground in Prince William Sound

1986
- Chernobyl Reactor Accident, fire and explosion release large amount of radioactive debris into atmosphere
- Rita Levi-Montalcini becomes Nobel laureate in medicine

1987
- Congress releases the report on the Iran Contra investigation
- The Senate rejects the nomination of Judge Robert Bork for the Supreme Court

1988
- Gertrude Elion becomes Nobel laureate in medicine

1989
- Tiananmen Square... student resistance ended in massacre
- Exxon Valdez runs aground and spills nearly 11 million gallons of crude oil into Prince William Sound

**HighLights since 1983**

Ages: 1, 3

Degree: BSc . Pet .

Maiden Name: Dickiehoof

Title: Homemaker (full time), Creative Memories Consultant (part time)

Mines Degree: BSc Phy . '87

Spouse's Name: Gary M . Scott

Mines grad? Yes

Year: '84

Degree: BSc . Pet .

Children (9): 2, Ages: 9, 6

LIFE AT MINES

Biggest Challenges: Getting my BSc, having Multiple Personality Disorder where three separate personalities that did not communicate, attended classes, did homework, and took tests. Funny part is that I found out it was unusual about eight years later.

Favorite Memories: Drafting TA drew a tree and a park bench on one of my best efforts and wrote that I forgot to put the flowers on; and using the "pencil hand" for the right hand screw rule being left handed.

"First woman to . . . " at Mines: to embarrass a man by being walked in on in the men's room because I didn't want to walk to the Physics building

What lasting impact did you have on Mines? Probably none

What lasting impact did Mines have on you? Being a Mines student taught me that I can do anything I put my mind to, even if it takes a while.

What would you tell a woman student at Mines today? Don't worry as much about grades as learning what you have fun learning. If you learn what you want to learn, you are set for life. Also, the analogy of needing fertilizer (compost, manure . . . ) to grow the flowers out of.

HIGHLIGHTS SINCE GRADUATION

Current Professional Field: Student

Job experiences: since graduation—in order: worked for an oil and gas company; stayed home with kids; worked in a sports car shop, worked for the Disney Catalog, several dept.; and volunteer work with kids in school, as mentor and tutor

Professional ground-breaking experiences: First woman reservoir engineer for my company, straight out of school. First woman allowed into several Petroleum Clubs—mostly in small towns.

Publications: None in the engineering field

Special Interests Outside Work: Needle work, weaving, piano, flute, sax, reading, and writing

Other significant achievements (including family): Two fine, independent sons who are nicely transitioned into friends who trade advice. Personally, have integrated over 30 separate personalities into one person who looks toward the future and enjoys life. (Ain't it great! I didn't know what I was missing!)

What personal goals do you have to carry you into the next century? My personal goals right now don't have a lot to do with being a professional. I want to teach kids who don't have a great opportunity to find out how much fun science and learning can be.

Additional Comments: I started at Mines in 1971, went back in 1979 and 1998. The place has changed much in the past 20 years but the changes are superficial and some are not at all superficial. I just hope it keeps the small school atmosphere.

Maiden Name: Crumb

Title: Sr. Applications Engineer

Mines Degree: BSc . CPR '84

Spouse's Name: Paul H. Wolfe

Mines grad? Yes

Year: '84

Degree: BSc . Pet .

Children (9): 2, Ages: 9, 6

LIFE AT MINES

Biggest Challenges: Be a student-athlete while passing classes; CPR Field Camp

Favorite Memories: E-Days were always the BEST TIMES! While President of the student conference of SWE, we hosted the Regional Conference at CSM

What lasting impact did you have on Mines? Helped build a strong SWE student section. Helped make softball a varsity sport for women

What lasting impact did Mines have on you? Prepared me to function technically and professionally/socially in a male-dominated workplace.

What would you tell a woman student at Mines today? With a degree from Mines, the opportunities are endless. Find a mentor—and hold on tight!

HIGHLIGHTS SINCE GRADUATION

Current Professional Field: Sales & Marketing for industrial equipment manufacturer
A late as 1984, the new CSM Director of Student Activities was quoted as saying, “All I’d heard (about Mines) was...how there were no women on campus.” While this was still Mines’ reputation, reality had changed. The 1980s were the decade when women finally had a sizeable presence at the Colorado School of Mines. The average graduating class of this decade had 91 women. This was over a 600% increase from the average for the previous decade. In fact, in 1986, there were 126 CSM graduates who were women. Between 1980 and 1983, eight Mines women had each obtained a PhD, tripling the total number of doctorates CSM had granted to women. Among this group was Ramona Graves, the first woman in the U.S. to obtain a doctorate in Petroleum Engineering.

This acceleration of women graduating from CSM appears to have at least two sources. First, it reflected the women’s movement in America; the beginning of the ’80s saw continuing national debate on the women’s movement and the Equal Rights Amendment. Second, reflecting the downturn in the oil and metals industry, the school’s focus was moving away from mining and petroleum and toward an increased focus on mineral economics, environmental sciences, and basic engineering programs.

The fact that women were an established presence at Mines was being noticed. The January 1984 issue of Mines Magazine, focused on women at Mines and their influence on the school, included in this issue were articles on the first women PhD graduates from Mines and an article discussing the impact of women administrators and faculty at Mines. In the same issue of Mines Magazine, it was noted that two Mines women had been included in the University of Michigan’s videotape series, “Women in Science.” By the end of the decade, CSM publications placed little special focus on coeds. It appears that women had become an accepted part of the Mines community and no longer warranted special attention. In the latter part of the decade, these publications shift their special focus to other minorities on campus.

This decade showed the first two significant drops in women graduates. Both of these drops can be attributed primarily to economic forces. The first drop occurred 1981 when the number of women graduates decreased to 71 from the previous year’s 99. This drop mirrored a general decline in enrollment and coincided with a reduction in the demand for engineers: “…(in 1981), some 150 companies conducted 4,165 interviews with the new BS degree holders from the School of Mines and offered 138 jobs...But in December 1982, only 85 companies conducted 2,432 interviews at the school and offered 33 jobs.”

The number of women graduates resumed its climb in 1982, and reached a high of 126 women graduates in 1986. This was followed by four consecutive years of decline to a low of 74 women graduates in 1990.

As with American society in general, women were establishing their own culture within the larger institution. In 1980, 16% of the student body was female, and it was quickly becoming unusual to find a class with just one coed. Women’s groups, such as...
The attitudes of the women at Mines have their own consulting firms, frequently recognized by the students for their teaching skills at CSW. The majority of the respondents from this decade are still working in technical fields related to their degrees, many have been successful in other careers. Two of the respondents are lawyers, one is a professor, and several have successful careers in the arts. A large percentage of the respondents balanced work with raising children, and several have chosen parenthood as their primary focus. It is a wonderfully diverse and successful group of women.

The professional women in the Mines community, including Florence Caldwell, Betty Gibbs, Patricia Mosch, and others, have a career. The workplace has changed with children, and several have chosen parenthood as their primary focus. It is a wonderfully diverse and successful group of women.
What lasting impact did Mines have on you? It made me realize I can do anything that I set my mind on.

What would you tell a woman student at Mines today? Continue using the determination used to survive at Mines throughout our life, but remember to look at all sides of an issue.

HIGHLIGHTS SINCE GRADUATION

Current Professional Field: Environmental consulting and litigation support

Special Interests Outside Work: Outdoor art collecting, tandem bicycling

Other significant achievements (including family): Elected to Board of Directors of the Association of Ground Water Scientists and Engineers

What personal goals do you have to carry you into the next century? Personal happiness

Additional Comments: Sorry I won’t be there

Maiden Name: Bensema

Mines Degree: BSc Geol. ’86

Spouse’s Name: Jim

Mines grad? No

LIFE AT MINES

Biggest Challenges: Due to my youth and sex I found it difficult to be accepted at Mines in Graduate School as a serious student with an intellect.

Favorite Memories: The grad students from Chemistry and Geochemistry playing softball on Friday nights.

What lasting impact did Mines have on you? I’m still grateful almost daily for the M on freshmen “M Climb” in 1979.

“First woman to . . .” at Mines: reach the “M” on freshmen “M Climb” in 1979

What lasting impact did you have on Mines? Revitalized SWE on CSM campus as SWE President

What lasting impact did Mines have on you? My Mines education enabled me to find employment in a “down” market and continued to open doors for a successful career thereafter.

What would you tell a woman student at Mines today? Participate in extracurricular activities and be a well-rounded person. Strive to achieve your personal best and don’t let anyone steal your dreams. Commitment to excellence and integrity will always pay off.

HIGHLIGHTS SINCE GRADUATION

Current Professional Field: International marketing


Special Interests Outside Work: Travel, and mommy activities.

Other significant achievements (including family): Spring recital ’98—Pat and Ken Cummings choreographed and danced “Fire”, an Argentine tango, on stage in Costa Mesa, Calif.

Maiden Name: Carey

Title: Deputy Executive Director

Mines Degree: BSc. Geol. ’80

Spouse’s Name: Doug Hart

Mines grad? Yes

Year: ’92

Degree: PhD. Math.

Children (#: 1, Age: 5

LIFE AT MINES

Biggest Challenges: 1) Staying out of trouble. 2) Keeping the fraternity guys out from stealing everything in our house

Favorite Memories: Drinking beer. Dean of Students—Mike Nyikos

“First woman to . . .” at Mines: help get a nationally affiliated sorority at CSM

What lasting impact did you have on Mines? I think I received more tickets from the campus police than anyone else.

What lasting impact did Mines have on you? I still hate surveying!

What would you tell a woman student at Mines today? Get out of taking organ-
GRADUATION
Current Professional Field: I have been employed as a metallurgical engineer since graduation in 1980.

Job experiences: Management Trainee at CF&I Steel Corp.; shift boss at the Climax Molybdenum Co.; worked for Barrick Gold the first three years they owned the Goldstrike property (three startups in three years); my own consulting company; working for an engineering company with extensive overseas travel.

Professional ground-breaking experiences: The title of my position at CF&I was changed for me…from "practice engineer" to "practice engineer.

Publications: Several

Special Interests Outside Work: Gourmet cooking, fishing, writing

Other significant achievements (including family): Numerous

What personal goals do you have to carry you into the next century? I must finish my PhD in the next year.

Maiden Name: Brown
Title: Instructor—CSM

Professional Certifications, Registrations, and Titles: EIT

Mines Degree: BSc. Eng. ’81

Spouse’s Name: Ravel F. Ammerman
Mines grad? Yes
Year: ’81,
Degree: BSc. B.E.
Children (9): 2, Ages: Rob (12), Eryn (10)

LIFE AT MINES
Biggest Challenges: Getting through second semester Physics

Favorite Memories: All the good friends, good professors and sunny days in Golden. Learning how to muck ore and drill in the Edgar Mine for a Mining class.

What would you tell a woman student at Mines today? Work hard but follow your heart’s desire when choosing your career upon graduation.

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Environmental Engineering

Job experiences: Mining Engineer at the US Bureau of Mines. Graduate Student at CSM. Environmental engineer at a Boulder-based consulting firm. Currently working on a complex rails-to-trails conversion combined with remediation of a 72-mile rail line in northern Idaho.

Publications: Iron Ore Availability—Bureau of Mines 1987; various conference publications on wetlands treatment of acid mine drainage

Special Interests outside work: Gardening, bicycling, turn-of-the-century home renovation, knitting

What personal goals do you have to carry you into the next century? To raise my children to be responsible, Godly young men and women for the next generation.

Professional Certifications, Registrations, and Titles: E.I.T

Mines Degree: BSc. Chem. E. ’86

Spouse’s Name: Greg Mitchell
Mines grad? No
Children (9): 2, Ages: 3 years, 4 months

LIFE AT MINES
Biggest Challenges: "Temporarily out" to be a mom.

Favorite Memories: Morgan 3rd floor sodding the Morgan 1st floor restroom in 1978 (laying sod from the library landscape project)

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Homeschooling mom


What personal goals do you have to carry you into the next century? To be the best in what I do and be happy that I did my best.

Maiden Name: Wightman
Title: Environmental Engineer

Mines Degree: BSc. CPR ’88

Spouse’s Name: Stephen Collins
Mines grad? Yes
Year: ’86
Degree: BSc. Phy
Children (9): 1, Age: Elisabeth "Ellie" (2 years-old)

LIFE AT MINES
Biggest Challenges: To get through all of the classes. The “fearsome foursome” was the most difficult semester.

Favorite Memories: Enjoyed dorm life

ções you and something that you can believe in and then work towards your goals.

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Environmental Engineering

Job experiences: Worked for the U.S. Environmental Protection Agency for nine years—three years in Region 8 (Denver) and six years in Region 5 (Chicago). I have focused on enforcement and compliance assistance for petroleum refiners in both air and water.

Professional ground-breaking experiences: Have worked on negotiating teams to settle enforcement cases that involved multi-million dollar penalties.

Special Interests Outside Work: Ballroom dancing, reading, crafts and puppets

Other significant achievements (including family): Have earned two bronze medals for work on environmental projects I worked on at the U.S. Environmental Protection Agency. Gave birth to a spunky and determined daughter and have enjoyed travelling with my family.

What personal goals do you have to carry you into the next century? My goals are to raise an independent daughter, to protect the air and water we breathe and drink and to be the best possible person I can.

Maiden Name: Vogt

Professional Certifications, Registrations, and Titles: Registered Geologist, Certified Engineering Geologist

Mines Degree: BSc. Geop. ’83

Spouse’s Name: John Cosulich
Mines grad? No
Children (9): 1, Age: 3

LIFE AT MINES
Favorite Memories: Intramural volleyball, intramural tennis, women’s volleyball...
What lasting impact did you have on Mines? Students in the CPR department had to go through Mines prepares you well to succeed in industry and career goals.

**HIGHLIGHTS SINCE GRADUATION**

**Job experiences:** Lead Engineer, Engineering Standards at Boeing Commercial Airplane Group, Renton, WA; Sales Engineer, Mobil Oil Co., Fairfax, VA.

**Other significant achievements (including family):** After 6½ years in a challenging and rewarding career at Boeing, I’ve decided to take a leave of absence to raise my children.

**What personal goals do you have to carry you into the next century?** Retire soon and sail around the world.

**What lasting impact did you have on Mines?**

**Children (2):** Ages: 3 and 4

**Maiden Name:** Kramer

**Mines Degree:** BSc. Geol. ’84

**Other Degree(s):** BSc ’77, Beloit College

**Spouse’s Name:** Curtis

**Mines grad?** No

**Children:** 2; Ages: 3 and 4

**Maiden Name:** Henry Herbert

**Spouse’s Name:** Jordan Jacobsen

**Mines grad?** No

**Children:** 1; Ages: 16 (stepdaughter)

**Maiden Name:** Kraver

**Professional Certifications, Registrations, and Titles:** Certified Business Continuity Consultant

**Mines Degree:** BSc. Math. ’84

**Other Degree(s):** MS CS ’91, UD

**LIFE AT MINES**

**Biggest Challenges:** Graduating . . . in 4 years . . . with a 3.0 average

**Favorite Memories:** Helping students with their computer programs, playing pinball at the student center

**KIMBERLY A. LEGG**

“First woman to . . . at Mines: be on the rifle team”
Maiden Name: Ostrander
Title: Attorney
Mines Degree: BSc. Pet. ’84
Other Degree(s): PhD. JP Lewis & Clark
Spouse’s Name: Jack A. Krug
Mines grad? Yes
Year: ’89
Degree: BSc. CPR

LIFE AT MINES
Biggest Challenges: Graduating
Favorite Memories: Graduation and Senior Day

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Mining Consulting
Education admissions counseling
Job experiences:
- CSM Admissions office —14-plus years

Special Interests: Chief Engineer at a
- Computer modeling and mine planning
Publications:
- An integrated computer-based approach to remediation design; computer applications on the mineral industry, second Canadian Conference
- An integrated computer-based approach to remediation design; computer applications on the mineral industry, second Canadian Conference

Other significant achievements (including family):
- President, Denver Chapter
- Taylor Energy Corp., 1990–present
- Superior Oil, 1980–present

Special Interests Outside Work: Family, skiing, hiking, gardening

What personal goals do you have to carry you into the next century?

What would you tell a woman student at Mines today?

What would you tell a woman student at Mines today? I could do anything.

Maiden Name: Ostrander
Title: Assistant
Mines Degree: BSc. CPR ’83

LIFE AT MINES
Biggest Challenges: Learning about myself.
Favorite Memories: SCAC, Homecoming committee, and CR summer session

What has been the biggest lesson you have learned?
Challenged me to exceed my own expectations.

What would you tell a woman student at Mines today? I could do anything.
What lasting impact did you have on Mines? I have been married 13 years. N. M. Chris and I have somehow managed to raise our two boys to be good men.

What lasting impact did you have on Mines today? My primary goal is to raise my two daughters, support my husband’s career, and use the gifts God has given to me to serve God, serve my family, my church and my community.

What personal goals do you have to carry you into the next century? My seven children are completely independent and I have never regretted it! My seven years in industry gave me the skills and confidence to pursue other goals and I am grateful for what Mines gave me to me!

What would you tell a woman student at Mines today? Stick to your goals and don’t let anyone tell you that you won’t succeed!

What personal goals do you have to carry you into the next century? Haven’t made any definite plans, but thinking of working up to a marathon (walk/run) after I finish this degree. Possibly moving to Europe for work

What lasting impact did Mines have on you? Confidence building. Another one of those, “If I can do that, I can do anything” experiences.

What would you tell a woman student at Mines today? Stick it out. In the long run, you will be glad you did.
LIFE AT MINES

Biggest Challenges: Getting into CSM. At the time, there were not a lot of non-traditional students, and Mines didn't really have systems in place to accept significant career changes. I had a B.S. in Nursing, and the registrar's office didn't know how to fit that in their normal admission procedure so they sent me to Metro State College for a year to get "some serious education."

Favorite Memories: Finding ways to fit fun and new friendships into a very hectic schedule. I worked 30 hours a week and took a full class load, but I was always energized by the fantastic people I met at school.

What lasting impact did Mines have on you? I learned how to think, how to solve problems, and to believe in myself.

What would you tell a woman student at Mines today? Keep school in perspective. It's difficult at first to get to know people, but joining the sorority helped.

Favorite Memories: I really enjoyed my senior year: graduation was in sight, I had made good friends, and the job offers came pouring in. The hard work finally paid off!

"First woman to . . ." at Mines: I ran for "Student Trustee" in my junior year. I lost, but two years later another woman ran and won. It made me glad.

What lasting impact did you have on Mines? I didn't blaze any new trails at Mines, but I did later in my career and in the oil industry.

What lasting impact did Mines have on you? I think going to Mines helped me develop the confidence and determination to succeed later in life.

What would you tell a woman student at Mines today? Going to Mines can provide you with career opportunities that are not open to most college graduates. You will work harder as a student, but the rewards will come.

HIGHLIGHTS SINCE GRADUATION

Current Professional Field: Environmental engineering with a major oil company

Job experiences: Mobil Oil, 1986-present; 1986-1989, operations engineering, 1989-present, environmental engineering

Publications: "A Summary of Regulatory Authority for the Management of Pipeline Wastes in the State of Texas," Susan Riebe and Bart Sims

Special Interests Outside Work: Hiking, skiing, quilting

What personal goals do you have to carry you into the next century? To succeed later in life.

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What personal goals do you have to carry you into the next century? To succeed later in life.

What personal goals do you have to carry you into the next century? To succeed later in life.
Favorite Memories: Ordering pizza to be delivered at the library and having homework parties there

“First woman to...” at Mines: attend both CU, Mines, and work at the same time.

What lasting impact did you have on Mines? I brought up the idea that environmental issues were a consideration in all projects.

What lasting impact did Mines have on you? Some of my professors have continued to provide insight and expertise on some of my projects.

What would you tell a woman student at Mines today? Take all the management classes you can, because in today’s market you need technical as well as business skills.

HIGHLIGHTS SINCE GRADUATION

Current Professional Field: Environmental Engineer

Job experiences: I have worked as a pharmacist and an environmental engineer.

Professional ground-breaking experiences: I have had to learn how to be in a meeting with eight to ten men and no other woman present. I took my 8-week old son to a technical conference.

Publications: I have written articles on Bioremediation and how to write a RD&D Hazardous waste permit.

Special Interests Outside Work: Past President of Horsemen’s Association, trail planning, Children’s Hospital volunteer, Bright Beginnings volunteer

Other significant achievements (including family): My most significant achievement is my family. I have a beautiful three-year old boy and an equally beautiful one-year-old girl.

What personal goals do you have to carry you into the next century? My personal goal is raising responsible, happy, and healthy children. I would also like to work on children’s and health care issues.
The Nineties: Part of the Crowd

PART OF THE CROWD

Timeline
The 1990s: PART OF THE CROWD

1990
- 1991 riots after the Walter Mondale votes to end the cold war
- USSR dissolved, the soviet union
- Gulf War ends, Kuwait
- Warsaw Pact dissolved

1991
- Allied forces begin the bombing of Iraq
- Nelson Mandela freed
- Noriega surrenders

1992
- East and West Germany reunite, the Berlin wall comes down
- Iraq invades Kuwait
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal

1993
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

1994
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

1995
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

1996
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

1997
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
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- Explosion in Centennial Park, Atlanta, Georgia
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1999
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2000
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2001
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2002
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2003
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2004
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2005
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2006
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2007
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2008
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
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2009
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2010
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2011
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2012
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2013
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2014
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2015
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2016
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2017
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2018
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2019
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2020
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2021
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2022
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2023
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2024
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2025
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2026
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
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2027
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2028
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2029
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2030
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2031
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
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2032
- Explosion in Centennial Park, Atlanta, Georgia
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2033
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2034
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2035
- Explosion in Centennial Park, Atlanta, Georgia
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- Centennial Park, Atlanta, Georgia
- Bombing

2036
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

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- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

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- Explosion in Centennial Park, Atlanta, Georgia
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- Centennial Park, Atlanta, Georgia
- Bombing

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- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2040
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2041
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2042
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2043
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2044
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
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- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2046
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2047
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

2048
- Worst year for air safety in the U.S.
- Nelson Mandela inaugurated as President of South Africa
- U.S. Navy Tailhook scandal
- U.S. Baseball player's strike
- Northridge earthquake in California

2049
- Whitewater scandal in U.S.
- Death to Affirmative Action in the U.S.
- Ebola virus scare in Africa
- Oklahoma City Bombing

2050
- Explosion in Centennial Park, Atlanta, Georgia
- Summer Olympics
- Atlanta, Georgia
- Centennial Park, Atlanta, Georgia
- Bombing

--- continued on page 61 ---

The Nineties: Part of the Crowd
A CENTURY OF WOMEN AT MINES

1999

- NATO forces bomb Kosovo
- Fifteen die in Columbine High School shooting in Littleton, Colorado
- Concerns grow about the “Y2K” bug
- Michelle Barron attended law school at the University of Denver and also received a master’s degree in mineral economics. Her business ventures began through the Welborn, Dufford, Brown and Teasly law firm, and after a few years she decided to form her own firm. In 1992, Maria Terry Fox (BSc. CPR ’95) was awarded the South Texas College of Law’s two most prestigious scholarships, the Garland R. Walker Alumni Scholarship and the Dean’s Diversity Scholarship. Terry was born in the U.S., but spent the first eight years of her life in Mexico before moving back to the U.S. She graduated salutatorian of her high school class despite having to work 30 hours a week to help support her mother and siblings and earned a scholarship to CSM. She worked as an environmental engineer before enrolling in the South Texas School of Law.³

Non-Traditional female students have also been featured in Mines Magazine. A non-traditional student is defined by the Colorado.com as: Higher Education as a student aged 25 and older enrolled as an undergraduate at one of the state’s colleges or universities.⁴ Joey Roth (BSc. Min. ’92) attended CSM after working in the oilfields of Alaska for thirteen years. She found returning to school difficult because of the difference in age between her and the other students and because she had been away from school for an extended period of time.⁵ Karen Mattson is an excellent example of a woman coming back to school who offers business consulting to Russians and Americans in joint ventures. After receiving her degree from CSM, she established a family, she decided to study electrical engineering at CSM.⁶

Several women have been featured in recent Mines Magazine articles for their accomplishments as women in industry. Beth Jordan (BSc. Geop. ’80) and Claudia Rehne (BSc. Geop. ’84) formed the Legacy Energy Corporation in 1990, an independent oil and gas exploration company. They both had previously worked for Mobil Oil Corp. in Denver and at first had attempted to form a small company within Mobil. When Mobil rejected the business plan they decided to form their own company.³ Sasha Karpov (BSc. Met. ’80) is now a lawyer who offers business consulting to Russians and Americans in joint ventures. After receiving her degree from CSM, she attended law school at the University of Denver and also received a master’s degree in mineral economics. Her business ventures began through the Welborn, Dufford, Brown and Teasly law firm, and after a few years she decided to form her own firm.⁸

The fascinating analysis of these numbers shows that in this decade, the amount of time to graduate 500 women from the school has been cut almost in half. What’s even more fascinating about this is that there was an overall increase in the number of women entering freshmen students around 1993 when the requirements for admission were raised.¹² Despite the enrollment drop at that time, more women are graduating from CSM than Garfield.

The Biographical Summaries received for the Centennial Celebration follow. Many women have continued to practice engineering. Some have struck out into other fields, using their engineering education as a springboard, and still others are continuing their studies in graduate school. Many, like most women in the United States today, are balancing a family life and a career. Several have completed their degrees with two or more children in tow.

Although women have been at the Colorado School of Mines for 100 years there is still room for some “firsts.” Priscilla Thompson (BSc. Eng. ’97) was the first woman to build and row a concrete canoe for an American Society of Civil Engineers competition. Tomi Bowden (BSc. CPR ’85) was the first black woman to become a Resident Adviser. Judy Schenk (MSc. Geol. ’90) and her husband, Kip, became the first mother/daughter pair to receive degrees from the school. Karen Krug (BSc. Pet. ’84), appointed to the Board of Trustees in 1996, is the first CSM alumna to hold the position.

Female students at the Colorado School of Mines have finally come into their own. The number of women on campus continues to grow and the number of women in the science, engineering, and math fields continues to grow. Although we are still far from a 50:50 split between women and men in these fields, the number of women in these fields continues to grow.

In the future the Colorado School of Mines may even be able to boast having 50% of the students on campus be women.

Title: Project Engineer/ Training Mines Degree: BSc. CPR ’96

LIFE AT MINES

A CENTURY OF WOMEN AT MINES

The Nineties: Part of the Crowd

The Nineties: Part of the Crowd
**The Nineties: Part of the Crowd**

**the Engineer, McBride Honors Program & Registrations, and Titles:**

Recently accepted to Mines today? Stick with it. The rewards are worth it.

**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Environmental consulting

 pid job experiences: Environmental testing group—project engineer

Special Interests Outside Work: Quarter and Paint horses

What personal goals do you have to carry you into the next century? Start a family

Maiden Name: Guikley

Title: Environmentalist

Mines Degree: BSc. Chem. ’95

Spouse’s Name: James Barron

Mines grad? Yes

Year: ’95

Degree: BSc. Geol. ’97, MSc. Geol.

**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Environmental consulting

job experiences: Field! Lab sampling techniques, research on acid mine drainage, geochemical modeling

Other significant achievements (including family): Recently accepted to University of Colorado (Boulder), Environmental Engineering Master’s Program

Professional Certifications, Registrations, and Titles: EIT, Order of the Engineer, McBride Honors Program & Minerals in Public Affairs

Mines Degree: BSc. Eng.

**LIFE AT MINES**

**Biggest Challenges:**

Deal with “man’s” minds; every class was a challenge that made Mines an exciting place to be in.

**Favorite Memories:** E-Days, especially the fireworks year ’98. The professors—Karl Nelson, Gaby, Candy Ammerman, John Steele, among others.

**What lasting impact did Mines have on you?** Hard work, good preparation, good network, lasting friendships, responsibility, organization, challenge, and creativity.

**What would you tell a woman student at Mines today?** It is not hard to compete against men; actually is fun, challenging and rewarding. This environment prepares you to face the real world always with the chin up. And security. Success is around the corner—go for it.

**What lasting impact did Mines have on you?** I feel like Mines prepared me to do anything. I wouldn’t have traded the experience for anything. I have worked with people all over the world, and I feel that Mines has given me a definite advantage over the others. I think the hard work and massive course load prepared me to work hard and taught me how to work with all kinds of people.

**What would you tell a woman student at Mines today?** Keep on top of an experience that will prepare you for any adventure that might come your way, including areas outside your area of expertise. Also, the male/female ratio is virtually the same in any technical industry, which enables you to learn to deal with any adversity along the way.

**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Environmental protection

job experiences: Cheerleading at Mines; kept up an experience that will prepare you for any adventure that might come your way, including areas outside your area of expertise. Also, the male/female ratio is virtually the same in any technical industry, which enables you to learn to deal with any adversity along the way.

**What personal goals do you have to carry you into the next century?** Go into the international arena in the oil or gas field.

**Maiden Name:** Wyckslak

**Mines Degree:** BSc. Geop. ’96 (minerals)

**Spouse’s Name:** Espen Bommen

**LIFE AT MINES**

**Favorite Memories:** Some of my favorite memories are of playing in the band, especially around homecoming. The entire Mines Band experience was very new to me, since I had had contact with a very structured band program in high school. The plaid shirts, blue jeans, hiking boots, and hard hats were a welcome relief from the old, musty wool uniforms with tassels. I really enjoyed the field shows. No one will ever see the splitting of the atom—where else!!! The homecoming Plunger Core was also great! It was a lot of fun.

**What lasting impact did Mines have on you?** I feel like Mines prepared me to do anything. I wouldn’t have traded the experience for anything. I have worked with people all over the world, and I feel that Mines has given me a definite advantage over the others. I think the hard work and massive course load prepared me to work hard and taught me how to work with all kinds of people.

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**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Geology

job experiences: Faculty and president of Mines; served in the Peace Corps in Afghanistan

**Maiden Name:** Shaner

**Title:** Life Safety/Fire Protection Engineer

**Mines Degree:** BSc. Eng. ’96

**Other Degree(s):** MS. ’97, University of Maryland

**Spouse’s Name:** Ryan Borgman

**Mines grad? No**

**LIFE AT MINES**

**Biggest Challenges:** Physics (hee hee) Sometimes it seemed impossible to get through some of the classes. It was a challenge to keep up the high intellectual level needed at all times.

**Favorite Memories:** Cheerleading at CSM football games, hanging out at the Ace and Mesu

**What lasting impact did you have on Mines?** Helped build the cheerleading program

**SARA THOMPSON BROWN**

**What lasting impact did Mines have on you?** I learned discipline, determination and integrity. My intuition was developed. I met some of my best friends. I learned teamwork.

**What would you tell a woman student at Mines today?** Stay with it. Even though classes seem unbearable and impossible sometimes, don’t give up. The lessons you will learn at CSM are invaluable.

**HIGHLIGHTS SINCE GRADUATION**

Current Professional Field: Fire Protection/Life Safety

**job experiences:** Code consultant/Fire Protection Engineer—Indianapolis, Ind., Life Safety/Fire Protection Engineer—MKS Consulting Engineers, Denver, Colo.

**Professional ground-breaking experiences:** Envisioning from University of Maryland with a Master’s degree, being hired by MKK to start and manage the fire protection/life safety division

**Publications:** Master’s Thesis

**Special Interests Outside Work:** Dancing, shopping

**What personal goals do you have to carry you into the next century?** If you can get through Mines, you can do anything . . .

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**What personal goals do you have to carry you into the next century?** If you can get through Mines, you can do anything . . .
What personal goals do you have to carry you into the next century? Get married and have several children. Become a dentist.

Maiden Name: Thompson
Title: Process Engineer
Mines Degree: BSc. CPR ’93
Spouse’s Name: Kelly M. Brown
Mines grad? Yes
Year: ’93
Degree: Bsc. Pet.

LIFE AT MINES
Biggest Challenges: Finding enough time to get all my homework done.
Favorite Memories: Finishing Field Session the summer after graduation. Then I knew I really was done!

What lasting impact did Mines have on you? My education taught me to be a good engineer and my experience helped prepare me for “real life”.

What would you tell a woman student at Mines today? My advice to a woman student wouldn’t be any different than my general advice to all students: try to get good summer jobs so you’ll know what to expect and you’ll be more marketable.

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Chemical Engineering—Process Engineer at a large engineering and construction company
Job experiences: First year in Environmental Industry—didn’t enjoy it because the work I was doing was completely regulation-driven (no engineering involved.) Been working for 3½ years now in engineering and construction. As a woman in my company, I’m treated no differently than the male engineers.

Additional Comments: Working in a male-dominated field. Thanks to the WISEM committee for drawing attention to our accomplishments in the last 100 years!!
Title: Process Engineer
Mines Degree: BSc. CPR ’95

LIFE AT MINES
Biggest Challenges: Worrying about an ill parent while at school
Favorite Memories: Volleyball road trips and FCA and Campus Crusade for Christ retreats
What lasting impact did Mines have on you? Time will tell that.

What would you tell a woman student at Mines today? You need to set a balance between work and fun. Work needs to be the priority but don’t stress about it. Stress will make you less efficient, and, more importantly, it will end up hurting your well being.

HIGHLIGHTS SINCE GRADUATION
Current Professional Field: Civil Engineer I at Enron Energy Services
Job experiences: Civil Engineer I at Parsons Transportation Group
What personal goals do you have to carry you into the next century? I’m Still trying to figure that out one.
Title: District Manager
Mines Degree: BSc. CPR ’95

LIFE AT MINES
Biggest Challenges: Calculi III, Physical Chemistry 2, Kinetics
Favorite Memories: “An A on a Physics 2 test. Rush, Sorority (Pi Beta Phi), retreats, M-climb (both freshman and senior), E-Days
What lasting impact did Mines have on you? Mines taught me that hard work paid off. Mines also taught me that no obstacle or goal is too large and it gave me a lot of pride in my education.
What would you tell a woman student at Mines today? Stick with it, the hard work is worth the effort.
What lasting impact did Mines have on you? I learned to become an independent critical thinker and to stand up in situations where I knew I was correct.

What would you tell a woman student at Mines today? Don’t let them treat you any differently just because you are a woman.

Digital Geologic Map of the relaxed setting. And of course, meet-
involvement in student government.

What personal goals do you have to carry you into the next century? I would like to start a family and work on a comple-
migrate your husband! Graduation! It was wonderful, although a little long!

What lasting impact did Mines have on you? Mines provides you with an unparalleled technical education, but more importantly, Mines teaches you how to learn. I learned how to be outgoing, confi-
capable of working with others and willing to learn.

What would you tell a woman student at Mines today? Insist on equality but also relish the fact that men and women are different. Don’t ever assume that you won’t have the same opportunities as your male counterparts. Mines is like all other facets of life: It’s what you make of it.

What lasting impact did Mines have on you? I learned to become an independent critical thinker and to stand up in situations where I knew I was correct.

What would you tell a woman student at Mines today? Don’t give up. You’ll have to fight a lot of battles to prove yourself as an engineer; but it is all worth it.

What lasting impact did Mines have on you? Mines taught me to fight for what I believed in. To never let anyone put you down and to be the best engineer you can.

What would you tell a woman student at Mines today? My biggest challenges were in the corporate world! I started a consulting firm with my friends both in the educational and in any spare time we found, pretty soon you will be out in the real world and you might not have homework, but you have to get up every morning and go to work!

What lasting impact did Mines have on you? All night-ers in the computer lab in the geology building working on labs and reports. Six weeks in a tent-days filled with geology, nights filled with beer.

What would you tell a woman student at Mines today? Study hard, but take time to enjoy yourself too, pretty soon you will be out in the real world and you might not have homework, but you have to get up every morning and go to work!

What personal goals do you have to carry you into the next century? I would like to go back and get my masters in the next five years. I would like to get my P.E. or RG as soon as I have enough experience.

What lasting impact did Mines have on you? Mines taught me to be the best engineer you can.

What would you tell a woman student at Mines today? Shoot for the Stars!

What lasting impact did Mines have on you? Mines taught me to be myself and to have faith in my own abilities. It also taught me that the mountains are beautiful, and that you miss them when they’re gone.

What lasting impact did Mines have on you? Mines taught me to be the best engineer you can.

What personal goals do you have to carry you into the next century? I would like to get my P.E. or RG as soon as I have enough experience.
Finding my roots: the University of Mines

As a first-generation student, my family played an essential role in my academic journey. The support of my parents, along with their encouragement and belief in my potential, was instrumental in shaping my path. My father, a civil engineer by trade, instilled in me a love for problem-solving and a desire to make a positive impact on society. My mother, a homemaker, emphasized the importance of education and instilled in me a strong work ethic. Their combined efforts laid the foundation for my future endeavors.

The role of the Mines Education Trust Fund

The Mines Education Trust Fund, established in 1920, played a critical role in my academic success. It provided scholarships that alleviated the financial burden, allowing me to focus on my studies and extracurricular activities. This support not only enabled me to pursue my academic goals but also facilitated my personal growth and development. The fund’s impact is a testament to the enduring legacy of the University of Mines and its commitment to ensuring that all students have access to a world-class education.

The importance of extracurricular activities

In addition to academic pursuits, extracurricular activities played a significant role in my development. I was an active member of Phi Delta Theta fraternity and the Associated Students of the University of Mines (ASUM), participating in various events and leadership roles. These experiences honed my leadership skills, taught me the importance of teamwork, and provided valuable networking opportunities. Furthermore, my participation in Mines Little Theatre and the Aspen Fringe Theatre Festival showcased my passion for the arts and reinforced my belief in the power of creativity.

Graduation and beyond

Graduating with a degree in civil engineering from the University of Mines, I began my professional journey. As a professional engineer, I have had the opportunity to work on various projects, from designing infrastructure to managing complex projects. Each challenge has provided me with valuable lessons, and I am grateful for the diverse experiences that have shaped me as an engineer.

The Mines Experience: A Lifetime of Opportunities

The University of Mines provided me with a wealth of opportunities that have transformed me into the professional I am today. From participating in extracurricular activities to engaging in meaningful research, my experiences at Mines have been invaluable. I am confident that the knowledge and skills I acquired will continue to serve me well throughout my career.

In conclusion, my journey at the University of Mines has been a significant chapter in my life. The support of my family, the generosity of the Mines Education Trust Fund, and the opportunities provided by the University have been pivotal in shaping my professional path. I am proud to be a part of the Mines community and look forward to continuing the legacy of excellence that has been so well established.
A Century of Women at Mines

A Life at Mines: Biggest Challenges: Physics II
Favorite Memories: M-Climb and track and field competition
What lasting impact did you have on Mines? Worst hinderer ever
What lasting impact did Mines have on you? Persistence and hard work pay off.
What would you tell a woman student at Mines today? Foundation is the key to success.

Life at Mines: Biggest Challenges: Physics II
Favorite Memories: M-Climb and track and field competition
What lasting impact did you have on Mines? Worst hinderer ever
What lasting impact did Mines have on you? Persistence and hard work pay off.
What would you tell a woman student at Mines today? Foundation is the key to success.

HiLigHTS SiNCE GrADUAtiON
Current Professional Field: Petroleum Industry—consulting in seismic stratigraphy and sequence stratigraphy
Job experiences: Five years Exxon geophysicist—Western U.S. Basins; six years consulting—international work in seismic and sequence stratigraphy; teaching undergraduate courses (CSM); teaching short courses (Elf Aquatine, Ecopetrol)
Professional ground-breaking experiences: Mentoring—was hired as a consulting expert to work on integrated interpretation of seismic data and well data in sequence stratigraphic context, (one year at Elf Aquatine) mentoring done in French.

Special Interests Outside Work: Parenting, hiking, photography, teaching, gardening
Other significant achievements (including family): Sister at Rice—star volleyball player. Husband—played AVP (associate pro volleyball)
What personal goals do you have to carry you into the next century? All financial

Mines taught me perseverance. It is still a white man's at Mines today?

What would you tell a woman student at Mines today? Striving to become an astronaut

Made me a more well-rounded scientist. As a woman, I would like to believe that professors have equal, fair rights for professional ground-breaking experiences: Response to oil pipeline ruptures in Los Angeles area after Northridge earthquake—response to a natural disaster was challenging and insightful—I hope the big one doesn’t happen!

Publications: “Rapid Response, Flow Diversion Save Wildlife Habitat After Oil Spill” in several experiments on satellite, telescopes, and space station

Special Interests Outside Work: SCUBA diving, mountain biking, softball, travel

Other significant achievements (including family): Married best friend, Kyle Hoover, in 1996

What personal goals do you have to carry you into the next century? Striving to become an astronaut

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What personal goals do you have to carry you into the next century? Striving to become an astronaut

Made me a more well-rounded scientist. As a woman, I would like to believe that professors have equal, fair rights for professional ground-breaking experi-
**Mines Degree:** BSc. Eng. ’97

**LIFE AT MINES**

**Biggest Challenges:** Studying. The biggest challenge was finding the discipline to study especially on Saturdays.

**Favorite Memories:** Girls Night Out. Either going to the movies or staying at home and having chicken fajitas and margaritas.

“First woman to . . .” at Mines: Build and row a concrete canoe. There were three women of a team of five for our senior design project to build a concrete canoe. Then we had to row the canoe in the ASCE competition in South Dakota. The two other women were Mary Wasgatt and Allison Christner.

**What lasting impact did you have on Mines?** Hopefully, I left a few laughs.

**What lasting impact did Mines have on you?** Irreplaceable friendships and education.

**What would you tell a woman student at Mines today?** Enjoy your time at Mines because your time at Mines doesn’t last forever. Take the time to study, but also take the time to be social and create lasting friendships.

**HIGHLIGHTS SINCE GRADUATION**

**Current Professional Field:** Civil Engineering

**Job experiences:** Designed a residential bike path and sidewalk. I was the lowest man on the totem pole when we had to set the bike path and sidewalk. I was the lowest man on the totem pole when we had to set the bike path and sidewalk. I was the lowest man on the totem pole when we had to set the bike path and sidewalk.

**Favorite Memories:** Dreams and仕事をする with my friends, and learning from my experiences—good and bad

**Title:** Chemical Engineer

**Professional Certifications, Registrations, and Titles:** P.E. Chemical and environmental engineering (Oregon Engineering Board), Most recently, scored 75 on the FE Exam.

**Other significant achievements (including family):** Nominated for Edinburgh University’s first mother (’90)/daughter (’97) duo to graduate from Mines.

**LIFE AT MINES**

**Biggest Challenges:** Making a positive difference in the world—not just trudging along with what others say/do.

**Favorite Memories:** Friends and peers—spring breaks, field camp, learning and growing through classes and activities.

“First woman to . . .” at Mines: Moon the library during finals week (maybe not first!)

**What lasting impact did you have on Mines?** Certainly I’m not a “typical” engineer—never was!

**What lasting impact did Mines have on you?** I can do it if I put my mind to it and really try.

**What would you tell a woman student at Mines today?** Inspire others, follow my dreams, and learn from my experiences—good and bad

**Title:** Chemical Engineer

**Professional Certifications, Registrations, and Titles:** P.E. Chemical and environmental engineering (Oregon Engineering Board), Most recently, scored 75 on the FE Exam.

**Other significant achievements (including family):** Nominated for Edinburgh University’s first mother (’90)/daughter (’97) duo to graduate from Mines.

**LIFE AT MINES**

**Biggest Challenges:** Balancing graduate school and having two kids!

**Title:** Support Specialist/Geologist

**Min. ’99

**GRADUATION**

**Current Professional Field:** Oil and gas upstream services sector. I work as a business and market analyst for the U.S. Business Acquisitions Manager (a woman!) for Brown & Root Energy Services.


**Special Interests Outside Work:** Started training for my first marathon this year; do volunteer work for environmental and sustainable engineering groups; working on my MBA

**Other significant achievements (including family):** Married fellow Mines grad Travis Rein, BSc. CPR, ’93, in May 1994. Traveled most of U.S. Visited Paris, Lyon, and Tokyo as much as possible, and enjoy the good life.

**Favorite Memories:** Too many to list

**HIGHLIGHTS SINCE GRADUATION**

**Current Professional Field:** Geological software technical support

**Job experiences:** A three-month internship at Phillips Petroleum introduced me to the importance of keeping up with technology development and led me to my current job.

**Other significant achievements (including family):** Married fellow Mines grad Travis Rein, BSc. CPR, ’93, in May 1994. Traveled most of U.S. Visited Paris, Lyon, and Normandy, France on business.

**What personal goals do you have to carry you into the next century?** To grow my client base with my company, to continue graduate studies after my MBA, and to continue graduate studies after my MBA, and to continue graduate studies after my MBA.

**Professional ground-breaking experiences:** Stuck with it. The benefits of a CSAM degree are great, and teach you skills that are useful in any career.

**What personal goals do you have to carry you into the next century?** To grow my client base with my company, and to continue graduate studies after my MBA.

**Professional ground-breaking experiences:** Stuck with it. The benefits of a CSAM degree are great, and teach you skills that are useful in any career.

**What personal goals do you have to carry you into the next century?** To grow my client base with my company, and to continue graduate studies after my MBA.

**Favorite Memories:** Too many to list

**HIGHLIGHTS SINCE GRADUATION**

**Current Professional Field:** Electrical engineer—Entrepreneur

**Job experiences:** Five years as a High Voltage Substation Designer for Western Area Power Administration; two years as President of Sprackling Consulting Company, designing and installing control systems for AMOCO, Western Aggregate (TXI, Inc.), Industrial Controls, Inc., and a number of other interesting clients.

**Special Interests Outside Work:** Sailing, snowboarding, ultimate Frisbee, and coaching youth soccer teams

**Professional ground-breaking experiences:** Staying my own company and making it a success. Working on a 500-Kv transmission line and three substations

**What personal goals do you have to carry you into the next century?** I plan to grow my client base with my company, and to continue graduate studies after my MBA, and to continue graduate studies after my MBA.

**Favorite Memories:** My 22nd birthday party on the final night of E-Days (thanks for the good life).

**Mines Degree:** BSc. Geol. ’97

**LIFE AT MINES**

**Biggest Challenges:** Time Management; Fall semester (too long—not enough breaks); Chem 121

**Favorite Memories:** My 22nd birthday party on the final night of E-Days (thanks for the good life).

**Mines Degree:** BSc. Eng. ’91

**Spouse’s Name:** John Sprackling

**Mines grad?** Yes

**Other significant achievements (including family):** Several relations to attend...

**Mines Degree:** BSc. Geol. ’91

**LIFE AT MINES**

**Biggest Challenges:** Time Management; Fall semester (too long—not enough breaks); Chem 121

**Favorite Memories:** My 22nd birthday party on the final night of E-Days (thanks for the good life).

**Mines Degree:** BSc. Geol. ’97

**LIFE AT MINES**

**Biggest Challenges:** Learning how to work with a team dominated by men. Learning how to think and solve open-ended problems.

**Favorite Memories:** Being in the CSM Marching Band, especially during Homecoming! McBride Spring Break trip to Washington D.C., geology field trips, Geology Field Camp, and friends I made in Sigma Kappa.

“First woman to . . .” at Mines: possibly first mother (’90)/daughter (’97) due to graduands-from-Mines—...
The Florence Caldwell Centennial Celebration
A Century of Women at Mines
In October 1998, the Women in Science, Engineering, and Mathematics (WISEM) program commemorated the 100-year anniversary of the graduation of Florence Caldwell, the first woman to receive an engineering degree from the Colorado School of Mines. Alumnae from four decades and members of the Mines administration gathered in October 1997 to plan and develop the event. The changes that have taken place for women in the field of engineering and at Mines in the last forty years were apparent when this group compared their experiences.

The committee organized three days of activities on the campus of Mines. Alumnae from four decades and members of the Mines administration gathered in October 1997 to plan and develop the event. The changes that have taken place for women in the field of engineering and at Mines in the last forty years were apparent when this group compared their experiences.

**SATURDAY, OCTOBER 3, 1998**

**Continental Breakfast and Welcome**

Following an early morning breakfast, Dr. Bickart welcomed the group and gave an interesting overview of the progress of women in engineering and in engineering education. He discussed how Colorado School of Mines contributed to this advancement of women and shared his hopes for Mines in the future. Karen Ostrander-Krug, ’84, a member of the CSM Board of Trustees, and Mary Pott, ’83, former CSM Alumni Association President also gave insights to the changes for women, both at Mines and in industry.

**Workshops**

The workshops covered a wide range of topics for professional and personal development. These included financial planning, career management, humor in the workplace, stress management, leadership skills, and tips for succeeding in the global workplace. In addition there were workshops focusing on nonverbal communication, analyzing personality strengths, and a historical overview of women who have won the Nobel Prize.

A highlight of the evening came when Kim Blair, a present alumnae, Dr. Theodore Bickart, CSM’s new president, gave a presentation about the Mines alumnae. Following the highlight of the evening was a film screening of the movie “A Woman’s Place,” which featured the first female engineers in the world of engineering. They reviewed the different challenges that faced the women who followed and recognized that professionalism and competence are what make women visible members of the engineering community. The weekend also offered everyone the opportunity to learn from each other and establish contacts within the industry.

Colorado School of Mines has a unique opportunity to use the feedback from those who attended. Those who worked on the Centennial Celebration will use these ideas and suggestions to plan activities in future years to help women in engineering and in other technical fields. The women from participants will be used to enhance the feedback from the alumnae community at the School. The feedback from the alumnae community at Mines will also be reviewed to develop and plan activities in the future years.

Colorado School of Mines campus and selected the first weekend in October 1998, for the celebration. A kick-off dinner and dessert social followed by sorority reunions took place on Friday. Activities on Saturday included a continental breakfast, workshops, luncheon, group photo, wine tasting, and awards banquet. Sunday was a family day that included a breakfast, workshops, luncheon, dessert social followed by sorority reunions took place on Saturday.

The committee organized three days of activities on the campus of Mines. Alumnae from four decades and members of the Mines administration gathered in October 1997 to plan and develop the event. The changes that have taken place for women in the field of engineering and at Mines in the last forty years were apparent when this group compared their experiences.

**Sunday was a family day that included a breakfast, workshops, luncheon, dessert social followed by sorority reunions took place on Saturday.**

**Lunch and Group Picture**

Comedian and speaker Melody Soell, a self described “recovering computer programmer” added a light touch to the day’s luncheon. Melody had everyone laughing as she spoke about her “recovery.” To celebrate the tremendous changes since the 1952 Life magazine photo, the alumnae, Dr. Bickart and Nancy Ise gathered on the steps of Guggenheim for a reunion picture.

The committee organized three days of activities on the campus of Mines. Alumnae from four decades and members of the Mines administration gathered in October 1997 to plan and develop the event. The changes that have taken place for women in the field of engineering and at Mines in the last forty years were apparent when this group compared their experiences.

**FRIDAY OCTOBER 2, 1998**

**Kick-off Dinner and Dessert Social**

The Mines Chapter of Society of Women Engineers (SWE) sponsored the kick-off dinner and dessert social held in the ballrooms at the Ben H. Parker Student Center. At each table alumnae and current students enjoyed visiting with old friends and finding out what was new on campus. Everyone received a commemorative T-shirt as a gift from the SWE chapter. After dinner, everyone received a commemorative T-shirt as a gift from the SWE chapter.
**Beer and Wine Tasting**

After the day of workshops, it was time to kick back, relax and sample some of Colorado’s light alcoholic beverages in the Geology Museum. Cathy Skokan provided wines from the western slope while John Higgenlooper of the Wynkoop Brewing Company supplied a keg of microbrew.

**Awards Banquet**

Saturday evening everyone enjoyed good food and conversation at the Centennial Celebration Awards Banquet. Dr. Joan Gosink, Head of the Engineering Division at Colorado School of Mines, gave the keynote presentation on wind research in the Antarctic.

Presentation of awards by President Theodore Bickart and Dr. John Trefny, Vice President for Academic Affairs, concluded the evening. These awards commemorated women who have made significant contributions to the history of women at Mines.

**CENTENNIAL CELEBRATION COMMITTEE**

Mary Pott, ’83, Chairman
Tiffany Abbink, ’94, Assistant Chairman

Kathy Altman, ’80
Candy Ammerman, ‘81
Mary Beth Beach, ’69
Kim Blair, graduate student
Judy Bolis, ’82, ’92
Abby Browder, student
Hendy Cooksey, ’84
Chantal Cordova, student
Vicki Cowart, MS ’77
Jodi Davidson, ’91
Mary Jo Giddings, CSMAA
Joan Gosink, Engineering
Shannon Hines, student
Linda Sue Hoops, ’81
Sandy Kramar, ’73
Karen Ostrander-Krug, ’84
Laila Matthews, ’87
Cathy Mencin, ’83
Debbie Mooney, CSMAA
Jane Raunikar Taylor, CSM
Public Information
Claudia Rebne, ’86
Melanie Rich
Susan Riebe, ’86
Carrie Salerno, student
Tara Schenk, ’97
Maureen Silva, OIA
Cathy Skokan, ’70, ’72, ’74
Pamela Títos, ’72, ’77
Liz Towley, student
Gina Vaccari, student
Louise Waldman, CSM
Career Center

**SUNDAY, OCTOBER 4, 1998**

**Family Day**

Sunday was a day for family fun. An “M” climb followed a continental breakfast in the Coolbaugh House. At the “M” everyone received a souvenir button stating “One Hundred Years and Still an Uphill Climb.” The group participated in a group photo. A member of Blue Key was on hand to locate the lights on the “M” purchased by the alumnae during the recent lighting project.

The group returned to the Coolbaugh House to enjoy a picnic lunch. Students conducted tours of campus so participants could view new additions such as the large stained glass window in Alderson Hall, the atrium in the recently remodeled Coolbaugh Hall, and the additions currently under construction.
21 March 1999

Dear Alumni and Friends:

Our task at the Colorado School of Mines is to identify and educate those who would be engineers, scientists, and business leaders. We have been doing so for 125 years. For 100 of those years we have counted women among the ranks of our graduates. And, today women are 25 percent of our baccalaureate graduates. Both of these are remarkable facts in the realm of engineering schools and colleges, probably more so for an institution bound to the extractive disciplines. However, we should not be satisfied. Since women constitute slightly more than half of the population, we must presume that there is latent talent for engineering to be awakened among the women who will be university bound in the future.

Our task must be to inform young women of the opportunities and rewards of engineering, a profession committed to creating products and processes to improve the human condition, and the positive experiences that will be theirs while learning to be scientists and engineers at the Colorado School of Mines.

If we sustain a welcoming and supportive environment within which a diverse student body and faculty can thrive, we believe that women in our ranks will grow to about 50 percent. Additionally, we will also surely find that the various ethnic minorities at Mines will achieve parity with their numbers in the population.

Some of us in the family of Mines have defined roles in the process. For example, the Admissions Office staff members are always looking for talented women and ethnic minorities who might be drawn to a Mines education in science, engineering, or economics and business. However, all of us in the family of Mines have an opportunity to inform talented prospective students about these professions and the mind-expanding and life-fulfilling educational experiences provided by Mines.

Faculty members—our students’ intellectual mentors—are in a position to encourage their students, especially those in underrepresented groups, to consider graduate study and the practice of their professions within the academy. In time this will lead to a more diverse faculty at Mines.

Let us join together to achieve full diversity and increased intellectual vitality at Mines.

Sincerely,

Theodore A. Bickart
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