

Celebrating 125 Years

In 2021, the College of Earth and Mineral Sciences celebrated its quasiquintennial—the 125th anniversary—of its founding in 1896.

A number of celebrations were held beginning in the fall of 2020 and continuing throughout 2021 to commemorate the 125th anniversary. Events such as honorary lectures and speaker series were held virtually due to COVID-19. A number of them were recorded and are available to view online. Please visit www.ems.psu.edu/125Anniversary to learn more.



The Founding Years

The College of Earth and Mineral Sciences boasts a long and distinguished history, one that started in 1859 with the University's first earth sciences courses offered in the agricultural program and stretches today to the borders of the Commonwealth, the nation, and beyond.

The college officially was founded in 1896 as the School of Mines, with three faculty members offering classes in mining, metallurgy, and economic geology to twenty-two students.

From those beginnings, it has evolved into an outstanding college with highly ranked academic programs, a significant research enterprise, world renowned faculty, superb students, talented staff, and nearly 28,000



A mineralogy laboratory class in the 1890s.

alumni. From the vision and commitment of the founders, the college has grown during the last 125 years and produced more than a century of noteworthy accomplishments.

See our rankings: www.ems.psu.edu/about/our-excellence/rankings.

125th Anniversary Fellows Named

The College of Earth and Mineral Sciences recognizes that the success and reputation of the college is defined substantially by the achievements of its graduates. To honor their accomplishments the college has selected a prominent group of alumni whose contributions to the fields of science and engineering have set them apart from their peers and named them 125th Anniversary Fellows. View list of Fellows: <https://bit.ly/3RAKiKO>

New dates: Celebration of Accomplishment weekend

The Celebration of Accomplishment: 125 Years of Earth and Mineral Sciences, which was postponed due to COVID-19, has been rescheduled for Friday, October 14, and Saturday, October 15, 2022.

Weekend festivities will include the 125th Anniversary Fellows Reception, open houses, and tours. As details are confirmed, information will be posted online: <https://bit.ly/3v5Gml9>.

Building on our history...

As we mark our college's 125th Anniversary, we continue a strong tradition started more than a century ago of building deep disciplinary expertise along with interdisciplinary teams that focus on the interfaces of the natural science, social science, and engineering disciplines, where answers to the most pressing problems facing society await discovery.

At the heart of the college is a spirit of community, engaging our students and alumni in all that we do, seeking always to create a culture of inclusivity and belonging for all, while reaching out to industrial, governmental, and community partners to identify important problems and design solutions.

Moving forward, we see that the world is in transition, and the college is in transition as well. Basic research continues as the cornerstone of innovation, while our faculty and staff actively pursue the translation of research discoveries and advances to the direct benefit of society, including engagement with local, state, national, and international stakeholders. Interdisciplinary research remains the hallmark of the college, and its importance is elevated in a world in transition.

The ways that we collaborate and the tools that we use to further our mission are also changing, and we need to create new spaces to support these novel approaches. As we manage these transitions, we need to sustain and expand our leadership position, at the University and beyond, drawing upon those attributes and traditions that make the college great: agility, creativity, interdisciplinarity,

collegiality, inclusivity, and an unwavering focus on quality. In all that we do, the safety and well-being of our community must be a precondition for excellence.

Planning for the next chapter

These transitions demand a new, innovative strategic plan for the college, one that stays true to our mission, manages our own transitions, and guides those of our stakeholders. Our strategic plan is centered on four principal goals:

- 1 Promote curricular and co-curricular innovation to grow active, engaged and competency-based learning with a focus on career readiness.
- 2 Build a more diverse, equitable, compassionate, and inclusive community of scholars, where members share a sense of belonging and respect.
- 3 Perpetuate and expand the role the college plays as an innovator and leader in signature initiatives at the University and beyond.
- 4 Improve operational resilience and critical infrastructure for research, educational, and outreach initiatives.

Read our Strategic Plan: <https://bit.ly/3Pymci3>

The mission of the College of Earth and Mineral Sciences is to advance knowledge, talent, and leadership to elucidate Earth processes and history, harness and sustain natural resources and materials, and develop novel solutions to major challenges in energy, environment, and well-being.

Obelisk built by EMS as a teaching tool

Constructed in 1896, the same year the college was established, the obelisk consists of 281 blocks of building stone from 139 different localities, mostly in Pennsylvania. Its components are arranged to represent the geologic column of the rocks of Pennsylvania, with the oldest rocks at the bottom and the youngest at the top.

Magnus C. Ihseng, Penn State's first professor of mining engineering and geology and our college's first dean, initiated its construction. He desired to create an instructional yet artistic monument which would test the weathering qualities and commercial value of Pennsylvania's building stones. He employed freshman William Clinton B. Alexander to secure stones from around Pennsylvania.

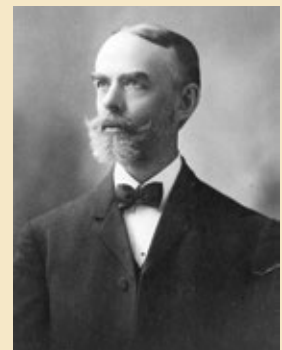
In a letter to President Atherton, after its completion, Ihseng wrote, "It exhibits many of the varieties of structural material with which Pennsylvania is endowed and reveals to the architect at a glance the possibilities of artistic combinations from our native products...Thus the column is not only picturesque but exceedingly valuable to student, visitor, and artisan." Professor Ihseng considered the obelisk to have been the college's "greatest single expenditure for the year"—\$708.09.

Today the Obelisk is the symbol of a society that honors major contributions to the college and whose members reflect their commitment to the continuing achievement of the college through their generosity.

Information from: T.C. Hopkins in the Mining Bulletin, Vol. III, No. 2, March 1897 and John Elliot Allen in Mineral Industries, Vol. 18, No. 6, March 1949



Early view of the Obelisk located along the Mall in by the former Armory.



Magnus C. Ihseng

Blue Band origins traced to Cadet Band formed by EMS alum

The Blue Band can trace its origin to a Cadet Band formed by EMS alum George Deike in 1899.

As a member of the corps of cadets, Deike lived in the cadets' dormitory. The Commander of Cadets, Captain Taliaferro noticed the bugle hanging on the wall above Deike's bunk. Questioned about it, Deike replied that he had served as his unit's bugler during his service in the Spanish-American War.

Taliaferro saw in Deike an opportunity. He charged Deike with the task of finding and assembling a military band to provide the necessary cadence for the cadets' drill. Deike recruited five of his fellow cadets and formed a drum and bugle corps that connects in an unbroken line to the Penn State Blue Band we have today.



Deike (front row, left) and the five other students in the Cadet Band, referred to as the "Original Six."

“Old Mining Building”

In 1906, the School of Mines expanded and was renamed the School of Mines and Metallurgy. Since the school had outgrown its quarters, a new site was chosen for the erection of a new building to house the growing school. The building, erected on the site occupied by the current power plant on College Avenue, was called the Old Mining Building.

The cost was defrayed by a gift of \$5,000 from Andrew Carnegie. In 1907, the state legislature appropriated \$20,000 to enlarge the building.



Largest program in the East

In the first decades of the 1900s, funding was scarce and graduating classes were small, but by the late 1920s, with 126 students, the School of Mines and Metallurgy was the largest mineral industry program in the East and the second largest in the United States.

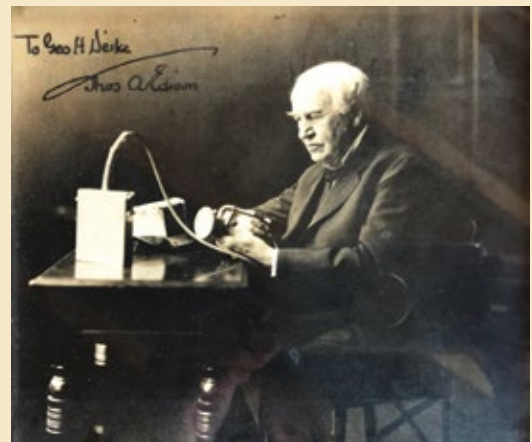
Left photo: Mineralogy class, meeting in the Old Mining Building in the late 1920s, identifying rock specimens.

Legacy of the Deike and Ryan families

The names Deike and Ryan may be familiar to Penn Staters; each have facilities named in their family’s honor on the University Park campus—the Deike Building and the Ryan Family Student Center, the college’s advising, tutoring, and social hub—named in honor of their long-lasting ties to the college and University.

George H. Deike Sr. received his degree in mining engineering in 1903 and John T. Ryan Sr. earned his degree in mining engineering in 1908. In 1914, the two partnered to form Mine Safety Appliances in Pittsburgh, Pennsylvania. Recognizing the critical importance of dependable, safe mining equipment, they enlisted Thomas Edison to help them create a dependable and safe electric cap lamp. The creation, known as the Electric Cap Lamp, ultimately made the open flame lamp obsolete, greatly reducing fatal explosions. Over the next twenty-five years, mine explosions were reduced by 75 percent, saving many lives. Edison would later say in life that of all his inventions, this was the one that did the most for humanity.

Ryan and Deike each had sons—John Ryan Jr. and George Deike Jr.—who would go on to get their mining engineering degrees from Penn State and continue in their fathers’ footsteps by focusing on improving mine safety. Deike Jr. and Sr. also played a strong role in Penn State’s development by serving on the Board of Trustees; together, the two served for fifty-one years total. George Deike Jr. and Sr. and John Ryan Jr. received the Penn State Alumni Association’s Distinguished Alumni award in recognition of their accomplishments. George Deike Jr.’s wife, Anne B. Deike, endowed the first professorship in the College of Earth and Mineral Sciences in 1998.

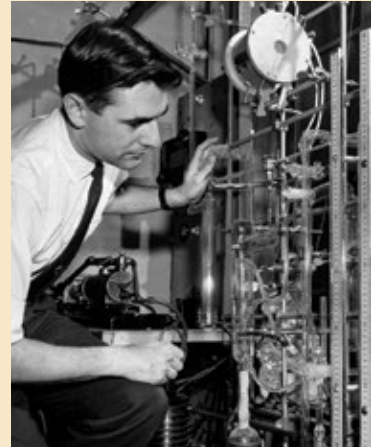


Signed photo of Edison with the Electric Cap Lamp.

Early classes and research



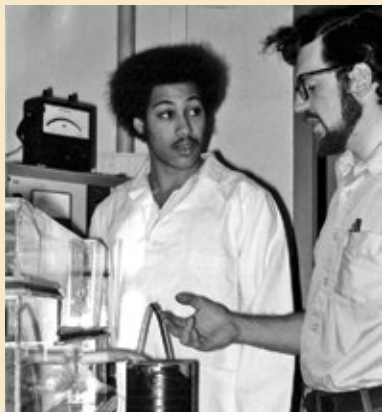
Photos (left to right): Row 1: mining class of 1903, group of students in 1914, surveying in 1922. Row 2: carbonizing steel in 1930, fuel technology lab in 1930, ceramic science class in 1930. Row 3: Raymond Murphy, first geographer on faculty teaching in 1933, weather balloon launch in 1937, David McFarland, head of metallurgy, teaching in 1937. Row 4: Conducting a magnetic survey in 1940, measuring radioisotopes for oil and gas in 1946, ceramics lab in 1948, cartography studies in 1948. Row 5: preparing to launch weather balloon in 1948, studying fossils in mapping the Bedford quadrangle project in 1949.



Photos (left to right):
Row 1: students lined up to receive rock kits in the 1950s, student at Field Camp in 1950, research using the vertical seismograph in 1950. Row 2: students in petroleum and natural gas in lab, conducting an electromagnetism survey in 1951. Row 3:



Della Roy, research assistant in geochemistry, investigating mineral synthesis at high pressures and temperatures in 1952, field work measuring the pull of gravity, metallurgy students working in the metals lab in 1956, research using gas handling system used in extracting oxygen from synthetic materials in 1957. Row 4: measuring ratio of heavy to light oxygen using mass spectrometer, which was developed by Penn State, researchers using single crystal goniometer, which shoots x-rays at crystals to obtain diffraction patterns in 1959.



Photos (left to right):
 Row 1: Hans Panofsky and student measuring ozone content of stratosphere on the Dobson Spectrophotometer in 1959, field camp in Montana in 1961 (first time held outside of Pennsylvania), group of students in 1957. Row 2: squeezing oil from coal in 1970, using computer for research in 1970, students working in cartography lab under the supervision of C. Greg Knight in 1974. Row 3: John Trent with polymer science professor in 1974, student polishing rocks in lapidary lab in 1979, two students in cartography lab in 1982, student working on atomic-probe field-ion microscope in 1982. Row 4: students using optical microscopes to examine thin sections of minerals and rock in 1982, student operating electron microscope with aid of adviser in 1983, mineral processing student using sludge cyclone in 1995.



Steidle, a man of vision

Edward Steidle, a man of great energy and vision, became dean in 1928. Under his leadership, many new programs and facilities were inaugurated. One of his first actions was to change the name of the school to the College of Mineral Industries in a successful attempt to offer a broader curriculum, as well as give it more credibility. In 1966, the name was changed to the College of Earth and Mineral Sciences by Dean Charles Hosler.

Steidle emphasized the development of strong programs that embraced all of the mineral sciences. He included what were then uncommon university disciplines such as geochemistry, geography, meteorology, and mineral economics. By his retirement in 1953, Dean Steidle had seen the undergraduate enrollment grow from 144 to 590, the graduate enrollment from none to 170, and the faculty from 15 to 60.

Under his guidance, the School constructed the Mineral Industries Building in 1930, now named the Steidle Building, and the Mineral Sciences Building, in the late 1940s, now named the Hosler Building.



1929 rendering of the then proposed Steidle Building, signed by architect Charles Z. Klauder who designed many early Penn State buildings. The iconic rotunda and portico beautifully illustrate Klauder's Beaux-Arts style.



Above photo: Breaking ground for Steidle Building in 1929. Former Armory shown on the the right of photo and Carnegie and Sparks Buildings are shown to the left.

Left photo: Hosler Building (right side of photo) being built in 1948 with the recently constructed Steidle Building in the center. Left side of photo shows the Willard Building under construction.

Steidle Collection of American Industrial Art

The EMS Museum & Art Gallery holds one of the country's most extensive collections of paintings and sculpture depicting mining and similar industries—the Steidle Collection of American Art. Established in the 1930s by Steidle, the collection has been described as “a time capsule that allows us to observe the relationships among the fine arts, industry, and education in America in the years before World War II.”

Steidle believed art reflected life and experience. He commissioned and collected artwork that depicted Pennsylvania's extractive industries. He used the art as dynamic and aesthetic education tools to build awareness of the importance of minerals to human existence. By exhibiting art with specimens of Earth materials and objects of technology, Steidle positioned the EMS Museum & Art Gallery to protect and project the history of science, technology, research, and teaching that takes place in the college.

The collection continues to grow and currently includes more than 250 paintings, prints, drawings, watercolors, and sculptures representing the work of 130 artists, 29 of whom are women.

View the collection online at <https://bit.ly/3QzbXKQ>



Dean Steidle (left) with the 1846 painting *Rolling Steel Ingots*, Richards Foundry by George C. Bingham.

Long history of diversity

Penn State is committed to and accountable for advancing diversity, equity, and inclusion in all of its forms and diversity, equity, and inclusive excellence play a central role in the college's core mission to prepare its students to live, work, and lead in a global environment. The college aims to provide all students with a world-class education. By fostering an environment that values diversity, the college hopes to help all students find their place in the college.

The college has a long history of diversity but more work is needed. The college has increased the diversity of our students. Women now comprise 31 percent of the college's undergraduates; 9 percent are from underrepresented minorities; and 21 percent are international students.



Alexandra Tillson with Dean Edward Steidle.

Alexandra Tillson Filer

Alexandra Tillson Filer, who graduated in 1938, was the first woman to graduate from Penn State with a degree in metallurgy. In a 2014 interview she said, "The graduating class in metallurgy that year was small, just myself and seven young gentlemen."

Filer had to overcome much opposition to women studying science and engineering. She remembers quite vividly that when she went to her

first metallurgy class, the professor said "What the hell are you doing in my class! Obviously he wasn't expecting a girl in his metallurgy class, even though my name was on the attendance sheet! He must have thought that my name 'Alexandra' was misspelled and was supposed to be 'Alexander' and was another male student."

Della Roy

Another pioneer was Della Roy, professor emeritus of materials science. She earned her master's degree in mineralogy in 1949 and her doctorate in mineralogy in 1952.

She was a pioneering scientist who laid the foundations for the development of lower-CO₂ emission production methods of cements



Della Roy in 1952

Her career at Penn State spanned more than fifty years. She was a founding member of the Penn State Materials Research Laboratory, now the Materials Research Institute. She was the first female materials scientist and the first Penn State woman to be inducted into the National Academy of Engineering. When her husband, Rustum, was also inducted, they became the first spousal couple to be so honored.

The mineral Dellaite was named after her in 1965. She is one of only 112 women to have a mineral named after them as of May 2019. She died in 2021.

Warren Washington

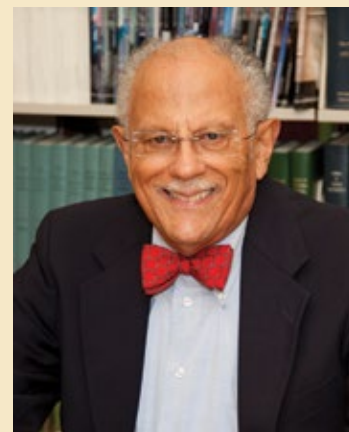
Warren Washington earned his Ph.D. in meteorology from Penn State 1964, making him the second African-American to earn a Ph.D. in meteorology nationwide.

Warren is often referred to as the father of climate modeling. In the early 1960s, he recognized the potential of computers to revolutionize our understanding of Earth's climate and helped develop the first-ever computer models to study the effects of atmospheric carbon dioxide concentrations on global temperatures. His groundbreaking work advanced the field of numerical climate modeling, allowing scientists to predict future atmospheric conditions and better understand climate change.

In 2007, he contributed to the IPCC report, which was awarded Nobel Peace Prize; was awarded the 2010 National Medal of Science from President Barack Obama; and was co-recipient of the Tyler Prize in 2019.

He advised six consecutive U.S. presidents—from Jimmy Carter through Obama—on climate change.

In 2019, the University honored him by naming the Warren M. Washington Building in Innovation Park after him.



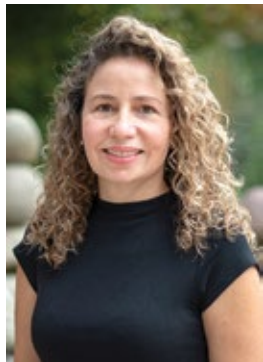
College leadership then and now



Photo of college deans taken in 1966. Left to right: Charles Holser (1965-85), Richard Jahns (1962-65), Frank Tuttle (1959-60), Edward Steidle (1928-53), Elburt Osborn (1953-59), and David Mitchell (1960-62).



Photo of college deans taken in 2019. Left to right: Lee Kump (2017-present), William Easterling (2007-17), Eric Barron (2002-06), John Dutton (1985-02), and Charles Hosler (1965-85). Barron served as President of Penn State from 2014 to his retirement in May 2022.



Left to right: Zuleima Karpyn, associate dean for graduate education and research, Yvette Richardson, associate dean for undergraduate education, Victoria Sanchez, associate dean for educational equity, and Annie Taylor, assistant dean for distance learning.

Earth and MINTerl Sciences Bittersweet Mint

Penn State Berkey Creamery Flavor of the Month

In honor of the College of Earth and Mineral Sciences' 125th Anniversary, the college partnered with the Penn State Berkey Creamery to sponsor the popular flavor, "Bittersweet Mint," as "Earth and MINTerl Sciences Bittersweet Mint" from August to October.

"We chose the mint flavor—"Earth and 'MINTerl Sciences"—because we are the college where new ideas and discoveries in energy, environment, and materials are 'minted' into just, equitable, and sustainable solutions for society," said Dean Lee Kump.

The partnership is part of the Creamery's flavor sponsorship program, which can support the temporary renaming of a flavor, according to Jim Brown, assistant manager of Creamery operations.

"As with all our flavor sponsorship programs, the Creamery hopes to build awareness that the Creamery is much more than ice cream," Brown said. "We are what Penn State is all about: community, tradition and pride."

<https://bit.ly/3dWLzfU>



Dean Lee Kump serves up Earth and MINTerl Sciences Bittersweet Mint at the Penn State Berkey Creamery.