EARTH AND ENVIRONMENTAL ENGINEERING

Columbia Engineering began on Madison Avenue, during the American Civil War, with Columbia College's School of Mines, which evolved over an eventful 150 years into today's Department of Earth and Environmental Engineering (EEE). Originally focused on metallurgy and resource extraction, today EEE plays a leading role innovating ideas and tools for sustainability and environmental preservation, while improving standards of living for a still-growing global population. Current research includes alternative energies, carbon sequestration, water availability and assessment, waste management, and greener industrial processes.

1863 Thomas Egleston Jr., a graduate of Yale and the Ecole des Mines in Paris, proposes a school of metallurgy and mining in New York City, and Columbia College Trustee George Templeton Strong champions his idea among other leaders.

1864 Columbia's School of Mines, the first of its kind in the U.S. and starting in a single basement room on Madison Avenue, begins instruction. The three founding faculty are Egleston, mining expert and Civil War veteran Francis L. Vinton, and chemist Charles F. Chandler.

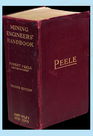
1867 The first graduates of Columbia's School of Mines receive EM degrees, denoting their scientific training in mining.

1877 Liberian-born James R. Priest (first row, fifth from the left) graduates from the School of Mines. He returns to Liberia to pursue civil engineering, becoming a professor of mathematics, but dies tragically young. Luiz de Souza Barros from São Paulo, Brazil, is also a member of the class (shown directly under the '77 on the left.)

1891 As the diversifying engineering school transitions to the School of Mines, Engineering, and Chemistry, prominent geologist Henry S. Munroe EM1869, PhD1877 signs on to lead the reorganized Department of Mining.

1892 The Columbia School of Mines now accounts for more than 46 percent of all graduates from U.S. mining schools. From 1867 to 1892, 871 mining engineers graduate from 16 U.S. mining schools; 402 are Columbia School of Mines alumni.

1892 Veteran mine engineer and consultant Robert Peele EM1883 signs on as adjunct professor of mining. He later authors *The Mining Engineer's Handbook* and earns induction into the Mining Hall of Fame.



1898 After receiving financial aid to complete his senior year, Henry S. Krumb earns a degree in mining and goes on to devote his career to improving extracting techniques for gold, silver, and copper, becoming a leader in the field and a benefactor of the School.

1903 Irving H. Langmuir graduates with a degree in metallurgy and goes on to make important advances in filaments, vacuum tubes, and surface chemistry, for which he wins the Nobel Prize in Chemistry.

1907 A new building designated "School of Mines," financed by Adolph Lewisohn, a public-spirited mining investor, opens on the University's new Morningside campus and remains the School's home until the Seeley W. Mudd building opens in 1961.

1914 Constantin Meunier's *Le Marteleur*, a gift from alumni, is dedicated and stands before the School of Mines, facing Auguste Rodin's *Le Penseur* in front of Philosophy Hall. It becomes a symbol of engineering that follows the School to the Seeley W. Mudd Building.

1919 Arthur F. Taggart becomes professor of mineral engineering and begins a legendary three decades at Columbia, authoring the ubiquitous *Handbook of Mineral Dressing* among other works, on topics including flotation, crushing, and gravity concentration.

1932 Menelaos D. Hassialis '31CC is appointed assistant professor of mining and begins 47 years on the faculty, consulting on the Manhattan Project, patenting many innovations, and building a global community of mining engineers. In 1959, he becomes the first Henry Krumb Professor of Mining.

1946 Herbert H. Kellogg BS'41, MS'43 signs on to teach mineral engineering and, in 44 years at Columbia, goes on to become a prominent researcher and passionate advocate for developing the mining industry's environmental awareness. He is named Stanley-Thompson Professor of Chemical Metallurgy, earning a seat on the National Academy of Engineering for "uniting theoretical studies with practical industrial needs."

1958 Upon the death of friend and benefactor Henry S. Krumb EM1898, University Trustees recognize his vision and generosity by naming the Department of Mining, Metallurgy, and Mineral Engineering the Henry Krumb School of Mines (HKSM).

1951 Nathaniel Arbiter '32CC begins a 25-year tenure at Columbia Engineering, winning election to the National Academy of Engineering in 1977 for his work on low-grade ores and new hydrometallurgical processes.

1961 Thanks to the resources provided by Henry Krumb for the construction of the Mudd building and the endowment of HKSM, the Department moves to the Seeley W. Mudd building, and the goal of increasing the faculty to 21 is within reach. This marks the beginning of more than a quarter century of productive scholarly research and teaching as the department maintains its position as a leader in the field.

1970 Ponisseril Somasundaran, an expert in colloids and surfaces, joins the School. On the faculty for more than 40 years, he makes advances in mineral flotation, fine particles processing, and enhanced oil recovery, is named LaVon Duddleson Krumb Professor of Mineral Engineering, and is elected to the National Academy of Engineering in 1985.

1964 Celebrating its centennial and continuing vitality, the School of Mines hosts a groundbreaking international conference on strata control in New York City.

1980 Nickolas J. Themelis is appointed professor of extractive metallurgy, and, in 1983, is elected to the National Academy of Engineering for "contributions to metal production technology, specifically in copper smelting practice." During his 25 years on the faculty, he is named Stanley-Thompson Professor of Chemical Metallurgy and founds both the Earth Engineering Center (EEC) and the Waste to Energy Research and Technology Council (WTERT).

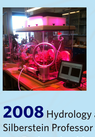
1986 Governor Mario Cuomo designates the Henry Krumb School of Mines to be the Mining and Mineral Resources Research Institute of the State of New York; Professor Tuncel M. Yegulalp EngScD'68, an authority in mineral economics and low-emission power plants, becomes its director.

1990 Recognizing the increasing importance of environmental stewardship, Professor Tuncel M. Yegulalp and Associate Professor Kunsoo Kim organize the First International Conference on Environmental Issues and Waste Management in Energy and Minerals Production.

1988 Enders A. Robinson, considered the father of digital seismic data processing, is appointed professor of applied geophysics, the same year he is elected to the National Academy of Engineering.

2005 Recognizing changes in the industry and the global challenge of sustainable resource management in the 21st century, the Henry Krumb School of Mines becomes the Earth and Environmental Engineering Department (EEE).

1996 Moving to address the environmental impact of mining, The School of Mines overhauls its curriculum to include an innovative MS program in Earth Resources Engineering and a new undergraduate program in Earth and Environmental Engineering.



2006 The Lenfest Center for Sustainable Energy is created with Maurice Ewing and J. Lamar Worzel Professor of Geophysics Klaus Lackner as founding director. The following year, Ah-Hyung Alissa Park joins the department and is named the Center's associate director.

2008 Hydrology and sustainability expert Upmanu Lall, Alan and Carol Silberstein Professor of Earth and Environmental Engineering and of Civil Engineering and Engineering Mechanics, is named founding director of the Columbia Water Center, an interdisciplinary initiative aimed at managing the global crisis of freshwater scarcity.

2013 More and more undergraduate and graduate students are drawn to the study of environmental sustainability for air, water, materials, and energy, spurring plans to grow the faculty by 25 percent.

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1864–2014