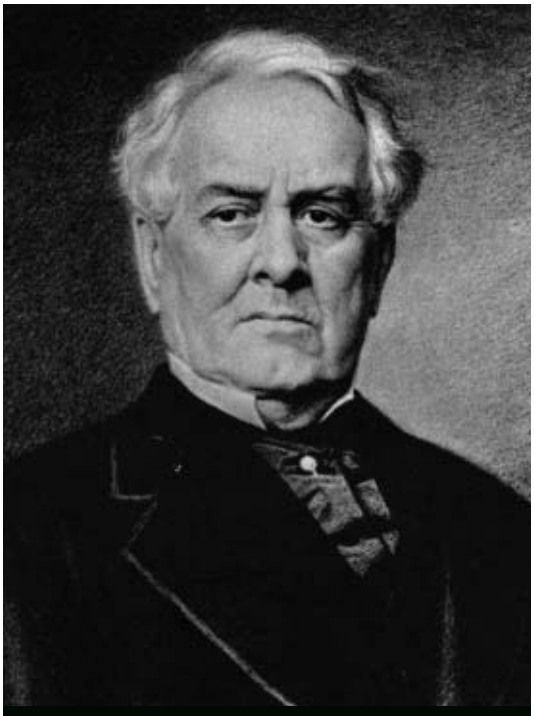
COVER STORY:

William Corcoran and His Transformative Vision

SEAS Turns **125 YEARS OLD**

To many, the Washington of the 1880s was not a promising place to start a school of engineering and applied science. "It was rural, and its society was primitive," complained the writer Henry Adams. "No literary or scientific man, no artist, no gentleman without office or employment, had ever lived there." Adams may have been exaggerating the state of Washington society but he was likely aware that the leading advocate for scientific education in the District was not a scientist or an engineer but a retired banker named William Corcoran.

Corcoran had been born in Washington. His father had been a merchant in Georgetown. He had followed his father's career only to see his business collapse during a time of economic difficulties. After a few fallow years, Corcoran had switched to banking. He had made his fortune in a short period by financing the Mexican American War and then had retired from commercial life. "As compared with the millionaires of New York or Chicago, he was not a rich man," wrote on admirer, but "his philanthropic acts attracted far more attention than his wealth." He had founded an art gallery that bore his name, created a home for poor widows, and donated a medical building to the George Washington University (then known as Columbian University).



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A VISION: Believing that the District of Columbia needed a school of science and engineering, William Corcoran established engineering at GW when he founded the Corcoran Scientific School.

Because of his position in society, Corcoran knew every District resident who had any interest in science or technology. Most of these individuals were connected with the Naval Observatory or the Smithsonian Institution. In 1878, he had lent these individuals a room in his office building to form a club for scientists. They had named their organization the Cosmos Club because of the number of astronomers among their members, and soon found a permanent home on Lafayette Square in the center of the city.

One of the neighbors of the Cosmos Club was the Columbian University. In 1882, the university occupied a new building at 15th and H Streets, barely a block away from the Cosmos Club, and it shared not only a common neighborhood but also the common patron of William Corcoran. Corcoran was serving as the chair of the university trustees and had helped the school finance its new campus.

Looking to the educational needs of both Columbian University and the District of Columbia, Corcoran decided that the university needed to start a scientific school, a college that would teach both science and engineering. Such schools were common in that time. The Lawrence Scientific School at Harvard had been operating since 1847. It had been followed by similar schools at Yale, Columbia, and the University of Pennsylvania. None had been founded in the south. Indeed, Johns Hopkins in Baltimore was the only school south of Philadelphia that offered a scientific education.

Without consulting anyone at the university, Corcoran announced his decision to a surprised board of trustees. "It is to be a polytechnic school, somewhat on the model of the Boston Institute of Technology," announced the *Washington Post*. The university had few teachers who could help with such a school, so Corcoran turned to a pair of his friends at the Cosmos Club for assistance, Simon Newcomb and

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(Top left) **The Cosmos Club: Through William Corcoran, the early engineering school had many ties to the Cosmos Club, located only a block away.**

Charles E. Munroe *(above)* **was dean of the Corcoran Scientific School from 1892-1897 and an important researcher in the school's early days.**

Cleveland Abbe. Newcomb, who had been educated in mathematics at Harvard, was the director of the Nautical Almanac Office. Abbe, who had studied in Europe as well as the United States, was the chief of the U. S. Weather Bureau. Both their names were prominently displayed on the list of faculty for the new school and both taught classes.

The Corcoran Scientific School opened its doors on October 1, 1884. It was a night school. That night, the students and faculty were addressed by the geologist John Wesley Powell, yet another member of the Cosmos Club. "Science does not wait on genius," he argued, "but is the companion of industry." The school would strive to be the companion of local industry or at least the local offices that clustered about Lafayette Square. Classes were held after work, beginning at 6:00 pm. Faculty and students would arrive at 4:00 for discussions and lab work. When the evening's instruction ended, the teachers would retire to the Cosmos Club for dinner.

Initially, the school offered only two engineering degrees, that of civil engineering and a more specialized bachelor of science in mining engineering. At the time, the term "civil engineering" was still used to refer to any aspect of engineering that was distinct from military engineering. However, just as the school opened its doors, two other fields of engineering were starting to assert independent identities. Mechanical engineers had formed a professional society only four years before, and electrical engineers were establishing a society in New York as the Corcoran School began offering classes. Faculty acknowledged the importance of these new disciplines in the school's initial catalog and developed courses for them. Students "completing any of these courses," the catalog announced, "will receive the corresponding degree."

From its inception, the Corcoran School offered graduate degrees, though the initial demand for such instruction was slight. "If a sufficient number of students shall apply for instruction in advanced studies," the school advertised, "arrangements will be made for them, as well as for graduate practice and original research in the laboratories."

FIRST HOME: In its early years, the engineering school was housed in this building on 15th and H Streets.

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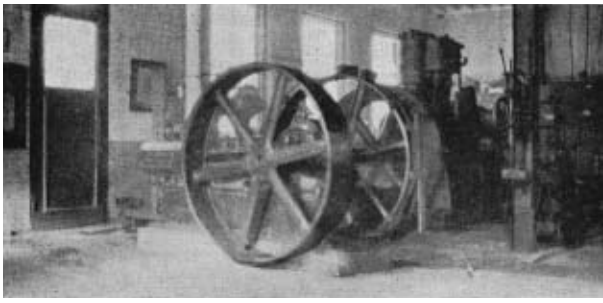
Much of the school's early research was connected to the military. In 1894, Professor Charles Munroe, who served as the school's second dean, developed a new explosive for the ordnance laboratory at the Navy Yard. "This powerful substance is composed of a dark liquid and a white powder that while the two are kept separate," the *Washington Post* announced, "the liquid is as harmless as water and the solid as harmless as so much sand."

Munroe was perhaps the most prominent researcher in the early days of the school but he worked in an environment that was radically different from modern circumstances. He had no grants from the federal government or contracts to support his laboratory. Instead, he had to request equipment and supplies from alumni and friends of the university. "The school has been indebted to generous friends for many and valuable gifts received," wrote an early dean. These gifts included equipment such as motors, a mill for the amalgamation of free metal in gold bearing ore, a milk testing machine, two dynamos, and a large collection of chemicals for use in the laboratories."

Even the early curriculum bore little resemblance to the modern engineering program of study. Like many of the early engineering schools, the Corcoran School taught courses in a wide variety of subjects. Students in the school could even get a degree in moral philosophy, a field that gave birth to the modern social sciences. Corcoran had also insisted that the school offer courses in German or French so that the students could read the latest technical articles from Europe.

In 1903, the university began to distinguish the different kinds of programs of the Corcoran School. It transferred the scientific programs and other activities to the liberal arts college. Two years later, it established a new school for the engineering programs, which it christened the Washington College of Engineering. In these programs, we can see the outlines of the modern programs in civil, mechanical, and electrical engineering. In developing the college, the new dean, Howard Hodgkins, moved to reaffirm the school's connection to the federal government. In 1905, he was able to get the school approved as an official technical school for officers.



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1918: A mechanical engineering laboratory at GW.

By the start of the First World War in 1914, the Washington School of Engineering had moved from its building at 15th and H Streets to a new campus at Foggy Bottom. That move symbolized a major change, as it advanced the school beyond William Corcoran's 19th century vision of a scientific school and created the seed for a modern engineering college.

The war strengthened the ties between the military and engineering schools. As the conflict expanded to threaten the United States, the Cosmos Club again became the center for scientific activities. A group of scientists, most from New York, Boston, or Chicago, formed the National Research Council

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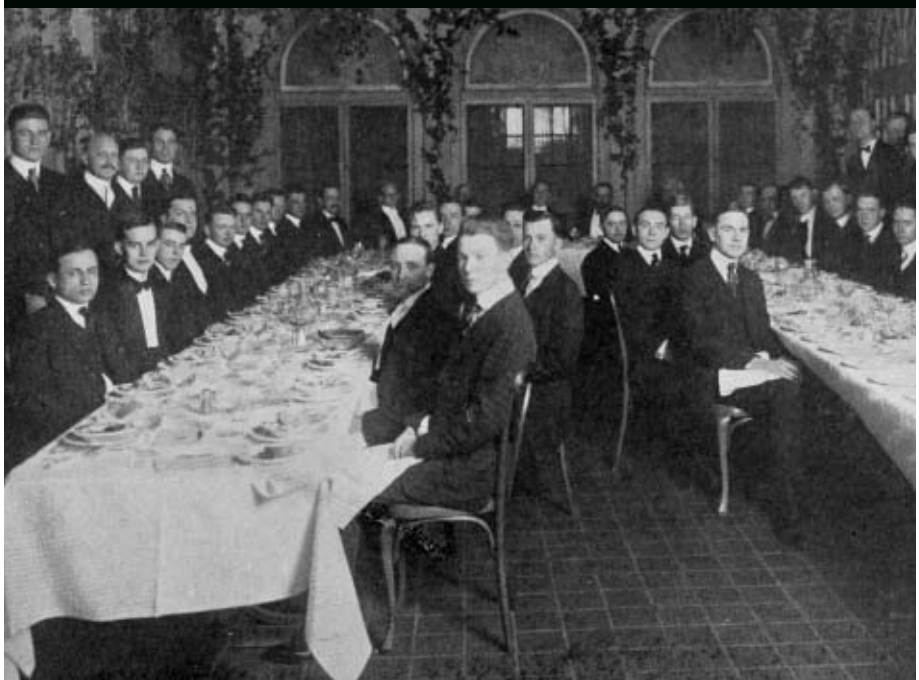
GENTLEMEN SCHOLARS: Members gather in 1916 for the GW Engineering Society banquet.



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The recoilless anti-tank rifle (popularly known as the bazooka) was developed at GW under a contract at the Cumberland Arsenal in Maryland.

to coordinate scientific research to fulfill the needs of the Army and Navy.

During American involvement in the war, the Washington School of Engineering took the name George Washington University School of Engineering and devoted itself to providing technical education to new officers. The school advertised that its courses were "valuable for students entering several branches of naval service." Most of these students came from the new Naval Headquarters buildings, which had been hastily constructed on the Mall, just south of Foggy Bottom.

The excitement of the war ended quickly for the School of Engineering. On November 12, 1918, hours after the warring powers had signed an armistice, the United States Government started issuing orders to terminate war production and research. In the years that followed, both the Army and Navy shrank. Nonetheless, the school was able to exploit its location and continue a working relationship with the Navy. Working with engineers at the Naval Yard, its faculty started a program in naval architecture. The school was also aided by the fact that its dean, Howard Hodgkins, had been promoted to university president in 1921. With his assistance, the school was able to build new laboratories for both electrical and mechanical engineers.

The Second World War gave the engineering school new opportunities to expand its educational and research programs. Following the start of hostilities, the school again took a leading role in educating young military officers. Many a young officer told the story of trudging up Virginia Avenue from the Naval buildings to take evening classes at the school.

The school's research program was greatly aided by the Office of Scientific Research and Development, the organization that was created to provide the military with research support. Located only a few blocks from the headquarters of the organization, the engineering school was in a good position to learn of projects and to promote its faculty. In 1943, the school won the contract to manage rocket and ordnance research at the Cumberland Arsenal in Maryland. In this work, university faculty developed the recoilless anti-tank rifle (popularly known as the bazooka), a variety of short range mortars, and a number of elements of small rockets. In this work, it cooperated with the California Institute of Technology, which later became the Jet Propulsion Laboratory. By the end of the war, the engineering school was the eighth largest university contractor with the Office of Scientific Research and Development, following only MIT, Cal Tech, Harvard, Columbia, University of California Berkeley, Johns Hopkins, and the University of Chicago.

After the end of the war, the engineering school finally acquired a building of its own. In 1947, Charles Hook Tompkins, an alumnus of the school, offered

TOMPKINS HALL: Completed in 1956, the new engineering building boasted modern civil, mechanical, and electrical engineering laboratories.

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***(Above)* Hard at work: one of the successive, and last, generations of engineering students to study drafting at SEAS.**

***(Left)* Then, as now, laboratory demonstrations and discussions were key to an engineer's education.**

$22,500 to build a new facility. Tompkins had built a number of buildings for the university, including the hospital and Lisner Auditorium. Construction began in 1954 and finished two years later. The faculty was very pleased with the new building. They were particularly pleased with the new laboratory space. The basement held mechanical and civil laboratories with high ceilings and a protected walkway for observation. The electrical engineering faculty had modern laboratories on the third floor.

In the years that followed the completion of Tompkins Hall, the school evolved into its modern form. Aided by the renewed interest in science and technology that followed the launch of the Russian satellite Sputnik in 1957, it shed outmoded programs and strengthened new ones. The school's original program in mining engineering was long gone. Naval architecture had vanished a few years after the Second World War. As the school moved into this new era, it added courses in computer science and aeronautical engineering. In 1962, it acquired its current name, the School of Engineering and Applied Science.

Forty-seven years have passed since the school took its current name. This era has stories of its own to tell about *its* character and contributions to the 125-year-old school founded by William Corcoran. But these are stories for another time, because *this* story is about legacy and lineage, about the passage from the Corcoran Scientific School to the School of Engineering and Applied Science.

Corcoran's contributions to the university were many: the Corcoran School established engineering at GW, but it also initiated the Departments of Biology, Chemistry, and Physics. Still, the School of Engineering and Applied Science is the most direct legacy of his vision. He was interested in practical science—in engineering skills that would improve the lives of those people who lived in Washington, D.C. He wanted a school that would bring the benefits of technology ideas to them. A school that would serve the government with research. A school that was within walking distance of the city's center and of Lafayette Square.

DAVID ALAN GRIER
David Alan Grier writes "The Known World" column for the IEEE magazine *Computer* and is the author of two books on science and technology: *When Computers Were Human* and *Too Soon To Tell*. He served as assistant dean of SEAS from 2002-2004 and is currently associate dean of the Elliott School of International Affairs.

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