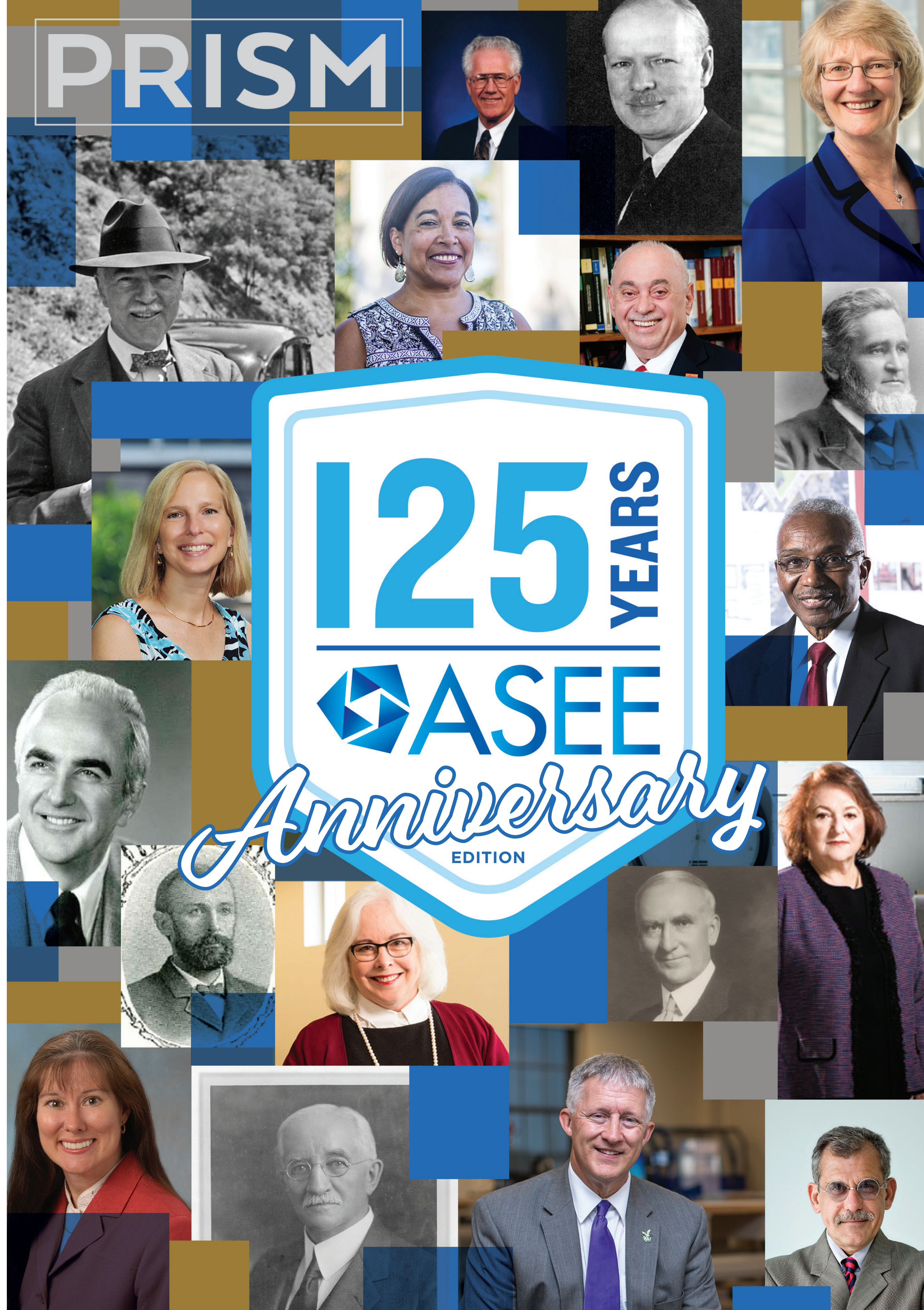
125 YEARS

ASEE

"To this Society is entrusted more than to any other agency the future of engineering education in this country."

Ira O. Baker, President's Address to the Society for the Promotion of Engineering Education (later, ASEE), 1900



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1. A.H. White 1941-1942
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3. Lyle D. Feisel 1997-1998
4. F.M. Dawson 1950-1951
5. Louis Martin-Vega 2016-2017
6. Sarah Rajala 2008-2009
7. De Volson Wood 1893-1894
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10. J. P. Mohsen 2009-2010
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14. A.N. Talbot 1910-1911
15. Renata S. Engel 2010-2011
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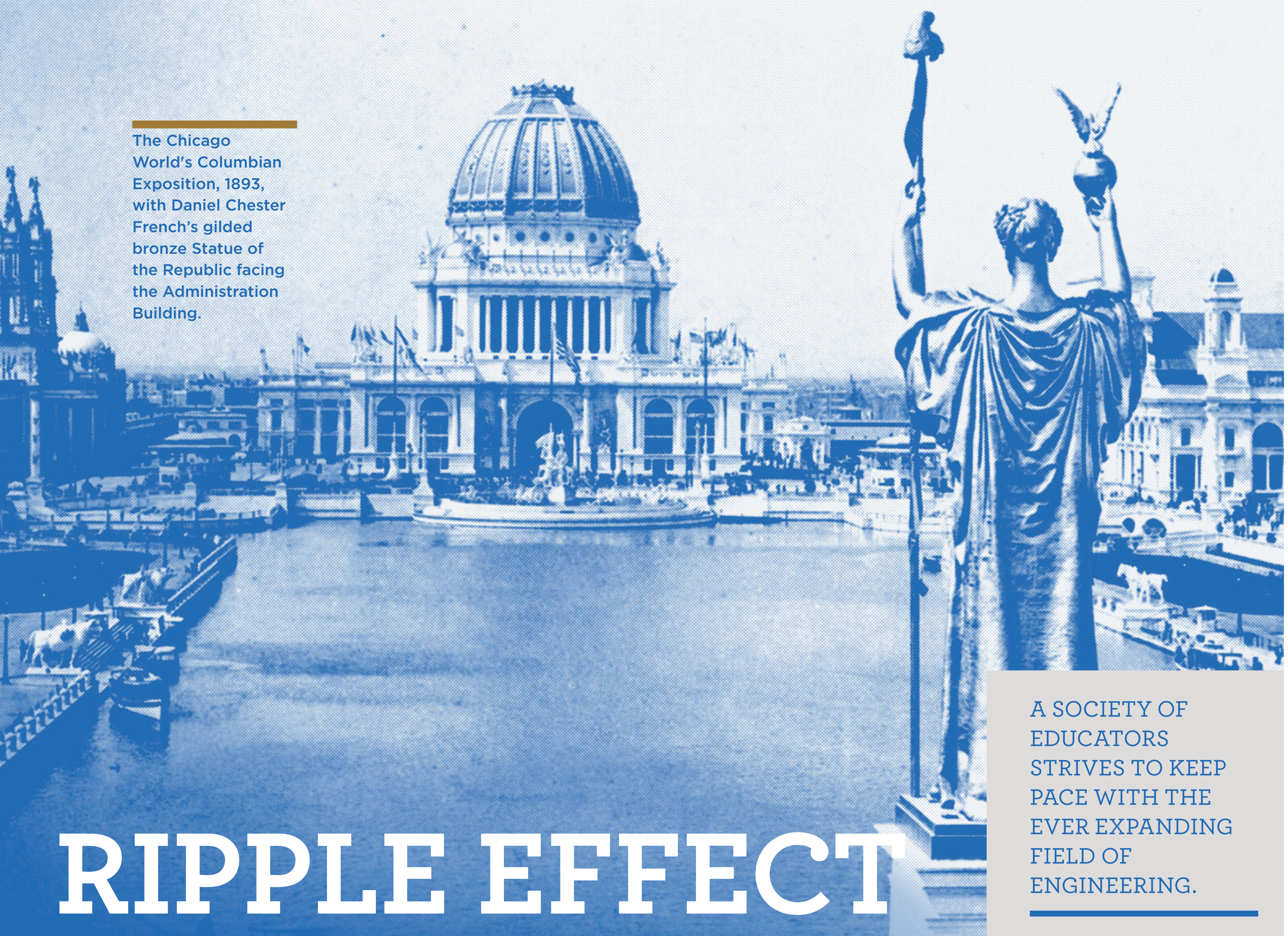


The Chicago World's Columbian Exposition, 1893, with Daniel Chester French's gilded bronze Statue of the Republic facing the Administration Building.

RIPPLE EFFECT

A SOCIETY OF EDUCATORS STRIVES TO KEEP PACE WITH THE EVER EXPANDING FIELD OF ENGINEERING.

'MIND OVER MATTER'

On May 1, 1893, President Grover Cleveland pressed an oversized gold telegraph key and sent machinery throughout the Chicago World's Fair clanging into motion. Electric-powered fountains shot brilliantly colored water 150 feet into the air. At night, 100,000 incandescent electric lamps bathed the fairgrounds in light. The spectacle marked a triumph for Nikola Tesla and George Westinghouse in their battle to win wide acceptance of alternating current, heralding electrification of cities and towns across America. That feat, in turn, would accelerate industrial progress and spread the use of such appliances as the electric dishwasher, introduced at the fair by inventor Josephine Garis Cochrane.

When, on June 21, 1893, George Washington Ferris Jr. dedicated his iconic Chicago Wheel—the exposition's star attraction—to the engineers of America, he spotlighted the people responsible not only for the fair's technological brilliance but for much of the nation's rapid growth since the Civil War. More advances would follow, with engineering—propelled by industry, wars, ingenuity, and eventual large-scale government support, playing a major role in "the American century" and touching just about every aspect of life. "We are the priests of material development," American Society of Civil Engineers President George S. Morison would proclaim in 1895, "of the work which enables other men to enjoy the fruits of the great sources of power in Nature, and of the power of mind over matter."

If ever a group of educators had a cause worth promoting, it was the 70 men who made up Section E of the International Engineering Congress, which met partway through the World's Fair at the Art Palace on Chicago's lakefront. But their decision to form their own Society for the Promotion of Engineering Education (later ASEE) reflected not just their growing importance to the country but also a desire to establish what they needed to teach and how. Offered in the early 1800s only by the U.S. Military Academy at West Point and in 1825 by Rensselaer Polytechnic Institute—Ferris's alma mater—engineering by 1893 had been adopted as a course or degree by leading colleges throughout the country. Their numbers shot up with the Morrill Act of 1862—extended to the former Confederate states in 1890—which provided land grants to educate not just the elite but the surging "industrial classes."

1802

* The U.S. Congress establishes the Army Corps of Engineers.

1817

* The U.S. Military Academy is established at West Point, modeling its engineering curriculum on that of France's École Polytechnique.

1819

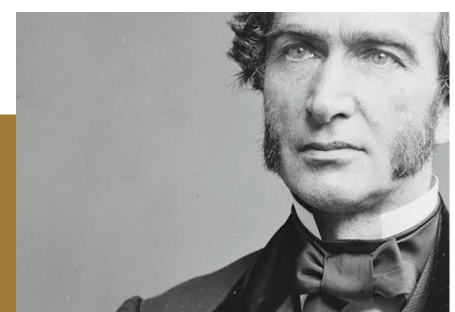
* Norwich University, in Vermont, offers America's first civil engineering program.

1825

* Rensselaer Polytechnic Institute, in Troy, N.Y., launches the country's first engineering school.

1862 to 1890

* Morrill Act and land-grant colleges expand the number of schools offering engineering.

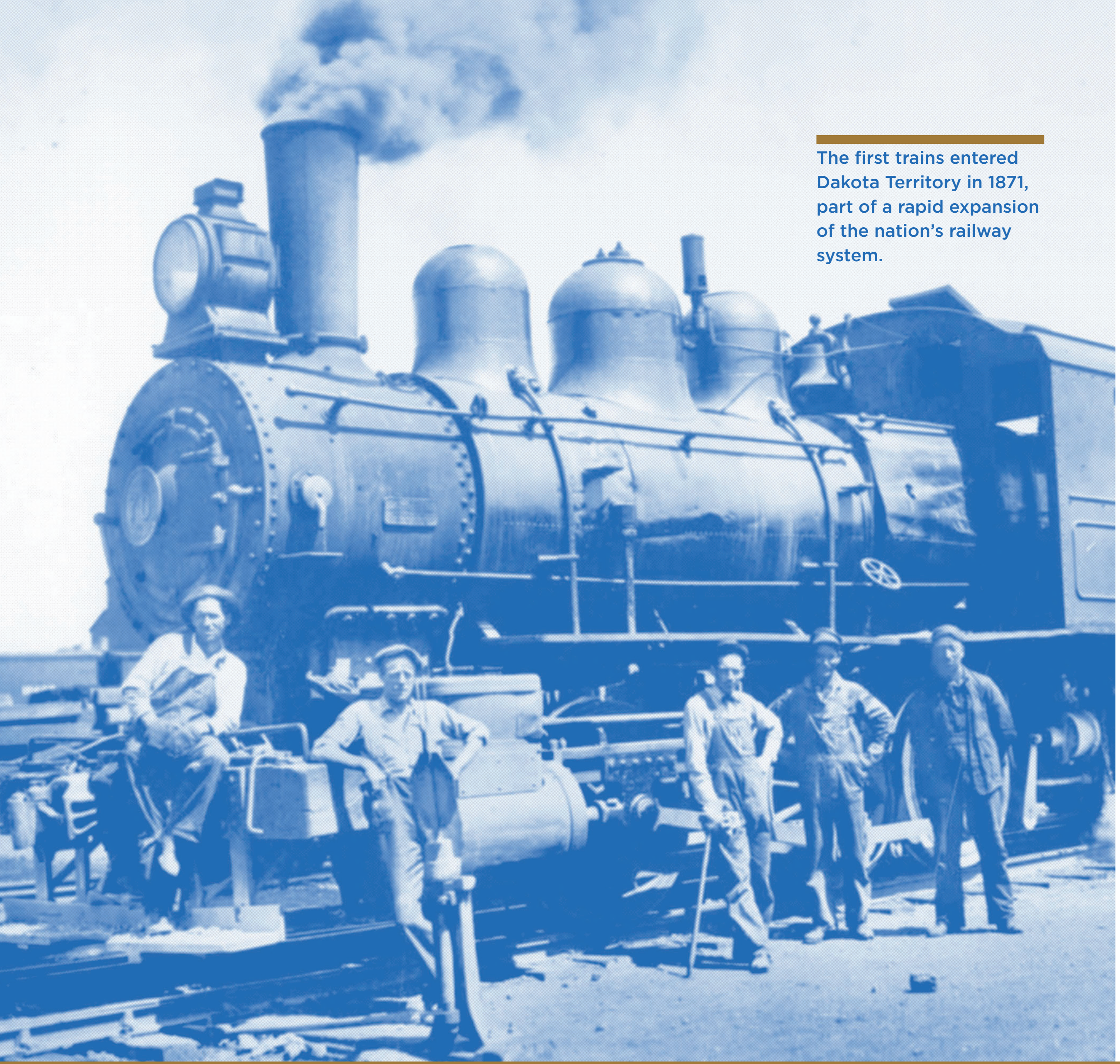


1882

* The Technische Universität Darmstadt founds the world's first department of electrical engineering.

1883

* MIT makes mechanical engineering a formal department, with specialties in marine, locomotive, and mill (textile) engineering.



The first trains entered Dakota Territory in 1871, part of a rapid expansion of the nation's railway system.

FULL STEAM AHEAD

From shops performing "mechanic arts," surveying and construction of roads and bridges, and farming, industries requiring engineers had by 1893 come to include all the elements of Gilded Age expansion: steam, railways, mining, iron and steel production, early electrification, and extensive use of the telegraph.

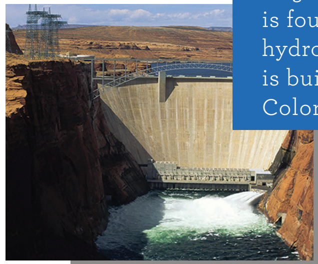
Against this sprawling landscape, engineering schools adopted what historians Bruce Seely and Terry Reynolds write were "radically different strategies," some pursuing hands-on skills training and others stressing math and science fundamentals. The new SPEE was formed at least partly in reaction to this and to "reduce the diversity among American engineering colleges, especially as engineering enrollments increased rapidly in the 1880s and 1890s." European schools, one member noted, tended to provide more advanced instruction. Members coalesced around the idea that, as Reynolds and Seely recount, "engineering curricula should stress fundamental scientific and mathematical principles, not hands-on apprenticeships." While the hands-on-versus-fundamentals debate would never be put to rest and decades later would give rise to engineering technology as a separate approach to engineering instruction, "a common denominator in the engineering method" would hold sway for the next half century. In a 1940 report for SPEE, H.P. Hammond of Brooklyn Polytechnic wrote, "There is among engineering colleges a basic uniformity of aims, ideals, methods, and standards of undergraduate instruction. This homogeneity is not the result of any imposed standardization; it is derived from a strong sense of solidarity among the different institutions and from the common ends they serve."

Almost as constant, however, was close attention to industry needs. Out of this came the specialization within disciplines that would eventually lead to new fields. Electrical engineering began inside mechanical engineering; petroleum engineering inside chemical. As early as 1893, a SPEE paper called for mining engineering to be subdivided among a half-dozen specialties, with each school concentrating on the one best fitting regional needs. By the 1900 meeting, with membership up to 249 and the number of engineering students having grown threefold in a decade, attendees included many professors of civil, mechanical, and electrical engineering but also specialists in machine design, combined geology and mining, steam engineering, topographical engineering, civil and irrigation engineering, experimental engineering, descriptive geometry, stereotomy, and drawing, experimental mechanics and engineering physics, hydraulic engineering, applied electricity, and bridge and sanitary engineering. Laboratory instruction was by then world class, SPEE President Ira O. Baker told members. In fact, specialization had reached the point where he wondered if anything should be done to halt it.

While civil engineering responded to the needs of a growing population requiring roads, water, and sanitation, emerging fields of engineering developed mostly as a result of discoveries, inventions, and creation of new knowledge within industry rather than at universities.

1885

* Cornell establishes the nation's first department of electrical engineering and produces the world's first graduates.



1893

* The same year that the Society for the Promotion of Engineering Education is founded, the first hydroelectric dam is built across the Colorado River.

1894

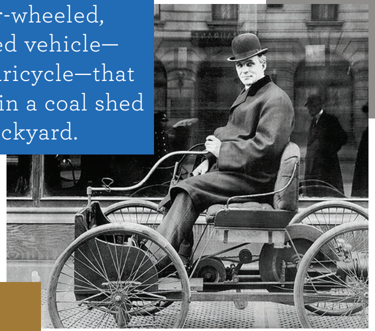
* London's Tower Bridge raises its roadway for the first time to let ships pass.

1895

* Wilhelm Roentgen discovers X-rays. He would win the first Nobel Prize for Physics in 1901.

1896

* Henry Ford drives his first four-wheeled, motorized vehicle—the quadricycle—that he built in a coal shed in his backyard.



Orville Wright observes a proving flight of his airplane at Fort Myer, Virginia, in July, 1909.

INDUSTRY SETS THE PACE

Readily hired at decent pay with a bachelor's degree, engineering graduates for the most part preferred practice to further study. If they conducted research, it was while working for a company or government. The field of chemical engineering began when an industrial inspector in England, George E. Davis, decided to transfer to the classroom the vast knowledge gained from inspecting chemical plants. A year later, writes Phillip Wankat of Purdue University, a chemistry professor at MIT began teaching a chemical engineering course, drawing from industrial practice in Germany. Following MIT's lead, other universities created four-year programs, "but always as part of their Chemistry Department," Wankat writes.

In fact, technology moved so fast that engineering schools had a hard time keeping up. Eventually, advances in transportation, aeronautics, telephones, and construction would make it into the curriculum. But the pace of change prompted a consulting civil engineer, speaking to SPEE in 1915, to assert that the need for a five-year engineering course "cannot well be disputed." Automobiles, for instance, went from costly, slow-moving horseless-carriage novelties in the 1890s, many propelled by steam or electricity, to mass production of the affordable, internal combustion engine Model T in 1908. The School of Automotive Trades (later Kettering University) didn't start until 1919. The two-year period from 1903 to 1904 saw the completion of four sustained flights by the Wright brothers, the operation of the New York City subway, and the American takeover of Panama Canal construction.

The nation's first course in aeronautical engineering began in 1914 at MIT, but World War I pressed governments into the act, accelerating the pace of development. Lagging behind both Britain and Germany, the United States in 1915 set up the 12-member National Advisory Committee for Aeronautics, forerunner of NASA, funded at $5,000 a year "to supervise and direct the scientific study of the problems of flight with a view to their practical solution." NACA marked an early R&D collaboration between government and university researchers, with its biggest contract going to Stanford engineering professor William F. Durand, also a committee member, to study propeller design. Member Michael Pupin, a Columbia electrical engineer, conducted research on submarine detection and communication between airplanes. Besides helping to generate volume production of aircraft once the United States entered the war, the committee laid the groundwork for a postwar boom as the driving force behind the Langley Memorial Aeronautical Laboratory. Dedicated in 1920, the lab drew engineers from around the country, according to a NASA history, spurring university coursework leading to undergraduate and graduate degrees.

1897

* Columbia University creates a department of mechanical engineering consisting of one professor, two drawing instructors, and two assistants.

1898

* Rudolf Diesel receives a patent for the engine he invented in 1892.

1900

* Ferdinand von Zeppelin develops the world's first successful dirigible.
* Kodak's Brownie camera goes on sale for $1.
* Nicola Tesla gets the first U.S. patent for electrical transmission.
* Telephone service is established between cities.

1901

* The first commercial version of the escalator, invented by Charles D. Seeberger, debuts at Gimbel's department store in Philadelphia.
* The first U.S. oil gusher occurs near Beaumont, Texas. U.S. oil production reaches more than 65 million barrels by the end of the year.
* Italian inventor Guglielmo Marconi picks up the first transatlantic radio signal.

1902

* Columbia engineering faculty give up right to grant Ph.D.'s

Small box respirators, shown here being worn by Australian soldiers, proved to be one of the most effective protections against poison gas in World War I.

RISE OF THE TECHNOCRATS

World War I drove home engineering's destructive power. "We have learned, with mingled amazement and pain . . . that engineering, which has so ministered to happiness and intellectual progress, has also armed that fierce creature man with new weapons of unheard of frightfulness, certain to be used in the killing of women and children," Iowa State's engineering dean Anson Marston told SPEE's 1915 meeting. Besides the advances it brought in aircraft, tanks, and submarines, the Great War introduced weapons of mass destruction in the form of chlorine, phosgene, and mustard gas that ultimately injured more than 1.3 million and killed an estimated 90,000. U.S. research and production of chemical weapons—including the American invention, lewisite—began in earnest once the United States entered the conflict in 1917, becoming the largest government research program in the country's history.

The contribution of engineers to U.S. prosperity inspired SPEE President Charles F. Scott, in 1922, to challenge members to think bigger. "The increasing importance in our modern life of professional engineers and of men with engineering training for leadership in industrial and other fields brings larger opportunities to the engineering schools and imposes upon them increased responsibilities." No one at the time personified the engineer as leader more than Herbert Hoover, an Iowa-born, Stanford-trained mining engineer. After running an international relief effort for Belgium after it fell to Germany in World War I, he was tapped by President Woodrow Wilson to manage the nation's food supply after the United States entered the war. As commerce secretary under Warren Harding, he organized another large-scale relief effort following a 1927 Mississippi flood. After he won the presidency the next year, a *New York Times* writer observed, "The modern technical mind was for the first time at the head of a government."

The need for that "modern technical mind" continued even after Hoover's defeat by Franklin Roosevelt in 1932. Civil engineer and college president Arthur Morgan served as first chair of the Tennessee Valley Authority, a system of dams and rural electrification that remains the largest federal economic development agency and a social engineering experiment.

World War II gave new prominence to the scientific underpinnings of engineering as the United States strove to outpace Germany and Japan in advanced weaponry. Results included radar, the computer, systems theory, jet propulsion, long-range rockets and missiles, synthetic rubber, penicillin, and DDT, as well as the atomic bomb.

1902

* Columbia engineering faculty give up right to grant Ph.D.'s

1904

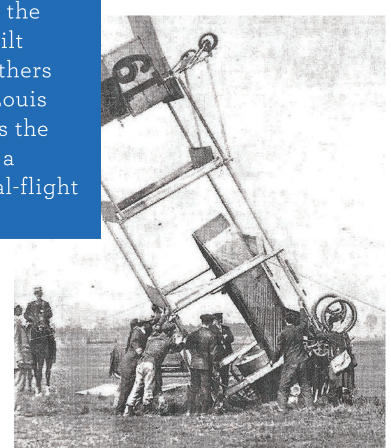
* The world's first auto race, the French Grand Prix, is held on a 100-km circuit near Le Mans.

1905

* The Society of Automotive Engineers is formed.

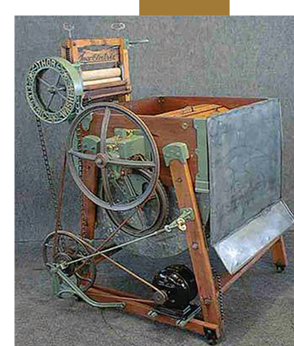
1907

* A gyroplane (forerunner of the helicopter) built by French brothers Jacques and Louis Breguet makes the first ascent of a piloted vertical-flight aircraft.



1908

* The Thor, the first automatic laundry machine, is invented by Alva J. Fisher and goes on sale in Chicago.
* The American Institute of Chemical Engineers is formed.



1910

* SPEE membership has grown sufficiently to warrant publication of a monthly periodical "devoted to technical education" called the *Bulletin of the Society for the Promotion of Engineering Education.*

Students at work in a Cornell University laboratory. An archive document suggests it's the servo-mechanisms and control-systems lab, part of a new electrical engineering building dedicated in 1955.

TEACHING IS TRANSFORMED

Only a minority of engineering students would pursue advanced degrees. Industry increasingly needed graduates who didn't require extensive on-the-job training. And a curriculum front-loaded with calculus, chemistry, and physics failed to retain students who thrived on projects and hands-on experiments. An upshot was another form of expansion: the emergence of engineering technology as a separate degree, starting in 1951 at the University of Houston. Other universities followed, including engineering powerhouses Purdue and Texas A&M. SPEE, by then renamed the American Society for Engineering Education, would adjust, at times uncomfortably, to both kinds of instruction. Eventually, the project-based teaching promoted by ET programs was rediscovered by reformers and found its way back into some of the nation's premier engineering classrooms.

Consider team-based first-year design courses. Now widespread, such project-based learning was a radical departure in 1988 when bioengineer Eli Fromm, then a professor of electrical and computer engineering at Drexel University, introduced the reform—partly in response to employer complaints that the nation's engineering graduates were poorly prepared for real-world work. With NSF backing, he then established the Gateway Engineering Education Coalition in 1992 to implement and assess the impact on students and faculty of overhauled first-year experiences at Drexel and other institutions. A decade later, coalition schools found that retention rates had risen significantly for women and African-Americans in the hands-on introductory courses. Engineering educators like ASEE Fellow Jacquelyn Sullivan and her colleagues at the University of Colorado, Boulder documented similar gains.

Those pioneering efforts paved the way for a proliferation of service-learning projects, Grand Challenge Scholars programs, entrepreneurship courses, and other innovations that have helped increase student engagement, success, and diversity. They also generated interest in—and scholarship on—K-12 engineering education.

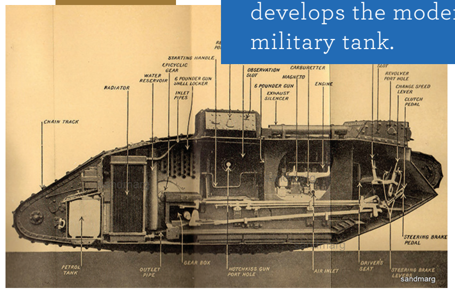
To meet the nation's need for more, better-trained engineers, universities will continue to roll out new specialties. While fields such as cybersecurity capture headlines, the emergence of engineering education as a full-fledged discipline may produce the broadest impact. The sea change began with the 1993 restructuring of ASEE's *Journal of Engineering Education* into a publication for peer-reviewed research papers on teaching and learning. Purdue followed a decade later with the establishment of America's first school of engineering education. Today, more than a dozen engineering colleges have programs offering bachelor's degrees to Ph.D.'s., and ASEE's online scholarly publication, *Advances in Engineering Education,* just celebrated its 12th anniversary. ASEE's founders, themselves intent on uplifting and bringing order to engineering education practice, would approve.

1911

* General Electric markets the world's first refrigerator.

1913

* The assembly line is introduced to manufacture Ford Model T's.
* The Institution of Mechanical Engineers commences its own examinations for graduates in a drive to improve and control training. The tests are not entirely technical; general knowledge papers test candidates' reading of Chaucer and Tennyson.



1914

* The world's first car wash opens in Detroit.
* Ernest Swinton, a British military officer, develops the modern military tank.

1917

* HMS Argus, the first vessel to be designed for use as an aircraft carrier, launches.

1919

* Charles Strite designs the pop-up toaster, which receives a patent in 1921 and is launched in 1926.

ASEE BY THE NUMBERS

NUMBER OF MEMBERS

10,679

MEMBERSHIP BY RACE & ETHNICITY

WHITE, NON-HISPANIC	52%
NON-RESPONDERS	23%
ASIAN/PACIFIC	11%
DECLINE TO ANSWER	5%
BLACK, NON-HISPANIC	5%
HISPANIC	4%

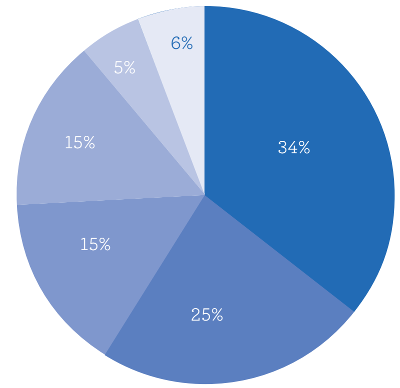
SNAPSHOT

NUMBER OF INSTITUTIONS	414
NUMBER OF DISCIPLINES REPRESENTED	31
ENGINEERING DEANS COUNCIL MEMBERS	336
ATTENDANCE AT THE 2018 ANNUAL CONFERENCE	3,880
NUMBER OF DIVISIONS	53
NUMBER OF SECTIONS	12
BOARD OF DIRECTORS' ADVISORY COMMITTEES	12
GLOBAL PARTNERS	10

MEMBERSHIP BY GENDER

FEMALE	26.8%
MALE	68.9%

MEMBERSHIP BY ACADEMIC RANK



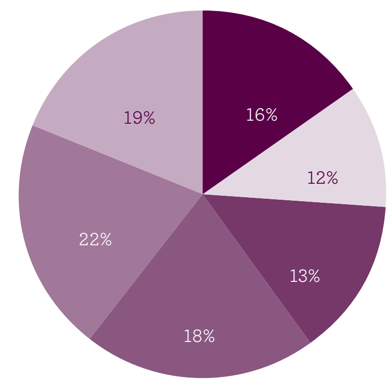
- Professor (34%)
- Other Acad. (25%)
- Assoc. Prof. (15%)
- Asst. Prof. (15%)
- Corp. / Gov. (5%)
- Instructor (6%)

SINCE ITS 1893 KICKOFF MEETING, ASEE HAS GROWN TO INCLUDE GLOBAL PARTNERSHIPS WHILE CONTINUING TO ADVANCE ALL FIELDS OF ENGINEERING AND ENGINEERING TECHNOLOGY EDUCATION, PRESCHOOL TO POSTDOC.

DID YOU KNOW...

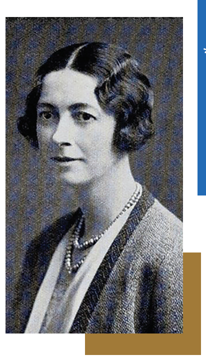
- ASEE's 1893 inaugural meeting featured a paper calculating that the supply of civil engineers had "nearly approached the limit of demand."
- ASEE members represent all segments of engineering education, from preschool through late-career professionals.
- ASEE publishes two scholarly journals, the *Journal of Engineering Education* and *Advances in Engineering Education.*
- ASEE's *Profiles of Engineering and Engineering Technology Colleges* is the national media's go-to source for engineering college data.
- ASEE is overseeing a National Science Foundation-supported project on Transforming Undergraduate Education in Engineering.
- ASEE's Deans Diversity Pledge has garnered well over 200 signatures and now includes a website to collect best practices.

LENGTH OF MEMBERSHIP



- 0 to 1 years (16%)
- 1 to 2 Years (12%)
- 2 to 5 Years (13%)
- 5 to 10 Years (18%)
- 10 to 20 Years (22%)
- 20+ Years (19%)

1924



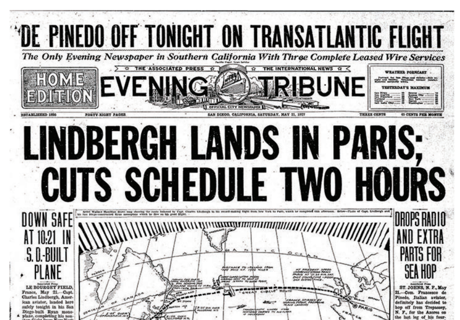
* Felix Wankel develops the world's first rotary engine.
* Verena Holmes becomes the first woman to be elected as a member of the Institution of Mechanical Engineers.

1926

* Scottish engineer John Logie Baird demonstrates the first working television.
* At General Electric, Edith Clarke becomes the first woman professionally employed as an electrical engineer. She later joins the University of Texas at Austin, becoming the first female EE professor.

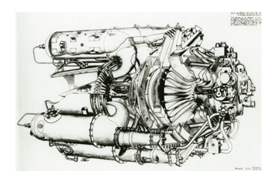
1927

* U.S. pilot Charles Lindbergh completes the first solo transatlantic airplane flight.


DE PINEDO OFF TONIGHT ON TRANSATLANTIC FLIGHT
The Only Evening Newspaper in Southern California With Three Complete Leased Wire Services
HOME EDITION
EVENING TRIBUNE
LINDBERGH LANDS IN PARIS; CUTS SCHEDULE TWO HOURS
DOWN SAFE AT 10:21 IN S.D.-BUILT PLANE
DROPS RADIO AND EXTRA PARTS FOR SEA HOP

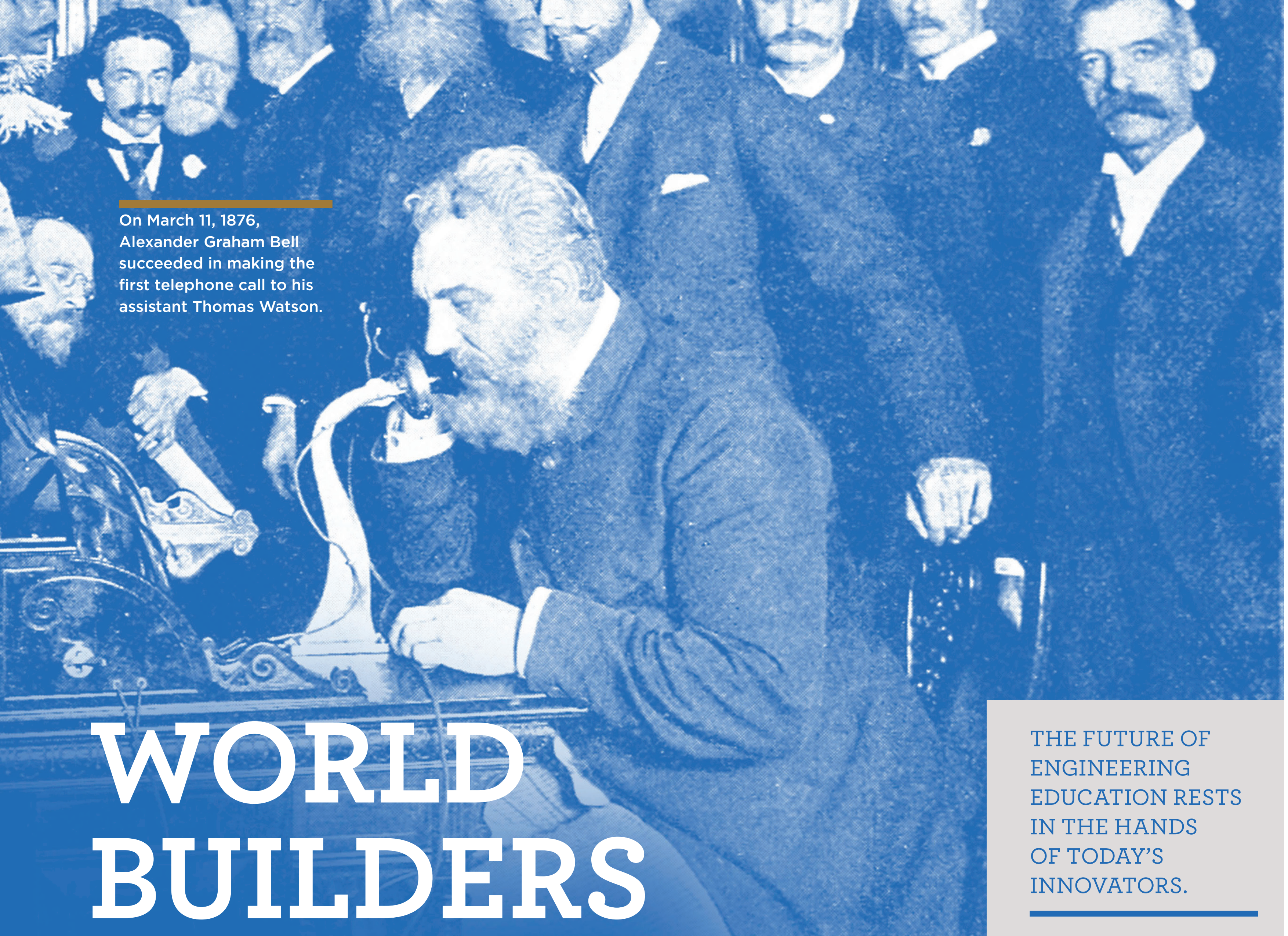
1930

* SPEE publishes the Wickenden study, A Report of the Investigation of Engineering Education, 1923-1929.
* Frank Whittle patents a turbojet engine.



1935

* Hungarian-Argentine journalist Laszlo Biro invents the ballpoint pen.



On March 11, 1876, Alexander Graham Bell succeeded in making the first telephone call to his assistant Thomas Watson.

WORLD BUILDERS

THE FUTURE OF ENGINEERING EDUCATION RESTS IN THE HANDS OF TODAY'S INNOVATORS.

HISTORY IN THE MAKING

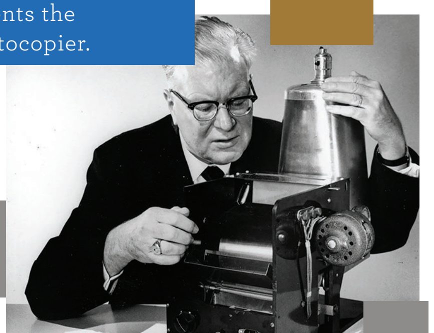
"Mr. Watson, come here. I want to see you." When the sound of Alexander Graham Bell's voice reached the ear of assistant Thomas Watson by way of a mouthpiece, transmitter, wire, and receiver, it proved their concept of a telephone. Then came the engineering challenge. To begin with, the device could convey only simple words, whereas more complicated speech was indistinct and muffled. It also needed a system to connect calls. Bell and other innovators—including Thomas Edison—tackled these problems with competitive zeal. Within two years of Bell's 1876 breakthrough, a telephone exchange opened. Within eight years, the industry would revolutionize communication. A century and a half later, the phone remains a magnet for creative engineers. Now a wireless, voice-activated computer of ever expanding capability, it's a premier product of Apple, the world's first trillion-dollar public company.

Future "Mr. Watson, come here" moments in research and development will create new industries, generate new wealth, and open up new disciplines. They will test the capacity of engineering schools to anticipate the job market and of students and instructors alike to become lifelong learners. Among a number of emerging fields, four look like strong candidates for a Bell-like breakthrough, given their ability to inspire talent and attract funding: quantum computing, fusion power, biotechnology, and resilience engineering.

Quantum computing, building on the motion and interaction of subatomic particles, may be nearing a breakthrough stage—or maybe not. Scientists aren't sure why quantum particles can appear to be in two places at once, but they do know a quantum computer could perform feats that cannot now be imagined, solving problems in seconds that would take an eternity with conventional computers. Getting one to work, however, requires controlling unpredictable quantum bits, or qubits. The National Science Foundation, Department of Energy, and Department of Defense are each funding quantum research, anticipating dramatic advances in sensors, imaging, networking, computation, and development of materials. NSF's $30 million Quantum Leap initiative supports some 20 projects linking industry, including IBM's Watson Laboratory and Google, with universities such as Georgia Tech, MIT, and the University of Maryland. Eventually, NSF expects to see new quantum science and engineering curricula that "galvanize the science and engineering community" and instill "quantum thinking."

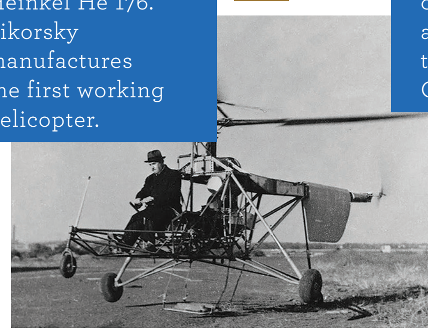
1937

* Chester F. Carlson invents the photocopier.



1939

* German test pilot Erich Warsitz flies the first rocket-powered aircraft, the Heinkel He 176.
* Sikorsky manufactures the first working helicopter.

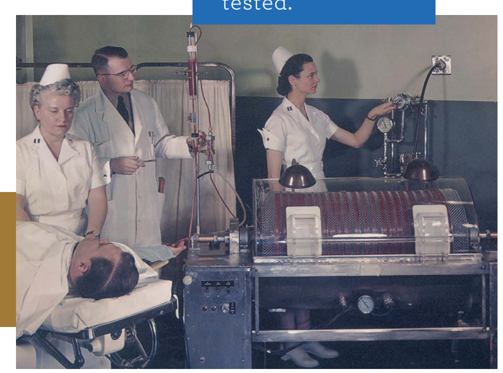


1942

* Enrico Fermi demonstrates the first self-supporting nuclear chain reaction in a laboratory at the University of Chicago.

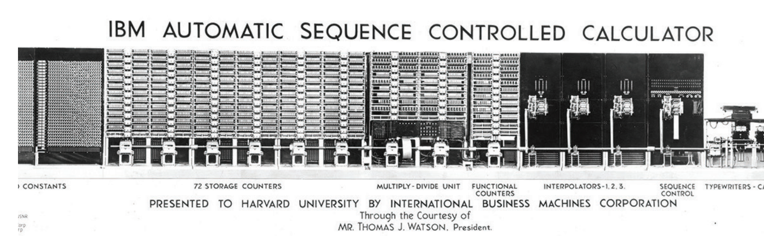
1943

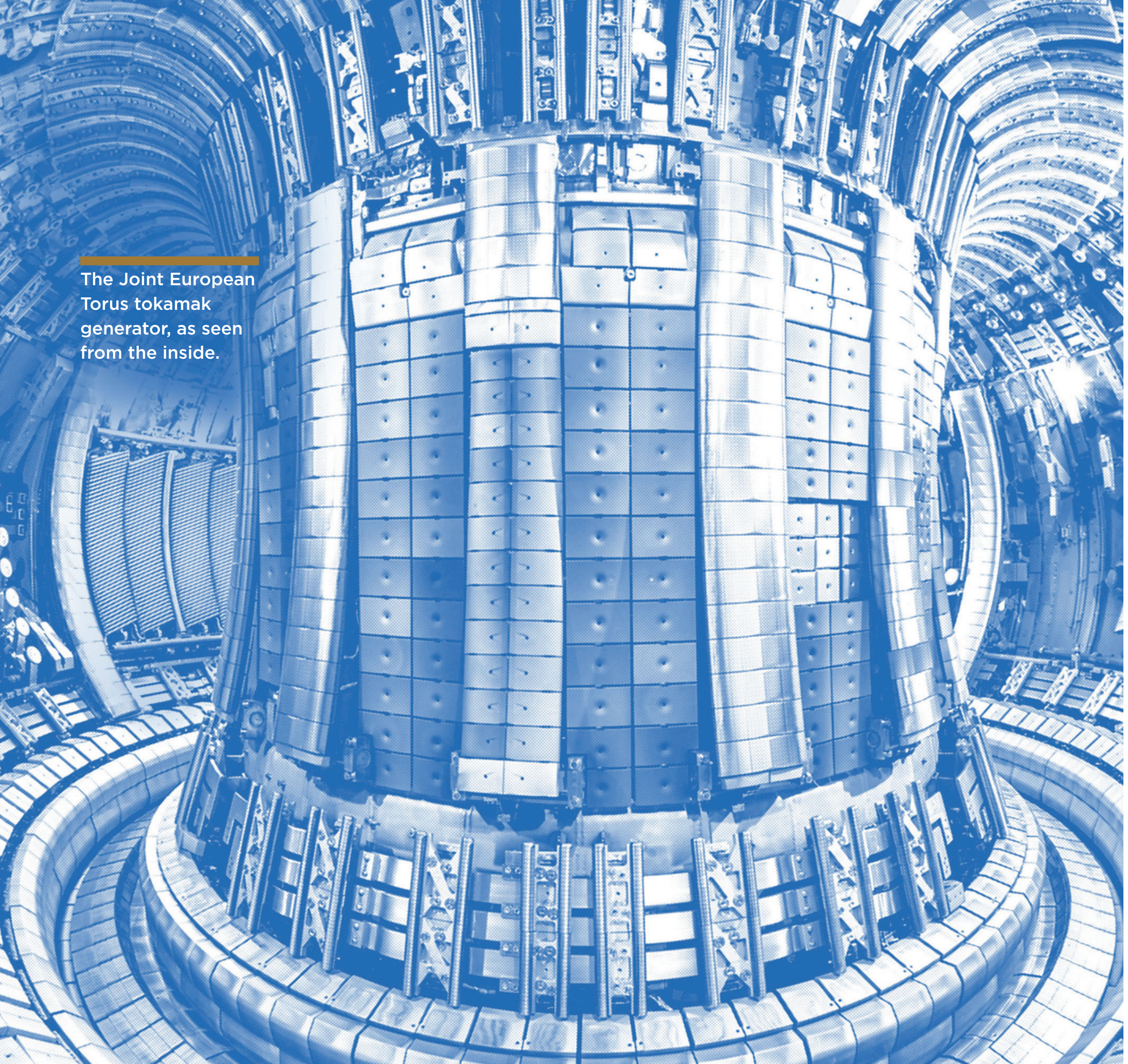
* The first kidney dialysis machine is tested.



1944

* Howard Aiken develops the first fully automatic large-scale calculator, known as the Harvard Mark I. It has more than 750,000 parts.





The Joint European Torus tokamak generator, as seen from the inside.

POWER STRUGGLES

As engineers wrap their minds around quantum thinking, they can contemplate the impact of another world-altering, physics-driven discovery: harnessing nuclear fusion, the process that powers the sun and the stars. The focus of an international multibillion-dollar research commitment, it would bring a thousand-year supply of energy that produces no greenhouse gases or nuclear waste, can't be used by rogue states to build weapons, and won't cause a meltdown. It could spawn industries and solve problems at a level limited only by engineers' imagination. The International Fusion Energy Organization (ITER) is currently erecting a giant experimental tokamak reactor in France, but rising costs and delays mean that it may not lead to commercial power until 2050 or later. Researchers at MIT, working with a new firm called Commonwealth Fusion Systems, say they might be able to beat ITER to producing nuclear fusion power. Using a new superconducting material—a steel tape coated with a compound called yttrium barium-copper oxide (YBCO)—they are developing superconducting electromagnets, the key component in what they intend to be a compact tokamak prototype much more powerful for its size than the ITER facility.

If, despite its obvious benefits, fusion energy is not commercially viable, other technology will be required to resolve the tension between the world's growing energy demands and the imperative of curbing carbon emissions. One possibility is advanced fission reactors. As described in a September 2018 MIT report, these include small light-water modular reactors that use advanced construction techniques as well as helium-, sodium-, fluoride-, or lead-cooled reactors and a design that employs molten salt as both coolant and fuel. Meanwhile, biological engineering may help fill the energy gap with new fuels derived from carbon dioxide or methane. But the "bio-economy" encompasses much more. New genetic engineering tools and platforms promise rapid advances in everything from microbes that clean up contaminated sites to lab-developed meat, protein-rich plants, improved aquaculture, control of disease-carrying insects, and protection of bee colonies. As a 2017 National Academies panel noted, it is now possible to mine genetic data from a wide variety of organisms "and then to synthesize new genetic constructs that modify the function of living organisms." Already, efforts are under way to introduce genes from the extinct woolly mammoth into elephants so they can adapt to frigid climates. Achieving the field's industrial potential will draw on artificial intelligence, computing, and big data, in addition to genetic engineering and chemistry. The potential for discovery is vast.

1945

* Alan Turing develops the Turing-Welchman "bombe," an electromechanical machine capable of deciphering the German Enigma codes.

1947

* Chuck Yeager breaks the sound barrier flying the X-1.

1949

* The de Havilland Comet, the world's first jet airliner, makes its maiden flight.

1950

* Canadian John Hopps invents the cardiac pacemaker.
* Percy Lebaron Spencer patents a microwave oven.

1951

* The first usable electricity from nuclear fission is produced at the National Reactor Station, Idaho. Four years later, the neighboring town of Arco is the first to be powered by nuclear energy.

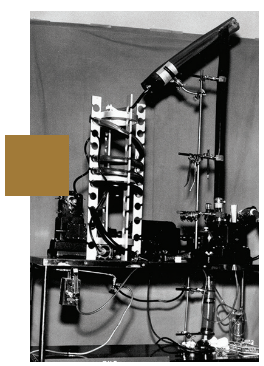
Promising technologies could help arid regions like Diego de Almagro, Chile, which was battered by heavy rains and flooding in 2015, as well as mitigate damage caused by climate change.

PREPARED FOR THE WORST

While engineers can't prevent earthquakes or the extreme storms, droughts, and rising sea levels linked to climate change, they can work to save lives and mitigate impact. They can design storm-resistant structures, coastal protection, and methods to manage forests; systems for coping with medical shortages; and communication networks, transportation, power grids, and cyberinfrastructure that can either withstand a disaster or bounce back quickly. This is resilience engineering, an interdisciplinary field that encompasses dams and levees, land-use planning, building codes, safety-management tools, accident analysis, and risk assessment. It also includes resilient communities that address "the complex interactions of people, the services they need, and the local economy that sustains life and drives growth," according to a 2015 National Institute of Standards and Technology workshop document. Without it, the cost of responding to disasters will continue to climb.

The need is particularly acute in urban areas, where more than 60 percent of the world's populace will live by 2050. Government interest in resilience has grown in the wake of deadly natural disasters. Los Angeles has a resilience manager, a sign that the field is gaining traction. The Idaho National Laboratory conducts an annual energy-focused Resilience Week symposium. NSF is looking to develop "a new science of integrative designs in interdependent critical infrastructure." New tools are available, such as sensors that detect weaknesses in structures before they become serious, inspection robots, and self-healing materials. While engineers can develop advanced structures and systems, the existing ones—the built environment we occupy now—must still be strengthened.

If mitigation is inadequate and climate change has passed its tipping point, society may soon clamor for geoengineering—large-scale efforts to reverse global warming. These could include removal of carbon from the atmosphere and storing it and various methods to cool the planet, such as injecting aerosols into the stratosphere to block sunlight from reaching Earth or thinning or eliminating cirrus clouds so long-wave radiation can escape the atmosphere. Think of a Manhattan Project global in scope and potential impact, with the world's fate in the balance. It's the ultimate engineering challenge.

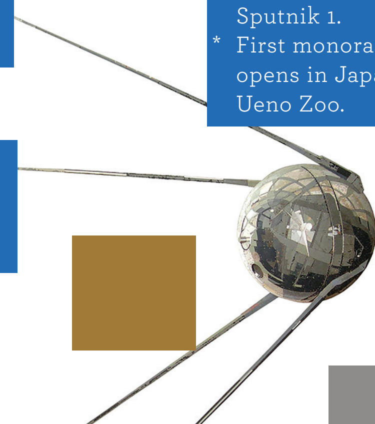


1953
* The heart-lung machine is developed by John H. Gibbon Jr. of Philadelphia.
* The National Television System Committee (NTSC) adopts RCA's technology as the U.S. standard for color television.

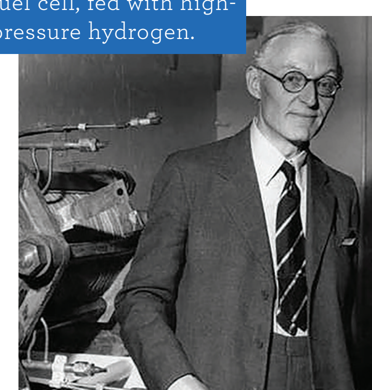
1954
* The first practical photovoltaic solar cell is demonstrated.

1956
* Christopher Cockerell invents the modern hovercraft.

1957
* Russia launches the first satellite, Sputnik 1.
* First monorail opens in Japan's Ueno Zoo.



1959
* Francis Thomas Bacon builds the first modern fuel cell, fed with high-pressure hydrogen.



1960
* The Sealed Air Corporation is formed by U.S. engineers Alfred Fielding and Marc Chavannes in order to market their new invention, Bubble Wrap.

Duke Engineers for International Development working with Bridges to Prosperity in Bolivia.

INSTRUCTIONAL OVERHAUL

Don Millard, of NSF's Engineering Education and Centers Division, has said engineering could be the liberal arts degree of the future. Yet the rapid pace of technological change and emerging fields—quantum computing and 3-D-printed body parts, for instance—makes it hard for educators to match instruction with the state of the art in engineering. Should they cease trying to impart the latest knowledge in their disciplines and stick to math-, physics-, and chemistry-based fundamentals? Should they concentrate on just teaching students how to learn? ASEE President-elect Stephanie Adams, dean of engineering and technology at Old Dominion University, sums up the challenge with a quote by former U.S. Education Secretary Richard Riley: "We must prepare students for jobs that don't yet exist, using technologies that have not yet been invented, in order to solve problems we don't yet know are problems." While T-shaped engineers—those with both domain knowledge and the ability to work across disciplines—are popular with industry, even more desirable are M-shaped engineers with expertise in more than one discipline: a product designer who is also a coder; an expert in both big data and electronics; a musician-animator. The so-called wicked problems that tomorrow's students will tackle won't have solutions in the back of a book. Besides basic engineering courses, professional skills, general education, capstone design, and math and science, students should have "making and doing" opportunities to learn decision-making amid risk and uncertainty. Adams puts particular stress on systems thinking—techniques for synthesizing and recognizing the interconnectedness of and relationships between problems.

Tomorrow's students will have some built-in advantages. Incoming faculty are more inclined than their predecessors to break out of silos and cross disciplinary boundaries, notes Darryll Pines, engineering dean at the University of Maryland, College Park. Students "don't need to know the fundamentals as well as I did," he adds. Where Pines might have used a pencil-and-paper calculation to "ballpark" problems, today's students must master sophisticated software tools to reach solutions. They will also need "more experiential learning opportunities—that's where they pick up real-world knowledge," he says.

Among the proven methods of offering experience that can also expose students to cutting-edge techniques and ideas is engaging undergraduates in sponsored research. NSF, for instance, considers it "one of the most effective ways to attract talented undergraduates to and retain them in careers in science and engineering." Besides teaching the skills of scientific discovery, research projects can also put students to work uncovering 21st-century problems. One group, for instance, assisted Virginia Tech professor Marc Edwards in his investigation of lead in the Flint, Mich., water supply. These are among many ways tomorrow's students will realize their own "Mr. Watson, come here" moments.

1961

* Yuri Gagarin of the Soviet Union becomes the first human in space.

The Huntsville Times

Man Enters Space

'So Close, Yet So Far,' Sighs Cape

U.S. Had Hoped For Own Launch

Soviet Officer Orbits Globe In 5-Ton Ship

Maximum Height Reached Reported As 188 Miles

Hobbs Admits 1944 Slaying

To Keep Up, U.S. Must Run Like Hell

1962

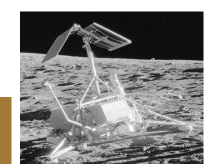
* The implantable heart pacemaker is patented by electrical engineer Wilson Greatbatch.

1964

* ASEE moves its headquarters to Washington, D.C.
* Douglas Engelbart invents the computer mouse.
* Tokaido Shinkansen, the world's first high-speed rail line, opens between Tokyo and Shimonoseki, with trains traveling at speeds of 130 mph.

1966

* Russian Luna 9 probe achieves first soft moon landing.

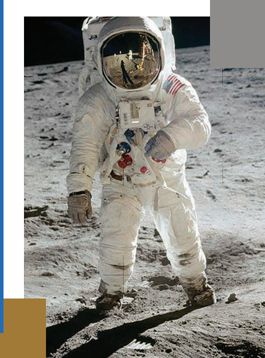


1968

* Clayton Jacobson patents the Jet Ski.

1969

* U.S. astronauts Neil Armstrong and Edwin "Buzz" Aldrin land on the moon.
* The world's first automatic teller machine (ATM) is installed at a Chemical Bank branch on Long Island.
* The supersonic Concorde passenger jet takes its first flight. Commercial service runs from 1976 to 2003.



TRAILBLAZERS

FROM FIRST-YEAR DESIGN TO DIVERSITY INITIATIVES, ASEE PIONEERS HAVE MADE THEIR MARK ON HISTORY.

CHANGE AGENTS

For 125 years, ASEE has provided a sounding board and launch pad for educational reform and innovation, responding to the needs of the nation, industry, and its own mission. At the same time, as its various reports make clear, the Society has been forthright and reflective in noting gaps between goals and practice—in teaching, retention, and preparing an engineering workforce that reflects the country's diversity. Below is a small sample of people who have challenged the status quo and fostered change.

HOWARD G. ADAMS,

an author and speaker on mentorship, was the first executive director (1978-94) of the National GEM (Graduate Degrees for Minorities in Engineering and Science) Consortium. GEM's fellowships and internships have assisted some 3,000 underrepresented minorities in obtaining advanced degrees in engineering and applied science.

ELEANOR BAUM,

ASEE Fellow and its first female President (1995-96), was a leader of a project-based reform of first-year engineering courses hailed by an ASEE report as "the largest and potentially most revolutionary effort" to improve engineering education of the day. She became the first female dean of a U.S. engineering school at New York's Pratt Institute in 1984. In 1987 she was named dean of the Albert Nerken School of Engineering at Cooper Union, where, during her 13-year tenure, female enrollment grew from 3 percent to more than 30 percent.

1970

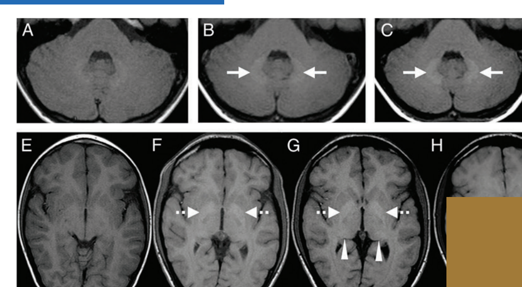
* The Boeing 747, the first jumbo jet, arrives at Heathrow Airport in London, completing its maiden flight from New York.

1971

* The Soviet Union launches the first space station, Salyut 1.

1972

* Raymond Damadian patents the world's first MRI (magnetic resonance imaging) scanner; he undertakes the first full-body scan in 1977.



1973

* American engineer Martin Cooper invents the mobile phone.

1976

* The inaugural Cray-1, the first commercially developed supercomputer, is installed at Los Alamos National Laboratory.

JOSEPH BORDOGNA,

emeritus professor and former dean of engineering at the University of Pennsylvania, is an ASEE Fellow and champion of diversity, including in K-12 engineering education. Among his signature initiatives as an assistant director for engineering and then deputy director at the National Science Foundation (1991-2005) was the ADVANCE women-in-science program. He also helped found the Philadelphia Regional Introduction for Minorities to Engineering in 1973.

WALTER BUCHANAN,

an ASEE Fellow and past President (2012-13) who is a professor of electronic systems engineering technology at Texas A&M University, has been a tireless advocate for engineering technology education. The listserv he created in 1995 is now a flourishing network of more than 4,000 members who exchange information and pursue such shared goals as changing federal policy toward ET. Buchanan also participated in a National Academy of Engineering study of ET education.

EUGENE M. DELOATCH,

an ASEE Fellow and the Society's first African-American President (2002-2003), is credited with educating more African-American engineers than any other individual—during 26 years at Howard University, where he chaired the electrical engineering department, and then as founding dean of Morgan State University's School of Engineering (1984-2016). Cofounder of the annual Black Engineer of the Year Program, he also chaired the Council of Deans of Engineering of the Historically Black Colleges and Universities.

AMELITO G. ENRIQUEZ,

a professor of engineering and mathematics at Cañada College and past chair of ASEE's Two-Year College Division, has been at the forefront of strengthening the pathways into engineering for community college students—many of them from low-income, immigrant backgrounds similar to his own. Initiatives include bridge programs for military veterans, intensive math and physics placement test "jams," STEM career exploration institutes for high school freshmen, scholarships and summer research internships for two-year college students, and summer teaching institutes for faculty. He has earned widespread recognition, including ASEE's 2017 National Outstanding Teaching Award and the 2010 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring.

RICHARD FELDER,

professor emeritus of chemical engineering at North Carolina State University and an ASEE Fellow, cofounded (with James Stice) the National Effective Teaching Institute (NETI)—a highly regarded workshop for instructors now in its 28th year. The first National Science Foundation grantee in the field of engineering education, he has contributed over 300 publications to the fields of science and engineering education and chemical process engineering.

ELI FROMM,

an ASEE Fellow, professor emeritus of electrical and computer engineering. and director of the Center for Educational Research at Drexel Univeristy, was instrumental in overhauling the first- and second-year engineering curriculum, starting in 1988 with the E4 program (Enhanced Educational Experience for Engineers) that brought social science professors into engineering classrooms, developed students' communication skills, and added design projects, labs, and co-op programs. In 1992, with NSF funding, he launched the Gateway Coalition, which implemented and extended many of E4 program's ideas at 10 partner institutions and helped to shine a spotlight on engineering education reform nationwide. A National Academy of Engineering member and former NSF bioengineering program manager, he received the 2002 Gordon Prize for Innovation in Engineering and Technology Education.

KAMYAR HAGHIGHI (1950-2011),

founding head of Purdue's School of Engineering Education (2004-2010) and recipient of ASEE's 2009 Chester A. Carlson Award, led the vanguard of engineering education reform. He launched the nation's first Ph.D. program in engineering education, created the first institute for P-12 engineering research and learning, saw ABET accreditation of Purdue's multidisciplinary engineering program, and transformed first-year engineering with a design-focused curriculum.

DONALD KEATING (1935-2009),

professor emeritus of mechanical engineering at the University of South Carolina and former chair of ASEE's Graduate Studies Division, was a leader in graduate education reform, advocating for lifelong learning and advanced professional studies for America's engineers as chair of a national task force.

SUE KEMNITZER,

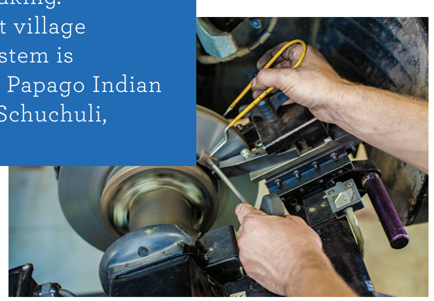
deputy director of the National Science Foundation's division of engineering education and centers from 1990 to 2016, was an ardent advocate for broadening participation and diversity. She coauthored the first three issues of "Science and Engineering Indicators" for the National Science Board, served as executive director of the 1986 Congressional Task Force on Women, Minorities, and the Handicapped in Science and Technology, and supported young engineering faculty through NSF's CAREER program.

BILLY VAUGHN KOEN,

a celebrated nuclear engineer and electrical engineering professor emeritus at the University of Texas at Austin, championed a number of teaching innovations, including self-paced instruction (in the 1960s) and Internet relay chats (early 1990s). Among his signature contributions: *Definition of the Engineering Method,* published in 1985 by ASEE, which describes the engineering problem-solving process. A Fellow and former ASEE board member, he won the 1993 Lamme Medal and Centennial Award.

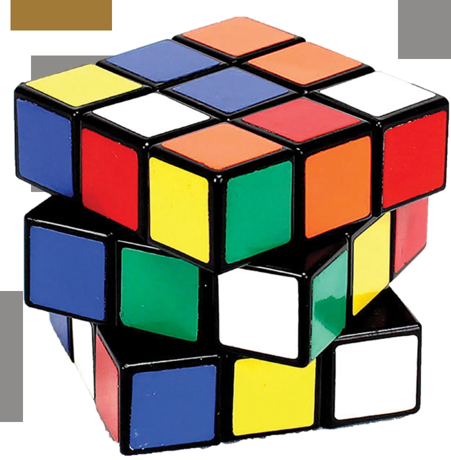
1978

* Electrical engineer David Arthurs develops a hybrid electric car that features regenerative braking.
* The world's first village photovoltaic system is installed on the Papago Indian Reservation in Schuchuli, Arizona.



1980

* The Hungarian architect Erno Rubik's cube goes on sale. The 3-D, twisting cube becomes one of the top-selling toys of all time.



1981

* Lockheed's F-117A Nighthawk is the first aircraft to use stealth capability.
* Solar One is completed. The 126-acre pilot solar-thermal project produces 10 MW using 1,818 mirrors, or heliostats, that concentrate the sun's rays on a collector tower. The energy is then stored for later use.

1982

* AutoCad, the computer-aided design tool, is released.

OTIS E. LANCASTER,

mathematician, a professor of engineering education at Penn State and ASEE's 1977-78 President, was an early proponent of research on teaching and learning effectiveness. In the 1960s, he developed a summer institute on effective teaching for young engineering teachers. His illustrated 1974 book, *Effective Teaching and Learning*, became a bible for instructors.

RAYMOND LANDIS, 1940-2018

dean emeritus of engineering, computer science, and technology at California State University, Los Angeles (1985- 2001) and an ASEE Fellow, launched America's first minority engineering program in 1973 at Cal State Northridge. He also developed a widely adopted model for transforming first-year programs and a text for studying engineering that is used at hundreds of institutions nationwide.

MARYBETH LIMA,

an ASEE Fellow and professor of biological and agricultural engineering at Louisiana State University, is a pioneer of community engagement and service learning in engineering. Her LSU Community Playground Project, a first-year design/build experience she introduced in 1998, shortly after joining LSU's faculty, has paired undergraduates with local schools and families to create more than 30 dream playgrounds now enjoyed by 12,000 children every day. She has published and presented extensively on community engagement in engineering, leading to this educational innovation's widespread adoption and ASEE's 2018 Carlson award.

MICHAEL LOUI,

an ASEE Fellow, professor of engineering education at Purdue University, and professor emeritus of electrical and computer engineering at the University of Illinois, has elevated the writing quality and academic integrity of engineering education research in various capacities, including as editor of the *Journal of Engineering Education* (2012-2017) and campus research integrity officer. He also led the team that revised ASEE's plagiarism policy in 2014 and produced ASEE's first "New Engineering Educator's Survival Kit" in 1984.

LOUIS MARTIN-VEGA,

North Carolina State University engineering dean and past ASEE President (2016-17), has championed diversity and K-12 education within ASEE and on campus. As a National Science Foundation officer, he helped establish the Research Experiences for Teachers in Engineering (RET) program. At NC State, he oversaw the establishment of a top-performing STEM early college public high school based on engineering's grand challenges.

WILLIAM OAKES,

an ASEE Fellow and Carlson award winner, is codirector of EPICS: Engineering Projects in Community Service, begun at Purdue University in 1995, in which undergraduate teams design and deploy solutions for local organizations. A founding faculty member of Purdue's School of Engineering Education, he shared the National Academy of Engineering's Bernard M. Gordon Prize for Innovation in Engineering and Technology Education.

FRANKLIN W. OLIN (1860-1951),

founder of the Olin Corp., was a civil engineer, entrepreneur, and philanthropist whose impact on U.S. higher education through the F. W. Olin Foundation includes the construction of 78 fully equipped buildings on 58 campuses and the creation of a radically reimagined, entrepreneurial engineering school—from scratch. The $460 million pledged to Olin College in 1997 remains one of the largest grants in the history of American higher education.

ELIZABETH A. PARRY,

an ASEE Fellow and former IBM engineer, has been a leading proponent of PreK-12 engineering and broadening participation in STEM at every level. As a founding member of North Carolina State University College of Engineering's outreach program, she established a tiered mentoring system for math involving graduate students, undergraduates, K-12 students, parents, and teachers—practices that expanded to other programs and were recognized with the 2012 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring. She also was a founding member and past chair of ASEE's Precollege Division as well as the founding chair of the ASEE Board's P-12 Committee.

GEORGE D. PETERSON,

a former professor of electrical engineering and executive director of ABET from 1993 to 2007, championed an outcomes-based, continuous-improvement accreditation philosophy (ABET EC-2000) that is credited with major improvements in curricula, teaching methods, professional development, and program assessment.

DARRYLL J. PINES,

dean and professor of aerospace engineering at the University of Maryland's Clark School of Engineering since 2009, has led an effort to improve the preparation of future college students with a high school advanced engineering course. Working with ASEE's Engineering Deans Council, he has secured the support of more than 100 deans.

DONNA RILEY,

an ASEE Fellow and head of engineering education at Purdue University, regularly draws controversy, whether by challenging sexism and homophobia in engineering or questioning whether students' overseas service projects actually help local communities. In her role as a program director at NSF, she launched the REvolutionizing engineering and computer science Departments (RED) initiative.

SHERI SHEPPARD,

an ASEE Fellow and Stanford University mechanical engineering professor, began her career in the auto industry and has upped the game in engineering education research, starting with a five-year, multicampus study of 5,000 students that challenged many assumptions about instruction and learning. Winner of a Carnegie Foundation for the Advancement of Teaching Professor of the Year Award in 2014, she leads Stanford's Designing Education Lab.

1983

* Philips invents the sonic toothbrush.

1984

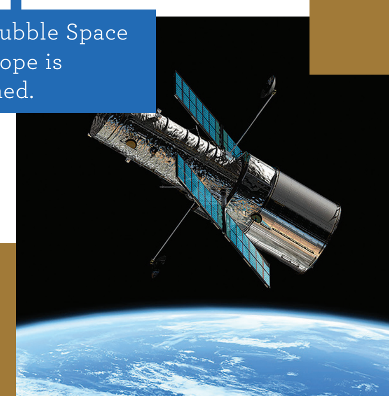
* Apple introduces the Macintosh.

1989

* Tim Berners-Lee invents the World Wide Web.

1990

* The Hubble Space Telescope is launched.



1994

* Genetically modified crops, designed to be more resistant to disease and faster growing, are introduced.

1995

* Roger Easton conceives the GPS (global positioning system), which measures time and location in all weather using a network of satellites.

1996

* Dolly the sheep, the world's first cloned mammal, is born.

KARL A. SMITH,

an ASEE Fellow, professor in Purdue University's School of Engineering Education, and University of Minnesota professor of civil engineering emeritus, is a pioneer in engineering education research. With Ruth Streveler, an associate professor of engineering education at Purdue and an ASEE Fellow, he pushed to involve social scientists and other investigators in rigorous, multidisciplinary engineering education research to improve teaching and learning.

JAMES STICE,

an ASEE Fellow and 2014 Lifetime Achievement Award winner who is a University of Texas at Austin professor of engineering emeritus, cofounded (with Richard Felder) the National Effective Teaching Institute (NETI) and developed the first center on engineering teaching and learning: the Bureau of Engineering Teaching. He also created the first course on college teaching for engineering students and was a pioneer in bringing computer-assisted instruction to the teaching of thermodynamics.

JACQUELYN SULLIVAN,

an ASEE Fellow and cofounder of the Precollege Division, is founding codirector of the award-winning Integrated Teaching and Learning program at the University of Colorado, Boulder's College of Engineering and Applied Science, which focuses on integrating hands-on design experiences for 4,200 undergraduates and more than 2,000 K-12 students annually. She spearheaded an ABET-accredited degree program that blends education and engineering courses to prepare graduates for careers in either field, and created TeachEngineering, a widely accessed digital library of classroom-tested, standards-based K-12 lesson plans.

SAMUEL TRUESDALE,

product quality manager for the Apple iPhone and a former employee development manager for Rolls-Royce, has built industry-academic ties through a number of groups, including ASEE's Conference for Industry and Education Collaboration. He also worked on graduate engineering education reform.

MAC VAN VALKENBURG (1921- 1997),

an ASEE Fellow and the University of Illinois, Urbana-Champaign's first endowed chair in engineering and later its dean, was considered the guru of electrical engineering education and a world-class teacher. An authority on circuits and systems, he was renowned for colored-chalk lectures and lucid textbooks that made difficult concepts readily understandable to generations of students around the globe. He also wrote a column for ASEE's *Prism* magazine, received the Benjamin Garver Lamme Award, and was elected to the National Academy of Engineering. The IEEE bestows an annual early-career teaching award in his honor.

KRISHNA VEDULA,

an ASEE Fellow, professor of chemical engineering, and dean emeritus of engineering at the University of Massachusetts Lowell, has been a catalyst of ASEE's global outreach. Past president of the International Federation of Engineering Societies, he also developed the Indo-Universal Collaboration for Engineering Education (IUCEE), in which Indian instructors tap U.S. expertise to improve engineering education across India.

PHILLIP WANKAT,

an ASEE Fellow and emeritus professor of both chemical engineering and engineering education at Purdue University, developed the first course on teaching engineering for grad students/TAs and coauthored the textbook *Teaching Engineering,* now in its seventh printing. The author of numerous articles and a history of chemical engineering at Purdue, he headed the university's multidisciplinary engineering program from 2001 to 2014.

BEVLEE WATFORD,

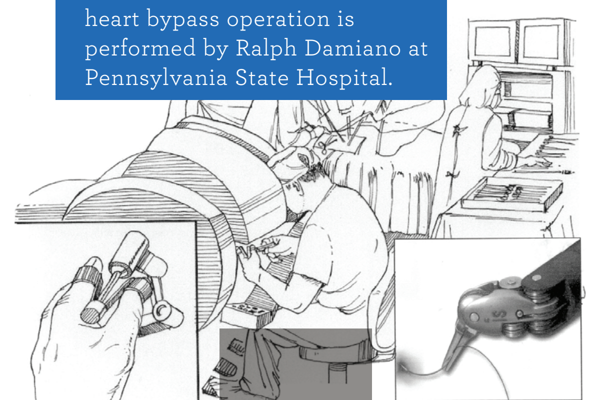
an ASEE Fellow, associate dean for academic affairs, and founding director of the Center for the Enhancement of Engineering Diversity at Virginia Tech, has been a tireless mentor and advocate for inclusion and student success. As ASEE's first African-American female President (2017-18), she organized the Society's initial Collaborative Network for Engineering and Computing Diversity (CoNECD) conference, drawing faculty and organization leaders from all underrepresented groups. CoNECD is looking ahead to its second annual event.

1997

* Fifty-five nations sign the Kyoto Protocol pledging to reduce greenhouse gas emissions. The U.S. withdraws in 2001.
* The Toyota Prius, the first mass-produced hybrid automobile, goes on sale in Japan. It is introduced worldwide in 2001.
* NASA lands the first Mars probe, prompting speculation about microbial life on the Red Planet.

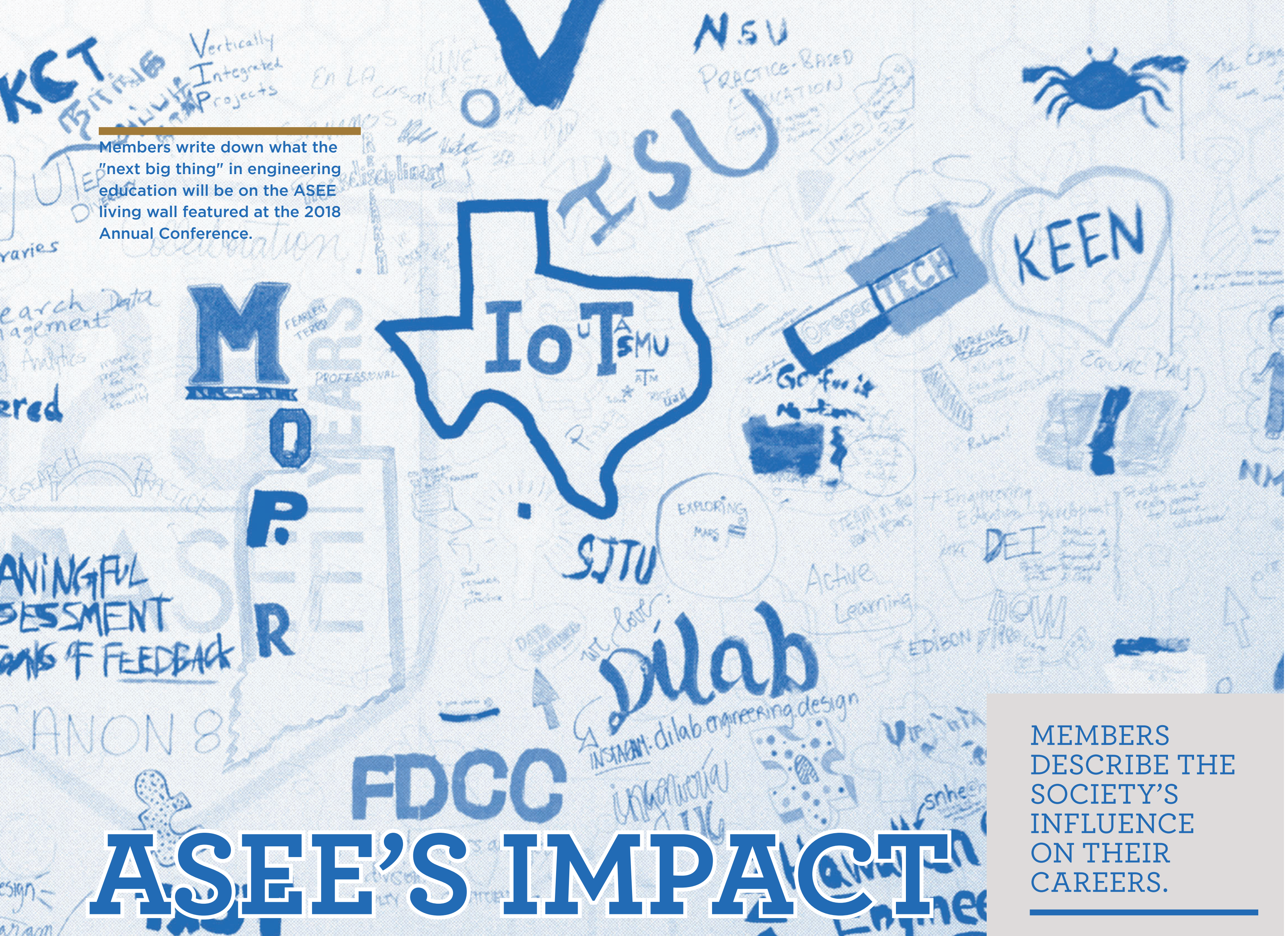
1998

* Work begins on the International Space Station.
* The first robot-assisted heart bypass operation is performed by Ralph Damiano at Pennsylvania State Hospital.



2001

* Dean Kamen (below in red) rolls out the Segway.



Members write down what the "next big thing" in engineering education will be on the ASEE living wall featured at the 2018 Annual Conference.

ASEE'S IMPACT

MEMBERS DESCRIBE THE SOCIETY'S INFLUENCE ON THEIR CAREERS.

TESTIMONIALS

"I am an engineer who has a doctorate degree from the business school. When I got to Texas A&M with my first job out of business school, I understood the significance of the engineering education field. But I did not understand its entire scope and impact. When my then department head, Walter Buchanan, was elected President of ASEE, he provided all new faculty in the department with free membership for a year. I attended the Annual Conference in Vancouver in 2011 based on his encouragement. Only after attending the Conference was I able to get an idea about the current challenges to STEM education and workforce development, meaningful ways to engage students, and the people who are making an impact, and it fascinated me. Since then, I have focused on engaging more students in better ways. If not for Walt's encouragement and support to get involved and attend the Annual Conference, I don't think I could have learned so much about engagement in engineering education.

Additionally, 2015 was the year when Woodie Flowers accepted the President's Award on behalf of FIRST, and the introduction video about him included a clip about the robotics league, which seemed exciting. When I came back home, I started looking for FIRST teams and events, and there were none. I took it on myself to see if our community would be interested in this program—and they were! I organized an info session, and about 300 people showed up interested in the LEGO League. In the short span of three years, we were able to host the largest FLL qualifier in the Central Texas region in the Bryan/College Station area.

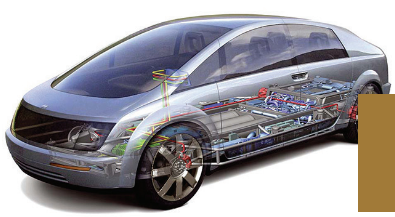
So, the 2015 ASEE Conference was a critical event in my life, and ASEE has impacted my professional growth immensely. The cherry on top is the recognition now as a '20 under 40' faculty rising star."

– MALINI NATARAJARATHINAM

Associate professor of engineering technology and industrial distribution at Texas A&M University

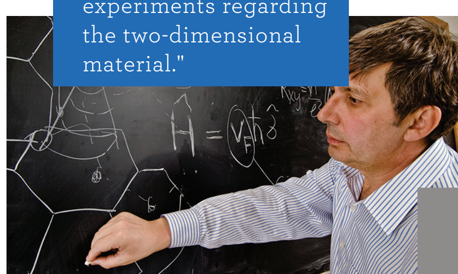
2002

* Eugene M. DeLoatch, Morgan State University's founding dean of engineering, serves as ASEE's first African-American President.
* General Motors reveals the Hy-Wire, a revolutionary concept car powered by hydrogen fuel cells that is controlled electronically, removing the need for steering wheels, pedals, and other traditional features.



2004

* Graphene is isolated by Andre Geim (pictured) and Konstantin Novoselov, who won the 2010 Nobel Prize in Physics "for groundbreaking experiments regarding the two-dimensional material."



2006

* Aqua Sciences develops a method to extract water from the atmosphere.
* Nintendo releases the Wii.

2007

* *Advances in Engineering Education*, ASEE's online publication, puts out its first issue.

2008

* The first carbon-capture-and-storage plant is built.
* The National of Academy of Engineering publishes 14 Engineering Grand Challenges.

TESTIMONIALS

"I was waiting for the bus to the 2000 ASEE Annual Conference picnic. Standing next to me was the chair of the ECE Department at Ohio Northern University. After introductions, we wound up talking for two hours. When it was time to leave, he casually mentioned that ECE was going to merge with the CS department, and asked if I would be interested in becoming the new department's first chair. Without knowing it, I had just had my initial interview for the position that I eventually received in 2001. The impact of this move was far-reaching, as I would never have become an ASEE Fellow without the generous support of the three deans that I've worked under at Northern. Being an ASEE member made that connection, and many others, possible."

– JOHN K. ESTELL
Professor of computer engineering and computer science at Ohio Northern University

"Frankly, ASEE, as an organization, a community, and a network of colleagues, has to some degree played a role in virtually every major decision and opportunity since I left industry to pursue a teaching, administration, and ultimately engineering association management career these past 40 years. Happy 125th!"

– THOMAS PERRY
Director, engineering education (ret.) at the American Society for Mechanical Engineers

"In 2011, Dr. Reg Pecen encouraged me to travel to a hydrogen fuel cell manufacturing plant for a tour sponsored by the Energy Conversion and Conservation Division. While traveling to the site, I had a chance to meet many wonderful people. During the 2014 Conference, Dr. Pecen nominated me for newsletter editor of the division, and now I am division chair. Everyone I met in 2011 has become a friend and colleague, supportive of each other. Because of my involvement, I met my future boss, Dean Jenna Carpenter, who gave me the opportunity to assist her in founding a new school of engineering at Campbell University. I have had many unique and wonderful experiences because of ASEE. A special shout-out to the PCEE (formerly K-12) Division. They were the reason I became involved in ASEE in 2008."

– LYNN ALBERS
Assistant professor of engineering at Campbell University

"ASEE helped introduce me to my wonderful mentor, Dr. Amelito Enriquez, who in turn recommended me to my current job as professor of engineering at Ohlone College. I have been so inspired to improve the learning experience for my students through the Society, and have been gratified in winning awards based on that work. I am humbled to have been the first African-American female professor to receive the outstanding teaching award from the ASEE PSW section for my inclusion and equity in pedagogy work. ASEE has helped me advocate for women and other underrepresented demographic groups."

– ROSE-MARGARET ITUA
Professor of engineering at Ohlone College

"ASEE membership has provided me with two decades of professional development, networking with diverse colleagues, and opportunities to learn about and advance in leadership roles."

– JANET CALLAHAN
Dean of the College of Engineering at Michigan Tech University

"Miriam Heller and Brian Yoder of ASEE spearheaded a survey of sustainability in engineering education, and the results will have impact for years! We now know more about how engineering education is developing leaders in sustainability, from climate change and global cycling of nutrients to innovative energy technologies and life cycle assessment. The survey results are influencing my career by highlighting gaps in engineering education and demonstrating where my colleagues and I at Syracuse University can devote efforts to revising our curriculum to make it relevant to human needs at the intersection of technology and preserving ecosystem services."

– CLIFF I. DAVIDSON
Professor of engineering at Syracuse University

2012

* EV charging stations debut.
* Large Hadron Collider detects the Higgs boson, nicknamed the "God particle."
* ASEE publishes "Innovation with Impact: Creating a Culture for Scholarly and Systemic Innovation in Engineering Education," an eight-year effort led by Purdue engineering dean, Leah Jamieson, and Jack Lohmann, vice provost for academic affairs and faculty development at Georgia Tech.

2014

* Amazon launches Alexa and Echo, ushering in a new era of "smart" home appliances.
* ASEE Board authorizes a Year of Action on Diversity.

2016

* ASEE launches a yearlong "Commit to P-12: When Engineering Begins" campaign.

2017

* Apple announces its iPhone X with facial recognition technology.
* Dubai test-flies world's first passenger drones.
* Bevlee Watford of Virginia Tech becomes ASEE's first black female President.
* Clemson University's Lisa Benson named *Journal of Engineering Education* editor.

2018

* Google unveils Bristlecone, the world's most advanced quantum processor, which features 72 qubits.
* Stephanie Farrell of Rowan University becomes ASEE's sixth female president.

ASEE recognizes and thanks

our members, sponsors, and other partners who have helped us thrive for 125 years.

OUR MISSION

ASEE advances innovation, excellence, and access at all levels of education for the engineering profession.

OUR VISION

ASEE is the pre-eminent authority on the education of engineering professionals.

OUR VALUES

Excellence, engagement, innovation, integrity, diversity, and inclusion.

OUR GOALS

ASEE recognizes the term "engineering education" to encompass the full academic spectrum of instruction, research, scholarship, practice, and service. ASEE also has an enduring commitment to continuous improvement.