

This is the second of three articles to mark the 50th anniversary of women being initiated in the Association. The third will be in the Summer Bent.

THE STRUGGLE: Women's Badge to Full Membership

by Allen D. Erickson, *New Mexico Gamma '14*, with assistance from Ashley L. Begley, *Colorado Alpha '10*; Sue L.R. Holl, *California Lambda '76*; and Josuan Hilerio-Sanchez, *Puerto Rico Alpha '07*.

THE EARLIEST WE KNOW that Tau Beta Pi could have initiated a woman into membership was in 1903 when the Executive Council rejected Illinois Alpha's attempt to initiate Ethel Ricker, an eligible architectural student. The matter was brought before the 1903 Convention, where the delegates affirmed the Council's decision and resolved to interpret the Constitution as restricting membership to men. It took decades and numerous attempts by subsequent Conventions to undo that choice.

To allow women into the Constitution, a number of amendments had to be made changing gender references ("men" to "students," etc.) in order for the prohibition on membership for women to be erased. The usual first step in the amendment process for TBPI has been a motion at Convention for which at least 75% of the voting delegates present must vote in favor.

While the topic had been considered at several previous Conventions, it wasn't until the 1938 one—the same gathering at which the Women's Badge program was announced, giving chapters an option to recognize outstanding female engineering students—that opening membership to women was allowed an actual vote since 1903. Only one delegate voted in favor of full membership for women, but it signaled the beginning of a long fight.

REPLACED MEN DURING WAR

When the United States joined World War II in 1941, Convention had to be canceled as a large number of Tau Bates were drafted into the military. At the same time, women became more and more active in technical fields, particularly manufacturing, as they replaced men joining the armed forces. Beginning with the Convention of 1946, the first since the end of the war, admission of women was considered nearly every single year.

Between 1946 and 1952, six attempts were voted down, although twice a majority of delegates supported the attempt. They did not reach the required 75%, however. The main arguments for and against the amendments were fleshed out during this time and changed very little for the next decade.

In the 1950s, two primary reasons for excluding

women were given. First, many Tau Bates felt that admitting women would destroy the "fraternal spirit" of the organization. Second, surveys had indicated that women who studied engineering often did not remain in the engineering profession long after graduation.

This argument had three main faults: it was based on limited statistics (as an example, a survey that included only three women who had graduated at least 10 years earlier), it didn't consider that women had fewer job opportunities in engineering due to discrimination, and it was hypocritical, as there was no requirement for Tau Bates to remain in engineering and plenty of men had also left the field.

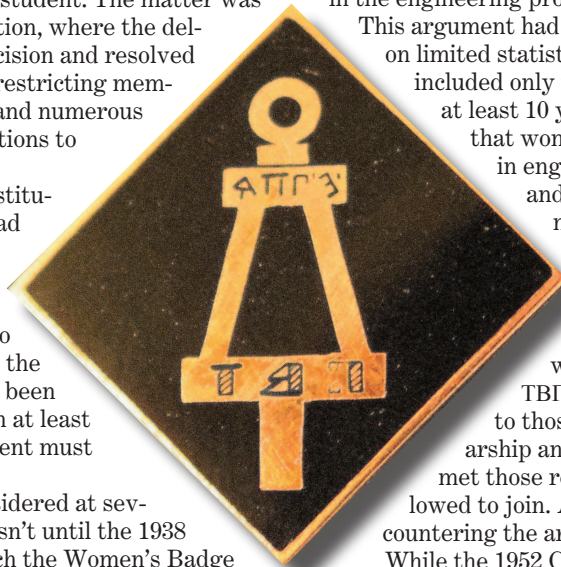
Arguments for admitting women focused on one concept—TBPI should only restrict membership to those who have "distinguished scholarship and exemplary character"; if women met those requirements, they should be allowed to join. Additional arguments focused on countering the arguments against inclusion.

While the 1952 Convention was unsuccessful in passing the necessary amendments, delegates tasked Secretary-Treasurer R.H. Nagel, *New York Delta 1939*, with asking existing recipients of the Women's Badge for their perspectives. The following year, a survey was sent to 150 recipients.

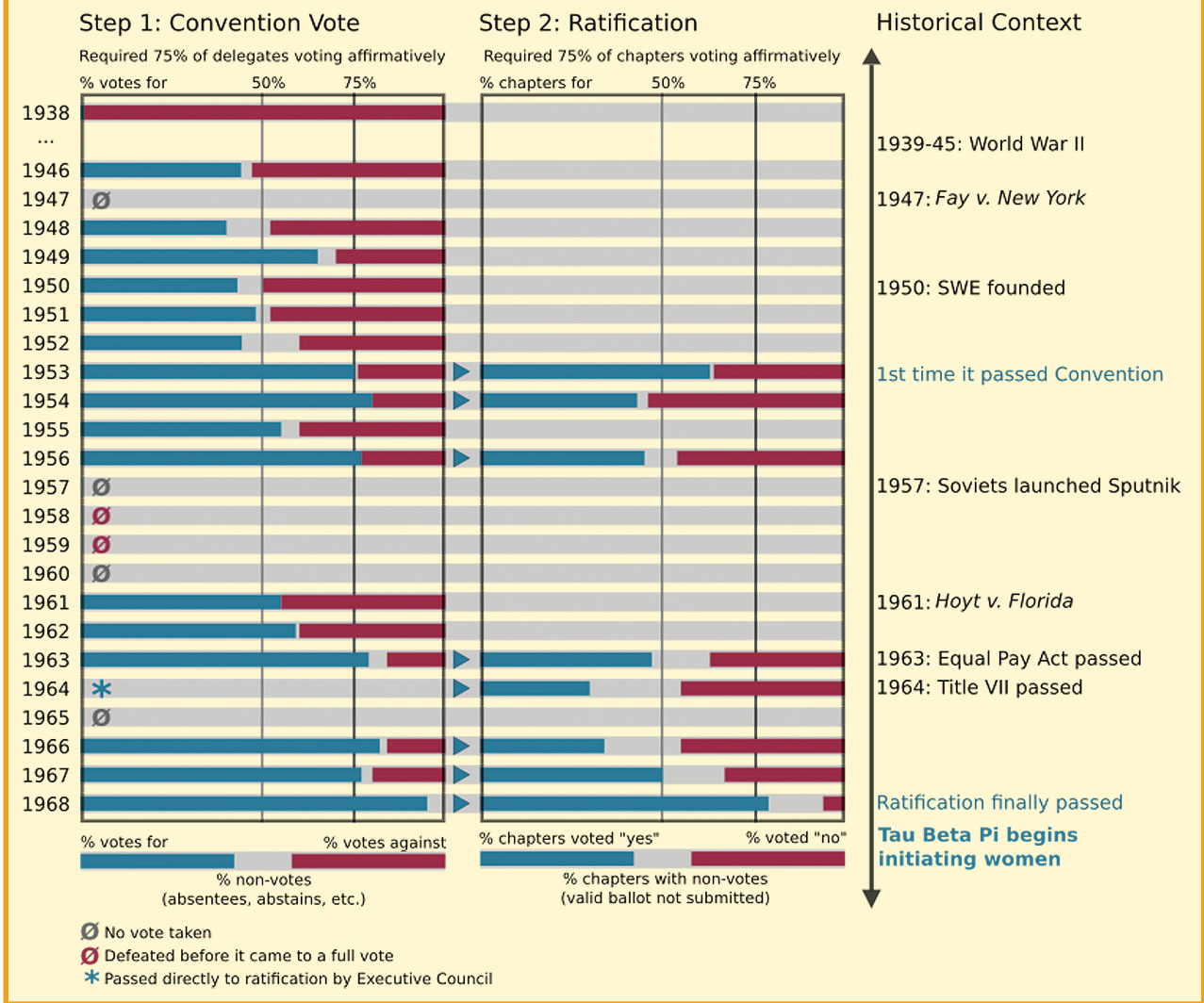
Some 86 of them responded, and a clear majority indicated they felt women should be allowed to join. Gloria Asch Hackel, *New York Eta 1945*, stated in her response, "I have always felt that to make a distinction on the basis of sex was unworthy of an organization such as Tau Beta Pi. When the object of a group such as this is to reward intelligence and diligent application, to discriminate in the fashion, seems uncalled for." Several recipients also wished they had full membership as it would have helped in the struggle to get a job as a female engineer.

The year 1953 marked the first time the amendments intended to open membership to women passed the Convention floor, with exactly 75% of the present active members voting in favor of admitting them. Then the amendments were sent to the chapters for ratification.

This process is simple. Each chapter meets to vote on the amendments. A quorum of active members must be present, and 75% of those at the meeting vote in favor for



Twenty Attempts in Thirty-One Years



the chapter's vote for ratification to be "yes." If less than three-quarters support the changes—even if a majority still vote for them—the chapter decides against.

Although a clear majority (69%) of all voting members in 1953 voted for inclusion during the attempt at ratification, the specific requirements were not met. Only 63% of chapters reached the three-fourths affirmative vote. And 1954 saw almost identical results. Again in 1956, Convention passed the amendments, but the chapters failed to ratify them. In all three cases, the majority of students voting during ratification voted in favor of the changes, but not enough chapters achieved the necessary three-fourths affirmative vote. The requirements may seem strict, but several other amendments, mostly administrative matters, passed easily during this time.

LITTLE SUCCESS AT CONVENTION

Following these three failures to ratify the changes, the amendments faced little success at Convention over the next four years. Twice no vote was taken at all, and twice the vote failed before it even got to a full roll call vote. TBPi wasn't alone in feeling a reverse of the progress that had been made in supporting gender equality. In the area of allowing women to serve on juries, for example, the U.S. Supreme Court had ruled in *Fay v. New York* (1947) that women were equally qualified to do so, but

that progress was somewhat diminished when the Court in *Hoyt v. Florida* (1961) upheld a Florida statute that implicitly discriminated against women in jury selection.

At the same time, more and more women were becoming involved in engineering and science. As a response to the Soviets' launch of Sputnik in 1957, the U.S. Government began campaigning to get both sexes to study science and technology. A survey released in 1964 by the Society of Women Engineers (SWE) showed that 53% of female engineering graduates stayed in the profession. Notable contributions were being made by women.

These facts directly countered the common narrative of Tau Bates against inclusion who had claimed that women didn't remain engineers. Slowly, those arguments disappeared, and even those against inclusion admitted they had a presence in engineering, a presence that wasn't going away.

Full votes on the topic began again in 1961. The next year, two Women's Badge recipients—Maryly Van Leer Peck, *Badge #102 then Tennessee Beta 1951*, and Judith C. Siegel, *Badge #222*, attended Convention and spoke in favor of full membership. The year 1963 marked the first time since 1956 that the amendments made it out of Convention, only to suffer a similar fate during ratification as those in the 1950s.

In an attempt to reduce the amount of time spent on

the topic at Convention, the Executive Council of 1964 used another mechanism for the amendments; they used their constitutional powers to directly submit proposed changes to the chapters for ratification. This marked a significant change in the EC's stance; after all, it was the Council who first decided to exclude women, rejecting Ethel Ricker's election in 1903. Ratification still failed.

The Convention of 1965 chose not to vote on the subject, as two attempts in a row had failed. The years 1966 and 1967 both saw the amendments pass Convention floor but fail ratification in the same way as before: a majority of active chapter members voted for, but not enough chapters reached the three-fourths majority needed to approve the amendments.

NEED WAS URGENT

By this point, only one primary argument from the opposition remained: "tradition." A minority report from the Constitution & Bylaws Committee from 1966 stated, "The unspoken unity of mind and spirit present in existing chapters would be shaken if not destroyed. Standing procedures and functions, regardless of worth, would have to be changed." The opposition also feared the Association would never be able to turn back once they admitted women.

While opposing arguments diminished, new reasons for opening membership surfaced. Some alumni refused to support TBI until the exclusion was lifted. Female students eligible for the Women's Badge rejected it, preferring no recognition over inferior recognition. State laws against sex discrimination began to threaten some chapters at state universities who faced losing recognition from their university due to the exclusion.

The need to finally pass the amendments for allow-

ing women was urgent. When G. Ronald Ames, *Maryland Beta 1969*, was elected chair of the Constitution & Bylaws Committee at the 1968 Convention, Secretary-Treasurer Nagel took him aside after the first meeting and spoke with him for hours about each and every argument that he had heard over the years for and against the amendments. Nagel was "desperate to get it passed," according to Ames.

Realizing the vast majority of the committee saw no controversy about admitting women, they set about a vigorous strategy to make sure it passed Convention: a groundswell. Committee members spread out to talk to every other voting delegate at Convention in order to convince them all to support the amendments. The result was significant—not one voted against.

Perhaps partly as a result of convincing every present voting delegate—most of whom were the chapter presidents who presented the amendments to their members—the ratification process finally saw a different outcome: 79% of the chapters achieved the needed three-fourths majority, and the amendments were finally ratified. In the Spring of 1969, 155 women were initiated as members, 97 of whom had held the Women's Badge.

Despite the significance, the moment was not fully celebrated, not because of disagreement with the result but because of how long it took. Secretary-Treasurer Nagel, who had first written in *The Bent* of his support for full membership for women in 1952, wrote in the Summer 1969 issue, "And thus is a chapter in the history of Tau Beta Pi brought to a close, a bit late, but successfully.

'The Women Question' [as the subject was commonly referred to] is no more. May it rest in peace. In recent years it was not one of the Association's prouder aspects."

ENVIRONMENTAL ENGINEER & PIONEER

MARJORIE A. FRANKLIN (1935-2011), Badge #202 and later Kansas Alpha '57, was the first woman to enroll in and graduate with a degree in aerospace engineering from the University of Kansas (KU). In 1954 as a junior at KU, she became the first woman member of the Sigma Tau Fraternity, which merged with Tau Beta Pi in 1974. As an undergraduate, she served as editor of the *Kansas Engineer* and secretary-treasurer of the Institute of Aeronautical Sciences, among other campus activities.

She applied her engineering education and writing experience to the field of municipal solid waste, for which she was internationally known. Her professional career included 20+ years as an environmental engineer of management responsibility for development of the material flows methodology for characterizing waste used in reports published annually by the Environmental Protection Agency (EPA). A sample of her research/writing can be found in chapter 5 (Solid Waste Stream Characteristics) of the *Handbook of Solid Waste Management*, Second Edition.

In 1983, she became president of Franklin Associates, an environmental consulting firm, and during this time she was also active in the solid waste processing division of the American Society of Mechanical Engineers (ASME). She was the first woman to chair that division. She later became principal engi-



neer and co-owner of Franklin Associates with her husband.

In her personal life, she married William E. Franklin and had two children (Mark and Janice). William co-founded Franklin Associates, later served as mayor of Prairie Village, KS, and passed away in 2016.

In addition to her family and career, Marjorie was heavily involved with her alma mater spending more than 17 years as an active member of the School of Engineering Advisory Board. Again leading the way as the first female on the board and the first to chair the board. In 2003, she was the recipient of the KU Distinguished Engineering Service Award in part due to advocating and encouraging other women to pursue a career in engineering.

Marjorie was the fifth Women's Badge recipient from the Kansas Alpha Chapter in 1956 and was initiated as a member of Tau Beta Pi in 1969. She is remembered for her lifelong dedication to engineering, technical writing abilities, leadership in professional societies, and commitment to the University of Kansas. As a pioneering Jayhawker, she paved the way for future generations of engineers.

—Dylan S. Lane, HQ Communications Specialist

ENGINEERING WAS HER REBELLION

ELEANOR KUSHEL BAUM, Ph.D., Badge #249 and later New York Eta '59, immigrated with her parents through Canada to the United States after World War II. She attended public school in New York City.

In those days, women were bound to be a school teacher or a nurse and perhaps graduate with an MRS degree. You worked until you married, stayed home to raise children, and then went back to teaching. The guys in her high school wanted to be engineers. She didn't really know what they were, but she tried it out as her mother wanted her to be a high school math teacher. She finally said "No, I'm not. I'm going to be an engineer." Her mother gasped and said, "You can't do that. People will think you're weird, and no one will marry you." Becoming an engineer was her rebellion.

Eleanor studied electrical engineering at City College of New York. She got good grades and had a lot of friends, all male. She was admitted to Eta Kappa Nu, the electrical engineering honor society, which did accept women. Eleanor also qualified to join TBII and had to write an essay. She wrote about volunteering at a children's ward in the local hospital, which the men thought was really weird, strange, and non-technical, but it was clear she was different from them. She received the Tau Beta Pi Women's Badge in 1958. She was asked to step out of the room before the initiation ceremony and came back for the party afterward. She received an orchid, which she thought was nice. A lot of her friends were being initiated, so it was an honor to be included.

Eleanor graduated in four years as the only woman in her class. She took a job in aerospace on Long Island but hated it and started looking for other options. She was offered a National Defense fellowship which paid tuition of \$2400 a year for graduate school. At Brooklyn Polytechnic for her master's, she enjoyed teaching. Eleanor took another job after graduate



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school but did not like it either. In 1965, she became an assistant professor at the Pratt Institute in Brooklyn. She received her Ph.D. from Brooklyn Polytechnic, and on December 4, 1969, she was initiated into TBII's New York Eta Chapter at CCNY.

In 1984, at Pratt, Eleanor became the first female dean of a U.S. engineering school. She was recruited by Cooper Union and became engineering dean in 1987.

In 1995, Eleanor became the first woman president of the American Society for Engineering Education (ASEE). She was involved in education on a global scale, serving as chair of the Washington Accord, which allows engineering associations to accept professional credentials between countries. Eleanor is a fellow of the Society of Women Engineers, ASEE, and IEEE and has served as president of the Accreditation Board of Engineering and Technology (ABET), as well as on the National Science

Foundation advisory board. She was inducted into the National Women's Hall of Fame in 2007.

Eleanor retired in 2012 after 23 years as dean at Cooper Union. She is active in professional societies, consulting, and traveling. And even though she and her parents worried that she would never marry, she did to a physicist, Paul Baum. They have two daughters and two granddaughters.

To our students, she says to remember the point of being an engineer is to help humanity, to make life better, and improve the quality of life, and condition of society. Regarding one's own professional growth, keep learning. Learn new things, learn new technologies, and you know it's time to move on from a job when you're not learning anything new. Get involved in professional organizations. It's a great way to network, hear about job opportunities, and learn about new technologies.

—Tricia Gomulinski, SD A '98

What does being a woman have to do with it?

ANITA H. ROLLO, Badge #292 and later Louisiana Alpha '60, graduated from Louisiana State University in 1960 with a B.S. and in 1967 with an M.S., both in Chemical Engineering. She liked math, chemistry, and physics in high school, so in her senior year Anita told her counselor that she might want to major in chemical engineering. He got out a book, read what chemical engineers do, then told her, "You don't want to do that." So, initially, Anita majored in chemistry at Rice University because it sounded more lady-like, but that didn't last long. She married during her freshman year and transferred to LSU, where her husband was studying petroleum engineering. At LSU, Anita changed her major to chemical engineering.

The primary challenge she faced in completing her degrees was just hard work, like any other engineering student. The slide rule was, however, a unique problem for a woman. How do you carry a slide rule? The guys carried it on a belt around their waist. As a girl, how do you carry it with a bunch of books in your hands? It sounds trivial now, but back then it was a real problem.

It took nine years to complete her B.S. degree and another seven for her master's, since she had three children and took some time off. Anita worked and took night classes while her husband was in graduate school, but was just determined to



finish her degrees. As a female, Anita felt that she had to do really well to prove that she belonged. In college, Anita was such a small minority that she was not really discriminated against, just overlooked.

Anita originally worked for Ethyl Corporation in petrochemical engineering, her favorite thing to do. When they moved to Washington, DC, she worked for an IBM subsidiary, then later IBM itself for 20 years. Anita's last role there was at a development R&D center where she was responsible for chemical and environmental controls for a semiconductor facility. While IBM wasn't close to her first career choice, it all worked out in the end. As a retiree, she enjoys painting (and noted that she takes a scientific approach to painting), travel, and cooking.

Anita's peer group at LSU got the Women's Badge for her, which she notes was really an ego trip. At the time she was 27 years old, an "old lady" compared to her fellow students. She was aware when TBII membership was finally granted to women and felt it was certainly the right thing to do. Anita never really wanted to be part of anything that was a "women engineers" program. After all, what does being a woman have to do with being an engineer?

—Jenna P. Carpenter, IN A '83

“RENAISSANCE WOMAN” AND GRANDMOTHER

(AGNES) RACLARE CORDIS KANAL (1933-2016), Badge #158, the daughter of an engineer, was born and grew up in Tucson, AZ. She studied mechanical engineering at the University of Arizona where she fully immersed herself in college life. Raclare was a dedicated student earning excellent marks while also engaging in a wide variety of activities. She threw herself into coursework and when asked about her pursuit of a rigorous major, said she found studying “relaxing.”

She was the first female University of Arizona student invited to join TBII and was awarded the Women’s Badge in her junior year in Fall 1953. She continued her extracurriculars, serving as acting president of the University of Arizona Engineering Council in her senior year. Raclare was the lone female engineering graduate when she earned her B.S. in mechanical engineering in 1954.

Even as a student, Raclare exhibited an expansive view of her opportunities. She knew her engineering education would provide her with a firm foundation for any career choice. She had a global view of her potential impact and early on exhibited a dedication to life-long learning. She took courses to learn about other cultures and became fluent in Arabic with the goal of working and studying in Egypt. Raclare was described as a “Renaissance woman” by the University of Arizona engineering alumni magazine. This is appropriate as she was adept in many disciplines and committed to using her talents to improve the world. In addition to her coursework, Raclare found time for many organizations, including the Pan American League, TBII, and other professional groups. She had an interest and facility for languages and felt that learning them and about other cultures would let her bridge cultural divides.

After graduating, Raclare worked as a computer engineer



for RCA on the Bizmac, RCA’s first commercial computer. Because of her desire to develop her talents and explore other interests, after a few years in industry, Raclare decided to pursue another of her passions. She enrolled in graduate school earning a master’s degree in anthropology from the University of Pennsylvania. There, she met her husband, Laveen Kanal, a student from India who was working on his Ph.D. in electrical engineering. They were married in 1960, having three children, and two grandchildren during 55 years of marriage.

Raclare raised the young Kanal family in rural Pennsylvania and in Maryland after Dr. Kanal joined the faculty at the University of Maryland, College Park. As she had always done, Raclare continued to explore and immerse herself in many scientific and cultural fields, from botany to genealogy and photography to Mexican mariachi.

Raclare’s center was her family—her husband, children, and grandchildren. Additionally, she volunteered for a wide range of causes including rescuing countless small animals. Her contributions were significant; she published a scientific paper on her discovery of a new species of vascular plant and was honored for her volunteer work with the National Park Service and the Family History Center in Washington, D.C. In 2016, a scholarship at the University of Arizona for women engineering students was established in her name. Raclare was honored in 2017 by being one of the first inductees to the University of Arizona Engineering Hall of Fame.

Raclare Cordis Kanal died in 2016 when she was 83. Her life exemplifies all that we stand for in TBII—commitment to integrity, breadth of interest, and quality in all our pursuits.

—Sue L.R. Holl, CA 176

NUCLEAR RESEARCHER AND LIFE-LONG LEARNER

SOFIA MILNER LASKOWSKI (1941-2018), Badge # 372, was born in Matanzas, Cuba. She wanted to be a chemical engineer from a young age and enrolled in Villanova University in Havana, completing two years of undergraduate work before her family fled the country. They immigrated to the United States in 1960, when Sofia transferred to the Polytechnic Institute of Brooklyn (now New York University). She started the student chapter of the Society of Women Engineers while at Poly and went on to graduate with a degree in chemical engineering as the top student in her class.

Right before graduating, she was awarded a Women’s Badge by New York Zeta. The Summer 1963 *Bent* celebrated Sofia’s accomplishments that spanned two countries. She had worked as a volunteer social worker at two hospitals in Havana. In New York, she worked as a senior lab technician in a study of calcium metabolism in humans. Aside from science and engineering, Sofia was interested in writing poetry and painting, as well as mineralogy, medical research, ballet, and nuclear reactors! The remarkable young engineer was awarded both a scholarship and a fellowship to pursue graduate school in chemical engineering at the University of Minnesota.

She went on to become the first female Ph.D. graduate in the department. After obtaining her doctorate in 1969, Dr. Milner Laskowski started her professional career in nuclear



power plant research and development. She worked in this field until 1980, when she joined IBM, where she stayed for 25 years, enjoying a long and rewarding career. Sofia retired as the program director of intellectual licensing and went on to explore many of her interests and hobbies during retirement. As a life-long learner, she attended photography classes at Foothill College. Her work was exhibited at Foothill, Prague, and Havana.

In 2002, Sofia and her husband Jan established the Jan J. & Sofia Milner Laskowski Fellowship to support promising female graduate students in the chemical engineering department at the University of Minnesota. Their goal was “to give priority to female students in hopes of continuing to increase the fraction of women in engineering, an extremely rewarding and well-paying profession.” To date, at least

14 women engineers have benefited from the fellowship. In a 2013 interview, the couple explained that “they were driven to establish the fellowship since they believed engineering education is critical to the successful growth of the United States and making the world a better place to live.” Indeed, Sofia had made the world a better place through her hard work, dedication to learning, and passion for life. She passed away on October 22, 2018.

—Stefani Kocovska, NJ 17