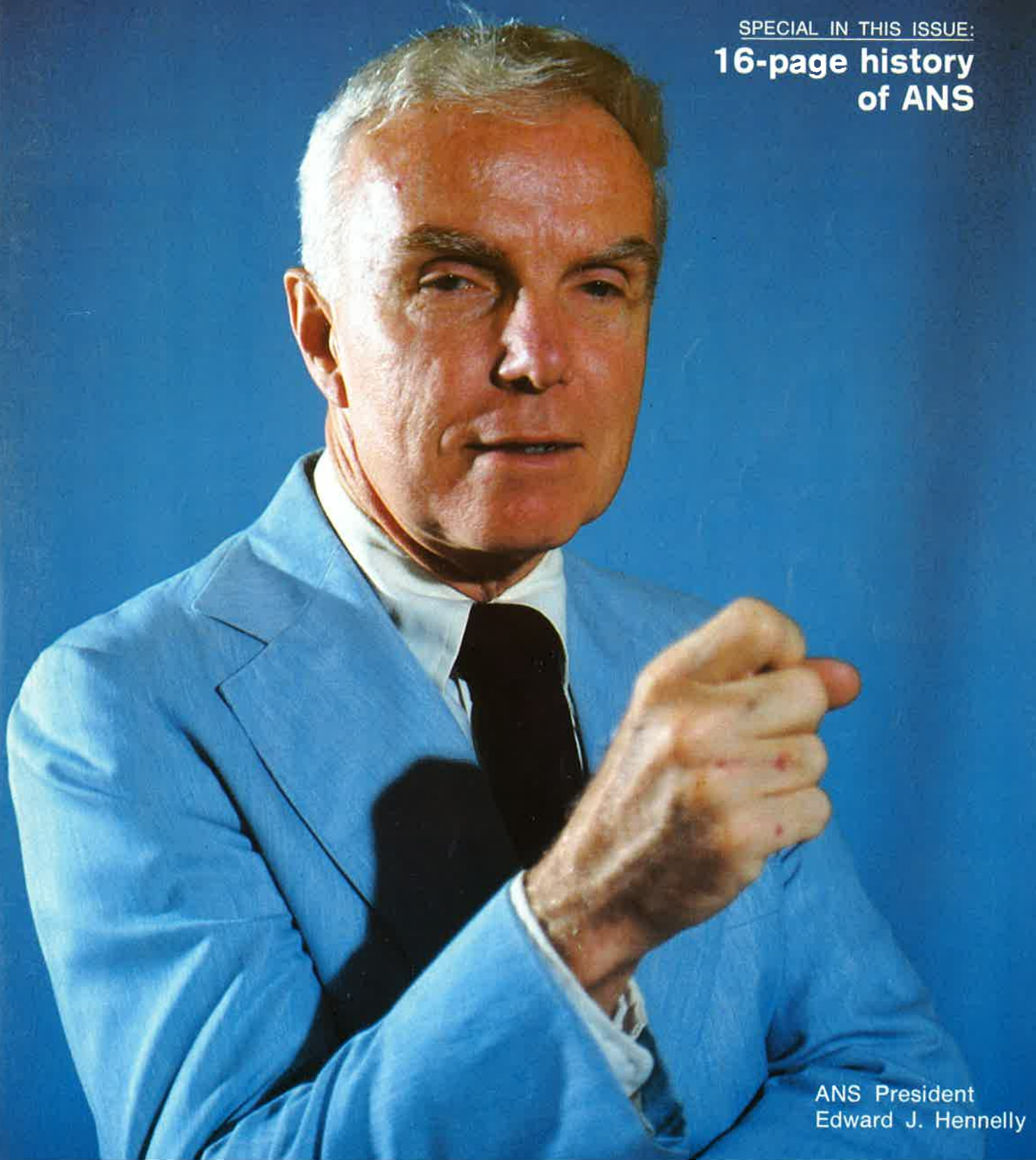


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SPECIAL IN THIS ISSUE:
**16-page history
of ANS**



ANS President
Edward J. Hennelly

Ed Hennelly: A time for internationalism

ANS president Edward J. Hennelly is a research chemist, and yet nearly his entire career reflects a steady commitment to nuclear science. From his first nuclear-related assignment at Argonne National Laboratory in 1951 to his current position as a research associate at the Savannah River Laboratory, Hennelly's career covers a broad range of nuclear projects and accomplishments. Nearly 30 years of experience in nuclear science has given him a chance to develop some firm opinions about nuclear power and its future.

"The future of nuclear energy is totally dependent on internationalization," Hennelly says. "The solution has to be worldwide." Current nuclear-energy-related problems that appear insoluble at the local level may have solutions when they are placed in the broader, global context, according to Hennelly. He is currently involved in the regulatory aspects of defense waste processing and disposal, and he says that he hopes that waste disposal and other problems will be solved through a more formal network of international cooperation.

The American Nuclear Society's goal should be to foster that international cooperation through meetings, information exchanges, and maybe eventual federation with nuclear societies of other nations, Hennelly believes. As president, he hopes to strengthen international contacts in this next year,

while keeping ANS members involved and interested in Society activities at home and abroad.

Growing up with science

Driving along the quiet, tree-lined roads of Aiken, S.C., where Hennelly lives, just 17 miles from the Savannah River Laboratory, the 56-year-old scientist displays a native's enthusiasm and pride for the community, with its stately homes shielded from the road by a dense growth of magnolia and



flowering dogwood trees. Yet, Hennelly is not native to the area, but was born and raised in Schenectady, N.Y., living there until he entered the Navy during World War II.

As a boy, his interests were guided by his environment. "I grew up with science," Hennelly says. Schenectady was the site of the General Electric Research Laboratory (of which Knolls Atomic Power Laboratory was subsequently to become a part), and many of the town's residents were affiliated with it. This includes Hennelly's father, Edward F. Hennelly, who earned a liberal arts degree from Union College in Schenectady, took a summer job at the Laboratory in 1916, and was to remain there for 38 years until his retirement in 1954. A research scientist, he worked early in his career in the technology of vacuum tubes and later in solid-state electronics and, finally, in fissile fuel accountability methods (at KAPL). Hennelly's father, 90, and his mother, Kathryn Cleary Hennelly, 85, still live in Schenectady.

The town's environment was stimulating, Hennelly recalls, both at home and at school. His father made a radio set for the family long before most people in the town had acquired one. Hennelly recalls hours spent listening in fascination to the new instrument. Now, says Hennelly, that same radio set is at the Smithsonian museum in Washington.



Young Ed: In sailor suit, with father, as Eagle Scout, and as Boy Scout camp counselor

Many of Hennelly's teachers were scientists and researchers who lost their jobs during the Depression and found work teaching school. As a result, the quality of instruction was excellent. Looking back, Hennelly says the high school may have been "one of the best in the country" for science education. One of Hennelly's early projects was a Cottrell precipitator that he and some classmates built for a science fair, and he recalls with interest that the machine, which removes suspended particles from exhaust gases, represented early work in pollution control.

A number of prominent scientists worked at the GE Research Laboratory while Hennelly was growing up; those he recalls include Irving Langmuir, who won the Nobel prize in chemistry; Charles Steinmetz, who developed much of the fundamental research on alternating current; and W. D. Coolidge, who in 1916 patented his invention, the Coolidge x-ray tube. (If anyone ever received an overdose of radiation, it was Coolidge, Hennelly says, and he observes with some amusement that Coolidge lived to the age of 102.)

Higher education, other callings

Hennelly was graduated from high school and like his father before him, entered Union College, interested in, but not irrevocably committed to, a career in chemistry. "If there had been any money in it, I would've been a historian," Hennelly says. "I've always loved reading history and still tend sometimes to view things from their historical perspective—sometimes to the infuriation of people I've worked with."

An only child, Hennelly continued to live with his parents during this time, and had completed three years of college when World War II interrupted his work toward a bachelor's

degree in chemistry. He entered the Navy's V-12 officer training program and was able to complete another half-year of college before being called up for active duty.

For his initial training, Hennelly was assigned to the remodeled battleship the *Prairie State* (the USS *Illinois* of the Great White Fleet) and spent the winter of 1943 on board, moored in the Hudson River at 169th Street in New York City. He was then sent to Harvard, for pre-radar studies and to the Massachusetts Institute of Technology for radar studies, after which he was assigned to a destroyer division as a radar officer until the war ended. During this time, Hennelly was to pick up valuable experience in the relatively new sciences of radar and microwaves that he would later apply to his research at Princeton University as a graduate student. (Union College, meanwhile, had determined that Hennelly had the credits needed for a bachelor's degree in science with a major in chemistry, and awarded him that degree.)

As soon as Hennelly got out of the Navy, he married. He met Barbara Sheahan in Schenectady when he was 18, and throughout the war years corresponded with her and saw her as time and occasion would permit. By 1946 Barbara had been graduated from the College of New Rochelle, in New Rochelle, N.Y., and was working as a stewardess for Eastern Airlines. The couple were married in June 1946, and moved to Princeton, N.J., where Hennelly was about to enter the PhD program in physical chemistry. Initially, the newlyweds lived on a farm outside Princeton, but soon after he began his studies, they were able to move into the "Princeton Project," a housing project for students.

Golden years at Princeton

The post-war period at Princeton was an exciting one for a young graduate student: Hennelly recalls it as being "a golden age of science" at the University. Princeton had its bicentennial in 1948, and, as a result, "anyone who was anyone" showed up at the school at some point during the year, Hennelly says. Robert Oppenheimer was lecturing at Princeton, having just served as director of the Los Alamos Scientific Laboratory during the development of the atomic bomb; Albert Einstein was then at Princeton; George Gamow, who developed the big bang theory, came to the campus; and a steady stream of scientists visited the University during the three years Hennelly spent working on his doctorate. He remembers one occasion on which Niels Bohr, who had an incurable habit of "talking to the front of his shirt" during lectures and interviews, managed to "outwit" seven microphones placed in front of him. Hardly a word was audible.

Hennelly worked under Prof. C. P. Smyth, who had worked as a chemist for the Manhattan Project and as a consultant for the U.S. Army and Office of Naval Research during the war. Smyth was the brother of Henry D. Smyth, director of the Smyth Report on U.S. applications of atomic energy, a report released just after World War II.

Hennelly was familiar with the Smyth Report: in fact, he says it "was all I knew about nuclear in the 1940's. I had been aware that something was going on: I had had vague notions that there were things going on in Tennessee and in Washington [state], but that's about all I knew before I read the report."

Radar and microwaves were of



At 31: Starting work at Savannah River

greater interest to him at the time, however, and Hennelly was busy exploring the knowledge he had gained in his thesis work while in the Navy. "Radar was new stuff," he explained, and he became involved in a project sponsored by the Office of Naval Research to use microwave energy to measure the dielectric properties of organic liquids. Hennelly's thesis involved setting up microwave equipment to measure the dielectric constants of organic bromides. The project involved pure, not applied, research. "We were interested in molecular structure," Hennelly says. "Although the work was a forerunner of microwave ranges, all we were doing was showing how liquids absorb frequencies."

Working for Du Pont

After Hennelly received his PhD from Princeton in 1949, he went to work for E. I. du Pont de Nemours & Company, in Wilmington, Del., as a research chemist in the Polychemicals Department. His introduction to work directly related to atomic energy was to come soon after, when he was selected as one of a group of bright, young Du Pont scientists to travel to the Argonne National Laboratory in Illinois for training on nuclear-related projects.

Du Pont had been awarded the government contract for the Savannah River Plant, and had already begun work on the five production reactors. The company's assignment also included facilities for preparing the reactor fuel, separating plutonium and tritium from irradiated fuel elements,

and producing the heavy water used as a moderator in the reactors. By 1951, more than 60 Du Pont employees were receiving training at Argonne, in areas including the metallurgy of fuel elements, especially their fabrication and the behavior of various alloys under irradiation. Hennelly's particular assignment was to work on the design of the CP-5 reactor under the direction of John West. When the temporary assignment ended, he went back to Wilmington and worked as a research physicist, chiefly in the area of reactor lattice and charge design, physics planning for production, and reactor startup. His period in Delaware ended in 1953, when Hennelly received his assignment to work at Du Pont's Savannah River Laboratory in Aiken, S.C.

"I didn't know a thing about Aiken," Hennelly recalls, and he says that his only "non-official source of information" was an article in *The New Yorker* magazine on the newly opened Savannah River Plant titled "Bombs and Camellias." One part of the article that caught his eye, Hennelly says, was an interview with a "winter resident" named Warner Baltazzi; the interview was conducted "in his paneled den in his home off Whiskey Road." Little did Hennelly know that he would soon be living in the same house as its new owner.

As senior research supervisor in the Laboratory's Explosives Department, Hennelly found himself responsible for technical direction of developing data used in designing heavy-water reactor fuel loadings, and performing reactor safety analysis. From there his work branched out into exploring new roles for the production reactors and further work on reactor safety. He is credited

with performing much of the early work leading to the operation of a production reactor at the highest sustained neutron flux for the production of transplutonium elements, and was designated to receive for SRL the plaque awarded by the Atomic Energy Commission for that achievement.

Another interest of Hennelly's has been the production of radioisotopes for heat source and other applications. In 1966 he served as technical chairman of the ANS Topical Meeting on Large Scale Production and Application of Radioisotopes.

More recently, Hennelly has been interested in the role of tritium in fusion technology. If fusion technology becomes significant, a substantial amount of tritium will be needed, Hennelly says, and that tritium would have to be made in Savannah River reactors. "If those reactors were to be shut down, there would be no readily available source of tritium for a fusion program," he says.

His current work involves the regulatory aspects of defense waste management: its processing and ultimate disposal. Hennelly says that it's a "fairly major political," but not technical, problem. Congress may make a decision this year on funding a defense waste plant, he says, but one very possible decision might be to simply postpone a decision in this inflation-conscious period.

Politics and the private person

Politics is a special sideline of Hennelly's, one that he thinks has helped him solve problems in his work with nuclear energy. Soon after he moved to Aiken in 1953, Hennelly became active in the local Republican party, eventually serving for two years, 1972-

74, as chairman of the Aiken County Republican party. Although South Carolina is still heavily Democratic, Hennelly says that at least Aiken County now enjoys the benefits of two-party government, adding: "I feel like I've played a part in that." After Hennelly was elected ANS vice president/president-elect, a number of South Carolina politicians sent congratulations, including U.S. Sen. Strom Thurmond, "who chased me down with a phone call," Hennelly says.

Since May 1975, when he was appointed by former Gov. James Edwards, Hennelly has served on the 11-member South Carolina Nuclear Advisory Council, which advises the governor and the general assembly. Hennelly has been chairman of the Council since July 1976.

Hennelly likes to joke that there were really only two things he wanted to achieve in life: an audience with the Pope and an invitation to the White House. The first goal was realized in the early sixties, when he and his wife obtained an invitation for an audience with Pope John XXIII while they were traveling in Europe, an occasion Hennelly recalls as "very exciting." The second was realized in 1973, when he and his wife were invited to a reception at the White House.

The Hennellys live in a spacious, white frame house with six fireplaces and six bedrooms on Magnolia Lane, which is, as reported in *The New Yorker*, just off Whiskey Road. Across the dirt road, which is preserved for residents who prefer the earth surface for horseback riding, is one of the country's oldest polo fields, and it is still in use today. Aikenites themselves are divided into two groups, Hennelly explains: permanent residents and a sizeable "winter colony" of residents who migrate south to Aiken each year because of its mild winters. The Hennelly property, like many in the area, is graced by an abundance of magnolia and dogwood trees, azaleas, and heavy, purple wisteria. Inside, the home is furnished with graceful, elegant antiques that Hennelly and his wife have collected and refinished over the years.

More recently, Hennelly has found himself spending a great deal of time on what the Hennellys refer to as "Barbara's shop." Four years ago, Mrs. Hennelly and two friends opened a small antique and gift shop in Aiken, with a restaurant offering French cuisine. At first "La Martingale," specializing in crepes, salads, and desserts, and what Hennelly describes as "a very good selection of wines," was open only for lunch. Since then, they've begun serving special gourmet dinners on the first Saturday of each

month. They are frequently booked also for special occasions, such as parties and receptions. "Barbara's shop" has become a family project, Hennelly explains, with himself and all five of their children having spent time cooking, waiting on table, serving wine, and cleaning up. The shop has been attracting increasing publicity in the local papers and most recently was written up in *Augusta Magazine*.

Only one of the Hennellys' five children has left the area: Mary, 31, is married and lives in New Jersey with her husband, Peter Burke, and their two children. Carroll, the next oldest at 23, is a graduate of the University of South Carolina and teaches in a parochial school in Columbia, S.C. Michael, 22, was graduated this year from Union College (thus achieving a three-generation "tradition"), and now plans to attend graduate school in business at USC; Barbara, 21, is a junior at USC; and Tom, 17, will be a senior in high school this fall. Last spring, Tom received an appointment through Senator Thurmond to serve as a page in the Senate for two months.

After his family, his job, ANS, and "Barbara's shop," Hennelly says that he doesn't have a lot of extra time for other pursuits. He enjoys an occasional game of golf though, and religiously attends the Masters Golf Tournament held each year at the Augusta National Golf Club, about 20 miles from his home.

A president's goals

As president of ANS, Hennelly says he is looking forward to an even busier year than usual, and has been trying to get the groundwork laid ahead of time. He explains that he has already



Barbara with her youngest, Tommy (1962)



Ed and Barbara at home in the garden

been doing a lot of the "preliminary work" toward goals he hopes to achieve as president. These goals include strengthening international contacts of the Society, drawing more members into active involvement in Society activities, and attempting to increase the membership. Hennelly describes himself as "member-oriented" and says that one of his main goals is "bringing the message to the members"—making them realize their talent is needed by ANS.

Hennelly became a member of ANS in 1963 and has been an active member indeed. Besides serving as technical program chairman of the 1966 topical meeting on radioisotopes production (mentioned above), he was the 1968 chairman of the Savannah River Section; program chairman, Isotopes and Radiation Division, 1969-71; technical program cochairman, ANS Topical Meeting on Neutron Sources and Applications, 1971; chairman of the ANS National Program Committee (1971-73); served on the Board of Directors (1971-74) and Executive Committee (1972-74); and was technical program chairman for the 1976 ANS/ENS/AIF International Conference in Washington, D.C. He was named an ANS Fellow in 1968. Hennelly is also a member of the American Chemical Society, Sigma Xi, and Psi Upsilon.

Drawing on his political experience, Hennelly likens the operation of ANS to that of a political organization. "A well-run society is like a well-run political organization," he says, with the national committees, professional divisions, and local sections being the precincts. If an organization is healthy, it has strong precincts. To keep the precincts healthy, we need strong people in the different leadership positions. We can't afford to let things drift."—*Debby Graves*



Hennelly (right) talking with W. P. Overbeck (left) and Karl Cohen, then president of ANS, at a Society-sponsored meeting in Aiken