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Gail de Planque
ANS President

38-PAGE SPECIAL SECTION
Health Physics

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de Planque—Expanding the ANS image

by Nancy J. Zacha

In the past, the people chosen to be presidents of the American Nuclear Society joined the industry in the early days, when the science was still young, and they matured as the industry did. Gail de Planque, the 1988–1989 ANS president, is part of a new vanguard, however—those who entered the field in the late sixties and early seventies, when nuclear power plants and other manifestations of nuclear science were already part of our everyday lives. Thus, she represents the Society's future, and she has definite ideas about the directions that future should take.

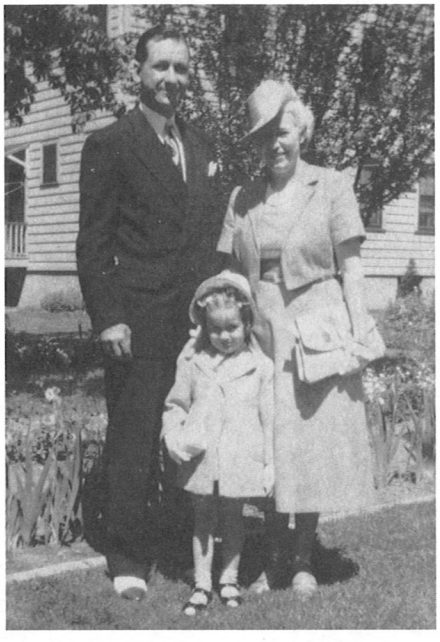
Learning

Gail was born on January 15, 1945, in Orange, N.J., the only child of Martin and Edna (Gilroy) de Planque. Her father was an engineer with the New Jersey Bell Telephone Company, where he met her mother, who worked there as a secretary. They were married about seven years before she was born. During World War II, her father volunteered for the Navy. His engineering skills were of interest because of communication efforts during the war and the need for sonar. He served in Naval Intelligence for some time and, after schooling in California in preparation for underwater sound detection work, was sent to the Pacific—to New Guinea and the Philippines. He left the day she was born and returned just prior to her first birthday.

"My father," Gail notes, "probably indirectly got me interested in physics and engineering. He had this marvelously intricate mechanical pencil when I was quite young. Since I always wanted to know how things worked, I remember being intrigued with taking apart and reassembling that pencil."

Gail attended parochial schools during her youth—St. Joseph's grammar school in Maplewood, N.J., and high school at Benedictine Academy in Elizabeth, N.J. She remembers her school years: "I was always fascinated by mathematics, even from the time I was in the fifth or sixth grade, and I was lucky enough to have several teachers along the way who saw that. One particular teacher in high school would give me extra problems to solve (I suppose to keep me interested), telling me to do them whenever I could. But they were a challenge, so I would do them almost immediately, and as soon as I would bring them back, she'd give me more to do."

In high school, Gail's days were action-packed. In addition to a multitude of academic accomplishments, including membership in the National Honor Society, she was president of the Forensic League and participated in a wide range of forensic events, with debating as a specialty. She represented New Jersey in the national finals of the Catholic Forensic League, and often walked away with the championship in debating and oratorical contests. On the lighter side, she had several roles in school plays, commenting: "Since I went to a girls' school, and being not uninterested in boys, I always seemed to seek out the activities that would provide a social atmosphere. Debating and theatre offered splendid opportunities. The debating even led me to think that maybe I'd be interested in law as a career."



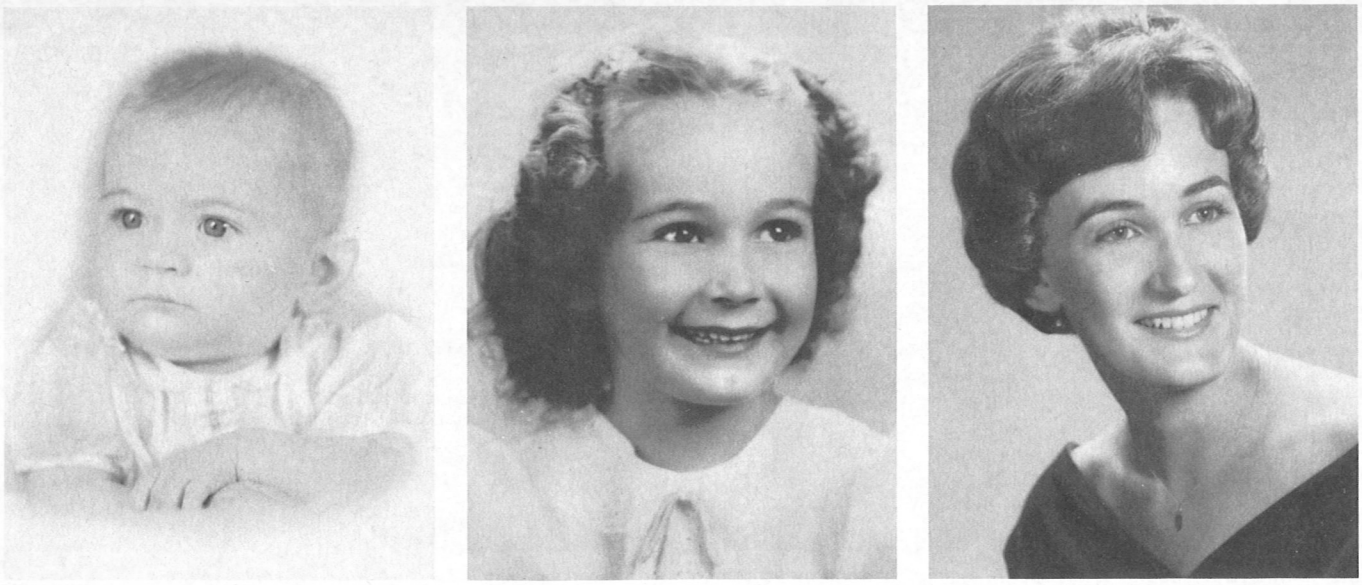
Martin, Edna, and Gail de Planque—in the late 1940s

Graduating from Benedictine in 1963, as valedictorian of her class, Gail also captured the prestigious Father's Club Award for the "most outstanding senior" and walked off with several scholarships, including one to Immaculata College, in Pennsylvania, where she began her college studies that fall.

With wide interests spanning everything from law to physics, Gail settled on mathematics as her college major. She chose Immaculata because of its strong science and mathematics programs—"in a class of about 160, there were something like 16 math majors," she notes, "and probably about half of the class majored in one of the sciences." After a sampling of physics, Gail decided it was just as exciting as mathematics, and included every possible physics course in her schedule. This was in addition to all the course work and student teaching required to obtain a teaching certificate, which in those days was, Gail notes, "considered insurance for a woman."

Life was not all books for Gail in college, however, as she continued to seek out "the more social extracurricular activities." These included the tennis team and the Intercollegiate Conference on Government, a Pennsylvania-wide program to give college students first-hand experience in the workings of government, an activity that also satisfied her continuing interest in the area of law.

Looking back at her school years, Gail muses: "I have mixed feelings about going to a women's high school and col-



The early years: Gail at 5 months, 5 years, and in college

lege. In the beginning, I thought this would put me at a disadvantage in the workplace. But, in retrospect, I think there were some clear advantages. Everything was done on the basis of ability and fair competition, so if you could do the job and if you could compete academically, you got ahead. Competition was always ability-based and obviously never gender-based. In addition, nuns were among the few active career women at the time. They were the women pursuing master's degrees and PhDs. They were work-oriented and therefore good role models for young women who planned to have careers."

After graduating *cum laude* in 1967, Gail, with fellowship offers from Fordham and Catholic University, considered graduate school, but opted for some "real-world" experience first. She decided to take a job with what was then the Atomic Energy Commission's Health and Safety Laboratory (HASL), located in New York City's Greenwich Village/Soho area. She explains how this job came about: "One year, when I was active in debating in high school, the national topic was nuclear disarmament. In the process of getting background information on the topic, I became familiar with the Atomic Energy Commission. When I was applying for jobs after college, I remembered the AEC and thought they might have a job for someone with a math major and an interest in physics. So I applied to the AEC. I also applied to a lot of other companies, but all of them wanted to use me as a computer programmer, and I wasn't interested in that. Then the AEC contacted me, telling me of an opening in the Radiation Physics Division at their Health and Safety Laboratory in New York City. I was interviewed and offered the job." She has remained at the laboratory—now known as the Environmental Measurements Laboratory (EML)—ever since.

After some time on the job, Gail realized that she wanted to continue her education, and she once again toyed with the idea of becoming a lawyer (her husband at the time was in law school). In the end, however, she decided to continue in the sciences, and looked for a school that was conveniently located and that she could attend at night. She finally chose the Department of Engineering Science at what was then known as Newark College of Engineering and is now known as the New Jersey Institute of Technology. "It's very well known and well respected in the New York/New Jersey area, and the bulk of the students are from this area," she comments. "Ben Stevenson, a professor in the Nuclear Engineering Department, head of the NJIT ANS Student Chapter, and an active member of ANS, joined my list of longstanding friends and colleagues through my graduate experience. The engineering science program was not really engineering, but rather basically physics. It had all the routine graduate physics courses, such as quantum mechanics, solid-state physics, and theoretical physics. Going to school only at night, it took me some time to finish, but I finally earned a master's degree in 1973."

A master's degree completed, more education seemed desirable in view of Gail's interests in pursuing research. She notes: "After deciding once and for all that I wouldn't be a lawyer, I looked around to see what kind of program I could find that would be applicable in terms of the work I was doing, and that would not be just an academic pursuit. I chose New York University, where I started in the Physics Department."

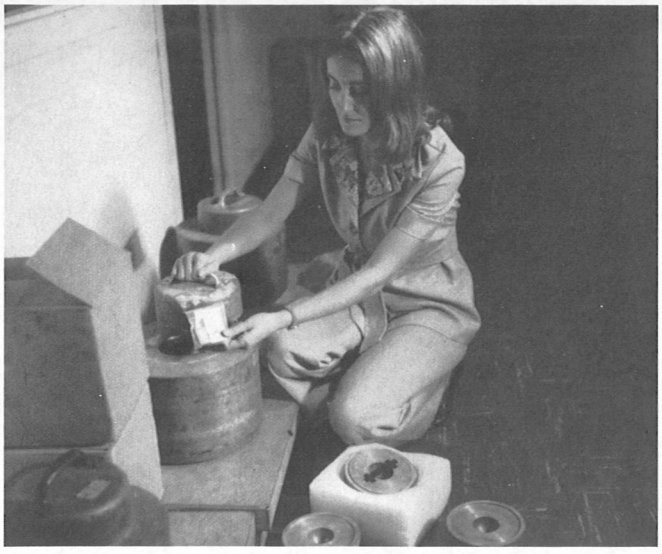
But after a few courses in the Physics Department, Gail realized that the NYU physics program was not as diversified as she wanted, in view of her professional work. She continues: "It was a very traditional physics program, and I was looking for something that was more interdisciplinary. At that time, NYU had a new department that had evolved from the Nuclear Engineering Department, largely through the efforts of Dr. Merril Eisenbud, who also happened to have been a previous director of HASL. It was an interdisciplinary program in environmental health sciences at what is now called the Department of Environmental Medicine." She went through the course work in about five years, and then spent several more years completing her thesis in the area of solid-state dosimetry, during all of which she continued to advance her research career. She received her PhD degree in 1983.

Looking back on her experiences in getting her advanced degrees by attending school part-time, she says: "In retrospect, I don't think I'd recommend it—it is a difficult and demanding way to go. On the other hand, simultaneous and complementary work experience can be quite valuable."

Working

So, while she was pursuing her master's and PhD degrees, Gail was also employed full-time as a research physicist at the Environmental Measurements Laboratory.

The laboratory had its beginnings—during World War II—as an advisory group for the Manhattan Engineering District. At that time, it was mainly involved in industrial and occupational hazards from the use of uranium and beryllium in the weapons program. With the creation of the Atomic Energy Commission in 1947, the group became officially established as a laboratory. Since those days, the laboratory has experienced several changes, not only in its name, but in the sponsoring organization (after the restructuring of the AEC in 1975, the laboratory was run first under the auspices of the short-lived U.S.



Early work at the laboratory: left, on the rooftop checking measurements; right, working with TLDs to measure cosmic radiation

Energy Research and Development Administration, and eventually under the U.S. Department of Energy). Its main facilities are located in a government building at 376 Hudson St. in Manhattan.

In the early days, the laboratory was primarily involved in studying fallout from weapons testing. Several programs were set up at that time for the measurement of fallout, and parts of those programs still exist today, giving the laboratory more than a 40-year history of global measurements of radiation and radioactivity from ground level up through the stratosphere.

In describing her work with the laboratory, Gail explains: "I started out working with problems in radiation shielding, which I did for a couple of years. At about that time, interest was growing in the field of thermoluminescent dosimetry (TLD). Quite a bit of work was being done in the application of TLD to personnel monitoring, an area traditionally covered by film. Particularly because of the expansion of nuclear power, there was a need to develop good environmental dosimetry systems. In spite of the prevailing wisdom that TL wouldn't work well for environmental dosimetry, I decided to investigate the possibility. So I sort of locked myself in the laboratory for a while, and finally emerged saying, 'Guess what, I think they'll work.' This was the beginning of a mini-career in thermoluminescent dosimetry, especially its application to environmental measurements."

After considerable research work and a string of presentations and publications, Gail was called upon to chair the working group that developed an American National Standard on the performance of TLDs for environmental dosimetry. The standard was quickly adopted by the Nuclear Regulatory Commission and still remains in effect today. This work led to appointments as the U.S. delegate to working groups of the International Organization on Standardization (ISO) and the International Electrotechnical Commission (IEC), working with TLD for environmental and personnel monitoring. "And just to make sure I had no time to get into trouble," Gail notes, "I also became involved in the organizing and editorial committees for several of the international conferences in solid-state dosimetry."

Today, EML continues with many of the programs that Gail helped start. An example is the series of international intercomparisons on TLDs used for environmental measurements, which began in 1974 in cooperation with colleagues Tom Gesell (University of Texas) and Klaus Becker (Oak Ridge National Laboratory). EML continues to sponsor the intercomparisons every year or so, with some 150 laboratories from around the world participating. This type of program is in perfect keeping with the laboratory's heavy emphasis on research and development in the area of quality assurance, Gail notes.

The application of TLD to environmental monitoring around nuclear power plants and nuclear facilities in general was one of Gail's primary interests. Along with this went the need for understanding the spatial and temporal variations in natural background radiation. She initiated long-term studies of environmental radiation background with TLDs, along with research into methods for interpreting the results of TLD measurements made around nuclear facilities in order to isolate facilities-related radiation doses.

In the 1970s, the laboratory worked with several power plants, setting up and testing environmental monitoring programs. "Our laboratory helped to bring TLDs to the forefront as a viable method for making extensive, relatively inexpensive measurements around nuclear facilities," Gail says. "Networks of TLDs were established around every power plant in this country, and around nuclear power plants throughout the world. And when the accident at Three Mile Island occurred, ultimately the exposures to the public were determined largely from the TLDs that were around the plant. After the accident, I think there was a better realization of the necessity of detectors like this, and TLD networks around power plants were greatly expanded. Today, you're likely to see three sets of TLDs, or even four, around any given plant: one operated by the utility, one by the state, one by the NRC, and sometimes one operated by an independent consultant." From Gail's experience with the international comparisons, she found that today there are at least 20 000 locations all over the world that are monitored at any given time with TLDs. And these are only those operated by the intercomparison participants, so the real number is probably considerably higher. "I get very frustrated sometimes," she notes, "because here we essentially have a global monitoring network established, but it's not being used in that sense. It would be fantastic if it could somehow be standardized and coordinated so that the data were useful for research purposes as well as during accidents. Hopefully, some day that will come about; there is just an incredible wealth of information out there waiting to be tapped."

Recalling an amusing incident that took place shortly after the TMI accident, Gail notes that she had spoken at a meeting of the Ohio ANS Section, and they had arranged a television interview for her with Dorothy Fuldheim, a well-known, long-time journalist and reporter in the Cleveland area. She was rather intimidated by just how famous this interviewer was. The topic of the interview was to be environmental dosimetry. According to Gail: "I went into her office

for a pre-show interview, and she said, 'Oh, I see you're from the Department of Energy. The DOE is doing a lot of work on electric cars. What do you know about electric cars?' Well, all I knew about electric cars was what I had read in the popular press, but even though I kept telling her I knew about environmental dosimetry and could talk about TMI, she just kept going on about electric cars. Well, this was going to be a live show, and I was convinced that I was about to make a fool of myself on live television trying to talk about electric cars. But when it was time for the interview, she looked at me and said, 'I understand you know something about environmental dosimetry. Can you tell us about measurements made around Three Mile Island?' I couldn't believe it. This woman was a pro—she had heard everything I had said before the interview. She just steered me right down the proper path once we were on the air. It was one of my early experiences in dealing with the media, and fortunately a good one."

When the laboratory fell under the ERDA rather than AEC umbrella, there came a push to expand into non-nuclear work—"non-nuclear being a catch-all phrase for all other forms of energy generation," Gail says. Researchers at the laboratory adapted and expanded many of their radiation programs to measure and study pollutants in the environment from fossil-fuel burning. Thus, the laboratory began to move into such areas as acid rain, or, more correctly, acid deposition, and became involved in several interagency efforts studying atmospheric transport of environmental contaminants across the North American continent.

Today, one of the hot issues is radon, Gail says. From the beginning, the laboratory had been involved in radon because of the concern over radon exposure in uranium mines. Today, EML is one of four reference laboratories in the world for radon calibration measurements, and routinely conducts comparisons with other facilities around the world. In fact, the first several rounds of the Environmental Protection Agency certification tests for commercial radon detectors were conducted at EML while the EPA was completing its own calibration facility.

The 1986 accident at Chernobyl was a significant event for EML, as it was for many laboratories. "We were naturally one of the laboratories immediately called upon by the DOE to marshall our forces and see what we could do," Gail says. "A great deal of the laboratory's efforts instantly turned to Chernobyl. Our global network of fallout sampling stations that had been in existence for years was immediately tapped for this purpose, with several collection stations being switched to daily instead of monthly or weekly collection. Based on decades of studying environmental radiation and radioactivity, we have considerable expertise in such areas as soil sampling and *in situ* gamma spectrometry, and we sent personnel to work with colleagues in Europe. In addition, extensive studies were conducted in the New York area, including milk and diet analyses. I'm pleased to say that we were one of the first, if not the first, organization in the DOE community to publish results of Chernobyl."

While Gail's research efforts, resulting in more than 60 scientific publications, were heavily concentrated on solid-state dosimetry, environmental radiation, and nuclear facilities monitoring, she became involved in a multitude of endeavors. These include membership in EURADOS (European Radiation Dosimetry Group) and the National Council on Radiation Protection and Measurements task force on xenon, as well as a place on the editorial board of the *Radiation Protection Dosimetry* journal. In the academic area, she is an adjunct professor at New York University, and serves on the Advisory Committee to the Board of Trustees of the New Jersey Institute of Technology.

After many years of hands-on research, Gail moved up the management ladder at the laboratory, becoming deputy laboratory director in 1982. She comments: "Herbert Volchok became laboratory director the year before I was appointed deputy. Because he had not been director all that long before I became his deputy, the two of us really began to manage the laboratory together. His technical background and mine complemented each other, and between us we were collectively comfortable with the work. He was a delight and pleasure to work with."

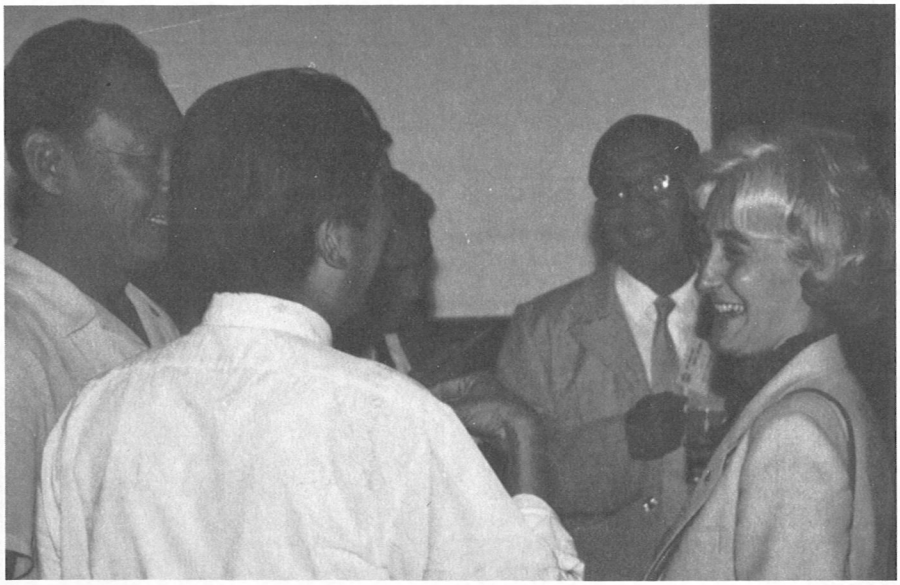
Volchok died suddenly in 1987, and Gail was appointed director of the laboratory. "Taking over the job was the easiest part of the succession," she states. "Losing a good friend, part of my support network, and someone I was so used to working with as a team, that was the hardest part. He was always extremely supportive of my efforts with ANS. We had carefully explored how I would be able to handle the responsibilities of ANS president-elect and president. We figured that when these duties were over, he would probably want to retire, and, if I was interested in the director's job, I would most likely have a good chance of getting it. So much for long-range planning."

Society activities

Early in her career, Gail became active in both the American Nuclear Society and the Health Physics Society. "ANS came first," she recalls, "because the first technical paper I ever gave was at an ANS meeting [in June 1971 in Boston]. But for me, professionally, it made sense to have a foot in both camps. I haven't had much time for the HPS work lately because I've become so much more active in ANS, but I'm still a national member of HPS and belong to two of their local sections."

At her first ANS meeting, Gail met Clyde Jupiter, and she credits him with getting her active in the Society. "He badgered me all the time, nominated me for everything, and got me involved," she says. In the early days, she worked actively with the Environmental Science Division and the Radiation Protection and Shielding Division, serving on the Executive Committee of the latter. Simultaneously, she worked extensively with the New York Metropolitan Section, also serving on their Executive Committee. She currently belongs also to the Northern New Jersey Section.

In 1974, she was appointed to the National Program Committee. "That sort of started things," she notes. "That's an excellent committee—sort of a cross section



In the People's Republic of China in 1987

of the Society—for learning about ANS. Several years after that, someone, I think it was Manning Muntzing, called me up and asked me to join the Bylaws and Rules Committee. The approach at that time was that not many people want to be on this committee because its activities seem somewhat foreign and dull to scientists and engineers, but would I be on the committee anyway? And I thought, well, I've always been interested in law, so why not; after all, it's not every day that one is asked to serve on a national committee. And that's a five-year appointment, but I now understand why—for the first year, you haven't a clue as to what's going on, and then in the second year, you finally get the idea. At that time, if you're still interested at all, they make you chair. I did that for two years. The fifth year you have to stay on—after all, someone has to explain it all to first-year members!

"But when I joined the committee [in 1980], things were no longer dull. All hell seemed to break loose for some reason. Those were the years when there was some very vocal discontent within the Society, largely centered around a perceived lack of openness on the part of the Board. I suspect a lot of it may have had to do with the tradition of running only one candidate, not only for the principal offices, but also for each of the Board positions at that time. Anyway, there were challenges to our election procedures. What came out of all of it, however, was not, in my estimate, the desired effect—that is, to open up the process a little more. What came out of it instead, of necessity, was a close look at the New York incorporation laws to see whether we were following them in our election procedures. As it turns out, strictly speaking, we weren't. We had to go through a considerable change in the procedure, which formerly had been a mail ballot process that I think worked fairly well, to a procedure that is an awkward combination of mail ballot and voting at the meeting. This has caused a little bit of a problem, in that we don't know the results of the election until the meeting. In any event, my term on the Bylaws and Rules Committee was hardly dull!

"And if that wasn't enough, Sharon Kerrick, who at that time was staff liaison to the Bylaws and Rules Committee, along with Margaret Butler, the previous chair—and a tough act to follow, I might add—felt that the local sections and divisions needed to clean up their bylaws and rules as well, some of which were archaic and out of sync with the National Bylaws and Rules. So we had a tremendous workload. I wound up working a lot with Manning Muntzing, because he was president during the time [1982–1983] when a lot of these things were being done. I remember a few times when we were on the phone at 11 o'clock at night, saying, 'What on earth do we do with this one?' I think now we both look back on it with a bit of amusement."

In considering those responsible for getting her involved with ANS, Gail recalls: "Muntzing has always been very influential in bringing about many of my activities with the Society. Before that, though, Ed Hennelly, whom I originally met on the program committee, also encouraged and supported my involvement. And, of course, from the beginning there was Clyde Jupiter, always a good friend and supporter, who was the one who got me to run for the Board the first time [in 1977]."

Never sitting still, Gail has also served on many other ANS committees, including the Planning Committee, various nominating committees, the Finance Committee, and the Executive Committee. She has served two terms on the ANS Board of Directors: 1977–1980 and 1984–1987.

She is also a member of the Association for Women in Science (she served as vice president of the New York Metropolitan Chapter), the American Physical Society, the American Association for the Advancement of Science, and the New York Academy of Sciences.

Private life

Home for Gail is still Maplewood, N.J., a 45-minute commute ("non-rush hour," she hastens to note) from EML. While her duties as laboratory director and as ANS president do not allow much chance for relaxation, she still manages to find time to pursue outside interests. "New York City is unique and just special. One of the nice things about being in Manhattan," she says, "is the accessibility to Lincoln Center, Carnegie Hall, and, of course, the theatre—that's one of my major interests.

"I very much enjoy classical music, so I almost always have a radio or tape on at home. I play the piano, but just for myself. And I try to manage to play tennis regularly. I learned to play when I was young, which was somewhat unusual then, so it was hard to find people to play with. Fortunately for me, we now have a group from the laboratory with regular court time. And one of my most challenging partners is my father, now nearly 80, who lives in Bradenton, Fla. [Her mother died in 1971.]

"I also enjoy photography—I've never taken any lessons, but I like it, and often combine it with my appreciation for cats. My own cat, Genever, who, by the way, has had to come to terms with my travel, usually manages to show up in the last few frames of every role of film I shoot. Of course, it's nice to combine travel and photography. I'm not one of those real picky people who take 10 minutes to set up a scene; I just do it. If it comes out nice, then I'm lucky."

Travel has been a part of Gail's professional duty—and personal interest—for many years. "I have been very fortunate professionally, since I've gotten to travel a lot, mostly in connection with my responsibilities on international committees and collaborative research efforts with other laboratories." She has been in many places in western Europe, as well as Egypt, Latin America, Australia, and China. "One of the most memorable things that ever happened to me on a trip occurred when I was on the organizing committee for a conference held in Toulouse in the early 1980s," she recalls. "The 'night out' for the conference was a tour through the Armagnac country of France, where armagnac, a kind of cognac, is made. The organizing committee was inducted into the Knights of Armagnac—a very traditional French society. I think I was the first woman inducted into the group, and they weren't quite sure what to do with me. All of the men received traditional royal blue sashes with medallions, but they gave me a big musketeer's hat with a huge feather in it. I had many more stops to go on my trip, and I couldn't imagine how I was going to carry this hat around with me. But Martin Aitken, a dosimetry expert from

Genever de Planque (photo by E. Gail de Planque)

Oxford, fancied the hat and offered to trade his sash for my hat. This initiated a delightful series of inquiries concerning the well-being of our respective hat and sash."

Always fascinated with her family name, Gail has also developed an interest in genealogy. "Several years ago," she explains, "I was attending a meeting in Salt Lake City. I had an extra day, and I took a tour of the Mormon Temple, which included their marvelous genealogical library, and I got hooked. At that point, I didn't even know my great-grandfather's first name. Now I know my family back to Jean Frederick de Planque, a French marquis in the late 1700s, and the estate in Normandy from which my ancestors have come. As an interesting sidelight, I managed to reestablish connections with another part of the family that we had lost track of for more than 30 years." If you see her in airports furiously looking through telephone books, she says, fear not, there is no problem. She's just searching for long-lost relatives.

ANS goals

"One of the concerns I have about the Society is its image," Gail states. "Over the past few years, there's been a considerable emphasis on commercial nuclear power. That's been natural, of course, since the nuclear power industry has been through some tough times, and a large fraction of the ANS membership is involved in this area. On the other hand, the other components of the Society are not as visible as they were 10 or 15 years ago. I'd like to see us reemphasize a broader scope for ANS. I think that's important for several reasons. Future advancements in nuclear power in general depend to a great extent on a broad base of nuclear science and technology. We would be remiss to ignore basic research and development, and the many activities in other areas in which nuclear technology can be applied for the benefit of humanity. I think we need to consciously nurture all those areas, and actively pursue making them visible parts of the society. If we are perceived as—and, in fact, are—a broad-based society, interested in all applications of nuclear science and technology and not merely advocates of commercial nuclear power, we will maintain and enhance our credibility as technically competent spokespersons for the whole nuclear field."

Somewhat naturally, Gail is also interested in increasing the membership of women at ANS. "A lot of women's groups tend to be antinuclear," she notes. "I'm not convinced that this is grounded in the nuclear issue per se; rather, I sense that some degree of paternalism, or at least perceived paternalism, on the part of the industry in the past plays a role. It would be my hope that if more women become involved in this field, not just from the public relations point of view, but in business, operations, and in research, it will help to improve public image. For some reason, there just seems to be a little more trust when a woman speaks to a women's group. I hope that the situation will improve, though I must admit that I'm a little discouraged by the fact that the percentage of women in ANS has hardly changed since I joined the Society. When I first became active in ANS, women members comprised 1½ percent; now it's maybe 2 percent. The numbers of women have certainly increased in engineering in general, but not as much, as far as I can tell, in physics and nuclear engineering, and I'm not sure why that's the case. It certainly has nothing to do with ability. But there's still some reluctance to get into this business, and we need to make some effort to see that change."

Gail maintains that, in the long run, the power sector will benefit if the Society increases its emphasis on the other areas of nuclear science. She has accomplished so much in 43 short years that's it's hard to doubt her. If she is right and, in the coming year, her efforts do increase the Society's credibility, we will know where to direct the credit. It should make for an intriguing time.