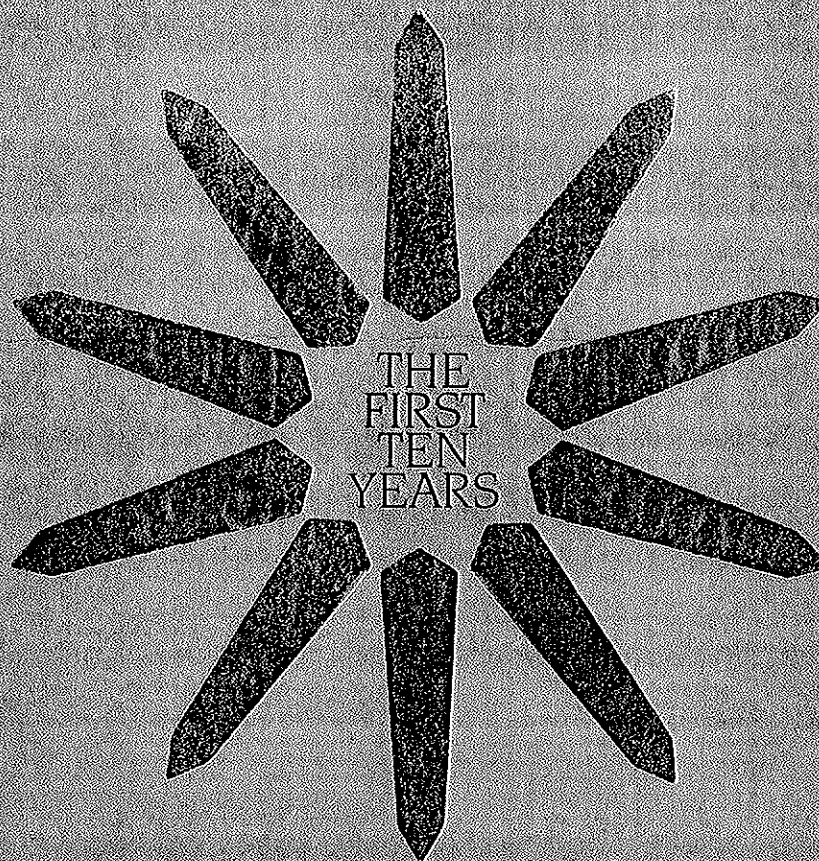




IEEE's United States Activities Board



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Ten Years . . .

USAB is ten years old. This special issue of *IMPACT* features a number of special items to cover the ten years of our existence. All the USAB chairmen have been asked to contribute to a special program at the June USAB meeting, to be reported on in our next issue. We also asked all of our Congressional Fellows to contribute to this issue.

There has been a real change in the IEEE since the formation of USAB. There has also been a change in the attitude of engineers. We are far more concerned about our profession, both as the public views our profession and as our profession contributes to society at large. These professional concerns are really worldwide concerns, and the Chairman of the United States Activities Board is also the IEEE Vice President for Professional Activities.

To date, there has been little IEEE action on professional activities outside of the United States. Our members in Canada have some interest in professional activities but these interests are not as well organized. The article in the February 1983 *IMPACT* by George Sinclair was an indication of his concerns, which he has voiced frequently and which numerous other Canadians have also voiced. Still, the participation of all citizens in all aspects of society seems to be stronger in the United States than in the other countries with large IEEE membership.

Your editor believes that the increase in professional activities among engineers is good for the profession and good for the country. I would like to see more of our membership engaged in professional activities, but this engagement must be voluntary, prompted by the individual's deep concern in the area. We are a society of individuals—fortunately, individuals who have different attitudes, different capabilities, and different interests. It would be as bad to try to force all engineers into professional activities just as previously some who engaged in professional activities thought that IEEE leadership positions required individuals who had published at least 20 papers in our journals. The IEEE should be open to all who have the qualifications of an engineer. We should encourage each to participate in his or her own way.

—B. J. Leon

IEEE IMPACT IS THE NEWSLETTER FOR THE IEEE PROFESSIONAL ACTIVITIES COMMITTEES FOR ENGINEERS



IEEE IMPACT

Send contributions to Ben Leon, Dept. EE, University of Kentucky, Lexington, KY 40506.
Address for other mail: IEEE IMPACT, 1111 19th Street, N.W., Suite 608, Washington, DC 20036
NOTE: MATERIAL FOR PUBLICATION **MUST** BE IN HAND 30 DAYS IN ADVANCE OF PUBLICATION DATES,
WHICH ARE THE *FIRST* DAYS OF EVEN MONTHS.

Editor-in-Chief
Benjamin J. Leon
(606) 257-8040

Executive Editor
David B. Dobson
(202) 722-2246

Managing Editor:
Gloria Aukland
(202) 785-0017

Associate Editors:
Frank E. Lord
(415) 966-2602

Harry M. Cronson
(617) 369-4000 ext. 339

IEEE IMPACT (ISSN 0274-8207) is published bimonthly for the Professional Activities Committees for Engineers of the IEEE United States Activities Board, by the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017, with the *IMPACT* Editorial and Administrative Offices at 1111 19th Street, N.W., Washington, DC 20036, telephone 202/785-0017. Annual subscriptions are \$1.00 per year and are included as a portion of the US assessment. All rights including translation are reserved by the IEEE. Second Class postage paid at New York, NY and additional mailing offices.

Postmaster: Please send Form 3579 to IEEE, 1111 19th Street, N.W., Washington, DC 20036.

USAB'S GROWING PAINS: IEEE COMES OF AGE IN WASHINGTON

USAB, the United States Activities Board, has too often been viewed as the radical vocal element of an otherwise quiet and unassuming professional society that pursues its work of increasing the body of technical knowledge and literature and educating its members to the most current state of the art without much fanfare.

USAB's accomplishments, however, are beginning to stand out amid the noise. The level of noise has, in fact, diminished, while the message of professional concerns comes through clearer. The actions of this major board of the Institute has matured, and in the recent three to four years, a greater degree of sophistication in its operations is noticeable. The past is truly prologue in the sense that solutions to professional problems have come about.

As an example, the following four professional dilemmas were presented in the prologue to the annual report prepared by USAB at the end of 1976. In only five years, three of the four dilemmas have been resolved, and the fourth is targeted for 1982. Consider the first of the problems as outlined in the annual report:

- *"You are a 50-year-old EE working on a Government aerospace contract for \$17,290 per year. A new company takes over the contract and you receive an offer to continue your employment at \$8,700 per year."*

In 1978, following a year-long struggle to devise a legislative solution, USAB achieved an administrative solution to the problem of wage-busting with OMB Policy Letter 78-2, which made professional salary considerations central to service contract bids. Government agencies were directed to consider whether realistic salary levels had been proposed. Under the new regulation, action can be taken by individuals working under service contracts to assure compliance. A booklet, *PAC Guide to Service Contracts* (subtitled "Your Rights As A Service Contract Employee") was published by USAB to provide guidance to members through the Professional Activities Committees of the IEEE Sections and Societies. Pressure is being continued, however, on the legislative front, with testimony and support for various bills. Another serious problem in 1976 was:

- *"You are 35 years old and far-sighted. Consequently, you're troubled by your company's inadequate pension plan. You would like to 'opt out' and set up your own Individual Retirement Account (IRA). This way, you could sock away 1500 tax-deductible dollars every year and thereby add a tidy supplement to your ultimate retirement benefit. But the law forbids this simply because you are covered by your company's pension plan."*

In 1981, investment in IRAs was opened to all workers under the provisions of the Economic Recovery Act. The limitation is \$2,000, and the deduction will be effective for tax years after 12/31/81. But USAB's efforts towards more equitable pension benefits are not limited to IRAs. Portable pensions is still an objective that will continue to be addressed in 1982. A third problem posed in USAB's 1976 report concerned:

- *"You are an EE with a severe conscience. You take seriously the IEEE Code of Ethics' charge to 'protect the safety, health and welfare of the public and speak out against abuses in those areas affecting the public interest.' But you also have a family to support and so you keep quiet about what you consider an unsafe practice on the project on which you're working. After all, if you 'blow the whistle' and lose your job in the process, who will help you?"*

IEEE can help, according to policy and procedures initiated by USAB and approved by the IEEE Board of Directors in 1978. Procedures for support and procedures for discipline of members were outlined in various IEEE publications following BoD approval. A Member Conduct Committee is appointed each year to deal with ethical matters. USAB has published a number of materials to provide guidance to members through PACs. The fourth professional dilemma was described as follows:

- *"You are a prolific inventor. You've garnered a number of patents over the years, and while this has brought you a lot of praise, it rankles a bit that you've had to assign your company all the rights to your inventions. True, you've had some promotions, but you would still enjoy having some direct share in the income from these inventions. But there's nothing you can do. It's 'company policy,' and not unusual at that."*

The present Congressional session saw USAB's patent bill introduced, while a major lobbying effort is getting under way among volunteers. The provisions of this bill have been described in several publications. Essentially, it would provide rights to inventions made while employed, if such inventions are unrelated to the employer's business and did not involve the employer's time or materials. Last year, USAB supported legislation that returned to contractors the rights to inventions made under Federally sponsored research projects.

While these dilemmas may represent the major thrusts of USAB, they are by no means all the programs in progress in the Washington Office. When members decided that energy problems were foremost in their minds, according to the 1980 Opinion Survey conducted by USAB, the Energy Committee swung into action. It provided testimony on a number of energy projects, to the Congress and DOE, and it developed a number of positions ultimately approved by the BoD as IEEE Position Papers. The Committee also developed a slide presentation on the U.S. energy problem that will be distributed in January 1982 through the PACs. In turn, members may take it to other professional societies, civic organizations and schools for presentation.

USAB is ten years old in 1982, and the past years have often, not surprisingly, been turbulent ones. If, as engineers, we think in terms of lead-time from conception to marketing of an electronic system, ten is a decent average for the never-easy effort to go from ground zero to a focused, self-sustaining program aimed at meeting real needs at a reasonable cost.

Happy Birthday USAB!



USAB CHAIRMAN'S MESSAGE

THE ISSUE OF THE ALIEN ENGINEER

In recent years, the alien engineer has begun to occupy an increasingly important and controversial niche in our technical industry and even more so in our engineering schools. The reason for this phenomenon is not completely clear and widely debated. But regularly one hears segments of the electronic industry say they could not function without these alien engineers. And the statistics are incontrovertible that our graduate schools, and thereby the ranks of our teachers of undergrads have extremely high percentages of aliens.

One fact that cannot be denied is that under current law, when alien students leave school they must either obtain employment or return home. This has led to claims—and some cases have been clearly identified—that some companies and schools have taken advantage of the students' vulnerability and offered them jobs well below the salary the job might command in an open market.

Educators say, however, that considering the salaries they are able to offer, they could never obtain the staffs they need to educate the engineers needed in the United States, without the aliens who are willing to take these salaries. Whether the public would be willing to increase its financial support of engineering education, if it could not obtain these alien teachers, is not clear. There does appear to be an increasing realization that our engineering schools need more support. A number of companies have recently made large donations to engineering schools. A bill in Congress, H.R. 1310, proposes matching grants by the Federal government. The IEEE, through AAES, strongly supported this proposal this past February.

The IEEE has been involved in the alien engineer issue for several years. Originally, it aimed at avoiding the wage busting of alien engineers because of their vulnerability. In 1981 a statement was sent to the Labor Department recommending that if an alien engineer is offered a job with a salary in the upper quartile for such a job, he be granted his "green card" automatically. On the other hand, if the offered salary was in the lower quartile, he should automatically be disqualified.

However about a year ago, the issue took a new direction. A bill was introduced in Congress that proposed to make citizens of *all* aliens currently in the country. But from then on, it would be much tougher to enter the United States, and, germane to engineers, all alien students would have to return home for two years after

graduation and then enter the standard queue for entry to the United States.

The USAB Manpower Committee did not oppose the two-year return but recommended that a select group of engineering graduates, those in the top decile of their classes and with salary offers also in the top decile for the job, be exempted from the return provision. The bill was ultimately amended to include a broad exemption for all technical graduates. But because of the controversy over the broader issue of making citizens of all current aliens, the bill never came to a vote in the 1982 Congress.

The bill again emerged in the 1983 Congress, and the IEEE was again asked by the House to testify on the alien engineer issue. This time the Manpower Committee had moved to a somewhat stronger stance on the issue, that of specifically favoring the two-year return and saying there should be no exceptions; but if there were, they should be for exceptional students. Further, together with the NSPE, we brought the issue to the Engineering Affairs Council of AAES, and they ratified the position. And so our Career Council Chairman, Dave Lewis, testified before Congress representing the AAES with this position.

The issue is obviously a controversial one, and the Manpower Committee position is being moved up through the hierarchy of the IEEE for ratification and/or modification. In April, on Long Island, USAB OpCom ratified the position and it will be submitted to the full USAB and the IEEE Executive Committee in June.

In the meantime, we are all looking for signs of how the members feel. At a recent Region 5 meeting in Houston, a seminar was held on professional affairs, and a straw vote on this issue favored the return-home provision by about two to one. *The Institute* asked several questions of their readers on the subject in a recent issue. Early returns indicate a majority favors return, but with selective exemptions. One of the possible checkoffs in *The Institute* survey was "no opinion." Up to now, *no one* has checked that off, a first. Everyone seems to have an opinion on this issue.

A controversial issue on which everyone has an opinion. WOW! But as Harry Truman used to say, "If you can't stand the heat, stay out of the kitchen."

—E. J. Doyle

THE SCORE

IEEE 100

USAB 10

No, the above is not a lop-sided basketball score; nor is it the relative budget of the IEEE and USAB. Rather, it is a cryptic way of saying that in 1984 the IEEE will be 100 years old, which we all know by now. But also, as many of us may not know, that in 1983 USAB (or professional activities in the IEEE) will be 10 years old. For it was then that the IEEE Constitution and Bylaws were amended to include professional activities in our scope.

As we approach this 10th anniversary, it might be well to relook at the direction given back then. Let me quote from the IEEE Constitution the pertinent words on professional activities. "Its purposes are—(b) professional, directed toward the advancement of the standing of the members of the profession it serves; means to this end include, but are not limited to, the conduct and publication of surveys and reports on matters of professional concern to the members of such professions, collaborations with public bodies and with other societies for the benefit of the engineering professions as a whole, and the establishment of standards of qualification and ethical conduct." This covers what we in USAB sometimes call the "inward" part of our activities, now mainly conducted by our Career Council.

The "outward" activities of USAB are covered in the next section of the Constitution. "The IEEE shall strive to enhance the quality of life for all people throughout the world through the constructive application of technology in its fields of competence. It shall endeavor to promote understanding of the influence of such technology on the public welfare." Such activities in USAB are mainly carried out by its Technology Council.

I have not been able so far to find out who actually wrote these words. But at least for me, ten years later, I

would not wish to change them much.

The stimulus that put IEEE into professional activities after so many years of existence was truly a grass roots endeavor. One hears of organization meetings in members' living rooms planning the strategy to gain this goal. At the time there were dire predictions that this turn in the direction of the Institute would destroy its technical pre-eminence. Any honest observer would have to admit that this has not happened. In fact, to a certain extent, some of the activities of our technology policy committees may well have enlightened the outside world about our technical capabilities.

To those of us who have closely watched USAB (and the predecessor USAC) over its history have been delegated to watch its growing maturity. As one of the "old hands" of professional activities said to me after a recent USAB meeting, "They no longer jump up on the table and shout at each other." Sometimes I am personally concerned that things are so orderly that we're not getting anything done. But when I really look closely, the action is there, more than ever. We just seem to have learned how to go about it in a less passionate manner.

One of my occupations, other than my salaried job and my non-salaried IEEE work is as a jazz drummer. And thinking about USAB, I am drawn to an old jazz song whose lyric went: "You've come a long way from St. Louis, baby, but you've still got a long way to go." I think this very well describes USAB. It will be fun to look at USAB in another ten years. I hope it will have come an even longer way and have less of a way to go. Come on you young PACE people, keep pushing!

—Jack Doyle

INSTITUTE PENSION FUND PROPOSED

Many of us have thought that the Institute should have a fund, from which the Board of Directors could from time to time allot sums of money or pensions to distinguished members who are in straitened circumstances. I know this is a very difficult problem to handle wisely, but I believe it would be a sound thing for the Institute to do.

Even though the Institute does not itself allocate funds to this objective, it might well receive contributions to a fund for such purposes, to which many engineers will be

willing to contribute. I have not infrequently heard the expression that it is a "reflection on the electrical industry" if any one of its truly distinguished men is not provided for in his old age.

—from a letter to Institute leadership written in 1942, commenting on the nationally publicized plight of Nikola Tesla.

NATIONAL PACE CHAIRMAN'S CORNER

Elsewhere in this issue of *IMPACT* the history of USAC/USAB and PAC/PACE will no doubt be recorded. Growing pains will be remembered by many of us. If one wishes to do so, he can criticize those initial efforts. But isn't it always easy to look back and identify misjudgments and false starts? I prefer to think that those who guided USAB in its beginning were people of goodwill, the same as you who presently hold leadership positions.

Bold steps were taken in 1971, 1972, and 1973. There are still members who will tell you that the Institute has no business being involved in professional activities. I trust that they realize the Constitution was changed by a vote of the membership, which permitted the Institute to expand in this relatively new direction.

The passage of time has other effects, as well. I wonder how many of our members have been in the Institute less than ten years. They are probably not interested in hearing that the Institute was not always the way it is today. USAB and PACE activities were in place when they joined! Think about the thousands of students who have been introduced to IEEE through the excellent Student Professional Awareness Program! Many of them have participated in S-PACs (Student Professional Awareness Conferences) where the USAB-PACE messages are clearly presented, and, I might add, enthusiastically received. They will always know the Institute as a strong, viable organization with two thrusts—one technical and the other professional. The latter should not, and in fact cannot, diminish the former.

Having mentioned student branches, I am reminded of the student magazine, *Potentials*. Every time I have shown an issue to an IEEE member, the response has been, "Let me see that! Where can I get a copy?" Now, of course, it is specifically for the students. As a matter of fact, they voted to increase their dues by 25% just so they could have the magazine. But I think it would be a good idea for Sections to subscribe. Perhaps the Section executive committee has a member with student responsibilities. This person could take out the subscription and circulate the magazine, so that everyone would get to see it. For a subscription, which costs \$10 a year, write to: IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.

Let me ask you to keep the communication lines open within PACE. When an item interests you or a problem needs to be addressed, don't hesitate to call your region, area or section PACE person, and call or write to me if you wish! Sanda Blair is another person to contact. She frequently makes six or eight copies of letters sent to her and distributes them to everyone who may be in a position to take action. Let's keep PACE on the front burner throughout our 10th year.

—Joseph A. Edminister



PROFESSIONAL IDEALS SET BY ENGINEERING FEDERATION

According to a report received by *IMPACT*, a "preliminary conference of many engineering societies" was held, and shortly afterward a council was organized, which was, at first, called Federated American Engineering Societies. The following excerpt from its constitution "indicates the high idealism as to the function of the engineer in our modern life: 'The object of this organization shall be to further the public welfare wherever technical and engineering knowledge and experience are involved, and to consider and act upon matters of common concern to the engineering and allied technical professions.' "

—Quoted material taken from *Electrical Engineering 50th Anniversary Number, May 1934*; "The Institute's First Half Century" by Charles F. Scott. The federation, which became known as the American Engineering Council, was organized in November 1920, with Herbert Hoover as its president.

WASHINGTON SCENE



John A. Casazza

Increased Efficiency and Diversification of Energy Sources Urged

Former IEEE Energy Committee Chairman John A. Casazza testified at three recent Congressional hearings to "provide the Institute's perspective on the nature of the current U.S. energy problem, and the steps the Federal government should be taking to alleviate this problem." The testimony was presented to a Senate Committee on Energy and Natural Resources subcommittee on May 3, and to subcommittees of both the House and Senate Appropriations Committees on March 24. Mr. Casazza recommended a number of actions to increase energy efficiency and diversify resources. "We believe that free market forces can be constructively influenced by appropriate government policy and action," he said. The recommendations included accelerated investment in energy-efficiency equipment and support for the development of solar energy, fusion power, breeder reactors, nuclear power, and coal power. Copies of the testimonies are available from the IEEE Washington Office.

Increased NASA and NSF Funding Supported

On behalf of the R&D Committee, Theodore R. Simpson testified before a subcommittee of the House Appropriations Committee on April 20 in support of full funding of a number of R&D programs of the National Aeronautics and Space Administration and the National Science Foundation. Regarding NASA's budget, Mr. Simpson specifically endorsed funding levels for space science and applications, space transportation, and aeronautics, although some increases were recommended for research in advanced aeronautics technology. In the larger context of overall R&D funding levels, Mr. Simp-

son remarked that while international competition is increasing, the U.S. trend toward decreasing R&D levels "has to be reversed." He termed Federal R&D a "key factor in maintaining our competitive edge," supporting the view that national economic well-being and national security "depends in part on science and technology."

In discussing the NSF budget, he pointed to the "vital role that high technology will play in opening up new industries and job opportunities," as a reasons why "we must not short-change the engineering disciplines . . . It is engineering and engineering research that will provide the critical linkages between discoveries in the laboratory and products and services in the marketplace." He also specifically endorsed program elements that would encourage faculty retention, including upgrading research tools and the new NSF research awards program, noting that about half of the awards proposed are slated for engineering. [See separate story in this issue.] Copies of the testimony are available from the IEEE Washington Office.



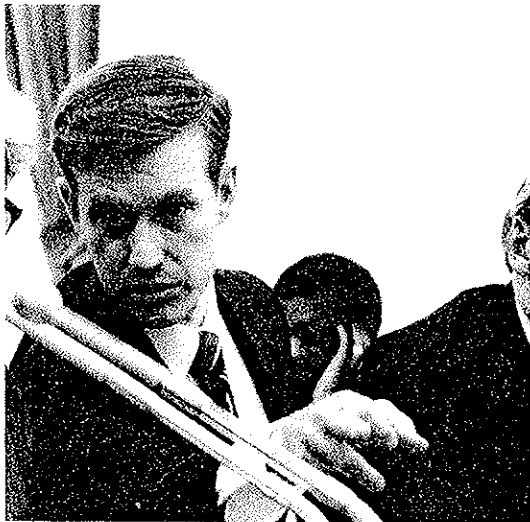
Theodore R. Simpson (l.) at witness table with Russell C. Drew.

Standards Bureau Budget Cuts Opposed by USAB

Russell C. Drew, chairman of USAB's Government Activities Council, testified before a subcommittee of the Senate Appropriations Committee on April 20 and a subcommittee of the House Appropriations Committee on April 7 against proposed budget cuts in programs of the National Bureau of Standards. The cuts appear "both short-sighted and completely out of keeping with our national need for technological development," he said. Two programs deserving of full funding, the Measurement Assurance Program and the Institute for Computer Science and Technology, were highlighted in Dr. Drew's statement. "There is general agreement that technology is one of the most important of the many factors that must be addressed in order to retain the degree of industrial leadership necessary to our continued economic health." Copies of his testimony are available from the IEEE Washington Office.

Fusion Energy Research Supported

Allan T. Mense testified on behalf of both the Energy and the R&D Committees before a subcommittee of the House Science and Technology Committee on March 16. Dr. Mense responded to a Congressional request for an assessment of the scientific status of the fusion program and its technical readiness for development, and for a proposal of program activities and funding levels to maintain an aggressive R&D pace, as well as for comments on the Administration proposal to lengthen the development schedule. He also commented on industrial involvement in the course of development. Copies of the testimony are available from the IEEE Washington Office.



David C. Lewis

"Return Home" Provision for Foreign Students Supported

David C. Lewis, chairman of USAB's Career Activities Council, testified on behalf of the AAES Engineering Affairs Council in favor of legislation requiring foreign students studying in the U.S. to return to their home country for two years after graduation. "We support the return-home provisions of H.R. 1510, and feel they should be implemented now . . . We are opposed to exploitation of alien engineers, just as we are opposed to the exploitation of American engineers." Copies of the testimony are available from the IEEE Washington Office. [See additional report in this issue.]

New USAB Committee to Study "Supercomputers"

An ad hoc committee on super scientific computers is planning to issue a preliminary report this year on government initiatives that may be needed to maintain the U.S. lead in the development of super-speed computers. The U.S. has always led the world in developing and producing "supercomputers," according to Dr. Sidney Fernbach, a theoretical physicist who chairs the new committee.

Meanwhile, the White House Office of Science and Technology Policy announced that it has asked the Departments of Energy and Defense to assume responsibility for addressing the Federal role in development and use of "supercomputers." While U.S. firms have dominated this field, the Japanese Ministry of International Trade and Industry is now assisting their industry to develop advanced computers that may begin to challenge U.S. leadership within a year or so. Dr. George A. Keyworth, Science Advisor to the President, stated, "We are watching this situation closely because the industry is fragile . . . Our national interests require that we maintain a dependable domestic capability to meet our needs."

Patent Bill Reintroduced

Sen. Charles Mathias (R-MD), who chairs the Subcommittee on Patents, Copyrights and Trademarks, has reintroduced a bill to protect semi-conductor chips and masks against unauthorized duplication. IEEE has been formally requested to testify at a hearing tentatively scheduled for May 19. USAB's Patents Task Force will prepare the testimony.

Research Awards Program Announced by NSF

A new program of research awards to the nation's most outstanding and promising young science and engineering faculty has been initiated by the National Science Foundation at the request of President Reagan. The program is expected to help universities meet the demand for highly qualified personnel for academic and industrial research and for teaching.

The Presidential Young Investigator Awards will provide cooperative research funds (from \$25,000 to \$100,000 per year) for up to five years to a maximum of 200 young science and engineering faculty each year. "Young" means faculty who are no more than seven years beyond receiving the doctorate degree. For further information, write Presidential Young Investigator Awards, National Science Foundation, Room 414, Washington, D.C. 20550, or telephone (202) 357-7536.

Strategy Recommended to Innovate Hi-Tech Products

Preserving national capacity to create and use frontier technologies must be "among the nation's highest priorities," according to a blue-ribbon panel assembled by the National Research Council. Stressing that domestic actions hold the key to the nation's performance in advanced technology development and trade in the years ahead, the panel urged the U.S. to give "immediate attention" to a two-part strategy, including new government and industry initiatives, aimed at strengthening domestic innovative capacity and reducing international trade frictions. The report and recommendations of the panel were made public in a hearing of the Senate Finance Committee on April 14. Further details are covered in USAB's *Legislative Report*.

Cogeneration to Reduce Costs, Increase Efficiency

The combined production of electricity and useful thermal energy—cogeneration—could contribute significantly to reduced costs and greater planning flexibility for electric utilities, as well as to increased energy efficiency in industrial facilities, commercial buildings, and rural and agricultural uses, according to a report released by the Congressional Office of Technology Assessment. OTA also points out, however, that cogeneration's potentially large market will be limited by technical, economic, and institutional constraints. One current, primary restraint is the uncertain status of regulations on pricing and obligations to interconnect. Resolution of these issues, currently on appeal to the U.S. Supreme Court, would lend economic and planning certainty to potential cogeneration projects.



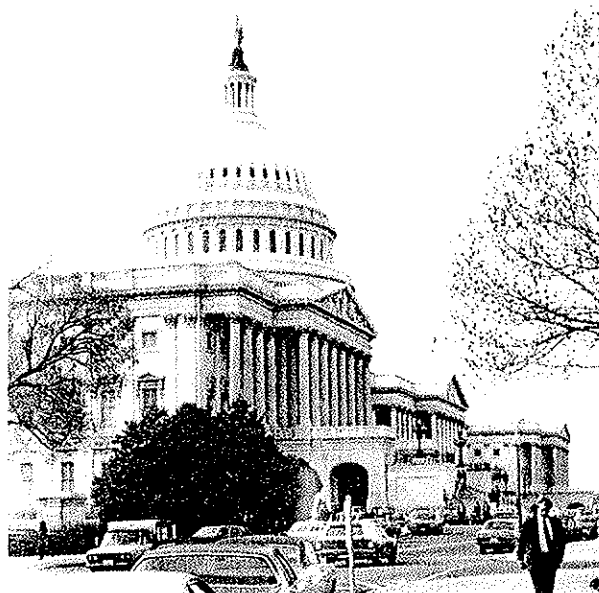
Harvey C. Nathanson

Electric Energy Systems Program Supported

Lester H. Fink testified on behalf of the R&D Committee before a subcommittee of the House Science and Technology Committee on March 17. "IEEE has consistently supported the Electric Energy Systems Program," he said, in testimony before Congressional oversight committees. "We strongly support continuation of that program." Major benefits were cited in the realm of advances in basic theory and in the recruitment and training of post-graduate professionals, who have begun to "inject new vigor into university power engineering programs and the power industry at large." Congress was urged, however, to restore funding at a level that will sustain the program's successful efforts, and to relocate it under an agency more supportive of broad-based, long-range research concerns, as well as to assure qualified staff at an adequate level. Copies of the testimony are available from the IEEE Washington Office.

R&D at DOD Supported

Five action items "of particular concern to IEEE" were proposed for implementation in the DOD budget by Dr. Harvey C. Nathanson testifying on behalf of the R&D Committee before a subcommittee of the Senate Appropriations Committee on April 19. His recommendations included protecting the Technology Base funding, continuing funding to upgrade university research equipment, supporting an assured manufacturing capability for the VHSIC program, continuing emphasis on advanced materials, and maintaining the vitality of IR&D and B&P procedures. Copies of the testimony are available from the IEEE Washington Office. ■





IEEE MEMBER IS GUEST OF TV TALK SHOW

Dr. Thelma A. Estrin, 1982 IEEE Executive Vice President, is seen here seated behind TV talk show host Phil Donahue (c.) on "The Phil Donahue Show," which aired nationally in April. The invitation to IEEE to appear on the show came as a result of CBS coverage of the Capitol Hill briefing for Congress and the media, sponsored by USAB in conjunction with broadcast of the EAB Robotics Seminar. (See *IMPACT*, Feb. 1983.) The subject of the Donahue Show was computers as educational tools, including such advanced technologies as robotics.

“PACE in the Second Decade” is Theme of 1983 National PACE Workshop

The 1983 National PACE Workshop, “PACE in the Second Decade,” will be held at the Pointe Resort in Phoenix, Arizona, during Labor Day weekend. The sessions will begin Friday evening, September 2, and continue through Monday morning, September 5.

In a departure from past PACE Workshops, this year’s program will include intensive workshops on leadership skills to enhance the development of the PACE volunteer network and the USAB programs served by that network. Also, attendees will be asked to examine what might be wanted and needed by IEEE members during the next 10 years, and to set goals accordingly.

Workshop planners have arranged for other special considerations, in addition to the off-season rates accorded attendees. For those who wish to bring families, the room rate for double occupancy will be the same as for single occupancy. This will be in effect for the weeks before and after the meeting.

PACE leaders are asked to contact their Regional or Divisional PACE Coordinators about attending.

Attend the Careers Conference

USAB’s Task Force on Career Maintenance and Development is sponsoring a third conference on careers, September 27-28, 1983, in Palo Alto, CA. “Enhancing Careers by Fulfilling Individual and Organizational Goals” will consider engineering careers from the standpoint of the practicing engineer, manager, social scientist, and academic, according to Conference Chairman Wallace D. Decker. Further information on the Conference and how to register is available from the IEEE Washington Office.



USAB CITATION OF HONOR PRESENTED TO JAMES F. FAIRMAN, JR.

IEEE President James B. Owens (r.) presented a USAB Citation of Honor to James F. Fairman, Jr., during the annual awards banquet of the Washington D.C. and Northern Virginia Sections. An engineer and an attorney, Mr. Fairman currently practices law in Washington, D.C. His award was for "enhancing recognition of national professional activities." For a number of years, he has counseled on legal aspects of both the ethical and age discrimination concerns of the Institute.

USAB CHAIRMEN HONORED AT DINNER COMMEMORATING USAB'S DECENNIUM

The current USAB Chairman, Edward J. Doyle, and six former chairmen of USAB or its predecessor organization, USAC, the United States Activities Committee, will be honored at a dinner commemorating USAB's Decennium during the series of Board meetings to be held in Denver in June.

On June 9, the current members of the Board of Directors and the major IEEE Boards—USAB, TAB, RAB, EAB and PUB—who will be gathered in Denver for their meetings, will attend a dinner and program sponsored by USAB to commemorate its first ten years and express its appreciation to the leaders of IEEE professional activities.

A commemorative booklet describing USAB's history, including the events that led to its formation and its significant accomplishments on behalf of the profession, was prepared for the occasion. USAB's guests of honor, and the years during which they held office, are:

Edward J. Doyle, 1982-83
Richard J. Gowen, 1980-81
Bruno O. Weinschel, 1978-79
John J. Guarrera, 1977

James H. Mulligan, 1976
Harold S. Goldberg, 1975
Leo Young, 1974
Harold S. Goldberg, 1973

IEEE's LEWIS TESTIFIES ON IMMIGRATION BILL,

Boston Section PACE Representative Observes

On March 10, Dr. David C. Lewis, chairman of the USAB Career Activities Council, testified before the House Subcommittee on Immigration, Refugees, and International Law. A representative of the Boston Section's Professional Activities Committee for Engineers (PACE) was in Washington to observe the hearings, to talk with aides of Rep. Barney Frank, and to meet staff members of the IEEE Washington office.

Dr. Lewis addressed those sections of the Mazzoli-Simpson Immigration Bill (H.R. 1510) that deal with the return home of foreign students who have studied in the United States. Speaking for IEEE and for the Engineering Affairs Council of the American Association of Engineering Societies (AAES) Dr. Lewis said, "We advocate the position that all students, upon completing their education, should return to their home country for a period of at least two years."

He went on to testify that "H.R. 1510 accepts the questionable notion that there is a manpower shortage and exempts, until 1989, students with degrees in natural science, engineering and computer science, or mathematics, with certified job offers in universities or in industry . . . We of the AAES/EAC contend that there is no basis for this exemption."

He further stated that "If there were a shortage of engineering manpower, we would expect to see a significant escalation in salaries paid engineers . . . [but] the IEEE salary survey data (for 1981) show no significant escalation, and salaries even decreased in constant dollars. In fact, our database shows that the second lowest paid engineering specialty is computer science, the specialty in which the shortage is supposed to be most acute."

IEEE's invitation to testify before the subcommittee followed the suggestion of Rep. Barney Frank, who had discussed the immigration issue with Boston Section PACE members in November at his Newton office. IEEE Washington staffers feel that the November meeting and subsequent letters from Boston PACE to Rep. Frank helped bring about the invitation. Because of this prior communication, and because Rep. Frank is a member of the subcommittee which held the hearings, Dr. Lewis and IEEE Washington staff invited a Boston Section PACE representative to come to Washington for the hearings and for a meeting with Rep. Frank's aides.

Dr. Lewis was part of a six-person panel which gave testimony on the foreign student issue. Two other panel members, Irwin Feerst of the Committee of Concerned EEs and Billy E. Reed of the American Engineering Association, also favored the two-year return home provision and the elimination of the temporary waiver for engineering students. The three panelists opposed to the return-home provision were Dr. Paul Grayu, president of MIT, who spoke for the Association of American Universities; John Calhoun, director of business development for Intel, who spoke for the American Electronics Association; and Marvin Baron, president-elect of the National Association of Foreign Student Advisors.

Mr. Baron stated that with the hiring of foreign students "displacement of Americans will not occur because of the certification process." Dr. Gray also mentioned the labor certification process. Certification is a process whereby, before an alien can be hired, it must be shown that no U.S. citizen is available to fill the position at the prevailing wage. Lewis, Feerst, and Reed all agreed that the current certification process does not work. The Subcommittee Chairman, Rep. Ron Mazzoli (D-Ky), even suggested that prior testimony had convinced him that the certification process did not work in other fields and would probably not work in engineering.

Boston Section PACE has been investigating the certification process for some time and feels that the current system is ineffective and is not being administered as intended by the law. PACE data indicate that salary surveys are not being conducted properly and that recruitment ads, which are used to certify that no one is available for a particular position, are overly specific and offer extremely low salaries. One ad placed by the Massachusetts Division of Employment Security in the Dec. 13, 1982 *Boston Globe*, offers a salary of \$18,000 for a position which requires "B.S. in relevant science plus 5 years experience in neutron activation or PhD with dissertation in area of neutron activation." Another ad, placed by the Division in the Nov. 15, 1982 *Globe*, requires a "Masters Degree in Computer Science or Computer Engineering" and "verbal and written fluency in English, French, and Arabic a must, as well as knowledge of European and Middle eastern cultures."

Rep. Don Lungren (R-Cal.) appeared frustrated by the lack of reliable, accepted data regarding engineering employment. He went on to stress that even if the waiver is adopted now, academic and industrial leaders should not expect to return to Congress in 1989 and easily obtain an extension. The "sunset provision" is meant, he said, to provide "an incentive for better education of Americans." He made it clear that Congress desires an improvement in American secondary education and that, in the future, American universities should plan to recruit more engineering students from American high schools.

Toward the end of the hearings, Rep. Mazzoli mentioned that prior testimony made him feel that agricultural interests prefer alien labor because it "is tractable and doesn't talk back." "Is there a possibility," he asked, "that we have the same thing with engineering?" The final draft of the bill is not yet ready. When it does appear, it may indicate how Rep. Mazzoli answered his own question.

IEEE members who wish to offer additional support for the IEEE/AAES position should write to their congressmen requesting that the exemption for engineers and computer scientists be removed from H.R. 1510. The address for all House members is: U.S. House of Representatives, Washington, DC 20515. ■

SOME THOUGHTS ON THE "MACHINE OF THE YEAR"

As USAB began its tenth year of Washington-based activities, a national news magazine that usually features a "man (or woman?) of the year" in its January issue chose instead to feature a "machine of the year," the computer. The magazine, *Time*, in its January 3, 1983 issue, stated that "it would have been possible to single out . . . one of the engineers or entrepreneurs who masterminded this technological revolution, but no one person has clearly dominated those turbulent events." Some caring IEEE members have raised the point that such feature articles in the past have profiled a profession or other group of persons; why not this time, *Time*? Perhaps anticipating the question, *Time*'s article further stated that the selection of people would "obscure the main point . . . the greatest influence for good or evil is not a man at all. It is a machine: the computer."

Are engineers so remote from the products they create that they have become invisible? Are the "things" they produce more important than they, as people, are? Wasn't USAB created to overcome that sort of reversal of priorities by advancing the professional standing of members? I am not faulting USAB; there are many dedicated volunteers and staff members working hard to achieve that goal.

It seems to me that I get a different message, however, from many other IEEE members. I take a lot of friendly teasing at IEEE meetings and during informal conversations, since I turned from engineering to law. I also regularly scan letters to the editors of IEEE publications. The message I get is that IEEE shouldn't mess in social affairs, including pensions, age discrimination, career development, and like matters. The members who send this message also seem to have an unhealthy disdain for politicians, and for other people who are considered less well-trained or trained differently—including lawyers like myself—or those who seem to have less imagination and lack creativity or depth of interest in a specialty.

Surely, we have all spent at least one day with someone who considers him- or herself an expert on insulating materials, or electronic modular interfaces, drive trains, or ANSI standard #0000 dealing with control valves monitoring nuclear plants of the boiling water type. These individuals can sometimes be as boring as a surgeon enamoured of sutures, their variety and applications. An important difference between the surgeon and the engineer is that the surgeon gets to see and deal with the people who want or need the surgeon's skill applied to them.

The software or hardware creators and designers, however, do not have such personal contact with the people who use the "things" that they have produced. Engineers, if they seem invisible, are so for two reasons: they are, in fact, isolated, and they like it that way.

Engineers are remote from the people who use the fruits of their labors. They write on company letterhead, and they participate in conferences identified as project manager of X for ABC Company. This enables them to keep a low personal profile and avoid conflict and disputation; they don't have to take a position on the impact of their expertise that they will have to defend, especially if they must articulate their views in a dialogue calling for expressions other than bytes—0 and 1, or on/off.

These circumstances amount to a vocational, occupational, professional hazard, or reality, that leaves engineers feeling mostly unappreciated and unidentified with their work-product. The products, however, hold great promise.

The *Time* article even states that computers "re-open the territory." When I was a college sophomore I learned about the Turner thesis; *i.e.*, there is a mind-set at work based on the frontier days. If you don't like eastern locales, you can go west, to open spaces. Now, our frontiers are space, or under the Arctic ice, or that "space in time" that, it is claimed, computers provide, "bytes of free time."

But when the blasted product doesn't work, who do you turn to? The clerk who answers the phone at the local outlet store doesn't know what to do. The voice on the other end of the toll-free number included in the instructions doesn't seem to be able to help either. The IEEE members in the bowels of GE, IBM, TI or Bell Labs are not the people that the public—the consumer/user—has contact with when they buy and try to use computers, microwave ovens, or automobiles.

The public doesn't know what engineers do. That, I suppose, is my thesis. And because the public doesn't know, there is no understanding of what goes into a computer, or a word processor, or a calculator, or a microwave oven. The engineer is a prisoner of his/her own black box. In my view, the engineer also appears reluctant or unable to contribute to decisions on how his/her skills are used. (The unchallenged assumption is that smaller or faster is better.)

By the same token engineers don't seem to know what others do. They are super-critical of the common folk or other professionals, including politicians, whom they perceive to be relatively uninformed of the wonders of technology, and who at the same time have their self-interest at heart, and hold elected offices, and are searching for the means to balance the myriad of interests busily competing in our society.

The computer was called the machine of the year, but it may as well be the tomb of the unknown engineer. The authors of the *Time* article state unabashedly that it was the engineer who gave us the Apple, but Eve got more recognition for her apple than the engineer ever will for his. And yet the computer may be causing as big a revolution in our modern society as that ancient apple did so long ago. America will boast a car in every garage, a chicken in every pot, and a computer in every home and office.

Something is wrong, when such a key group of professionals as engineers are invisible to the larger society. The questions I keep asking are: (1) Do engineers care? (2) If so, what input do they wish to have? (3) What terminal will they access to have an interface with the process? (4) If access is established, what do they want to communicate? (5) How will they know that communication has been effected? (6) What response will be fed back? (7) Is the feedback understandable? (8) What do engineers do with the message received? (9) Go back to question (1).

—James F. Fairman, Jr.

REFLECTIONS ON THE CAREER PATH— WOMEN IN ELECTRICAL ENGINEERING

In the late 1700s Benjamin Franklin said that science would serve the coming century as handmaiden to the arts. In the early 1800s Jacob Bigelow, a physician, introduced into general usage the word "technology" to signify that union. Both Franklin and Bigelow were ahead of their times. Most scientists in the universities pursued natural philosophy or investigations aimed toward the discovery of lofty metaphysical truths about the universe. They had nothing but disdain for practical applications. The practical men had little use for theories. These traditions impeded the union of science and the useful arts, which finally occurred in 1861 when MIT was established to educate the modern engineer.

All of us women in engineering are present-day pioneers, but I would like to introduce you (see boxed insert) to some women who were engineers more than a half-century ago.

I would like to tell you that at least one of those women was my role-model. But the truth is: I was the first woman engineer I ever knew.

YESTERDAY

At school nobody took me very seriously. But I took myself seriously and Jerry my husband, took me seriously. From the beginning, our marriage of almost 40 years has been a partnership. This was something that came to both of us quite naturally. Neither of us had to overcome the mindset of believing women's place was only in the home.

By working 18 hours a day and not taking vacations, we both zipped through Wisconsin, obtaining BS, MS and Ph.D. degrees in record time. As we were completing our Ph.D. theses in 1950, Bell Aircraft sent us identical telegrams offering us jobs at \$5,000 a year. We didn't accept because Jerry had a better opportunity for employment with John Von Neumann's team at the Institute for Advanced Study in Princeton, to build a new kind of machine, called a stored program digital computer—the parent of all our computers today. Despite our equal relationship and equal schooling, we just never questioned that his was to be the primary career and I would make the best choices under the circumstances. We moved to Princeton, where I tried to get a job, but hiring a woman engineer just was not something anyone wanted to do at that time.

During my graduate career at Wisconsin I had learned that electric signals could be recorded from the surface of the head by electrodes pasted to the scalp; the electrical tracings so produced are called electroencephalograms. I believed that the study of this electrical phenomenon should be in the province of an electrical engineer. When I couldn't find a job in the Princeton area, friends in New York helped me locate a position at the Neurological Institute in New York City, in the electroencephalography department.

In 1953 Jerry received a fellowship to go to Israel to build a computer at the Weizmann Institute of Science. I went along, became a member of his engineering group, and had the opportunity to learn about computers and participate in building the first computer in the Middle East.

Edith Clark, electrical engineer

Edith Clarke was the first woman to be elected a fellow of the American Institute of Electrical Engineers, forerunner of the IEEE. She made many original contributions to stability theory and circuit analysis. She graduated from Vassar and received a master of science degree in electrical engineering from MIT. She spent most of her career with General Electric and authored many publications on various aspects of power system analysis. She holds many patents in the field.

Lillian Moller Gilbreth, industrial engineer

A graduate of the University of California, she was the first woman to be chosen as UC commencement speaker. The book *Cheaper by the Dozen* is the story of her life. She is known as the "first lady of engineering," the "first ambassador of management," and the first woman to be elected to the National Academy of Engineers.

Elsie Gregory MacGill, aeronautical engineer

Elsie MacGill earned a bachelor's in electrical engineering from the University of Toronto, and a master's of science in aeronautical engineering from the University of Michigan. She was the first woman to design, build and test her own airplane. These accomplishments were made despite a crippling attack of poliomyelitis while she was at the University of Michigan.

Ada Augusta, software engineer

The Countess of Lovelace, Lord Byron's daughter was a skilled mathematician and a close friend of Charles Babbage. In a detailed analysis of his proposed "analytic engine," a mechanical calculating machine, she developed the essential ideas of programming. Her name will soon become a household word because the new Department of Defense programming language "Ada" was named after her. Ada is expected to become the dominant programming language of the 1980s.

Returning to the United States from Israel, we decided to move to sunny California, where Jerry became a professor in the engineering school at UCLA. Nepotism laws prevented me from obtaining a position in engineering, and I obtained a job in the medical school as a research engineer with the newly formed Brain Research Institute, where I designed and established the first general-purpose computer facility for brain research. My contributions helped to transform brain research from a qualitative discipline to what we now call neuroscience. With nepotism laws outlawed, I later became a professor of engineering in residence in the computer science department.

TODAY

At the present time, I am on leave from UCLA, serving as Director of the Electrical, Computer and Systems Engineering Division of the National Science Foundation.

For me there never was a doubt but that I had to continue my journey as a professional woman. My career has been a great adventure with great satisfactions—but if I were starting on that journey today, I'd use career planning as a guide. I'd be starting the journey with higher expectations; also, there are many more roads to choose from. Forty years ago my options were severely limited by the societal norms of the time.

Career and life planning is a relatively new field which takes a "systems view" of a person's life. For engineers it addresses such fundamental questions as: Do I want a higher degree? Should I become a registered engineer? Do I want to pursue a technical or managerial career, or both? What type of job do I want in the next years? Where is it? What is the knowledge base? What level of experience is required? What skills are needed? What kinds of interpersonal relationships are important to



Dr. Estrin chaired the USAB Committee on Professional Opportunities for Women (COMPOW) from 1976 through 1978, and actively supported its efforts over a five-year period. She has also served as President of the Engineering in Medicine and Biology Society, Director of Division VI, and Executive Vice President of IEEE.

develop? Career planning can also help with short-term decision-making on job assignments, and can provide the motivation for continuing education and acquiring new skills, and for transitioning to second and third careers. All these factors apply equally to male and female but there are distinct problems for women, in implementing career goals.

Today, women who try to combine the traditional feminine role of wife and mother with a professional career may be caught between two reference groups which have conflicting values and standards. Career and life planning is a guide in making these decisions because it

Margaret H. Hutchinson, chemical engineer

Dr. Hutchinson earned her degree in chemical engineering from Rice and was the first woman to earn a doctor of science degree at MIT. The major portion of her career was as a consultant for the Badger Process Division of Stone and Webster Engineering Corporation—she directed development and design of major plants for the production of penicillin, oil and synthetic rubber.

Margaret Ingels, mechanical engineer

Margaret Ingels is credited with being the first woman in the world to obtain a mechanical engineering degree. Born in Paris, Kentucky, she graduated from the University of Kentucky in 1916 and then obtained a master's degree from the University of Kentucky after three years of practical experience and a thesis. Her work in the air conditioning field is well respected. She spent most of her career with the Carrier Corporation.

Nora Stanton Barney, architect

She was the first woman in the United States to receive a civil engineering degree. The granddaughter of Elizabeth Cady Stanton, the women's suffrage leader, she brought suit against ASCE, in an effort to advance from junior member (today's AM) status to AM (now M, and thus voting, or corporate member ranking). It was one of the few battles she lost.

She graduated cum laude from Cornell University in 1905, where she was elected to Sigma Xi, honorary scientific society. Fresh from college, she authored a short paper on the water system of Washington, D.C., which served as a primary reference in studies on the transport of solids in liquids for 50 years. (*Transactions*, ASCE, December 1906.)

In 1908, Mrs. Barney was married to Dr. Lee DeForest, inventor of the radio vacuum tube. She became his assistant, but, as DeForest remarks in his autobiography, her need to work independently drove them apart. After their divorce, she married Morgan Barney, a naval architect.

forces self-awareness and attention to such questions as: What do I want out of life? Is social acceptance or financial success more important? Do I place a higher value on a career than a family, or do I place equal value on both? And most important—what compromises am I willing to make?

There will be many crossroads along the career path and at each one there is the perennial question: Do I have the courage and strength to take the more difficult path or should I take a lesser voyage? Perhaps you don't want to climb the highest mountain but just want an invigorating hike each day. It's okay to choose to stay at base camp and support the more competitive and ambitious souls who want to scale the mountains. The wonderful thing about engineering as a career is that it offers the options. There are 9-to-5 environments offering creative jobs while leaving energy for family, hobbies, friends. Then there are those highly competitive, all-consuming environments that give you great power if you can get to the top of the ladder and not develop too many ulcers or other stress-related diseases along the way. The corporate road has many obstacles, is fiercely competitive, and takes great stamina, but it also has great rewards. If it fits your personality, go for it. But tread wisely. Women must remember that they may be traversing a dormant minefield of sexism. The mines were not put there especially for an individual woman; they are remnants of the past. But help is on the way. Research in the disciplines of behavioral psychology, women's studies and organizational development are telling us that, driven by technological advances, the workplace and the home environment of tomorrow will become more appropriate for women's aspirations.

TOMORROW

In the world of tomorrow we will have restructured the world of work to accommodate all human beings, including working women. The issue is not whether women can or should or will work. Women are working, they want to work, they have to work, and the economy needs them to work. We must confront the problem of how to make our work-world more responsive to the personal and social needs of all of us, with equal pay for comparable work, job-sharing, part-time work and easy access to child care. When we do, half of the members of the learned professions will be women. The traditional women's professions of today—teacher, nurse, secretary, librarian—will include large numbers of males. As a result, these professions will no longer be among the lowest-paid occupations. My hope is that the benefits of technology will humanize the world, as we women engineers humanize technology. ■



PUT THE "YOU" IN USAB

USAB's Pension Task Force is looking for a few good men or women—IEEE volunteers with an interest in pensions. Volunteers who serve on this task force will be expected to initiate and complete those tasks which identify and resolve pension problems common to the American members of IEEE.



No salary is offered; only all the overtime an individual could want. Apart from the free coffee generally available at task force meetings, there are no other fringe benefits, let alone a pension! On the plus side, volunteers participating in these activities can help solve a major problem of the profession, and they can reasonably expect to learn a lot about corporate pension plans, especially their own!

Contact your USAB recruiter today! Write or phone IEEE Washington office, 1111 Nineteenth St., N.W., Washington, D.C. 20036; (202) 785-0017. Tell'em Dave Lewis sent you!

THE IEEE ROLE IN IMPROVING PENSION BENEFITS FOR THE ENGINEERING PROFESSION

IEEE's role in improving pension benefits for the engineering profession began with efforts toward passage of the Employee Retirement Income Security Act (ERISA) in 1974. ERISA was a major step forward in pension legislation. For example, pension vesting periods of up to 25 years were not uncommon before ERISA. Today, as a result of ERISA, the maximum length of time that an individual can be left completely unvested in a pension plan is ten years. Among other things, ERISA allowed individuals who were not covered by a pension plan to set up tax-deferred IRAs. However, not everyone was allowed to set up an IRA for two reasons: first, it was felt that persons covered by pension plans really did not need the double coverage provided by an IRA and a pension plan; and second, the tax loss associated with letting everyone have an IRA was perceived to be too great.

The United States Activities Committee (USAC)—the predecessor of the United States Activities Board (USAB)—worked hard to assure that ERISA contained a "carve out" provision, in the hope that it would be used to establish a portable pension fund for IEEE members. When ERISA was enacted, it did indeed contain the "carve out" provision that USAB sought, but it was a permissible provision, not mandatory. Because of the permissive nature of the provision, and because of employer perception of administration and plan qualification problems, the IEEE was unsuccessful in obtaining employer support for inclusion of the "carve out" in the retirement plans covering a wide range of IEEE members.

In 1976 the IEEE/USAB formed a Pension Task Force to act as a focus for its pension-related activities. Some of the early members were Leo Young, assisted by his late wife Fay, John J. Guarrera, and Richard J. Backe. Dr. Young served as Task Force Leader for several years. One of the first activities of the Task Force was to seek other ways to provide some pension protection to engineers who were often covered by, but not vested in, pension plans. From the outset, the Pension Task Force understood the necessity of minimizing the tax loss associated with any enlargement of IRA eligibility. At the same time, they were well aware of the problems faced by many working engineers, i.e., never being vested in any pension plan. Over a period of several years the Task Force developed a proposal called the Limited Employee Retirement Account, or LERA. The LERA was very similar to an IRA except that it was designed to be used by an individual who was covered, but not fully vested in the pension plan of his current employer. When the individual did fully vest, or employment was terminated, he or she had to pay taxes on the money that was in the LERA account. Thus, persons who never became fully vested in pension plans had some needed protection, and the Treasury did not lose tax revenues to persons who ultimately vested. There was no double coverage in the LERA concept.

Acting on behalf of the Pension Task Force, Congressman James C. Corman (D-CA) introduced a bill contain-

ing the LERA concept in the House of Representatives in 1977. The entire Pension Task Force labored to get that bill, H.R. 628, passed. The bill was resubmitted by Mr. Corman in 1978. H.R. 628 was passed in the House in 1978 but failed in the Senate. In 1979 a bill providing for LERAs was introduced by Senator Lloyd M. Bentsen (D-TX) and others in the Senate, and Mr. Corman resubmitted H.R. 628 in the House. This time the Senate bill passed, but the House bill did not. Throughout this period, the Pension Task Force actively supported the numerous bills, numerous sponsors, and numerous legislative approaches containing the LERA concept, in addition to providing testimony on a number of occasions. John Guarrera testified several times, as did Robert A. Barden who later became Task Force Leader. Additional Task Force members who were instrumental in arranging constituent meetings with key congressional leaders were Malcolm Drummond and Harb S. Hayre.

In addition to meeting with Congressmen and Senators, the Task Force worked hard and successfully to get other organizations and societies to back the IEEE position. For example, the Task Force was responsible for organizing the Engineers and Scientists Joint Committee on Pensions (ESJCP), which brought together many engineering and scientific societies. IEEE provided the lead through an education and information program, and it gained support for various activities, including legislative action. At the same time, the Task Force sought to broaden its political base by reaching out to non-technical groups, such as the U.S. League of Savings Associations, and by participating in the activities of such organizations as the Citizens Commission on Pension Policy.

Task Force members talked and testified whenever they could. For example, in 1980, Task Force members testified before the President's Commission on Pension Policy, Congress' Joint Committee on Taxation, and both the National Democratic Platform Committee and the National Republican Platform Committee, in conjunction with the Presidential nominating conventions. Also, the Task Force worked with the Professional Activities Committee for Engineers (PACE, formerly PAC) to develop a network of individuals who were constituents of key Representatives and Senators and who would be willing to make personal contact with their Congressmen on pension issues. Thus, going into the 97th Congress, the IEEE had already generated substantial interest in broadening IRA eligibility. It had nearly gotten the LERA through Congress twice, and it had more than 50 cosponsors for a LERA bill that was before the tax-writing committees. Finally, the Task Force had developed a network of PACE people who were knowledgeable on the IRA/LERA issue and who were committed to active support of these efforts through writing and visiting their Congressmen and Senators as the need arose.

Continued page 18

As stated earlier, a major objection to expanded IRA eligibility was the associated tax loss. This led to the LERA concept as a mechanism to minimize loss. Another major objection to the LERA was that it would be very hard to administer. In particular, the Government would have to start keeping track of the vesting status of each citizen—a formidable task, given the infinite variety of pension plans. Toward the end of 1980, however, the ground rules began to change. In particular, Congress was starting to be concerned that Americans were not saving any money, or as an economist would put it, our capital formation rate was down. The Task Force had for several years pointed out that nothing forms capital better than long-term (e.g., retirement) savings. Thus, many in Congress became less concerned with the tax loss associated with enlarging IRA eligibility. Instead, they saw enlarged IRA eligibility as a tool that could be used to encourage capital formation.

Even though the IEEE efforts were successful in having both national political parties include pension/retirement concerns in their official campaign platforms, IEEE cannot take credit for getting a tax-cut on the national legislative agenda—President Reagan certainly did that. However, once it was decided that some tax-cut would be made, the Task Force, because of its years of experience on the issue, was in a position to move, and it did. The Task Force had already persuaded many members of Congress that an expanded IRA was needed. The Task Force, together with the PACE leaders, met with members of the House Ways and Means Committee, including Congressmen Rostenkowski, Conable, Gibbons, Pickle, Archer, and Downey, to ensure that an IRA provision would be in the tax-cut bill reported out of that Committee. The Administration ultimately adopted most of the House Ways and Means Committee's bill. The biggest differences were that the Administration's tax bill started with the House bill and then added more tax cuts over a longer period of time.

Once the Task Force was sure that expanded IRA eligibility was in both the Administration's and the Democratic Party's tax-cut plans, its principal concern was to see that it stayed in any subsequent plans. In particular, there was concern that a special interest group might try to eliminate the IRA provisions (in order to get the money which Treasury had accepted as a tax loss attributed to expanding IRA eligibility) to support their own project (e.g., the All-Savers Certificate). To forestall this possibility, the Task Force issued a Legislative Alert to a few selected congressional districts and states asking IEEE members to write their Representatives and Senators to let them know that they wanted IRA eligibility expanded. Congressmen on the House Ways and Means Committee received more than 100 letters from IEEE members as a result of the Task Force's call for support. Also during this period, representatives from the AIAA, ASME,

ASCE, and the Pension Task Force met with Dr. Norman Ture, the Undersecretary of the Treasury for Tax Policy, to argue for expanded IRA eligibility. The meeting was set up by the AIAA (it helps to have allies). At that time the Administration was publicly committed to expanding IRA eligibility so that persons who were covered by a pension plan could invest up to \$1,000 per year, and a person not covered by a pension plan could invest up to \$1,500 per year. The position of the USAB Pension Task Force at that meeting was that everyone should have a \$2,000 per year IRA. That may have been the first time that the limit of \$2,000 had seriously been proposed for that bill. The tax-cut bill that finally passed contained the \$2,000 deduction.

The Task Force followed the tax reduction bill carefully as it moved through the Congress. As stated earlier, a Legislative Alert was issued by the Task Force when the bill was about to come out of the Ways and Means Committee. When the tax bill came to the House floor for a vote, the Task Force ran an advertisement in *EE Times* to ask all readers to contact their Congressmen and Senators. Many persons responded. For example, one IEEE Section sent its Congressman a petition with more than 400 signatures asking him to support the expansion of IRA eligibility. This type of response, which was led by PACE people, had a real effect.

In summary, the effort to get the present IRA covers many years, and includes a lot of IEEE members, and others also. It includes the members of the Pension Task Force, and USAB staff, doing a lot of organizing and leg work. It includes PACE people supporting the Task Force at critical times. PACE support of the Task Force's activities was absolutely essential to the attainment of expanded IRA eligibility. For example, we could never have met with many of the Congressmen without the constituent support provided by PACE. We could never have let the Congressmen and Senators know that IRAs were something that really mattered, if PACE people had not called and written their elected representatives when the tax bill was about to be reported out of committee, and later when the bill came to the floor for a vote. PACE can be proud of the role it played in making IRAs available to everyone. In fact, the PACE constituent network developed in conjunction with the IRA efforts has established an effective model for USAB's greatly expanded legislative activities.

—David C. Lewis, Chairman
USAB Career Activities Council

*A "carve out" provision allows discrete treatment of particular segments of the workforce covered by a pension plan, due to the unique characteristics of that segment; e.g., engineers, because of their mobility.

GETTING IT ALL TOGETHER— THE ENGINEERING PROFESSION

While there are many men of great breadth of mind and experience worthy of the title of "engineer," there is no one who can claim it in the same way that lawyers and doctors can claim their titles. There are engineering professions, but there is no one profession. There are engineering degrees, but there is no one engineering degree. There is no engineer without an adjective. It must be ac-

USAB PATENT ACTIVITIES: A RETROSPECTIVE

The issue of patent rights in electrical and electronic technology has been a principal focus of USAB over the past decade, through its Patent Task Force. Throughout this recent history, there has developed an accommodation among those members having diverse opinions as to what the United States patent law should be and in such diversity is its strength.

On the one hand, members who are managers, entrepreneurs, or patent right owners generally view the proper role of the patent laws to encourage development and investment in new technologies from the time of invention forward. Another group of members, on the other hand, who are generally employees and/or individual inventors and creators, view the primary purpose of the patent laws to encourage the act of invention and, once an invention is made, the disclosure of that invention. It is fortunate that these different philosophical views exist and have been vigorously expressed by the members of the Institute, because the result has been educated legislative action and the taking of significant advisory positions that have been directed to a common goal of each group: "To Promote the Progress of Science and useful Arts . . ." (U.S. Constitution, Article I, Section 8).

In the first few years of USAB, patent issues were considered as part of other committees. In about 1976, the Institute adopted a statement of policy favoring the sponsorship of legislation giving employed inventors a greater right or reward in their inventions than was allowed under the practice of employee agreements that companies required as a condition of employment. The Patent Task Force was then formed to implement that policy and by the end of 1977 proposed legislation had been drafted, which, had it become law, would have restricted the right of employers to require in advance the assignment of all inventions of its employees during the term of employment without any special recognition or compensation. The policy consideration of these activities was that the promotion of the useful arts would be better served by directing the patent law to encourage the making of new inventions, and, once made, their disclosure, even in the employment context.

It was about that time that the direction of the Patent Task Force changed so the promotion of such legislation was postponed until some years later. The attention of the Task Force was then directed to questions of whether pa-

tent and related laws could be improved to better encourage investment and development of ideas and inventions after they are made, representing the views of the first philosophical group of members discussed above. Among the issues addressed during this period included matters of contractor rights in Government sponsored research and development, taxation and the prolongation of the term of pharmaceutical patents when the Government delays the introduction of a product to test it.

With the benefits of this diverse background, the current era of the Task Force began in 1980. The Task Force is headed by Bob Frank of Washington, D.C. with a West Coast subcommittee having recently been established because of the number of members on the West Coast interested in the subject, the subcommittee being chaired by Brad McMillian of San Francisco. An employed inventor rights bill H.R. 4732 drafted by the Task Force was introduced into the House of Representatives in October of 1981. Hearings were held in mid-1982 on this and a companion bill H.R. 6635, promoted by others, that provided for employers giving compensation to its employed inventors, something that the IEEE bill did not address. The IEEE bill simply restricts the scope of subject matter that would be allowed in employment pre-invention assignment agreements. This compromise position, which appears to have the support of both of the philosophical membership groups previously mentioned, is a result of the diverse views that the Institute contains, a significant asset.

But the issue of employed inventor rights is only one of several being actively considered by the current Task Force. Another is the desirability to provide copyright protection to integrated circuit masks, a subject of pending legislation. Another is the protection of computer software through patents and copyrights, one issue being whether the software industry would better develop, for the benefit of us all, if special legislation outside the copyright laws was passed to protect computer software.

The Institute has a particular expertise to develop policy and advise our policy-makers on such issues. We can all look to the Institute to make significant contributions in this area in the future.

—Gerald P. Parsons
San Francisco

knowledge that there is some truth in the charge of "lack of breadth" considering the whole body of engineers. It is also curious that in medicine and law the students leave school all with the same general training and degree, but specialize afterwards, whereas in engineering they are specialists at school.

Many will remember how often within the last few years a demonstration or recommendations by a united engineering profession would have been valuable. Society needs such help in connection with appointments of the many municipal, state and national commissions involving engineering in some form, opposition to ill-advised laws, methods of conducting public works, and a variety of similar matters. When unity is so desirable or even

necessary, a great effort is worthwhile to obtain it, but the question is, how?

Unity we need badly—unity we ought to have. A great organizing genius might build a merger out of or on top of the present organizations, which would leave them organically intact, but provide for united action in general fields. Engineering might have a federal government. It is to be feared, however, that the time is not ripe. Nevertheless, there is every reason why we should work toward such an ideal . . .

—Excerpted from a paper presented by William McClellan at the 30th Annual Convention of the AIEE, June 24, 1913.

IEEE CONGRESSIONAL FELLOWS— THEN AND NOW

1983 also marks the tenth anniversary of the IEEE Congressional Fellows program. Over the past decade, 21 IEEE members have served Congress, reviewing proposed legislation from an engineering and scientific perspective, identifying qualified witnesses for legislative hearings, and serving as liaisons to executive departments and agencies, as well as to the engineering and scientific communities.

Personal reflections on their Fellowship years, their activities in Congress and the impact on their professional and personal lives have been contributed by several former and current Fellows.

Willis D. Smith (1974): My current position as Deputy Staff Director for the Minority on the Senate Armed Services Committee indicates that nine years after starting my IEEE fellowship, I still have not tired of the experience. The extremely broad, diverse, and complex nature of my assignments has been invigorating to me.

The IEEE history of service to our nation is epitomized by the Fellows program. During a Fellow's tenure, the direct benefits to the IEEE should be minimized to avoid the appearance of conflict of interest. However, the experience gained by the Fellows is a reservoir that the Institute can draw on for dealing with issues and setting forth the Institute's views at all levels of government.

The mere existence of the Fellow program has given the Institute heightened prestige, recognition, access, and impact on the national scene. It is an exceedingly cost-effective program. I am indebted for the opportunity the IEEE afforded me by selecting me as one of its first Fellows.



Anthony L. Rigas

Anthony L. Rigas (1975): The Fellowship program has indeed influenced my awareness of the political workings of our society and has had a very positive effect on my life. The experience gained led to a number of activities in the years since my return from Washington. I was appointed to head the Energy Extension Service Program at the University of Idaho, where I am now director of education

outreach at the College of Engineering. I was also appointed to the State Energy Extension Task Force by the Governor of Idaho and subsequently elected chairman for two consecutive terms. Because of my political experience and contacts, I was elected chairman of our County Democratic Party and elected to the State Executive Committee of the Party. I am also invited to speak and present papers dealing with energy policy and related topics. The issues decided by Congress today are so complex, so interdependent, so vital to our survival as individuals and as a nation, that we cannot afford not to get involved.

Leonard D. Weiss (1976): From a personal point of view the IEEE program gave me the entree to the legislative community that has since enabled me to make direct and meaningful contributions to public policy in America in a number of diverse areas, including arms control and nuclear nonproliferation, energy, governmental efficiency and accountability, science and technology policy, education, and environmental protection.

In retrospect I find it remarkable how easy it was to make the transition from a fifteen-year career as an engineering professor and researcher to a career as a legislative, political, and policy activist within the U.S. Senate. Of course, it helped that I was (and still am) working for John Glenn, whose appreciation of technical expertise and hard analysis is exceeded by no one in public life today.

I do believe, naturally, that the IEEE program has been beneficial to the organization and to the country. The organization has received the goodwill that flows from the good work done by its representatives in Congressional offices since 1973, and the country has benefited from having its legislative deliberations informed by the expertise provided by IEEE fellows.

If there is one thing that has become reinforced in my thinking since arriving here, it is that America's problems both here and abroad are not amenable to solutions through policies that stem from rigid ideological notions, or are implemented without due regard for democratic principles or the principles of human rights.

John B. Wallace (1978): Not only was my Fellowship a highlight of my professional career, but it was a major happening in my personal life and in the life of my family as well. The year we spent in the nation's capital gave me the insight into the workings of the legislative branch of our government that no amount of study or reading could have provided. That day-to-day, hands-on type of experience that a congressional staffer is exposed to in the fellowship program is unique, at times intense, exciting, rewarding, constantly changing and challenging. As I look back on those days, as I have often done over these past five years, it was a time of growth for our entire family. Living in Virginia, exploring the countryside and historic Civil War sites were very rewarding. The visits to the Smithsonian Museum, the historical monuments and

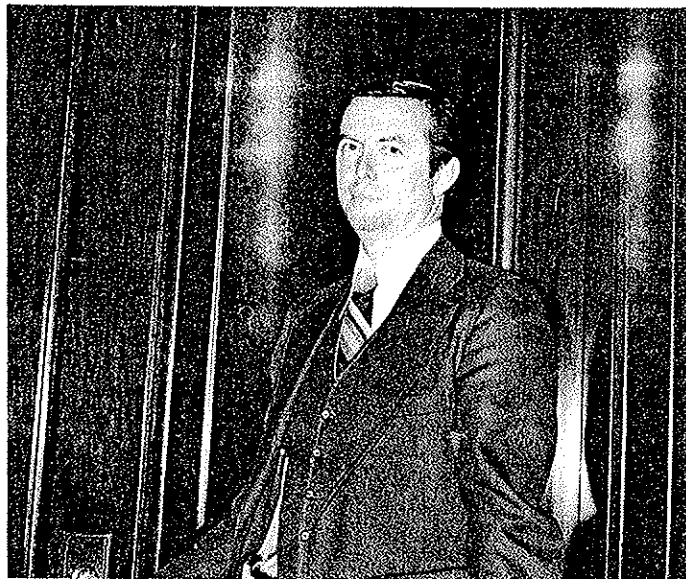
buildings and the parks and the beautiful flower gardens of Washington will long be remembered. The many fine friendships we shared with the other Fellows in the Science and Engineering Fellowship Program were also very rewarding. All of us shared our common experience "on the Hill" and our personal experiences in our careers "back home."

I returned to my former position of Principal Applications Engineer with my employer of 28 years, The Detroit Edison Company. Although I resumed my engineering career, I continued, to some extent, to be active for the Congressional Fellowship program. Since I am a member of The Detroit Edison Speakers Bureau, we worked up a presentation of my experiences in the Fellowship program and have presented this talk about two dozen times to various IEEE groups, Detroit Edison management and engineering groups, to various professional and engineering groups, and to the Engineering Society of Detroit, which has become a participant in the Congressional Fellowship program by sending two fellows to Washington in the last two years to serve in the senate offices of Michigan's two Senators.

I have maintained close communication with several of the staff people that I worked with during my term of fellowship. Although Senator Schmitt was not successful in his reelection bid in 1982, many of his staff are now part of the professional staffs of the various congressional committees. We have been in contact many times to discuss proposed legislation that was of common interest, and I have visited with them several times when I was in the Washington area on business. I believe these contacts and others I have had as a member of the IEEE Congressional Fellows Selection Committee have helped to keep me quite active politically, both in the national election campaigns and in local politics as well. I was very active in a local ballot referendum campaign last fall and felt good about being on the winning side of the issue.

The Congressional Fellows program should continue to be supported by IEEE. It benefits the Institute by having its members seen on the Hill, and their assistance on the various staffs has a very positive effect on the Members of Congress that are thus served. It is also a great benefit to the individual engineers that are chosen to represent their colleagues. As Senator Schmitt often said when I was on his staff, "Most engineers and scientists feel that politics should be left to the politicians, but that is the best way there is to get poor legislation." Engineers have a role to play in the political process, and the sooner they perform that role, the better off the country will be for it.

David C. Lewis (1979): It's hard to believe that it has been three years since I left Capitol Hill. It was a lot of fun, and I learned a lot. The big winners in the Congressional Fellows program, however, have been the members of the IEEE. The program has placed IEEE members as staff on the Hill who are sympathetic to technology, and even sympathetic to the IEEE. Just as important, a cadre of ex-Fellows has helped USAB to formulate and pursue a legislative program that benefits the members. For my part, the Fellowship certainly provided new insights into the legislative process. It allowed me to focus on national problems much larger in scope than the sort of things a typical engineer works on. It was exciting stuff.



Thomas L. Fagan enters Congressional Committee room during Fellowship year, opening doors for engineering input.

Thomas L. Fagan (1980): The IEEE Congressional Fellows program has had a major impact on both my career and my life. It certainly has helped me to understand better how the system operates, where the pressure points are, and how legislation really gets moved through the Congress. It also enabled me to build up quite a base of professional contacts and acquaintances on the Hill.

After returning to Pennsylvania with my employer, the General Electric Company, I was offered the opportunity to continue to utilize my relationships and experience with the Congress by serving as Manager of Congressional Relations for the company. This has been a very natural and easy transition to make and has enabled me to expand greatly on my technical and Congressional interfaces.

I can see that over the past ten years IEEE has developed a very solid reputation on Capitol Hill. On the Senate side alone, I know of about 20 offices that will reach out and ask, "What is IEEE's position on this issue?" IEEE witnesses have also been very credible at quite a number of Congressional hearings. The Institute has established a presence in Congress, and the long-term prospects are very favorable. However, IEEE cannot become complacent. There is a very high turnover rate with the Congress, especially among the Hill staffers. The staffers tend to be very bright, recent graduates, overachievers who are underpaid and work for only a few years, utilizing their tenure as a stepping stone in their career path. As a group they are still predominantly lawyers and journalists with very limited technical backgrounds and experience. They and their Members of Congress welcome and need all of the best technical and professional help they can get. It is amazing how far and how fast members and staff can move when they are given adequate data, the pros and cons of an issue, and are pointed in the right direction.

Continued page 22

New young Congressmen are increasingly interested in quantitative assessments of issues. Such assessments can only be made by people experienced in analyzing and expressing results in quantitative terms—people such as engineers and scientists.

It would be very sad for the Institute and the engineering profession if we did not continue to maintain our presence on the Hill over the next decade. The issues are becoming more complex, more multi-variate, and more costly than ever before. I urge all of our members to continue their support of the IEEE Congressional Fellows program.

P. Gene Smith (1980): I am an enthusiastic booster of the Fellows program, and consider my year in Washington a highlight of my career. The program enhanced my interest in the important, long-term problems which this country faces and improved my understanding of the difficulties of getting useful legislation passed. I have increased my study of political activities at all levels, from local to international, by reading non-technical materials much more extensively, and by contributing selectively to political-action groups supporting causes in which I believe.

I believe the Congressional Fellows program has impressed Members of Congress. In particular, Senator Bumpers, to whom I was assigned, appeared pleased with the maturity of IEEE Fellows, their flexibility in working in diverse areas, and their ability to highlight the important technical and political issues for them. An important outgrowth of the program has been that several former Fellows have joined members or committee staffs. I consider this to be a key goal and benefit of the program. With heightened interest in politics, experienced engineers and scientists will be more inclined to seek such employment, and may even run for political office.

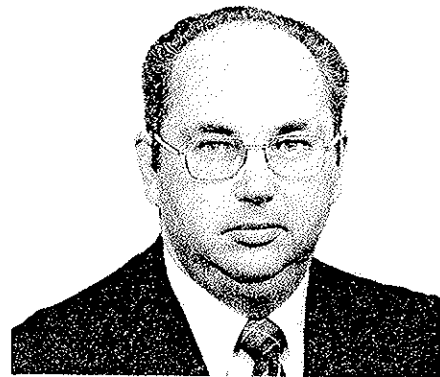


Frederick J. Twogood

Frederick J. Twogood (1981): I am currently located in Pittsburgh, PA, with the Westinghouse Water Reactors Division, serving as a project manager on a nuclear power plant project for Duke Power Company. This is my first management position with Westinghouse, and I consider it a major career step, attributable directly to the Congressional Fellowship. The Fellows program gives the participant recognition and visibility not easily available to mid-career professionals, especially when working in a large organization.

Another outgrowth of my fellowship year has been my involvement in the IEEE Energy Committee, which is tasked with the responsibility to prepare position papers, review entity position papers, and prepare testimony for Congressional hearings on energy-related issues. This year, I have been elected to chair the energy committee, so my involvement with Federal legislation and my contact with Congress continues to be active.

I am frequently asked to give talks at IEEE meetings (local sections, society chapters, regional, and national), on the subject of the Fellowship program. I do this enthusiastically, because I truly believe that this program is one of the most professionally enriching investments an electrical engineer can make.



Theodore R. Simpson

Theodore R. Simpson (1981): Someone supposedly once asked Willie Sutton why he robbed banks. Willie is said to have replied: "Because that's where the money is." For the same reason, but in pursuit of a more legitimate goal, I became an IEEE Congressional Fellow. I was disturbed by the decline in Federal support for aerospace R&D in general, and NASA in particular, during the 1970s. I thought then, and still do, that Federal funding for R&D is an investment in our nation's future. The effects of neglect would be devastating, not only to the scientists and engineers involved, but to the nation as a whole.

In order to get some idea of what NASA's problems really were, I decided to work on the staff of the Senate Subcommittee on Science, Technology, and Space where I covered NASA's budget and other policy issues involving the civilian space program. One of the things I found was that there is no vocal, articulate support of any consequence for the U.S. space program. There are individuals who occasionally speak out, some with more success than others, but the space program is in a real sense a non-issue. The reason for this is probably obvious. The people who could, and should, lead this effort are scientists and engineers. They are the ones who understand the value of research and development, and if the space program is anything, it is a gigantic R&D program.

Unfortunately, most scientists and engineers are either apathetic or have negative feelings about getting involved with politics. They seem to be unable to make the connection between their current and future work and the Federal government's funding for R&D. The connection to me is quite obvious—no funding, no jobs.

One of the valuable byproducts of the IEEE Congressional Fellows program is that we are gradually educating a group of EEs about how Congress operates and which members of Congress support Federal funding for R&D. We ought to take this process one step further and ask the PACE membership to help re-elect those Congressmen who support R&D. Perhaps if PACE had gotten involved in last year's election, two strong supporters of R&D, Senator Howard W. Cannon and Senator Harrison J. Schmitt, would not have been defeated. I worked closely with both of these gentlemen. Their presence in the Senate will be missed.

Eli Fromm (1981): Being an IEEE Congressional Fellow for a year was an exciting, broadening experience during which I concurrently contributed to my profession, the legislative process, and my own personal fulfillment. Much of that success must be attributed to my fortunate selection of assignment. As a staff member of the Science, Research and Technology Subcommittee of the House Committee on Science and Technology I worked with dedicated professionals on a broad range of significant issues in a participative management style. They all quickly gained my respect, and I was accepted as a team member. The assignment involved me in many issues of long-term significance to the science and technology community in an interactive policy analysis, compromise and formulation environment. Furthermore I witnessed a time of significant transition (Sept. 1980-Sept. 1981) thereby participating in a wide diversity of philosophical discussion and policy impact. Thus both the process of being a Fellow as well as the issues will have lasting personal impact.

The experience also benefits IEEE. In the short term, of course, the assistance to Congress brings a perspective on issues then under consideration, as well as a contact point for expressing the IEEE position, both informally as well as formally. In the long term these contacts remain important, as well as bring additional perspective into the IEEE volunteer leadership. I was an active IEEE member in Technical Activities prior to my year as a Fellow and my responsibilities within IEEE have increased since. While I don't believe this continuing role and responsibility level

as an IEEE active volunteer is the result of my year as a Fellow (I would have continued in the same direction anyway) the perspective I offer in these roles is now a good bit different.

Orin E. Marvel (1983): I decided to perform a word association test to relate my "real time" feelings about the Fellows program. During this test, the major words that came to mind were: (a) Overwhelmed; (b) Inexperienced; (c) Communications.

I have been *overwhelmed* by the competence and dedication of the staff people that I have been associated with. Their technical and theoretical understanding of the key issues facing the U.S. is exemplary. The long hours and personal commitments required are taken in stride.

On the flip side, the average staff member is young and *inexperienced*. In a lot of cases, the implications of implementation are not understood, and a lot of confusion is caused by new policy. I would wish for understanding, dedication, and experience; but I am probably a dreamer. I have been very impressed with the contributions of the IEEE Congressional Fellows program to strengthen this experience base in the Congress.

The toughest job for any Legislative Aide within Congress is *communications*. To most people I have met, communications is talking; and we all need to learn to listen more. Most people miss the fact that communications is a closed loop process. I believe that most systems engineers understand that the best way to communicate is to speak, listen, modify what was said, etc.

I am still learning a lot. I currently have a bill that is just entering the legislative process and am excited about seeing it through.

Doyce Satterfield (1983): After only three months on the "Hill," my reaction is appreciation to the IEEE for the opportunity to experience a year of viewing of the legislative process from the inside. The program is every bit as rewarding as I had hoped it would be.

In my application for the Fellowship, I stated that I would like to emulate a Congressional staffer and see Congress from that perspective. Thanks to Senator Heflin

Continued page 24



The 1983 Congressional Fellows (l.-r.) Jack Lubowsky, Orin Marvel, and Doyce Satterfield at a recent meeting with USAB Chairman Edward J. Doyle.

Doyce Satterfield *Continued*

and his people, who have accepted me as any other full-time staff employee, I am achieving that goal. I have been active in the Science, Technology, and Space sub-committee hearings on both the NASA and the NSF programs, providing information for issue discussions.

One of the most beneficial aspects to the program is the information network that is established among the Fellows and the regular staff. These lasting friendships will be a source of continuing benefit to all of us when we return to our own private endeavors and to our sponsoring societies. I feel that it will be through these relationships that we can continue to influence national public policy of mutual interest.

Jack Lubowsky (1983): The experience is very exciting, and for just about every reason. The sheer quantity and quality of information available defies description. Similarly, the potential for achieving seems limitless. There is great potential for both education and action.

I have been able to utilize some of the most extensive information sources in the world, the Library of Congress with its experts and documents extending over virtually every area, and the resource which is the people of the United States who respond with their expertise to questions from a senator's staff. That is the input side.

On the output side, there is the potential for action, although one very quickly learns to appreciate the difficulty of sculpting legislation and getting it passed. Unlike engineering or mathematics, it is not possible for one person to create something. It is an amazing process: The contact among staff, the forming of coalitions, and other activities that comprise the orchestration of a legislative effort. It is rather like watching the indicators on a computer, knowing full well that the activity which can be seen is only an indication of the far more complex process that runs beneath. Playing a part in that underlying process is giving me an education I'll not forget. ■

**IEEE CONGRESSIONAL FELLOWS
1973-1983**

1973

Ronal Larson

1974

Lloyd B. Craine
Willis D. Smith

1975

Anthony L. Rigas

1976

Diane W. Drehoff
Leonard D. Weiss

1977

Kirby C. Holte

1978

Balraj G. Sakkappa
John B. Wallace

1979

David C. Lewis
Ian Whyte

1980

Thomas L. Fagan
P. Gene Smith

1981

Eli Fromm
Theodore R. Simpson
Frederick J. Twogood

1982

Glenn R. Heidbreder
Feisal S. Keblawi

1983

Jack Lubowsky
Orin E. Marvel
Doyce E. Satterfield

A LOOK AT IEEE WASHINGTON OFFICE ACTIVITIES TODAY

Leo C. Fanning
Staff Director, Professional Activities
The Institute of Electrical and
Electronics Engineers, Inc.
Washington, D.C.

ABSTRACT

This paper discusses: (1) how the IEEE United States Activities Board (USAB) can serve as a mechanism facilitating contributions to the formulation of future policy directions; and (2) how individual engineers as well as IEEE units can interact with USAB. It begins with a brief overview of USAB's involvement in the public policy process, then describes USAB's organization. Finally, it examines specific opportunities for interacting with USAB.

INVOLVEMENT IN PUBLIC POLICY PROCESS

As we consider USAB involvement in the public policy process, perhaps each of you will ask yourselves: What local and national decisions affect me? How will R&D funding decisions affect the direction of my work or life? Are there public policy decisions which can increase or lessen my job effectiveness? How much of my work is affected by Federal regulations? What technical contributions are needed for the development of these regulations? How can my talents, and those of my peers, be most effectively utilized?

Based on a vote of the IEEE membership, the IEEE Board of Directors incorporated professional activities into IEEE's mission by supporting the promotion and improvement of the economic well-being of the membership as well as the promotion of scientific, literary, and educational activities. USAB and the IEEE Washington Office were designated as focal points for member interaction with the Congress and Executive Branch of Government. Concurrently, the Board of Directors requested the Technical Activities Board (TAB) to develop specific programs in sociotechnology, many of which have become joint TAB/USAB activities.

Since the establishment of USAB in 1973, the IEEE has interacted with the U.S. Government on a broad range of issues, including:

- In 1973, USAB initiated the IEEE Congressional Fellows Program coordinated with the American Association for the Advancement of Science and a dozen different societies. Over the last decade, 21 IEEE Congressional Fellows have worked with Congress reviewing proposed legislation from an engineering and scientific perspective; identifying qualified witnesses for legislative

hearings; serving as liaisons to executive departments and agencies as well as the engineering/scientific community.

- In 1973, USAB began seeking passage of widespread pension reform, beginning with support of the *Employment Retirement Income Security Act* (which became law in 1974) creating individual retirement accounts (IRAs). USAB assumed the lead in supporting expanded eligibility for IRAs, promoting the retirement security of all Americans as well as providing an important source of capital for industrial expansion. Thus, a major professional goal was realized with the enactment in 1981 of the *Economic Recovery Tax Act*. In addition to promoting retirement security for those holding IRAs, under this new law, the 120,000 non-student members of IEEE could realize more than \$35 million in new and increased tax benefits for 1982.

- In 1977, TAB and USAB held the first of five conferences on U.S. technology policy. The fifth such conference, held in 1982, included sessions on energy, innovation, and information policy. These conferences have proven to be a valuable tool for educating IEEE leadership on public policy issues, as well as communicating IEEE views to Government officials. Following the IEEE 1982 Conference on U.S. Technology Policy, then-IEEE President Robert E. Larson addressed Congressional staff in the U.S. Capitol on "Developing a More Coherent U.S. Technology Policy Through Consensus-Building."

- In 1978, USAB began to testify actively before Congress on such subjects as telecommunications, Federal energy/R&D policies, and reducing capital gains taxes as a means of increasing capital formation in high technology industries. The availability of *IEEE Position Papers* and *USAB Entity Position Statements* has assisted volunteers and staff in giving Congressional testimony, enabling them to represent the organization on previously agreed upon positions. There are currently some 30 *IEEE Position Papers*, *USAB Entity Position Statements*, and pending *USAB Entity Position Statements*.

- In 1979, after the nuclear accident at Three Mile Island, the TAB/USAB Energy Committee identified major nuclear safety and reliability issues to be considered by Congress. At the same time, the TAB/USAB Telecommunications Policy Committee presented its views on a major rewrite of the *Communications Act of 1934*. Most recently, the IEEE was one of three organizations receiving requests to testify before the House on the effect of

telecommunications legislation on research and development at Bell Laboratories. Past IEEE President Richard W. Damon questioned whether *H.R. 5158* could result in a lack of R&D funding at Bell Labs, and whether the bill would restrict information flow within the Labs or to the nation's communications industry.

- In 1980, USAB cooperated with the Nuclear Regulatory Commission (NRC) in sponsoring a conference on "Advanced Electrotechnology Applications to Nuclear Power Plants." With the success of this event, USAB was asked again in 1981 to assist the NRC in developing a draft guidebook on the application of probabilistic risk assessment to nuclear power plants.

- In 1981, USAB convened a "Conference on Engineering Manpower Supply and Demand," assembling Government, industry, and association representatives to share and evaluate manpower data.

- In 1981 and 1982, USAB leaders met on many occasions with the Presidential Science Adviser, Dr. George A. Keyworth, continuing a long-standing dialogue with the Office of Science and Technology Policy. Key concerns were discussed such as industrial innovation, national productivity, the national laboratories, Federal support of R&D, technology transfer, manpower, and engineering education.

- In 1981, the TAB/USAB Energy Committee held a briefing on photovoltaics for 18 Congressional staff members of scientific and technical committees, prior to a Senate hearing on the Department of Energy's photovoltaics program. Senator Pete V. Domenici (R-NM) met with the Energy Committee at the beginning of the day. In the same year, the Energy Committee also completed (and is now updating) a slide presentation, entitled "Energy in Perspective," available in English and Spanish. The show has been widely distributed in the U.S.

- In 1982, USAB sponsored a site at the U.S. Capitol for Congressional staff and Congressmen interested in viewing the IEEE short course on robotics broadcast live via satellite. The presentation on Capitol Hill attracted almost 100 Congressional aides and media.

USAB ORGANIZATION

Turning now to USAB's organization, it should be noted that the Board is divided into four councils: (1) the Member Activities Council; (2) the Government Activities Council; (3) the Career Activities Council; and (4) the Technology Activities Council. Activities for all of these councils during 1982 are summarized in the *USAB 1982 Report*, available from the Washington Office.

SOURCES OF INFORMATION ABOUT USAB

I would like to outline briefly the many sources of information about USAB's involvement in the public policy

process: (1) the *USAB Program Plan*; (2) the *USAB Directory*; (3) USAB Operating Committee and USAB meeting summaries; (4) *IEEE Position Papers* and *USAB Entity Position Statements*; (5) *The Institute*; (6) *IEEE Impact*; (7) the *Legislative Report*; and (8) the *Legislative Alert*, issued intermittently. All are available on request to the Washington Office.

SPECIFIC OPPORTUNITIES FOR INTERACTING

Now, let us consider specific opportunities for interacting with USAB on an individual or group basis:

- Your Divisional or Regional Director may be a member of USAB. This individual could be approached to present action items, resolutions, and position statements to USAB.

- You can examine the *USAB Program Plan* or *USAB Directory* as to whether there are representatives on committees or task forces of interest. Incidentally, all IEEE societies may provide representatives to the Energy and R&D Committees.

- Your Divisional Regional Professional Activities Committee for Engineers (PACE) Chairmen are knowledgeable about USAB's diverse activities. These individuals can obviously be approached for the latest information on volunteer actions.

- You can participate in USAB-sponsored or -supported conferences, forums, and briefings, such as the Technology Policy Conference, the American Association of Engineering Societies' Public Affairs Forum, the briefings on Federal R&D funding, the PACE Workshops, and others listed in the *IEEE Technical Activities Guide*.

- You and your society can participate in the IEEE Congressional Fellows program through the selection process or through the Congressional Fellows Fund.

- You can, of course, volunteer to serve on any number of USAB's many committees and/or task forces.

CONCLUSION

USAB can provide a mechanism for facilitating contributions to the formulation of future national policy directions, but it relies on individuals such as yourselves to set the policy. USAB activities reflect the continuing emphasis on communication with volunteer leaders, volunteer members, and other constituent members. These activities also indicate a concern for decentralized decisionmaking with PACE assuming a large responsibility for initiating and implementing activities responsive to local member needs. And they reflect a continuing desire to offer maximum member benefits for volunteer time and money invested. ■

Dear Sir:

In a letter to me from the membership committee chairman, he asked me to write to you, "if I am temporarily in financial difficulty." I am. So, here goes! . . . I have lost all of my sources of income one after another, by fall in prices of my accumulation of stocks and failures to receive dividends, etc. These mishaps have brought my nose close to the grindstone.

I will be 83 years of age next July. While I have the physical ability to do certain kinds of expert engineering work, age seems to be a matter of consideration with possible employers.

Simply, I am unable to pay my dues to the Institute, at present, at least. But I have promises of employment as soon as financial and other business become better, or normal.

In thinking over my connection with the Institute,

. . . my labors in getting together . . . members, and of the continuous attention and work I gave to it during . . . the year, I often wonder why I have never received any formal recognition of my services. Be that as it may. I can't pay up now. I am in the hands of the Institute, and, of course, will abide by its judgment. Accept my cordial thanks and personal regards. —Name withheld

Do the problems sound familiar? The letter was written in 1921 by a member of one of the predecessor Institutes that formed the IEEE. Only the identifying phrases were, of course, deleted. Today, through its many programs the Institute recognizes the services and achievements of members who so distinguish themselves. But there are larger problems, matters of public policy, still to be resolved.

—Ed.

NEW SALARY SURVEY

IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854, U.S.A.

Please send me a copy of the IEEE 1983 U.S. Membership Salary and Fringe Benefit Survey (UH01529) at the special pre-publication price — IEEE member \$39.95; nonmember \$50.00. (Prices after June 6, 1983 are: member \$60.00; nonmember \$75.00.)

- ☐ Payment enclosed. (Checks payable to IEEE in U.S. funds drawn on a U.S. bank.)
☐ Charge to my credit card.
☐ VISA ☐ American Express ☐ Master Card

Card No. _____ Exp. Date _____

Signature _____

☐ Bill me direct. (Add \$2.00 billing charge to book price.)

Name _____ IEEE No. _____

Address _____

City _____ State /Country _____ Postal Code _____

New Jersey residents add 6% state sales tax. SS-B

HOW DOES YOUR SALARY COMPARE WITH WHAT OTHER EEs ARE MAKING IN 1983?

Our 1983 Salary Survey questionnaire was mailed in early January to a scientific sampling of IEEE U.S. members, excluding students and retirees. Tabulation of response is underway.

Scheduled for publication on June 6th, the Survey report will contain the most complete information available on compensation of electrical/electronics/computer engineers on the basis of numerous variables — and on many pairs of variables simultaneously, such as: Income vs. Engineering Experience by Highest Degree Earned . . . Income vs. Geographic Region by Industry or Service of Employer . . . Income vs. Years With Present Employer by Organization Job Function.

The survey will also contain current data on pension coverage . . . life, health, accident and major medical contributions and other benefits — necessary information for EEs, corporate and engineering management, personnel and salary administrators.

SPECIAL PRE-PUBLICATION OFFER FOR THE IEEE 1983 SALARY SURVEY SAVES YOU OVER \$20.00!

EMPLOYMENT GUIDE

ORDER FORM

IEEE Service Center
445 Hoes Lane
Piscataway, NJ 08854

Please rush _____ copy (ies) of the publication

"Employment Guide for Engineers and Scientists"

UHO156-0 List \$10.00

Member Price \$7.50

CHECK APPROPRIATE BOX

- ☐ Payment Enclosed (Make check payable to IEEE).
☐ Bill me. A \$2.00 billing charge will be added to your order.
☐ Charge to my credit card:
☐ Master Charge ☐ VISA ☐ American Express

Card No. _____ Expiration Date _____

Signature _____

Name _____

IEEE Member No. _____

Address _____

City _____ State _____ Zip _____

New Jersey Residents Add 5% Sales Tax.

ARE YOU CONSIDERING A CAREER CHANGE

Now for the first time IEEE's United States Activities Board's Employment Task Force tells IEEE members all they need to know about:

- Career Planning Strategies
- The Marketplace for EEs
- Practical Advice on Resumes
- How to Use Employment Agencies
- Professional Abstracts Registries (PAR)
- PACE Assistance
- Outplacement
- Salaries and Benefit Expectations

plus . . . three directories of companies, employment agencies, and outplacement organizations that search for IEEE members.

Order your copy today. . .

"Employment Guide for Engineers and Scientists"

UHO156-0 List \$10.00

Member Price \$7.50

NOTE: Unemployed members may obtain a free copy of the *Employment Guide for Engineers and Scientists* on request to the IEEE Washington Office. Please include membership number.

FOR THE ENGINEER'S PROFESSIONAL LIBRARY

1982 Salary Update for IEEE Members

A unique six-page bulletin showing salary curves that supplement and update five parameters of IEEE's 1981 U.S. Membership Salary and Fringe Benefit Survey. Data collected in Feb. 1982 by the Engineering Manpower Commission (AAES) and converted by USAB's Salary Survey Task Force to show income vs. experience, highest degree, managerial responsibility, number of employees and geographic area/Region. (UH0151-1) Members: \$7.50. Nonmembers: \$10.

Digest of the 1982 Conference on U.S. Technology Policy

"Charting the National Course" presents IEEE views on key technical issues in the development of public policy. A total of 16 papers on energy issues, communications networks, resources for innovation, and public understanding of technology. (UH0150-3) Members: \$7.50. Nonmembers: \$10.

**SINGLE COPY PRICES ARE SHOWN.
MULTIPLE COPY PRICES ON REQUEST.**

(cut here)

IEEE Service Center, 445 Hoes Lane
Piscataway, New Jersey 08854

Please send me the publications checked:

- | | |
|-----------------------------------|-----------------------------------|
| ☐ UH0151-1 | ☐ UH0149-5 |
| ☐ UH0150-3 | ☐ UH0146-1 |
| ☐ UH0148-7 | ☐ UH0138-8 |
| ☐ UH0145-3 | ☐ TH0073-7 |
| ☐ UH0139-6 | ☐ TH0077-8 |
| ☐ UH0140-4 | ☐ UH0136-2 |
| ☐ UH0147-9 | ☐ UH0141-2 |

☐ Payment enclosed.

☐ Master Card # _____ Exp. date _____

☐ Visa # _____ Exp. date _____

☐ Bill me. (A \$2 billing charge will be added to all non-prepaid orders.)

Name _____

IEEE Member # _____

Address _____

City _____ State _____ Zip _____

(New Jersey residents please add 5% state sales tax.)

Record of the 1981 Careers Conference

"What's Working to Enrich Engineering Careers," sponsored by USAB's Task Force on Career Maintenance and Development. Includes more than 30 papers on career issues. (UH0148-7) Members: \$18.75. Nonmembers: \$25.

1981 IEEE U.S. Member Salary and Fringe Benefit Survey

EE salaries related to numerous variables, such as job function, supervisory responsibility, type of employer, company size and geographic location, years of experience and level of education. Extensive tables showing income based on pairs of variables simultaneously, as well as survey statistics on fringe benefit plans. (UH0145-3) Members: \$45. Nonmembers: \$60.

Executive Summary of the 1980 Conference on U.S. Technology Policy

"Global Competition in the '80s" outlines actions required now to meet the global challenge to our industry and economy. (UH0139-6) Members: \$14.25. Nonmembers: \$19.

Record of the Joint IEEE-Industry Professional Conference

"Building a Professional Work Climate" focuses on the professional utilization and development of EEs in industry. (UH0140-4) Members: \$12.75. Nonmembers: \$17.

Employed Engineers: Who Owns Their Inventions?

Explains a number of pre-employment patent agreements and what they mean to the employed inventor. Detailed guidance on assignment of rights, forms of reward, confidentiality of employer information, disclosure of prior inventions, and a sample agreement. (UH0147-9) Members: \$2. Nonmembers: \$2.75.

The IEEE Role in Engineering Ethics

The IEEE Code of Ethics and procedures for enforcement, including IEEE support for members placed in jeopardy for adhering to the Code, and discipline of members for Code violations. Includes two case studies of IEEE involvement. (UH0149-5) Members: \$2.25. Nonmembers: \$3.

Your Rights as a Service Contract Employee

Describes wage busting and wage erosion, and tells what action may be taken under current laws and regulations. (UH0146-1) Members: \$2.25. Nonmembers: \$3.

Age Discrimination Digest

The most complete, up-to-date source of information on laws, cases, regulations, and agencies providing help. (UH0138-8) Members: \$16.50. Nonmembers: \$22.

Record of the IEEE-NRC Conference on Advanced Electrotechnology Applications to Nuclear Power Plants.

The complete record of a conference to examine nuclear safety and reliability in the wake of TMI, and to consider the practicality of applying advanced electrotechnology to nuclear power plant safety. (TH0073-7) Members: \$24. Nonmembers: \$32.

Executive Summary of the IEEE-NRC Conference

A summary of the Conference described above. Contains the recommendations of the working groups and an overview of presentations. (TH0077-8) Members: \$24. Nonmembers: \$32.

Special Offer: Both the Conference Record and the Executive Summary, IEEE-NRC

Both publications described above. (UH0136-2) Members: \$27. Nonmembers: \$36.

Reproduction of the IEEE Washington Office Mural

Two-color print suitable for framing (11" x 14") of the twelve portraits included in the Washington Office mural: Faraday, Morse, Babbage, Kelvin, Maxwell, Edison, Bell, Tesla, Steinmetz, DeForest, Marconi, von Neumann. Commemorating engineering discovery and invention, a tribute to the technical excellence of leading figures in the development of electrosience and technology. (UH0141-2) Members: \$2.50. Nonmembers: \$3.50.

United States Activities Board
DECENNIIUM

