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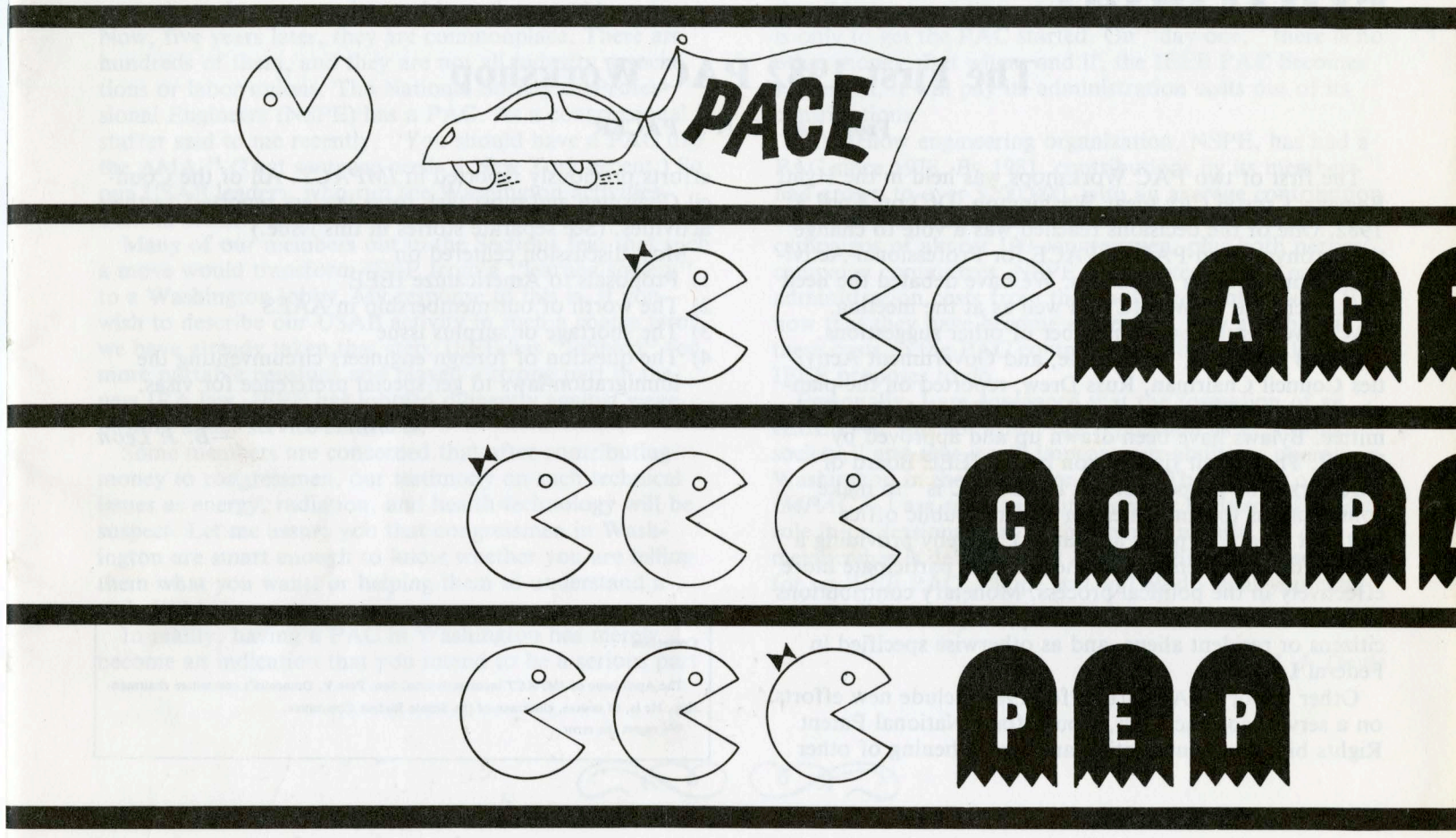

PACs SHIFT TO PACE AT WORKSHOP

PACE—Professional Activities Committees for Engineers—is the new name for PAC, the Professional Activities Committees of IEEE. PAC leaders suggested new titles and voted to change their acronym at the National PAC Workshop held on April 3 in Washington, DC. When USAB met in Washington on February 22, Dr. Ron Fredricks, National PAC Chairman, moved that the PAC leadership be authorized to re-name itself at the Workshop.

Why the Name Change Is Necessary

Because there are about 2700 legal PACs (Political Action Committees) in the U.S. presently, there is often confusion outside of the Institute between PAC volunteers and members of a legally constituted PAC. In addition, USAB is proposing to set up a legal PAC to solicit voluntary contributions on a 3-year, sunsetted, trial basis, with costs (other than start up costs during the first three years) to be borne by PAC contributions. If approved, IEEE members might then become confused between the activities of an IEEE (legal) PAC and those of the national "PAC" organization. (Also, try asking any "vidiot" who a "PAC man" is!)

Continued on page 2

Continued from page 1

A PACE By Any Other Name . . .

Some of the suggestion included:

- IMPACT: *I*EEE *M*embership *P*rofessional *Act*ion
- PACT: *P*rofessional *Act*ion *T*eam
- COMPACT: *Com*mittee for *P*rofessional *Act*ion
- PEP: *P*rofessional *E*nhancement *P*rogram

Simple ballots reduced a number of proposals to three name changes. The three changes, along with a fourth choice, "no change," were voted on by written ballot, using a ranking of first through fourth preference. Results were announced in the concluding Workshop session.

We always knew that professional activities would set a "pace" for the Institute. (See additional Workshop coverage in this issue.) ■

EDITORIAL

The First 1982 PAC Workshop

From PACMAN to PACER

The first of two PAC Workshops was held in the Hyatt Regency Crystal City (near Washington, DC) on April 3, 1982. One of the decisions reached was a vote to change the acronym from PAC to PACE for Professional Activities Committees for Engineers. We have debated the need for the change in *IMPACT* as well as at the meeting. PACE won easily over a number of other suggestions.

USAB chairman, Jack Doyle, and Government Activities Council Chairman, Russ Drew, reported on the planning for an IEEE-sponsored PAC, Political Action Committee. Bylaws have been drawn up and approved by USAB. They await final action by the IEEE Board of Directors. The purpose of the IEEE-PAC is "to make contributions to candidates for Federal public office (without regard to party affiliation), thereby providing a means for U.S. members of the IEEE to participate more effectively in the political process. Monetary contributions to the IEEE PAC will be voluntary, only from U.S. citizens or resident aliens, and as otherwise specified in Federal Laws."

Other major USAB thrusts for 1982 include new efforts on a service contracts bill, a push for a National Patent Rights bill, and continuation and strengthening of other efforts previously reported in *IMPACT*. All of the Council Chairmen and most task force leaders reported on their activities. (See separate stories in this issue.)

Most discussion centered on

1) Proposals to Americanize IEEE
2) The worth of our membership in AAES
3) The shortage or surplus issue
4) The question of foreign engineers circumventing the immigration laws to get special preference for visas.

—B. J. Leon

Correction . . .

The April issue of *IMPACT* incorrectly cited Sen. Pete V. Domenici's committee chairmanship. He is, of course, chairman of the Senate Budget Committee.

We regret the error.

IEEE IMPACT

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USAB CHAIRMAN'S MESSAGE

As I am sure many of you know from reading *The Institute*, USAB has set the IEEE membership to thinking about professional activities by proposing, for the second time in IEEE history, that we form an IEEE Political Action Committee. This Committee would accept contributions from members and contribute these monies to selected congressman for their campaigns. The last and only time this was proposed to the IEEE Board was in 1977, and the proposal was turned down.

When this proposal was first made, Political Action Committees were new in Washington. No one was very sure where they were going and how they would work. Now, five years later, they are commonplace. There are hundreds of them, and they are not all industry associations or labor unions. The National Society of Professional Engineers (NSPE) has a PAC. As a congressional staffer said to me recently, "You should have a PAC like the AMA." (That sentence needs a New York accent.) So our USAB leaders, who run the Washington activities, decided to have another try.

Many of our members out in the Sections fear that such a move would transform IEEE from a "learned society" to a Washington lobby. My response to this is, if you wish to describe our USAB activity in such a coarse term, we have already taken that step. IEEE has "lobbied" for more portable pensions and played a strong part in the new IRA law. IEEE has lobbied diligently against wage busting under service contracts.

Some members are concerned that after contributing money to congressmen, our testimony on such technical issues as energy, radiation, and health technology will be suspect. Let me assure you that congressmen in Washington are smart enough to know whether you are telling them what you want, or helping them to understand a technical issue.

In reality, having a PAC in Washington has merely become an indication that you intend to be a serious part of the Washington scene. One can do that by hard work and a lot of individual contacts, and indeed the IEEE has done this in the decade it has been in Washington. But today, the existence of a PAC makes entry that much easier.

Some members who have spoken to me question the proposal that administrative expenses, such as mailings and record keeping, are proposed to be paid out of the regular USAB assessment. This is legal under the PAC laws, but no USAB money can be used for direct contributions to congressmen. It should be clearly understood that this proposal to use USAB money for administration is only to get the PAC started. On "day one," there is no other money. But when, and if, the IEEE PAC becomes successful, it will pay its administration costs out of its contributions.

Our fellow engineering organization, NSPE, has had a PAC since 1978. By 1981, contributions by its members had grown to over $200,000, with an average contribution of about $45. The monies were used to contribute to the campaigns of almost 100 congressmen, plus both parties' campaign committees. NSPE also started out by paying administration costs from their normal member dues. But now that they have become successful, they are shifting these costs to the PAC contributors. This is exactly what IEEE proposes to do.

Personally, I am convinced that the formation of an IEEE PAC will not affect our reputation as a "learned society," and that it will improve our ability to operate in Washington in the professional area. The readers of *IMPACT*, I am sure, are our strongest boosters of IEEE's role in professionalism. In the coming months, as our membership is debating and deciding this second proposal for an IEEE PAC, I hope you will all do what you can to support this most important proposal.

—E. J. Doyle

IS IEEE READY FOR A POLITICAL ACTION COMMITTEE?

Tell us, PACErs and other IEEE members, what are your views? Do we need it? Do you want it? Contrary to recent reports in other publications, the PES does *NOT* have a PAC. None exists presently in IEEE. Should it? What are your questions or concerns about having a PAC?

—Editors

EDITOR:

Layoffs of engineers are once again upon us. As before, it is the older engineer who is the most vulnerable. To this end, I have written to each member of IEEE's Board of Directors urging the establishment of an Age Discrimination in Engineering Employment Task Force. The aim is to establish procedures by which IEEE's legal resources may be used to obtain legal redress for those of our members who have been unjustly laid off because of age bias.

It is time for IEEE to act, once again as in the BART case, as a professional defender.

—Irwin Feerst
Committee of Concerned EES

NATIONAL PACE CHAIRMAN'S CORNER

On July 1, many of our Sections and Societies will undergo a change of officers and, quite possibly, PACE leadership. I would like to review the activity schedule which local PACE units should follow over their operating year. This schedule was presented at the last two PACE workshops, and an earlier version was included in all the *PAC Source Books*. While I have never encountered a section or regional PACE that followed this schedule exactly, I feel that fairly close adherence is necessary, if you as PACE leaders are to succeed in implementing an effective local professional activities program of clear benefit to your Section or Society membership.

Your calendar of Professional Activities Milestones should look something like this:

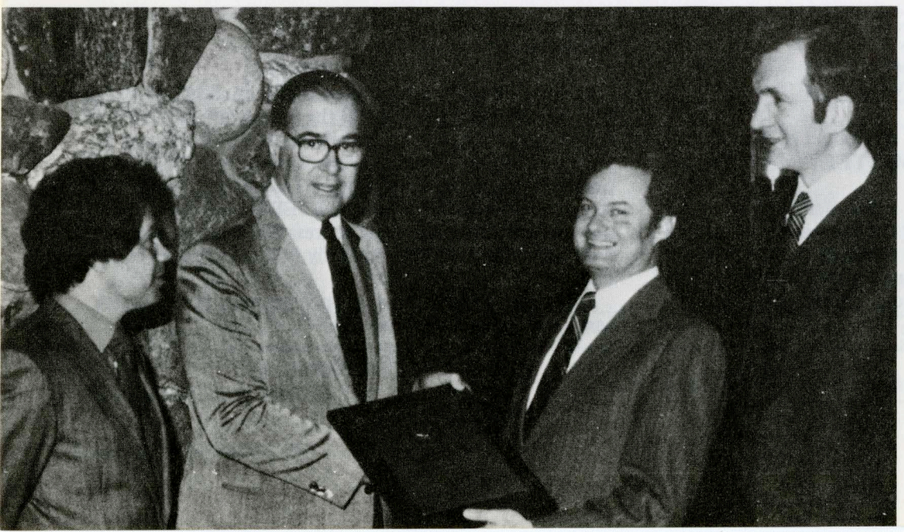
SECTION/SOCIETY PROFESSIONAL ACTIVITIES SCHEDULE

MAJOR EVENT	DATE
1. Report incoming chairman's name to Field Services, Regional/Divisional Coordinator and Washignton office (Sandra Blair)	- 30
2. Review existing PACE programs and your membership needs, and draft a new Program Summary.	- 20
3. Organize your PACE: Elect officers and appoint subcommittees based on Program Summary. (No Section or Society is so small it warrants only a one-person PACE.)	- 10
4. Get Section Excom or Society Adcom to approve appointments and Program Summary. Revise latter, if necessary.	- 5
5. Convene PACE; write project plans.	- 10
6. Review draft Project Plans; approve and send to your Reginal or Divisional PACE Coordinator, regardless of whether outside funding is required or not.	20- 60
7. Establish a Project File for each new project.	20- 60
8. Implement each Project Plan subject to your Coordinator's approval and any funding Authorizations.	20-365
9. Attend any Regional or Divisional PACE workshop. Also, USAB-sponsored sessions on various issues are being planned at many major conferences.	30-365
10. Attend a National PACE Workshop and/or Tech Policy Conference when one is scheduled. The remaining workshop for 1982 will be held in Phoenix, Friday evening, Sept. 10 thru Saturday, Sept. 11	30-365
11. Submit Progress Reports to your Coordinator, as requested. (These may be by telephone.)	90-395
12. Quarterly Review Section/Society Professional Activities Program; Revise Program Summary and Project Plans.	90-365
13. Secure Section Excom or Society Adcom approvals for revisions.	90-365
14. Send Quarterly Revised Project Plans to Coordinator. (Written preferred.)	90-365
15. Loop back to (7) as necessary.	90-365
16. Fill out PACE Local Project Summary Sheets for your major projects and return as directed to National PACE Coordinator or person designated. (These are for the benefit of other PACE units contemplating similar projects in the future.)	180-355
17. Repeat items (1)-(3) for the next Section/Society administrative year.	330-355
18. Turn all your files over to the incoming PACE Chairman. Please note that the National PACE Workshop held last April recommended that the PACE chairmanship generally be viewed as at least a two-year position rather than just "one of the Section/Society officer chairs."	355

Also, examples of a somewhat overdetailed Program Summary, a Project Plan and a Local Project Summary are included in your PAC (now PACE) *Source Book* along with sample forms. However, there are no "official" forms that you must use, since this paperwork is really only meant to keep you organized and your Coordinator and the National PACE organization informed. You might wish to make up your own record format. Finally, don't forget to send to *IMPACT* descriptions of any projects, in order to share your results (including problems encountered) with the other PACE units.

Well, I'm getting too "windy" again, so I will close for now. Next time I'll write on some PACE projects that I view as very apropos this year. For now, I hope to meet many of you in Phoenix this September.

—Ron Fredricks



Congressman Barber B. Conable, Jr. (2nd from l.) was presented with a plaque by the IEEE Rochester Section in appreciation for the legislation he introduced and the support given toward passage of the universal Individual Retirement Account. Joining in the presentation are (l.-r.) Constantine Anagnostopoulos, Section Chairman; Congressman Conable; Malcolm M. Drummond, USAB Pension Task Force Member; and James Minor of the Computer Society. The presentation took place in Henrietta, NY, on March 7.

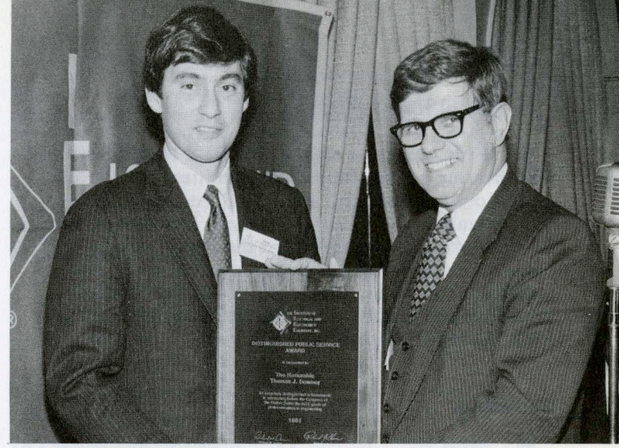
CONGRESSMAN DOWNEY RECEIVES USAB AWARD

USAB presented its annual Distinguished Public Service Award to Rep. Thomas J. Downey (D-NY) on March 21 at a Long Island Section meeting in Bethpage, NY. The Congressman was cited for "singularly distinguished achievements in advocating before the Congress of the United States the IEEE goals of professionalism in engineering."

In accepting the award, he asked for help from IEEE members in "assuring the future progress of American technology," as well as the revival of the economy. "We need organizations like yours to bridge the growing information gap."

"Right now," he continued, we have a vacuum tube government in a microprocessor world." Broader technical understanding among the public is needed in order to gain more public funding for path-breaking technological and scientific research. "If we don't wake up soon," he concluded, "we will find ourselves falling further and further behind in this more competitive world . . . it is up to you to help us communicate this understanding to the American public."

The USAB Award was presented by Dr. Richard J. Gowen, who was chairman of USAB in 1981, when Mr. Downey was selected as recipient. Dr. Gowen termed the award a "recognition of democracy in action" in citing the Congressman's responsiveness to the concerns of the technical community on Long Island and across the nation. "He has helped to demonstrate," Dr. Gowen said, "the effectiveness of a balanced policy combining the interests of both our high technology industries and the engineers responsible for the development of new technologies." ■



Congressman Thomas J. Downey (l.) is presented with the USAB Award for Distinguished Public Service by the 1981 USAB Chairman Richard J. Gowen.

WASHINGTON SCENE

Testimony has been offered on a variety of topics and two new IEEE Position Papers have been approved.

Manpower

Testimony was presented by Dr. Eugene Zwoyer, president of the American Association of Engineering Societies (AAES), on April 27, before the House Subcommittee on Science, Research and Technology on H.R. 5254, the National Engineering and Manpower Act of 1982. The AAES endorsed the bill in principle, but it made a number of specific recommendations on implementation, especially as related to the council established by the legislation and the manpower forecasts it is expected to be making. A copy of the complete statement is available from the IEEE Washington Office.

Energy

Testimony was presented by John A. Casazza, chairman of the IEEE Energy Committee, on April 26 before the Senate Subcommittee on Energy Research and Development on funding for energy R&D. The statement outlined a broad perspective on energy problems facing the U.S., particularly in the critical period of the present to the year 2000. It concluded by recommending vigorous development of all U.S. resources to meet growing needs, in addition to implementing conservation measures wherever feasible. The testimony is available from the IEEE Washington Office.

Technology Policy

Samuel J. Raff presented testimony on April 21 before the House Appropriations Subcommittee on Commerce, Justice and State, on the issue of "technical stagnation" in the U.S. He commented on the lack of appropriation of funds authorized by the Stevenson-Wydler technology innovation act, passed in 1980. While this appropriation will not solve all of our national problems, "it is clearly a step in the right direction," he said. The testimony is available from the IEEE Washington Office.

Electric Energy Systems

Lester H. Fink testified on behalf of both the Energy Committee and the R&D Committee on March 25 before the House Subcommittee on Energy Research and Production. His statement supported the DOE electric energy plan in recommending an increased role for electricity through R&D programs that support improvement of electric power system efficiency and reliability as well as advanced conversion technologies. A justification for government support of these efforts was included. The complete statement is available from the IEEE Washington Office.

Innovation

Letters were sent by USAB Chairman Doyle on March 8 to key House Committee Chairmen endorsing in principle H.R. 4326, the Small Business Innovation Act, as contributing significantly to technological innovation in the U.S.

Continued top of page 6

Postal Rate Increase

Eric Herz, executive director of IEEE testified before a joint hearing of the House Subcommittees on Postal Operations and Services, and Postal Personnel and Modernization on March 15 opposing increases in rates for non-profit mailers. He cited the importance of IEEE publications in disseminating information among the technical professions. Severe page reductions could be forced by postal rate hikes. The testimony is available from the IEEE Washington Office.

Radiation

The IEEE Committee on Man and Radiation (COMAR) developed a position on human exposure to microwaves and other radiofrequency electromagnetic fields, which has been approved by the Board of Directors as an IEEE Position Paper. In summary, it states that there is no cause for public concern about environmental levels of RFEM fields to which the general population is exposed. Prolonged exposure to levels lower than those recommended by the American National Standards Institute Committee C95 is not likely to be hazardous to human health.

Engineering Education

The Educational Activities Board has developed guidelines to institutions seeking to provide engineering programs of acceptable quality, which has been approved as an IEEE Position Paper. The position addresses such issues as faculty vacancies and inadequate laboratory facilities and relates the quality and quantity of graduates to development of the nation's economy, defense and standard of living.

Position Papers and Statements

Copies of all IEEE Position Papers and most Entity Position Statements are available from the IEEE Washington Office. In addition to the recently approved papers initiated by COMAR and EAB (see above) the following positions have been developed and are available on request:

IEEE POSITIONS

- Age Discrimination
- Federal Support of Research and Development
- The Role of the U.S. Government in Civilian Communication Satellite Research and Development
- IEEE Members' Professional Needs
- Electricity in the United States Energy Economy
- Energy Conservation
- The Need for Nuclear Power
- Fusion Power
- Solar Energy
- Energy from Municipal Solid Waste
- The Solar Power Satellite
- Cogeneration in the United States
- Breeder Reactors in the United States
- Pensions
- Nuclear Waste Management

ENTITY POSITION STATEMENTS

- U.S. Civilian Space Program (USAB)
- H.R. 4732, Patent Legislation (USAB Patent Task Force)
- Service Contracts (USAB)
- The Need for Tax Incentives to Promote a Health R&D Effort (USAB)

In progress are papers or statements on health care technology policy, telecommunications networks and issues of regulation, and health aspects of video display terminals. ■

IEEE 1982 Conference on U.S. Technology Policy

Breakfast Session, Washington, DC, February 25, 1982

Dr. George A. Keyworth II, director of the Office of Science and Technology Policy, outlined Administration science and engineering policies.

The Administration's Science and Engineering Policy Agenda

by Dr. George A. Keyworth II

TALKING POINTS

Always pleased to talk to members of IEEE, which I consider one of the Nation's most effective groups for advancing science and engineering.

Will discuss Administration's science and engineering policies—which are shaping into the first real National S&L Policy we have had since WW II.

Will make reference to the FY 83 R&D budget, as the budget is in essence "the bottom line" of policy.

The Administration's S&E philosophy in a nutshell:

Strong belief in the importance of R&D to serve Nation's needs.

Federal Government should support R&D in two broad categories:

Where it is the sole or primary user: i.e., defense, space, etc.

Where it clearly helps assure strength of Nation's economy and welfare of citizens; i.e., agriculture, health, etc.

Continued ⟶

Keyworth—*Continued*

Re: meeting national needs Federal Government has two main responsibilities:

Providing climate for technological innovation in private sector.

Focus direct R&D support where there is substantial prospect for economic gain, and where such R&D is not appropriate to individual firms.

Hence: importance of Federal support of basic research, more reliance on private sector for development.

How does Administration back up this policy?

Climate for innovation improved by:

Economic Recovery Tax Act measures (credits, depreciation allowances, etc.)

Regulatory reform

Support of other moves to encourage investment in private sector R&D

R&D budget for FY 83 reflects policies and priorities.
Let me provide some examples.

R&D Budget Highlights:

Total R&D up to $43. billion, an increase of $4.2 billion over '82.
Within total *basic research* is $5.8 billion, a 9% increase over '82.

Recognizes need to maintain strength in all scientific disciplines.

Encourages scientists at universities in research at frontiers, and training of future scientists and engineers.

DOD R&D up to $24.5 billion, a 57% increase over 82.

Increased support for basic research at DoD.

Increase support of R&D related to development of advanced strategic systems.

NASA R&D up to $6.5 billion, $0.7 over '82.

Space Shuttle a high priority.

Space Science, including Space Telescope, Galileo and Gamma Ray Observatory

Commerce at $4.2 billion includes $3.9 billion for proposed transfer of DOE programs, including Energy Research and Technology Administration.

NSF up to $1,033 million, an increase of $72 million over '82.

Increased support of research in natural sciences and *engineering*.

NOTE RE: ENGINEERING EDUCATION: Reduction in NSF Budget, followed by recent proposal to transfer programs to new national educational institute does not signify the relinquishing of Federal role in education. But rather a new focus on the problems of the '80s as opposed to those of the '60s.

Now that '83 budget has been presented, we can now focus more on other matters.

Here are a few areas of OSTP interest and involvement:

White House Science Council

Membership (including many in engineering and industry)

Meetings

Subgroups

National lab review

National Airspace System Plan

New military technologies

Engineering Education and Manpower, Focus on:

Shortage of Engineering Faculty

Instrumentation issue

Fellowships

NOTE: Will continue to consult closely with IEEE on these matters.

Productivity, Focus on:

High impedance in transfer of research results to industry, particularly from National Labs.

Anti-trust legislation

Patent reform

NOTE: From a European perspective, we are in a better position regarding technology transfer.

Importance of Government-Industry-University cooperation

Have seen rapid improvement.

Industry-University collaboration on the rise.

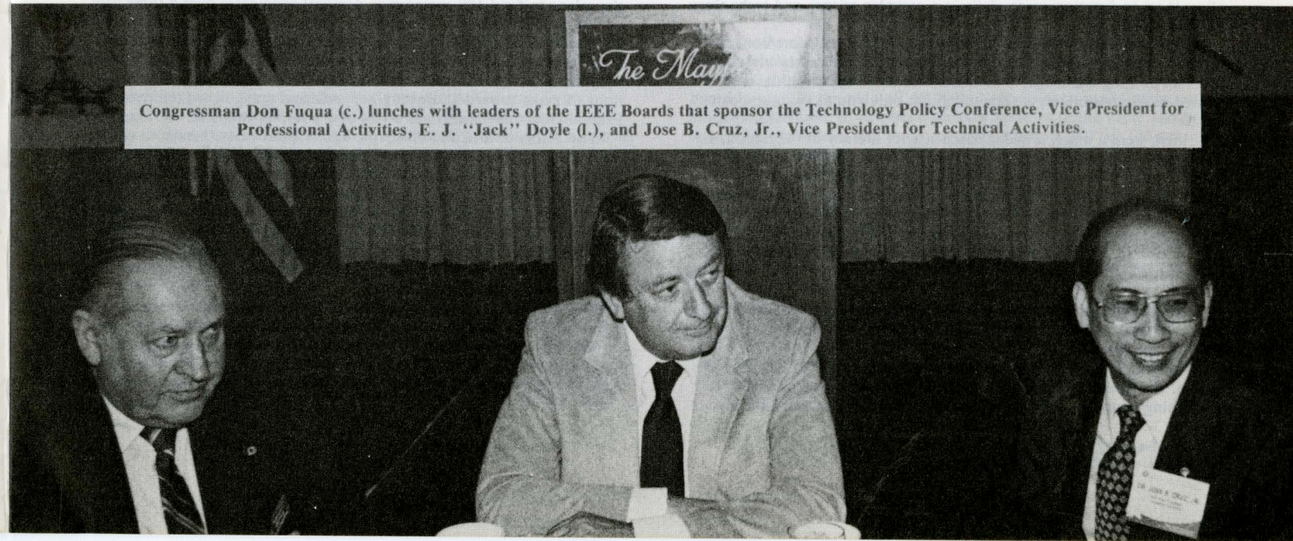
Changing institutional arrangements important to America's industrial competition.

The time for analyzing problem is past.

We need a new family of recommendations on which to act.

IEEE can make important contributions.

We look forward to our continued close and beneficial relationship. ■



Congressman Don Fuqua (c.) lunches with leaders of the IEEE Boards that sponsor the Technology Policy Conference, Vice President for Professional Activities, E. J. "Jack" Doyle (l.), and Jose B. Cruz, Jr., Vice President for Technical Activities.

REMARKS

by the Honorable Don Fuqua, U.S. House of Representatives
Before the IEEE National Engineers Week Conference, February 24, 1982

I am pleased to be here today as part of your National Engineers Week Conference. I am not a newcomer to IEEE meetings and I am very glad to have been invited back once again. The opportunity to speak to a group of engineers is always a welcome one because I believe we have much to learn from each other. In today's society, engineers and public officials cannot afford to live in separate worlds. The success of our respective work increasingly depends upon an honest and continuous working relationship between the two groups.

In my remarks I would like to focus on three subject areas: first, science/math literacy in the U.S. today, second, hearings that the Science Committee has held on Engineering Manpower concerns and third, legislation I have recently proposed to address some of those concerns.

Despite America's long-standing research effort, the high caliber and quality of that research, our stellar community of Nobel Laureates, and the country's high technology eminence, we as a nation do not have a well informed or technically literate population. In fact, a large percentage of our students go through their entire formal education without being exposed to anything beyond the most basic science and technology.

In the February 15 issue of *U.S. News and World Report*, an article entitled, "Johnny Can't Count—The Dangers for U.S." stated, "As U.S. analysts see it, 'technological illiteracy' poses a major threat to American economic security and national defense. Fears are growing that too few mathematically adept graduates are coming out of schools to develop technologies that hold the key to national well-being." The article goes on to report the results of the latest nationwide math survey of 17 year olds. Only 58% of the students surveyed knew what percentage 30 is of 60, only 42 percent could determine the area of a square when the length of only one side was given, only 39 percent could correctly divide 250 by 0.5.

If this survey had also been conducted in Japan, West Germany or the Soviet Union, I think the results would have been dramatically different. The general academic requirements for science and math in the Soviet Union, for example, are startling. Algebra and geometry are taught in the sixth and seventh grades, and calculus is required in high school. In addition, all youngsters are required to complete five years of physics and four years of chemistry. In our own public school systems, only one-sixth of secondary school students take science or math beyond tenth grade. Only one-third of the nation's 17,000 school districts require more than one year of mathematics *or* science. While *our* academic requirements provide only a weak science/math foundation in those going on to college and a poor preparation for science/math skills in the work force at all levels, the requirements in Japan, West Germany and the Soviet Union promote strength in these technical fields. No doubt, this has been a factor in the very rapid expansion of technical industries in these countries.

Without an expanded requirement for science and math at the pre-college level, we lose what may be the single opportunity for exposing many students to sufficient knowledge in science and mathematics to allow them to function successfully in a complex science and technology based society.

The opportunities that exist for engineers to be in the forefront of promoting technical literacy in the nation are diverse and to my mind offer an exciting challenge. Whether or not these opportunities are viewed as responsibilities is something that only you as engineers can decide.

If there were a much broader based science literacy in the nation, I think two things would occur. First, voters would be more inclined to support programs to enhance the nation's technology base and two, future elected officials, as products of a stronger technical education, would be more sensitive to the nation's technological needs from their own valuation of science and technology as a national priority. This cannot, of course, happen overnight but the longer we put off making it happen the more detrimental it will be to your work and to our national goals.

Even though the task we must begin to improve science/math literacy in our schools nationwide will be a slow one, there is other work we can do here and now.

Throughout the 96th Congress and continuing in the 97th Congress, part of the Science Committee's efforts have been directed toward addressing issues concerning the nation's scientific and technical manpower situation. This was done as part of a comprehensive study of factors affecting U.S. technological innovation. In our hearing series entitled "Engineering Manpower Concerns" we set out to explore the specifics and scope of the nation's technical manpower problems. Our goal was to cut through the rhetoric and generalizations that mislead one to believe that the United States is faced with a dire shortage of engineers *in general* or that enrollments in engineering disciplines are declining dramatically or other such misconceptions.

The one theme that was repeated throughout the hearings was that America's human resource is our most valuable and powerful resource and our most critical need is to give careful attention to training and teaching that resource.

In light of this, let us examine the situation that exists regarding the training and teaching of America's future engineers. It is not, as many would have us believe, that we have too few young people wanting to pursue engineering careers. On the contrary, our undergraduate engineering enrollments are expanding. It is rather that a dire shortage has occurred in those needed to teach these future engineers. This dilemma has arisen because bachelor-degree engineers are able to find such attractive industry positions that this works as a disincentive for them to pursue graduate study. The combination of few engineering students electing to do graduate work and a simultaneous drain of current engineering faculty taking industrial jobs has left the engineering departments at our universities with many faculty vacancies. There are approximately 2000 engineering faculty vacancies which means that an estimated 10 percent of all engineering teaching positions are unfilled.

This problem becomes more severe as the undergraduate engineering ranks expand, as they are doing, which, in turn, requires increasing numbers of *qualified* faculty. I emphasize the word qualified because today's world is one of intense technological competition. This is unlike the post World War II period when Japan, Germany and other industrial nations were faced with rebuilding their industries and their economies and posed little threat to America's pre-eminence.

The term qualified faculty also should not be reserved for just the ranks of university teachers but should extend throughout our educational systems to the lowest level of elementary school. In this regard, it is a frightening prospect that 26 percent of all *pre-college* math teaching positions are filled by teachers uncertified to teach math.

While we must surely address the problem of quantity for teaching positions, we cannot afford to trade quantity for quality. Excellence breeds excellence and mediocrity will also breed itself. At present, engineering faculty members are faced with a heavy burden of larger classes, increased teaching loads and less time for professional research. This will not promote excellence.

Our task will be to provide incentives for the best students to, first, remain in school through the doctoral level and, second, to choose academic careers.

I am encouraged by the fact that industry is becoming actively involved in helping to encourage this trend. The Exxon Education Foundation plans to fund 100 engineering doctoral candidates over a three year period at 66 colleges and universities. There are also other examples, but we should not lose sight of the fact that we are talking about a short-fall in the thousands which may well get worse before we can turn it around.

While industry and academia each have their own unique contributions to make toward addressing our technical manpower problems, the Federal Government also has a role and a responsibility in this area.

In an effort to articulate that role and responsibility, I have recently proposed legislation entitled the "National Engineering and Science Manpower Act of 1982" (H.R. 5254). It calls for the creation of a National Coordinating Council on Engineering and Scientific Manpower within NSF. The Council would be comprised of representatives from industry and academia, as well as the President of the National Academy of Sciences, the National Academy of Engineering, the Director of OSTP, the Chairman of the National Science Board, and the Director of the National Science Foundation.

It would have the authority to review the spectrum of science and engineering efforts within the Federal Government. It would have the power to develop mechanisms to coordinate those numerous splintered and narrowly focused efforts in our mission agencies to foster the best and broadest utilization of these varied endeavors. This will not only

Continued→

USAB COUNCIL CHAIRMEN REPORT TO PAC (PACE) LEADERSHIP AT WORKSHOP

The Chairmen of USAB's four Councils—Career Activities, Member Activities, Government Activities and Technology Activities—reported on the actions taken by the Task Forces and Committees within their Councils in 1982 during the PAC(E) Workshop on April 3 in Washington. To keep all *IMPACT* readers up to date on USAB activities, the reports of the Council Chairmen will be covered in the pages of *IMPACT*.

Along with a report, Career Activities Council Chairman David C. Lewis presented a list of "deliverables" by that Council in 1982.

- Wagebusting legislation to be introduced in the House of Representatives.
- Decision regarding provisions on pirating in service contract regulations.
- Inputs regarding continuity of pension rights under government contracts (to Sec. 414, Internal Revenue Code).
- Testimony on H.R. 5254, "National Engineering and Science Manpower Act of 1982."
- PAC(E)—Department of Labor network established.
- Patent bill introduced in the Senate.
- Pension booklet (draft) developed.
- Pension materials organized for PACE.
- COMPOW problems identified.
- Bibliography on Age Discrimination developed.
- Employment Assistance Guide (draft) written.
- Denver Conference Proceedings published and distributed. ■

REPORT OF THE CAREER ACTIVITIES COUNCIL: Highlights of the 1982 Projects

COMPOW

The goal of COMPOW this year is to survey the female membership (member grade and higher) to determine:

(a) Are there career problems specific to women engineers?
(b) If so, what are they and why do they exist?
(c) What can IEEE/USAB do about the problems?

PATENTS

The Patent Task Force has already dispatched one Legislative Alert to generate support for the patent bill. We expect there will be other Alerts later in the year. In addition, the Patent Task Force will need PAC support and participation in local visits to key Representatives and Senators. We hope the PAC will develop a network of individuals who are completely familiar with the IEEE patent bill and other related issues who can support us rapidly at the section level.

We intend to develop a position on the higher patent fees that are currently being proposed by the Administration. The position will be conveyed to the Congress or the Administration, as appropriate.

Finally, we will continue the patents column in *The Institute*.

MANPOWER

The single greatest objective for the Manpower Task Force this year is to determine whether or not there is a critical engineering manpower shortage. To this end we are reviewing all of the data and studies we can find. We intend also to fund a technical evaluation of the AEA manpower study, and to disseminate the results of that study.

On the alien engineer issue, we are developing guidelines on acceptable salary levels for employment advertisements in IEEE periodicals. The recent exposé by *The Institute* showed clearly how the legal process was being manipulated so that alien engineers could be employed at substandard wages. It is useful to point out that very often the alien engineer is just as abused as the American engineer who is looking for a job.

Finally, the Task Force is working to improve bills in Congress that are aimed at solving the "critical shortage of engineering manpower."

Continued on page 10

Fuqua—*Continued*

help to insure that federal agency efforts are mutually reinforcing but that they are also supportive of state, local and private sector efforts.

The bill also establishes a special Engineering and Science Manpower Fund to implement the programs developed by the Council. Grant money from the fund will be available through a system of matching funds on a one-to-one ratio with other private or public sector money as it becomes available. The fund has been created for a 5 year period with $50 million for its first year of operation.

I hope that the fund will encourage strong industrial interest so that more initiatives such as the one started by Exxon will be possible. In addition, the fund can also be used to match the financial resources put forth by states and universities to promote the quality of America's technical and scientific manpower.

Federal initiatives to enhance science and engineering education, such as the one I have proposed and others already in existence, are important; however, they can reach only a small percentage of the population.

In finality, the broadest and most fundamental effect on education in this country comes from individual state and local governments. Engineers such as yourselves live and work in those communities and states. You can, by your concern and involvement, have an important effect on the emphasis of science and math in our public education. Local and state school boards determine the academic requirements in any given geographical area. An engineer, as a member of a school board in each of the nation's 17,000 school districts, could represent a unique opportunity to educate their communities to the value and importance of more science and math for more students and for the general benefit of the nation.

I believe a significant impact can come from the grass roots. Although the government, the industrial sector and academia can all provide help and promote progress, you as individuals and as a professional community can do a great deal.

We have just begun to recognize and define the extent of a national weakness. We can turn that weakness into the national strength of a formidable and competitive work force at all levels. This will indeed require funds and guidance from various sectors, but of equal importance will be the influence of those who can clearly convey to the public the value of a technically literate population. The time, energy and concern of technical professionals such as yourselves can provide that influence.

Thank you. ■

Career Activities Council—*Continued*

Among other things, we want very much to see that the interests of the working engineer are represented, not just academia, industry, and Government. You can expect to get Legislative Alerts urging you to contact your Representative and/or Senators in support, or non-support, of a variety of engineering manpower bills that are currently in the Congress.

ACTIVITIES OF THE 1982 MANPOWER TASK FORCE

National Manpower Policy Bill, H.R. 5254 (Fugua/Walgren, et al)
Established a committee to develop an IEEE position on the bill, develop a proposed AAES position and present it to the Engineering Affairs Council.

IEEE Position Paper on Engineering Education in the United States
Reviewed the EAB Position Paper and requested that a delay be granted to allow the Task Force to see the back up documentation pertaining to student/faculty ratios. If additional time could not be granted, the task force proposed revisions.

Entry of Foreign Engineers
Established a committee to write a Position Statement on the Employment of Foreign Engineers in the U.S.
Established a committee to develop action and information packages on the alien entry issue for use by PAC and Government Action Leaders.
Will send a legislative alert on the following bills:

S. 2222 (Simpson et al.), H.R. 5872 (Fish, McClory), Immigration Reform and Control Act of 1982.

S. 1765 (Thurmond, for the Administration), H.R. 4832 (Rodino, for the Administration), Omnibus Immigration Control Act.

1981 Survey on Engineering Supply and Demand by the American Electronics Association
Established a committee to review and evaluate the survey and publication by the AEA. Based on the results of this evaluation, the Task Force will take a stand and issue a report on its findings.

Engineering Manpower Modeling
Established a committee to continue the development of an engineering manpower model, whether through the Task Force or to support the work of another organization.

EMC Demand Survey
Established a committee to structure a way to use local IEEE Professional Activities Committees in support of the EMC Demand Survey. Local PACs would, in essence, provide follow-up casework by visiting local employers who are survey participants. This would be an effort to standardize responses from employers. A pilot program will be conducted before enlisting all of the local PAC network.

PENSIONS

The principal thrust of this year's work is to develop supporting materials to assure that IEEE/USAB members have the opportunity to take maximum advantage of the new IRA/Keogh legislation.
The Task Force has drafted a booklet entitled "Guide to Private Pension Plans," which has completed its initial review cycle and should go to IEEE lawyers and professional editors. It is designed to walk the lay engineer through the steps necessary to begin to understand defined-benefit and defined-contribution plan. Also, the booklet will tell how to find out more about special topics.
The Task Force is also working to develop material that the PAC can use at the local level to get IEEE members initiated into thinking intelligently about their pension plans, and especially the new IRA and Keogh regulations.
We have also begun an effort to analyze the pension plans of the "Top Ten" companies, in terms of IEEE employers, in order to get a better handle on the characteristics of a typical member's pension plan. We may find some plans that are especially good, in which case we may publicly recognize the corporation in an attempt to encourage other corporations to adopt the good characteristics of that plan.

A PAC survey to find out what pension issues were of interest to the PAC showed that many members were concerned about the Social Security earnings cap, which requires that a person earning money above the level set by the cap forego one dollar of Social Security for each dollar earned. This issue was the second most important to PAC respondents. (The first was earlier vesting.) Our goal this year is to develop, distribute, and evaluate a questionnaire to determine how the Social Security cap affects our members. Based on the results of this work we intend to seek a change in the regulations or legislation next year; but, first we need data.
We intend to keep pushing for earlier vesting by supporting a series of bills that have been submitted by Congressman Pepper, but, the prospects for this legislation do not look good in this Congress.

SERVICE CONTRACTS

The Task Force has been working to develop an appropriate service contract bill for professionals, such as engineers, for nearly a year. We are in at least our third rewrite. We expect to have a bill ready to submit within 10 days of this meeting, and we then have to get the bill introduced and passed.
In addition, we have been working with the Pension Task Force to try to influence changes to IRC 414(a) so that it eliminates "fringe-benefit busting." Our spot-checks have shown that this practice affects half of the people who do service contract work. The GAO has published a report that generally supports our conclusions. We can't guarantee a change in IRC 414(a), but we'll try!
Finally, the Service Contract Task Force is working to eliminate "pirating" regulations. These regulations affect everyone, not just service-contract engineers. This is an unconscionable attempt to manipulate the manpower marketplace.
If we are going to be successful in these activities we are going to need support from PAC. In particular, we are going to rely on PACs to help us generate data and examples to support any testimony associated with our efforts to get suitable legislation and/or regulations passed.

AGE DISCRIMINATION

The Age Discrimination Task Force intends to develop what we hope will be an effective program to reduce the occurrence of age discrimination. A first step in this process is to develop and make available to IEEE members an annotated bibliography on age discrimination. At the same time we will be working with individuals from the Career Maintenance and Development Task Force to develop materials that will encourage and make easier individual efforts to keep up with the state of the art. Finally, we will look for innovative ways to reduce the prejudices employers may have against older engineers.
Age discrimination is a very complex and difficult issue to resolve. There is probably no single, complete solution. We look to PAC for support, and especially new ideas and approaches that can be tried out in combating the age discrimination problem.

EMPLOYMENT ASSISTANCE

The Employment Assistance Task Force continues to provide members with suggestions for job-seeking activities; to provide local volunteers with information to assist unemployed members; and to provide administrative support to the IEEE member employment information service provided through Professional Abstracts Registries, Inc.
We need the PAC volunteer network to keep us informed of local unemployment problems.

ETHICS

The Ethics Task Force continues to work toward development and acceptance, by the IEEE and the AAES, of a uniform code of ethics.

LICENSURE

The Licensure Task Force is working with the EAB and the NCEE to provide appropriate data for the EIT, EE, and PE examinations. In addition, the Task Force is monitoring certification, validation, and/or relicensure programs throughout the country.

—D. C. Lewis, Chairman

REPORT OF THE GOVERNMENT ACTIVITIES COUNCIL

Since spring is around the corner, I thought I'd start off with an analogy related to baseball, which is usually one of the harbingers of spring.
When USAB was established, and the professional activities of USAB were put in to place, particularly the part that I'm going to talk about—government activities—we decided, symbolically, to play in a new ballgame. And here in Washington, we're playing in what I would call the major leagues.
And yet, there is a whole infrastructure out there, which you might call the farm teams and the minor leagues, who are also playing in the same ballgame. It's a ballgame that calls for a degree of knowledge and professionalism in the way we treat that game. It is in giving us the tools, if you will, the training and the mechanisms for getting that ballgame played properly, that is the task of the Government Activities Council.
Now let me talk a little bit about the major leagues. Professionalism is something that we in the IEEE have prided ourselves on. As a professional society, we do things professionally. I think we should also face up to what it takes to do our government activities professionally, as well. In other words, we should be professional in everything we do.
In order to do that, we've got to conduct and involve ourselves with programs which take us away from our everyday engineering activities, and which get us into a realm where, in fact, we are not necessarily the people who have all of the knowledge and understanding. In fact, when we're playing in the big leagues, we are playing over our heads in many cases. So, in beginning the process of getting us to where we will in fact be playing on a level with the rest of the people here in town, in the big league, is part of one of our major functions.
Now, to accomplish that, we've founded a number of programs. We've got information flowing in; we like to develop systems for getting information flowing out. The way that information flows out, the techniques that we use for involving ourselves with the sort of big league operation (which is Washington) is another part of what the Government Activities Council is all about.
Now, I want to talk about two issues today, although there are a number of others in this picture, because I think those two illustrate a particularly important aspect of how we need to become professional.
One of them is a proposal for a Political Action Committee. As you may or may not know, a Political Action Committee is an outgrowth of the provisions of the Election Reform Act of 1971, which, in essence, changed the approach to the funding of the political campaign process of the United States. It took the more or less unlimited contributions of the so-called "fat cats" and it said there was going to be a maximum limit set on the amount of money that can be contributed, and we're going to make it more and more possible for the people to get involved in this process effectively. Now what does "effectively" mean in this case? It means in an organized way, rather than each individual in a sort of fragmented way, making a small input. It allowed people to gather together, when they had common interests and common objectives, to donate their funds to political campaigns, and therefore, to have some involvement and interests expressed for the guidance and input to the political leader who is, we hope, if we're successful in supporting the appropriate candidates, going to be sitting in a decision-making position in Washington.
The Political Action Committee is basically a device to allow people to become more effective in involving themselves in the political process. Effectiveness is one of the things we're up to, and the Political Action Committee therefore is being proposed as a mechanism for keeping the IEEE a professional in this big league ballgame.
The other program I wanted to mention specifically is the Congressional Fellows activity. Congressional Fellows are being supported by a number of professional societies in Washington. Simply stated, it is a device for putting technically competent people in the staff level on the Hill, to involve themselves with the entire legislative process.
The staff function on the Hill is an extremely important part of the entire process, because Congressmen are becoming more and more involved in a broader array of issues. In other words, they're spreading themselves thinner and thinner across their responsibilities, and the responsibilities for a Congressman today are indeed awesome. I should point out—it's kind of a favorite topic of mine—that I think one of our great difficulties in America today is this problem of the dilution of effort in the Congress, which doesn't allow individuals to do the kind of job that they would really like to do. I know a number of Congressmen have resigned or retired rather prematurely because of this feeling of frustration of not being able to do their jobs.
As a consequence, the staff becomes much, much more important; they have much more responsibility and much more in-depth involvement in what actually happens. As a consequence, it's very important to have technically competent people in the right places in Congress, because they are going to play an important role.
We've had some excellent feedback on our Congressional Fellows. It has been part of getting the IEEE recognized on the Hill and used as a technical resource. You have to understand this: that is, we are not a well appreciated resource. We may think we have the answers to many questions, but this political ballgame that we're in doesn't recognize that, and so we have to take much more vigorous initiatives in order to bridge that gap, and that's sort of what we're about in the Government Activities Council.

—R. C. Drew, Chairman

GOVERNMENT ACTIVITIES COUNCIL (GAC)

RESPONSIBILITIES

1. CONTRIBUTE TO IEEE PROFESSIONAL ACTIVITIES PURPOSES UNDER USAB, PARTICULARLY THOSE THAT RELATE TO—
   "... collaboration with public bodies"
   "publication of ... reports on matters of professional concern
   Art. 1, Sec. 2, IEEE Constitution
2. ASSIST IN ACCOMPLISHMENT OF SPECIFIC USAB GOALS
   "Improve our ability to influence ..."
   "Increase ... effectiveness ..."
3. MANAGE ASSIGNED PROGRAMS

BASIC ROLE

TO INFLUENCE—Act as conductor and provide the network and connections (for signals that originate elsewhere)
EFFECTIVELY—With low noise
and
EFFICIENTLY—With minimum attenuation and losses
with
FLEXIBILITY—Redundant network with dynamic response and multiple, reprogrammable interconnections

NEEDS

- Better networking to enable greater use of expertise available

Continued overleaf

Gov't Activities Council—*Continued*

- Local congressional contact system for key leaders in House and Senate
- Better recognition in Congress
- Improved information system to feed issues to IEEE members and feedback to USAB leadership and task force leaders
- People—motivated and willing to contribute time and talents
- "Extended staff" resource to aid small number of Washington USAB staff
- USAB project monitoring and 'sunset' provisions

PROGRAMS

". . . TO INFLUENCE"
- Government affairs committee
- Congressional Fellows
- Legislative newsletter
- AAES participation

"EFFECTIVELY"
- Internal/external communications
- Program and financial planning

"EFFICIENTLY"
- Washington office
- USAB administration and secretariat

"with FLEXIBILITY"
- New projects
- Project development ■

REPORT OF THE MEMBER ACTIVITIES COUNCIL

The Member Activities Council essentially has a function of communication among members, providing the interface between many different activities going on within USAB, and then delivering some kind of product from that activity to members, to legislatures, or to industry, and then to bring back to USAB information from the members.

Probably one of the most important goals of all this communications activity is *who* we are—as an engineering profession. If we can establish what that is with some form of commonality in all of our minds, we will have a more common road to travel, and our activities will be more directed. There would be projects and programs that would lead to the development of an image for the engineer and a visibility of the Institute among engineers.

The U.S. Activities Board gives us a map, of sorts. If you look at PAC activity, you have three facilitators. Each of the activities they represent has to interface in some way with all the other activities. And in turn, the PAC activity has to deliver the information to the appropriate target, whether it be members, sections, regions, or legislatures, so that the very essence of our Member Activities Council is the PAC. That's probably the largest single, strongest function.

To facilitate communications and the image and enhancement of the profession, we have a newsletter *Impact*, edited by Ben Leon. We try to disseminate new information among PACs. It's intended to be a write-in newsletter, also, where you can present your ideas and thoughts and have them expounded upon within our peer group, nationally, and hopefully something would come out of that, that would lead to further programs or resolutions.

The Salary Survey is being led by Henry Bowes, and the Opinion Survey by George Morris. These are measurements of the environment—where we are in the world and how we fit with the rest of the country in our profession and within other groups. They are an information source for our plans and programs and future works.

We're working on building a very strong student awareness program. Dr. Charles Alexander of Tennessee Tech is heading that program. When we bring students out of college now into the engineering world, they are more prepared to identify both with the problems, in the profession, in industry, and in legal matters, and also with the Institute as a peer group, in order to keep them in the Institute and to enhance our long-term professional growth.

And finally but foremost—because you don't do any of these other activities without money—we have the administration of division and regional funds, which is essentially the operating money that all of you used in your sections, in the regions and in the area council groups.

I am very interested in promoting activities concerning the image of the engineer and the profession. I see three areas that we could work in that have not been developed. They need leaders to form the activity. I think we're in a position where we can put them into our ongoing programs.

1. Develop the engineering "image" through public relations. There is an Institute function that is performing this activity now; it is relatively low key. We need to present the view of the engineer through the public media. This in turn would also enhance and assist our own commonality of the engineering image.
2. The next lies in conference activities. The IEEE sponsors many conferences during the year. Our participation in those conferences in an imageenhancing mode is rather nil. We do not identify engineers with their roles in society—be it designer of systems, enhancing products, maybe cat scan, biomedical electronics, signal processes, energy researching, computers and so on. We'd like to go forward with some kind of program that would evolve that image.
3. The third activity concerns participation of professional activities volunteers in targeted conferences. We need to set up a group that would track all IEEE conferences in the U.S. and target particular papers, responses, panels and sessions for the conferences. This is more than just PAC activities. We need to target those particular activities that would be of most interest to particular conferences, where you have at least a segment of the engineering population who may be interested in that activity. It could extend from professional benefits of various types to actual technological inputs.

We need to put together a plan for USAB acceptance and funding and carry that on through the rest of the year, and into the coming year. I'd really like to make it a target of the centennial, because that is a year that we really ought to come on strong, and join the other activities within the Institute that will be publicized in the centennial.

This is quite important, because unless we do something in a more coherent manner with respect to these conferences that are coming up, we won't get cooperation from the conference people at the last minute, if we're just trying to throw something together. We've really got to have a committee in MAC that's working on that. Here's a chance for some people who are at the moment unloaded from some of their other PAC or IEEE activities to contact me about picking up some of this work.

Finally, to keep things in your own mind straight, you might consider the Career Activities Council and the Technology Activities Council as something like a factory; they make the products. But the marketeers are people that interact in bringing the products out to customers. The Governmental Activities Council takes them to government, and the Member Activities Council takes products out to PACs and to the general public customer.

—R. J. Wojtasinski, Chairman

REPORT OF THE TECHNOLOGY ACTIVITIES COUNCIL

There is much technical expertise within IEEE to share with our government, with our country. It's the goal of the Technology Activities Council to coordinate the activities of the technical committees within the Institute to influence public policy.

The committees of the USAB Technology Activities Council have been quite active since January of 1982.

What follows is a brief review of these activities, as well as program objectives for the immediate future.

U.S. Energy Program

When the Energy Committee held its first meeting of 1982 on February 24, in conjunction with the U.S. Technology Policy Conference, Dr. John Marcum, Assistant Director of the Office of Science and Technology Policy, presented the committee with an overview of the Reagan Administration philosophy on transferring Federal energy research activities to the Department of Commerce under the proposed Energy Research and Technology Administration (ERTA). An important exchange of views followed.

On March 25, the Committee joined with the IEEE R&D Committee in presenting testimony before the House Science and Technology Subcommittee on Energy Research and Production on the Electric Energy Systems Program of the Department of Energy.

The Energy Committee is also undertaking a review of its position on cogeneration and has proposed a second seminar on the breeder reactor to update its position on breeder technology. Its Nuclear Waste Subcommittee continues to work with Congress on nuclear waste disposal legislation.

Committee on Communications and Information Policy

The Committee's March 26 meeting featured short statements by two invited guests, one, State Department official charged with responsibility for telecommunications and trade, and the other a Commerce Department official with similar responsibilities.

Mission statements and charters of several subcommittees were ratified. The newest subcommittee is one on Technical Liaison with the Federal Communications Commission.

The Legislative Subcommittee is preparing a committee position statement on a bill pending in the House (H.R. 5008). The bill would enable the FCC to set minimum performance standards for audio and visual electronic equipment to reduce susceptibility to interference from radio frequency energy. Companion legislation (S. 929) has already passed the Senate.

Health Care Technology Policy

A six-member committee has been established with representation from the following sectors: industry/research, health care, and academia. In addition, there are liaison representatives (non-voting) from NSPE, the American Society of Hospital Engineering, and the Health Resources Administration Institution.

COMAR

The Committee's position paper on radiation has been the subject of about 100 requests over the past month, many of which have come from Canadian sources.

U.S. Technology Policy Steering Committee

On February 24 and 25, the U.S. Technology Policy Steering Committee held its fifth Conference, attracting over 102 IEEE members, and approximately 40 government attendees for various portions of the program.

The Steering Committee met on March 20 to review the event, and to plan for future activities. A survey has been developed for distribution to the Conference attendees to evaluate their reactions.

The Steering Committee recommends not holding another conference until 1984, which will augment the IEEE centennial celebration. For 1983, the Steering Committee recommends holding the April 19 meeting of the Executive Committee in Washington, and supplementing the meeting with various technology policy related activities. For the remainder of 1982, the committee will develop a series of forums in Washington to address specific technology policy concerns.

On April 21, the Committee presented testimony before the House Appropriations Subcommittee on Commerce, Justice and State, on funding to implement the Stevenson-Wydler Technology Innovation Act of 1980.

NRC/IEEE Conference

On March 30, the IEEE received a written extension from the Nuclear Regulatory Commission for its grant on Probabilistic Risk Assessment (PRA), and which will now terminate on December 31, 1982. The extension also confirms additional work to be performed for the NRC toward the production of the PRA Guidebook. This additional work is intended to deplete approximately $100,000 of funding which remained after the completion of the IEEE Review Conference in October of 1981.

Research and Development Committee

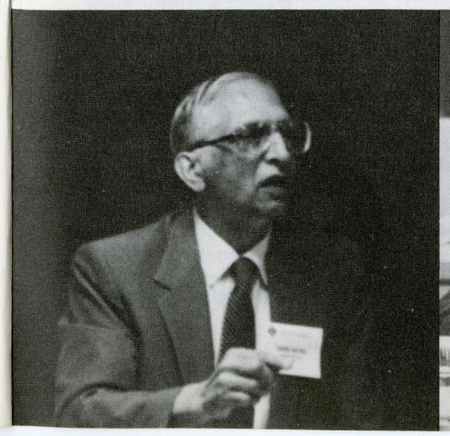
The R&D Committee prepared an analysis of electrotechnology in the Federal FY 1983 research budget. The report was included in the "Inter-society Preliminary Analysis of R&D in the FY 1983 Budget," published by the American Association for the Advancement of Science.

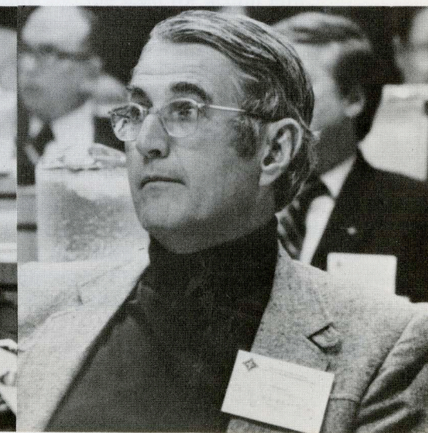
On February 23, the Committee presented testimony before the House Science and Technology Subcommittee on Space Science and Applications on the FY 1983 NASA budget. The statement called for additional funding for a 30/20 Ghz communications satellite program, and the House Subcommittee accepted the proposals. On March 25, the R&D Committee joined with the Energy Committee in presenting testimony supporting the DOE Electric Energy Systems Program. Requests to testify have been submitted to an additional eleven Congressional subcommittees.

On March 30, the R&D Committee held its second annual Federal R&D Budget Briefing, at which Administration spokesmen addressed the research budgets of the Defense Department, the Department of Energy, the NSF and NASA. The briefing was followed by a committee luncheon, at which Leonard Weiss, of Senator John Glenn's staff, called upon the Committee for assistance in drafting legislation to address the ills of American R&D policy. The committee established a task force to be responsive to Dr. Weiss' requests.

—L. K. Wilson, Chairman

Harb S. Hayre, Region 5 Director, raises a question. / **Irwin Feerst studies a document intently.** / **Bill Jarzembski, Division VI PAC Coordinator, listens attentively to presentation.**





Review of IEEE Legislative Activities, January—March 1982

Date	Subject/Bill Number and Description	Government Body	Action/IEEE Position	Legislative Status
1981-82	Patent legislation. H.R. 4732 (Kastenmeier), to set Federal standards for permissible employee pre-inventions.	House/Senate	USAB Patent Task Force met with numerous Members of Congress to urge co-sponsorship and obtain Senate sponsorship. Legislative Alert and Entity Position Statement issued. Testimony is expected to be given.	Hearings are planned for late spring/summer.
1982	Predecessor/successor pension rights under govt. contracts.	House Ways & Means Committee Treasury Dept.	Contact with Rep. Conable to pursue change in Internal Revenue Code 414(a).	
1982	RFP (wage busting)	NASA	USAB Service Contracts Task Force is reviewing to determine validity of thrust to eliminate wage busting.	
1982	H.R. 5254 (Fuqua/Walgren), National Engineering and Science Manpower Act of 1982. Provides for a national policy for engineering, technical and scientific manpower.	Subcommittee on Science, Research & Technology (House Science & Technology Committee).	USAB Manpower Task Force contributed to AAES testimony; also provided a written statement.	Referred to Senate Science & Technology Committee. Hearings to begin April 27 in House.
1982	S. 2222 (Simpson, et al.), H.R. 5872 (Fish, McClory), Immigration Reform & Control Act of 1982.	Senate/House	IEEE is studying this bill and will take a position shortly.	Not yet reported out of of subcommittee.
1982	S. 1765 (Thurmond, for the Admin.), H.R. 4832 (Rodino, for the Admin.), Omnibus Immigration Control Act.	Senate/House	IEEE testified against proposals contained in this bill in 1981.	Held in subcommittee and in committee.
1982	S. 929/H.R. 5008, Radio and Private Land Mobile Services Act of 1981.	House/Senate	IEEE Communications & Information Policy Committee is developing a proposed position paper on this bill.	S. 929 already passed Senate; H.R. 5008 is pending before the full House.
1/22/82	Divestiture of AT&T (H.R. 5158).	Subcommittee on Telecommunications (House Energy & Commerce Committee)	Unofficial technical briefing of Subcommittee staff by representatives of IEEE Communications & Information Policy Committee.	
2/23/82	H.R. 5890, NASA Authorization, FY83	Subcommittee on Space Science and Applications (House Science & Technology Committee)	IEEE R&D Committee testified in favor of inclusion of funding for continuation of the 30/20 Ghz communication satellite program, an item the Administration deleted. The Subcommittee included funding for continued development.	The bill has not yet been reported out of Subcommittee
March '82	IEEE/USAB-proposed Professional Service Standards Act	Congress	Final draft of proposed legislation submitted to legal counsel.	Pending introduction into House.
3/8/92	S. 881, H.R. 4326, Small Business Innovation Act.	House	USAB has issued a letter of support for H.R. 4326.	S. 881 already passed Senate. H.R. 4326 passed the Small Business Committee and is pending before Armed Services, Science & Technology, and Energy & Commerce Committees.
3/11/82	Technology transfer issues.	House Science & Technology Committee	Meeting between Technology Transfer Committee Chairman and General Counsel of House Science & Technology Committee.	

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Legislative Activities—*Continued*

3/15/82	Appropriation for U.S. Postal Service for FY 82	Subcommittee on Postal Operations & Services (House Committee on Post Office & Civil Service)	IEEE submitted a statement opposing postal rate increases for non-profit organizations.	House Post Office & Civil Service Committee has held hearings. The bill is expected to come to the House floor shortly.
3/12/82	Government agency liaison.	Depts. of Commerce and State	IEEE Communications & Information Policy Committee representatives met with DoC and DoS representatives to develop technical liaisons.	
3/25/82	Authorization for Federal energy activities for FY 83 (Electric Energy Systems Div. of DOE)	Subcommittee on Energy Research & Production (House Science & Technology Committee)	IEEE Energy and R&D Committees have testified in support of continued funding for electric energy systems programs. FY 82 amount for these programs was $24.5 million, and, under the continuing resolution passed at the end of the past Congressional Session, authorization for FY 83 will remain the same.	Energy Research & Production Subcommittee presented its recommended appropriation levels to House Appropriations Subcommittee on Energy & Water Development on April 1. Combined recommendation for both electric energy systems and electric storage systems was approximately $41.6 million.

—L. C. Fanning, Staff Director
IEEE Washington Office

IEEE ENERGY ADVOCACY PROGRAM GETS UNDER WAY

With the distribution of the slide presentation, "Energy in Perspective" to all PACE Chairmen and to others who requested it, the IEEE Energy Advocacy program has been initiated. The slide show, as described in *The Institute* (March 1982, page 7) and in *IMPACT* (April 1982, page 3), is designed for presentation to various audiences, both technical and non-technical. These include not only IEEE groups, but also other professional societies, civic groups, schools, colleges, government bodies, business groups, and other related organizations.

The complete speaker's kit includes a speaker's guide, the slide presentation in a Kodak Carousel, a cassette tape, a typed script, reference material, audience questionnaire forms, a speaker's meeting report form, and sample copies of leaflets which may be requested for distribution to audiences. By study of the material, a speaker can be prepared to respond to questions, act as moderator of discussion groups, or serve as a spokesman for IEEE at the local or state level.

Presentation of "Energy in Perspective" is the first step in securing audience involvement on energy problems and proposed actions to be taken at the local, state and national level to solve them. In order to initiate this audience involvement, an Energy Interests questionnaire is distributed to members of the audience before the presentation is made. It is to be filled in and returned at the conclusion of the slide presentation, indicating individual reactions, questions to be answered during the discussion period, and volunteer commitments to work on projects or act as a speaker.

I have presented the slide show in Northern Virginia and Washington, DC to IEEE groups, including the National PAC Workshop on April 3, 1982, and to other engineering groups. The responses that I have received to the questionnaire were over 90% favorable, with numerous requests for further information and volunteer commitments to act as speaker and present the show. By this method, it is possible to build up a network of IEEE members and other interested citizens who can carry out the work of making the public more aware of the facts about our energy future and the need for action now.

The IEEE has now begun its first national program to influence the general public on a subject of primary importance. In placing energy issues in perspective, the IEEE is not only providing a public service, but is also securing recognition for the engineering profession and the Institute. Make it your goal to have the presentation given once a week!

—James F. Strother
Chairman, Education Subcommittee of the IEEE Energy Committee, and Chairman, PACE, Engineering Management Society

Region 1 Area B Meeting Report

by Lawrence Edelman, Long Island Section

On March 27, 1982 an Area B Professional Activities Committee meeting took place in New Jersey. The meeting was attended by the Area B PAC Chairmen and their guests, and Larry Edelman, Area B PAC Chairman, and Alex Gruenwald, Region 1 PAC Chairman.

During the meeting a recommended 1983 USAB budget and Area B 1982 activity plans were formulated.

On a percentage of the total Direct Expense basis, the 1983 USAB budget was allocated as follows:

Council Totals

• Member Activities:	33.7%
• Government Activities:	14.4%
• Career Activities:	22%
• Technology Activities:	11%
• Management:	13.9%
• USAB Discretionary Fund:	5%

This budget will be presented by the Region 1 Area B PAC at the April 1982 National PAC Workshop in Washington, DC.

Region 1 Area B PAC Activities planned for 1982 are as follows:

1982 REGION 1 AREA B PAC ACTIVITIES

Long Island Section

PAC Chairman: Bob Bruce

Project Coordinator	*Activity*
• Stan Roth	Labor Certification of Alien Engineers
• Larry Edelman	Guidance Brochure
• Brenda Stoops	Forum on Career Maintenance
• Treasurer Phil Morris	Publishing Costs
• Al Kelly	Legislative Liaison on Eng. Manpower
• Bob Bruce	Monitoring of USAB Activities
• All PAC Members	PAC Public Relations

New Jersey Coast

PAC Chairman: Miguel Carrio

Project Coordinator	*Activity*
• Miguel Carrio	Economic Forum on Technology Impact

New York Section

PAC Chairman: Maryon Williams

Project Coordinator	*Activity*
• Maryon Williams	Seminar on Mid-Career Crisis

North Jersey

PAC Chairman: Maitland McLarin

Project Coordinator	*Activity*
• Robert Sinusas	Project EGO—(Member Awareness & Interest)
• Robert Sinusas	Money Matters
• Robert Sinusas	Definition of Engineer
• All PAC Members	Increase PAC Activities and Budget
• All PAC Members	Work Contracts & General Conditions
• Richard Tax	Restructuring of Section XCOM

Princeton

PAC Chairman: Mahesh Kumar

Project Coordinator	*Activity*
• Mahesh Kumar	Lecture Series on Career Development

Westchester

PAC Chairman: Ernest Joerg

Project Coordinator	*Activity*
• Ernest Joerg	Career Seminar on Continuing Education
• Ernest Joerg	Speak on Behalf of Engineering at Local High Schools

Connecticut

PAC Chairman: Robert J. Lynn

Project Coordinator	*Activity*
• Robert J. Lynn	Three Part Lecture Series Recovering from a Layoff; Advancement and Career Satisfaction ■

A Comparison of Engineering Salaries with Several Unionized Trades

When a high school student considers his alternatives for the future he has many opportunities open to him.

On the one hand there the trades; Retail Clerk, Auto Mechanic, Electrician, Carpenter, Plumber, etc. Many of these jobs are physical; many are outdoors; most do not require an office and do not require paper-shuffling.

On the other hand there are the professions; Engineer, Doctor, Lawyer, Dentist, Educator, etc. These are clean, indoor, learned, respected jobs. They involve working in clean, well lighted offices. They require a college education. They have mental rewards. Since fewer people can qualify, they should obviously pay more!

What can we do to help the high school student make up his mind? Only he can put into perspective his interest in science, his interest in constructing things, and his need for certain surroundings. We can help him evaluate his earnings—short term and lifetime. We can do this using readily available sources. Anybody can do this. *You* can do it for your own area with a few phone calls.

This study will compare engineering salaries to several less academic trades. This study will be confined to take-home pay, something we all understand and identify with.

All wages are for the San Francisco Bay area. It is expected that the results would not be radically different for any other area.

Engineering wages are obtained from a commonly used salary survey for 1982. There are at least three firms that generate this information for the Bay area. I can assure you that the information used is accurate. The curve used represents Engineers in non-supervisory positions having a maximum of a Bachelor's degree.

Continued on next page

Information on wages in the trades was obtained simply by calling the union locals. Four trades were chosen for comparison. They are considered representative:

- Retail Clerks
- Auto Mechanics
- Electricians
- Plumbers and Steamfitters

Comparisons are made on the basis of take-home-pay levels (which is obvious from the curves) and on the basis of lifetime accrued income after high school (which is less obvious).

Trades people all start off with a natural advantage. They get paid while they're apprentices. The engineer, of course, invests in his future by paying out money to go to college. To keep things simple we will not even consider the negative cash flow during college. These years are simply calculated at zero income.

Retail Clerks

Retail Clerks are the people who check out your purchases at the supermarket. The information was obtained from Retail Clerks Local 428, headquartered in Walnut Creek, California.

Retail Clerks work steadily, get pension and health benefits, and even get vacation and sick leave. The curves assume that they work a standard 2080 hour year.

They serve a one-year apprenticeship before becoming journeymen at $11.98 per hour. During apprenticeship they start at $6.59 per hour, with increases each quarter to $7.79, $8.98, and $10.18 per hour.

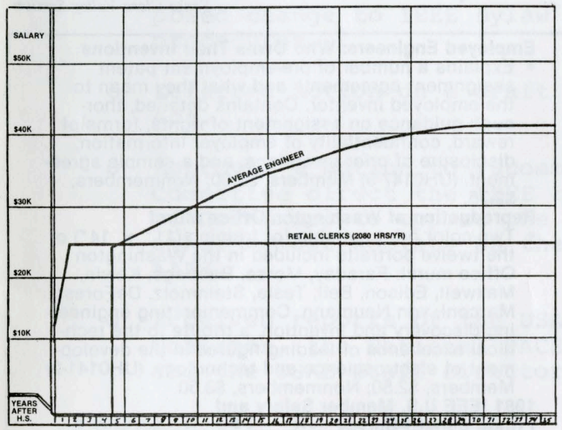

FIGURE 1: Engineers vs Retail Clerks

Figure 1 plots the curve of retail clerk's wages vs the average engineer's wages.

The curves are deceptive. The Retail Clerk works four years while the engineer goes to college. Therefore in accumulative lifetime income after high school the engineer requires 19 years to catch up to the Retail Clerk! By then he's 36 years old.

Auto Mechanics

This information was obtained from local 1414 headquartered in San Mateo, California.

The work is not seasonal; I have assumed the Auto Mechanics work a full 2080 hour year.

Autom Mechanics serve a three-year apprenticeship. They start at 50% of journeymen's wages and get 5% increases every six months. Journeymen's wages are $14.03 per hour.

Figure 2 plots the curve of Auto Mechanic's wages vs the average engineer's wages.

In his ninth year the engineer makes the same hourly wage as an Auto Mechanic! In accumulative lifetime income after high school he does not catch up until he is 24 years out of high school! By then he is 41 years old and is acutely aware of age discrimination in engineering.

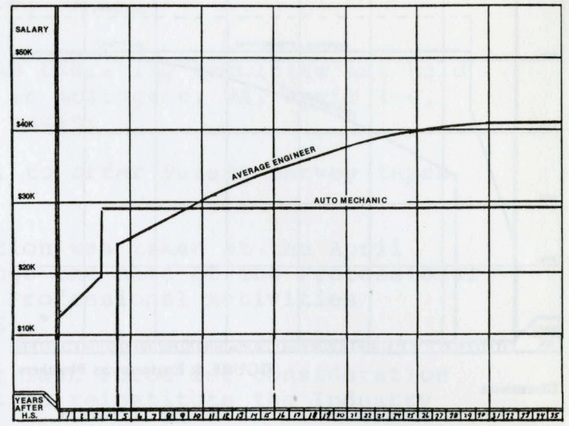

FIGURE 2: Engineers vs Auto Mechanics

Electricians and Plumbers

Information on Plumbers and Steamfitters was obtained from local 393, San Jose, California. Information on Electricians was obtained from Electrical Workers Local 332, San Jose, California.

Electricians and Plumbers work in the building trades. They get pensions and health benefits. They do not get sick leave and paid vacation and holidays. Journeymen Electricians make $21.20 per hour; Journeymen Plumbers and Steamfitters make $22.17 per hour.

Based on information from the unions, it is assumed that Electricians work a 1700 hour year (solid line in figure 3) instead of 2080 hours (dotted line). Plumbers work 90% of the available 2080 hours.

The curves are plotted in figures 3 and 4.

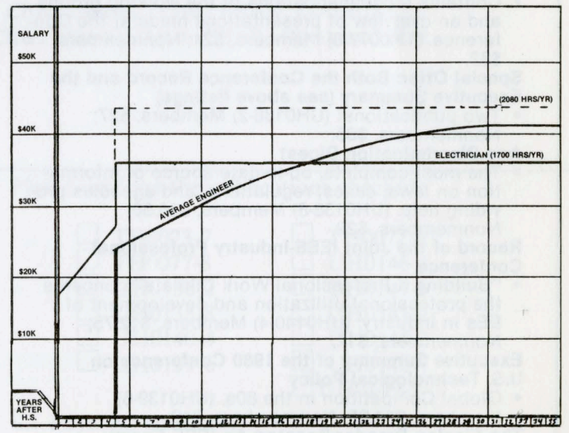

FIGURE 3: Engineers vs Electricians

The curves speak for themselves. The Engineer takes 18 years out of high school before he even equals the electrician's hourly wage. The plumber beats him hands down; the average engineer can't even catch up to him in hourly wages!

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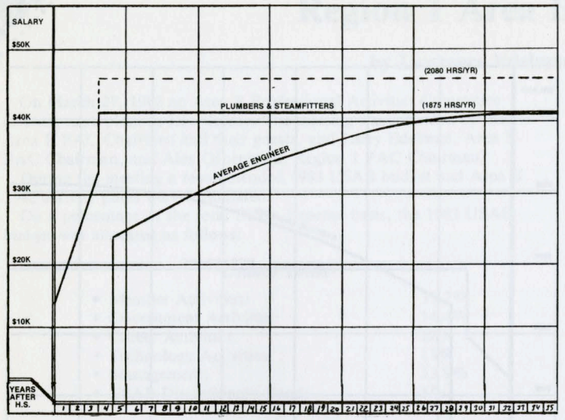

FIGURE 4: Engineers vs Plumbers

Discussion

I'm trying to keep this simple. Only take-home-pay is considered. Benefits are given lip service.

The curves and salary levels are frozen for 1982. If the same thing was done back a few years or repeated a few years in the future it is doubted very much that the results would change.

Trades people have several additional advantages. They get paid for every hour worked; overtime is double or even triple time! No tradesperson works a scheduled 50 hour week for 40 hours pay!

The tradesperson also accumulates seniority. All layoffs occur only by seniority!

The tradesperson's disadvantage is that union rules are followed to the letter. If its not in the contract, specifically, he doesn't get it! Engineers are given much more flexibility.

Conclusion

Engineering is financially a bad investment! The investment in four years of college does not pay off as well as an apprenticeship in a trade. (Remember, I'm only talking about money now.)

Even if you count the intangibles, you have to worry about age discrimination after forty.

The IEEE must act! We must clarify who is an engineer and who isn't. Then perhaps we'll have some senior techs to help us again. We must force engineering salaries to a level that is worthy of four years of the hardest college study available! We must make the layoff of a real degreed engineer the most dangerous thing a company can do!

Career-pathing has become a popular buzz word among personnel people in industry. It essentially means that everyone eventually becomes an engineer! We are letting the personnel people determine our qualifications.

Nurses don't automatically become Doctors. Court clerks don't automatically become lawyers. Why? Where have we gone wrong!

Wayne E. Amacher
Santa Clara Valley Section

FOR THE ENGINEER'S PROFESSIONAL LIBRARY

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Record of the IEEE-NRC Conference on Advanced Electrotechnology Applications to Nuclear Power Plants
- Considers the practicality of applying advanced electrotechnology to nuclear power plant safety. (TH0073-7) Members, $24; Nonmembers, $32.

Executive Summary of IEEE-NRC Conference (see above)
- Contains recommendations of the working groups and an overview of presentations made at the Conference. (TH0077-8) Members, $24; Nonmembers, $32.

Special Offer: Both the Conference Record and the Executive Summary (see above listings)
- Two publications! (UH0136-2) Members, $27; Nonmembers, $36.

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 Joint IEEE-Industry Professional Conference
- "Building a Professional Work Climate" concerns the professional utilization and development of EEs in industry. (UH0140-4) Members, $12.75; Nonmembers, $17.

Executive Summary of the 1980 Conference on U.S. Technological Policy
- Global Competition in the 80s. (UH0139-6) Members, $14.25; Nonmembers, $19.

The Fission Breeder Reactor; An IEEE Energy Committee Seminar
- Comprehensive, up-to-date information. (TH0072-9) Members, $22.50; Nonmembers, $30.

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.

Employed Engineers: Who Owns Their Inventions
- Explains a number of pre-employment patent assignment agreements and what they mean to the employed inventor. Contains detailed, thorough guidance on assignment of rights, forms of reward, confidentiality of employer information, disclosure of prior inventions, and a sample agreement. (UH0147-9) Members, $2.00; Nonmembers, $2.75.

Reproduction of Washington Office Mural
- Two-color print suitable for framing (11″ × 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 electroscience and technology. (UH0141-2) Members, $2.50; Nonmembers, $3.50.

1981 IEEE U.S. Member Salary and Fringe Benefit Survey
- Contains latest information on 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 a number of fringe benefit plans. (UH0145-3) Members, $45.00; Nonmembers, $60.00.

IEEE Careers Conference.
- "What's Working to Enrich Engineering Careers." The Conference was sponsored by USAB's Task Force on Career Maintenance and Development, Denver, October 1981. (UH0148-7) Members, $18.75; Nonmembers, $25.00.

PAC Guide to Ethics.
- Discusses the IEEE Code of Ethics and the procedures for enforcing the Code, including IEEE support for members placed in jeopardy for adhering to the Code, and discipline of members for Code violations. Also discusses the anatomy of ethical decisions and includes two case studies of IEEE involvement. Presents activities for local PACs. (UH0149-5) Members, $2.25; Nonmembers, $3.00.

Summary of the USAB OpCom Meeting
April 3-4, 1982
Arlington, VA

The second meeting of the 1982 USAB Operating Committee was held at the Hyatt Regency Crystal City in Arlington, VA, April 3-4, 1982. The following actions were taken:

- Deferred action on a proposal to offer Salary Survey tapes for sale.
- Received a report that an action was taken at the April National PAC Workshop to change the name of the Professional Activities Committee to "the Professional Activities Committee for Engineers (PACE)."
- Referred to the USAB Manpower Task Force for consideration and recommendation a proposal to reinstitute the Industry Newsletter.
- Referred to the newly created IEEE Bylaws Committee a proposed change to IEEE Bylaw 310.5 concerning USAB election procedures.
- Deferred action on a draft Professional Service Standards Act.
- Approved a motion to recommend that the IEEE Executive Committee direct the IEEE representative to the AAES Board of Governors to oppose the identification of NSPE or any other member society as the Washington representative of AAES.
- Received reports of the USAB Chairman, the USAB Council Chairmen, the National PACE Chairman, the USAB Controller, and the USAB Staff Director.

PREPARED BY: R. S. Walleigh
DATE: April 6, 1982

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Please send me the publications checked:

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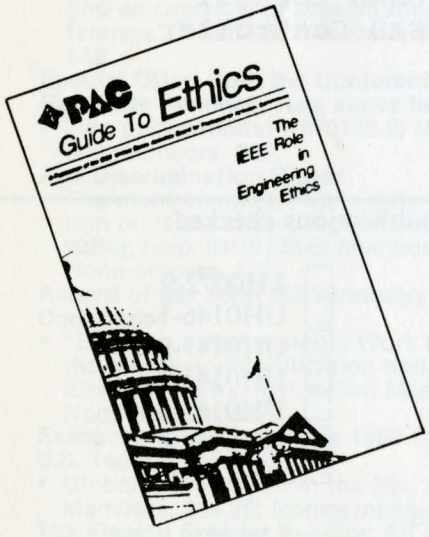
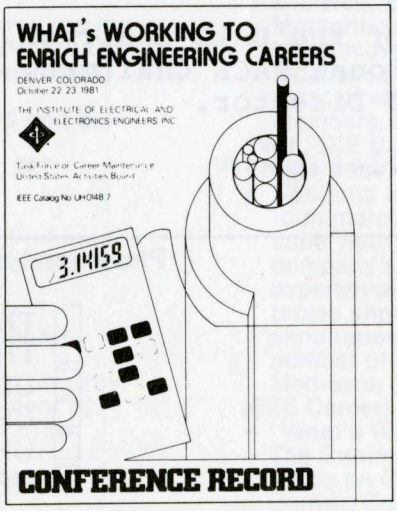
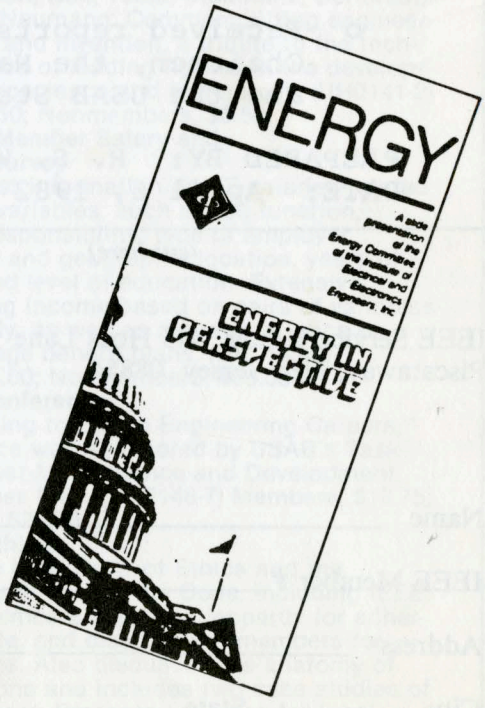
Senator Glenn addressed largest group of IEEE participants during the week of Board and Conference sessions.







DO YOU HAVE YOUR COPY?

—See pp 18-19