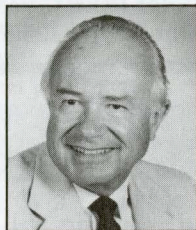


## Two Views of the Engineering Manpower Conference

### Conferees Say No Shortage Exists

by **Frank E. Lord**, Editor  
Career Activities Council



I was among a group of members of IEEE-USA's Manpower Committee who participated in a conference on September 11-12 in Washington, D.C., sponsored by the Engineering Manpower Commission of the American Association of Engineering Societies. With the theme *Engineering in America's Future: Shortage or Surplus?* the conference addressed the question of the reliability of supply and demand projections and the likely impact of demographic and other trends on such forecasts. The answer was a judgment of no shortage, now or in the foreseeable future.

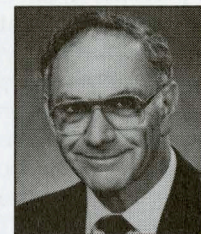
People of all persuasions explored the question, including industry leaders, practicing engineers, government statisticians, and engineering professors, most of whom were able to maintain objectivity. The program content flowed smoothly from the first day's sessions on *Statistical Background* and *Future Scenarios* to the *Employer Requirements* session on the morning of the second day. The keynote address was given by D. Allan Bromley, Director of the White House Office of Science and Technology Policy. The first day closed with a presentation of *Congressional Perspectives* by Congressman Don Ritter (R-Pennsylvania), the only Ph.D. engineer in Congress.

Most members of the conference's first panel seemed convinced that a manpower shortage exists, and they were there to speak about various aspects of it. Only the panel moderator put some caveats on what might be concluded from the present about the future. I was most astonished by a panelist from the National Science Foundation (NSF), who spoke about such deficiencies of the infrastructure as communications and transportation, attributing those inadequacies to a shortage of engineers. This notion appears equivalent to concluding that street people in U.S. cities indicate a shortage of home builders. I thought it ironic that a person unable to distinguish between societal and economic needs would be speaking at a conference examining supply and demand.

—continued on p. 6

### Can We Foretell the Future?

by **Gerald W. Gordon**, Chairman  
Member Activities Council



A shortage or a surplus of engineers—that is the question! Engineers, statisticians, managers, labor experts, government officials, and human resources executives from professional societies, industry, government, and academia gathered in Washington, D.C., on September 11-12 to answer the question. IEEE was well represented at the conference, sponsored by the Engineering Manpower Commission (EMC) of the American Association of Engineering Societies.

While conflicting ideas were presented, I felt that the conferees deeply involved with manpower supply and demand predictions had become more objective; their differences were much narrower now than in the past. Alan Fechter, Executive Director of the Office of Scientific and Engineering Personnel at the National Research Council, said he was surprised at the consensus among conference participants. "There is not as much contention as I thought there would be," he said.

The overwhelming judgment was that no shortage existed now, nor would there be one in the immediate future. Predictions about the distant future were much less certain. Some speakers thought shortages might occur by or before the year 2000. Most presenters agreed that long-range predictions are hazardous, because so little is known about the many factors affecting supply and demand.

Robert Rivers' position that a free market always has supply available at a higher market price and a smaller

—continued on p. 7

#### Inside . . .

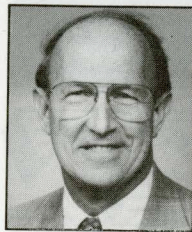
- Meet IEEE-USA's Council Chairmen, p. 4
- A Minute for PACE, p. 6
- Job Fairs, p. 2
- Washington Scene, p. 3



THE INSTITUTE OF ELECTRICAL  
AND ELECTRONICS ENGINEERS, INC.

IEEE UNITED STATES ACTIVITIES





## IMPACT

### On Season's Greetings and Farewells

Whether we're experiencing boom or bust in the economy, the holiday season causes most of us to pause and reflect on our lives and priorities. This introspection may be occasioned by the arrival of families, friends, bills, or IRS tax forms. The first two lead us to set aside more time for our personal lives. The last two convince us that much needs to be done in influencing public policies and perceptions.

For the past two years, I've carved out some time to edit this newsletter in support of IEEE's United States Activities. I am a convert to this activity. I used to think purely in technical terms, but I believe now that engineers will only really be considered professionals when they exercise their rights and responsibilities to pursue public good as they see it. There is certainly no reticence on the part of other professional groups to do likewise.

This is my last issue of *Impact* as Editor in Chief. My job has been made enormously easier through the support of IEEE-USA's Washington staff, especially Gloria Aukland and Georgia Stelluto. They did, as initially promised, almost all of the work. My thanks also go to the volunteer members of *Impact*'s Editorial Board, who set objectives and delivered articles on schedule.

—Pete Rodriguez  
Editor in Chief

## Ask Us About



... engineers' careers! IEEE-USA held its Seventh Biennial Careers Conference on October 10-11, in Denver, Colorado. Organized by the Career Maintenance and Development Committee, the conference theme was "Change & Competitiveness & Careers."

Upgrading professional careers, approaches to staying current, strengthening career development, and views on current career conditions were just a few of the topics discussed. A complete record of the conference presentations may be purchased through the IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331; telephone (800) 678-IEEE or (908) 981-1393. Ask for IEEE Catalog No. UH0190-9. Prices are \$20 for members and \$25 for non-members. ♦

## Job Fairs Update



IEEE Job Fairs will be held at these locations during December 1991:

DATE	LOCATION	EVENT
December 9-10	North Jersey Section	Job Fair
December 9-10	Chicago Section	Job Fair
December 9-10	Houston Section	Job Fair

Job fairs are open to all engineers. To locate the fair nearest you, contact the IEEE Career Fairs Coordinator at (800) 562-2820; in Virginia, call (800) 533-1827. ♦

## The newsletter for IEEE-USA's Professional Activities Committees for Engineers

*IMPACT* is designed to enhance communication among leaders of the Professional Activities Committees for Engineers (PACE) throughout the United States and among the leaderships of PACE, the United States Activities Board, and IEEE. As a medium for both opinions and news, the editorial objectives of *IMPACT* are to inform its readers in a timely and objective manner of newsworthy activities relative to IEEE's professional purposes; to comment on institutional professional matters, such as the actions of IEEE committees and boards; to serve as a forum for debate on professional matters of concern to PACE through publishing submitted articles, invited editorials, and letters to the editor; to provide news of USAB personalities, appointments, and awards; and to encourage member interest in professional activities.

Send contributed articles and letters to the editor to Dr. G. P. Rodriguez, 1090 Kingston Drive, NE, Atlanta, GA 30342. Address for other mail: IEEE *IMPACT*, 1828 L St., N.W., Suite 1202, Washington, DC 20036-5104. NOTE: Material for publication must be in hand at least 30 days prior to the first day of publication months listed below.

*IEEE IMPACT* (ISSN 0274-8207) is published eight times a year, in February, March, May, June, August, September, November and December 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 10017-2394, with the *IMPACT* Editorial and Administrative Offices at 1828 L Street, N.W., Washington, DC 20036-5104, telephone (202) 785-0017. Annual subscriptions are \$1.00 per year and are included as a portion of the U.S. 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 address changes to IEEE *IMPACT*, 1828 L St., N.W., Washington, DC 20036-5104.



## Washington Scene

### USAB Presents Awards at 1991 PACE Workshop

The 1991 PACE (Professional Activities Committees for Engineers) Workshop was held over Labor Day Weekend in Philadelphia, Pennsylvania. Approximately 205 IEEE members and others participated in addressing a broad range of issues of concern to IEEE's U.S. members. The presentation of IEEE's United States Activities Board (USAB) awards was a Workshop highlight.

In a ceremony on September 1, Michael J. Whitelaw, Vice President, Professional Activities, announced that Lawrence P. Grayson was the recipient of USAB's Award for Distinguished Contribution to Engineering Professionalism, USAB's highest award. While unable to attend the ceremony, Grayson was recognized for his outstanding leadership in creating a significant program of activities in precollege mathematics and science education for IEEE and for his role in organizing the National Coalition of Engineering Societies for Precollege Mathematics and Science, the nation's largest volunteer effort in support of education.

D. Allan Bromley, Director of the White House Office of Science and Technology Policy, was named the recipient of USAB's Distinguished Public Service Award for his contributions to the development and implementation of Federal policy on science, engineering, and technology and for enhancing the U.S. technology policy interests of IEEE's U.S. members. IEEE leaders will present Bromley's award to him at a private ceremony in Washington, D.C.

Citations of Honor, given to individuals who have made outstanding contributions toward achieving recognition of national professional activities, were presented to William R. Tackaberry and William D. Whipkey. Richard B. Marsten will receive his citation in Washington, D.C., at a National Capital Area Council awards ceremony.

Journalist Robert K. Bellinger received the Award for Distinguished Literary Contributions Furthering Engineering Professionalism, recognizing those who have made outstanding literary efforts to the advancement of IEEE's professional objectives in the United States. Author Eleanor R. Adair and National Public Radio's Richard F. Harris each received the Award for Distinguished Literary Contributions Furthering Public Understanding of the Profession, which recognizes journalistic or other communication efforts that contribute to the enhancement of public understanding of the profession.

Six members were awarded USAB's Regional/Divisional Professional Leadership Award for outstanding efforts in advancing IEEE's professional aims in the United States. R. Steven Brown (Region 6), Oscar N. Garcia (Divisions V and VIII), Gerald F. Jennings (Region 1), John W. Meredith (Region 5), and Glenn R. Thoren (Region 1) received their awards at the Workshop. George J. Simonis (Division I) will receive his award at a later time.

Andrew C. Knapp and Will Stackhouse each received

Further information about IEEE-USA, engineering career and technology policy issues, and copies of testimony, IEEE-USA Position Statements, and complimentary publications are available from the IEEE-USA Office. Write or phone IEEE-USA, 1828 L Street, N.W., Suite 1202, Washington, DC 20036-5104; (202) 785-0017. ♦

the Professional Achievement Award, recognizing significant contributions, achievements, and individual efforts in the development and implementation of U.S. professional activities. Not present at the ceremony, David M. Ostfeld and Lawrence R. Knapp were also named Professional Achievement Award recipients.

### How to Become A WISE Faculty Member

The Washington Internship for Students of Engineering (WISE) program, sponsored by professional engineering societies, is seeking applicants for a Faculty-In-Residence for the summer of 1992. A ten-week program for junior- and senior-level U.S. engineering students, WISE's goal is to educate future engineering leaders about the importance of the public policy process and how engineers can influence decision-making on science and technology issues.

The Faculty-In-Residence is responsible for organizing discussion sessions for students with leaders in the Washington, D.C., area, assisting students in writing a policy paper, and being a professional advisor and friend to the students. In screening applicants, such criteria as credentials as an engineering faculty member; knowledge of public policy, especially at the Federal level; experience in supervising student papers and research; and organizational and management skills will be considered.

Send a letter of interest, current vita, and two reference letters to Michael D. Devine, Associate Vice President for Research, 217A Westcott, Florida State University, Tallahassee, FL 32306-1047. For more information, call (904) 644-5260.

The deadline for applications is **January 10, 1992**.

### 1992 Congressional Fellows Appointed

The United States Activities Board recently approved recommendations for three 1992 Congressional Fellowships. Larry L. Stern, Kenneth D. Wagner, and Richard J. Jaeger will begin their Fellowships on January 1, 1992 and will work in selected staff assignments on Capitol Hill for one year.

A Program Manager for Hughes Aircraft Company, Mr. Stern manages software on an SDI surveillance satellite and has assisted in developing a real-time simulation project for an F-14 aircraft mission trainer.

Since 1986, Dr. Wagner has worked for IBM Corporation in Poughkeepsie, New York, as a Senior Engineer in the Systems Technology Division. He is responsible for Design for Testability Rules for IBM products, and for educating the IBM engineering community in such areas as logic design and test methodologies.

After a 35-year career with Bell Telephone Laboratories, Mr. Jaeger retired in 1987. He now teaches short courses on digital switching to government and industry-related groups.

—G. C. Stelluto, G. Aukland

IMPACT

IEEE

#### IEEE BOARD OF DIRECTORS

Eric E. Sumner  
President

#### IEEE HEADQUARTERS STAFF

Herbert H. Heller  
General Manager

#### IEEE UNITED STATES ACTIVITIES BOARD

Michael J. Whitelaw  
Vice President,  
Professional Activities  
and Chairman, USAB

Herbert H. Heller  
Member-at-Large, 1991-1992

John Kaczorowski  
Chairman,  
Director, Region 1

Mary Alys Lillard  
Member-at-Large, 1990-1991

Charles K. Alexander, Jr.  
Director, Region 2

Jack Lubowski  
Chairman,  
Government Activities Council

Daniel W. Jackson  
Director, Region 3

Joseph M. DeSalvo  
Chairman,  
Career Activities Council

Howard L. Wolfman  
Director, Region 4

Gerald W. Gordon  
Chairman,  
Member Activities Council

John E. Martin  
Director, Region 5

Robert P. Noberini  
Chairman, Professional Activities  
Council for Engineers

Jerry C. Aukland  
Director, Region 6

Arvid G. Larson  
Chairman,  
Technology Policy Council

Richard J. Jaeger, Jr.  
Director, Division III

James H. Beall  
Controller

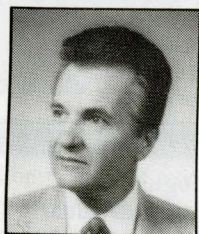
Helen M. Wood  
Director, Division VIII

Leo C. Fanning  
Staff Director

H. Warren Cooper  
Director, Division IX



# Meet IEEE-USA's Council Chairmen



Joseph M. DeSalvo

With this issue, *Impact* completes its interviews of IEEE-USA's five Council Chairmen. Through this series, we hope readers have become better acquainted with IEEE-USA's goals, priorities, structure, and operations. In this issue, Joseph M. DeSalvo, IEEE-USA's Career Activities Council (CAC) Chairman is interviewed by CAC Editor Frank E. Lord. An organization chart highlights the featured Council.

A registered professional engineer, Joe is manager of substation and methods standards at the Allegheny Power Service Corporation headquarters in Greensburg, Pennsylvania. He has a degree in electrical engineering from the University of Pittsburgh and a degree in industrial management from Carnegie-Mellon University in Pittsburgh, Pennsylvania. He is a member of IEEE's Power Engineering, Engineering Management, and Professional Communication Societies.

Joe has served IEEE in many positions, most recently on the Board of Directors and the Regional Activities Board. He is currently in his third year as IEEE-USA's Career Activities Council Chairman and his fifth year on the United States Activities Board.

## Q: What is the purpose of IEEE-USA's Career Activities Council and its committees?

A: CAC's purpose is to develop programs to ensure that members have the opportunity for a successful lifetime career as engineering and science professionals.

## Q: How does CAC meet its objectives?

A: An important means of meeting our objectives is through the dedicated support of our activities provided by the good, hardworking people associated with our committees. As CAC Chairman, I am proud to say that we have an excellent group of volunteers and staff. CAC's accomplishments are largely due to the coordinated efforts of the Committee Chairmen, Richard Plummer (Anti-Discrimination), Adeeb Hamzey (Career Maintenance and Development), William Middleton (Ethics), David Ostfeld (Intellectual Property), Richard Schwarz (Licensure and Registration), Paul Kostek (Manpower), and George McClure (Pensions); the CAC Editors, Frank Lord (*Impact*) and Wally Decker (*Professional Perspective*); and IEEE-USA staff members Vin O'Neill, Scott Grayson, Bill Anderson, Tom Suttle, and Leo Fanning.

Four major activities are also involved in meeting CAC's objectives. Committee members must identify issues of concern to U.S. members. They must develop strategies for resolving these concerns and submit them to IEEE's

United States Activities Board for approval. Then, they must take action to accomplish the goals. Finally, committee members must periodically review and reassess priorities and accomplishments.

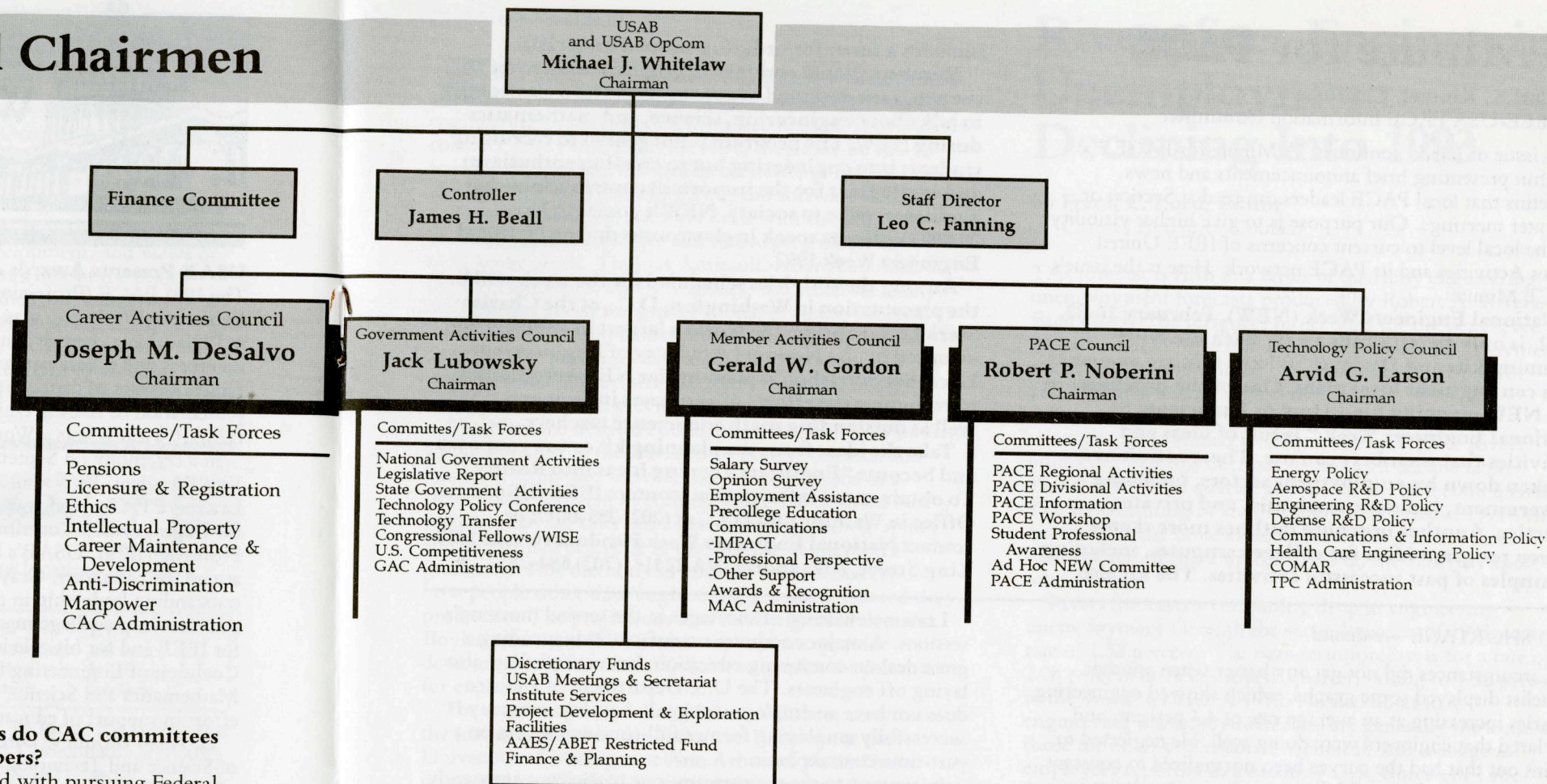
## Q: What services and products do CAC committees offer that benefit IEEE members?

A: CAC committees are involved with pursuing Federal legislation. Committee members give testimony, write letters, and visit U.S. Representatives and Senators. Also, committee members prepare articles for IEEE and outside publications on professional concerns of members, in addition to giving presentations at IEEE conferences to keep members informed and to solicit their participation. Further, they produce position papers and other publications to inform legislators, students, and industry leaders about our views, and they interact with other technical and professional organizations on related subjects. CAC committees have developed more than 20 position papers, 25 professional guidance publications, three workshops, and one biennial conference.

I can summarize how IEEE members benefit from CAC committee activities in this way. The **Anti-Discrimination Committee**, which supported the Older Workers Benefits Protection Act, is developing an early retirement handbook and revising a guide booklet on discrimination to reflect the concerns of women, minorities, and disabled engineers.

The **Career Maintenance and Development Committee**, which promotes and maintains three career workshops on "Conflicts," "Transitions," and "Phase II," sponsors biennial Careers Conferences and works to produce updated editions of the *Guidelines to Professional Employment for Engineers and Scientists* and the *Professional Practices for Engineers, Scientists and their Employers*.

The **Ethics Committee**, which publishes articles on IEEE's Code of Ethics, contributes to various ethics publications and coordinates with other organizations on ethical issues.



The **Intellectual Property Committee** testified in opposition to the U.S. Patent Office's proposed rule to do away with its two-tier fee system, drafted new legislation on software protection, supported the *Technology Transfer Improvements Act of 1991*, expressed views on the *Counter-Terrorism Act of 1991*, opposed the *Criminal Sanctions for Violation of Software Copyright Act*, and commented on the *Trademark Protection Act of 1991* and the *Copyright Amendments Act of 1991*.

The **Licensure and Registration Committee** worked on questions for the Professional Engineer Exam. Committee members served on related committees involving examination evaluations and also worked with IEEE-USA's State Government Activities Committee to oppose New Jersey legislation that would mandate licensing for software engineers.

The **Manpower Committee** submitted comments on proposed regulations implementing the *Immigration Act of 1990*, also prepared a position statement on engineering utilization. Committee members gave reports on manpower issues at IEEE conferences and continue to conduct modeling activities assessing the effects of major economic variables on engineering supply and demand. In addition, committee members participated in a recent Engineering Manpower Commission Conference and gave advice and guidance to Federal and state foreign labor certifying officials in response to questions on engineering job descriptions, education and experience requirements, and related compensation.

The **Pensions Committee's** major thrust is to support legislation to improve pension benefits. The Committee is backing legislation introduced in the U.S. House of Representatives by Congressman Sam Gibbons (D-Florida). H.R. 2390, the *Pensions Coverage and Portability Improvement Act*, will expand pension coverage, improve the portability of benefits when workers change jobs, and increase individual savings for retirement. Committee members have also strongly supported legislation that would help increase personal savings by expanding eligibility to make tax-favored contributions to IRAs. Further, the Pensions Committee sent 45,000 Legislative Alerts urging IEEE's U.S. members to write their Representatives and Senators in support of pension and IRA legislation.

## Q: Other than serving on committees, how can IEEE members help CAC achieve its goals?

A: We need the assistance of members to voice their views to their legislators on CAC-related issues. IEEE is fortunate in that many U.S. members can make an impact at the local level. Most legislators want to know how legislation will affect their constituents and how many of them share the same opinion. If more members would make an effort to be concerned, to be more aware of the issues, and to get involved, then IEEE-USA could accomplish more. Serving as a corresponding member of the CAC committees is another way to contribute without attending meetings. ♦



# A Minute for PACE

by Carl K. Kintzel, Chairman  
IEEE-USA PACE Information Committee

This issue of *Impact* continues "A Minute for PACE," a column presenting brief announcements and news bulletins that local PACE leaders can read at Section or Chapter meetings. Our purpose is to give higher visibility on the local level to current concerns of IEEE United States Activities and its PACE network. Here is the issue's PACE Minute:

**National Engineers Week (NEW), February 16-22, 1992, is only two months away. With the NEW planning kits and Discover "E" kits that are available, you can augment local plans. One of the brochures in the NEW planning kit, "How to Participate in National Engineers Week," is full of ideas and activities that members can use. These activities are broken down by employment sectors, including government, industry, academia, and private practice. Another brochure outlines more than a dozen program ideas for college campuses, including examples of past successful activities. The kit also**

## NO SHORTAGE—continued

Circumstances did not get any better when another panelist displayed some graphs, which showed engineering salaries increasing at an average rate of 4.4 percent, and declared that engineers were doing well. He neglected to point out that had the curves been normalized to constant dollars, the graphs would depict engineering salaries as barely keeping up with inflation.

Keynote speaker Bromley did not foresee an impending crisis. He did believe that students should concentrate on science and mathematics to keep the so-called "pipeline" full. Bromley said we need people who can function and contribute in a competitive industrial society. He did not say that the sole purpose of the pipeline was to direct young people into the study of science and engineering at the college level. He asserted that national policy as well as market forces should influence our industrial capability.

IEEE-USA Manpower Committee member Robert Rivers surprised the afternoon audience by declaring that there was no need to hold the conference. He explained that in a free market economy there is no such thing as a shortage or a surplus, only an equilibrium point between supply and demand that may shift position over time. Rivers cited elements of Economics 101 as applied to the engineering manpower arena. From that point on, I sensed a transition among the speakers to more caution in statements and more couching of answers to questions.

Congressman Ritter questioned the actual demand for engineers in the year 2000, seeing it as "less than certain, given the coming contraction in defense procurement and possible further declines in certain U.S. manufacturing industries and their continued growth offshore." He did not shy away from using such words as *laid-off*, *underutilized*, and *slump* in describing the current engineering employment situation. Ritter spoke of the need for national ability in production, quality, and competitiveness. In effect, he shifted the focus of the conference from academic views and bureaucratic concerns to the real world of engineering.

includes a form for ordering needed materials.

Members should continue to emphasize Discover "E", the program designed to get engineers into classrooms to talk about engineering, science, and mathematics during NEW. The program is not geared to recruiting students into engineering but to creating enthusiasm and excitement for the important contributions that engineers make to society. NEW's goal is to have 20,000 engineers speak in classrooms during National Engineers Week 1992.

Among the activities scheduled for the week will be the presentation in Washington, D.C., of the Charles Stark Draper prize, the world's largest in engineering, awarded by the National Academy of Engineering. Local Sections should plan similar NEW ceremonies to recognize the efforts of engineers in their areas, as well as outstanding math and science teachers.

Take the ideas from the planning kit or use your own and become "Engineers Turning Ideas Into Reality." To obtain more information, contact IEEE-USA's Office in Washington, D.C., at (202) 785-0017; or contact National Engineers Week Headquarters at 1420 King Street, Alexandria, VA 22314, (703) 684-2852. ♦

I saw no evidence of shortages in the second morning's sessions. A major computer manufacturer is spending a great deal on continuing education, but nevertheless, also laying off engineers. The U.S. Department of Defense does not have an employment goal. A utility company is successfully employing former full-time employees on a part-time contract basis.

In contrast to the mainstream, one participant apparently still quoted the discredited NSF shortfall figures as shortage numbers. He was experiencing an engineering shortage in his area of endeavor, because his particular business with its low salaries kept him out of the normal marketplace. The conference moved a giant step closer to what seemed to be its inevitable conclusion.

In the last session, *Conference Wrap-up*, the bulk of the effort fell on Alan Fechter, Executive Director of the National Research Council's Office of Scientific and Engineering Personnel. He noted that three major issues had been addressed: shortage or surplus, technical competency, and reliable data.

On the first issue, Fechter expressed mild surprise at the ease with which a consensus of no shortage was reached, with an almost total lack of contention. He saw no indicators of crisis, only normal concern about the future amidst uncertainties.

In his closing remarks, Fechter distinguished between making judgments and drawing conclusions. He pointed out that judgments are based on evidence. Unfortunately, determinations are sometimes based on minimal evidence. In the case of this conference, a preponderance of evidence led to the judgment. While judgments can be modified over time, it is more awkward or embarrassing to change a conclusion.

This conference was a valuable forum. In aggregate, the whole carries more weight and is less confusing to the public than a collection of statements that might have been issued by the same presenters. The deduction was that there is no imbalance between supply and demand for engineers at the present time, nor is there likely to be one in the foreseeable future. ♦

## FUTURE—continued

supply at a lower market price, was generally accepted by attendees. However, another speaker pointed out that the engineering market is not truly a free market. If employers consider salary demands excessive, they may be able to transfer engineering operations offshore, as they have already done with manufacturing and software design.

The first conference session dealt with the statistical basis for current estimates and future projections of manpower needs. Thomas Amirault, labor economist at the U.S. Bureau of Labor Statistics, described the many assumptions about the gross national product, personal consumption, business investment, foreign trade, and Government purchases that are used to project labor requirements. The present recession has made many assumptions used in previous projections meaningless.

The National Science Foundation's (NSF) Myles Boylan, a policy analyst in the Division of Policy Research and Analysis, explained the rationale for predictions of a tremendous shortfall in coming years. He clarified NSF's forecasts, saying they were based only on demographics and an estimated decline in the number of engineering graduates. This method did not take into consideration how people other than engineering graduates entered the profession. The projections also totally ignored demand. Boylan said that NSF's intent was solely to provide demographic information and not to predict the job market for engineers.

The session's last speaker, Malcolm Cohen, director of the Institute of Labor and Industrial Relations at the University of Michigan at Ann Arbor, explained how immigration affects U.S. engineering careers. A consultant to the U.S. Department of Labor, Cohen pointed out that engineers have done very well in employment and income increases over the years, compared to the general population. He agreed that there were no engineering shortages now but added that the situation could change in five or six years. A later speaker noted that inefficient use of U.S. engineers may exacerbate a shortage problem. He said European companies were much more productive in their use of engineers.

D. Allan Bromley, director of the White House Office of Science and Technology Policy, noted continuing fluctuations in the engineering job market and stressed the importance of engineers being able to shift from one area to another. He pointed out the desirability of an engineering-based liberal arts education, and he predicted an increase in the prestige of engineers. He emphasized the urgent need for radical improvement in precollege education, so the United States would have not only a sufficient number of engineers and scientists, but also a technically literate work force.

Congressman Don Ritter (R-Pennsylvania) spoke about the uncertainties of engineering employment in view of the anticipated reduction in defense spending and the continuing decline of the electronics industry in the United States. He stressed the need for all engineers to take steps to enhance U.S. competitiveness.

Other conference speakers discussed improving the quality of engineering graduates, the need to understand the cultures of other countries, and enriching U.S.

—continued on p. 8

# Rivers Sees Engineering Unemployment Declining Into 1993

by Frank E. Lord, Editor  
Careers Activities Council

This forecast is fifth in a series of quarterly engineering unemployment forecasts produced by Robert A. Rivers. Each quarter, he refigures projections for the next seven quarters. For comparison purposes, actual unemployment statistics from the Bureau of Labor Statistics (BLS) for previous quarters are included.

Reporting that third quarter (1991) engineering unemployment waned to 2.1 percent or 41,000, Rivers points out that this decrease continues a decline from 49,000 in the first quarter and 47,000 in the second quarter. The actual timing of an unemployment peak in 1991's first quarter was the same as he forecasted a year and three quarters ago, using a model based on the Federal Funds interest rates.

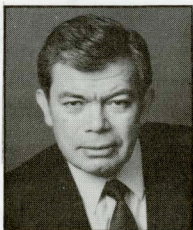
Rivers forecasts a continuing drop in engineering unemployment through the second quarter of 1993, to a rate of 1.32 percent. The near-term forecast is for a rate of 2.08 percent in 1991's fourth quarter, falling to 1.52 percent in the fourth quarter of 1992. He also notes that engineering unemployment rates are generally the same as those for other professional, technical, and managerial employees reported in a monthly U.S. Bureau of Labor Statistics' survey.

Engineering unemployment rates have varied from a low of 0.3 and 0.4 percent in the 1960s in some quarters to a high of 3.8 percent in the first quarter of 1983. At no time in the past 25 years has engineering employment reached the levels exhibited in the mid-1960s, when demand created by the U.S. space program and military buildup produced full utilization of engineers. ♦

Rivers' Engineering Unemployment Forecast			
Year	Quarter	Engineering Unemployment Percent	
		Forecast	Actual*
1989	4	1.49	1.3
1990	1	1.48	2.0
	2	1.53	2.1
	3	1.84	1.9
	4	2.18	2.2
1991	1	2.22	2.6
	2	2.23	2.4
	3	2.20	2.1
	4	2.08	
1992	1	2.02	
	2	1.93	
	3	1.88	
	4	1.52	
1993	1	1.37	
	2	1.32	

\*from Bureau of Labor Statistics (BLS) data  
NOTE: Transition engineering unemployment rate at times of full engineering employment = 0.3 to 0.4 percent





IEEE United States Activities Board

# USAB

## Chairman's Message

### Farewell

Throughout my service in IEEE my personal motto has always been "members first," because I have remained aware that the members are the most important element of our organizational structure. This is my last opportunity to thank all of you for your confidence in my abilities to act on your career and technology policy interests.

My position as Chairman of IEEE's United States Activities Board has proven to be the most challenging of my IEEE assignments. Managing professional operations for IEEE's U.S. members demands much of one's time. I have been lucky in receiving quality support from strong volunteer leaders and competent staff.

In the beginning of my term, I planned for a few select but deliverable goals. However, two issues arose mid-cycle that needed immediate attention and resolution. One matter had to do with restructuring USAB's communications with its members, and the other involved enhancing the efficiency of the employment assistance program. I chose dynamic volunteer leaders to implement these projects.

To further communication efforts, *Professional Perspective* and *Impact* took on new images. An updated slide show and a revised Communications Plan also contributed to this endeavor.

As for strengthening employment assistance efforts, records show that IEEE-USA was very successful in helping engineers in distress. I was touched by members' reactions to these programs, especially by those who took some time to let me know personally how much those efforts meant to them.

In considering the remaining goals I had hoped to achieve, I am happy to report further successes, especially considering the glacial speed at which deliberations in

the Washington arena move. The model pension plan, completed during my administration as draft legislation, was introduced by Congressman Sam Gibbons (D-Florida) and is now being reviewed by three powerful Congressional committees. IEEE-USA is still moving forward and may see results soon.

IEEE-USA now has two competitiveness pamphlets and a position paper that state both its views on the issue and what it urges national leaders to do about U.S. technological competitiveness.

As for improving the image of engineers, who could forget the "Winning With Technology" advertisement? I am certain that IEEE, its U.S. members, and the profession as a whole benefited from this promotion.

IEEE-USA is playing a leading role in the Engineers for Education program. This effort will continue to expand ongoing cooperation with other concerned organizations to formulate practical solutions for improving precollege math and science programs.

Also, IEEE-USA built cooperative bridges to facilitate joint programs with IEEE's Regional Activities Board in sponsoring Student Professional Awareness Conferences; with IEEE's Technical Activities Board in sponsoring workshops conducted by the joint TAB-USAB U.S. Technology Policy Conference Committee, and IEEE's Educational Activities Board in sponsoring Engineering Skills Assessment Programs at IEEE Job Fairs. In addition, all corrective action recommended by the 1989 Ad Hoc Committee to Review USAB was completed.

In spite of the hard work, I enjoyed serving members as IEEE's Vice President for Professional Activities. I appreciated the fellowship that I found among EEs in the United States and the dedication of IEEE volunteers.

—Michael J. Whitelaw, P.E.

### FUTURE—continued

education and engineering skills. They placed considerable emphasis on the need to improve K-12 education in the United States.

Daryl Chubin, project director of Science, Education and Transportation Programs at the Congressional Office of Technology Assessment, and Alan Fechter delivered the conference wrap-up. Fechter explained that the difficulty of predicting future market conditions makes for imprecise calculations and conclusions. He pointed out that the effects of offshore movements, early retirements, immigration, capital availability, technical competency, new technologies, and bringing women and minorities into engineering must all be considered. Fechter said with all the uncertainties in determining projections, engineers

should take the lawyers' approach and make judgments rather than draw conclusions.

Chubin emphasized that quality, not just quantity, of engineers is essential. He deplored the high attrition rate of engineering students and asserted that colleges should not admit those who don't have the basic skills to succeed.

Stressing that imprecise assumptions affect projections he said, "If labor markets were as rational and predictable as economists would like us to think, then we wouldn't be so perplexed, and we probably wouldn't be here talking about shortages and surpluses." He pointed to the crux of the entire problem by saying, "It's your crystal ball against my crystal ball, and we can easily abuse this so-called 'accuracy of numbers'."

In order to obtain a better understanding of the demand side of the question, EMC has established a task force to study the factors involved. ♦