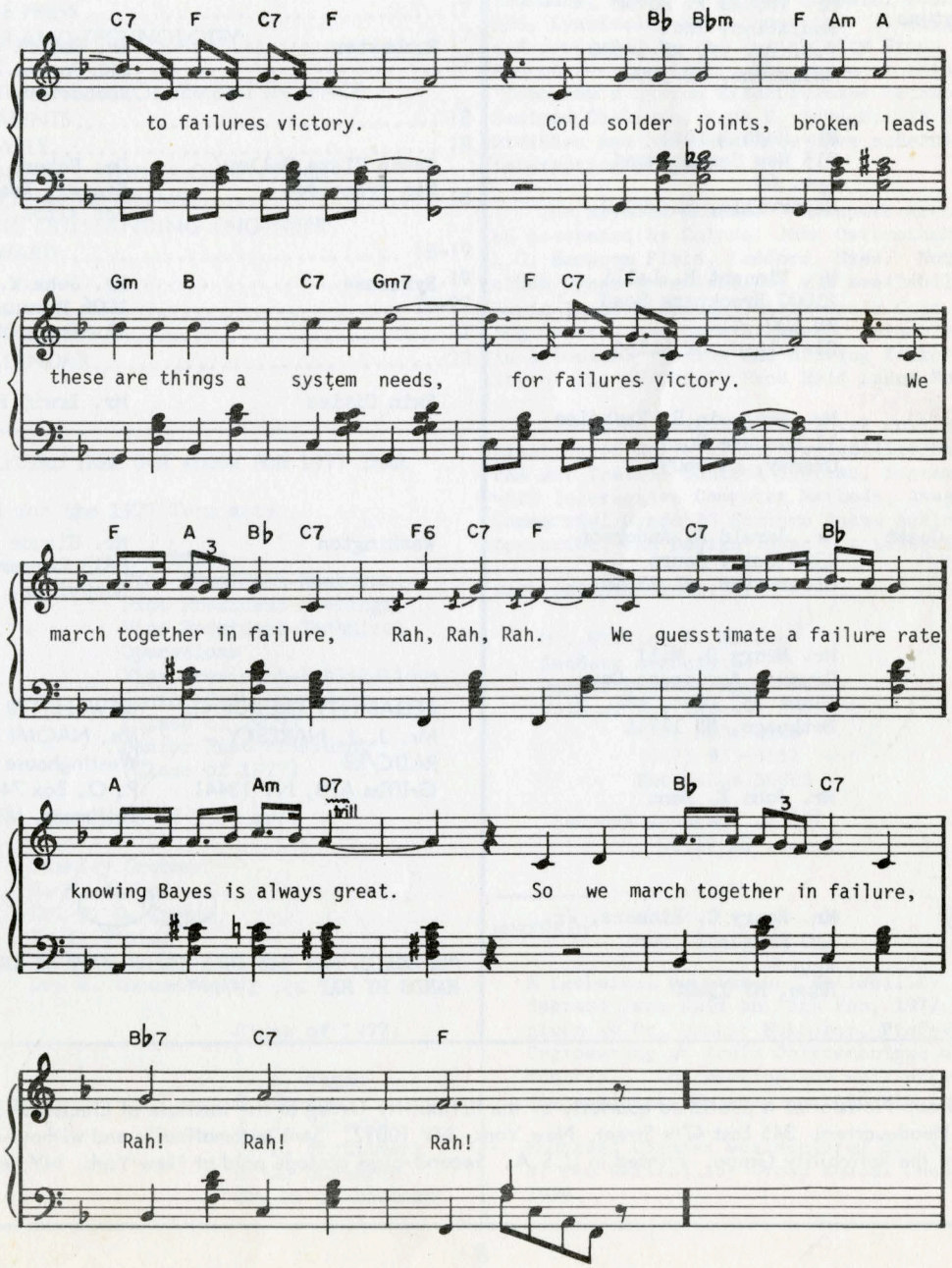
IEEE

RELIABILITY GROUP NEWSLETTER

April 1977 - Vol. XXII - Issue 2

Editor: Naomi J. McAfee



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"MATERIAL FOR THE JULY ISSUE MUST BE IN THE EDITOR'S HANDS BY MAY 25, 1977."

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CONTENTS

OFFICERS ELECTED IEEE G-R ADCOM FOR 1977 YEAR

Officers Elected for the 1977 Term are:

J. J. Naresky	President
W. T. Weir	Vice President-Membership
V. R. Monshaw	Vice President-Meetings
T. L. Regulinski	Vice President-Technical Operations
K. Greene	Vice President-Publications
J. W. Thomas	Junior Past President (Class of 1979)
C. R. Knight	Senior Past President (Class of 1977)

Members Elected to the Class of 1979 are:

Stanley Grubman
R. M. Jacobs
Dr. O. D. Trapp
D I. Troxel
J. E. Victor
Dr. W. Thomas Weir

Class of 1978:	Class of 1977:
D. F. Barber	T. L. Fagan
Dr. Olle Bjorklund	K. Greene
Ms. N. J. McAfee	J. J. Naresky
V. R. Monshaw	T. L. Regulinski
A. O. Plait	B. L. Retterer
H. W. Williams	Dr. M. L. Shooman

CHAPTER NEWS

BOSTON

On January 12, 1977, Mr. T. Kupfrian of RCA spoke on the subject of "Commercial Integrated Circuits in Selected Military Applications." His talk elicited a very lively and lengthy discussion period. On February 9, 1977, the Boston Chapter held a joint meeting with the Greater Boston Chapter of the Society of Logistics Engineers. The speaker at this meeting was Mr. J. Patton of Patton Consultants, Inc., who spoke on the topic of "Integration of Man, Machine and Support Systems." On March 16, 1977, Mr. J. Gaudet of Sanders Associates will speak on "MIL-STD-781C Revisions" at a dinner meeting to be held at the Officer's Club, Hanscom AFB, Bedford, Mass. On April 28, 1977, the Boston Chapter will hold its 15th Annual All-Day Spring Reliability Seminar at the Colonial Country Club in Lynnfield, Mass.

The 1977 Spring Reliability Seminar will be held Thursday, April 28 at the Colonial Country Club, Route 128, Lynnfield, Massachusetts. It will be sponsored and conducted by the Reliability Group Chapter of the Boston Section IEEE. The theme of this meeting is "Tomorrow's System Effectiveness Technology." The Seminar Chairman, Mark E. Snyder, GTE Sylvania, Eastern Division and his committee have scheduled a full and interesting program.

The Keynote Address - "Support Acquisition," will be presented by Colonel John Ostrominski, USAF ESG, L.G. Hanscom Field, Bedford, Mass. Morning topics include Dynamic Reliability and Availability Models of Rapid Transit Systems, Life Cycle Cost Analysis Utilizing Generalized Data Elements, Reliability Achievement in Avionics: gating and driving factors, and Reliability of the AN/GVS-5V Hand Held Laser Rangefinder.

Afternoon session will cover cost effective determination of Reliability/Availability/Maintainability in FAA Air Traffic Control Systems, System Reliability with Interactive Computer Methods, Assessment of Plastic Commercial Grade IC Failure Rates Achieved in Field Operation, and Design Impact of Logistic Delays.

MAIL REGISTRATIONS TO:

Mr. William P. McCabe
Sanders Associates
Daniel Webster Hgwy. South
Nashua, New Hampshire 03060
M/S. NHQA-1108
(617) 935-5111
Extension 56889

MONTREAL

- A technical meeting on "Reliability of Electrical Systems" was held on 15th Feb, 1977. The talk was given by Dr. Dinkar Mukedkar, Professor of Electrical Engineering at Ecole Polytechnique of University of Montreal. The meeting was well attended by practicing engineers as well as students.

- Montreal Chapter was declared one of the four winners of the Reliability Group Annual Chapter Awards for 1976.

- Mr. M.F. Hashin, Chapter Chairman has been promoted to Senior Member IEEE.

- Montreal Chapter is participating in the organization of "4th Annual Reliability Engineering Conference for the Electric Power Industry". This conference will be held on June 20 and 21, 1977 in Marriot - Essen Hotel New York.

NORTH JERSEY

"The North Jersey Section Reliability Chapter held a joint meeting with the Society of Women Engineers on Wednesday, February 23, 1977, at the Bethwood Resturant in Totowa, New Jersey. There was a pre-meeting dinner at 6:30 P.M. Ms. Naomi McAfee, a member of the Westinghouse Corporate Staff was the guest speaker. Ms. McAfee who is presently involved in the coordination of strategic resources, previously headed the reliability and Q.A. group at Westinghouse. Ms. McAfee presented the various aspects of the Reliability Design considerations.

We wish to take this opportunity to thank Ms. McAfee for a fine presentation."

WASHINGTON

We are continuing our normal monthly meetings on various subjects in the product assurance field. Two meetings have been held in 1977 and four more meetings are planned, of which speakers and subjects have been finalized for the March and April meetings.

On January 12, 1977 John S. Youtcheff, Program Manager, U.S. Postal Service Headquarters, spoke on the subject of "System Effectiveness Planning for the U.S. Postal Service". This meeting was well attended in spite of the extreme cold weather in the area.

Our February 16, 1977 meeting was a joint meeting with the Washington Section of the ASQC. The subject was "What You Should Know About Nuclear Power - Truth or Myth!" and the meeting consisted of a panel discussion on Nuclear Power Safety. The participants included Robert Wright of the Nuclear Regulatory Commission, Kenneth Stephens of Bechtel, and Robert Warner of General Physics.

The next meeting is planned for March 16, 1977, at which time Ralph Kuehn of IBM will speak on product screening. This will be followed by a meeting on April 21, 1977 concerning the Washington Metro subway system. The speaker will be John Shelton of Metro.

CHAPTER AWARDS

Chapter Awards for 1976 were presented at the 1977 Annual Reliability and Maintainability Symposium, in Philadelphia, PA, in January 1977. The awards were presented by AdCom Chairman, J. W. Thomas.

First place winners were the Boston Chapter. Ms. Amy Spear, 1976 Chapter Chair'n accepted the award for the Chapter.

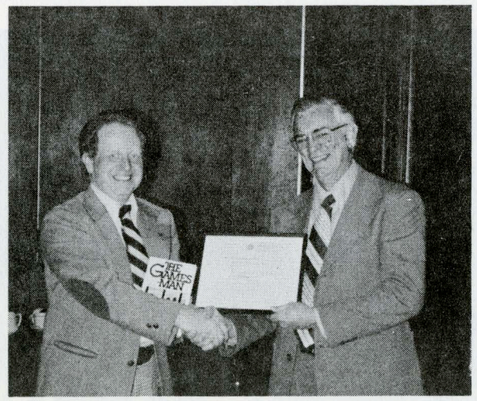
Mr. O. D. "Bud" Trapp, 1976 Santa Clara Valley/San Francisco Chapter Chairman accepted the Second place award for his chapter.

OUTSTANDING SERVICE AWARD

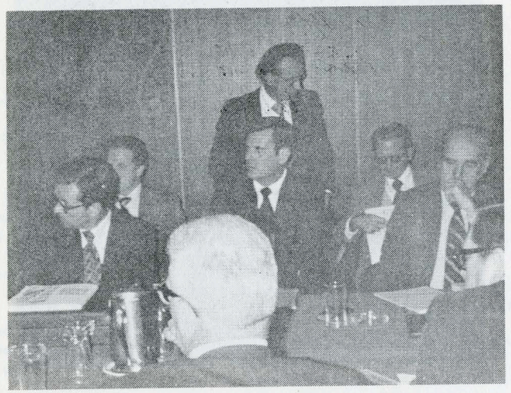
Past President Bill Thomas is shown below receiving award from Marion Smith for "Outstanding Service".

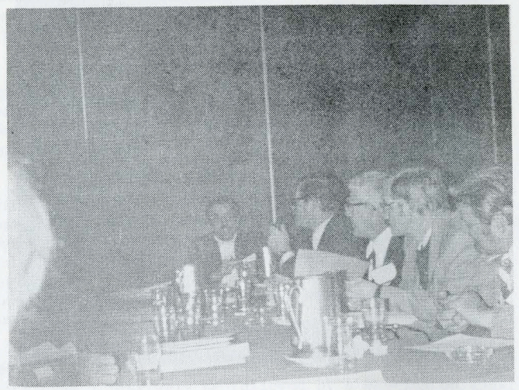
Third place winners were the Chicago Chapter and the Montreal Chapter, with a tied vote. Accepting the award for the Chicago Chapter is Mr. Hugh Edfors, Chapter Chairman. Accepting the award for the Montreal Chapter is their Chapter Chairman Mr. Fayyaz Hashmi, below.

ADCOM AT WORK



ADCOM AT WORK





ADCOM AT PLAY?

ADCOM ASLEEP?

CONFERENCES

FOURTH ANNUAL RELIABILITY ENGINEERING CONFERENCE
for
THE ELECTRIC POWER INDUSTRY

Marriott-Essex Hotel
Central Park South, New York City
June 20, 21, 1977

Theme

Reliability, Availability and Maintainability (RAM) of Power Apparatus and Systems.

Object

The 4th annual conference will promote the development and cross fertilization of ideas among reliability Engineers, System design Engineers and manufacturers and users of Electric Power apparatus and systems. This conference is sponsored by the Reliability Division of ASQC and hosted by Con Edison Co. of N.Y. You are invited to participate.

Technical Papers

Technical papers on the subject of Reliability, Availability and Maintainability covering the following areas of the Electric Power Industry will be presented:

Reliability	Economics of Reliability
Availability	Power Apparatus
Maintainability	Power Generation
System Analysis	Transmission & Distribution
Reliability Data	Power System Control

Registration

Registration fee is payable in advance and includes the cost of all sessions, lunches, coffee and one copy of the conference proceeding:

	Pre-Registration	Students
ASQC and IEEE Members	$50	$45	$15
NON Members	$55	$50	$18

For further information please contact.

GENERAL CHAIRMAN
Edward T. Parascos
Con Edison Co. of N.Y.
4 Irving Place Rm. 1901S
New York, N.Y. 10003

Cooperating Organizations

EEI, Power & Reliability Div. of IEEE are cooperating to make this conference a success.

European Conference on Electrotechnics

EUROCON 77 - COMMUNICATIONS

Venice, Italy, 3 through 6 May 1977

The papers to be presented at EUROCON 77, to be held in Venice, Italy, on 3 through 6 May 1977, cover the state of the art and future developments in virtually the whole field of Communications. One hundred and ninety-five papers from 26 countries have been selected; of these, 83 are concerned with new developments in communications, and the future will be examined further in a whole-day session on market research and technological forecasting.

EUROCON 77, is organized by the Institute of Electrical and Electronics Engineers (IEEE) and the Convention of National Societies of Electrical Engineers of Western Europe (EUREL), and has the special support of the International Union of Radio Science (URSI).

For further information contact

EUROCON 77 Office
c/o AEI
Viale Monza 259
I-20126 Milano, Italy

THE THIRD ANNUAL RELIABILITY TESTING INSTITUTE
of the
UNIVERSITY OF ARIZONA

April 25-29, 1977

Place: Ramada Inn, 404 North Freeway, Tucson, Arizona 85705 (602) 624-8341

Put on by: The University of Arizona, College of Engineering and Hughes Aircraft Company, Tucson, Arizona Operations.

Objective: Provide Reliability Engineers, Product Assurance Engineers and Managers and all other engineers and teachers with a working knowledge of analyzing component, equipment, and system performance and failure data to determine the distributions of their times to failure, failure rates and reliabilities; small sample size, short duration, low cost tests and methods of analyzing their results; Bayesian testing; suspended items testing; sequential testing; and others.

Dates: April 25-29, 1977

Fee: $425.00

Contact: Dr. Dimitri Kececioglu, Institute Director, Aerospace and Mechanical Engineering Department, The University of Arizona, Building #16, Tucson, Arizona 85721. Phone: (602) 884-2495 or 884-3901, 884-3054 or 884-1755.

IEEE HEADQUARTERS NEWS

1977 OFFICERS NAMED BY IEEE ASSEMBLY

New officers for 1977 were elected at the annual Assembly of the Institute upon recommendation of the Nominations and Appointments Committee chaired by Arthur P. Stern, IEEE past president.

Dr. Irene C. Peden, Professor of Electrical Engineering at the University of Washington in Seattle, was re-elected Vice President for Educational Activities. A Fellow of IEEE, she was the first woman to receive an engineering Ph.D. from Stanford University and the first American woman engineer or scientist to conduct field work in the interior of the Antarctic.

Also re-elected is Jerome J. Suran who continues as Vice President for Publication Activities where he helps to oversee the publication of a substantial fraction of the world's electrical engineering literature. He is Manager of the General Electric Company's Electronics Laboratory in Syracuse, N.Y., is co-author of two books, has written 40 papers in professional journals and holds 18 patents.

Douglas M. Hinton of Belleville, Ontario, Canada, has been named Vice President for Regional Activities. Supervisor of Engineering Training at Bell Canada's Technical Training Center, he has been active in IEEE affairs at the section and regional levels, having been Director of Region 7 in 1972-73.

Franklin H. Blecher, Director of the Mobile Communications Laboratory of Bell Laboratories in Whippany, New Jersey, has been elected Vice President for Technical Activities. He is a Fellow of IEEE and received the Institute's Browder J. Thompson Award in 1959 for some of his work on feedback amplifiers.

Robert D. Briskman, Assistant Vice President, Fixed Systems, of the COMSAT General Corporation, will serve in 1977 as Secretary-Treasurer. He currently serves as Vice President for Technical Activities of IEEE. Since 1967 he has been responsible for the technical planning of domestic communications services via satellites. An IEEE Fellow, he has been active in many Institute committees and programs, and will represent IEEE at a World Electrotechnical Congress in Moscow next June.

James J. Vasseleu of Australia has been elected Director of Region 10. He was the founder and first chairman of the Australian Section of IEEE and is director of an electrical engineering company in Sydney.

John J. Guarrera, of the School of Engineering and Computer Science, California State University in Northridge, California, has been elected Vice President for Professional Activities. A past president of IEEE, Mr. Guarrera is a graduate of MIT and former faculty member there. Over the years he has been active in both the academic and industrial fields.

John E. Barkle, procurement electrical advisor to the Bechtel Corporation in San Francisco, has been elected as Director-at-Large for 1977 to provide a special overview of the newly-created Division 7. Mr. Barkle has worked in various sections of the country on problems of engineering, design, procurement and construction of major steamelectric generating stations.

William R. Kruesi, who has aided IEEE standards activities this year, will hold a newly-established position, Director of Standards Activities for 1977. He is a consultant on standards to the Technical Resources Staff of the General Electric Company at its corporate headquarters. He has been identified with IEEE standards activity for many years.

MEMBERSHIP DEVELOPMENT COMMITTEE

SUMMING UP '76: In a dues increase year, IEEE membership slipped by a small 0.6 percent (1200 members) to 178,616 members as of December 31, 1876. Losses in higher grade categories were offset by a 1054 member increase in the student grade. Setting a 13 year high, at 25,385, student membership continues to provide the main source of higher grade members to the Institute. Overall Group and Society membership on the other hand moved strongly upward from 175,793 members to 181,909 as of December 31 with the student growth rate at 5.9 percent and higher grade rate at 2.7 percent from the previous year.

1977 GOAL: The Membership Development Goal for 1977 is to increase total Institute membership to 190,000 - an attainable 5.6 percent increase if all Division, Groups/Societies, Regions, Sections, Subsections, Chapters, and Student Branches begin work now.

RAISING PERCEPTIONS: Each individual's "Perceived Value of Membership" is fundamental to selling a new member. Every prospective member must feel a motivation to join because his or her personal needs are or can be fulfilled by personalized membership benefits. When talking to prospective members find out their needs then discuss the benefits derived from IEEE services that can satisfy those needs.

PROMOTING BENEFITS: IEEE provides hundreds of services to its membership, all of which are explained in the brochure "1977 Membership Information". A supply of brochures is available upon request to the Field Services Department. By using the brochure to sell IEEE membership, explain the personalized benefits that a prospective member can derive from the services we offer. Valuable business contacts are a benefit of attending local and national IEEE meetings. Recognition and Achievement are the benefits of active participation in Committee work and IEEE's extensive awards program.

Present and future occupational security are benefits of IEEE's educational and technical programs. Convenience in saving time and effort in locating information are the benefits derived from utilizing IEEE's extensive publication and indexing program and the facilities of the Engineering Societies Library. And world-wide friendships are the benefits of personal contact that active participants in the profession enjoy. Our 1977 membership effort should be benefit oriented ... let's raise the perceived value of membership among all prospective members by promoting personalized membership benefits.

ONE OF THE PAYOFFS: Sections will receive $7.50 for each new member elected in 1977. The recently approved Section Rebate Schedule designates $6.00 for new elections and $1.50 for each member in the Section - including students - as of December 31, 1977.

Look at every local Section, Chapter, or Branch meeting or activity as an opportunity to extend the benefits of IEEE membership to non-members. The Section Rebate Schedule points out that it pays off in the end!

HEADQUARTERS STAFF CHANGE: Beginning January 1, 1977 staff responsibility for the Membership Development Committee has been transferred to Bob Asdal from Emily Sirjane. Emily, now providing a greater share of her time to Corporate support activities associated with the Board of Directors, deserves a hearty round of thanks for her untiring devotion to membership activities and her success in promoting and extending the scope and preeminence of the Institute's membership world-wide.

YOU TOO CAN MAKE NOMINATIONS FOR IEEE AWARDS

As a member of IEEE you have the right, indeed the obligation, to make recommendations leading to the recognition of outstanding achievements in our profession. You can nominate any other individual for an IEEE award, provided the nominee meets the prerequisites for the award.

Some awards are general ones offered by the IEEE, and some are unique to the Communications Society. The IEEE awards, with their respective deadlines for submission of nominations, are as follows:

Field Awards	April 1, 1977
Medal of Honor	June 1, 1977
Major Annual Medals	June 1, 1977
Prize Paper Awards	September 15, 1977

If you would like help in making nominations, or want to suggest likely candidates for the Field Awards, Bob Aaron, Chairman of the ComSoc Awards Board, would be pleased to help. His address may be found below. Your suggestions for IEEE Prize Paper Awards would also be welcome. The IEEE Baker Award, for example, is presented for the most outstanding paper appearing in an IEEE Group or Society Journal or Transactions, or in the Proceedings of the IEEE, and consists of a certificate and $1000. It was won in 1973 by a paper in the IEEE Transactions on Communications.

M.R. Aaron, Chairman
Awards Board
IEEE Communications Society
Bell Laboratories
Hamdel, NJ 07733
Phone: 201-949-5061

TERMAN AWARDED NATIONAL MEDAL OF SCIENCE

Dr. Frederick E. Terman (M'23, SM'34, F'37, LF'58) was awarded the National Medal of Science by President Ford at ceremonies at the White House. Established by Congress in 1959, the National Medal of Science is awarded to persons "deserving of special recognition by reason of their outstanding contribution to knowledge in the physical, biological, mathematical, or engineering sciences."

Dr. Terman is immediate past president of Sigma XI, a member of the National Academy of Sciences, and a founding member of the National Academy of Engineering. In addition to his Fellow status in the Institute, Dr. Terman holds the IEEE Medal of Honor, IRE (1950), the Education Medal (1956), Founder's Medal (1963).

DILLARD REVIEWS HIS TENURE

In an interview with EE Times, 1976 Institute President Joseph K. Dillard stated that the Institute made some progress during the year but that he did not achieve everything he planned to do for the Institute. Three main goals were set: stable financial footing, advancing members professional status and creating an umbrella organization to act as spokesman for all engineering professions. Considerable progress was made in the first two goals, but much more must be done before a satisfactory spokes-organization for all engineers is created. Dillard stated that the Institute must remain on a sound financial basis.

IEEE BOARD OF DIRECTORS NOMINATES 1978 PRESIDENT AND EXECUTIVE V.P.

The IEEE Board of Directors at a recent meeting named two candidates for office for 19-8.

Dr. Ivan A. Getting, president and member of the Board of Trustees of the Aerospace Corporation in EL Segundo, California, has been nominated for the office of IEEE president. Carleton A. Bayless, division manager State of California, of Pacific Telephone and Telegraph in Sacramento, California, has been nominated to serve as executive vice president. Mr. Bayless currently holds the executive vice presidency for 1977, having been a successful petition candidate.

Dr. Getting during most of his more than 30-year professional career has been closely identified with the U.S. defense effort. Under his direction The Aerospace Corporation, working as a nonprofit, technical partner of the Air Force on space systems and ballistic missile re-entry systems, has become one of the nation's key technical resources. He has been with Aerospace since 1960.

Born in New York City, Dr. Getting attended school in Pittsburgh, was an Edison Scholar at M.I.T. from 1929 to 1933, and was a Rhodes Scholar at Oxford where he received the doctorate. He did research at Harvard for five years.

He served from 1945 to 1950 as a professor in M.I.T's electrical engineering department, heading a group which built a 350 million electrovolt synchrotron. During the Korean War he served with the Air Force as Assistant for Development Planning in the Air Staff. During World War II he had served from 1940 through 1945 as director of the division of fire control and Army radar at the Radiation Laboratory of M.I.T. He concurrently held other important assignments including being a special consultant to Secretary Stimson on the use of radar by the Army.

During the nine years before he came to The Aerospace Corporation, Dr. Getting was vice president for engineering and research of Raytheon Company. A member of the National Academy of Engineering, he received an honorary Doctor of Science degree from Northeastern University, is a Fellow of IEEE and The American Physical Society as well as the American Institute of Aeronautics and Astronautics and the American Academy of Arts and Sciences. Among his many honors are the IEEE Pioneer Award, President's Medal of Merit, Naval Ordnance Development Award, and the Air Force Exceptional Civilian Service Award.

Mr. Bayless received the B.S. degree in engineering physics from the University of California at Berkeley, and studied at UCLA, University of Michigan, and Stanford. He has been with the Bell Telephone system since 1940 at various installations.

While in military service he was communications and radar specialist in the Signal Corps and Air Force. Since 1950 his engineering assignments have included data transmission, voice transmission, special services transmission, microwave and mobile radio engineering, inductive coordination, analog and digital carrier transmission, plant extension engineering, and other fields. The Engineering Council of Sacramento Valley in 1974 gave him the Engineer of the Year Award.

Mr. Bayless has been a member of the Board of Directors of IEEE since 1975 and was the Region Six Director from 1975-1976. He has served on the Institute's executive committee, audit and finance committees as well as the Regional Activities Board, U.S. Activities Board, and other Institute organizations including officerships in sections, groups, and societies. He was managing editor of the "San Francisco Engineer." He is a registered professional engineer in California.

SPECTRUM: A STEADY DIET

As the first professional Editor of Spectrum, Donald Christiansen reflects: "I joined IEEE with the objective of turning a well-respected magazine into the world's foremost electrical/electronics journal. The challenge has been our readership--the largest and most expert conglomeration of engineers in the world. To serve their needs, we've had to keep our ears to the ground and our pens in our fingers." By background, Don is ideally suited to the task. Before joining Spectrum as Editor and Publisher in 1971, he divided his career between electrical and electronics engineering (for 12 years with CBS) and publishing (the latter culminating in his becoming editor-in-chief of Electronics magazine). A Senior Member of IEEE, he holds memberships in several Groups and Societies. His current interests include technology planning and forecasting, the study of innovation, and the history of technology and science.

Spectrum presents over 900 editorial pages per year, written by its eight fulltime editors and several contributing editors. Among the key staff members assisting Editor Christiansen on Spectrum are: Ronald Jurgen and Howard Falk, Managing Editors; Art Director Herbert Taylor; and Advertising Director William Saunders. Says Don, "We think we've been making progress at Spectrum. Our principal committment is to provide the members with a steady diet of timely, accurate, and, above all, useful information."

AUGUST 1976 IEEE/USAB
SAMPLE SURVEY ON MEMBER OPINION TOWARD
IEEE's ATTEMPTING TO REGULATE
QUALITY AND QUANTITY OF ENGINEERS

At the request of Paul Carroll, Richard C. Benoit, Jr., and their Task Force, the Washington, D.C. Office conducted a nationwide sample survey of approximately 2500 non-student U.S. members to determine their responses to the questions printed on the reverse side. The October issue of EE carried the preliminary results of that survey. The data presented below is an update of that information reported in October., Although the response rate has increased from 37% to 44% since October, the percentage of responses for and against each issue has remained consistent.

In addition to the national sample survey, the survey form was printed in the October issue of EE which was sent to 3,477 U.S. members who hold either elected or appointed office in IEEE. The national sample was printed on a postage-paid return postcard, while the EE survey was distributed as an insert on the back of the preliminary sample survey results.

Although the 4% response rate to the EE survey is very small, it is interesting to note that respondents favored attempting to regulate both quality and quantity by a much higher percentage than respondents to the random sample survey of all non-student U.S. members.

As of November 3, 1976, 29 Sections had responded to Dick Benoit's request that Sections also survey their members to determine their options on these questions. There were no survey guidelines given to Sections so each conducted its survey in its own way. A total of 3,319 members were represented in the Sections surveyed; 264 members responded to the survey. Responses were generally consistent with responses to the national random sample and EE survey.

1(a) Do you favor IEEE's attempting to regulate the quality of electrical engineers?

357 or 33% NO 723 or 67% YES

1(b) If yes, how?

310 or 29% By promoting universal registration.

206 or 19% By certification of technical societies.

258 or 24% By validation of continuing education courses by the technical socities.

443 or 41% By promoting higher accreditation standards for engineering curricula.

153 or 14% By examination to become an IEEE member, at the "Member" level or above.

2(a) Do you favor IEEE's attemption to regulate the quantity of electrical engineers?

531 or 51% YES 535 or 49% NO

2(b) 221 or 21% By working more actively through IEEE's student branches to educate high school students about the career opportunities available through the engineering profession.

333 or 32% By raising the standards for accreditation of colleges teaching engineering.

141 or 13% By increasing the number of years of study for an initial engineering degree through the accreditation process.

314 or 30% By obtaining for publication, and/or distribution, manpower reports on supply vs. demand of engineers.

Sample Size: Approx. 2500
No. of Responses: 1094
Response Rate: 44%

H.A. SCHULKE, JR.,
ANNOUNCES RESIGNATION

IEEE General Manager and Executive Director H.A. Schulke, Jr., has announced his resignation effective July 22, 1977. He has felt for some time, according to a letter to 1977 IEEE President Robert Saunders, that the demands of IEEE's growing professional activities on the office of the General Manager have prevented him from engaging in the kind of technical activities appropriate to his interests and expertise. The full text of Dr. Schulke's letter will appear in the February Spectrum.

President Saunders and the Executive Committee praised Dr. Schulke for his many accomplishments during his short time in office in organizing the Headquarters operations of the Institute, activating the Service Center in New Jersey, and contributing to important changes in the Institute's fiscal policies.

Dr. Schulke intends to seek a position in engineering or engineering management, preferably in his field of expertise, communications. A search committee will be formed to seek and select his successor. At time of writing, President Saunders told EE that no final decision had been made on the composition of this committee, but that members wishing to submit recommendations for Dr. Schulke's successor could write to: Chairman, Search Committee, Headquarters.

PROFILE:
FRANKLIN H. BLECHER

IEEE's 1977 Vice President for Technical Activities is Franklin H. Blecher. A Fellow of the Institute, Dr. Blecher has received the Institute's Browder J. Thompson Award for work on feedback amplifiers. He has served on and chaired numerous IEEE committees, boards, Groups, and Councils, and has made extensive contributions in conference organization. Since 1974, Dr. Blecher has been Director of the Mobile Communications Laboratory of Bell Laboratories in Whippany, N.J., and is presently responsible for the development of a new high-capacity mobile communications system. He has done pioneering work in the theory and design of single and multiple loop solid-state feedback amplifiers. He has published extensively on this subject as well as on the design of linear and nonlinear solid-state circuits, active filters, carrier equipment, and microwave circuits.

Dr. Blecher was educated at the Polytechnic Institute of Brooklyn, where he was awarded the B.E.E. degree in 1949, the M.E.E. in 1950, and the D.E.E. in 1955. He served there as a nonresident staff member from 1956 to 1960.

GLEN WADE APPOINTED EDITOR
OF THE PROCEEDINGS OF THE IEEE

(NEW YORK, N.Y.)--3 January 1977--Glen Wade, Professor of Electrical Engineering at the University of California in Santa Barbara, has been appointed Editor of the PROCEEDINGS OF THE IEEE, the general-interest research journal of the Institute of Electrical Engineers (IEEE). He succeeds Dr. Robert W. Lucky of Bell Telephone Laboratories.

The PROCEEDINGS, a monthly journal of engineering research with the largest number of subscribers of any publication of its kind, publishes high-level material on all aspects of electrical science and technology. Its mission is to serve the many IEEE members, and all others, who wish to keep abreast of major developments, including those outside their specialized areas of endeavor. This is achieved by the publication of broad-scope contributed papers, tutorial-review papers written on invitation by recognized technical leaders, and special issues devoted to the most important and timely subjects in the field.

Dr. Wade has had a rich and varied career as an engineer, educator, and administrator. He has taught at Stanford and Cornell, having served as the Director of the School of Electrical Engineering and having held an endowed chair (Distinguished Professorship) at the latter. In 1971 he received a Visiting Professorship Award at Tokyo University from the Japan Society for the Promotion of Science, and in 1972 he was awarded a Fulbright-Hays Lectureship in Spain. His industrial experience includes serving as Assistant General Manager of the Research Division of the Raytheon Company. He has published over ninety papers in technical journals, has presented more than 150 papers at meetings, and holds several patents.

Dr. Wade brings to the PROCEEDINGS impressive experience in publishing and professional activities. He was Editor of the IEEE TRANSACTIONS ON ELECTRON DEVICES for a number of years and also has served as Co-Editor of the IEEE JOURNAL OF QUANTUM ELECTRONICS. He has held a number of positions within the IEEE, including Chairman of the Educational Activities Board and member of the IEEE Board of Directors and the Publications Board. He is a Consulting Editor for an electrical engineering book series published by Harcourt Brace Jovanovich.

In 1955 he received an Outstanding Young Electrical Engineer Award from Eta Kappa Nu. Besides being a Fellow of the IEEE, he is a member of the American Physical Society, Phi Kappa Phi, Tau Beta Pi, Eta Kappa Nu and Sigma Xi.

REGISTRATION OF ENGINEERS

The Board of Directors at its meeting approved the following U.S. Activities Board Policy Statement on Registration of Engineers:

The Board of Directors of IEEE recognizes the need to safeguard the quality of the practices of engineering in order to protect the health, safety and welfare of the public. In the implementation of such policy, the IEEE is motivated also to protect the professional reputation of competent and responsible practitioners against the injury to that reputation occasioned by unprofessional practice. In furtherance of this policy, the IEEE:

A. Offers advice and assistance to boards of engineering examiners and similar agencies;
B. Approves the concept of uniform laws to aid in improving the quality of competence reflected in the attainment of a license to practice as being in the public interest;
C. Recommends that in the requirements for the practice of engineering there shall be a minimum of restrictions of a legal nature in the functioning of qualified engineers;
D. Recommends that, upon request, committees of IEEE IEEE members cooperate with appropriate agencies in the development of sound registration examinations which will adequately protect the public interest;
E. Recommends that the State laws uniformly reserve the title of Engineer, or _____ Engineer, to licensed practitioners; (_____ = Electrical, Electronics, etc.)
F. Recommends that all practitioners responsible for their activites, or the activities of their subordinates, be licensed to practice. Signature to any work performed, or to show approval/acceptance of a subprofessional's activities is one example to indicate responsibility;
G. Recommends that the industrial exemption, as it applies to practitioners responsible for their activities, be eliminated in all State laws and that current practitioners be permitted to "grandfather" into licensure on the basis of application.

In addition to the above, the following actions are recommended:

H. Each IEEE Section cooperate with State boards of engineering registration or other appropriate State agencies in the dissemination of educational information concerning registration.
I. IEEE Sections consider sponsoring or cooperating with other groups in conducting education refresher courses as preparation for registration examinations.
J. IEEE Student Branches devote some time to the subject of professional development with special emphasis on the purpose of registration from the standpoint of protection of the public interest, the standards required for such protection, attainment of higher quality professional performance, and the procedure is applying for registration.

ENGINEERS' SALARIES STILL TOO LOW, SAYS NSPE

Reprinted from: Electronic Engineering Times, 1/10/77.

WASHINGTON, DC - Engineers continue to be underpaid, according to information just released by the National Society of Professional Engineers (NSPE).

According to the Recommended Income Ranges for Engineers, engineers with considerable experience and responsibility are suffering most severely from the differences between the NSPE-recommended compensation and the pay that they actually receive. While entry level engineers generally are paid salaries that fall within the NSPE recommended income ranges, according to NSPE's latest salary survey, those in jobs requiring greater skill, experience and critical judgement in most cases are paid far less than the minimum proposed by NSPE for those levels.

The NSPE Professional Employment Committee developed the recommended income ranges, starting with a base salary of $14,300 a year, what it considers the going salary rate for new engineering graduates, and providing recommended minimum and maximum income levels for each of eight employment grades ranging from entry level professional work to positions of considerable complexity and responsibility.

Comparing median salaries obtained in NSPE's latest salary survey with an arbitrary 10 per cent added to approximate inflation occurring since the survey was conducted in 1975 reveals that, in NSPE's opinion, relatively few engineers are paid commensurately with their skill and experience. For example, an Engineer III, who, by NSPE's criteria, has passed the entry-level stage and has begun to apply independent engineering judgement in performance of the job, should be paid between $17,160 and $24,310, depending on qualifications, experience and other factors. Yet, NSPE's inflation-adjusted salary survey indicates the median income for engineers in this category is only $16,929.

An Engineer VI, a position of high authority in both technical and administrative areas with responsibility for the entire scope of complex engineering projects, should, by NSPE's standards, be making between $31,460 and $42,900. However, the median salary at this level is $28,578.

An Engineer VIII, typically a public works director, a senior consultant or dean of engineering, should expect a salary between $42,900 and $64,350, NSPE says. Employers appear to feel differently, since the NSPE-measured median income at this level is $36,652.

NSPE also points out that those employed in the entry-level Engineer I/II categories should receive $12,870 to $18,590, and the median salary measured by the Society's survey falls within those limits, at $14,927.

NSPE's Professional Employment Committee developed the recommended income ranges by analyzing "current statistical data and performance-experience levels consistent with sound management policy and a desirable career pattern," according to Committee chairman Dr. Charles H. Samson, Jr., of the civil engineering department of Texas A&M University. He claims that the recommended ranges would be made available to engineering employers and to senior engineering students around the country.

The NSPE Income Guidelines have been endorsed by the American Association of Cost Engineers.

Copies of the Recommended Income Ranges for Professional Engineers are available from NSPE, 2029 K Street, N.W., Washington, DC 20006. Single copies are free.

ENGINEERING BICENTENNIALS

One element of our past has been notably missing from the Bicentennial hoopla: Science. While our scientific community proposed some Bicentennial plans, all but a few of these died from lack of public interest. Most Americans will see out 1976 knowing little more of our technological heritage than the usual lore about Franklin's kite.

Spectrum wasn't publishing in 1776; George Washington never slept at IEEE headquarters. But the least we can do, as a Public Service, is to identify some of the great inventions and discoveries of, say, 1770 to 1800, whose own bicentennials we ought to be celebrating. It will be a serious list, giving the name and nationality of the inventor/discoverer. Here's what was new in the world when our nation was being founded:

1772 Nitric oxide (Priestly, English)
1774 Oxygen (Priestly, English)
1776 Attack submarine (Bushnell, American)
1777 Combustion explained (Lavoisier, French)
Circular saw (Miller, English)
1779 Spinning mule (Crompton, English)
1780 Steel pen (Harrison, English)
Bifocal lens (Franklin, American)
1783 Balloon (Montgolfier, French)
1784 Shrapnel shell (Shrapnel, English)
1785 Power loom (Cartwright, English)
Parachute (Blanchard, French)
1792 Gas lighting (Murdoch, Scottish)
1793 Cotton Gin (Whitney, American)
1796 Lithography (Senefelder, Bohemian)
Smallpox vaccine (Jenner, English)
1797 Cast iron plow (Newbold, American)
Carding machine (Wittemore, American)
1798 Bleaching powder (Tennt, English)

Probably the most significant of these is oxygen. Before Priestly invented oxygen in 1774, folks had trouble breathing. In 1775 the FDA discovered oxygen is vital to human well-being and established a minimum daily requirement. Our troops were given oxygen tablets in their K-rations, and that's why we won the war.

--Adapted from Bill Minkler (Nuclear News, July 1976), who of course wrote Nuclear News where we read Spectrum, and ANS instead of IEEE.

WRELIABILITY WRITINGS

THE MEANEST TIME BETWEEN FAILURES

Reprinted from Electronic Devices Newsletter.

You asked me to discuss 100 Proff Reliability or How To Have The Meanest Time Between Failures. Fundamentally the universe is a disorderly unshaven sort of place with entropy leaking through the cracks.

To maintain law and order in such an atmosphere, where the component parts are determined to go over the hill (except for tunneling devices which go under the hill) and back to thermal equilibrium is a task requiring firmness of purpose, strength of character and an unshakeable belief in Maxwell's Demon.

Previously, people with these qualifications have merely existed, bobbing up and down in an alien sea of stochastic processes. Now, in a bold move, they have organized quality control and reliability groups (This is not to imply that the laws of entropy are not applicable to such groups) and, waving the banner of root-mean-square have launched an all-out assault on the general slovenliness of nature.

This is an admirable project which will elicit the warm symapthy of anyone who has ever rooted for the underdog. The ideal of an orderly array of freshly scrubbed molecules with precisely arranged sleeve garters is indeed a noble one, worthy of support by men of goodwill everywhere.

Happily enough, there have been successes in the struggle. In the interest of placing proven (no weasel wording here) weapons in the hands of all shock troops of reliability, those techniques which guarantee (never weasel word here either) success are listed below.

1. THE SYMPOSIUM. This is a direct attack on randomness. It organizes people in one place at one time in spite of the forces which tend to diffuse them in many directions. The basic battle has been won when the people appear. The subject matter, therefore, is of minor significance. For most occasions, "The Advantage of the Weibull Distribution Over The Threshing Machine," will do.

2. MEAN TIME BETWEEN PAILURES. This gives precise expression to the rather loose notion that we don't know when a given part will fail. By not knowing to an ever-increasing number of decimal places, feelings of security (except for astronauts) are generated and morale is boosted.

3. LATIN SQUARE. Originally, this was an unhip Roman. Now it is a technique for putting things in boxes (which is still pretty unhip). This leaves no loose things lying around and is a step in the direction of order.

4. CONDITIONSAL PROBABILITY. This is the probability that event "B" will, indeed, occur after event "A" has occurred. As used in reliability work, it demonstrates the fact, that if you don't use the part, the changes that it will not fail are excellent (but not certain).

5. S-N CURVES. These curves relate to the magnitude of alternating stress to the number of stress cycles leading to failure. They have a minor disadvantage in that they don't work. However, this is counterbalanced by the fact that, in any realistic situation, nobody counts the number of cycles anyway.

6. LAST DATE OF CALIBRATION. (This is really a process of comparing two things and hoping that one is correct). This is a label which appears on instrumentation. It tells nothing about how the instrument is performing at the moment. However, it is a signal to the visiting Quality Control man that there are fellow travelers on the premises.

7. CONFIDENCE LEVEL. This is a measure of how uncertain you are about the positive statement you just made. This notion is based on the earlier work of Gilbert and Sullivan, "Never? No, Never! Well ... Hardly Ever!!," and is achieving a similar degree of popularity.

8. MATHEMATICAL MODEL OF RELIABILITY. This is a description of "the way the thing works". It leads to perfectly predictable results in the event that the model is flown and the hardware is kept on the ground.

ENGINEERING FOUNDATION FELLOWSHIPS

The Engineering Foundation has established a new series of Fellowships:

1. Within the technical field of each of the Founder Societies, the Fellowship is to support the preparation of a state-of-the-art review, emphasizing areas that need additional research. Each of the Founder Societies is to supply a list of technical fields that would be suitable for such reviews.
2. Within IEEE, the Technical Activities Board has been assigned responsibility for handling the IEEE portion of the program.

ENGINEERING FOUNDATION FELLOWSHIPS
Sponsored By
THE ENGINEERING FOUNDATION
with the cooperation of the
FOUNDER SOCIETIES

American Society of Civil Engineers,
American Institute of Mining, Metallurgical and Petroleum Engineers,
The American Society of Mechanical Engineers,
Institute of Electrical and Electronics Engineers, and
the American Institute of Chemical Engineers.

GENERAL

The ENGINEERING FOUNDATION announces the availability of Engineering Foundation Fellowships during 1978-1979 for State-Of-The-Art reviews in fields recommended by its FOUNDER SOCIETIES.

The program is directed toward members of engineering faculties and industrial specialists who have established a professional reputation through publications.

A grant of $5,000 will be awarded on a competitive basis to a member of each of the FOUNDER SOCIETIES for a proposed research review in a field of direct interest to his FOUNDER SOCIETY.

PROPOSED REVIEWS

Proposed reviews shall provide an analysis in depth of a specific field including recommendations on engineering research needed to advance the state-of-the-art of that field.

A list of recommended fields will be available upon request from the Executive Officer of his professional society.

EVALUATION AND SELECTION OF PROPOSALS

Proposals shall be sent to the Executive Officer of his professional society. A panel organized by his professional society will evaluate and select meritorious proposals. They will be submitted (in rank order) to the Projects Committee of the ENGINEERING FOUNDATION who will make the final selection of a proposal for each of the FOUNDER SOCIETIES for submission to the Board of the ENGINEERING FOUNDATION for final approval.

DEADLINE

All proposals being submitted to the FOUNDER SOCIETIES must be postmarked by June 1, 1977.

Selected proposals by the FOUNDER SOCIETIES to the Projects Committee of the ENGINEERING FOUNDATIONS must be postmarked by August 1, 1977.

ANNOUNCEMENT OF FELLOWSHIPS

Selected fellows will be notified by letter from the secretary of the ENGINEERING FOUNDATION on or about January 1, 1978, with copies to their FOUNDER SOCIETIES. The FELLOWSHIPS will be effective as of February 1, 1978.

FINAL REPORT

A final report shall be submitted to the ENGINEERING POUNDATION and to the FOUNDER SOCIETY by each fellow for publication. The ENGINEERING FOUNDATION reserves publication rights.

Appropriate recognition of the ENGINEERING FOUNDATION and the cooperating FOUNDER SOCIETY must be prominently displayed on the title page of the publication.

PAYMENTS

The ENGINEERING FOUNDATIONS will provide 50 percent of the grant at the start of the fellowship and 50 percent at the end of the fellowship when the final report is presented.

INSTRUCTIONS FOR PREPARING A PROPOSAL

The formal proposal shall contain the following information. Twelve copies are needed.

- The first page of the proposal shall include the title of the review; name of applicant, title, institution location; name of person financially responsible for administering the fellowship funds.
- The next section (not to exceed four pages) shall contain the proposed review in sufficient detail to allow an evaluation of its merit on the basis of delineated approach and time required for its fulfillment. Maximum time will be one year.
- The next page shall describe the special qualifications of the applicant for conducting the review followed by a biographical sketch and a listing of publications.
- The proposed budget shall appear on the last page in specific details describing how the funds will be utilized. The budget cannot exceed $5,000 and cannot include indirect costs. Such a fellowship award is not renewable.

PUZZLE

What is the next element in the sequence -

42, 34, 28, 14, 4, ___

IEEE STANDARDS CATALOG

The 1976 issue of the IEEE Standards Catalog is now available, free of charge, from the Standards Office at Headquarters. It lists over 350 standards publications in numerical sequence, and provides a subject index to the standards.

WASHINGTON *NEWS*

SOLAR ENERGY: A new solar energy coalition may have a bill ready for Congress late this month. It will be an omnibus bill and is designed to give President Carter something to think about as he prepares his energy policy message, due in April. So far, no news (leaks?) about the energy message.

MASS TRANSPORTATION: The Subcommittee on Housing will hold hearings on S 208, the National Mass Transportation Assistance Act in early March. The hearings will launch this omnibus transportation act which, will bring plenty of attention to mass transit problems, even if the bill itself doesn't pass. Mass transit advocates in town are worried about Brock Adams (our new Secretary of Transportation) and his priorities. The new Transportation Secretary does not have much experience in mass transit and seems to favor low mass transit system operating subsidies. On the other hand, he will be holding a series of transportation town meetings in various parts of the country. The meetings will seek public help in solving the Nation's transportation problems. Effective tool or good PR?..... Time will tell.

OSHA: OSHA, the agency small business loves to hate is not going to disappear. In fact, it has recently requested 150 new staff positions and just may get them. The new personnel will be mostly inspectors. One of the complaints about OSHA is that they do not have enough inspectors to carry out their responsibilities, so they tend to be heavy handed with everybody. No major change in the form of OSHA can be foreseen, however, Carter's Public Liaison Office (headed up most ably by Presidential Assistant Midge Constanza) reassures us that less onerous applications of unnecessary regulations will be the order of the day.

WAGE BUSTING: On January 28, 1977, in San Juan, Puerto Rico, the Engineers Joint Council endorsed the following resolution.

In furtherance of Engineers Joint Council (EJC) support of the Guidelines to Professional Employment for Engineers and Scientists, especially as they relate to Section II, Terms of Employment, EJC expresses its opposition to the practice of "wage busting". This is a practice whereby a contractor obtains a competitive advantage in securing successive technical service contracts for the same services by reducing the compensation of engineers and other professional personnel, even though such personnel will be employed in the same capacity as they were under the predecessor contracts. EJC encourages its membership to support appropriate actions to eliminate this practice.

In seeking this goal, EJC expresses its opposition to the setting of compensation for professional employees by government determination, and reaffirms the terms of the Employment Guidelines which state that the employer, rather than the government, "...should establish a salary policy, taking into account published surveys (salary surveys), and provide equitable compensation for each employee commensurate with his position and performance."

On February 24, 1977, a meeting was held between the professional societies and the service contractor trade associations on how to best approach the engineer salary busting problem. Progress was definitely made. One of the end results of the meeting is that the trade associations and the professional societies together will request a regulatory change from the Office of Management and Budget. If this approach is successful it should bring quick relief to the engineers suffering from the salary busting problem. We will keep you updated on developments in this area of key importance. IEEE is lobbying for Thompson's HR 314 which is in the pro-labor, House Education and Labor Committee. Currently this would place control of the problem in the Department of Labor, using Department of Labor statistics. No hearings have been scheduled as yet.

CLEAN AIR: The Senate Committee on Environment and Public Works will mark up amendments to the clean air act. They will start with S 252, which embodies the clean air act revisions passed last session by the Senate. The bets are that the auto industry will get a partial reprieve from auto emission controls. The big three auto companies want a two year delay, but will probably get only one. And they won't get the one without a fight. The United Auto Workers are on the companies side, for a change. John Dingell of Michigan has introduced an industry bill in the House. It contains a two year extension. Dingell will offer it on the House floor this spring, hearings on the House version will probably get underway mid-March.

CLEAN WATER: Clean water is also up for consideration these days. The reauthorization of water treatment construction grants (S 57, Muskie) could end up as a rider on S 427, the Public Works jobs program. House Public Works has other ideas and will hold hearings in March to air some of them. The House HR 3199 would authorize funds, but also amend the Act to give states more administrative control and clarify the engineer corps authority over dredge and fill permit program. The Senate opposed a similar bill which cleared the House last year. Another stalemate will follow.

ENERGY POLICY: The administration is reportedly working on a plan to consolidate administration of energy policy and supply operations. A request to Congress sometime in March is not unlikely. Some of the difficulties facing the drafters of this plan is whether to combine supply and policy operations under one roof. Also, there is a question whether or not to give the new agency Interior's present control over natural resources, such as federal land management and whether or not to dismantle the Federal Power Commission and its policy related functions. Senator Percy has introduced S 591 to merge all supply operations including Interior's but create separate White House Energy Policy Council. We will let you know which option prevails.

SURFACE MINING: The House and Senate Interior Committees plan to mark up S 7 and HR 2, the strip mining bills in March. These legislation may be ready for the President's signature by early summer. The Interior Secretary's all out support of this bill could pose problems for the administration's energy chief, since the proposed environmental regulations impact on needed coal production. Also, the Western states are expected to oppose coal leasing of federal lands where ranchers own the surface rights.

COAL CONVERSION: Among the flurry of energy related bills in Congress these days, Senator Randolph's S 273, the Natural Gas and Petroleum Conservation and Coal Utilization Act of 1977. The bill would prohibit

the construction of new power plans unless they are designed to use other than natural gas or oil as their primary fuel. Also, the Federal Energy Administration will issue construction orders for certain categories of new major industrial installations. Exemptions will be provided when a powerplant or installation demonstrates that adequate coal--or fuel other than natural gas or petroleum--supplies are not available or transportation facilities for such fuels are inadequate for the task. Exemptions are also provided when the new plant or installation is constructed to be operated solely as a peak load facility. As a companion measure, Senator Humphrey and Randolph have sponsored S 257 to provide loan assistance for the conversion of existing natural gas fired or oil fired powerplants and fuel burning installations to coal as a primary source. The bill is in the Senate Commerce Committee, but no hearings have been scheduled to date.

THE CONSUMER

CARTER TO ALTER CPSC MAKE-UP. Carter impact on CPSC is expected to be extensive and relatively prompt. Campaign pledges for tougher regulation of consumer products prime the Commission for new personnel, and the President can fill three of the five seats within 10 months after taking office. Only Chairman S. John Byington's and Barbara Franklin's positions are secure throughout this year.

AEROSOLS SNUBBED. Aerosol usage is decreasing and consumer perception of aerosol hazards is high, according to a poll of 1,801 persons conducted for CPSC by DeVries & Associates. Over half the respondents reported decreased aerosol use, while 24 percent have stopped using the sprays altogether. After hearing a statement describing the probable impact of fluorocarbons on ozone and the likely resultant health effects, 62 percent favored a fluorocarbon ban while 27 percent favored labeling.

NEW CAR QUALITY CHANGES REPORTED. Value of quality changes for the 1977 model domestic passenger cars was estimated to average $59.15 at retail prices, the Department of Labor reports. Estimates were done on cars included in the Wholesale Price Index and were based on an evaluation of data for similarly equipped '76 and '77 model cars. Quality changes related to safety or air quality standards accounted for $21.25 of the total.

EUROPE COMMISSION WANTS CHEMICALS MONITORED. Control of new chemical products in Europe is recommended by the Commission of the European Communities. It is proposed that companies planning to market new materials in any of the nine member countries must notify the relevant authorities, which will have the power to alter classification and limit or ban their use.

FDA SCRUTINIZING "HIGH RISK" FOODS. "High risk" food establishments will be given a closer inspection than usual during the current FDA food safety program, which terminates September 30. High risk firms are those that produce products with an unusually high potential for microbiological problems, FDA explains. Before the program ends, about 8,000 inspections of food firms will have occurred.

DIET SUPPLEMENTS REGULATED. FDA has issued final regulations for labeling and composition of dietary supplements that are labeled and advertised for special dietary use because of their vitamin and/or mineral content. Because labeling changes will be extensive, the agency has delayed the effective date until January 1, 1978. But voluntary compliance may begin immediately.

TOXIC CONTROL IN EFFECT. The Toxic Substances Control Act's principal effect is that it will prevent problems for public health and industry, its supporters claim. The controversial law, which took effect January 1, allows the Environmental Protection Agency to: require health and safety testing of chemical substances; require manufacturers to notify EPA before starting production of a new chemical; and ban or limit the distribution in commerce of substances found to be harmful to health or the environment.

RULING INSPIRING FOR VOLUNTARY STANDARDS. Encouragement for industry to develop strong voluntary standards was given by CPSC when it denied four separate petitions seeking federal safety standards for consumer products. One petition was aimed at ladders, and despite the agency's feeling that a significant hazard exists, it agreed to deny the request based on evidence of industry's commitment to upgrade standards and the likelihood of a high level of compliance.

FDA REAFFIRMS CYCLAMATE BAN. Cyclamates will not be allowed back on the market, FDA ruled in turning down a petition by Abbott Laboratories. FDA says there is insufficient evidence to determine that the sweetener is safe. Abbott, manufacturer of cyclamates, has asked for a public hearing and is threatening to go to court if necessary.

GASLINES STANDARDS DELAYED. The deadline has been extended for owners of offshore gas pipelines to come up with a plan to meet minimum federal inspection, operating, and maintenance standards. The new deadline is March 16, 1977. Certain offshore gaslines were first subjected to standards when the Materials Transportation Bureau issued a code of federal regulations on August 9 of this year.

CEQ RIPS ENERGY PROGRAMS. Environmental protection and energy conservation have been slighted in federal nuclear energy programs, the Council on Environmental Quality (CEQ) contends. From its recent analysis, CEQ found no effective, systematic approach to identifying priority environmental problems. The council singled out the handling of coal technologies now being developed, noting that there is too little information on health and ecological effects of hazardous substances resulting from the use of coal.

CPSC TO SURVEY CONSUMERS. "Consumer awareness" throughout the nation will be surveyed in spring, CPSC announces. Opinions solicited will include perceived risks on some 200 specific products. Results could indicate where the public sees a need for greater safety and how receptive consumers may be to "soft sell" safety.

RESTRAINT REQUESTED FOR SPEEDOMETERS. Speedometers indicating not more than 157 kilometers per hour (85 miles) are proposed by the National Highway Safety Administration. The agency believes that present speedometers, which read up to 222 kilometers per hour (120 miles), provide a temptation to drivers to test top speeds of the cars they drive.

TEST FACILITY REFERRALS MIGHT TERMINATE. A beneficial referral service available to organizations needing high-capacity mechanical testing might fold, its operator tells Quality Progress Magazine. The National Bureau of Standards sponsors the service, which offers a list of U.S. mechanical testing facilities with capacities exceeding 1 million pounds force. Unless greater interest is shown, the referral service might fall victim to a budget cut.

CONSUMER PROTECTION AGENCY. The House and Senate both passed differing versions of a bill to create a new Federal agency to intervene, as consumer advocate, in virtually any type of agency consumer action. Many groups questioned the need for this proposed agency as a costly and unnecessary new layer of bureaucracy with a potential for creating problems for both business and the consumer. The House vote was close and with the threat of a Presidential veto, the sponsors dropped the measure for further action this year. 1977 will likely see somewhat revised legislation reintroduced.

TAX DEDUCTIBLE COMMUTING EXPENSES. In a recent decision, the U.S. Tax Court ruled that taxpayer's commuting expenses to a distant job assignment are deductible only if the employment out of his home area was expected to be "temporary" rather than "indefinite".

SCIENCE AND THE PRESS

Communicating technological information to the general public is one of the big problems of the scientific and engineering community. The extent to which the public will support scientific research depends upon how they are educated about it. These were the general opinions of a recent seminar for science writers. Space and time constraints and the need to accurately translate scientific jargon into English that the public can understand leave little room for ambiguity of historical perspective. The little blip on a slowly rising curve must not appear as a major breakthrough to the non-scientist.

It was stated that a Gresham's-like law applies to news coverage of research developments; that bad communications will drive out good communications. If reliable scientists do not communicate with competent journalists, the charlatans and more sensational media will fill the vacuum. The choice then is not whether to communicate, but what to communicate and to whom. On the other hand since writers have to cover a wide range of subjects and cannot be experts in all fields they must trust the scientists from whom they get their information.

PRESIDENT CARTER AND TECHNOLOGY

President Carter is the first professionally trained engineer to occupy the White House since Herbert Hoover. He has indicated an appreciation of the value of a science advisor in the Executive Office of the President, the need for strong leadership and planning in energy conservation and shifting of energy R&D priorities to non-nuclear options. He further believes that the federal government must provideleadership and active support for basic research and its applications through established technical agencies of the government. He has also stated that our scientific and technological excellence is a principal tool in achieving a growing and healthy economy which provides jobs for our citizens and therefore, deserves priority support from the Federal Government.

BUSINESS HEALTH GOOD FOR CONSULTING ENGINEERS

Business for consulting engineers during 1976 was healthy and is looking even better for 1977, according to an American Consulting Engineers Council survey.

Nearly half of the 1,000 engineering design firms responding to the survey said their business was good during the past year, while slightly more than a quarter believed it was fair. Just under one-fourth said business was poor.

During 1976, the major problems affecting business health were the economy in general and tight money in particular (45%), followed by excessive government regulation (17%). Profit levels and lack of qualified personnel ranked next as problems.

During the past year, 35% of the reporting firms increased staff, while 36% maintained 1975 staff levels and 29% decreased staff.

Prime markets for consultants in 1976 were local and state government (43%), followed by commercial (20%) and industrial (18%) clients. Designers expected these market demands to hold in 1977.

POETRY CORNER

To Summarize

Americans believe in 'ize'.
We verbalize, conceptualize,
  strategize and optimize,
We vitalize and energize,
  minimize and maximize,
We synthesize and sanitize,
  idolize and canonize,
And when we cease to visualize,
  we finalize and funeralize.

NASA TO SEEK STUDENT INVOLVEMENT IN SPACE SHUTTLE EXPERIMENTS

The National Aeronautics and Space Administration is developing a program whereby high school and college students will propose experiments to be flown in the Space Shuttle according to Senator Frank E. Moss (D-Utah), Chairman of the Committee on Aeronautical and Space Sciences.

"Encouraging students to propose experiments for the Space Shuttle will provide a pool of innovative ideas for NASA and will also stimulate student interest in our space programs," Senator Moss said. He also said that the Forum for the Advancement of Students in Science and Technology, is attempting to develop a continuing relationship between students and NASA and has obtained support from many scientific and technical societies with student members. Dr. James C. Fletcher, NASA Administrator, said that Herbert J. Rowe, Associate Administrator of External Affairs, will be responsible for developing student programs and coordinating with student groups.

STUDENTS TO CONDUCT STUDIES ON ENVIRONMENTAL AND SOCIAL PROBLEMS

Almost 600 college students received support in the summer of 1976 from the National Science Foundation to conduct research in environmental and societal problems.

NSF grants support 69 student-initiated, planned, and directed projects aimed at exploring pressing national problems. The grants total $972,450 and were awarded to 63 universities in 30 states and the Commonwealth of Puerto Rico.

The Student-Originated Studies (SOS) program is designed to encourage students to address their concerns for society and the environment through tackling real-life research problems and, at the same time, develop their scientific talents. The individual projects are generally interdisciplinary in nature requiring a team approach. The success of these nearly independent student efforts has encouraged college facilities to put increased emphasis on student responsibility for their own educational development.

POSITION AVAILABLE

The Air Force Avionics Laboratory is seeking an electronics engineer with training/experience in the area of reliability/maintainability. The position involves reliability prediction, data analysis, failure classification, and general research on maintenance concepts and reliability improvement as they pertain to avionics equipment. Starting salary will range from $14,000 to $22,000 depending upon qualifications. This position is governed by Civil Service Regulations and carries with it full civil service benefits. Send resume/SF 171 to Diane Summers, AFAL/AAA-3, WPAFB, OH 45433.

Product Assurance Manager

- Challenging position available with our $50-100 million client
- Scenic city in Southeast
- Microelectronics experience needed for conversion of a formerly electromechanical product
- Duties include:
  - prototype quality, reliability, safety and product life
  - developing systems, equipment and personnel necessary for U.S. and overseas operations
  - customer and management liaison.
- Salary is approximately $30,000

Please contact Jean Handman, RATH AND STRONG, INC., Management Consultants, 21 Worthen Road, Lexington, Mass. 02173.

DR. FISK, BELL LABS, RECEIVES OUTSTANDING ENGINEER OF THE YEAR AWARD

NEW YORK, NY -- Dr. James B. Fisk, former president and board chairman of Bell Telephone Laboratories, has been named to receive the 1976 Hoover Medal, one of the highest honors awarded by the engineering profession.

The medal, presented January 28 at the 1977 General Assembly of the Engineers Joint Council in San Juan, Puerto Rico, honors an outstanding engineer for his distinguished public service.

Dr. Fisk was cited as a "distinguished leader ... and contributor to the public well-being through broad activities in education and public service of both local and national scope. His leadership of the United States Technical Delegation at the Geneva Nuclear Test Ban Conference in 1958 and 1959 was especially noteworthy and effective, supporting mankind's hope for avoiding a nuclear holocaust."

Luis A. Ferre', former governor of Puerto Rico and 1971 recipient of the Hoover Award, presented the medal. The citation was read by Kenneth A. Roe, chairman and president of Burns and Roe, Inc., Oradell, NJ, and past president of The American Society of Mechanical Engineers.

Established in 1929, the Hoover Medal is sponsored by the following societies: the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, The American Society of Mechanical Engineers, and the Institute of Electrical and Electronics Engineers.

Dr. Fisk received B.S. and Ph.D. degrees from Massachusetts Institute of Technology in 1931 and 1935, respectively. He joined Bell Labs in 1939 as an electronics research engineer.

Twice during his career he led teams of outstanding U.S. scientists at Geneva to negotiate nuclear test-ban control methods with Soviet scientists. He has served on other U.S. science missions overseas, and has been a member of the President's Science Advisory Committee and director of research for the Atomic Energy Commission. Since 1972, he has been a member of the U.S. - U.S.S.R. Joint Commission on Scientific and Technical Cooperation.

At Bell Labs, he was elected president in 1959 when he returned from Geneva and chairman of the board in 1973.

Dr. Fisk is noted for his work in developing microwave electronics. After joining Bell Labs, he was involved in developing microwave magnetrons for use with high-frequency radar. His 35-year career in industrial research and management encompassed such milestones as the invention of the transistor and the introduction of electronic switching and direct dialing of long-distance calls in the Bell System. Under Fr. Fisk, Bell Labs pioneered in the development of satellite communications, solid-state technology, coaxial cable systems, the PICTUREPHONE[R] set and in basic research in the field of lasers.

PUBLICATIONS

IEEE PRESS PUBLISHES BOOK ON MACHINE RECOGNITION OF PATTERNS

(NEW YORK, N.Y.) -- The publication of Machine Recognition of Patterns, a Book of Selected Reprints, has been announced by the IEEE PRESS. This collection was edited by Ashok K. Agrawala of the University of Maryland.

Machine Recognition of Patterns is priced at $14.95 for the paperbound member edition. A clothbound edition is available for $29.94 (discounted to $22.45 for IEEE members). This 472-page book can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Payment should accompany the order.

IEEE PUBLISHES BOOK ON AMERICAN ELECTRICAL HISTORY

(NEW YORK, N.Y.) -- The publication of Turning Points in American Electrical History, a Book of Selected Reprints, has been announced by the IEEE PRESS. This collection was edited by James E. Brittain of the Georgia Institute of Technology.

Beginning with Benjamin Franklin, Americans have made major--sometimes revolutionary--contributions to the development of electrical science and technology. This rich heritage of American electrical and electronics engineering is often not fully appreciated even by those who are members of the profession. To gain an understanding of it, one previously had to delve into dusty original sources and wide-ranging scholarly studies, a difficult and forbidding task in this fast-paced age of specialization.

Turning Points in American Electrical History, sponsored by the IEEE History Committee, is priced at $12.95 for the paperbound member edition. A clothbound edition is available for $25.95 (discounted to $19.45 for IEEE members).

This book can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854. Payment should accompany the order.

IEEE PUBLISHES MONOGRAPH ON ENGINEERS' TAX QUESTIONS

The Engineer & Federal Taxes, an analysis of the tax problems engineers can face, has been published by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) through the sponsorship of the United States Activities Board.

The authors are Paul Opalack, a CPA, and Paul S. Richter, a tax and patent attorney. Each author also holds a degree in engineering. The monograph outlines the mechanics of tax returns and details the tax questions IEEE members and other engineers frequently encounter. Its intent is to "de-mystify" the inner workings of the Internal Revenue Service as it explains The Tax Reform Act of 1976, auditing processes, specific itemized deductions (e.g., educational expenses), and tax shelters.

The 44-page booklet contains information on deductions frequently overlooked by engineers. For example, the amount allowable as a deduction for pre-moving expenses, such as house-hunting trips and temporary living expenditures, is $2,500.

Other explained deductions, with examples given, include dues paid to professional societies, such as the IEEE, business travel and entertainment expenses, home business, retirement plan, patents and royalties, prizes and awards.

The booklet also gives step-by-step advice on what to do if you are audited, including the taxpayer's rights in dealing with Revenue Agents.

The goal of this booklet is to assist the engineer without the aid of a tax expert -- something that is not usually warranted by the dollar value of tax issues confronting the typical IEEE member.

The Engineer & Federal Taxes (UH0121-4) is published in a paperbound format and is priced at $3.00 for members of IEEE and $6.00 for nonmembers.

The booklet can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854. Payment should accompany the order.

SHORT COURSES

IEEE Continuing Education

Introduction to Solid State Power Electronics, April 22 & 23, 1977 - Iowa - Illinois Section.

Microcomputer Design and Applications, April 25-29, 1977, Region 1 and the Mohawk Valley Section.

Introduction to Microprocessors - April 30, 1977, IEEE Computer Society - Huntsville Chapter.

Protection & Grounding of Distribution Systems, April 29 & 30, 1977 - Johnstown Section.

Introduction to Solid State Power Electronics, April 28 & 29, 1977, University of Minnesota.

Basic Project Management - Planning, Scheduling, and Control, May 6 & 7, 1977, IEEE Milwaukee Section.

Microprocessors Seminar, May 13 & 14, 1977, Metropolitan Chapter of the Instrumentation & Measurement Group.

Introduction to Microprocessors, May 21, 1977, Washington, D.C. and Northern Virginia Section.

Computer Networks, May 21 or June 4, 1977, IEEE North Jersey Section.

Microprocessors Seminar, May 25 and 26, 1977, IEEE Cleveland Section.

Introduction to Microprocessors, May 28, 1977, IEEE Alabama Section.

Model Curriculum in Computer Science Engineering, June 8, 1977, Williamsburg, VA, Education Committee of the Computer Society.

Microprocessors Seminar, June 10 & 11, 1977, Washington D.C. & Northern Virginia Section.

CAMAC, June 11, 1977, IEEE Columbus Section.

For more information contact:

Mr. Vincent J. Giardina
Manager, Continuing Education-IEEE
445 Hoes Lane
Piscataway, NJ 08854

Phone: 201-981-0060 ext. 174.

IEEE OFFERS TWO-DAY COURSE ON
BASIC PROJECT MANAGEMENT - PLANNING,
SCHEDULING AND CONTROL

The Continuing Education Department of the Institute of Electrical and Electronics Engineers announces a short course (two day) on "Basic Project Management - Planning, Scheduling and Control" to be given on May 6 and 7, 1977. This course will be given at the Holiday Inn Central, 1926 W. Wisconsin Ave., Milwaukee, Wisconsin.

The purpose of this seminar is to demonstrate how to improve planning of accurate schedules and budgets, increase manpower efficiency, tighten control of costs and time, and develop smoother working relations between departments. The instructor is Mr. Merril W. Buckley, Jr. of RCA.

For further information and enrollment, contact Dr. Russell Niederjohn, Marquette University, E.E. Department, 1515 W. Wisconsin Ave, Milwaukee, Wisconsin 53233, (414) 224-7457. Course fees: IEEE members - $105.00; nonmembers - $140.00; Student IEEE members - $50.00.

University of Wisconsin - Extension

Computer Techniques for Real-Time Control & Monitoring of Power Systems, June 13-24, 1977, Fee $575. Director-Willis F. Long.

Cost Effective Cooling for Electronic Equipment, May 9 - 13, 1977. Fee $375. Director - John T. Snedeker.

The Human Element - A Critical Factor in Modern Process Plants, May 4 - 5, 1977, Fee $140. Director - Charles E. Dorgan.

Practical Methods for Reducing Human Error in Work, May 2-3, 1977. Fee $140. Director - Charles E. Dorgan.

For more information contact course Director at:

University of Wisconsin - Extension
Department of Engineering
432 North Lake Street
Madison, WI 53706

Phone: 608-262-2061

THE MOVE IS ON

The SPEED LEARNING program endorsed by IEEE EAB is meeting with enthusiastic response. Over 200 courses were sold by the end of 1976. This speed learning self-instructional reading program consists of 4 cassettes, 3 workbooks, and 5 paperbacks, all of which are geared to develop more efficient reading-learning skills, a major need within the engineering community.

The course approaches reading as a thinking process (as opposed to the so-called speed reading technique which espouses eye-movement, muscle exercises) and utilizes a seven-step skill-building process which builds comprehension, retention, and speed.

The program has particular application to engineers because it offers a method of organization with a flexible framework. As Dr. Irwin Gray noted in his review of the Speed Learning program (in the Engineering Management Society Newsletter), "You learn to shift gears much as in an auto." Light reading is high gear, somewhat heavier reading requires a lower gear, and when you hit deep textual material of a complex nature, you go back to the slow pace, but with increased comprehension.

Member response to the program has been outstanding, reflecting Dr. Gary's summation that, "anyone who is really interested in becoming a more efficient manager by increasing the speed and comprehension of the material that flows through the office each day would do very well to take this program."

But don't take our word, see for yourself by contacting Mr. V.J. Giardina, Manager Continuing Education, IEEE, 445 Hoes Lane, Piscataway, New Jersey 08854.

NEW IEEE SHORT COURSES ON
MICROPROCESSORS

Schedule now for Spring 1977

MICROPROCESSORS I:

A one-day introduction and overview of technology and applications.

Instructor: Dr. R. Temple

MICROPROCESSORS II:

A two-day expanded treatment of design and applications considerations.

Instructors: Dr. L.A. Levanthal
Dr. J. Tierman
Dr. F.J. Harris

MICROPROCESSORS III:

A five-day in-depth course featuring "hands-on" microcomputer lab experimentation.

Instructor: Dr. Imsong Lee

Any of the above courses may be offered to IEEE Sections on one of two basic plans: the "Full Service Plan" or the "Instructor and Course Notes" plan. In-House presentations may also be arranged.

For details on any IEEE Educational Activities Board Continuing Education programs contact Mr. V.G. Giardina, Manager Continuing Education, IEEE, 445 Hoes Lane, Piscataway, New Jersey 08854, or Mr. John F. Wilhelm, Director, Educational Services, IEEE, 345 East 47th Street, New York, New York 10017.

IEEE OFFERS TWO-DAY COURSE ON
"MICROPROCESSORS SEMINAR"

(NEW YORK, N.Y.) -- February 28, 1977 -- The Continuing Education Department of the Institute of Electrical and Electronics Engineers, (IEEE) announces a short course (two days) on "Microprocessors Seminar" to be given on May 13 and 14, 1977. This course will be held at Holiday Inn, Junction of Routes 80 and 46, Parsippany, New Jersey.

This course will cover the characteristics, availability, and usage of microprocessors in the industry, along with an explanation of the jargon used by workers in the field. The instructor is Dr. Hans Van den Biggelaar, Professor of Electrical Engineering at Southeastern Massachusetts University.

For further information and enrollment, contact Ted Barabutes, Westinghouse Electric Corp., 59 Orange • Street, Newark, New Jersey 07101, (201) 465-2293. Course fees: IEEE members - $105.00; nonmembers - $140.00; student IEEE members - $50.00.

VIDEOTAPE COURSES

There are now four videotape courses of Reliability and Quality Control from the University of Arizona in the Genesys Video Tape Library. They are:

Engineering Quality Control - Dr. Duane L. Dietrich
Reliability Engineering - Dr. Dimitri Kececioglu
Reliability and Quality Analysis I - Dr. Paul H. Wirsching
Reliability and Quality Analysis II - Dr. Paul H. Wirsching

All of these courses are available for sale or lease in the video format of your choice. Each course is part of the regular engineering curriculum of the University and comes complete with one set of reproducible supplementary course materials.

Genesys' Library includes over 150 courses from leading universities. Courses range in length from three hours to 45 hours and cover a wide range of subjects in the fields of engineering, science, math, computers and business and management. Other specific subjects which may be of particular interest to the reliability and quality control professionals include:

Introduction to Statistics for Engineers - University of Arizona
Introduction to Probability Theory for Engineers - University of Arizona
Probability and Random Processes - Massachusetts Institute of Technology
Probability Theory and Monte Carlo Techniques - Lawrence Livermore Lab

For additional details contact:

GENESYS SYSTEMS, INCORPORATED
1121 East Meadow Drive
Palo Alto, California 94303
(415) 494-3701

RELIABILITY TUTORIAL ON
INDUSTRIAL AND COMMERCIAL POWER SYSTEMS

A 3 hour reliability tutorial course on industrial and commercial power systems was given last year on May 19, 1976, at the IEEE Industrial and Commercial Power Systems Technical Conference in Los Angles. 130 people attended

The course presents the fundamentals of reliability analysis and attempts to show how it can be applied in a meaningful way to influence design decisions of industrial and commercial power distribution systems. Examples are given to show how to use this analysis in cost versus reliability tradeoff decisions.

The presentation is slanted towards plant engineers and consulting engineers, even if they have forgotten most of their college mathematics. The main benefit of the reliability analysis is that a disciplined look is taken at the alternative choices in the design of the power distribution system.

During 1973, 1974, and 1975 the Power Systems Reliability Subcommittee has published eight papers containing reliability data and cost of power outage information from extensive surveys of industrial plants and commercial buildings. This data and the tutorial material are now being assembled into "IEEE Standards Project No. 493," a reliability handbook for use in the design of power systems for industrial plants and commercial buildings.

Some local IEEE-IAS sections have expressed an interest in the IEEE reliability tutorial course on industrial and commercial power systems. For further information, write or call the Chairman or Vice Chairman of the Power Systems Reliability Subcommittee:

P.E. Gannon
Keller and Gannon
560 Mission Street
San Francisco, Calif. 94105
(415) 781-7015

C.R. Heising
General Electric Co.
6901 Elmwood Avenue
Philadelphia, Pa. 19142
(215) 726-3429

POWER SYSTEMS RELIABILITY
TUTORIAL AT THE PENTAGON

Perry J. Fliakas, Deputy Assistant Secretary of Defense (Installation & Housing) sponsored at tutorial on "Electric Power Systems Reliability" on October 13, 1976. It was slanted at people in the Government who set policy on the design of power distribution systems for Government installations. 41 people attended from the Navy, Air Force, Army, and other Government agencies.

The reliability tutorial at the Pentagon used text material from the tutorial given at the IEEE Industrial & Commercial Power Systems Technical Conference in Los Angeles on May 19, 1976. The attendees at the Pentagon tutorial showed considerable interests in the extensive amount of reliability data that had been collected and published by the IEEE. Some people were very interested in the IEEE studies of the "Effect of Maintenance Quality on the Failure Rate of Electrical Equipment." This touched upon a major problem area in the Government.

P.E. Gannon and C.R. Heising were the instructors at the reliability tutorial at the Pentagon.

PROCEEDINGS AVAILABLE

Reliability of Nuclear Power Plants. Proceedings of a Symposium held at Innsbruck, April 14-18, 1975. (Proceedings Series) 1975, International Atomic Energy Agency, Vienna. Distributed by Unipub, Inc., Box 433 Murray Hill Station, New York, NY 10016. 751 pages, $42.00

The International Atomic Energy Agency convened the Symposium as part of its program on nuclear power plant technology and reliability. Under this program information on operating experience with nuclear power plants in the Member States has been collected and analyzed, and international working groups on the subjects of pressure components and of power plant control and instrumentation have been set up. The basic purpose has been to promote an exchange of information on research and development aimed at increasing the reliability of nuclear power plant equipment. The sessions were devoted to the following subjects: reliability data collection, storage and use; methods and techniques of reliability analysis; reliability assessment of nuclear power plant systems and components; nuclear technology standards and reliability; operation and maintenance of nuclear power plants.

Two Centuries in Retrospect is the title of a unique special issue of the PROCEEDINGS OF THE IEEE covering the development of electrical science and engineering in the United States over the past two hundred years. The intent of the issue is to acquaint electrical engineers with the rich and varied heritage of their profession.

The coverage is divided into two parts, the first concentrating on the period from 1776 to 1876 and the second covering the past century. Papers in the first part treat the contributions of such early workers as Franklin and Henry. The papers in the second part are arranged into three subject categories: Telecommunications and Electronics; Power, Light, and Transport; and Social, Professional, and Educational Aspects.

An unusual--if not unprecedented--feature of the issue is that it is made up of papers from two different types of authors: professional historians of technology, and engineers who have contributed to the developments they describe. The electrical historians were invited to write on topics in their fields of special interest and competence. The engineers--people such as W.L. Everitt, F.E. Terman, P.L. Alger, and D.G. Fink--tell some fascinating eye-witness tales. The result is a collection of papers that reveals numerous linkages and yields a broad coverage of electrical history.

An original painting by D.E. Noble, showing Ben Franklin flying his famous kite, forms the cover design for the issue.

This issue devoted to the history of electricity appears at a time of special historical significance to the PROCEEDINGS. The first special issue, which was devoted to color television, was published in October, 1951. The present issue thus marks the completion of a quarter century of PROCEEDINGS special issues.

Copies of this issue are available from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. The price to an IEEE Member for the first copy is $5.00; the price to nonmembers (and to members for additional copies) is $10.00. Annual subscriptions for the monthly journal are $9.00 and $60.00 for members and nonmembers, respectively.

CONFERENCE CALENDAR

Apr. 12-14	Int'l Reliability Physics Symposium Caesars Palace Las Vegas, NV	June 20-21	Reliability Engineering Conference for The Electric Power Industry Marriot-Essex Hotel New York, NY
Apr. 19-21	ELECTRO 77 Americana, Coliseum NY, NY	June 21-23	Int'l Microwave Symposium Sheraton Harbor Island Hotel San Diego, CA
Apr. 25-27	Circuits and Systems Int'l Symposium Del Webb's Towne House, Phoenix, Arizona	June 21-25	World Electrotechnical Congress Moscow, USSR
Apr. 28	Tomorrow's System Effectiveness Technology Colonial Country Club, Lynnfield, MA.	June 22-24	Joint Automatic Control Conference Hyatt Regency S.F., CA
May 2-5	Offshore Technology Conference Astrodome, Albert Thomas Convention Ctr. Houston, TX	June 28-30	Electromagnetic Compatibility Symposium and Exhibition Congress Bldg. Montreux, Switzerland
May 3-6	EUROCON 77 - COMMUNICATIONS (European Conference of Electrotechnics) Venice, Italy	June 28-30	Fault Tolerant Computing Conference (7th) Univ. Hilton L.A., CA
May 9-11	Acoustics, Speech and Signal Processing Int'l Conference Sheraton Hartford, Hartford, CT	July 17-22	Power Engineering Society Summer Meeting Maria Isabel Sheraton, Camino Real, Mex. C., MX
May 16-18	Electronic Components Conference Stouffer's Nat'l Cntr Inn, Arlington, VA	Aug. 24-26	Product Liability Prevention Conference Newark Coll. of Eng. Newark, NJ
May 17-19	Aerospace & Electronics Conference (NAECON) Dayton Convention Center Dayton, OH	Aug 28- Sept. 3	Intersociety Energy Conversion Eng. Conf. Sheraton Pk Wash., DC
May 19	Trends and Applications 1977: Computer Security and Integrity Nat'l Bureau of Standards Gaithersburg, MD	Sept 20-30	Western Electronic Show and Convention (WESCON) Civic Aud. Brooks Hall, St. Francis Hotel, S.F., CA
May 24-27	Power Industry Computer Applications (PICA) Royal York Toronto, Ontario, Canada	Sept. 26-28	International Electrical Electronics Conf. and Exhibition Automotive Bldg. Exposition Pk. Toronto, Canada
June 1-3	Laser Engineering and Applications Washington, DC	Sept 26-29	Electrical/Electronics Insulation Conference Palmer House, Chicago, Ill.
June 6-10	International Magnetics Conference (INTERMAG) L.A. Hilton, L.A., CA	Sept 27-29	Power Electronics-Power Semiconductors and their Applications IEE, London England
June 12-15	International Conference on Communications O'Hare Inn Chicago, Ill.		
June 13-16	Power Electronics Specialists Conference Dallas, TX		

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PAUL GOTTFRIED APR18
9251 THREE OAKS DR
SILVER SPRING MD 20901

Reliability Victory Song

Words & Music by Bob Stewart