

RELIABILITY SOCIETY NEWSLETTER



Editor: John Peter Rooney

Vol. 26, No. 2, April 1980 (USPS 460-200)

President's Report



The Reliability Society ushered in the New Year with two most noteworthy events: the Society-sponsored visit to the USA of The People's Republic of China reliability scientists and the competitive selection of AdCom member Thomas L. Fagan as IEEE Congressional Fellow.

As a result of AdCom action in the fall of 1979, invitations had been extended to Messrs.

Lu Chun-Yu, Chiu Tsu-Tung, and Ku Ken-Ching to attend the 1980 Reliability and Maintainability Symposium which was held in San Francisco, January 22nd through 24th. Mr. Lu is the Chief Scientist of the China Electronic Product Reliability and Environmental Testing Research Institute located in Canton, now called the city of Guangzhou. He is also an Ex-

ecutive Director on the Board of Directors of the Chinese Institute of Electronics (CIE). Concurrently, he holds the office of the President of the newly formed CIE Reliability Society. Mr. Chiu, the very able interpreter for Messrs. Lu and Ku, is a reliability engineer on the staff of the Chief Scientist. Mr. Ku Ken-Ching is a reliability engineer in the High-Reliability Department of the Fourth Ministry of Machine Building in Beijing (formerly Peking). The visitors itinerary included tours of West Coast testing laboratories of Viking, Hewlett-Packard, DCA, Varian, and VNS, and of the Midwest testing laboratory of Goodyear Aerospace Corporation in Akron, OH. A tour of the National Bureau of Standards in Washington, DC, wound up the visit in the States. The Reliability Society is proud of initiating the visit as a first step in developing between ourselves and the Chinese the spirit of cooperation, understanding, and mutual respect as peers in the practice of the reliability discipline. We look forward to further cooperative efforts between our two Societies.

Each year the IEEE, pursuant to provisions of the Congress-

President

T. L. Regulinski, Ph.D.
P.O. Box 295
Goodyear, AZ 85338
(602) 932-7321

VP Tech. Operations

B. Retterer
Arinc Research
2551 Riva Road
Annapolis, MD 21401
(301) 224-4000

VP Publications

A. O. Plait
Man-Tech Corp.
Century Suite 930
2341 Jefferson Davis
Arlington, VA 22202
(703) 979-0733

VP Membership

J. E. Victor
Westinghouse
Box 746-MS 454
Baltimore, MD 21203
(301) 765-3724

VP Meetings

C. M. Bird
IBM Corporation
103 A334
Owego, NY 13827
(607) 687-2121 Ext. 3729

Secretary

J. Hess
D. of Army
Readiness Command
5001 Eisenhower Dr.
Alexandria, VA 22333

Treasurer

I. A. Feigenbaum
COMSAT Laboratories
Clarksburg, MD 20734
(301) 428-4587

sional Internship Program, conducts a competition for Congressional Fellow appointment. The program essence is the competitive selection of electrical/electronics engineers or allied scientists to serve a one-year term on the personnel staff of individual Senators or Representatives, or on the professional staff of a Congressional Committee. The basic purpose of the program is to make practical contributions to more effective use of scientific and technical knowledge in government, to educate the scientific communities regarding the public policy process, and to broaden the perspective of both the scientific and the governmental communities regarding the value of such science-government in-

teraction. Under this program, the Fellows are selected on the basis of technical competence, on ability to serve in a public environment, and on evidence of service to the Institute and the profession. This year two applicants were chosen from a field of twenty, of which Tom Fagan was one. Tom will serve as special assistant to U.S. Senator Strom Thurmond, on the staff of the Senate Armed Services Committee. We take particular pride in the selection of one of our AdCom members as Congressional Fellow and manifest our confidence in Tom Fagan's successful tenure of office.

DR. THADDEUS L. REGULINSKI
President

Reports From Officers

Meetings

Those who missed the R & M Symposium in January missed an outstanding conference. The technical program was structured to provide something of interest for both the seasoned and the novice practitioner and was successful in doing so, as evidenced by the record attendance. A copy of the Proceedings has been sent to each Reliability Society member as a bonus from your Society. The Call for Papers for the 1981 Symposium was included in the Proceedings, and you should now have your abstracts prepared.

As this report is being written, final preparation is being made for the International Reliability Physics Symposium in Las Vegas, which also promises an outstanding program. This Symposium annually provides in-depth discussion of physics of failure, which is vital information to a large segment of our membership.

Mark your calendar for September 22-24 for the 1980 Product Liability Prevention Conference to be held in Washington, DC. Learn how to protect your company from liability exposure by participating in this educational conference. A few copies of the Proceedings of the 1979 PLP Conference are still available free of charge to Reliability Society members. Send your name, address, and membership number to

PLP Conference
23 Rumson Road
Livingston, NJ 07039

CARL M. BIRD
Vice President, Meetings

Membership

Membership Statistics: An overall membership increase of 4.4% was achieved (+123 members). A breakdown of this increase shows a 16% (28) drop in student members, a 5.7% (+150) increase in higher grades, and a 8.3% (1) increase in affiliates. See related story, later in this issue.

Treasurer's Report

The preliminary figures for 1979's operations were only recently (Feb. 28, 1980) made available to Treasurer Irwin A.

Feigenbaum, so that a formal report could not be made ready by the April *Newsletter's* deadline. The formal report will be carried in the July issue of this *Newsletter*. (Good news, though, instead of the projected deficit, there's an expected surplus.)

Publications Committee

Summary of 1979 Accomplishments

All the stated goals of the 1979 Publications Committee were accomplished, and included:

- Advertising solicitation for membership in the *Transactions* and *Newsletter*.
- Convened the Publications Committee and reviewed and submitted rules and guidelines for AdCom publications, which were accepted by AdCom.
- Reviewed cross membership with ASQC's Electronics Division. It was decided that changes to the *Transactions* policy would not result in transfer membership of any significance.
- Recommended a new addition to AdCom membership and added him to the Publications Committee (A. Constantinides).

Statement of Goals for 1980

1. Continue solicitation of members through ads in the *Transactions* and *Newsletter*.
2. Convene Publications Committee to review completeness, adequacy, and additional needs of policies and procedures, or guidelines.
3. Increase aggressive solicitation of "practical" papers for *Transactions* by request to Program Committees of ARMS and IRPS for unused articles and other sources.
4. Obtain more personal data on individual members from Headquarters or others on promotions, change in membership, articles on AdCom members, special chapter activities, etc., for use in *Newsletter*. (Members are invited to submit news items directly to the Newsletter editor.)

ALAN O. PLAIT
Vice President, Publications

EDITORIAL

In the back of this issue, you'll find an edited version of a speech made by A. Henry Morgan, Chairman of the IEEE Public Relations Committee. His words coincide with my feelings. To present differing views, drop a line to:

Editor, Reliability Society Newsletter
Old Colony Estates
16 Sansome Street
Plymouth, MA 02360

On a less philosophical note: Most of you probably received the January, 1980 issue of this *Newsletter* in early March, 1980. This was due to logistical problems, which hopefully are resolved, at IEEE Headquarters in New York. We would like to know how long it takes for the *Newsletter*

to reach you. The April issue should be mailed by April 15, 1980. When it reaches you, kindly take the time to fill out a postcard with the date and your location, and mail it to me at the above address. (Other comments would be appreciated too.) We are particularly interested in areas on the West Coast, in Canada, Mexico, and overseas.

JOHN PETER

Deadlines for Future Issues

Issue	Deadline
July 1980	May 5, 1980
Oct. 1980	Aug. 11, 1980
Jan. 1981	Oct. 24, 1980

Chapter News

Chapter Awards

Mr. Malec reported that 9 out of 18 chapters replied to the Chapters Award Program. The winners are

1. Washington/Northern Virginia
2. New York/Long Island
3. Cleveland

The awards were presented at the Annual Awards Luncheon, January 22, 1980.

Boston Chapter

The Boston Chapter opened the year of professional activities with its first monthly chapter meeting, held Wednesday, September 19th, 1979, at the Hanscom Air Force Base Officers' Club. John F. Benson of Kaiser Engineers, Inc. was the guest speaker. Mr. Benson is Manager of Systems Assurance and Safety Engineering Services being provided for Boston's MBTA Southwest Corridor Project. His talk, "Reliability, Safety, and the T," described how classical methods of reliability and safety have been applied to the

design and development of a state of the art rapid transit project.

The Chapter's Fall lecture series, "Software Reliability Techniques," was highly successful. Dr. Michael Paige of the Analytical Sciences Corporation (TASC) conducted the lecture on four Thursday evenings during October and November, 1979. There were 44 paid attendees.

The December Chapter Meeting was held at the Spere House in Lowell, MA. The guest speaker was Mr. J. B. Campbell who is Manager of Customer Requirements Engineering at Boeing Aerospace Company, Houston, TX. Mr. Campbell spoke on the subject of "Sneak Analysis," first providing insight into the analysis and then describing Boeing's experience and capabilities in the area.

In January, Mr. D. J. Harrahy was the guest speaker at the Chapter meeting held at the Hanscom AFB Officer's Club. Mr. Harrahy, Manager of Reliability/Maintainability Engineering, Raytheon Equipment Division, Sudbury, MA, gave a talk entitled, "Reliability for the 1980's: Challenges and Opportunities." Mr. Harrahy updated his talk of a decade ago focusing on the influence of new technologies on Reliability Engineering.

Calls for Papers

IEEE Transactions on Reliability Special Issue on Maintainability

The Editorial Board is planning a special issue of invited papers on the subject of maintainability. The purpose of the issue is to provide a forum for the exchange of applications and theory among those involved with the maintainability (including design, testing, use, and management) of modern consumer, industrial, or military equipments. Papers on practical applications and case histories will be considered. All papers must be previously unpublished. Suggested areas

- are
- Maintainability Specifications and Requirements
 - Design Techniques
 - Prediction, Assessment, and Measurement Methods
 - Test and Verification Methods
 - Specification and Measurement of Built-In Test and Fault Isolation Capabilities
 - Maintenance Cost Analysis
 - Maintenance Strategies: Present and Future
 - Man-Machine Interface for Maintainability
 - Maintainability of Software
 - Remote Test and Diagnostics

- Self-Repair Concepts
- Test Languages

In order to assist the Editorial Board in planning this special issue, the following target dates have been established for prospective authors:

- June 16, 1980 Inquiry or letter of commitment
- July 21, 1980 An abstract of 300-500 words and a one page biographical sketch
- Dec. 1, 1980 Three copies of full-text draft (not to exceed 20 double spaced manuscript pages, including illustrations) to the Guest Editor
- Dec. 1980- Jan. 1981 Author-referee consultations

Letters of commitment which describe the essence of the paper, or requests for further information, should be addressed to the Guest Editor:

DR. RICHARD KOWALSKI
ARINC Research Corporation
2551 Riva Road
Annapolis, MD 21401
(301) 266-4841 (office)
(301) 655-1878 (home)

Twenty-Sixth Annual Conference on Magnetism and Magnetic Materials

November 11-14, 1980, Dallas, TX

The Twenty-Sixth Annual Conference on Magnetism and Magnetic Materials will be held at the Dallas Hilton, Dallas, TX, November 11-14, 1980. The Conference annually brings together scientists and engineers interested in recent developments in all branches of fundamental and applied magnetism. Emphasis is traditionally placed on experimental and theoretical research in magnetism, the properties and synthesis of new magnetic materials, and advances in magnetic technology. The program will consist of both invited and contributed papers. Selection of contributed papers is based on abstracts whose submission deadline is July 25, 1980. A program booklet listing titles and authors of all papers selected for presentation at the Conference will be distributed prior to the Conference. An abstract booklet will be available in advance of the Conference for a fee of \$5. Registrants will receive this booklet at the Conference. The Conference Proceedings will be published in the *Journal of Applied Physics*.

Individuals who are not on the conference mailing list may obtain conference information and details concerning the preparation of abstracts in the prescribed format by writing

DR. HUGH C. WOLFE
American Institute of Physics
335 East 45th St.
New York, NY 10017.

The deadline for receipt of abstracts by Dr. Wolfe is July 25, 1980.

This topical conference is sponsored jointly by the

American Institute of Physics and the Magnetics Society of the IEEE in cooperation with the American Physical Society, the Office of Naval Research, the Metallurgical Society of the AIME, and the American Society for Testing and Materials. The meeting will be open to all persons subject to a registration fee of about \$60 (marked reduction for students).

1980 BIENNIAL DISPLAY RESEARCH CONFERENCE

OCTOBER 21-23, 1980, CHERRY HILL, NJ

Every two years for the last decade, at the Biennial Display Research Conference, leading contributors to display research have met for an intensive exchange of ideas. Frequently, first announcements of important new developments have been made at this conference. The 1980 Biennial Display Research Conference will be held on October 21-23, 1980, at the Cherry Hill Inn, Cherry Hill, NJ (about 20 minutes from Philadelphia, PA). This international conference is presented by the IEEE Electron Devices Society, the Society for Information Display, and the Advisory Group on Electron Devices.

The program will cover all of the disciplines relevant to advances in electronic display materials, processes, circuits, and devices. Previously unpublished papers describing significant new results of interest to active workers in the field are solicited. Among the areas of interest are light emitting and nonemissive technologies for direct-view and projection displays, addressing technology, device reliability, display characterization, and new phenomena and concepts.

The conference will feature a series of invited papers by distinguished workers in fields of current display interest including:

Keynote Address

- "Display: The Human Interface to Electronics," Larry Mayhew, Group Vice President, Tektronix, Beaverton, OR

State of Art Reviews of Recent Developments

- "Electrophoretic Displays: The State of the Art," Anne Chiang, Xerox Corporation, Palo Alto, CA
- "Active Control Layers for Liquid Crystal Matrix Displays," Donald Castleberry, General Electric Company, Schenectady, NY
- "CRT's: A Guide for their Replacement," Norman Lehrer, Watkins-Johnson, Scotts Valley, CA

The deadline for abstracts is June 1, 1980. The paper should be suitable for a 20-minute presentation, and authors must submit both a 35-word abstract and a one-to-two-page draft summary. Since papers will be selected on the basis of the draft summary, this must include a concise statement of what new and significant results, differing from previous publications, have been obtained. Illustrations such as hand drawings, sketches, and photographs should be included where applicable. Authors of accepted papers are en-

couraged to provide demonstrations at the conference.

The 35-word abstract, suitable for publication in an Advance Program, should be typed on a separate sheet, and should include title of talk, author's name, affiliation, complete address, and telephone number. The draft summary must include the author's name, affiliation, complete address, and telephone number on the first page, with the author's name and abbreviated paper title on each subsequent page. Authors of accepted papers must submit a camera-ready complete paper by September 1, 1980, for publication in a Proceedings to be distributed at the Conference.

In addition, authors are encouraged to submit their papers for formal refereed publication in a special joint publication of the *IEEE Transactions on Electron Devices* and the *Proceedings of the Society for Information Display*.

A few post-deadline papers (for 10-minute presentation) reflecting important new projects will be considered if 100-word abstracts and one-to-two page summaries with any pertinent illustrations are received by September 18, 1980.

Mail all material to Thomas Henion, Palisades Institute, 201 Varick Street, New York, NY 10014. Telephone: (201) 620-3384.

Conferences

1980 Annual Spring Reliability Seminar Boston Reliability Chapter

Thursday, April 24, 1980

Hillcrest Nims
220 Bear Hill Road
Waltham, MA

Sponsored and conducted by the Reliability Group Chapter of the Boston Section IEEE, this Eighteenth Annual Spring Reliability Seminar will feature technical papers on topics pertaining to the assurance technologies, "The Growing Dependence on the Assurance Sciences."

The keynote speaker is Colonel Curt Haley, Director of Logistics, USAF Electronic Systems Division, Hanscom Air Force Base, Bedford, MA.

Papers to be presented include the following (8 papers scheduled):

- The Role of Product Assurance in Small Computer Systems Design, J. Dzekevich, Digital Equipment Corporation
- Captive Line Controls Produce Hi-Rel IC's, J. Gaffney and A. Hevesh, Raytheon Company
- Achieving High System Reliability and Availability of The Highly Complex Pave Paws, G. Cawood, and J. Bajakian, Raytheon Co; and Major K. Steibohr, ESD
- TL-Indexes As A Tool For Insuring Reliable Operation of Electrical Capacitors, Moisey Lerner, Sanford Process Corporation
- Demonstrating High Inherent Availability Requirements, D. Kazarian, GTE Sylvania

Advance Registration

Members \$65.00; *Non-members \$90.00

After April 17, 1980:

Members \$75.00; *Non-members \$100.00

*Any non-member joining the IEEE will receive a \$25.00 rebate upon submitted proof of membership.

Extra Banquet/Refreshment Tickets \$8.00

Extra Proceedings Purchased at Seminar \$8.00

Extra Proceedings from IEEE office \$10.00

Mail Registrations To:

Mr. WILFRED AUBERT, M/S NCA 1-1332
Sanders Associates, Inc.
95 Canal Street
Nashua, NH 03061

Seventh Annual Engineering Conference on Reliability for the Electric Power Industry

APRIL 29 and 30, 1980

Concourse Hotel
Madison, WI

Electrical Overstress/Electrostatic Discharge Symposium

September 9-11, 1980, Town and Country Hotel,
San Diego, CA

A symposium dealing with electrical overstress (EOS) and electrostatic discharge (ESD) effects on solid state microelectronics is being sponsored by IIT Research Institute. The symposium will be devoted to the understanding of fundamental phenomena and their application to design, and production problems associated with transient electrical overstress. Although the symposium is especially intended for the dissemination of results related to EOS/ESD problems in the design, fabrication, testing, handling, and assembly of microelectronic circuits, papers dealing with electrical overstress in other electronic components and equipment are welcome and are being considered for the program.

HENRY DOMINGOS
Clarkson College
ECE Department
Potsdam, NY 13676
(315) 268-6535 or 6511

SRE-80: Transportation Information and Energy presented by The Society of Reliability Engineers

May 15 and 16, 1980

SRE-80 Registration

Name _____
Company _____
Street _____
City _____
Province/State _____
Postal/Zip Code _____
Country _____
Session Areas of Interest _____

*Advance Registration \$90.00

(Postmarked no later than April 16, 1980)

**Registration at Door \$90.00

Please make hotel reservations independently

*Fee includes luncheons, banquet, and copy of SRE-80 proceedings. Make cheque or money order payable to SRE-80; attach to completed registration form and mail to:

SRE-80 Registration
Suite 1, 732 Wilson Avenue,
Downsview, Ontario
Canada, M3K 1E2

Sponsors of more than one attendee are requested to list on a letterhead names, addresses, and affiliations of all extra attendees.

**Fee does not include meals.

Advance Program

THURSDAY, 15 MAY, 1980

07:30- REGISTRATION (FOYER 2nd FLOOR)
09:00
09:00 Keynote Address Mr. L.G. McConnell, Vice-President, Production and Transmission, Ontario Hydro.
09:45 COFFEE
10:00 Pipeline Reliability - Role in Logistics. Igor Bazovsky Sr.
11:00 Consumer Demand for, and Reaction to Reliability. Louise A. Heslop, University of Guelph, Ontario, Canada
12:15 LUNCH
13:45 Session 1 - Development of the DHC-7 Aircraft Maintenance Program. G.L. Oates, DeHavilland Aircraft of Canada
Session 2 - A Comparison Study of the Two Majority-Vote Instrumentation Systems: Two-of-Three and Three-of-Four Systems. G.W.E. Nieuwhof, Atomic Energy of Canada Ltd., Mississauga, Ontario, Canada
Session 3 - Testability of Modern Digital Systems. Jim Arsenault and Philip Thompson, Thompson Foss Inc., Ottawa, Ontario, Canada
14:45 Session 1 - Development of a Maintenance Plan for the Intermediate Capacity Transit System. Brian Keith, Canadair Ltd., Kingston, Ontario, Canada
Session 2 - Reliability in the Dormant Condition. A.P. Harris, A.P. Harris and Associates, Ottawa, Ontario, Canada

Session 3 - Reliability of Mechanical Parts Subject to Alternating Stress. Major B.G. Lamarre, Royal Military College of Canada, Kingston, Ontario, Canada and Dr. D. Kececioğlu, University of Arizona, Tucson, Arizona, U.S.A.

15:45 COFFEE
16:00 Session 1 - Establishing and Confirming R & M for DND Vehicles. Major F. Parsons and A.P. Harris, A.P. Harris and Associates, Ottawa, Ontario, Canada
Session 2 - Optimum Test Design Strategies. L.R. Lamberson and K.C. Kapur, Associate Professors, Wayne State University, Detroit, Michigan, U.S.A.
Session 3 - GIDEP (Government Industry Data Exchange Program) Solving Reliability Quality Problems. Edwin T. Richards, GIDEP Operations Center, Corona, California, U.S.A.
19:00 BANQUET, DINNER SPEAKER - MAX WARD, WARDAIR CANADA (1975) LTD.

FRIDAY, 16 MAY, 1980

09:00 Effect of System Peak Load Forecast Uncertainty on Annualized Reliability Indices of Composite Generation and Transmission Systems. R. Billinton and T.K.P. Medicherla, University of Saskatchewan, Canada
10:00 COFFEE
10:15 Session 1 - Reliability Pays Off (F5 Lead Computing Optical Sight System). W.G. Kindig and R.F. Dannecker, General Electric Company, Binghamton, New York, U.S.A.
Session 2 - Hardware and Software Reliability with Confidence Limits for Computer Controller Systems. R.D. Haynes and W.E. Thompson, ARINC Research Corp., Annapolis, Maryland, U.S.A.
11:15 Session 1 - A System Safety Approach to the Design of an Intermediate Capacity Transit System. A.F. Rumsey, Canadair Services Ltd., Kingston, Ontario, Canada
Session 2 - Strategies of File Redundancy in Information Systems. I.B. Turksen, University of Toronto, Ontario, Canada and V.V. Kul'ba, Academy of Science, Moscow, USSR
12:15 LUNCH
13:45 Session 1 - Panel Discussion - The Human Element in Reliable Systems. Panel Members include Pat Cross, University of Guelph, Ontario, Canada and Philip Thompson, Thompson Foss Inc., Ottawa, Ontario, Canada
Session 2 - A New Approach Towards Evaluation of Reliability of Electronic Equipment During Maintenance and Design. Moisey Lerner, Sanford Process Corp., Natick, Mass.
15:00 COFFEE
15:15 Session 1 - Mechanical Component Reliability Subject to Environmental Stress. B.S. Dhillon, University of Ottawa, Ontario, Canada
Session 2 - Probability and Sensitivity Analysis of Gas Turbine Engines. Henry H. Huang, Airesearch Manufacturing Company of Arizona, U.S.A.
16:15 THANK YOU FOR ATTENDING SRE-80

1980 Power Electronics Specialists Conference June 17-19, 1980, Atlanta, GA

The continuing motivation behind the eleventh annual IEEE Power Electronics Specialists Conference is to bring to a central forum current and specialized component and systems technology from the three major disciplines (electronics, power, and control) which comprise the rapidly evolving field of power electronics. The conference, to be

held in Atlanta, GA, June 17-19, 1980, is comprised of six technical sessions (each with seven papers), plus an evening "Rap Session."

Technical sessions will address the current state of the art as well as some of the newly evolving aspects of this challenging engineering discipline. Topics range from circuit synthesis, modeling, analysis, and optimization, to design and application of high power semiconductor devices in new and unique high frequency pulse width modulated power converters and inverters. An interesting sidelight of this year's conference is the degree of technical transfusion evidenced by the adaptation of techniques reported in earlier conferences by new authors.

Announcements

Special Issue on Public Speaking to be Published by Professional Communication Society

The March 1980 issue of the *IEEE Transactions on Professional Communication* will be devoted exclusively to the subject of public speaking for engineers and scientists. It will include several general articles on the preparation and delivery of technical speeches. Some of these articles cover the broad concept of oral communication, while others provide capsule guidelines for one or more specific aspects. In addition, several articles cover special topics such as off-the-cuff talks and use of microphones. An annotated bibliography listing 178 organizations and publications concerned with speech is also included.

Copies of this special issue will be available from Dr. R. J. Joenk, IBM Corporation, P.O. Box 1900, Boulder, CO 80302. The price will be \$5.00 each in any quantity, and checks should be made payable to the IEEE Professional Communication Society.

Nine New Directors Announced by IEEE

The following five new IEEE Regional Directors have been elected to office to serve a two-year term, starting on January 1, 1980:

Director of Region 1—Northeastern Region: Hans C. Cherney, Data Systems Division, IBM Corporation, Poughkeepsie, NY.

Director of Region 3—Southeastern Region: David C. McLaren, Engineering Administrator, Business Customer Equipment, General Telephone Company of Florida, Tampa, FL.

Director of Region 5—Southwestern Region: Arwin A. Dougal, Professor of Electrical Engineering, The University of Texas at Austin.

Director of Region 7—Canada: Jean Jacques Archambault, Assistant to the General Manager, Engineering, Hydro-Quebec, Montreal, Quebec, Canada.

Director of Region 9—Latin America: Oscar C. Fernandez, Executive Engineer, SICOM, Buenos Aires, Argentina.

Also elected as Vice Chairman of Region 3 was K. Reed Thompson, Manager, Metal Industry Engineering, General

This year's "Rap Session" will focus on three topics of current interest: Power Conversion at Switching Frequencies Above 100 KHz; High Power Transistors and Their Applications; and DC to DC Converter Topologies.

As has been the case in the past, a good deal of the work presently ongoing overseas is included in this year's conference.

For more information contact:

DR. WILLIAM E. SAYLE
School of Electrical Engineering
Georgia Institute of Technology
Atlanta, GA 30332
Telephone: (404) 894-2946

Electric Company, Salem, VA.

The following four Divisional Directors, representing technical societies, were elected to serve a two-year term from 1980 to 1982:

Director of Division I: Jose B. Cruz, Jr., Professor of Electrical Engineering, University of Illinois, Urbana, IL. Division I is composed of technical societies serving the following disciplines: Acoustics, Speech, and Signal Processing; Circuits and Systems; Control Systems; Information Theory; and Solid State Circuits.

Director of Division III: Edward J. Doyle, Assistant Vice President, Network Planning, New Jersey Bell Telephone Company, Newark, NJ. Division III is composed of technical societies serving the following disciplines: Aerospace and Electronic Systems; Broadcast, Cable and Consumer Electronics; Communications; Electromagnetic Compatibility; Geoscience Electronics; and Oceanic Engineering.

Director of Division V: Dick B. Simmons, Director, Data Processing Center, Texas A & M University, College Station, TX. Division V consists solely of the Computer Society.

Director of Division VII: James B. Owens, President, Gould-Brown Boveri, Rolling Meadows, IL. Division VII consists solely of the Power Engineering Society.

Those elected by the annual Assembly for one-year terms are:

Vice President—Educational Activities: Dr. Benjamin J. Leon, Professor of Electrical Engineering, Purdue University, West Lafayette, IN. Dr. Leon also served in this capacity in 1979.

Vice President—Professional Activities: Dr. Richard J. Gowen, Dean of Engineering, South Dakota School of Mines, Rapid City, SD.

Vice President—Publication Activities: Theodore H. Bonn, Director of the Digital Techniques Laboratory, Sperry Rand Research Center, Sudbury, MA.

Vice President—Regional Activities: Dr. Larry K. Wilson, Chairman of the Division of Electrical and Computing Sciences and Professor of Electrical Engineering, Vanderbilt University, Nashville, TN.

Vice President—Technical Activities: Dr. Robert E. Larson, Executive Vice President, Systems Control, Inc., Palo Alto, CA.

Treasurer: Donald S. Brereton, Manager of Market Development, Industrial Power Systems Engineering Operation, General Electric Company, Schenectady, NY. Mr. Brereton served as Secretary-Treasurer in 1979.

Secretary: Dr. Bruno O. Weinschel, President, Weinschel Engineering Company, Gaithersburg, MD. Dr. Weinschel served as Vice President—Professional Activities in 1979.

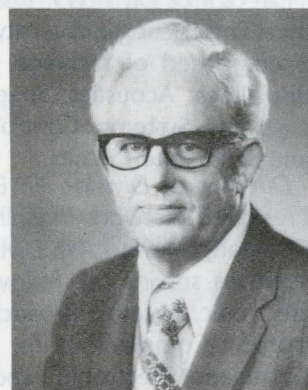
Director—Standards Activities: Irwin N. Howell, Jr., Assistant Vice President, Investments and Economics, South Central Bell Telephone, Birmingham, AL. See the following biography.

Executive Director: Eric Herz, IEEE General Manager, who continues in this office from 1979.

The annual Assembly consists of those twenty members of the 1979 Board of Directors who were elected to office by voting members of the IEEE. These include the President, the Junior and Senior Past Presidents, the Executive Vice President, nine Regional Directors, and seven Divisional Directors.

Howell to Head IEEE Standards Board in 1980

New York, NY: Irwin N. Howell, Jr. has been elected Chairman of the IEEE Standards Board for 1980. The IEEE Standards Board is responsible for the direction of standards development and approval of IEEE Standards and for the representation of IEEE in the development of standards both within the United States and internationally. It is also responsible for maintaining the secretariats of a number of



American National Standards Committees in the field of electrotechnology. The Chairman of the Standards Board serves as a Director of the Institute of Electrical and Electronics Engineers.

Mr. Howell, who has served as Vice-Chairman of the Board since 1976, has been a member of the Board since 1974, and served as Chairman of its Finance Committee in 1975. As Chairman of the Standards Board Finance Committee, he was also a member of the Technical Activities Board's Finance Committee.

Active in IEEE affairs since his student days, he served as Chairman of the Student Branch at The Citadel from 1949–1951. He served as President of the Industry Applications Society of IEEE in 1972, and as Chairman of the Regional Activities Board's Policy and Planning Committee in 1973.

Mr. Howell is Assistant Vice-President, Rates and Economics, of South Central Bell Telephone Company. A registered engineer in Tennessee and Mississippi, he is a Fellow of the IEEE and received the Outstanding Achievement Award of the Industry Applications Society in 1977. A graduate of The Citadel, Charleston, SC, Irwin N. Howell, Jr. received the Bachelor of Science degree in Electrical Engineering in 1951.

Reliability and Maintainability of Electronic Systems

Professional Development Course April 16–18, 1980, Washington, DC

JAMES E. ARSENAULT and JOHN A. ROBERTS

Never before has the system engineering process been faced with so many alternative technologies and techniques for use in achieving specified performance. As if this were not problem enough, systems must be designed to perform adequately for longer periods (reliability), and when they do fail, they must be designed for rapid repair (maintainability). This highly structured, results-oriented course is intended to meet the needs of the technical community to be fully aware of the state of the art in reliability and maintainability engineering in the life cycle context. The economic impact of reliability and maintainability will be considered, and detailed engineering techniques that must be applied if concrete results are to be achieved will be presented. Throughout, a practical approach to the achievement of system reliability and maintainability within an economic framework, to eliminate the gap between theory and practice, will be emphasized.

Outline of Selected Topics

- Life Cycle Cost
- Design Automation
- Mathematical Modeling
- Part Selection and Specification
- Thermal Design
- Fault Tree Analysis
- Sneak Circuit Analysis
- Failure Reporting/Analysis/Corrective Action
- Limited Life Items/Spares
- Manuals

This course is intended for maintainability and reliability engineers, system design engineers, and engineering managers, and is based on the book *Reliability and Maintainability of Electronic Systems*, edited by J. E. Arsenault and J. A. Roberts, a copy of which will be distributed to all participants. Course Fee—\$575.

Record Annual Growth Rate Boosts IEEE Membership Past 200,000

New York: The highest one percent gain in membership in its history was experienced in 1979 by the Institute of Electrical and Electronics Engineers, as it passed the 200,000 member mark for the first time. A 5.4 percent membership gain from 1978, including all grades from all geographic regions, was reported for the year ending December 31, 1979. With 202,000 members, the IEEE is the world's largest engineering society.

While a record 10.9 percent growth rate outside the United States was twice the rate of the U.S., the actual U.S. membership gain was nearly three times that of foreign memberships, 7500 vs. 2800. Both student and higher grade membership grew at 5.4 percent in 1979. Of total membership, 31,000 are students. Retention, a measure of member

renewals, was also at a recent record level of 92 percent for 1979.

Among the 30 technical societies which comprise the Institute, the largest membership gain was in the Computer Society with a 13.5 percent increase to 44,000. A total of 213,300 society memberships were recorded by 56 percent of the total Institute membership, or 1.9 associations per society member.

Commenting on the continued membership growth trend since 1976, following two years of recession-related decline, 1980 Vice President for Regional Activities, Larry K. Wilson, noted that sustained economic growth in the electronics industry and recent increases in university enrollments were major contributors to this increase, but that the Institute had also undertaken an active new membership development program which "succeeded very dramatically in 1979 and which provided us with momentum as we enter 1980."

"We continue to forecast a membership expansion opportunity through the 1980's, and we'll address that opportunity with aggressive programs," noted Professor Wilson, who is in the electrical engineering department of Vanderbilt

Address Presented by A. Henry Morgan, Chairman for Public Relations, to the IEEE RAB/TAB Meeting December 6, 1979, in New Orleans, LA

(The) subject is engineering—about what is an engineer and, perhaps even more importantly, about what the public thinks of engineering and what an engineer is.

It would certainly be interesting to all of us to know how the public's view matches or differs from ours.

Of course, one cannot speculate on that view without considering what the public's view is of technology in general.

I would suspect the public has a more specific image in mind—be that image correct or incorrect—of what technology is and what is its impact on society, than it does of the person in his or her practice of engineering as a profession—in terms of his or her social responsibility, intellectual and emotional involvement, or philosophical attitudes.

Regardless of what you may think of yourselves, I suspect you would be shocked at what many of us have found to be the public's view.

They think we are irresponsible, incompetent, polluters, immoral destroyers, insensitive, and stupid to the ways of society.

I see some of you are shocked—find what I say unpleasant—but let us look at the same record the public has looked at.

We have designed DC-10's that crash, automobiles that need to be recalled, military vehicles and bombs capable of destroying civilization in cahoots with some vaguely defined military industrial complex, nuclear reactors like Three Mile Island, and industries that proliferate waste and airborne pollutants. We spend our time going to the moon and avoid the seemingly simple (to them) task of making solar energy economical.

University. "The expanding worldwide ranks of engineering professionals have an underlying need for continued access to state of the art technical information available through the IEEE. We also sense that the expanding awareness of the professional activities of the IEEE and the importance of these programs to the overall success of the individual member are having an impact on membership growth."

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We are accused of participating in a conspiracy with big business, and aiding and abetting their planned obsolescence.

We are told our technology shares in the responsibility of "gooping up" our beaches because of our taking shortcuts in our design of offshore drilling systems, and that as an alternative for spoiled beaches we offer them coal, strip mining, and soot-filled, grimy air.

Our computers invade the public's privacy and are designed to entrap them.

To the public, we are servants of some soulless clique that abandons still serviceable historic buildings which are warmed by nostalgia and sentiment and in their place substitutes slabs of concrete uniform in their tendency to chill the soul, while at the same time creating slums and overcrowded cities.

You and I, they say, are interested in technology for technology's sake—as a profession we are self-serving and in arrogance talk only to ourselves in jargon only we insiders understand—and in this arrogance, we are taking society out of control.

You may think I'm exaggerating to make a point, but you must agree that this is the way we relate to a large segment of the public, and that the public does have a negative bias toward technology. We, as proponents of technology, are tainted by that same bias.

You may have noticed that I keep referring to technology almost as if purposely avoiding the word engineer. That is because to much of the public, engineers drive trains and unplug drains.

Art Rossof tells the story about a little boy who was introduced to his new uncle and told that his uncle was a civil

engineer.

The child hesitated for a moment, looked up at his uncle—puzzled—and asked, "How do you drive a civil?"

Do we rate this image, this lack of awareness by the public? Are we, as is said, only interested in things and not people?

It is now time to speak out articulately and make the public aware that as engineers we are proponents of not a necessary evil but a vital force in our society, in our economy, and without exaggeration, in our very survival as a nation, and even as a human race.

The doctor can help keep some people alive, the policeman some from being killed, the lawyer some from suffering injustice, but without energy, they will all be out of business real soon.

And only engineers can make that energy safe, non-polluting, inexpensive and readily available.

I say only, and I mean only. Scientists discover but engineers make science useful and public-serving.

And while we deal with the larger problems of survival, we assist doctors with our contributions to micro-surgery, create equipment and machines to increase efficient use of existing fuels, design systems to increase the yield of the soil to help feed surging population growth. Our communication equipment and hot lines promote better understanding among people or, in the least, help to reduce misunderstanding.

The same instruments of war we designed to keep us free help balance terror in the world until we can establish universal peace and, in the least, using surveillance vehicles we've designed, facilitate making sure that no one is taking the first step toward war.

I am certain all of you can add to this list of the engineers' achievements and, properly related to the public, can alter the public's bias.

Who are our spokesmen? What have we as engineers told the public?

In a most important area of energy—nuclear energy—the public has heard little or anything from us, and what we've said has been said timidly.

It is almost as if we've abandoned our voice on nuclear energy to a bunch of airport-based activists who insist that nuclear plants are built better than Jane Fonda and safer than riding in Ted Kennedy's car. Such nonsense is not going to solve our energy needs or encourage the mainstream of public opinion to understand what the risks are and what alternative actions are available and need be taken.

If you think my references are too grand for the individual engineer to relate to, or say what has this all to do with me, then I say that what the public thinks about us affects our status, peer acceptance, job satisfaction, employer's view of our value, career opportunities, and finally, what we are paid.

We have begun to make an effort to build a public awareness—to become more concerned about our relations with the public through the IEEE United States Activity Board (USAB) and a new Public Relations Program.

As the largest organization of engineers in the world, we at IEEE must take the lead in establishing the public's awareness

of our contributions as engineers, of the engineer's value to society, to our public consciousness, and our continuing readiness to work in the public's behalf.



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An Invitation To Membership

There is no better time than now to join the IEEE Reliability Society. Membership gives you ready access to meetings and conferences in your areas of interest, and to the prime movers in engineering, science, and business.

These Transactions and the Newsletter - both included in your Reliability Society Fee - keep you abreast of the latest developments in your field. You also receive automatically a free copy each of the Proceedings of the:

- Annual Reliability and Maintainability Symposium,
- International Reliability Physics Symposium.

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Active local Reliability Society chapters in many locations throughout the United States offer opportunities for your personal professional participation and growth. Association with other Reliability Society members helps you to exchange information and experiences on current technical problems and to learn how others are solving them.

Your membership entitles you to reduced registration fees for activities sponsored or cosponsored by the IEEE or Reliability Society. This could save you more than the cost of annual membership, if you are very active.

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