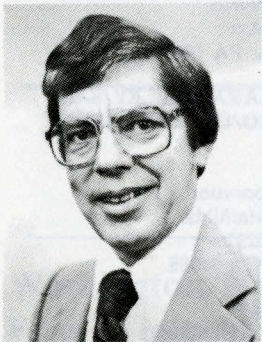

Reliability Society Newsletter

Editor: Susan Eames

Vol. 29, No. 1, January 1983 (USPS 460-200)

President's Message



Carl M. Bird, President

dedicated officers and committee chairmen, the Society has been successful and the job of President, rewarding. Our Society is sound financially, has grown in membership, has superior publications, excels in its technical pursuits, and has expanded its conference activity. For all of this, I thank you, and I shall long remember my tenure as your President.

Editor's Corner

One of my final duties as President of the Society will be to present, in January, the coveted Reliability Society Annual Award. It will indeed be a pleasure to present this award to a longtime friend and colleague, Dr. John E. Condon. Dr. Condon has been selected to receive this recognition as a result of his long-term management contributions to the field of Reliability. In particular, he was instrumental in establishing a strong program for reliability management of space programs through a series of NASA publications. These publications cover the details of implementation of all aspects of a sound reliability program and have been used extensively, even outside of the space program arena. Dr. Condon has also made many contributions to our profession through publication of papers and participation on technical committees. He served for many years on the management committee for the Annual Reliability and Maintainability Symposium and was General Chairman in 1971. Dr. Condon currently continues his service to the profession as Vice President of Corporate Quality Assurance for Abbott Laboratories. My deepest congratulations to John Condon on being selected for our annual award.

Since this will be my last message to you as President of the Reliability Society, I would like to thank the membership for the strong support I have received during the past year. With the able leadership of a group of strong and

I WOULD like to dedicate this issue to the Chapter Chairmen of our Society. On September 16 and 17, 1982 the Chapter Chairmen met with the AdCom in a two-day session to discuss major and continuing issues that need attention. In particular, issues that greatly affect chapter operations, such as chapter programming, speakers, and society publications, were discussed.

Each Chapter Chairman (or representative) had the opportunity to speak on his chapter's operations and answer such questions as: How effective is your program for adding new members? Are your finances sufficient? Is it feasible to have successful chapters with "one company" support? Which of the society publications are useful and should continue to get emphasis? What can the AdCom do for the chapters?

As both a Chapter Chairman and your editor, I feel this meeting and the exchange of ideas that transpired was well worth the trip to Washington, D.C. Since the AdCom is planning on making this an annual event, I highly recommend that each chapter be fully represented at the next such meeting.

If anyone has any contributions or comments for the *Newsletter*, please send them to Susan Eames, 2 Linda Street, Westborough, MA 01581. See you at the RAM Symposium in Florida!!!!

Reliability Society Officers

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Reliability Society Chapter Chairmen

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		NORTH JERSEY Serge W. Bogaenko 32 Melissa Drive Totowa, NJ 07512	

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Reliability Society Newsletter is published quarterly by the Reliability Society of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47th Street, New York, NY 10017. Sent automatically and without additional cost to each member of the Reliability Society. Printed in U.S.A. Second-class postage paid at New York, NY, and at additional mailing offices.

Maintainability Matters

A Call For Feedback

Control systems rely on feedback to perform their essential functions. There are two kinds of feedback—positive and negative. Positive feedback produces direct and forceful change; too much positive feedback leads to system oscillation. The system forgets to listen to inputs and makes its own decisions without regard to results.

Negative feedback moderates the system's actions and produces smooth changes which may not be noticeable in the short run; too much negative feedback deadens a system's sensitivity. The system stops issuing instructions, stops making changes.

Then there is the case of no feedback. When this happens the control system cannot do its job. Try to imagine a heat pump without a thermostat or an autopilot without position and rate sensors.

If you think of this column as the control system and the *Newsletter's* readers as the sensors, then the rules of feedback apply. Too much positive feedback may focus all our attention in a few select areas; too much negative feedback may produce inactivity. But the worst case of all is no feedback. Then, Maintainability Matters may simply wander from topic to topic without meeting the needs of our maintainability readers.

So . . . send us your comments, complaints, and suggestions. All the *Newsletter* readers are sensors for this column. Your feedback is important. Send it to me at ARINC Research Corporation, 2551 Riva Road, Annapolis, MD 21401.

Richard Kowalski

Chapter Reports

Washington/Northern Virginia From de facto to de jure

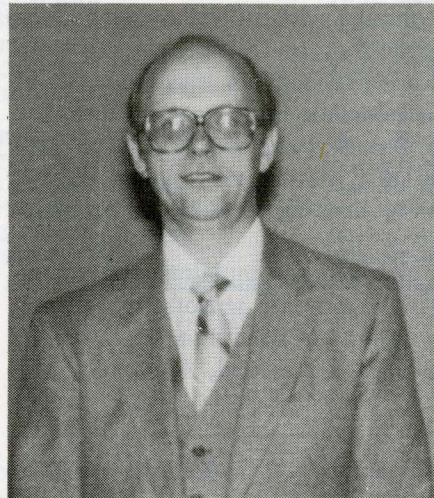
It is now officially the Washington/Northern Virginia Chapter. In 1977, the Northern Virginia Section came into being from what had been a part of the Washington Section. This new section encompassed the six Virginia counties of Arlington, Clarke, Fairfax, Frederick, Loudoun, and Prince William and the independent cities of Alexandria, Fairfax, Falls Church, and Winchester. The Washington Chapter of the Reliability Society continued to serve the members of the new section in the early years as well as the members of the Washington Section, and IEEE Headquarters related to the chapter as a joint affair. This informal relationship has come to an end. Recent action initiated by the chairmen of both the Washington Section and the Northern Virginia Section and approved by the Society President and IEEE Headquarters makes the joint status official.

Vernon E. Gardner

Central New England Council

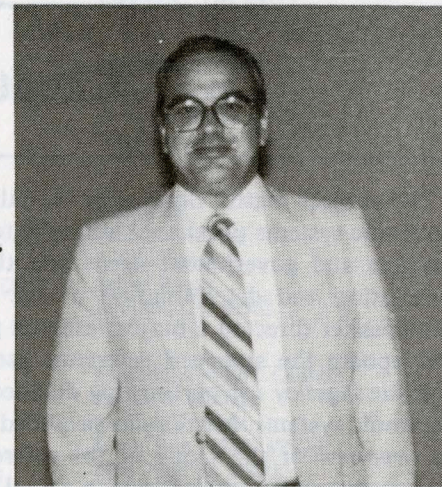
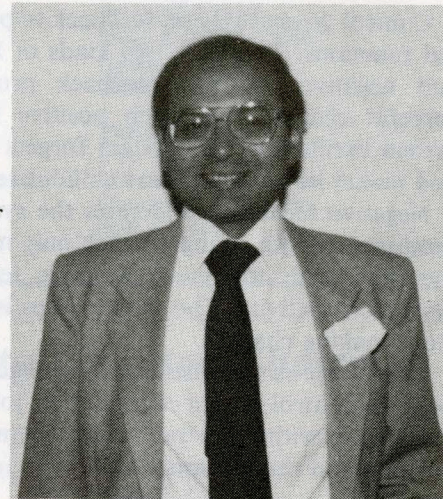
Activities for the fiscal year began with a September technical meeting at Hanscom Air Force Base, Bedford, MA. The guest speaker was Ted Taylor of Corporate-Tech Planning Inc. speaking on "Practical Guidelines for Estimating the Cost of Electronic Systems."

Meet Your Chapter Chairmen



Mr. Henry A. Hart,
Washington/Northern
Virginia Chapter.

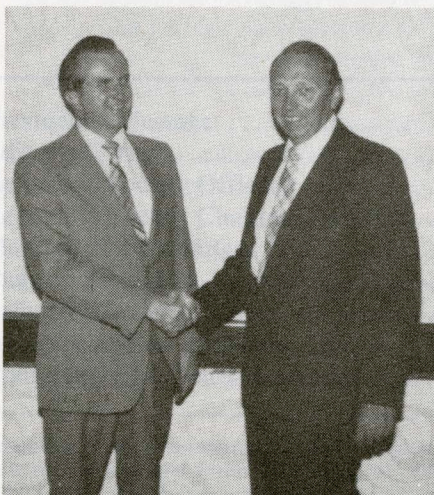
Ajit Goel, Chairman of
Santa Clara Valley/San
Francisco/Oakland-
East Bay Chapter.



Mr. Dino O. Fieni,
Baltimore Chapter.

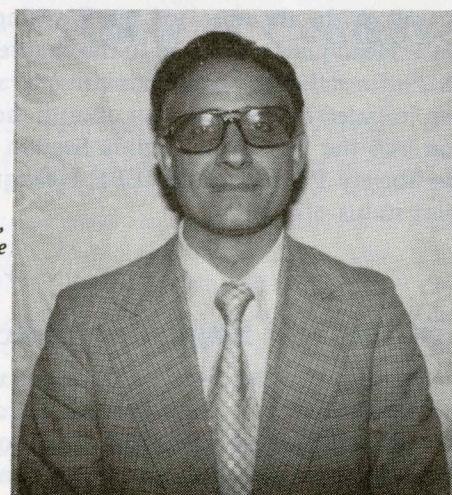


Joseph Fuchs, Chair-
man of the Montreal
Chapter.



John Adams, Denver
Chapter (Left) Shaking
Hands with Bernhard
Bang, Chairman of
Chapter Activities. Pic-
ture was taken at the Se-
cond Annual Chapter
Chairmen/AdCom
Meeting in Washington,
D.C.

Fulvio E. Oliveto,
Chairman of the
Philadelphia Chapter.



The names and addresses of new members who joined from July 1, 1982, through September 30, 1982, are listed below. For U.S.A. members, they are listed by alphabetical order of their state. For members outside the U.S.A., they are listed by alphabetical order of their country's English name.

ALABAMA

Dan A. Freeman
1802 Roseberry Drive
Scottsboro, AL 35768

Peter A. Ng
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Huntsville, AL 35802

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Foxboro, MA 02035

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Westborough, MA 01581

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Sudbury, MA 01776

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Lynn, MA 01905

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Kentwood, MI 49508

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Bruce Hoadley
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Sal Savino
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Weehawken, NJ 07087

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Warren H. Debany, Jr.
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RD1
Rome, NY 13440

Anthony M. Laurendi
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Levittown, NY 11756

1983 Conference and Course Calendar

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Kurt Rauschenbach Apt. 335 Center Ithaca Ithaca Commons Ithaca, NY 14850	Lawrence C. Lemke 307 Leisurewoods Dr. Buda, TX 78610	Donald E. Saramaga Manitoba Hydro GPD P. O. Box 815 Winnipeg, Man., Canada B3C 2P4	ISRAEL Naftali Shani 109/37 A.H. Silver St. Haifa, Israel 32696
NORTH CAROLINA Gary B. Beasley P. O. Box 815 Dunn, NC 28334	Pote Pruettiangkura 24035 Tayloe House Lane Katy, TX 77450	John P. Thomas 859 Lillocet Rd. North Vancouver, B. C. Canada V7J 2H6	ITALY Rossi Francesco Ansaldo Trasporti Spa Via Bergognone 34 20144 Milano, Italy
William R. Godwin R. J. Reynolds Industries, Inc. P. O. Box 2959 WHQ 2B Winston Salem, NC 27102	Ralph J. Vrana Motorola Inc. 3501 Ed Bluestein Blvd. Austin, TX 78721	Thieu Van-Huynh 212 Bronson Ave. Apt. 404 Ottawa, Ont., Canada K1R 6H8	Paolo Iori Via Raffaello 33 42100 Mancasale (Reggio Emilia) Italy
Ho-Ke Yin P. O. Box 5571 Raleigh, NC 27650	Herbert Welch 412 Fairview Richardson, TX 75080	P. R. Webb 15 Elke Dr. Nepean, Ont., Canada K2J 2E9	Giuseppe Primavesi Via Novara 31 20147 Milan, Italy
OHIO Bruce L. Bream 10026 Windjammer Aurora, OH 44202	VIRGINIA David M. Prokop 12818 Melville Lane Fairfax, VA 22033	JAPAN Tsuneo Mano 21-201 Denden-Higashi 1-890 Hanakoganeiminami-Cho Kodaira-Shi Tokyo, Japan 187	Yuji Nakagawa 355 Chokushi-Sho Takamatsu Kagawa 761, Japan
J. R. Brill 5018 Broughton Pl. Dayton, OH 45431	Richard W. Samms 11 Wakefield Rd. Newport News, VA 23606	Hiroki Saito 207 Daiichi-Park-Haitsu 3-4-13 Amakjbo Sakjramura Niiharigun Ibaraki 305, Japan	
James F. Egan 8181 Forest Ln. Mentor, OH 44060	WASHINGTON Merlyn B. Buchanan Puget Sound Power Light Co. Puget Power Bldg. Bellevue, WA 98009	KOREA Ki Y. Choi Cent Res Lab of Gold Star Co. Ltc. 327-23 Gariong-Dong Guro-Ku Seoul 150-06, Korea	
Fun-Kai Liu 651 Riverview Dr. Apt. 11 Columbus, OH 43202	George E. Roberts II Chief Joe Apt. #A6 Pullman, VA 99136	NIGERIA Stakpere O. O. Solomon Federal Polytechnic Elec/Electronics Dept. PMB 1037 Idah Benue Stae, Nigeria	
Mohammad Mirhakkak Mathematical Sci. Dept. Kent State Univ. Kent, OH 44242	WEST VIRGINIA Louis L. Kriso, Jr. 850 Alta Rd. Charleston, WV 25314	SAUDIA ARABIA A. S. Al-Marai Muree c/o Aramco P.O. Box 5443 Dhahran, Saudi Arabia	
Takashi Shima Systems Eng. Dept. Crawford Hall Case Western Reserve Univ. Cleveland, OH 44106	ARGENTINA Juan C. Arancibia Arce 243-P 11 DTO E Buenos Aires, Argentina 1426	SOUTH AFRICA David J. Neale P. O. Box 8245 Johannesburg 2000, South Africa	
OKLAHOMA Michael L. Green c/o Engineering Dept. Box 1431 Duncan, OK 73536	BELGIUM Ch. E. Binard Rue Ecis Lionnet No 11 B-1338 Lasne, Belgium	SPAIN Jose F. Del Puerto Jaime El Conquistador 46 Pt Madrid-5, Spain	
PENNSYLVANIA Alexander Freund Burroughs Corp. P. O. Box 517 Paoli, PA 19301	BRAZIL Marco A. Grisi Rua Dr. Seng 80 Ap. 41 01331 Sao Paulo Sp. Brazil	WEST GERMANY Christian P. Klauser Mendelssohnstr 2 D-6011 Baldham, West Germany	
Joseph B. Heimann 251 Jan Dr. Harleysville, PA 19438	Paulo J. Moassab R. Prof Manuel Ferreira 115 Apt. 1102 22451 Gavea Rio De Janeiro RJ, Brazil		
Frantz M. Herko Kennametal Inc. P. O. Box 231 Latrobe, PA 15650	Marcus T. Schilling Caixa Postal 33024 Leblon 22550 Rio De Janeiro RJ, Brazil		
Robert C. Sweeney AMP, Inc. 2100 Paxton St. MS 18-01 Harrisburg, PA 17105	CANADA J. Crake 18 Pante Cres Ajax Ont, Canada L1S 3T5	HONG KONG Kin-Hung S. Wong N614 Telford Gardens Kowloon Bay Kowloon, Hong Kong	
TEXAS John C. Donner II 3000 Green Ridge Apt. 307 Houston, TX 77057	L. Jamniczky Montreal Engineering Co., Ltd. 900 One Palliser Sq. 125 9 Ave. SE Calgary, Alta., Canada T2G 0P6	Y. K. Wong Flat 3 6/F Kai Fu Bldg 99G Dock St. Whampoa Estate Kowloon, Hong Kong	

DATE	CONFERENCE OR COURSE	LOCATION	MORE INFORMATION
Jan. 25-27	Reliability and Maintainability Symposium - "Increasing Productivity - The Continuing Challenge"	Sheraton Twin Towers Orlando, FL	T. L. Fagan General Electric Co. P. O. Box 8555 Philadelphia, PA 19101
Feb. 23-25	1983 IEEE Int'l Solid State Circuits Conference	New York City, NY	Lewis Winner 301 Almeria Coral Gables, FL 33134 (305) 446-8193 or 8194
Feb. 28-Mar. 2	OFC '83 (Optical Fiber Communication)	Hyatt Regency New Orleans, LA	John Rhea Optical Society of America 1816 Jefferson Place Washington, DC 20036 (202) 223-8130
Mar. 14-16	Second Annual Conference on Computers and Communications	Phoenix, AZ	Gerald Fetterer GTE Automatic Electric Lab. 2500 W. Utopia Phoenix, AZ 85027
Apr. 5-7	International Reliability Physics Symposium	Hyatt Regency Phoenix, AZ	David L. Burgess Hewlett Packard 1501 Page Mill Rd. Bldg. 28A Palo Alto, CA 94304 (415) 857-3886
May 2-4	1983 IEEE Int'l Symposium on Circuits and Systems	Newport Beach, CA	Dr. Sanjit K. Mitra Dept. of Elec. & Comp. Engrg. Univ. of California Santa Barbara, CA 93106 (805) 961-3957
May 16-18	33rd Electronic Component Conf.	Orlando, FL	Don L. Willyard The Bendix Corp. Dept. 867, MF39 P. O. Box 1159 Kansas City, MO 64141
May 17-19	NAECON '83 (National Aerospace and Electronics Conference)	Dayton, OH	Dan Snyder 2046 Northern Drive Dayton, OH (513) 255-4709
May 17-20	CLEO '83	Baltimore, MD	Optical Society of Amer. 1816 Jefferson Place, N.W. Washington, DC 20036 (202) 233-8130
May 25-27	10th Annual Engineering Conference on Reliability, Availability and Maintainability	Montreal, Canada	R.A.M. Conference P. O. Box 577 Succ. Desjardin Montreal, P. Q. Canada, H5B 1B7 (514) 289-4453 (Jos. Fuchs)
Jun. 28-30	FTCS-13	Milano, Italy	Michele Morganti Telettra S.P.A. Via E. Mattei 20 20064 Gorgonzola - Italy Tel: +39 2 9511561
Jul. 4-8	ICCBS	Toulouse Cedex, France	1st ICSD Laboratoire De Genie Electrique Universite Paul-Sabatier 118, route de Narbonne 31062 Toulouse Cedex France

DATE	CONFERENCE OR COURSE	LOCATION	MORE INFORMATION
Jul. 17-22	1983 Summer Meeting, IEEE Power Engrgr. Society	Los Angeles, CA	T. K. Hawkins c/o IEEE PES Special Activities 345 East 47th Street New York, NY 10017
Jul. 25-29	Sixth Int'l Symposium on Multivariate Analysis	University of Pittsburgh, PA	P. R. Krishnaiah Center for Multivariate Analysis, Ninth Floor, Schenley Hall University of Pittsburgh Pittsburgh, PA 15260
Aug. 31-Sept. 2	International Geoscience and Remote Sensing Symposium (IGARSS '83)	San Francisco Hilton San Francisco, CA	Mike Buettner MS L-156 Lawrence Livermore Nat'l Lab. P. O. Box 5504 Livermore, CA 94550 (415) 422-7888
Sept. 25-29	IEEE International Symposium on Information Theory	St. Jovite, Quebec, Canada	Professor Ian F. Blake Dept. of Electrical Engrg. University of Waterloo Waterloo, Ontario N2L 3C1 Canada (519) 885-1211, Ext. 3333
Oct. 4-6	Int'l Carnahan Conference on Security Technology	Zurich, Switzerland	P. de Bruyne ETH Zentrum-KT CH-8092 Zurich Switzerland Tel: (. . .411)256-2792
Oct. 24-26	IEEE 1983 International Symposium on Electromagnetic Compatibility	Shoreham Dunfey Hotel Washington, DC	William G. Duff Technical Program Chm. Atlantic Research Corp. 5390 Cherokee Ave. Alexandria, VA 22314

Plan Now to Attend

10th Annual Engineering Conference on Reliability, Availability and Maintainability for the Electric Power Industry

**May 25-27, 1983
Montreal, Quebec, Canada**

For further information:
R.A.M. Conference
P. O. Box 577
Succ. Desjardins
Montreal, P. Q.
Canada H5B 1B7

Jos Fuchs: (514) 289-4453
Richard Brown: (514) 845-3205
Joseph Mastrocola: (514) 289-5245

IEEE Offers Technical Writing Course for the Practicing Engineer

"Technically—Write II," a newly revised correspondence course, is now available from the IEEE. The course is specifically designed to help scientific and engineering professionals master the every-day communication techniques that are essential for career development.

The course covers the entire spectrum of communication tasks that might confront a modern engineer, including field reports, inspection reports, formal reports, technical correspondence, technical presentations, briefings and proposals, and even resumes and letters of application.

The correspondence course features personal instruction, with each student assigned to an instructor who is a specialist in the field, and who will evaluate student progress every step of the way.

Completion of the course is projected at 3½ months and students who successfully fulfill all course requirements receive a Certificate of Achievement and 6.0 CEAs.

The course is available to IEEE members at \$127.00, including shipping and handling, and to nonmembers at \$177.00.

For information, please call the IEEE Education Registrar, at (212) 705-7860.

What is AdCom

The AdCom is the ADvisory COMmittee of the Reliability Society. This committee of eighteen members manages the society by the guidelines stated in the Constitution and Bylaws. These eighteen members serve three years each on a rotational basis. Every year one-third (or six) members' offices come up for reelection. (Only two consecutive terms are allowed and the AdCom member must sit out for a term.) Once the entire AdCom is elected, these eighteen members in turn elect the President of the Society and four Vice Presidents for a term of one year each.

The AdCom holds three meetings for the entire AdCom during the year. The first meeting is held in conjunction with the RAM Symposium in January, the second in conjunction with the Reliability Physics Symposium in April, and the Third in the Fall (Chapter Chairmen's Meeting). At these meetings various issues are discussed. Each Vice President presents his/her report. These are published in the *Newsletter* under AdCom Vice President Reports.

In future issues of the *Society Newsletter*, there will be a column on the AdCom including Who is Who in the AdCom and a brief description of their office.

AdCom Vice President Reports

Publication Report—Anthony Coppola

The humor feature "Milestones in Reliability Engineering" will run out with #20 the end of this year. The Reliability Society is looking for a volunteer for a regular humor feature to follow. If interested, please contact the editor of this *Newsletter*.

Mr. Coppola is currently working on a Joint Booklet describing Reliability Engineering by both the ASQC and IEEE. A final committee version should be ready in January for approval from both societies.

Meetings Report—Dave Troxel

Reliability and Maintainability Symposium is scheduled to be held in the future at the following places:

- 1983 Sheraton Twin Towers, Orlando, FL
- 1984 St. Francis Hotel, San Francisco, CA
- 1985 Franklin Plaza, Philadelphia, PA
- 1986 Riviera, Las Vegas, NV
- 1987 TBD (either Washington or Philadelphia)

The future International Reliability Physics Symposiums are scheduled to be held:

- 1983 Hyatt Regency, Phoenix, AZ
- 1984 Caesar's Palace, Las Vegas, NV
- 1985 Orlando, FL
- 1986 Anaheim, CA
- 1987 San Diego, CA
- 1988 San Francisco, CA

Membership Report—Hank Malec

A five member team currently makes up the membership committee. Bernhard Bang is in charge of the Chapter Chairmen. He is responsible for coordinating the Annual Chapter Chairmen/AdCom Meeting. Sam Keene is the

Membership Chairman and is responsible for maintaining the membership roles and the membership development programs. Vince Lalli is the Professional Development Chairman. Vince is responsible for the activation of a Reliability Home Study Course. (Pay attention for information on this in future issues). The fourth position is held by the Membership Vice President, Hank Malec. This position handles the Chapter Awards Program. Due to the increased activities in the membership area, a five man team is needed to run the programs effectively.

Technical Operation—Naomi McAfee

Mechanical Reliability (Henry R. Hegner)

During 1982 the Mechanical Failures Prevention Group (MFPG) held one symposium, completed plans for a Fall 1982 symposium, and initiated plans for 1983 Spring meeting. The IEEE Reliability Society is endorsing and participating in the Fall 1982 MFPG meeting. The first symposium addressed "Time-Dependent Failure Mechanisms and Assessment Methodologies" and was held at the National Bureau of Standards (NBS), Gaithersburg, Maryland from April 20-22, 1982.

The second symposium, endorsed by the IEEE Reliability Society, was on "Technology Advances and Their Impact on Detection, Diagnosis and Prognosis (DD&P)" and was held in Scottsdale, Arizona from December 7-9, 1982. Mechanical failures of systems, structures and materials are a continuing problem of significant importance which impact our everyday lives. The consequences of these failures are particularly severe when they occur in today's large complex systems and equipment. One way of preventing failures and their adverse results is by means of DD&P techniques. Thus, techniques for diagnosing and predicting failures in mechanical systems have always been

an important means for preventing mechanical failures. The purpose of the symposium was to aid communications between those involved with the reduction of mechanical failures through DD&P.

Advanced Technology (Anthony Coppola)

The Status of the Reliability Technology Report will be in the next issue of the *Newsletter*. Mr. Coppola is still hunting for information on commercial and nuclear inputs. If you have such inputs, please transmit these to the *Newsletter* editor.

Human Performance (Arthur I. Siegel)

Materials describing the status of human performance reliability and advanced major emphasis have been sent to the Vice President of publications for inclusion in the annual "Reliability Status Report."

Full plans and goals for the coming year for the Human Performance Subcommittee have not fully materialized. Tentatively, the plans include (1) developing a speakers list on human performance reliability, and (2) organizing a

symposium for presentation of next year's R&M meeting.

Health Care Technology Policy (Vernon E. Gardner)

The Sixth Annual Symposium on Computer Applications in Medical Care was held in Washington, D.C. on October 30–November 2, 1982. Among the sponsoring and cooperating organizations were the IEEE Washington/Northern Virginia Section and the IEEE Computer Society Technical Committee on Computational Medicine.

Software Reliability (Irving Doshay)

Mr. Doshay attended a meeting of the working group of the Computer Societies Committee on Software Reliability Measurement and gave them a presentation on the Reliability Society Software Reliability Committee's effort to date. This meeting was held at Hewlett Packard on August 4–5, 1982, in Cupertino, California. The current definition of software reliability for inclusion in the MIL-STD-721 is being worked with the EIA Reliability Committee. More on this in the next issue.

Call for Papers—Transactions

The IEEE Transactions on Reliability has a continuing need for practical papers: Examples are:

- Case histories
- Reliability techniques which were found to be useful on a job, and those which were not useful or were too expensive.
- How you set realistic R&M requirements for a system or equipment.
- What kinds of reliability testing were actually cost-effective.
- Use of reliability data from the field instead of from special reliability tests. Comparison of field data with reliability tests.
- Comments on the worth of standards such as the many international or U.S. military standards on reliability.
- Ideas, from experience, on the major obstacles to setting and achieving worthwhile reliability requirements in commercial, military, or other fields.
- Where to find information. For example a list of trade and professional journals of value to electronics reliability and quality control practitioners.
- Information summaries. For example, annotated lists of computer programs for analyzing electronic circuits or for generating fault trees—tell what the programs do, how big a computer they need, and where they are available.

Book on Large Scale Systems Published by IEEE Press

The publication of *The World Large Scale Systems*, a book of selected reprints, has been announced by the IEEE Press. This volume, sponsored by the IEEE Systems, Man, and Cybernetics Society, was edited by James D. Palmer of Mechanical Technology, Inc. and Richard Saeks of Texas Tech University.

The past decade has witnessed major R&D activity in the large scale systems area in response to needs of at least five distinct industries: aerospace, communications, computer, power, and semiconductor. This has led to a multiplicity of parallel efforts. Often there has been minimal intercommunication among various activities, each of which has gone off in its own direction, sometimes duplicating and seldom benefiting from the others. There is a need for a unifying volume such as this.

The 35 carefully selected reprinted papers are divided into five application areas, as follows: Circuits (Simulation, Sensitivity, Testing); Control (Stability, Decentralized Control); Networks (Complexity, Partitioning, Layout); Power Systems (Simulation, Estimation Planning); and Socio-Economic Systems (Models, Social Systems, Optimization). The papers included in each application area were chosen to give the reader a sampling of the wide variety of tools, techniques, ideas, and philosophies underlying the important and complex field of large scale systems engineering.

The World of Large Scale Systems is priced at \$16.45 for the paperbound member edition. A clothbound edition is available to nonmembers for \$32.95 (discounted to \$24.70 for IEEE members.) This 360-page volume can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Payment should accompany orders.

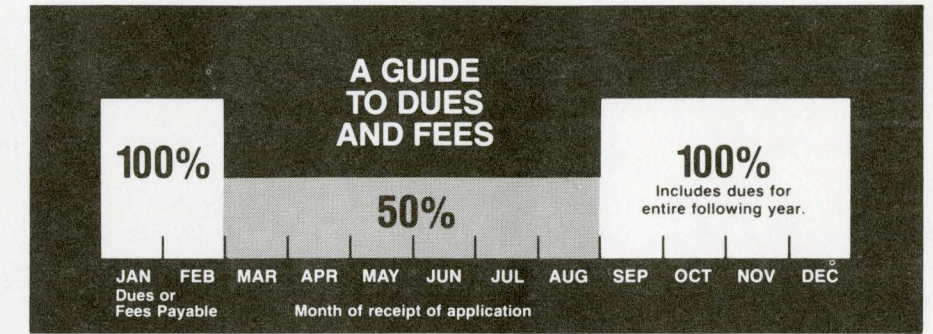
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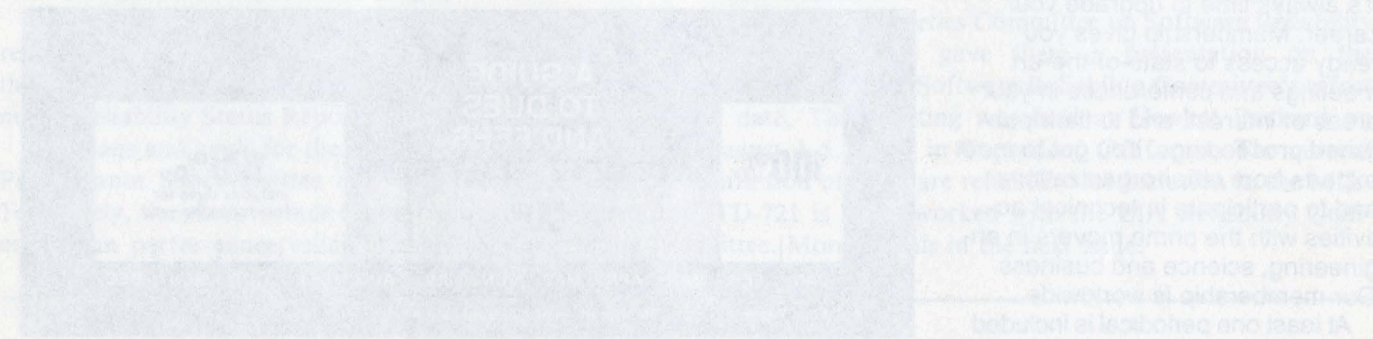
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an important means for preventing mechanical failures. The purpose of this symposium is to provide an opportunity for researchers to present their latest work in the field of reliability. The symposium will be held in Washington, D.C. on November 2, 1982. Arrangements for the symposium will be made through the Computer Society Paper Section and the IEEE Technical Committee on Computer Reliability.

Now is the best time to join our society. The symposium on Reliability of Large Scale Systems will be held in Washington, D.C. on November 2, 1982. Arrangements for the symposium will be made through the Computer Society Paper Section and the IEEE Technical Committee on Computer Reliability.



Call for Papers-- Transactions

Book on Large Scale Systems Published

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