EDITOR'S NOTES

After a long drought, your editor has received three genuine "Letters to the ...." along with the normal deluge of press releases and trickle of publishable news items. Two of these, from a Chapter Chairman, concerned a complaint about the handling of his Chapter's report and don't seem suitable for publication. The third, however, is along the technical lines sought as an alternate to the "Hints and Kinks" column; at the author's request, it is not formally labeled as a contribution to that column.

The author is in fact Ralph Evans, the Transactions Editor (his biography as an AdCom member appears in this issue by coincidence). Ralph welcomes, and hopes to stimulate, controversy; his contribution appears in the Newsletter in an effort to avoid any unfair advantage he might seem to have as Editor in his own publication. Responses of all kinds -- from sustained dialogue to nitpicking -- are solicited.
Baltimore

The Baltimore Chapter schedule for the 1969-70 season calls for meetings on October 20, November 17, January 19, March 18, and May 19. All meetings are at the Coachman on Maryland Route 2, halfway between Baltimore and Annapolis at Earleigh Heights, with cocktails at 6:30, dinner at 7:00, and speaker at 8:00.

The November meeting involved group discussion and dynamic conclusions for subjects of general Reliability interest, under the leadership of J. E. Victor, Jr., of Westinghouse Aerospace. Subjects and speakers for the balance of the season are to be announced.

Arrangements Chairman, T. A. Kurzmueller.

Current officers are:

Chairman
James H. King, Jr.
Westinghouse Electric Corp.
Aerospace Division, MD 525
P. O. Box 741
Baltimore, Maryland 21203
785-3521

Vice Chairman
(Vacant due to resignation)

Secretary/Treasurer
Raymond H. Seidt
Westinghouse Electric Corp.
Undersea Division, MD 3339
P. O. Box 1767
Baltimore, Maryland 21203
785-7117

Program Chairman
Charles H. Karr
Westinghouse (Aerospace) 454
785-2206

Publicity Chairman
Arch L. Busby
Westinghouse (Aerospace) 454
785-3441

Arrangements Chairman
Tom A. Kurzmueller
Westinghouse Electric Corp.
Surface Division, MD 808
P. O. Box 1857
Baltimore, Maryland 21203
785-8328

Binghampton

The 1968-69 season concluded with the May 19 meeting, at which H. D. Hulme of Westinghouse spoke on "Data Analysis and Reporting".

The new season began with the annual one-day conference co-sponsored by the Chapter and the Binghampton Section of the ASQC. Held at Binghamton College, the conference, "NEW HORIZONS IN QUALITY AND RELIABILITY," drew an audience of 200 to technical sessions featuring 11 speakers.

Familiar faces from the national as well as the local scene abounded, as evidenced by the accompanying photos.

M. A. Young, IBM Oswego, speaker; H. D. Hulme, Westinghouse, moderator; D. B. Christian, Xerox, speaker.

Richard M. Jacobs, Consultant Services Institute, presenting the luncheon address.

CHAPTER NEWS

Boston

The activities of the Boston Chapter last spring under the leadership of Chairman Bill Gray included three technical meetings and a highly successful All-Day Seminar. The technical meetings featured Dr. N. D. Singpurwalla and Dr. Bay Schater of Hughes Aircraft, who spoke on accelerated life testing and sequential Bayes procedures for Reliability demonstration testing respectively, and Major R. F. Fisher of the Air Force System Command who spoke on Air Force procurement practices. The All-Day Seminar, under the able direction of John Pollock, attracted 130 attendees to sessions featuring 8 speakers on subjects ranging from parts and microelectronics reliability to systems effectiveness analysis. The keynote address was delivered by Mr. Mike W. Foester, Vice President and Assistant General Manager of Raytheon's Missile Systems Division, and Major General Joseph Cody, Jr., Commander of the Air Force Electronic Systems Division was guest speaker.

The schedule for the current season, which was announced in the October Newsletter and began successfully on September 11 with a presentation by P. R. Pascull of Honeywell EDp on "How One Procurement Man Views Quality and Reliability", has been amended with respect to the February 16 meeting. That meeting will be held at the Honeywell Radiation Center, Lexington, at 6:00 p.m. and will be addressed by a speaker from the Trial Lawyers Association on "Consequences of Product Failure".

The All Day Seminar, previously announced as scheduled for April 18, will be held April 14.

Current officers are:

Chairman
Avery H. Hewes
AVCO Corporation
201 Lowell Street
Wilmington, Mass., 01887
657-2287

Vice Chairman/Program Chairman
Roland F. Emero
Raytheon Company
Harrison Road
Bedford, Mass., 01730
574-7100, Ext. 667

Treasurer/Secretary
John J. Pollock
Honeywell Radiation Center
2 Forbes Road
Lexington, Mass., 02173
782-6222

Secretary/Team/Chairman
Donald L. Dawes
Sandia Associates, Inc.
Bedford Division
Crosby Division
Bedford, Mass., 01730
278-0050, Ext. 338

Education Chairman
Irving Basinski
Mitre Corporation
P. O. Box 208
Bedford, Mass., 01731
271-3320

Meeting Program
Julius Riedman
Sylvania Electronic Systems
77 A Street
Needham, Mass., 02194
440-2000, Ext. 414

Arrangements Chairman
Norman Mariel
RCA
Routes 3 and 42
Burlington, Mass.
272-4000, Ext. 3107

Conversel-Days Beach

Recent cutbacks in the space program have resulted in the loss of nearly the entire slate of elected Chapter officers. A survivor -- the elected Vice Chairman -- has taken over as Chairman and a new slate has been selected, with the following results:

Chairman
Lee E. Webster
Radiation, Inc.
Systems Division
P. O. Box 57
Melbourne, Florida 32901
727-5613

Vice Chairman
Earle Baber
727-5051

Secretary/Treasurer
Jerral Hollaway
727-5693

Program Chairman
Jack Freeman
727-5150

Despite the upheaval, a Chapter meeting was scheduled for December 10 with Otto Feidt speaking on "Impact of Space Shuttle on Qualification Testing".

Mohawk Valley

The season's program was initiated with a meeting on September 30, at which J. S. Smith of RADIC spoke on "Radiation vs. Reliability Impacts and Trade-offs". On October 7, a joint meeting of the G-R and G-PMR chapters was addressed by D. L. Burchett of THW Systems on "Modular Packaging of Spacecraft Integration Equipment".

Montreal

Chapter technical meetings have been scheduled for January 21 and April 15 and are to be held from 7:00 to 9:30 at the Hydro-Quebec Building. 75 Dorchester W., subjects and speakers were not finalized as of the Newsletter's closing date.

The Chapter is sponsoring an intensive course in Reliability Engineering over a 5-week period in February and March. Lectures will be held at the Hydro-Quebec Building, 7:00 to 9:30 p.m., fees are $50 for IEEE and ASQC members, $35 for nonmembers.

February 4
Basic Concepts of Reliability

February 11
Reliability Prediction

February 18
System Reliability

February 22
Reliability Testing

March 4
Establishing a Reliability Program

For further information contact Dave Kiang, Canadian Marconi, 2442 Trenton, Montreal, phone 543-5411, local 129.
**Twin Cities**

The 1969-70 season schedule of the Twin Cities Chapter has been announced as follows:

**November 13**
- "System Effectiveness Modeling"
  - J. Paulie
  - Honeywell Systems & Research Division

**January 28**
- "Maintainability Test Performed on a Computer System"
  - D. W. Lowery
  - Control Data Corp.
  - (Time and Place to be announced)
  - Contact: Ron Gjerston
  - (612) 651-0631, Ext. 2123

**February 17**
- Joint Meeting with G-ARS
  - Speaker to be announced
  - Contact: Ron Gjerston

**April 22**
- Election of Officers
  - (Time and Place to be announced)

**Current Officers are:**

**Chairman**
- Daniel W. Lowery
  - Control Data Corporation
  - Space & Defense Systems Div.
  - 288-5555, Ext. 4747

**Vice Chairman**
- Gordon L. Seller
  - Honeywell, Inc.
  - Aeronautical Division
  - 2700 Ridgeway Road
  - Minneapolis, Minn. 55413
  - (612) 351-4141, Ext. 4506

**Program Committee**
- V. Mike Jordal
  - Honeywell, Inc.
  - Ordnance Division
  - 600 North 2nd Street
  - Hopkins, Minn. 55343
  - (612) 935-5135, Ext. 1726

**San Francisco**

The 1968-69 season was completed with meetings in March, April, May, and June. On April 30, a panel meeting on product liability included Mr. Chasse of Underwriters Laboratories, Dick Bayley of the General Electric Appliance Center, and Ken Kelly of Philco-Ford. The May 15 meeting was addressed by F. Taxar of Philco-Ford who spoke on "Computer-Aided Design Analysis". At the June 15 meeting, W. Young of the American Microsystem spoke on "Failure Mechanisms of Integrated Circuits" and F. Taxar of Philco-Ford on "Lancer Highlights".

**Washington**

At the Chapter meeting held October 29, Jacob Sacks and Richard Dangel, both of the Naval Ship Systems Command, spoke on "Integrated Logistic Support in the Naval Ship Systems Command". At the meeting, it was announced that the Chapter's Bylaws requirement for a 25-percent vote for Bylaws amendment had been removed by a 29 to 11 ballot. A substitute requirement prohibits the distribution of ballots between November 15 and January 15.

The November 16 meeting was unusual in being a four-way joint meeting involving G-ARS, ASQC, SAVE, and the American Association of Cost Engineers. Richard E. Birdenbender, Director of Value Engineering in the Office of the Secretary of Defense, addressed the audience on "Value Engineering Development". Of particular interest to G-ARS members was the speaker's contention that the implementation of value engineering has tended to increase reliability.

**Past President**

Ralph Evans in the present Editor of the Transactions on Reliability. He has been a senior physicist with the Research Triangle Institute (Durham, North Carolina) since 1963 and is a major participant in the Reliability activities of the Institute. Ralph came to the Institute from a position as Director of the Link-Shell Research Laboratory in Indianapolis where he had been for seven years.

Ralph received a B.S. in Engineering Physics from Lehig University in 1944 and a Ph.D. in Physics from the University of California at Berkeley in 1954. He is a senior member of the American Society for Quality Control and the IEEE, and has been a member of the Reliability Group for about eight years. He is Treasurer of the Electronics Division of ASQC and maintains membership in the American Physical Society, the American Association of Physics Teachers, American Society for Metals, and American Society for Testing and Materials. Ralph has been active in the Management Committee of the Annual Symposium on Reliability for about five years and is a Registered Professional Electrical Engineer (grandfather clause) in California. He is a native of East Orange, New Jersey.

Theodore L. Regničski in Associate Editor of the IEEE Transactions on Reliability (and was the Guest Editor of the special issue mentioned elsewhere in this Newsletter). He is Associate Professor of Electrical Engineering at the faculty of the Air Force Institute of Technology. A BSE graduate of Manhattan College in 1954, he received the IEEE degree from Newark College of Engineering in 1953 and, in 1967, was the recipient of a National Science Foundation grant to study Modern Control Theory at the University of Southern California.

Ted proposed the AFT graduate curriculum in Systems Reliability Engineering. In addition to teaching Reliability and Maintainability Courses in that program, he also teaches a sequence of courses in Information Theory and Systems Modeling. A Research Scientist with the Signal Corps Research and Development Laboratories before joining AFT, Ted also serves in a consulting capacity on space communications for the Air Force, missile systems reliability for the Navy, and solid state device reliability for the Air Force Materials Laboratory. He currently conducts research on telemetry transmission of cardiac and respiratory measurements.

A senior member of IEEE and a member of Pi Epsilon Gamma and Pi Kappa Nu, Ted is listed in the current edition of American Men of Science and was the recipient of the Omega Phi Pi 1968 Citizens of the Year Award. He is the author of the 1965 NAFI text Reliability Engineering.
CONFERENCES

February 3-5
1970 ANNUAL SYMPOSIUM ON RELIABILITY (G-R, ASQC, IEEE, ASNT), BILTMORE HOTEL, LOS ANGELES, CALIFORNIA

February 18-20

March 23-26
1970 IEEE International Convention, New York Hilton and New York Coliseum

April 1-9
1970 IEEE RELIABILITY PHYSICS SYMPOSIUM G-R, G-EDO, STARDUST HOTEL AND COUNTRY CLUB, LAS VEGAS, NEVADA

April 12-14
16th Annual Meeting of the Institute of Environmental Sciences, Sheraton-Boston Hotel

April 14-16

April 14-16

April 14-17

May 4-6
9th International Research Symposium on Electric Contact Phenomena (Verband Deutscher Elektrotechniker), Munich, Germany

May 5-8
1970 Annual Appliance Technical Conference, Leland Motor Hotel, Mansfield, Ohio

May 5-7
1970 Spring Joint Computer Conference (AFIPS), Convention Hall, Atlantic City, New Jersey

May 13-15
1970 Electronic Components Conference (IEEE, IECE), Statler-Hilton Hotel, Washington, D.C.

June 2-3
Silicon Device Processing Symposium, National Bureau of Standards, Gaithersburg, Maryland

June 15-19

June 16-18

July 14-18
1970 IEEE International Symposium on Electromagnetic Compatibility, Convention Center, Anaheim, California

August 18-21
International Conference on Microelectronics, Circuits and Systems (IEEE, The University of New South Wales, IEEE Australia, IEEE), Sydney, Australia (Symposium March 30, Papers May 23)

September 21-24
1970 IEEE International Conference on Engineering in the Ocean Environment (IEEE Oceanography Coordinating Committee and Panama City Section, with participation by U.S. Naval Ship Research and Development Laboratory, Florida State University, Louisiana State University, Panama City, Florida) (Abstracts and Summaries March 3, late news items until June 5)

July 20-24

July 21-23
1970 IEEE Annual Conference on Nuclear and Space Radiation Effects (G-NS) and the University of California at San Diego (Summaries February 16)

FELLOW AWARDS

Among the 122 IEEE members advanced to Fellow grade as of January 1 are the following 20 members:

Virgilio Floriani, North Italy, "For contribution to the development of radio links and related technology."

G. Raymond Knight, Annapolis Subsection, "For contributions to increased reliability and effectiveness in electronic and electromechanical systems." (Ray's biography as an AcSoc member appeared in the October Newsletter.)

C. Gunnar Sva, North Central Ohio, "For research in system theory fundamental electronic switching and saturation signaling."

SHORT COURSES

Newsletter policy with respect to short-course announcements, as established by the AdCom, is to provide publication for information only. No endorsement is implied, and no check on course content or instructor qualifications has been accomplished.

University of Arizona
2nd Annual Systems Engineering Institute: February 9-13, Five days, $250. Write: Director of Conferences and Institutes, Division of Continuing Education, The University of Arizona, Tucson, Arizona 85721

University of California at Los Angeles
Integrated Logistic Support: February 9-13, Five days, $250. Write: P.O. Box 24002, Engineering and Physical Sciences Extension, University Extension, UCLA, Los Angeles, California 90024


The September issue of the Transactions, delayed -- along with many other IEEE journals -- by a printers' strike, should be by now in the hands of all G-R members and subscribers. The subject of this special issue, Information Theoretic Approach to Reliability, is sufficiently avant garde that the issue may become a classic and a collector's item -- hang on to your copy.
Available from APICS Press, 210 Summit Avenue, Montvale, New Jersey 07645 (American Federation of Information Processing Societies)

All proceedings from the Spring and Fall Joint Computer Conferences (Spring 1963 through Fall 1969), in microfiche, Vols. 1-30, 31-50, 51-75, $7.00 for each subset, $12.00 for the complete set. In microfiche, Vols. 31-50, only, $18 per volume.


From IEEE:

The 1970 Directory is, of course, available on the usual basis at $7.00 for members, $15.00 for non-members. Additional copies may be purchased for official Group activities at the member price — via the Group Chairman (Harry Rees) or Group Secretary (Stan Zwerling).

A new program entitled "Cassette Colloquium" has been inaugurated. The ongoing series will stress tape recordings of special seminars, workshops, and other IEEE-sponsored sessions with apparent immediate value to a wide audience. The first offering is a recording of a workshop entitled "Industrial Programming Languages" and features electronic speech compression — speed-up of delivery without change of pitch. The result: 2 1/2 hours' worth of material in 75 minutes of cassette, at $6.00 per copy for members; $10.00 for non-members, from the Cash Receipts department of IEEE.

A Student Branch of the IEEE has scored a significant first in a field of major interest to all engineers today — continuing education for practicing engineers. The students, all of whom are enrolled at the University of Waterloo, Ontario, Canada, have organized an eight-week course for all members of the technical community, in present "The Principles, Operation and Applications of Semiconductors Development.

A team of consulting experts has been recruited from the University of Waterloo, McMaster University, and the Canadian Westinghouse Company's Integrated Circuits Laboratories in Hamilton. They will coordinate and teach the course, for which a registration fee is charged to cover expenses and lecture materials.

Over one hundred registrants have taken advantage of the opportunity to expand, update, refresh or just consolidate their knowledge of semiconductors. A Certificate of Completion is issued to registrants attending at least six of the eight lectures available.

LETTER TO THE EDITOR

The LogNormal Distribution is not a Weibull Distribution

The phrase "weibull" distribution is often used in the literature to describe a particular kind of behaviour for failure. But often this concept is not clearly defined and even misunderstood by the author. The analogy by which this distribution is named is the correspondence to mechanical wear such as that due to friction: the material absurdes away until there is too little left. The distribution most often used to describe the times to failure for mechanical wear is the Normal (Gaussian) distribution. The hazard rate (conditional failure rate) of the Normal distribution is always increasing (a very long lives, the increase in hazard rate is proportional to the increase in time). It is reasonable to define a wearout process as one in which the hazard rate is continually increasing.

The exponential distribution, with its constant hazard rate is not a wearout distribution. The Weibull distribution is wearout only if the shape factor is greater than one; if the shape factor is less than one, the hazard rate continually decreases. An increasing hazard rate means that the survivors are more likely to fail, in the next interval of time, that they were when they were younger. The decreasing hazard rate situation might be defined Ponce de Leon since the survivors have apparently found the fountain of youth: The longer they live, the less likely they are to die.

Some distributions have a hazard rate which contains a single maximum or minimum. The most familiar example is the bathtub curve, often raised as an example of system behaviour: it has a single minimum. Others, such as the lognormal, have a single maximum. Therefore, the weibull and Ponce de Leon definitions can be modified: if there is some value of time, beyond which the hazard rate is always increasing or always decreasing, then the distribution is wearout or Ponce de Leon respectively.

The lognormal distribution is used to describe the lives of bearings, the fatigue life of metal parts, or the life of semiconductors. Is it wearout or not? First, the lognormal is a very skewerd distribution. It of course begins at t=0 and goes to t=+∞. Its mode (highest point) occurs before the median (50% failed); the median occurs before the mean (arithmetic average of the life, MTTF). The distances between these three points are a measure of skewness. The hazard rate for the lognormal begins at zero, reaches a maximum, then decreases forever — no matter what the skewness. For a very skewed distribution (~<a>10^-6t</a>, there is a standard deviation of log 0, the hazard rate vs. time curve peaks between the median and mode; then it decreases continually. This happens even before half the population dies. If the skewness is much less (~<a>10^-6t</a>, there is still a maximum, but it occurs beyond the median life, and even beyond the mean life. For very small values of skewness (~<a>0.2</a>, 3/4 of the population is dead before the Ponce de Leon point is reached. Nevertheless, if one waits long enough, the lognormal distribution always has a decreasing hazard rate and thus can not ever be termed a wearout distribution.

Ralph A. Evans
Research Triangle Institute
P.O. Box 12104
Research Triangle Park, North Carolina 27709
November 17, 1969
IEEE TECHNICAL PLANNING COMMITTEE

During 1989, the Technical Activities Board appointed a Technical Planning Committee, which was given responsibility for new technologies, i.e., those which properly belong within IEEE, but might be overlooked by our present 31 specific technical Groups. The new Committee, under TAB's Vice Chairman, Edward W. Herald, includes John R. Whinnery, Hubert Efferth, David M. Hodgkin, Ralph E. Aramington, and William O. Fleckenstein. Two meetings have now been held, with objectives (a) to identify the most important new technologies, (b) to act on those in which delay is inadvisable, and (c) to propose a permanent and effective mechanism by which IEEE will exercise continuous leadership in new subject matter. The word "new" in this context is intended to include both the scientifically new, and that which is new to IEEE, but might have a substantial past history.

Among the topics considered were the following:

- Computer Aided Design
- Cable TV
- Electric Printing
- Biotechnology and Electro-Optical Systems
- Plasma and MHD
- Oceanography
- Acoustic Waves and Filtering
- Manufacturing Technology
- Cryogenics
- Applied Mathematics
- History of Electrical Engineering
- Social Systems (transportation, education, pollution, crime detection, data networks, urban planning, hospital systems)

In several of these, activity was already underway before the Committee was formed. For Cable TV and for Electric Printing, two Ad Hoc Committees were formed to undertake specific publication and conference actions and to recommend a permanent home for the technology in the IEEE structure. The most important action of the Technical Planning Committee was to cooperate with TAB to see that the future technical organization of the IEEE would be flexible enough, alert enough, and resourceful enough to absorb new technologies. Language has been put in the general principles of organization of the Group structure, and detailed responsibility is to be developed, whereby it becomes possible for IEEE to remain the leading professional society in electrical and electronic fields. Whether it actually does will depend on the enthusiasm and participation of present members in adapting to change.

In many cases, responsibility for action ultimately lies within the Group. IEEE Groups are expected to energetically and actively alter and/or enlarge their technical spheres of influence as conditions change. However, it is quite common in talking to Group administrators about a new field to get a reaction such as "we're watching this new field with interest", or "we're already sated with more material than we can handle--let's not expand even more", or "this belongs in IEEE but not with us", or "we're actively pursuing the subject" (when, in fact, little or no activity exists). These reactions are hardly conducive to attracting new members who work in a new field, and show for too much love of the status quo. In summary, the Technical Planning Committee urges Group members to take a broad view of their technology and, when appropriate, to stretch or change their definitions of scope so that IEEE can best serve the engineer and his future welfare.
Student Fee is $2.00.

Group Fee: $5.00 for IEE members of all grades except Student.

*Group Fee: $5.00 for IEE members of all grades except Student.

Student Fee is $2.00.

Group Fee: $5.00 for IEE members of all grades except Student.

I am interested in becoming a Reliability Group Affiliate. Please send information.

I am not now a member of IEE but would like to join. Please send information.

Reliability Group. I enclose a check for the group fee* (made payable to IEE).

I am a member of IEE and hereby apply for membership in the Reliability Group.

Field of Interest

Zip Code

State or Country

City

Mailing Address

Company

Membership No.

Name

IEEE Headquarters: 345 East 47th Street, New York, N.Y. 10017

Membership Application